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Topics **Figure No.**

8. MITIGATION
Communities Adjacent to Streams 8-D
Ona Section 31 Mine and Reclamation Phases 8-E

Q:\projects\mosaic\090015\2012 work\maps ACOE\Fig Q3-1 Adjacent Communities.mxd

By: jstebnisky Date: 5/23/2014

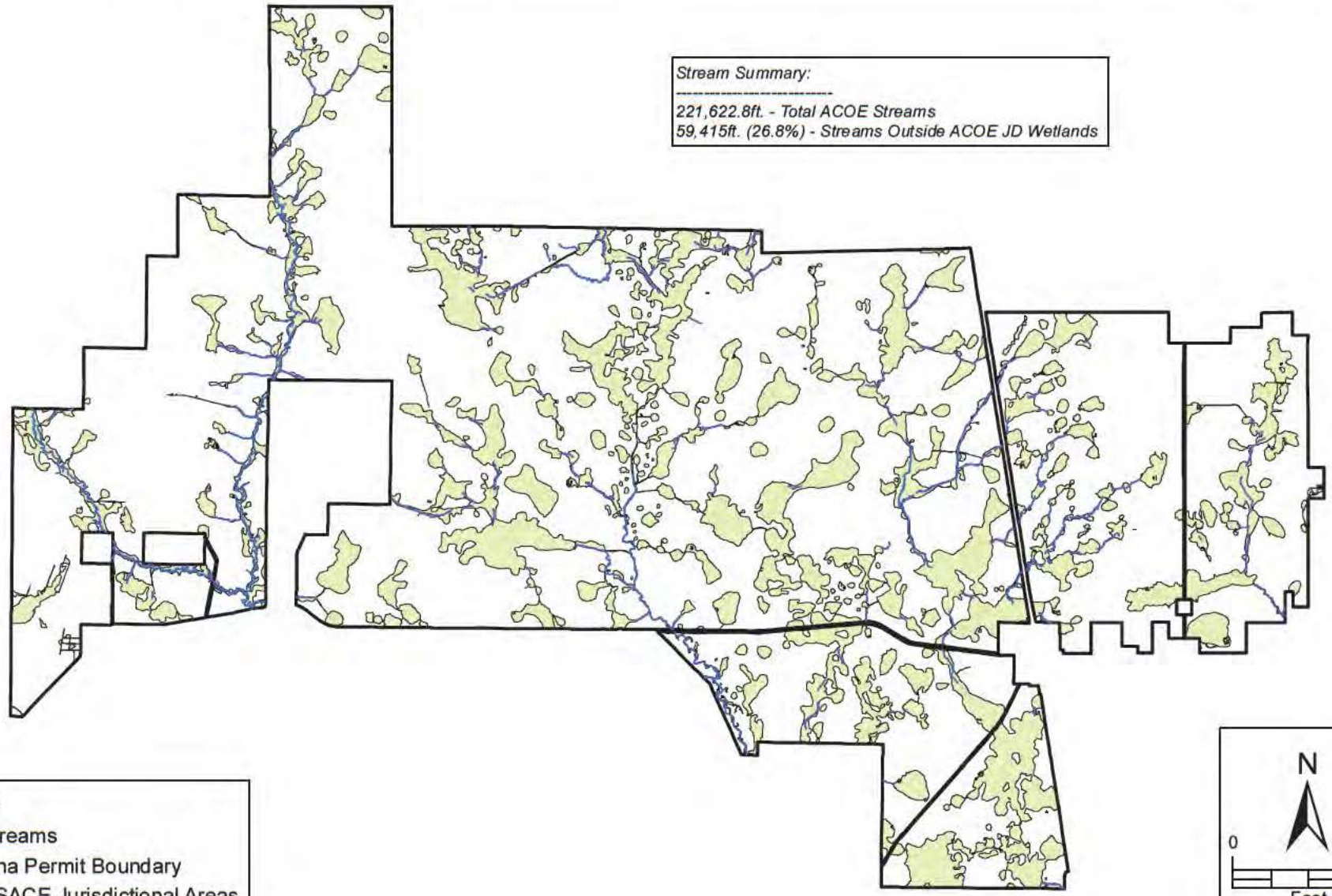
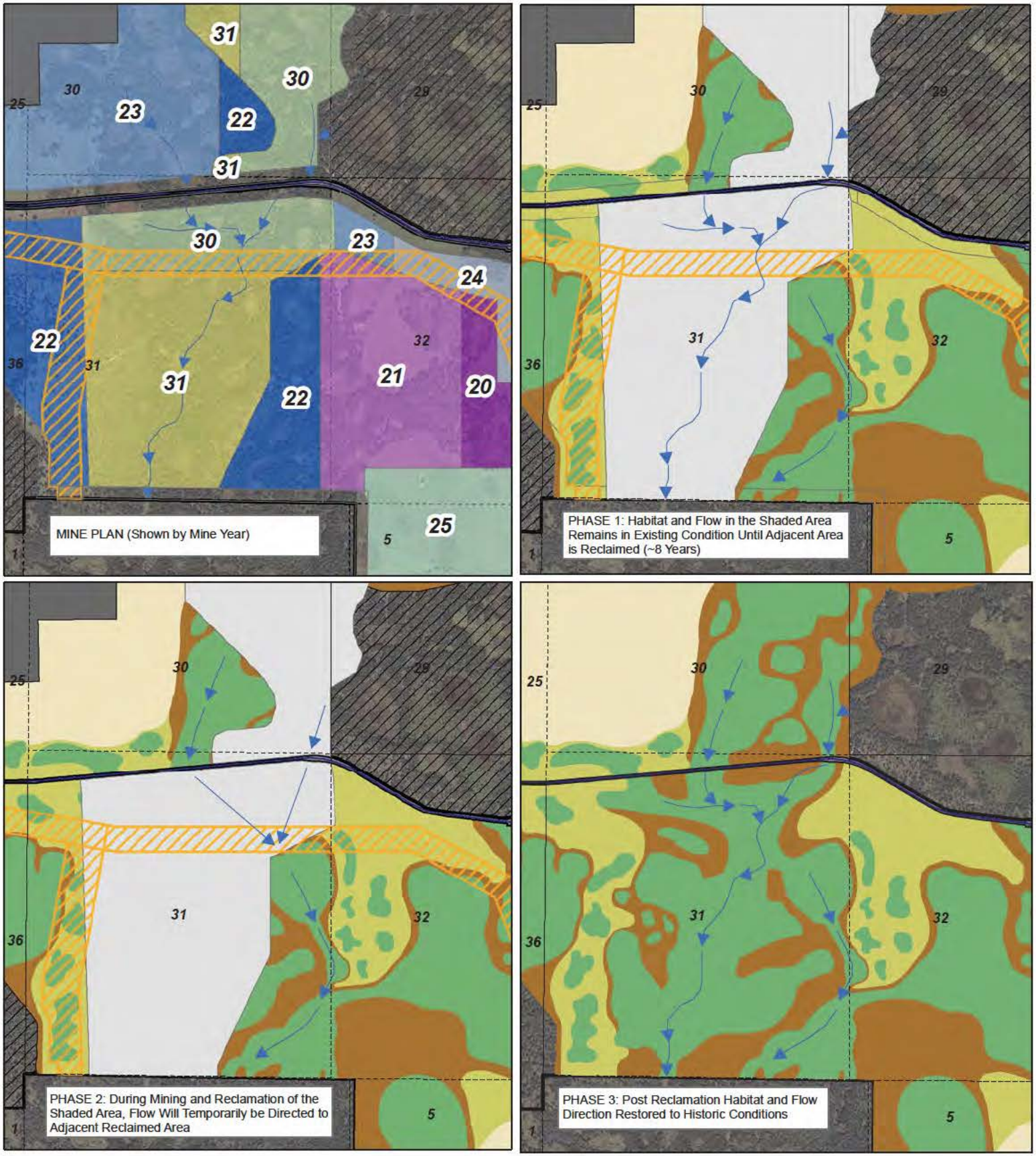


FIGURE 8-D.
COMMUNITIES ADJACENT TO STREAMS
ONA MINE
HARDEE COUNTY, FLORIDA

Sources: Mosaic, 2014; ECT, 2014.

Mosaic


MINE PLAN (Shown by Mine Year)
PHASE 1: Habitat and Flow in the Shaded Area Remains in Existing Condition Until Adjacent Area is Reclaimed (~8 Years)
PHASE 2: During Mining and Reclamation of the Shaded Area, Flow Will Temporarily be Directed to Adjacent Reclaimed Area
PHASE 3: Post Reclamation Habitat and Flow Direction Restored to Historic Conditions
Legend
Post Reclamation Land Use (FLUCFCS)
200 - Agriculture
300 - Rangeland
400 - Upland Forests
600 - Wetlands
Mine Year
20
21
22
23
24
25
30
31
Flow Direction
Section Lines
Access Corridors
Ona Tract Boundary
Roads
Avoided/Preserved Areas
Plant Site
Mosaic
Ona Mine - 404 Application
Figure 8-E
Section 31 Mine & Reclamation Phases
User: brn Date: 5/7/2014
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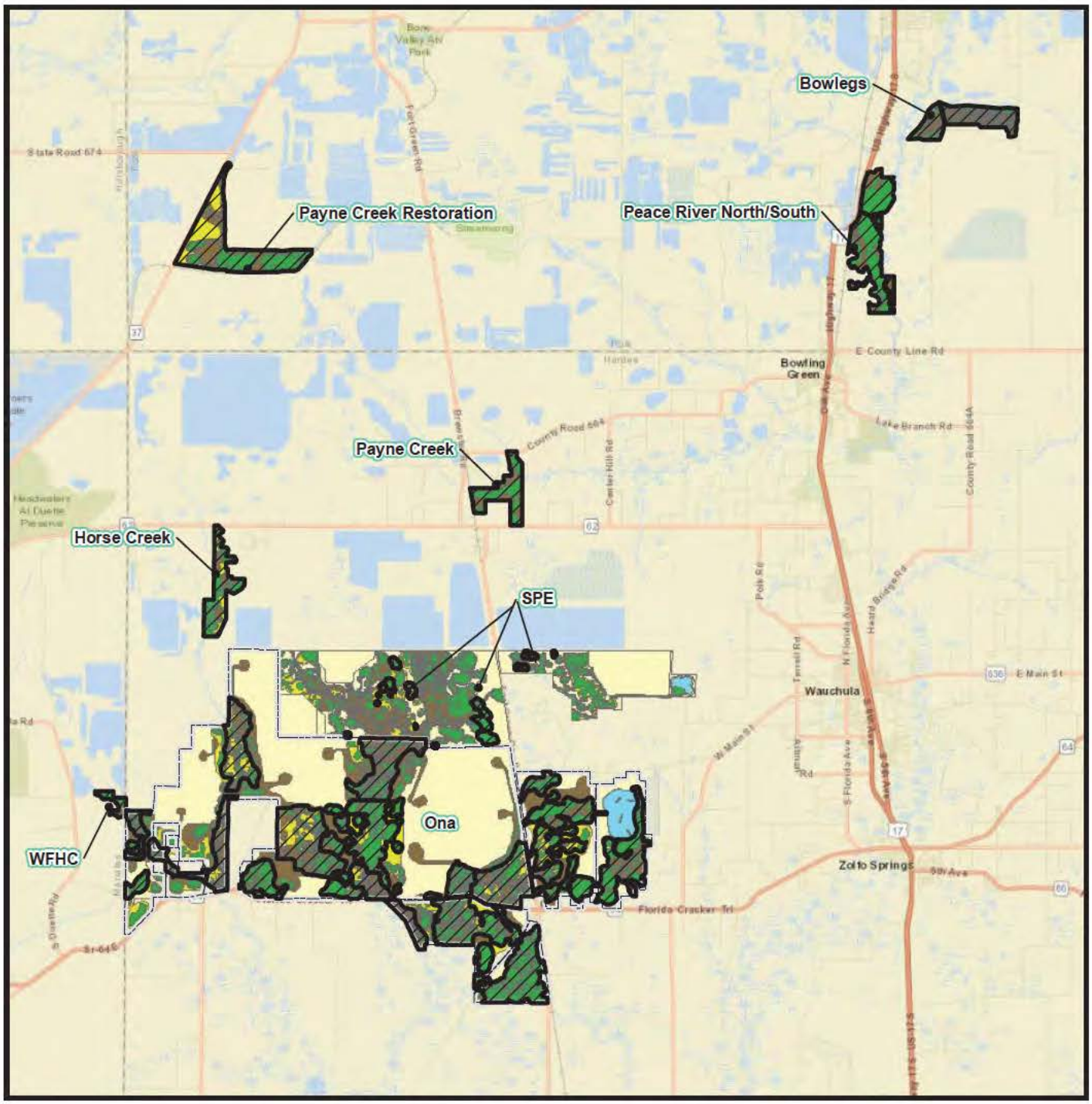
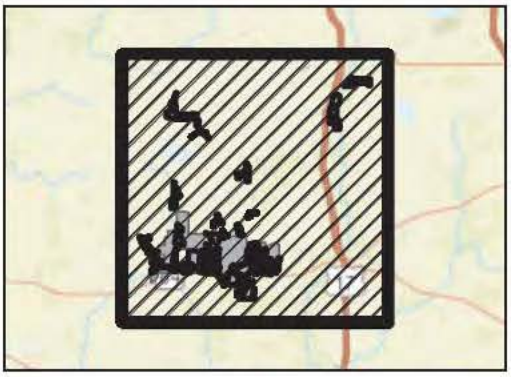


Mitigation Areas
Ona Mine
200 - Agricultural
300 - Rangeland
400 - Upland Forests
500 - Water
600 - Wetlands
800 - Transportation



0 1.5 3 Miles
1 in = 3 miles

US Army Corps of Engineers

Mosaic

ONA MINE
Mosaic Fertilizer, LLC
Figure 10
USACE 404 Application
Onsite & Offsite
Mitigation Areas

P \0003MOS\017-Ona UMAM Assistance\GIS\BOWLEGS CREEK

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TABLE A1
WETLAND C512 SYSTEM WATER BALANCE CALCULATIONS
Three Cell System (Upland-UG, Wetland & DG-Cell) with Daily Time Steps

	Primary	Fringe (if present)
WETLAND NUMBER:	C512	
WETLAND TYPE:	Freshwater Marsh	
MINE NAME	Ona Mine	
Permit Name:		
COUNTY:	Hardee County, Florida	

By: ECT
Date: October 13, 2014

VERSION 2.1

CONSTANT & INITIAL/STARTING CONDITION INPUT PARAMETERS

UPLAND-UG INPUTS		Symbol
Upland-UG Acres:	**92.77**	
Upland-UG Area (ft2):	4,041,061	Au-UG
Highest Upland-UG Elevation (ft, NGVD):	103	El
Average Upland-UG Elevation (ft, NGVD):	100.5	
Initial Starting Depth to Water at Upland-UG (ft):	2.0	
Initial Starting Water Table Elevation at Upland-UG (ft, NGVD):	98.5	
Specific Yield [Sy]/Porosity [n] (ND):	0.23	Pu
Distance between Centers of Upland-UG and Wetland (ft):	953	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Ku
Initial Upland Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0014	Gu
Upland-UG Saturated Thickness [bu] (ft):	70	Tuug
Upland-UG Ground Width entering Wetland [Wu] (ft):	5,000	Wu

Soil Type & Moisture Condition		AMC I	AMC II	AMC III	Cap. Suct. [CS]-(in)	Sat. Hyd Cd [Ks]-(ft/day)
Upland-UG -	Loamy Sand	0.382	0.347	0.312	-2.410	2.354
Wetland -	Loamy Sand	0.382	0.347	0.312	-2.410	2.354
DG-Cell -	Loamy Sand	0.382	0.347	0.312	-2.410	2.354

	Upland-UG	Wetland	DG-Cell
Evapotranspiration Extinction Depth (ft):	7	5	6
Minimum ET Rate (in/day):	0	0	0

WETLAND INPUTS		Symbol
Wetland Acres:	**28.49**	
Wetland Area (ft2):	1,241,024	Aw
Top of Bank Elevation (ft, NGVD):	100.0	TOB
Wetland Outflow Elevation (ft, NGVD):	97.8	OUT
Wetland Bottom Elevation (ft, NGVD):	96.2	BOT
Initial Starting Depth to Water at Wetland (ft):	-1.0	Dsw
Initial Starting Water Table Elevation at Wetland (ft, NGVD):	97.2	
Specific Yield [Sy]/Porosity [n] (ND):	0.23	Pu
Distance between Centers of Wetland and DG-Cell (ft):	1,351	
Wetland Discharge Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Kw
Initial Wetland Horizontal Hydraulic Gradient [ihw] (ft/ft):	0.0013	Gw
Wetland/Downgradient Saturated Thickness [bd] (ft):	75	Tw
Wetland Ground Width exiting Wetland [Wd] (ft):	210	Ww
Vertical Hydraulic Conductivity Confining Unit [Kv] (ft/day):	0.0029	
Vertical Distance Separating Surficial/Int. Aquifers [dv] (ft):	70	
Wetland Outflow Channel Width (ft):	20.0	
Wetland Outflow Channel Slope (ft/ft):	0.003	
Wetland Outflow Channel Manning Coeff (ND):	0.035	
Depth to Check for Wet Soil Conditions:	0.5	
Distance to Wetland Fringe Inner Boundary*:		
Distance to Wetland Fringe Center*:		
Distance to Wetland Fringe Outer Boundary*:		
Elevation of Wetland Fringe Inner Boundary:	98.2	
Elevation of Wetland Fringe Center:	98.2	
Elevation of Wetland Fringe Outer Boundary:	98.2	

* distance from wetland centroid

DG-CELL INPUTS		Symbol
DG-Cell Acres:	**6.59**	
DG-Cell Area (ft2):	287,060	
Highest DG-Cell Elevation (ft, NGVD):	99.5	
Average DG-Cell Elevation (ft, NGVD):	97.5	
Initial Starting Depth to Water at DG-Cell (ft):	2.0	
Initial Starting Water Table Elevation at DG-Cell (ft, NGVD):	95.5	
Specific Yield [Sy]/Porosity [n] (ND):	0.23	
Distance between DG-Cell and DG Boundary (ft):	1,389	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Ku
Water Table Elevation at DG Boundary Control Point (ft):	-9999.0	
Initial DG-Cell Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0022	Gu
DG-Cell Saturated Thickness [bu] (ft):	70	Tuug
DG-Cell Ground Width exiting system [Wu] (ft):	380	Wu

Input Variables - site specific conditions
Input Variables - represent more regional/seasonal conditions
Input Variables - site specific conditions, but limited range of variation

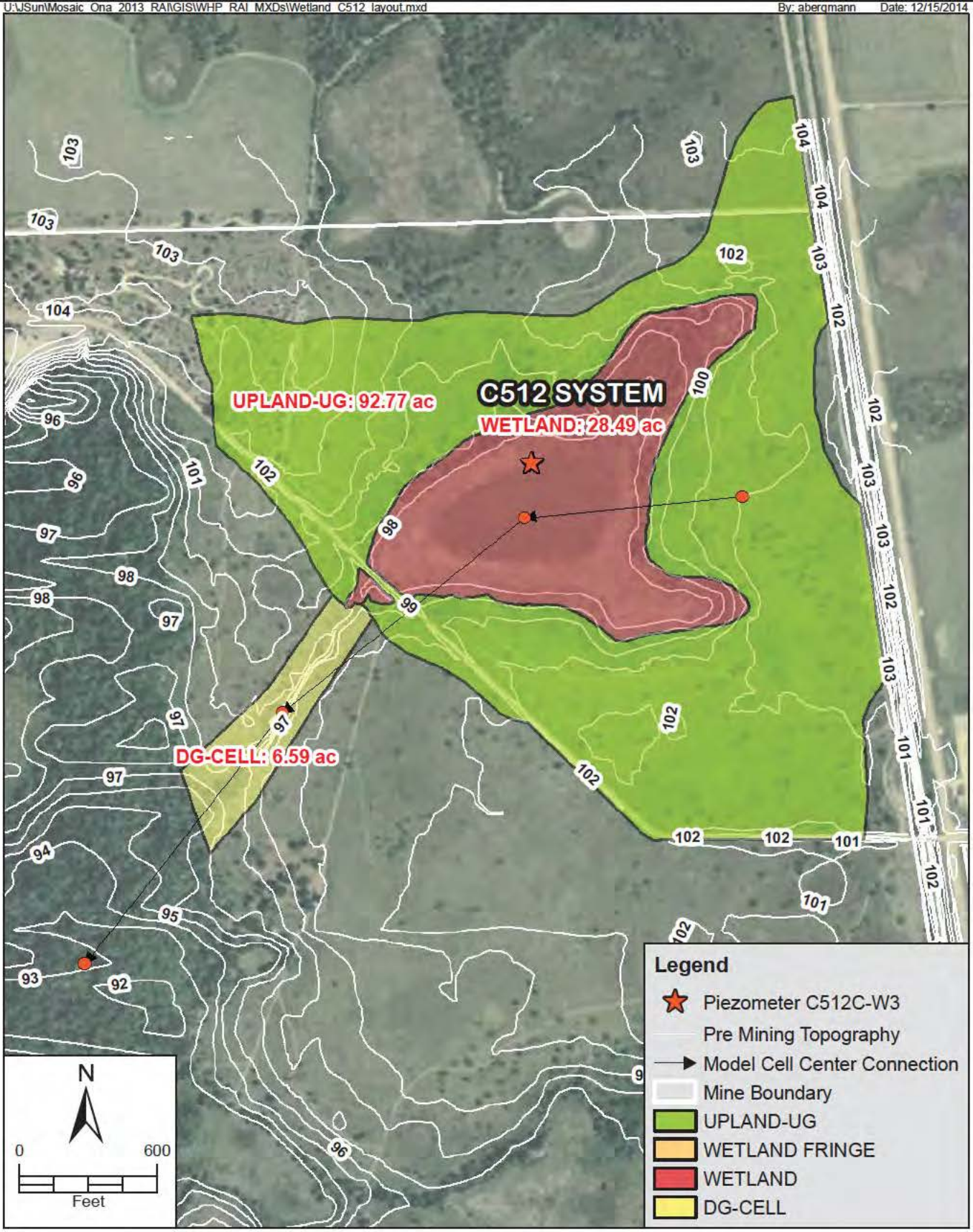
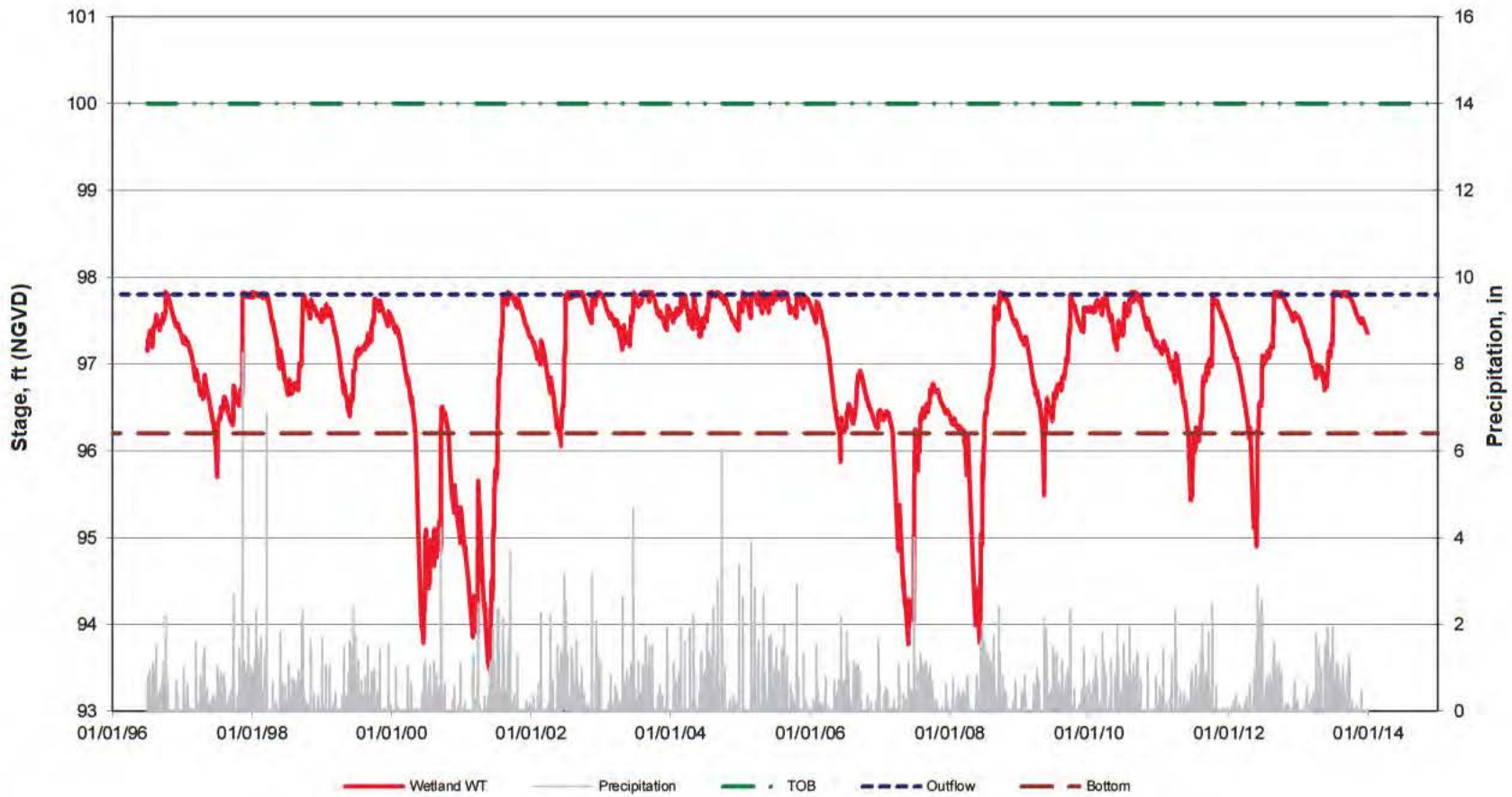


FIGURE A1-1
WETLAND C512 SYSTEM - HYDROPERIOD MODEL DIAGRAM
ONA MINE
HARDEE COUNTY, FLORIDA

Sources: ESRI, 2014; Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



	Elev. Ft.
Wetland Bottom =	96.2
Outflow =	97.8

Wetland Hydroperiod

Starting WLE = 97.2

Figure A1-2
Modeled Hydrograph of Wetland C512
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 10/13/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

WETLAND DESCRIPTION:	C512	Freshwater Marsh
PROJECT& LOCATION:	Ona Mine	Hardee County, Florida

Top of Bank Elevation (ft, NGVD):	100.0
Wetland Outflow Elevation (ft, NGVD):	97.8
Wetland Bottom Elevation (ft, NGVD):	96.2

Average	97.0 ft, NGVD	Range	4.3 ft
Maximum	97.8 ft, NGVD	Step Size	0.3 ft
Minimum	93.5 ft, NGVD	No. of Steps	14
Median	97.3 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
98.13			98.13	
97.83	0	0	97.83	0.00%
97.53	2296	2296	97.53	35.91%
97.23	1097	3393	97.23	53.07%
96.93	651	4044	96.93	63.26%
96.63	642	4686	96.63	73.30%
96.33	697	5383	96.33	84.20%
96.03	338	5721	96.03	89.49%
95.73	88	5809	95.73	90.87%
95.43	78	5887	95.43	92.09%
95.13	82	5969	95.13	93.37%
94.83	132	6101	94.83	95.43%
94.53	58	6159	94.53	96.34%
94.23	73	6232	94.23	97.48%
93.93	115	6347	93.93	99.28%
93.63	34	6381	93.63	99.81%
93.33	12	6393	93.33	100.00%
93.03	0	6393	93.03	100.00%

6393 Days
17.5 Years

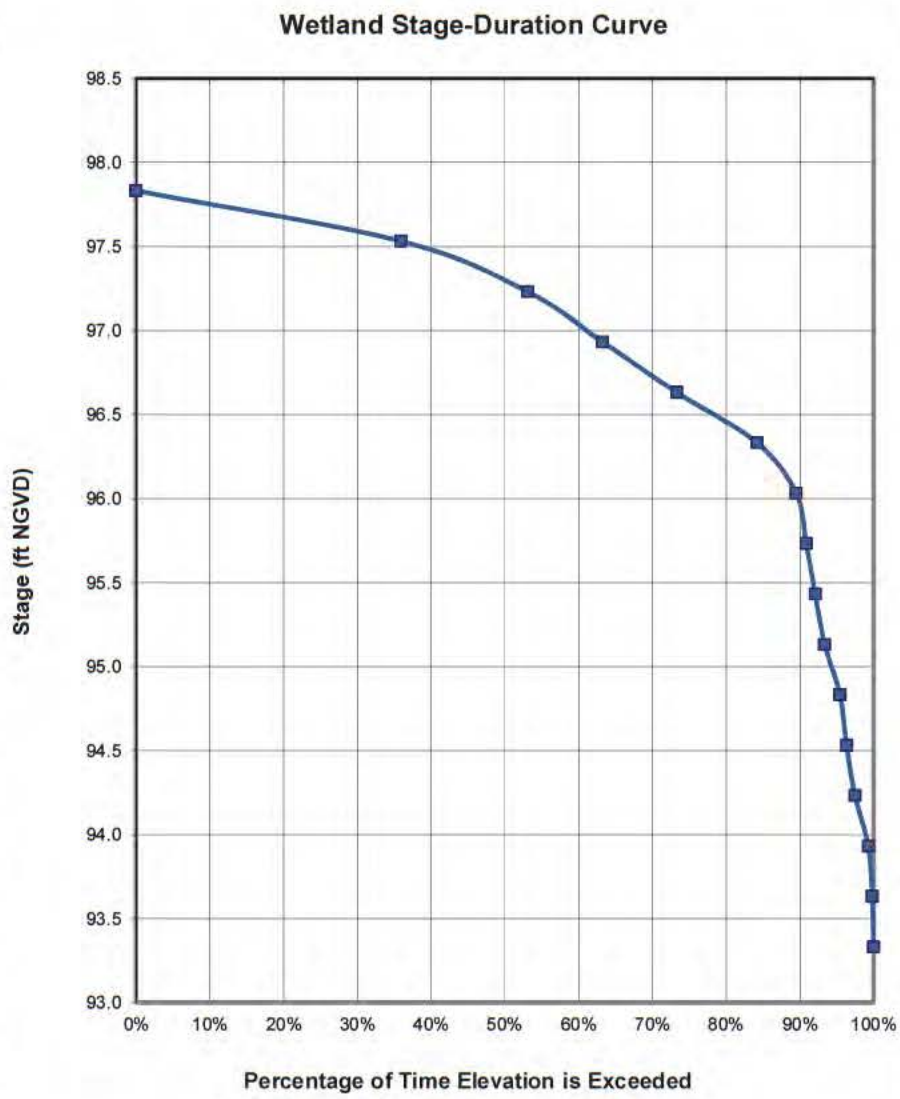
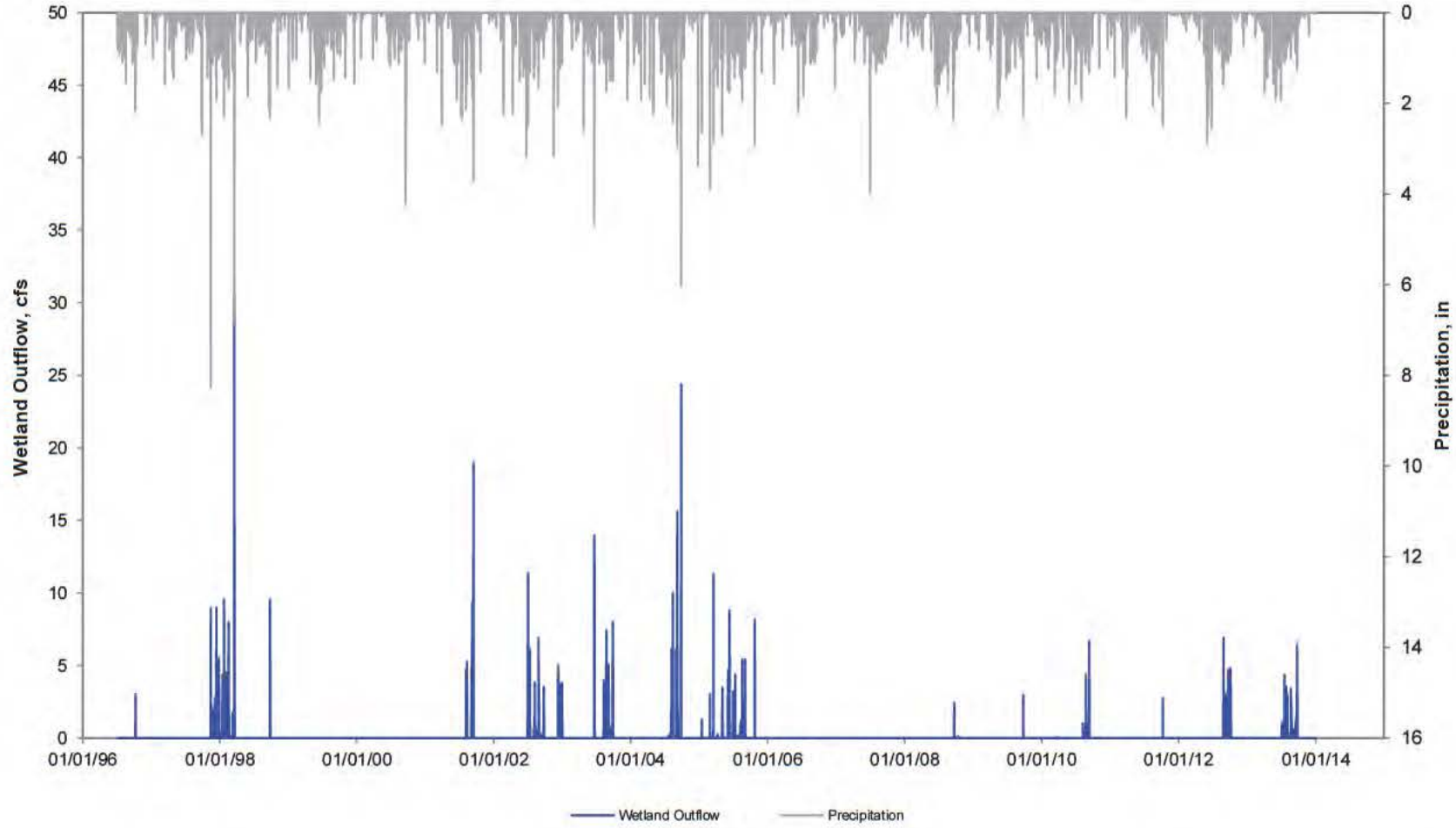


Figure A1-3
Modeled Stage-Duration Curve of Wetland C512
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 10/13/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



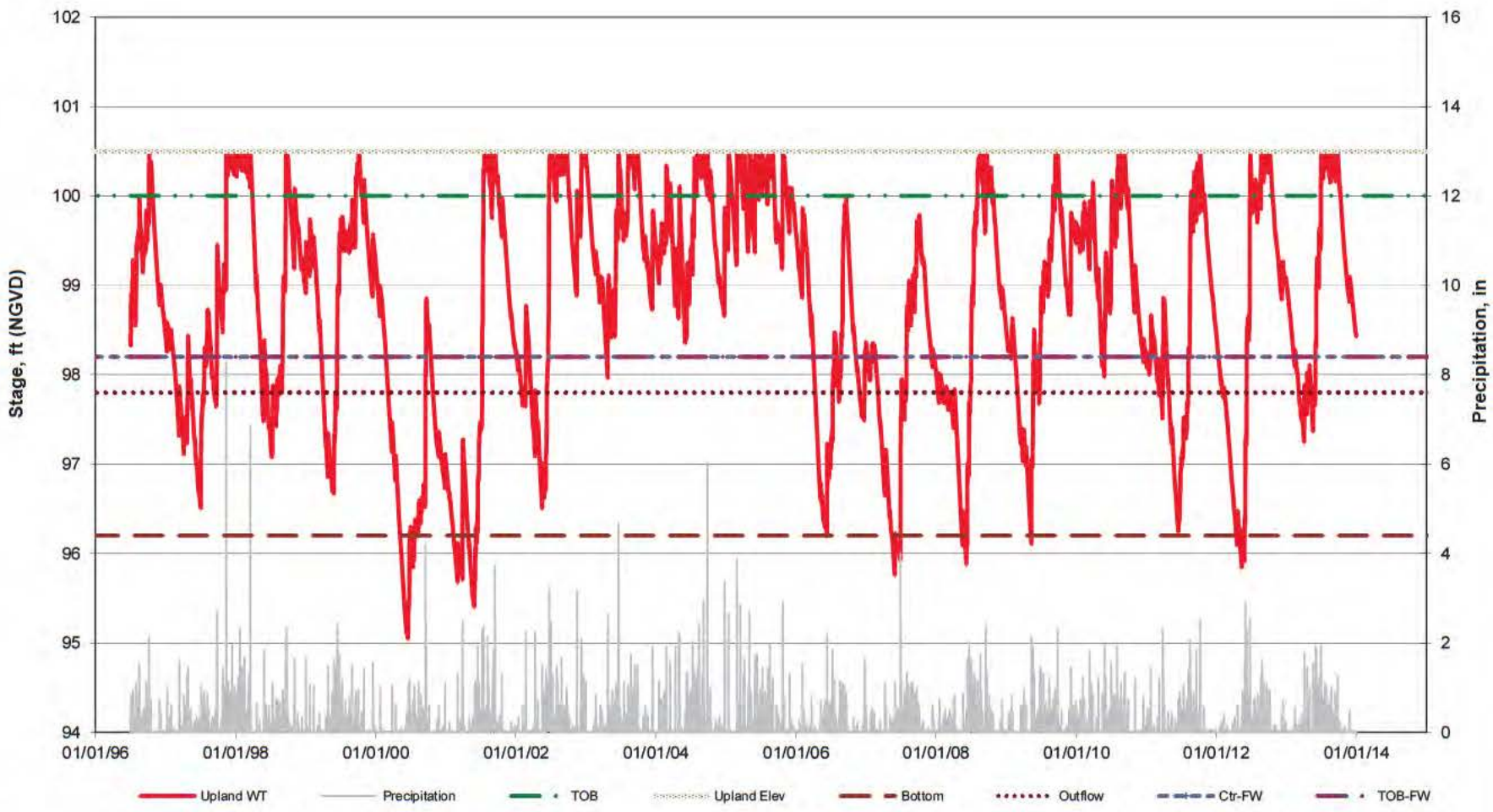
Wetland Surface Water Outflow

Figure A1-4
Modeled Outflow of Wetland C512 System
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: *ECT*
Date: *10/13/2014*

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



	Elev. Ft.
Wetland Bottom =	96.2
Outflow =	97.8

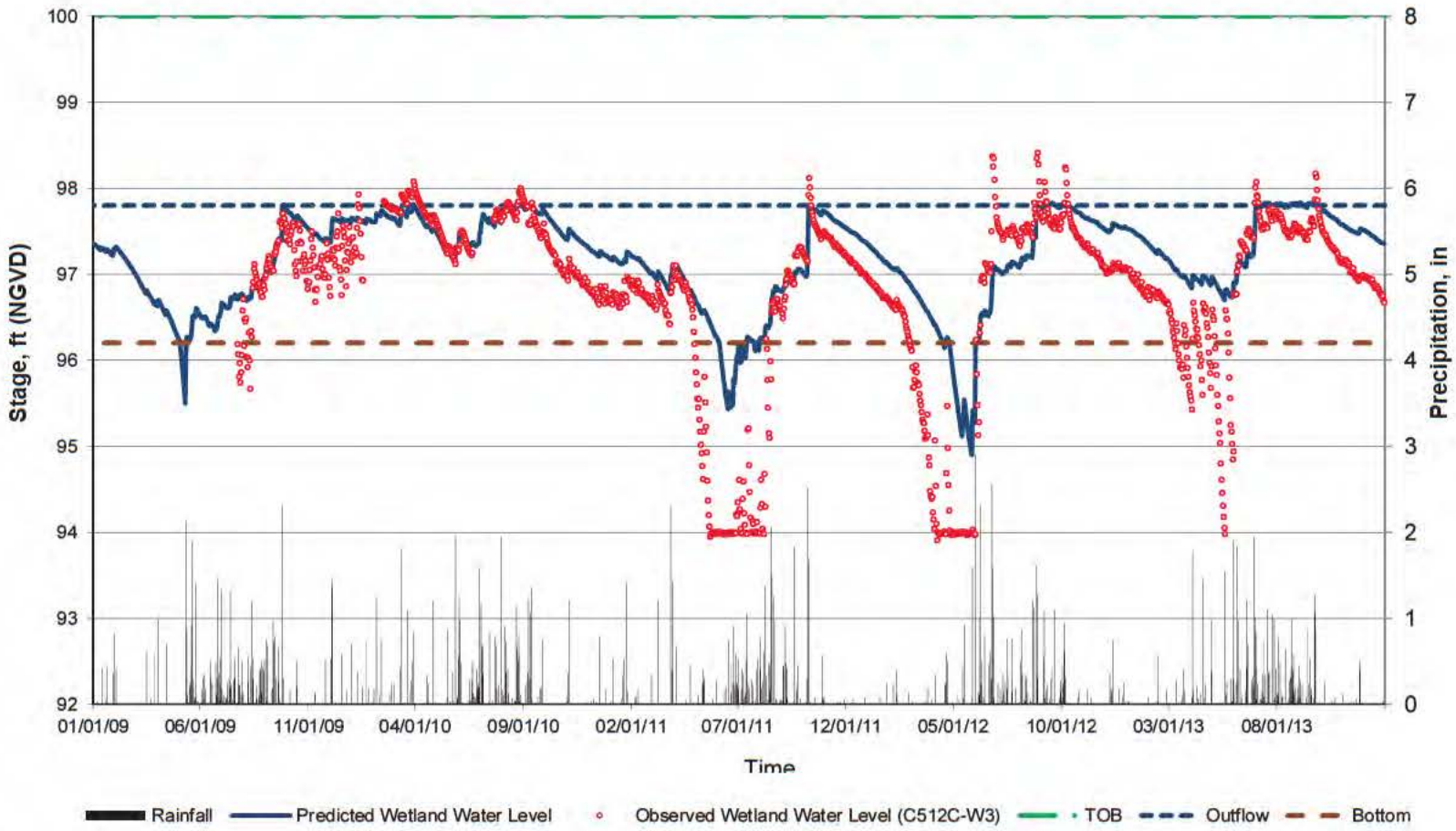
Upland Hydroperiod

Figure A1-5
Modeled Upland Hydrograph of Wetland C512 System
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 10/13/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



	Elev. Ft.
Wetland Bottom =	96.2
Outflow =	97.8

Wetland Hydroperiod

Figure A1-6
Hydrograph Comparison of Wetland C512 - Predicted vs. Observed
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 10/13/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

Copyright by ECT & Mosaic, 2011

TABLE A2
WETLAND C620 SYSTEM WATER BALANCE CALCULATIONS
Three Cell System (Upland-UG, Wetland & DG-Cell) with Daily Time Steps

	Primary	Fringe (if present)
WETLAND NUMBER:	C620	
WETLAND TYPE:	Freshwater Marsh	
MINE NAME	Ona Mine	
Permit Name:		
COUNTY:	Hardee County, Florida	

By: ECT
Date: October 13, 2014

VERSION 2.1

CONSTANT & INITIAL/STARTING CONDITION INPUT PARAMETERS

UPLAND-UG INPUTS		Symbol
Upland-UG Acres:	**24.34**	
Upland-UG Area (ft2):	1,060,250	Au-UG
Highest Upland-UG Elevation (ft, NGVD):	91	El
Average Upland-UG Elevation (ft, NGVD):	88.0	
Initial Starting Depth to Water at Upland-UG (ft):	2.0	
Initial Starting Water Table Elevation at Upland-UG (ft, NGVD):	86.0	
Specific Yield [Sy]/Porosity [n] (ND):	0.23	Pu
Distance between Centers of Upland-UG and Wetland (ft):	915	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Ku
Initial Upland Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0015	Gu
Upland-UG Saturated Thickness [bu] (ft):	70	Tuug
Upland-UG Ground Width entering Wetland [Wu] (ft):	1,200	Wu

WETLAND INPUTS		Symbol
Wetland Acres:	**12.36**	
Wetland Area (ft2):	538,402	Aw
Top of Bank Elevation (ft, NGVD):	87.0	TOB
Wetland Outflow Elevation (ft, NGVD):	85.3	OUT
Wetland Bottom Elevation (ft, NGVD):	84.1	BOT
Initial Starting Depth to Water at Wetland (ft):	-0.5	Dsw
Initial Starting Water Table Elevation at Wetland (ft, NGVD):	84.6	
Specific Yield [Sy]/Porosity [n] (ND):	0.23	Pu
Distance between Centers of Wetland and DG-Cell (ft):	650	
Wetland Discharge Horizontal Hydraulic Conductivity [Kh] (ft/day):	5.5	Kw
Initial Wetland Horizontal Hydraulic Gradient [ihw] (ft/ft):	0.0025	Gw
Wetland/Downgradient Saturated Thickness [bd] (ft):	65	Tw
Wetland Ground Width exiting Wetland [Wd] (ft):	500	Ww
Vertical Hydraulic Conductivity Confining Unit [Kv] (ft/day):	0.0027	
Vertical Distance Separating Surficial/Int. Aquifers [dv] (ft):	70	
Wetland Outflow Channel Width (ft):	20.0	
Wetland Outflow Channel Slope (ft/ft):	0.020	
Wetland Outflow Channel Manning Coeff (ND):	0.045	

DG-CELL INPUTS		Symbol
DG-Cell Acres:	**2.75**	
DG-Cell Area (ft2):	119,790	
Highest DG-Cell Elevation (ft, NGVD):	86	
Average DG-Cell Elevation (ft, NGVD):	85.0	
Initial Starting Depth to Water at DG-Cell (ft):	2.0	
Initial Starting Water Table Elevation at DG-Cell (ft, NGVD):	83.0	
Specific Yield [Sy]/Porosity [n] (ND):	0.23	
Distance between DG-Cell and DG Boundary (ft):	231	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Ku
Water Table Elevation at DG Boundary Control Point (ft):	80.0	
Initial DG-Cell Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0130	Gu
DG-Cell Saturated Thickness [bu] (ft):	70	Tuug
DG-Cell Ground Width exiting system [Wu] (ft):	430	Wu

Soil Type & Moisture Condition		AMC I	AMC II	AMC III	Cap. Suct. [CS]-(in)	Sat. Hyd Cd [Ks]-(ft/day)
Upland-UG -	Loamy Sand	0.382	0.347	0.312	-2.413	2.354
Wetland -	Sand	0.404	0.375	0.346	-1.949	9.276
DG-Cell -	Loamy Sand	0.382	0.347	0.312	-2.413	2.354

	Upland-UG	Wetland	DG-Cell
Evapotranspiration Extinction Depth (ft):	5	4	5
Minimum ET Rate (in/day):	0	0	0

Depth to Check for Wet Soil Conditions:	0.5
Distance to Wetland Fringe Inner Boundary*:	575
Distance to Wetland Fringe Center*:	575
Distance to Wetland Fringe Outer Boundary*:	575
Elevation of Wetland Fringe Inner Boundary:	85.3
Elevation of Wetland Fringe Center:	85.3
Elevation of Wetland Fringe Outer Boundary:	85.3

* distance from wetland centroid

Input Variables - site specific conditions
Input Variables - represent more regional/seasonal conditions
Input Variables - site specific conditions, but limited range of variation

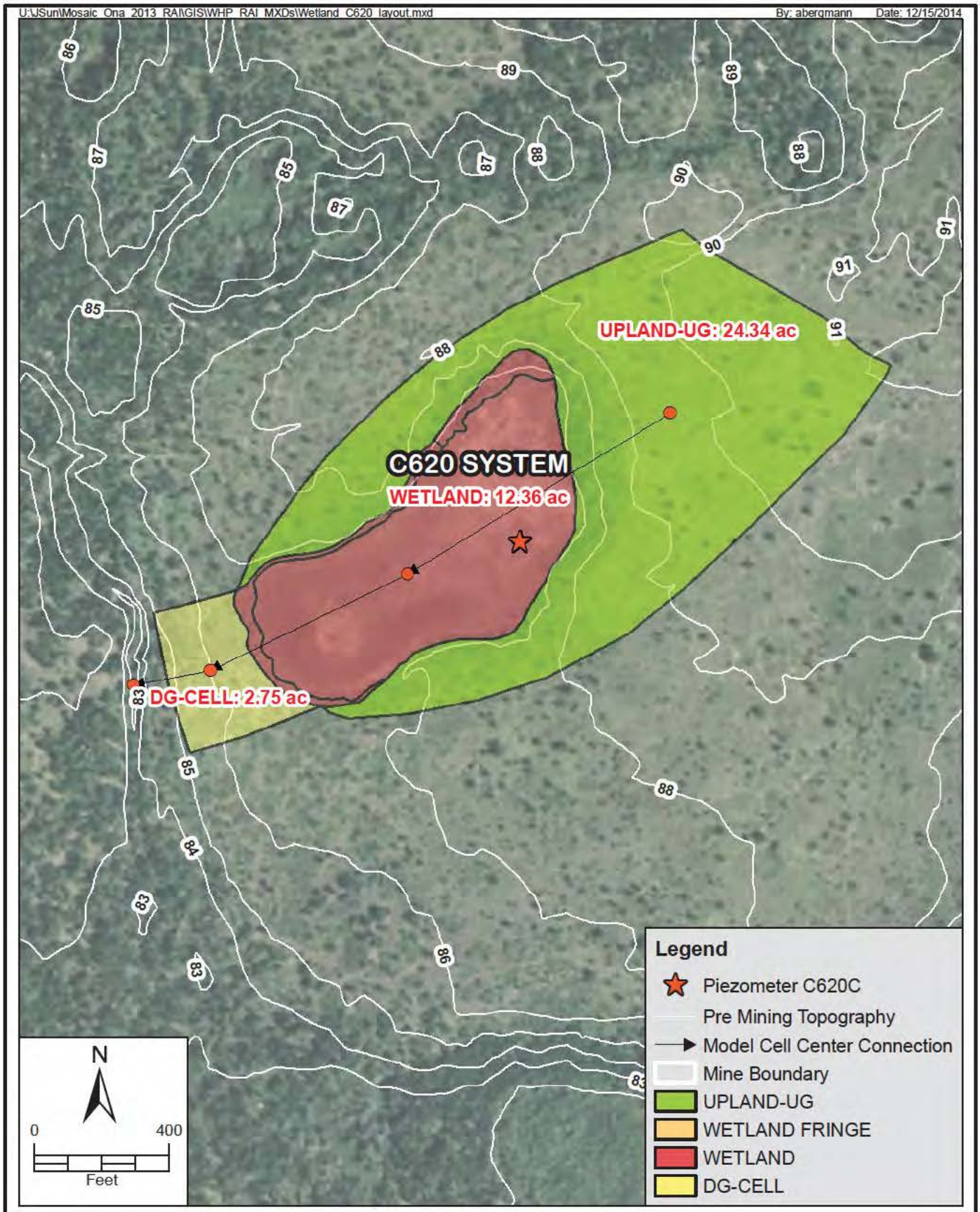
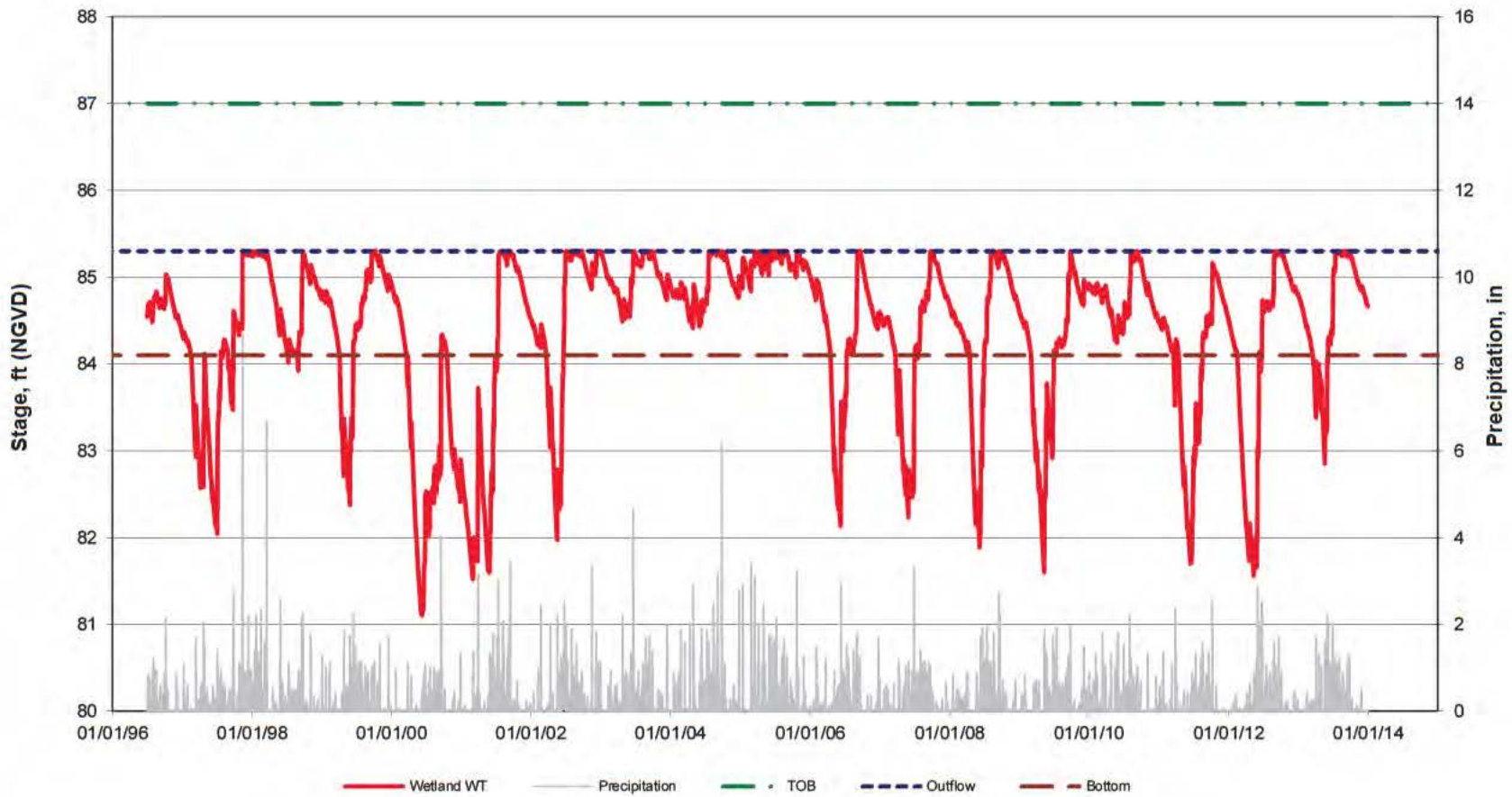


FIGURE A2-1
WETLAND C620 SYSTEM - HYDROPERIOD MODEL DIAGRAM
ONA MINE
HARDEE COUNTY, FLORIDA

Sources: ESRI, 2014; Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



	Elev. Ft.
Wetland Bottom =	84.1
Outflow =	85.3

Wetland Hydroperiod

Starting WLE = 84.6

Figure A2-2
Modeled Hydrograph of Wetland C620
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 10/13/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

WETLAND DESCRIPTION:	C620	Freshwater Marsh
PROJECT& LOCATION:	Ona Mine	Hardee County, Florida

Top of Bank Elevation (ft, NGVD):	87.0
Wetland Outflow Elevation (ft, NGVD):	85.3
Wetland Bottom Elevation (ft, NGVD):	84.1

Average	84.4 ft, NGVD	Range	4.2 ft
Maximum	85.3 ft, NGVD	Step Size	0.3 ft
Minimum	81.1 ft, NGVD	No. of Steps	14
Median	84.7 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
85.60			85.60	
85.30	0	0	85.30	0.00%
85.00	1756	1756	85.00	27.47%
84.70	1278	3034	84.70	47.46%
84.40	1026	4060	84.40	63.51%
84.10	818	4878	84.10	76.30%
83.80	173	5051	83.80	79.01%
83.50	168	5219	83.50	81.64%
83.20	203	5422	83.20	84.81%
82.90	193	5615	82.90	87.83%
82.60	227	5842	82.60	91.38%
82.30	218	6060	82.30	94.79%
82.00	141	6201	82.00	97.00%
81.70	120	6321	81.70	98.87%
81.40	49	6370	81.40	99.64%
81.10	22	6392	81.10	99.98%
80.80	1	6393	80.80	100.00%
80.50	0	6393	80.50	100.00%

6393 Days
17.5 Years

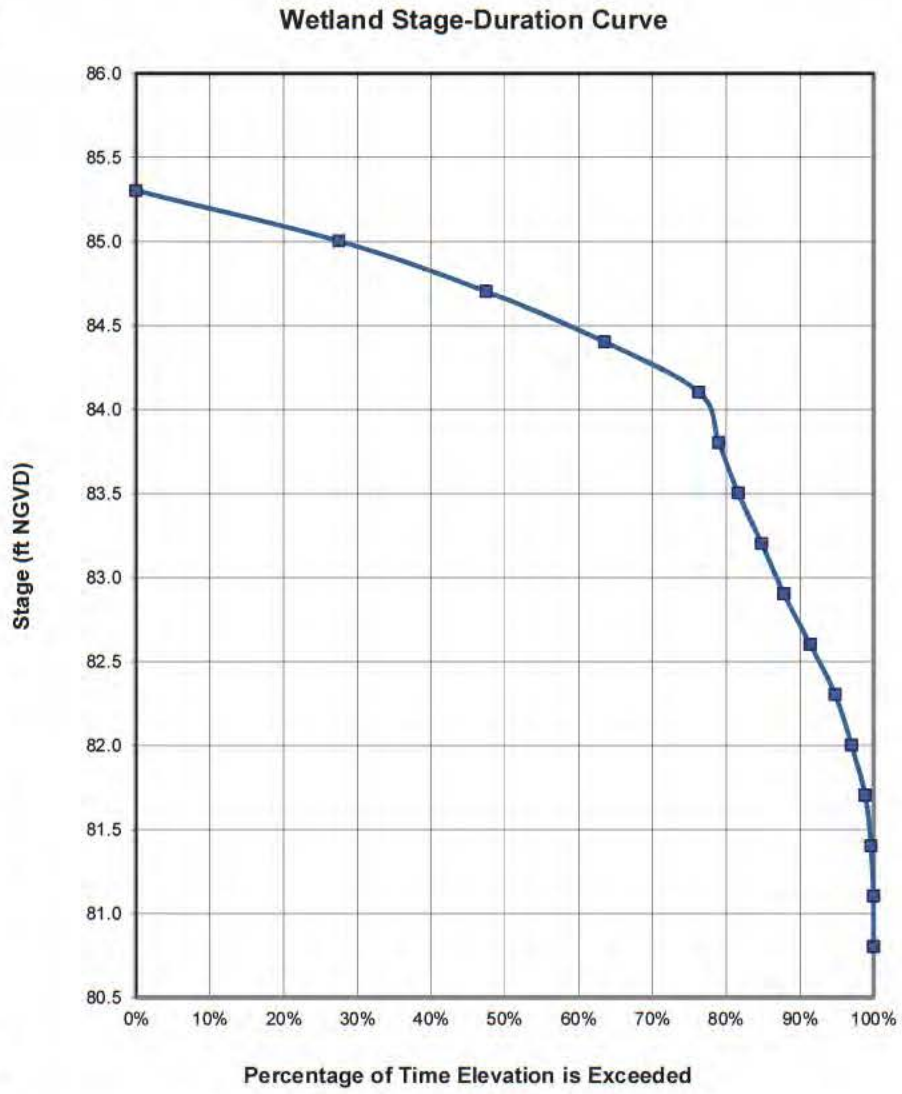
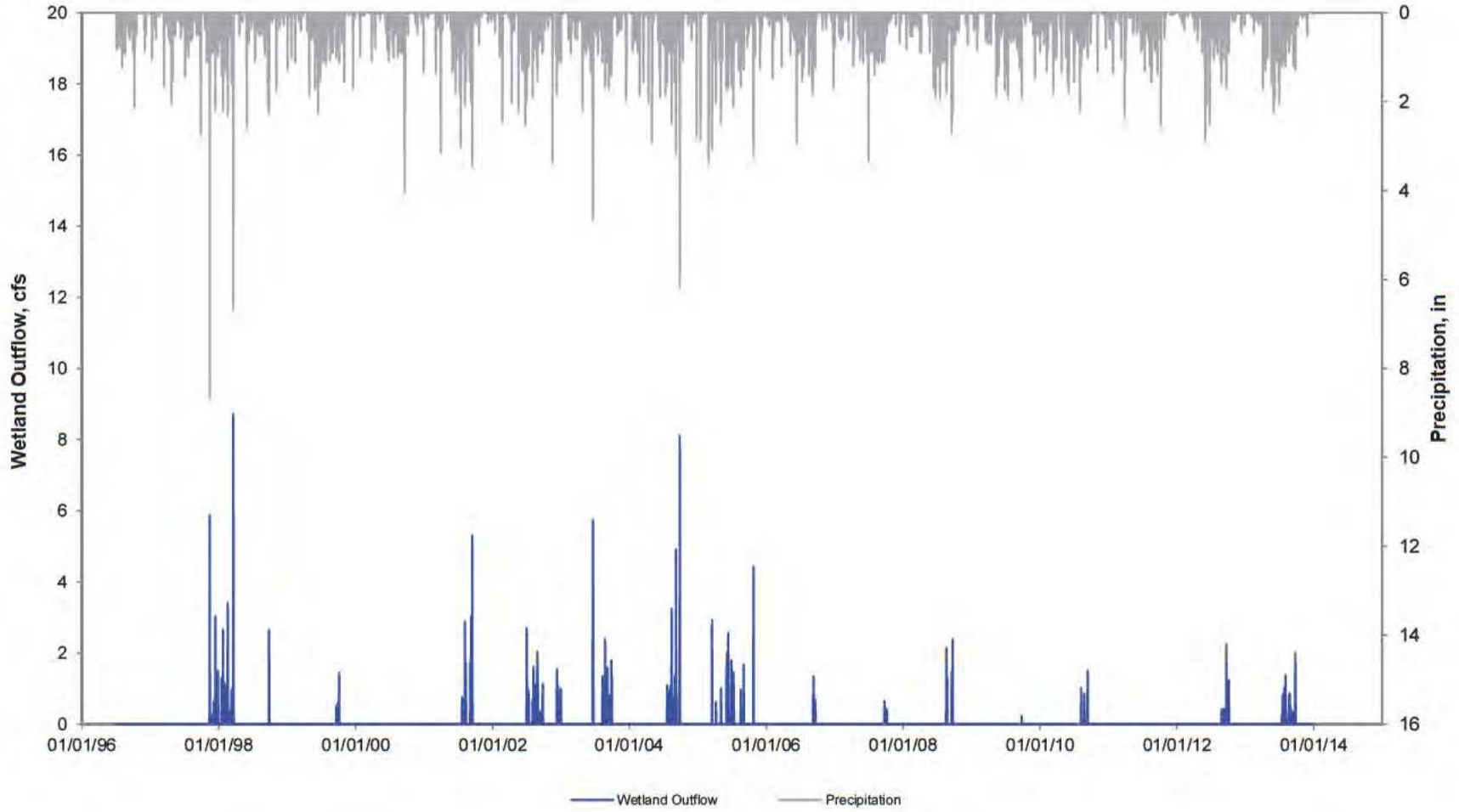


Figure A2-3
Modeled Stage-Duration Curve of Wetland C620
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 10/13/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



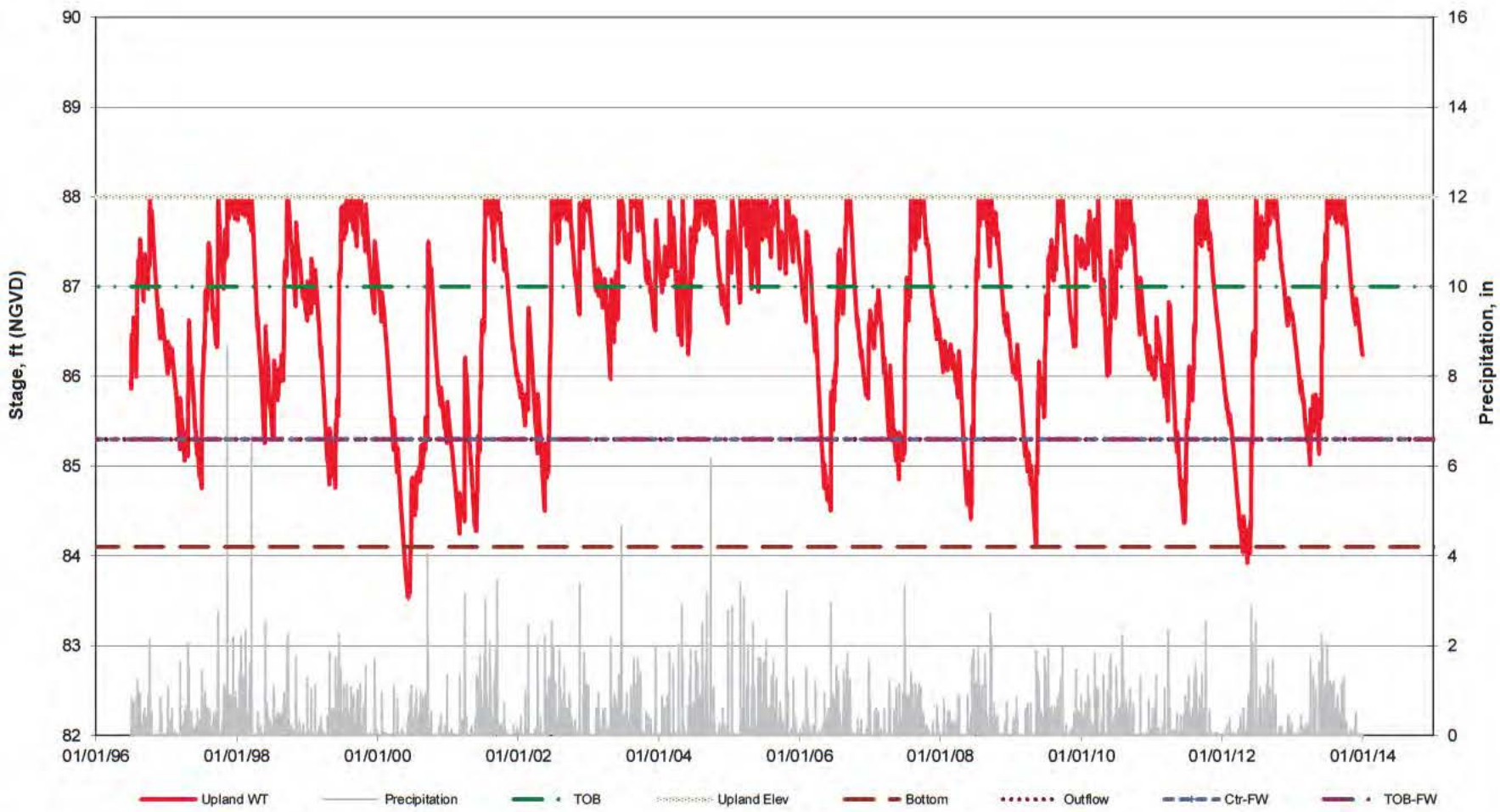
Wetland Surface Water Outflow

Figure A2-4
Modeled Outflow of Wetland C620 System
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 10/13/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



	Elev. Ft.
Wetland Bottom =	84.1
Outflow =	85.3

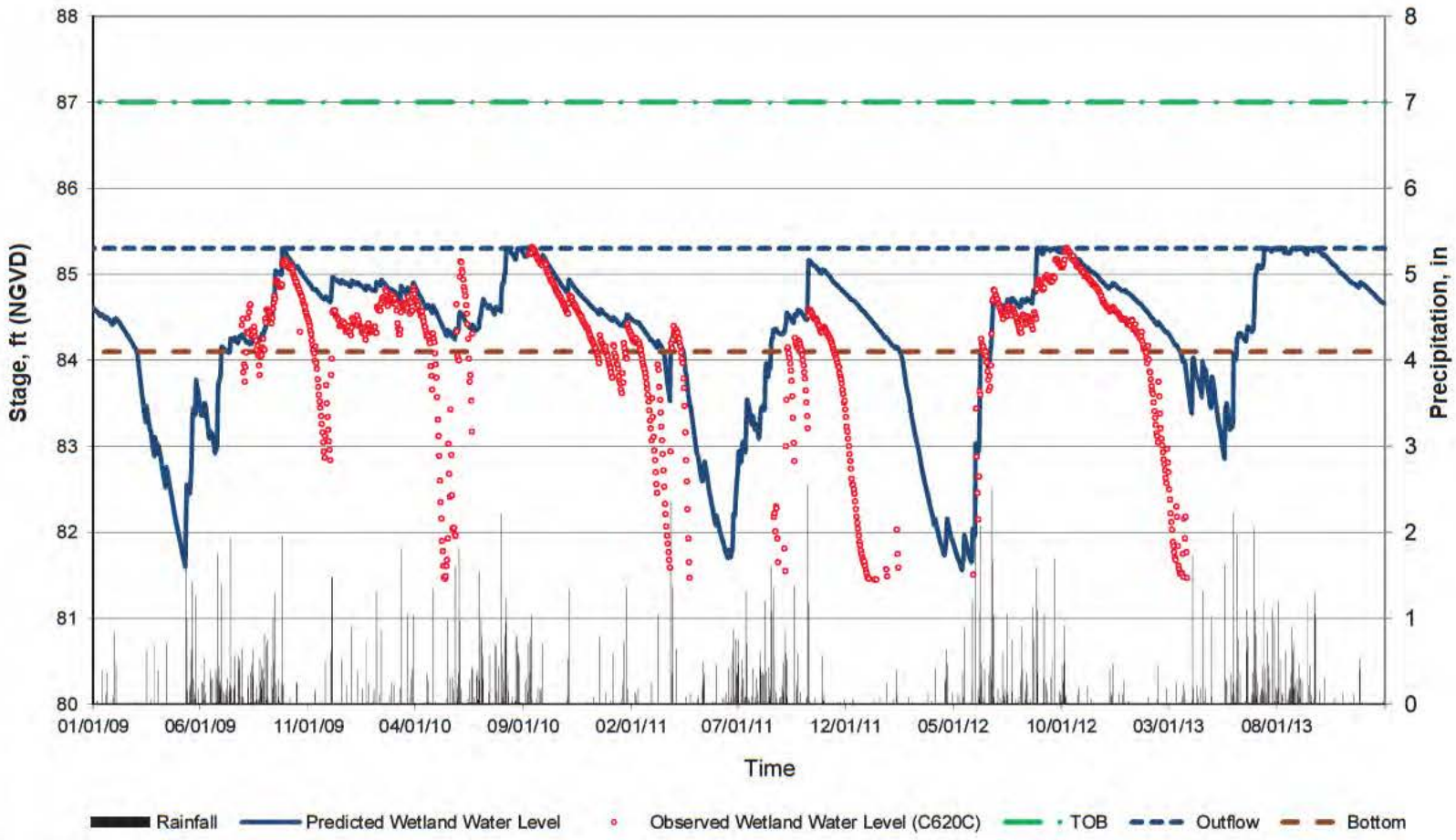
Upland Hydroperiod

Figure A2-5
Modeled Upland Hydrograph of Wetland C620 System
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 10/13/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



	Elev. Ft.
Wetland Bottom =	84.1
Outflow =	85.3

Wetland Hydroperiod

Figure A2-6
Hydrograph Comparison of Wetland C620 - Predicted vs. Observed
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 10/13/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

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TABLE A10
WETLAND 22-2 WATER BALANCE CALCULATIONS
Three Cell System (Upland-UG, Wetland & DG-Cell) with Daily Time Steps

	Primary	Fringe (if present)
WETLAND NUMBER:	22-2	
WETLAND TYPE:	Freshwater Marsh	
MINE NAME	Ona Mine	
Permit Name:		
COUNTY:	Hardee County, Florida	

By: ECT
Date: November 3, 2014

VERSION 2.1

CONSTANT & INITIAL/STARTING CONDITION INPUT PARAMETERS

UPLAND-UG INPUTS		Symbol
Upland-UG Acres:	**22.34**	
Upland-UG Area (ft2):	973,130	Au-UG
Highest Upland-UG Elevation (ft, NGVD):	107.5	El
Average Upland-UG Elevation (ft, NGVD):	103.0	
Initial Starting Depth to Water at Upland-UG (ft):	2.0	
Initial Starting Water Table Elevation at Upland-UG (ft, NGVD):	101.0	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu
Distance between Centers of Upland-UG and Wetland (ft):	577	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Ku
Initial Upland Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0040	Gu
Upland-UG Saturated Thickness [bu] (ft):	70	Tuug
Upland-UG Ground Width entering Wetland [Wu] (ft):	2,000	Wu

Soil Type & Moisture Condition		AMC I	AMC II	AMC III	Cap. Suct. [CS]-(in)	Sat. Hyd Cd [Ks]-(ft/day)
Upland-UG -	Sand	0.404	0.375	0.346	-1.950	9.276
Wetland -	Sand	0.404	0.375	0.346	-1.950	9.276
DG-Cell -	Sand	0.404	0.375	0.346	-1.950	9.276

	Upland-UG	Wetland	DG-Cell
Evapotranspiration Extinction Depth (ft):	5	4	4
Minimum ET Rate (in/day):	0	0	0

WETLAND INPUTS		Symbol
Wetland Acres:	**9.98**	
Wetland Area (ft2):	434,729	Aw
Top of Bank Elevation (ft, NGVD):	105.0	TOB
Wetland Outflow Elevation (ft, NGVD):	99.2	OUT
Wetland Bottom Elevation (ft, NGVD):	97.2	BOT
Initial Starting Depth to Water at Wetland (ft):	-1.5	Dsw
Initial Starting Water Table Elevation at Wetland (ft, NGVD):	98.7	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu
Distance between Centers of Wetland and DG-Cell (ft):	562	
Wetland Discharge Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Kw
Initial Wetland Horizontal Hydraulic Gradient [ihw] (ft/ft):	0.0002	Gw
Wetland/Downgradient Saturated Thickness [bd] (ft):	75	Tw
Wetland Ground Width exiting Wetland [Wd] (ft):	430	Ww
Vertical Hydraulic Conductivity Confining Unit [Kv] (ft/day):	0.0022	
Vertical Distance Separating Surficial/Int. Aquifers [dv] (ft):	70	
Wetland Outflow Channel Width (ft):	20.0	
Wetland Outflow Channel Slope (ft/ft):	0.003	
Wetland Outflow Channel Manning Coeff (ND):	0.035	
Depth to Check for Wet Soil Conditions:	0.5	
Distance to Wetland Fringe Inner Boundary*:	425	
Distance to Wetland Fringe Center*:	425	
Distance to Wetland Fringe Outer Boundary*:	425	
Elevation of Wetland Fringe Inner Boundary:	99.2	
Elevation of Wetland Fringe Center:	99.2	
Elevation of Wetland Fringe Outer Boundary:	99.2	

* distance from wetland centroid

DG-CELL INPUTS		Symbol
DG-Cell Acres:	**2.62**	
DG-Cell Area (ft2):	114,127	
Highest DG-Cell Elevation (ft, NGVD):	100	
Average DG-Cell Elevation (ft, NGVD):	98.7	
Initial Starting Depth to Water at DG-Cell (ft):	0.1	
Initial Starting Water Table Elevation at DG-Cell (ft, NGVD):	98.6	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	
Distance between DG-Cell and DG Boundary (ft):	342	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Ku
Water Table Elevation at DG Boundary Control Point (ft):	-9999.0	
Initial DG-Cell Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0003	Gu
DG-Cell Saturated Thickness [bu] (ft):	80	Tuug
DG-Cell Ground Width exiting system [Wu] (ft):	350	Wu

Input Variables - site specific conditions
Input Variables - represent more regional/seasonal conditions
Input Variables - site specific conditions, but limited range of variation

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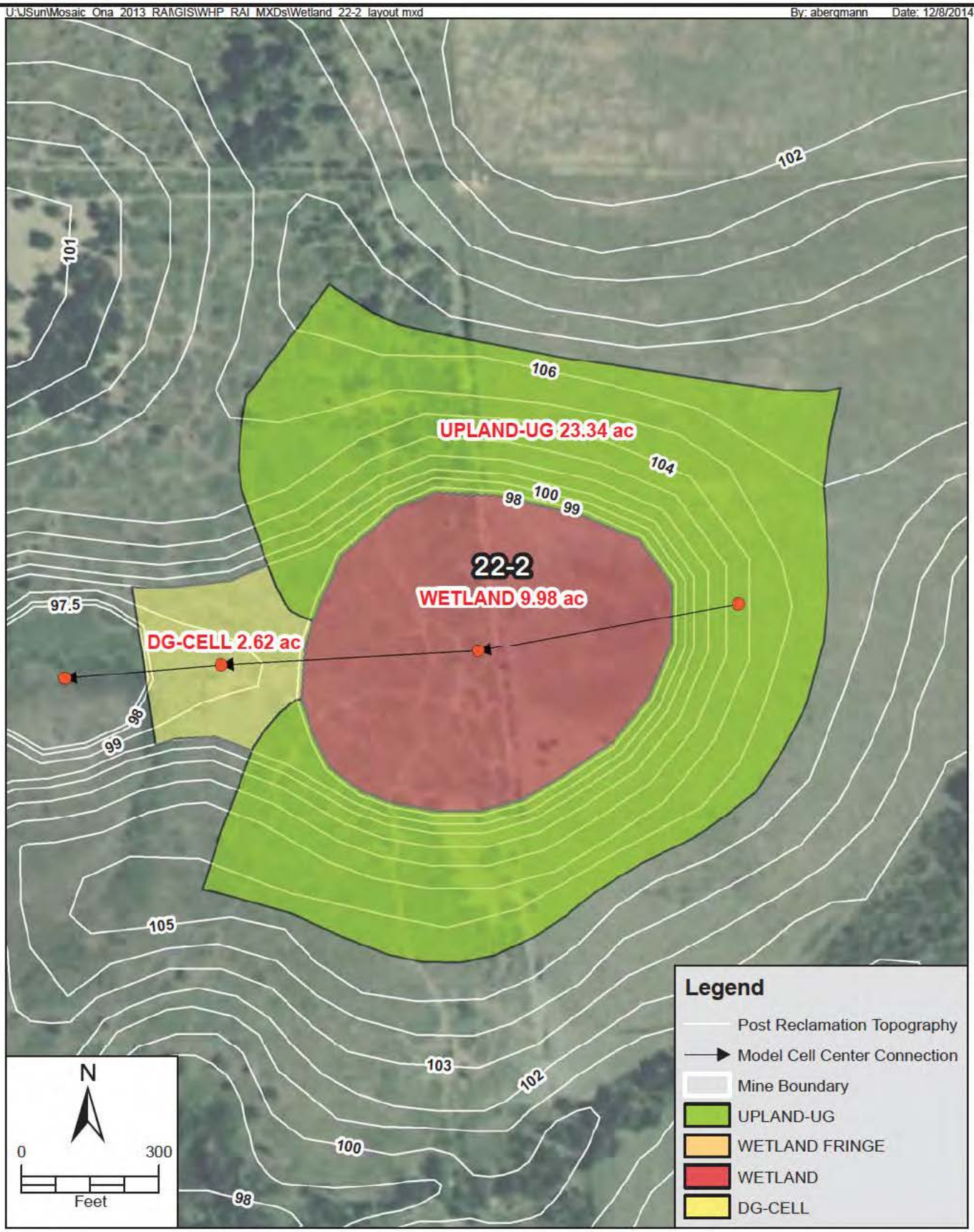
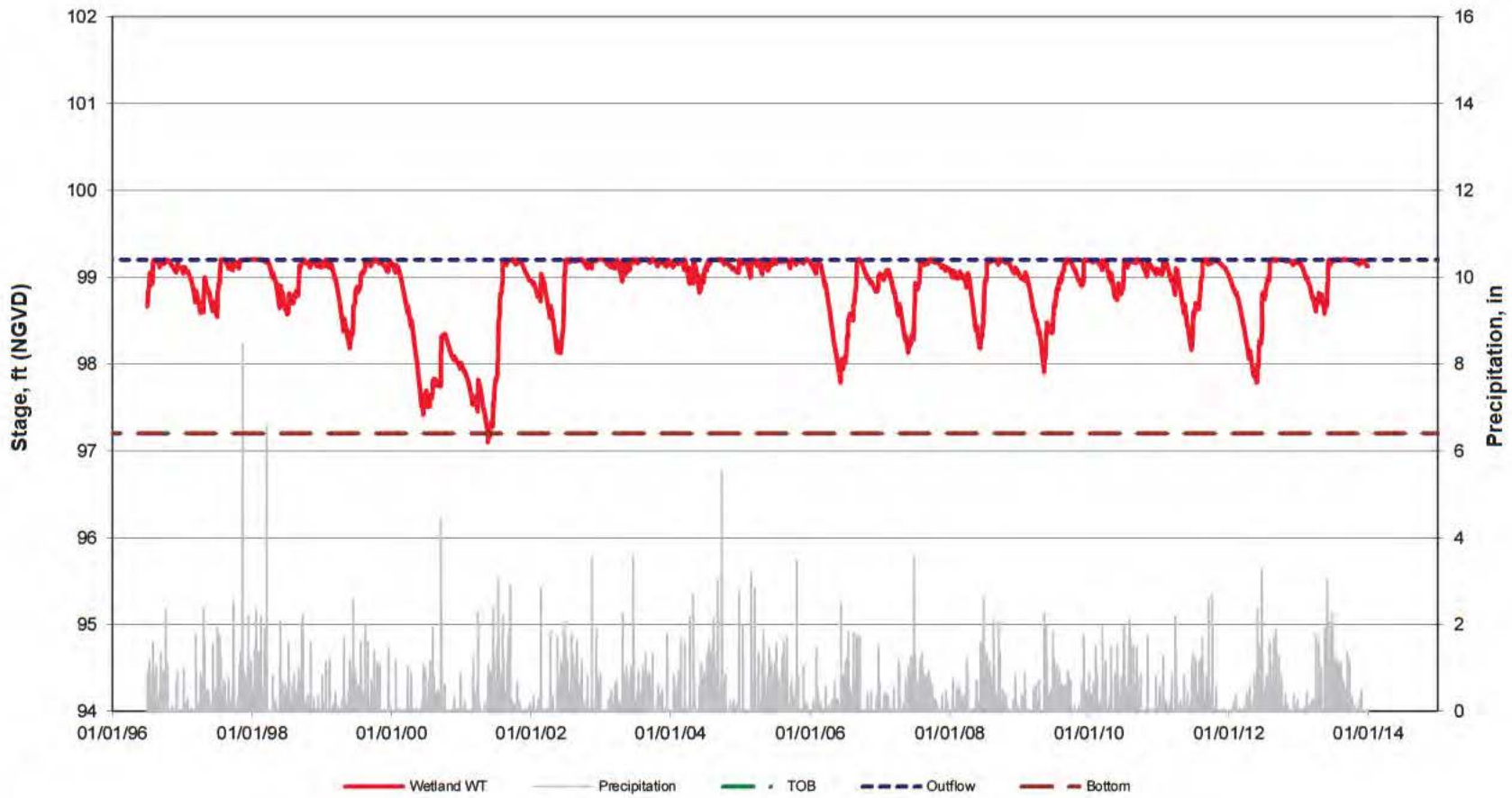


FIGURE A10-1
WETLAND 22-2 - HYDROPERIOD MODEL DIAGRAM
ONA MINE
HARDEE COUNTY, FLORIDA

Sources: ESRI 2014; Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc



	Elev. Ft.
Wetland Bottom =	97.2
Outflow =	99.2

Wetland Hydroperiod

Starting WLE = 98.7

Figure A10-2
Modeled Hydrograph of Wetland 22-2
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

WETLAND DESCRIPTION:	22-2	Freshwater Marsh
PROJECT& LOCATION:	Ona Mine	Hardee County, Florida

Top of Bank Elevation (ft, NGVD):	105.0
Wetland Outflow Elevation (ft, NGVD):	99.2
Wetland Bottom Elevation (ft, NGVD):	97.2

Average	98.9 ft, NGVD	Range	2.1 ft
Maximum	99.2 ft, NGVD	Step Size	0.15 ft
Minimum	97.1 ft, NGVD	No. of Steps	14
Median	99.1 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
99.36			99.36	
99.21	0	0	99.21	0.00%
99.06	3501	3501	99.06	54.76%
98.91	841	4342	98.91	67.92%
98.76	518	4860	98.76	76.02%
98.61	375	5235	98.61	81.89%
98.46	207	5442	98.46	85.12%
98.31	213	5655	98.31	88.46%
98.16	199	5854	98.16	91.57%
98.01	146	6000	98.01	93.85%
97.86	98	6098	97.86	95.39%
97.71	113	6211	97.71	97.15%
97.56	79	6290	97.56	98.39%
97.41	61	6351	97.41	99.34%
97.26	24	6375	97.26	99.72%
97.11	17	6392	97.11	99.98%
96.96	1	6393	96.96	100.00%
96.81	0	6393	96.81	100.00%

6393 Days
17.5 Years

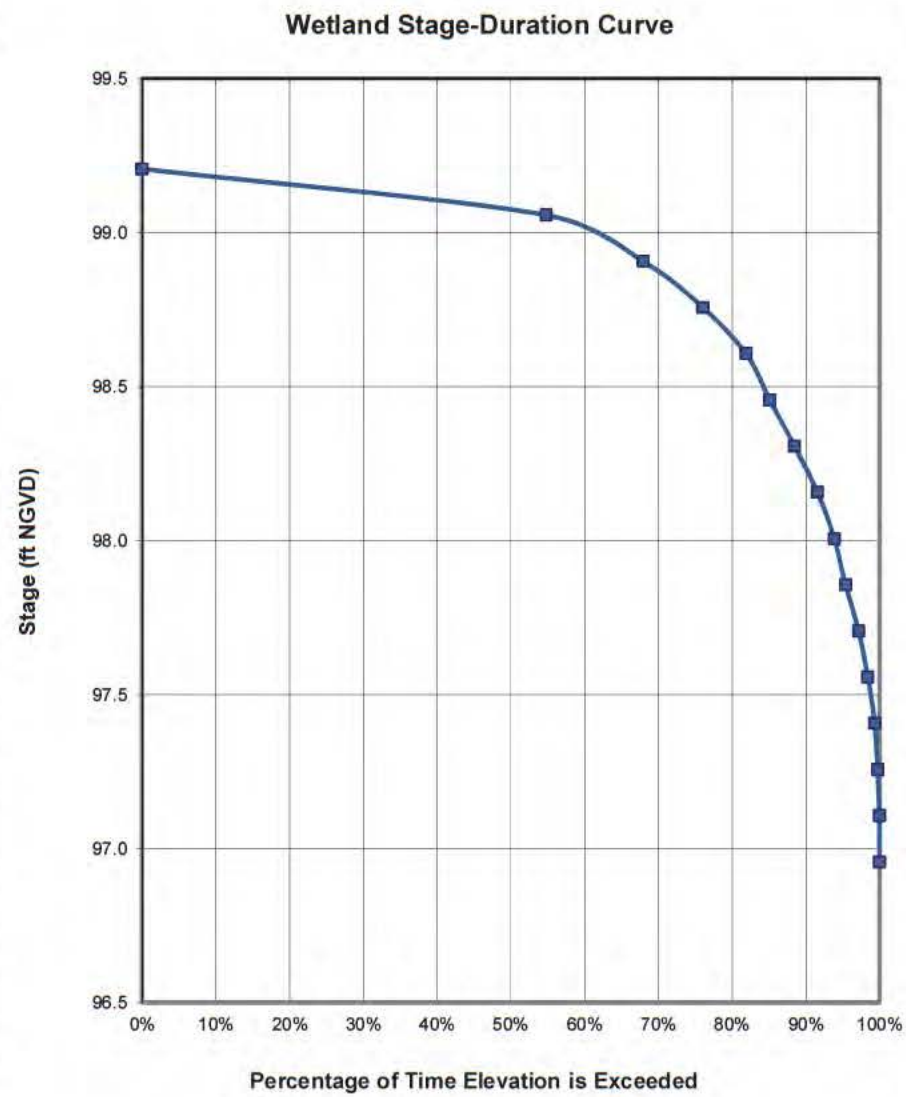
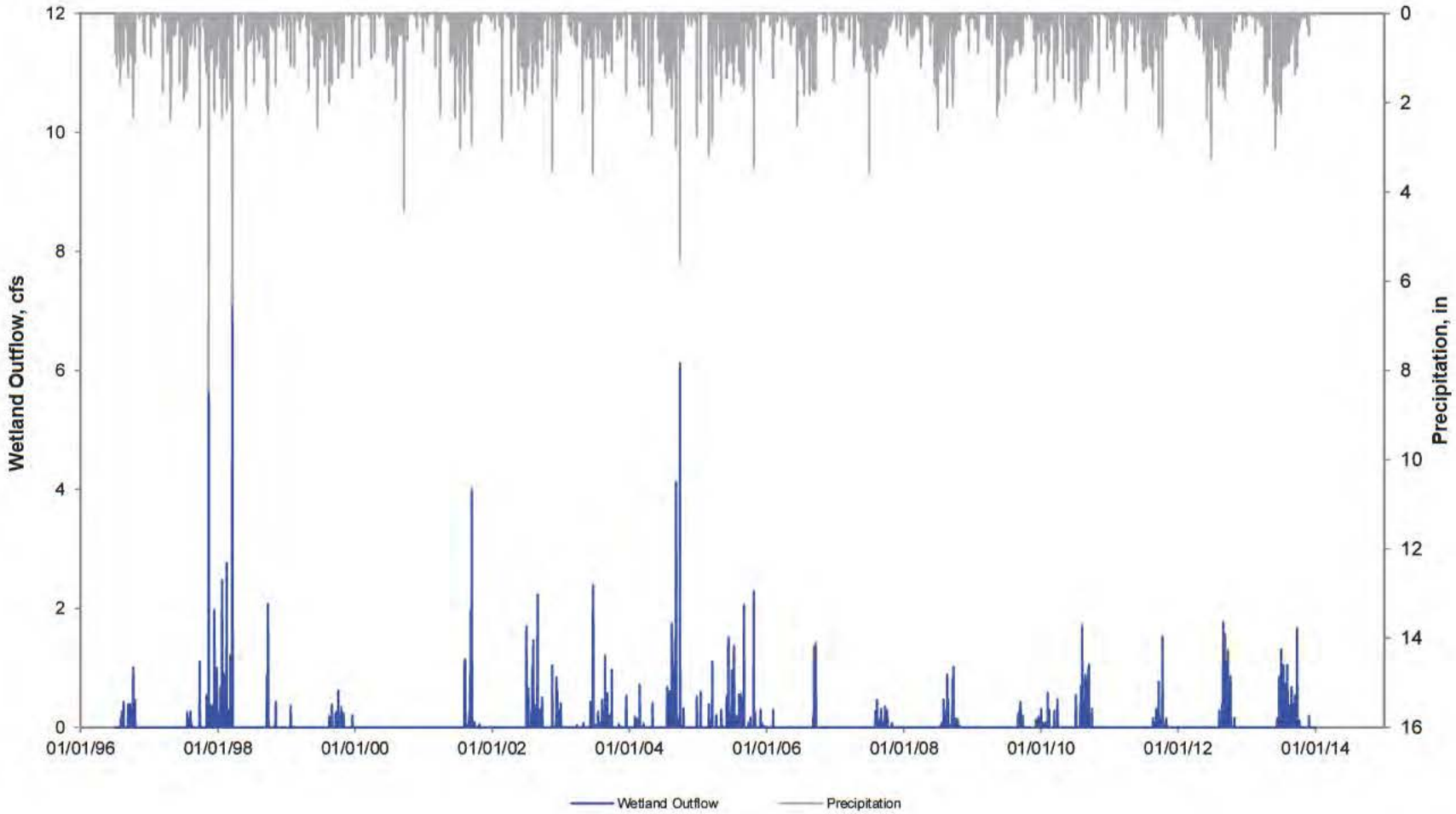


Figure A10-3
Modeled Stage-Duration Curve of Wetland 22-2
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



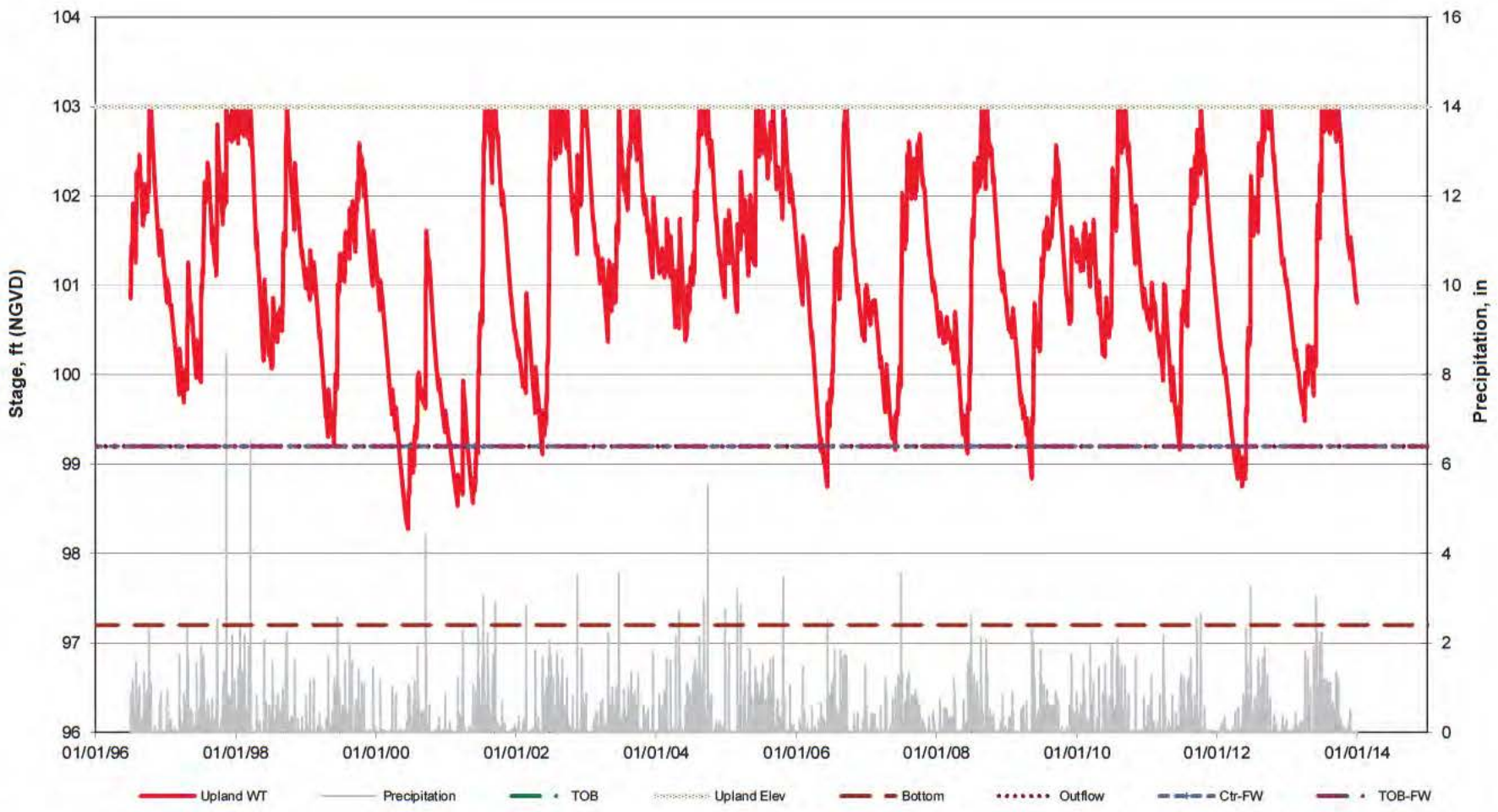
Wetland Surface Water Outflow

Figure A10-4
Modeled Outflow of Wetland 22-2
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



	Elev. Ft.
Wetland Bottom =	97.2
Outflow =	99.2

Upland Hydroperiod

Figure A10-5
Modeled Upland Hydrograph of Wetland 22-2
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: *ECT*
Date: *11/3/2014*

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

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TABLE A11
WETLAND 22-6 WATER BALANCE CALCULATIONS
Three Cell System (Upland-UG, Wetland & DG-Cell) with Daily Time Steps

	Primary	Fringe (if present)
WETLAND NUMBER:	22-6	
WETLAND TYPE:	Wet Prairie	
MINE NAME	Ona Mine	
Permit Name:		
COUNTY:	Hardee County, Florida	

By: ECT
Date: November 3, 2014

VERSION 2.1

CONSTANT & INITIAL/STARTING CONDITION INPUT PARAMETERS

UPLAND-UG INPUTS		Symbol
Upland-UG Acres:	**16.01**	
Upland-UG Area (ft2):	697,396	Au-UG
Highest Upland-UG Elevation (ft, NGVD):	108.5	El
Average Upland-UG Elevation (ft, NGVD):	106.5	
Initial Starting Depth to Water at Upland-UG (ft):	2.0	
Initial Starting Water Table Elevation at Upland-UG (ft, NGVD):	104.5	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu
Distance between Centers of Upland-UG and Wetland (ft):	650	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Ku
Initial Upland Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0011	Gu
Upland-UG Saturated Thickness [bu] (ft):	65	Tuug
Upland-UG Ground Width entering Wetland [Wu] (ft):	1,000	Wu

WETLAND INPUTS		Symbol
Wetland Acres:	**12.82**	
Wetland Area (ft2):	558,439	Aw
Top of Bank Elevation (ft, NGVD):	105.0	TOB
Wetland Outflow Elevation (ft, NGVD):	104.0	OUT
Wetland Bottom Elevation (ft, NGVD):	103.6	BOT
Initial Starting Depth to Water at Wetland (ft):	-0.2	Dsw
Initial Starting Water Table Elevation at Wetland (ft, NGVD):	103.8	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu
Distance between Centers of Wetland and DG-Cell (ft):	541	
Wetland Discharge Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Kw
Initial Wetland Horizontal Hydraulic Gradient [ihw] (ft/ft):	0.0070	Gw
Wetland/Downgradient Saturated Thickness [bd] (ft):	55	Tw
Wetland Ground Width exiting Wetland [Wd] (ft):	480	Ww
Vertical Hydraulic Conductivity Confining Unit [Kv] (ft/day):	0.0015	
Vertical Distance Separating Surficial/Int. Aquifers [dv] (ft):	70	
Wetland Outflow Channel Width (ft):	20.0	
Wetland Outflow Channel Slope (ft/ft):	0.02000	
Wetland Outflow Channel Manning Coeff (ND):	0.035	
Depth to Check for Wet Soil Conditions:	0.5	
Distance to Wetland Fringe Inner Boundary*:	435	
Distance to Wetland Fringe Center*:	435	
Distance to Wetland Fringe Outer Boundary*:	435	
Elevation of Wetland Fringe Inner Boundary:	104	
Elevation of Wetland Fringe Center:	104	
Elevation of Wetland Fringe Outer Boundary:	104	

* distance from wetland centroid

DG-CELL INPUTS		Symbol
DG-Cell Acres:	**3.11**	
DG-Cell Area (ft2):	135,472	
Highest DG-Cell Elevation (ft, NGVD):	104	
Average DG-Cell Elevation (ft, NGVD):	102.0	
Initial Starting Depth to Water at DG-Cell (ft):	2.0	
Initial Starting Water Table Elevation at DG-Cell (ft, NGVD):	100.0	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	
Distance between DG-Cell and DG Boundary (ft):	524	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Ku
Water Table Elevation at DG Boundary Control Point (ft):	98.0	
Initial DG-Cell Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0038	Gu
DG-Cell Saturated Thickness [bu] (ft):	55	Tuug
DG-Cell Ground Width exiting system [Wu] (ft):	440	Wu

Soil Type & Moisture Condition		AMC I	AMC II	AMC III	Cap. Suct. [CS]-(in)	Sat. Hyd Cd [Ks]-(ft/day)
Upland-UG -	Sand	0.404	0.375	0.346	-1.950	9.276
Wetland -	Sand	0.404	0.375	0.346	-1.950	9.276
DG-Cell -	Sand	0.404	0.375	0.346	-1.950	9.276

	Upland-UG	Wetland	DG-Cell
Evapotranspiration Extinction Depth (ft):	5	4	4
Minimum ET Rate (in/day):	0	0	0

	Input Variables - site specific conditions
	Input Variables - represent more regional/seasonal conditions
	Input Variables - site specific conditions, but limited range of variation

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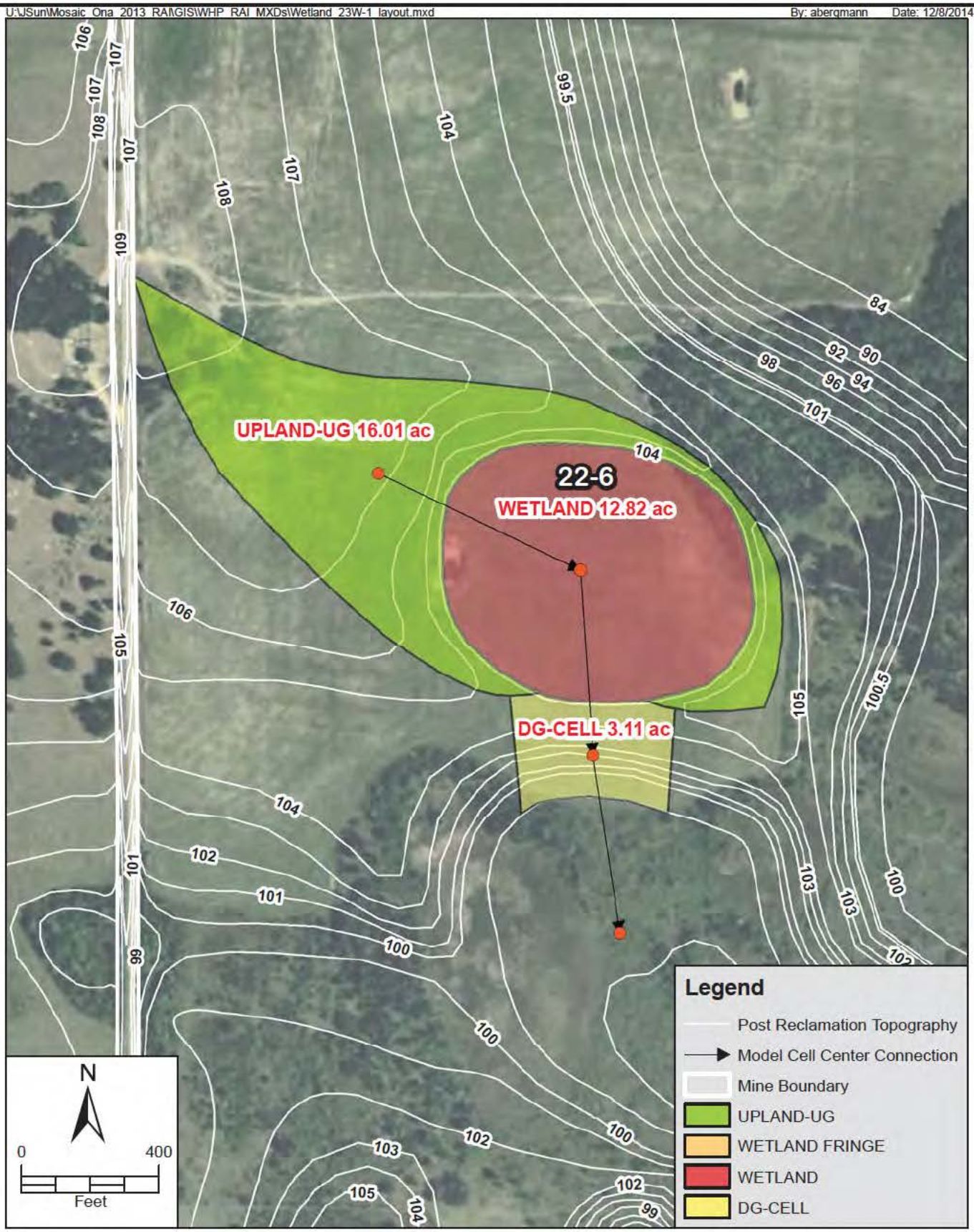
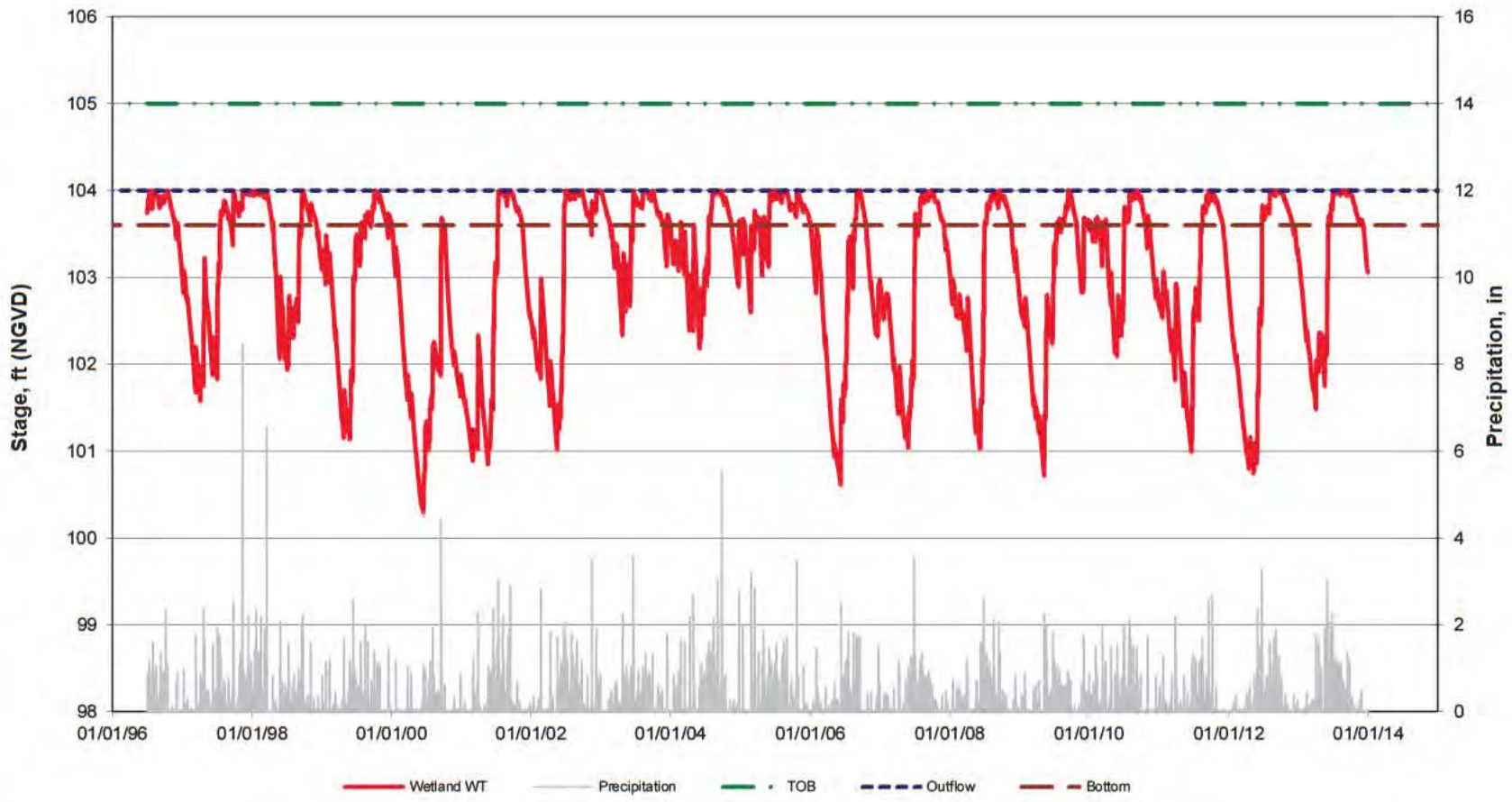


FIGURE A11-1
WETLAND 22-6 - HYDROPERIOD MODEL DIAGRAM
ONA MINE
HARDEE COUNTY, FLORIDA

Sources: ESRI 2014; Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc



	Elev. Ft.
Wetland Bottom =	103.6
Outflow =	104

Wetland Hydroperiod

Starting WLE = 103.8

Figure A11-2
Modeled Hydrograph of Wetland 22-6
Ona Mine
Hardee County, Florida

Wet Prairie
By: *ECT*
Date: *11/3/2014*

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

WETLAND DESCRIPTION:	22-6	Wet Prairie
PROJECT& LOCATION:	Ona Mine	Hardee County, Florida

Top of Bank Elevation (ft, NGVD):	105.0
Wetland Outflow Elevation (ft, NGVD):	104.0
Wetland Bottom Elevation (ft, NGVD):	103.6

Average	103.0 ft, NGVD	Range	3.7 ft
Maximum	104.0 ft, NGVD	Step Size	0.25 ft
Minimum	100.3 ft, NGVD	No. of Steps	15
Median	103.3 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
104.25			104.25	
104.00	0	0	104.00	0.00%
103.75	1883	1883	103.75	29.45%
103.50	1010	2893	103.50	45.25%
103.25	435	3328	103.25	52.06%
103.00	416	3744	103.00	58.56%
102.75	388	4132	102.75	64.63%
102.50	452	4584	102.50	71.70%
102.25	347	4931	102.25	77.13%
102.00	308	5239	102.00	81.95%
101.75	295	5534	101.75	86.56%
101.50	260	5794	101.50	90.63%
101.25	238	6032	101.25	94.35%
101.00	211	6243	101.00	97.65%
100.75	101	6344	100.75	99.23%
100.50	31	6375	100.50	99.72%
100.25	18	6393	100.25	100.00%
100.00	0	6393	100.00	100.00%

6393 Days
17.5 Years

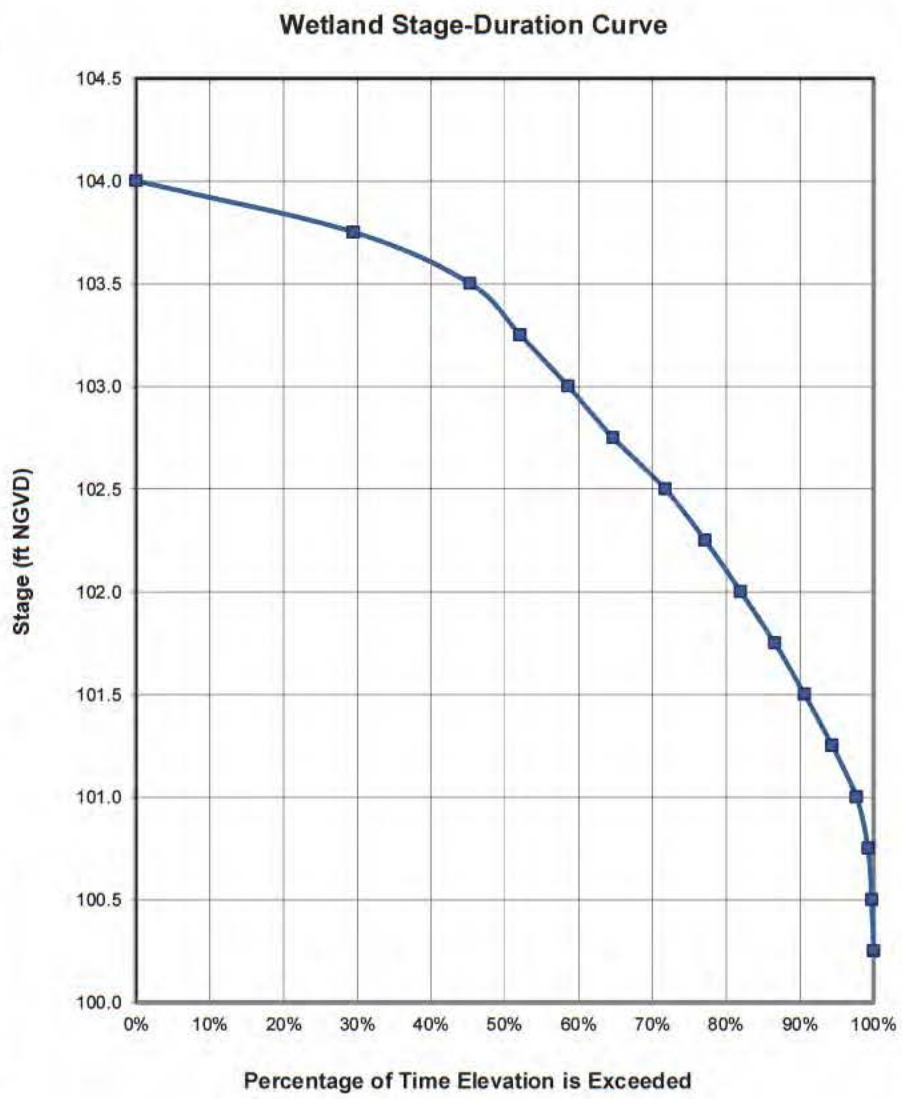
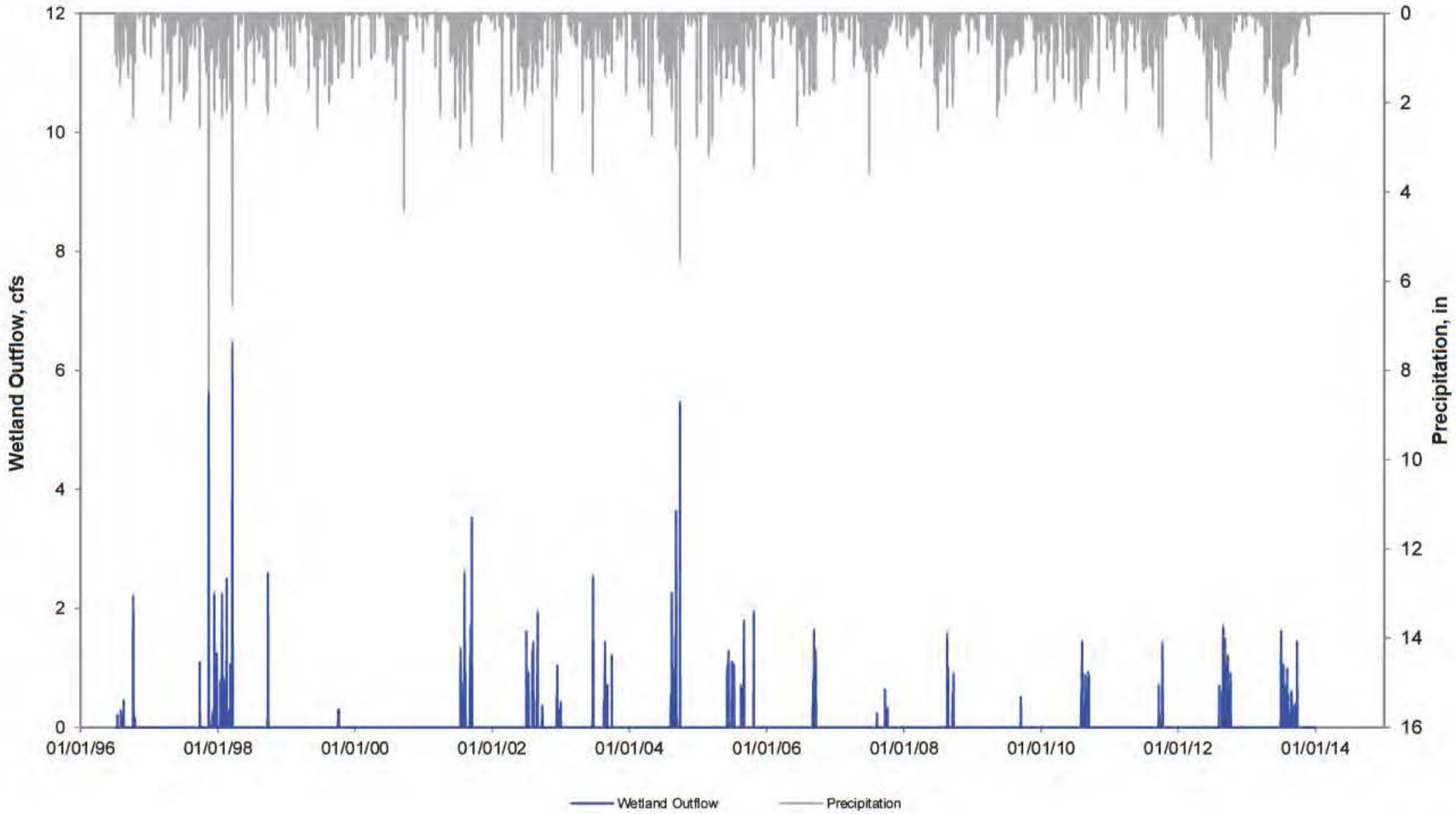


Figure A11-3
Modeled Stage-Duration Curve of Wetland 22-6
Ona Mine
Hardee County, Florida

Wet Prairie
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



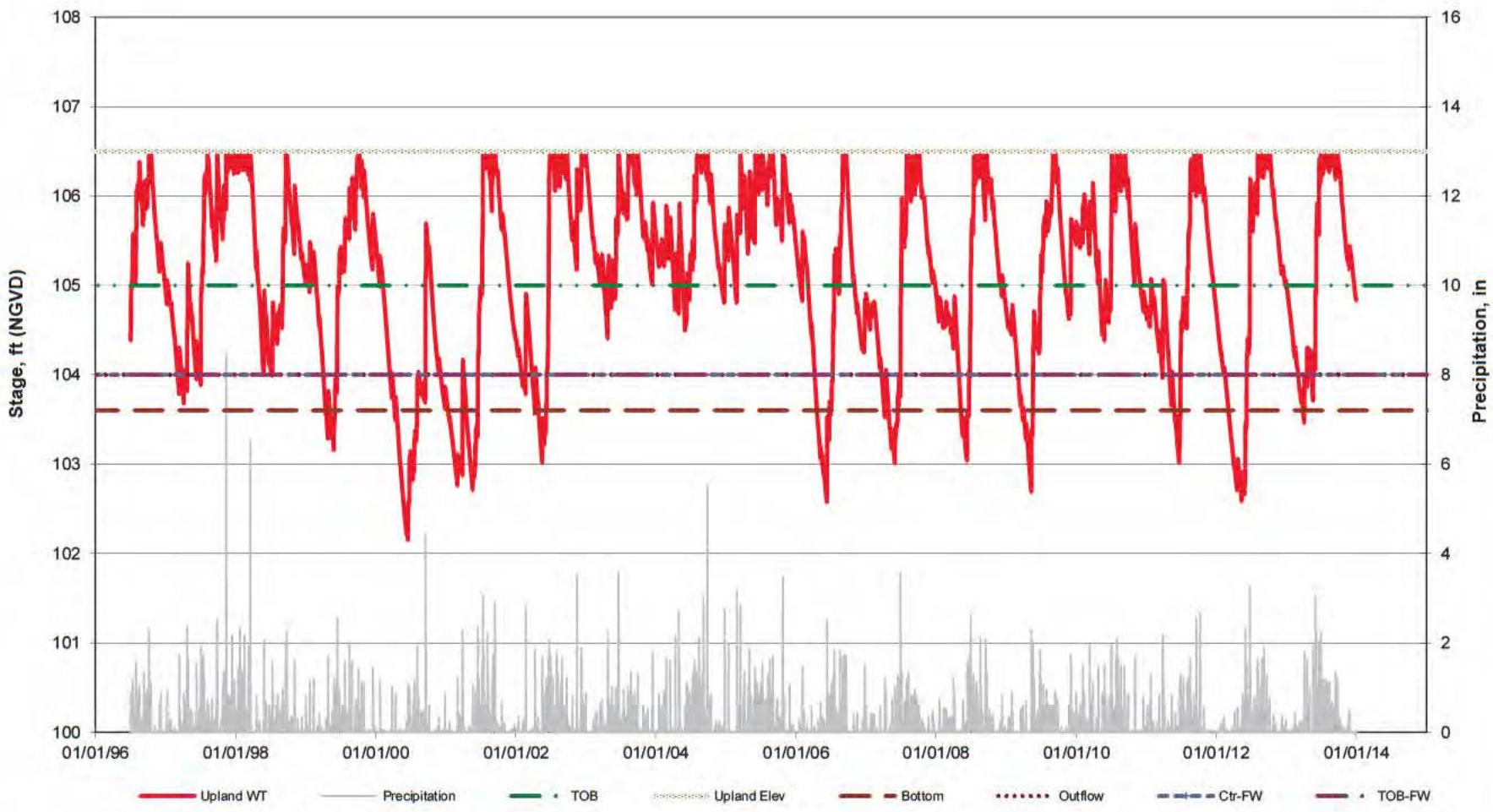
Wetland Surface Water Outflow

Figure A11-4
Modeled Outflow of Wetland 22-6
Ona Mine
Hardee County, Florida

Wet Prairie
By: *ECT*
Date: *11/3/2014*

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



	Elev. Ft.
Wetland Bottom =	103.6
Outflow =	104

Upland Hydroperiod

Figure A11-5
Modeled Upland Hydrograph of Wetland 22-6
Ona Mine
Hardee County, Florida

Wet Prairie
By: *ECT*
Date: *11/3/2014*

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

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TABLE A12
WETLAND 23W-1 WATER BALANCE CALCULATIONS
Three Cell System (Upland-UG, Wetland & DG-Cell) with Daily Time Steps

	Primary	Fringe (if present)
WETLAND NUMBER:	23W-1	
WETLAND TYPE:	Gum Swamp	
MINE NAME	Ona Mine	
Permit Name:		
COUNTY:	Hardee County, Florida	

By: ECT
Date: April 7, 2015

VERSION 2.1

CONSTANT & INITIAL/STARTING CONDITION INPUT PARAMETERS

UPLAND-UG INPUTS		Symbol
Upland-UG Acres:	**19.77**	
Upland-UG Area (ft2):	861,181	Au-UG
Highest Upland-UG Elevation (ft, NGVD):	92.5	El
Average Upland-UG Elevation (ft, NGVD):	90.0	
Initial Starting Depth to Water at Upland-UG (ft):	2.0	
Initial Starting Water Table Elevation at Upland-UG (ft, NGVD):	88.0	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu
Distance between Centers of Upland-UG and Wetland (ft):	396	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	2	Ku
Initial Upland Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0063	Gu
Upland-UG Saturated Thickness [bu] (ft):	60	Tuug
Upland-UG Ground Width entering Wetland [Wu] (ft):	800	Wu

Soil Type & Moisture Condition		AMC I	AMC II	AMC III	Cap. Suct. [CS]-(in)	Sat. Hyd Cd [Ks]-(ft/day)
Upland-UG -	Sand	0.404	0.375	0.346	-1.950	9.276
Wetland -	Sand	0.404	0.375	0.346	-1.950	9.276
DG-Cell -	Sand	0.404	0.375	0.346	-1.950	9.276

	Upland-UG	Wetland	DG-Cell
Evapotranspiration Extinction Depth (ft):	5	5	5
Minimum ET Rate (in/day):	0	0	0

WETLAND INPUTS		Symbol
Wetland Acres:	**5.06**	
Wetland Area (ft2):	220,414	Aw
Top of Bank Elevation (ft, NGVD):	92.0	TOB
Wetland Outflow Elevation (ft, NGVD):	86.0	OUT
Wetland Bottom Elevation (ft, NGVD):	84.5	BOT
Initial Starting Depth to Water at Wetland (ft):	-1.0	Dsw
Initial Starting Water Table Elevation at Wetland (ft, NGVD):	85.5	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu
Distance between Centers of Wetland and DG-Cell (ft):	929	
Wetland Discharge Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Kw
Initial Wetland Horizontal Hydraulic Gradient [ihw] (ft/ft):	0.0043	Gw
Wetland/Downgradient Saturated Thickness [bd] (ft):	75	Tw
Wetland Ground Width exiting Wetland [Wd] (ft):	170	Ww
Vertical Hydraulic Conductivity Confining Unit [Kv] (ft/day):	0.0013	
Vertical Distance Separating Surficial/Int. Aquifers [dv] (ft):	70	
Wetland Outflow Channel Width (ft):	50.0	
Wetland Outflow Channel Slope (ft/ft):	0.00500	
Wetland Outflow Channel Manning Coeff (ND):	0.035	
Depth to Check for Wet Soil Conditions:	0.5	
Distance to Wetland Fringe Inner Boundary*:	210	
Distance to Wetland Fringe Center*:	210	
Distance to Wetland Fringe Outer Boundary*:	210	
Elevation of Wetland Fringe Inner Boundary:	86	
Elevation of Wetland Fringe Center:	86	
Elevation of Wetland Fringe Outer Boundary:	86	

* distance from wetland centroid

DG-CELL INPUTS		Symbol
DG-Cell Acres:	**3.41**	
DG-Cell Area (ft2):	148,540	
Highest DG-Cell Elevation (ft, NGVD):	87	
Average DG-Cell Elevation (ft, NGVD):	83.5	
Initial Starting Depth to Water at DG-Cell (ft):	2.0	
Initial Starting Water Table Elevation at DG-Cell (ft, NGVD):	81.5	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	
Distance between DG-Cell and DG Boundary (ft):	1,647	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Ku
Water Table Elevation at DG Boundary Control Point (ft):	78.0	
Initial DG-Cell Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0021	Gu
DG-Cell Saturated Thickness [bu] (ft):	70	Tuug
DG-Cell Ground Width exiting system [Wu] (ft):	230	Wu

- Input Variables - site specific conditions
- Input Variables - represent more regional/seasonal conditions
- Input Variables - site specific conditions, but limited range of variation

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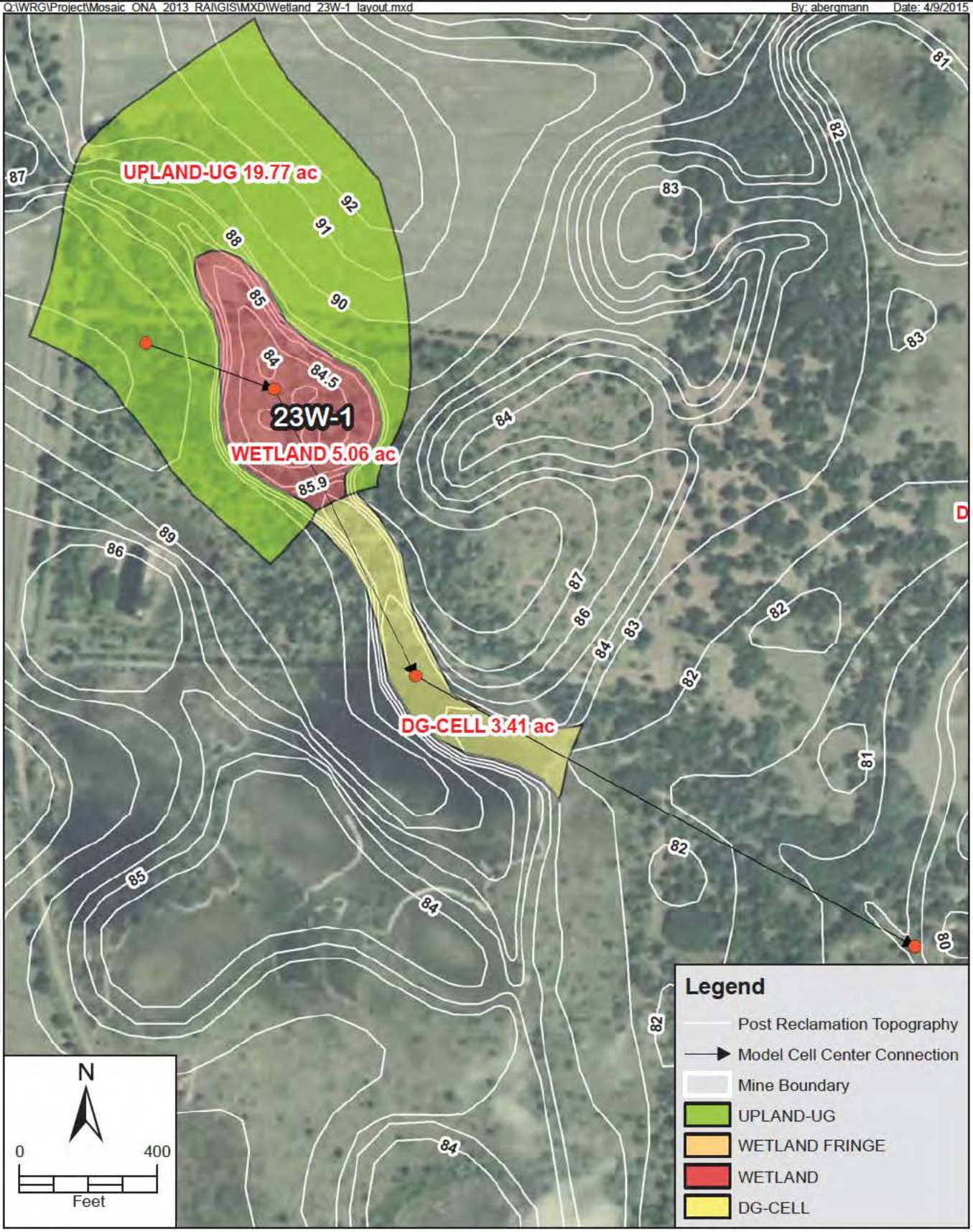
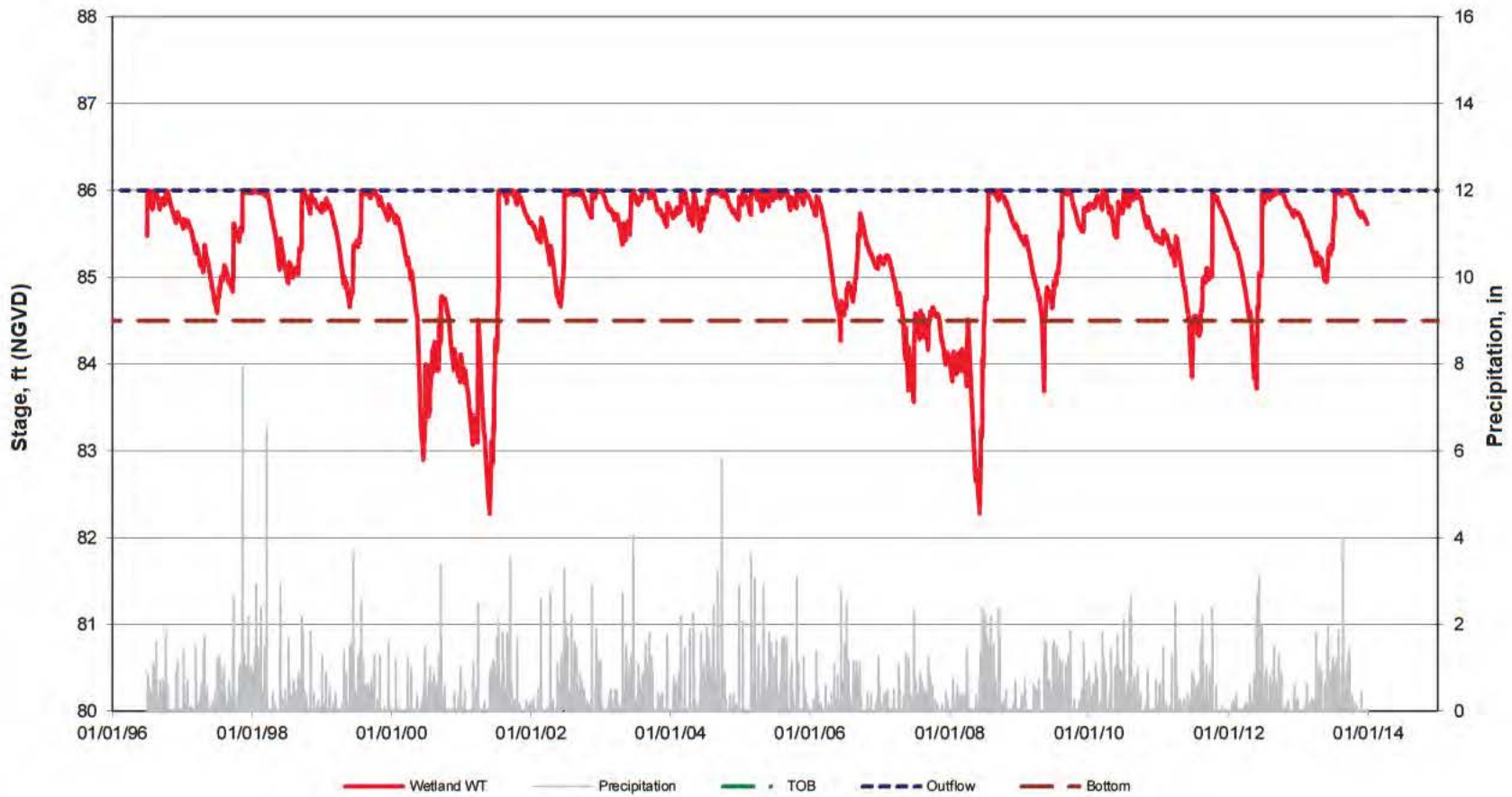


FIGURE A12-1
WETLAND 23W-1 - HYDROPERIOD MODEL DIAGRAM
ONA MINE
HARDEE COUNTY, FLORIDA

Sources: ESRI, 2014; Mosaic, 2015; ECT, 2015.

ECT Environmental Consulting & Technology, Inc



	Elev. Ft.
Wetland Bottom =	84.5
Outflow =	86

Wetland Hydroperiod

Starting WLE = 85.5

Figure A12-2
Modeled Hydrograph of Wetland 23W-1
Ona Mine
Hardee County, Florida

Gum Swamp
By: ECT
Date: 4/7/2015

Source: Mosaic, 2014; ECT, 2015.

ECT Environmental Consulting & Technology, Inc.

WETLAND DESCRIPTION:	23W-1	Gum Swamp
PROJECT& LOCATION:	Ona Mine	Hardee County, Florida

Top of Bank Elevation (ft, NGVD):	92.0
Wetland Outflow Elevation (ft, NGVD):	86.0
Wetland Bottom Elevation (ft, NGVD):	84.5

Average	85.3 ft, NGVD	Range	3.7 ft
Maximum	86.0 ft, NGVD	Step Size	0.25 ft
Minimum	82.3 ft, NGVD	No. of Steps	15
Median	85.6 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
86.25			86.25	
86.00	0	0	86.00	0.00%
85.75	2576	2576	85.75	40.29%
85.50	1018	3594	85.50	56.22%
85.25	629	4223	85.25	66.06%
85.00	558	4781	85.00	74.78%
84.75	426	5207	84.75	81.45%
84.50	391	5598	84.50	87.56%
84.25	143	5741	84.25	89.80%
84.00	225	5966	84.00	93.32%
83.75	181	6147	83.75	96.15%
83.50	59	6206	83.50	97.07%
83.25	45	6251	83.25	97.78%
83.00	68	6319	83.00	98.84%
82.75	30	6349	82.75	99.31%
82.50	23	6372	82.50	99.67%
82.25	21	6393	82.25	100.00%
82.00	0	6393	82.00	100.00%

6393 Days
17.5 Years

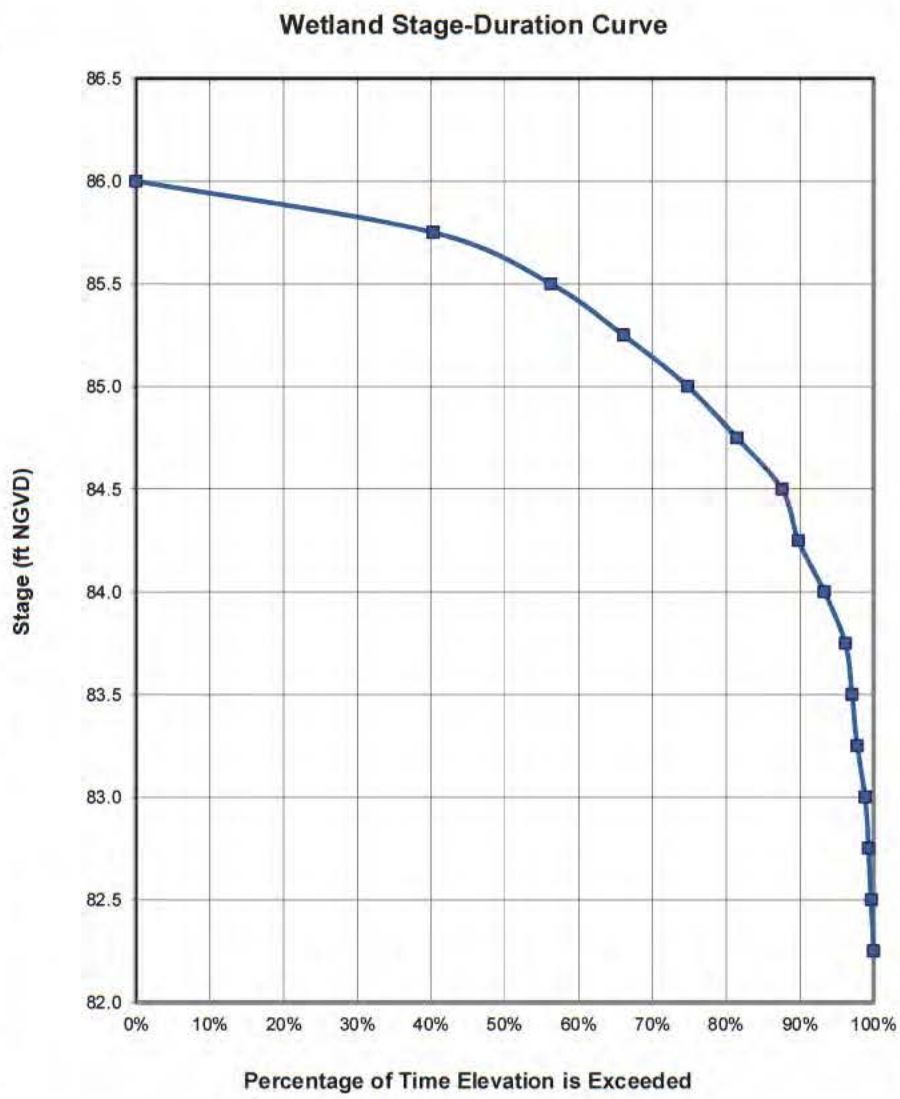
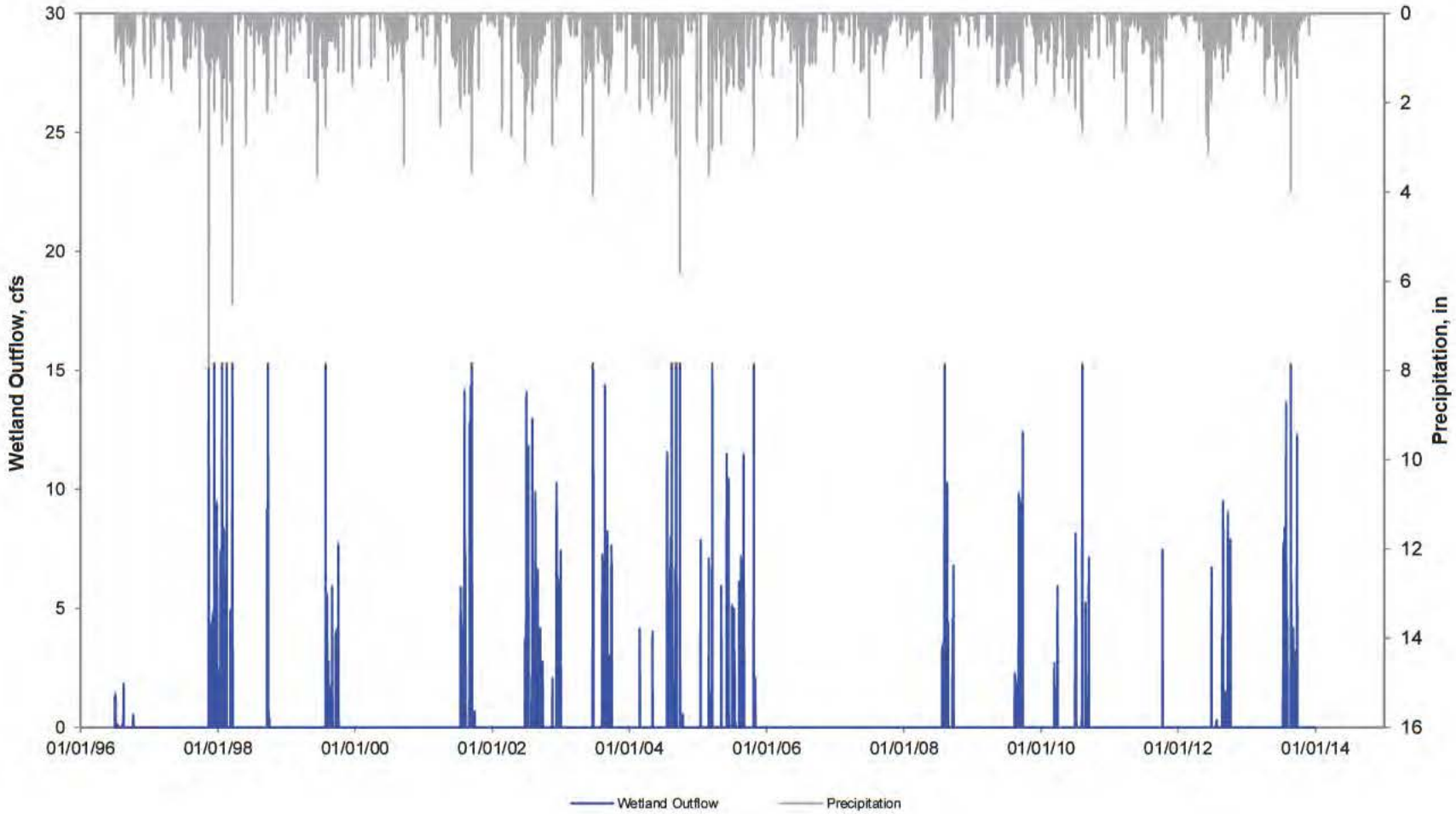


Figure A12-3
Modeled Stage-Duration Curve of Wetland 23W-1
Ona Mine
Hardee County, Florida

Gum Swamp
By: ECT
Date: 4/7/2015

Source: Mosaic, 2014; ECT, 2015.

ECT Environmental Consulting & Technology, Inc.



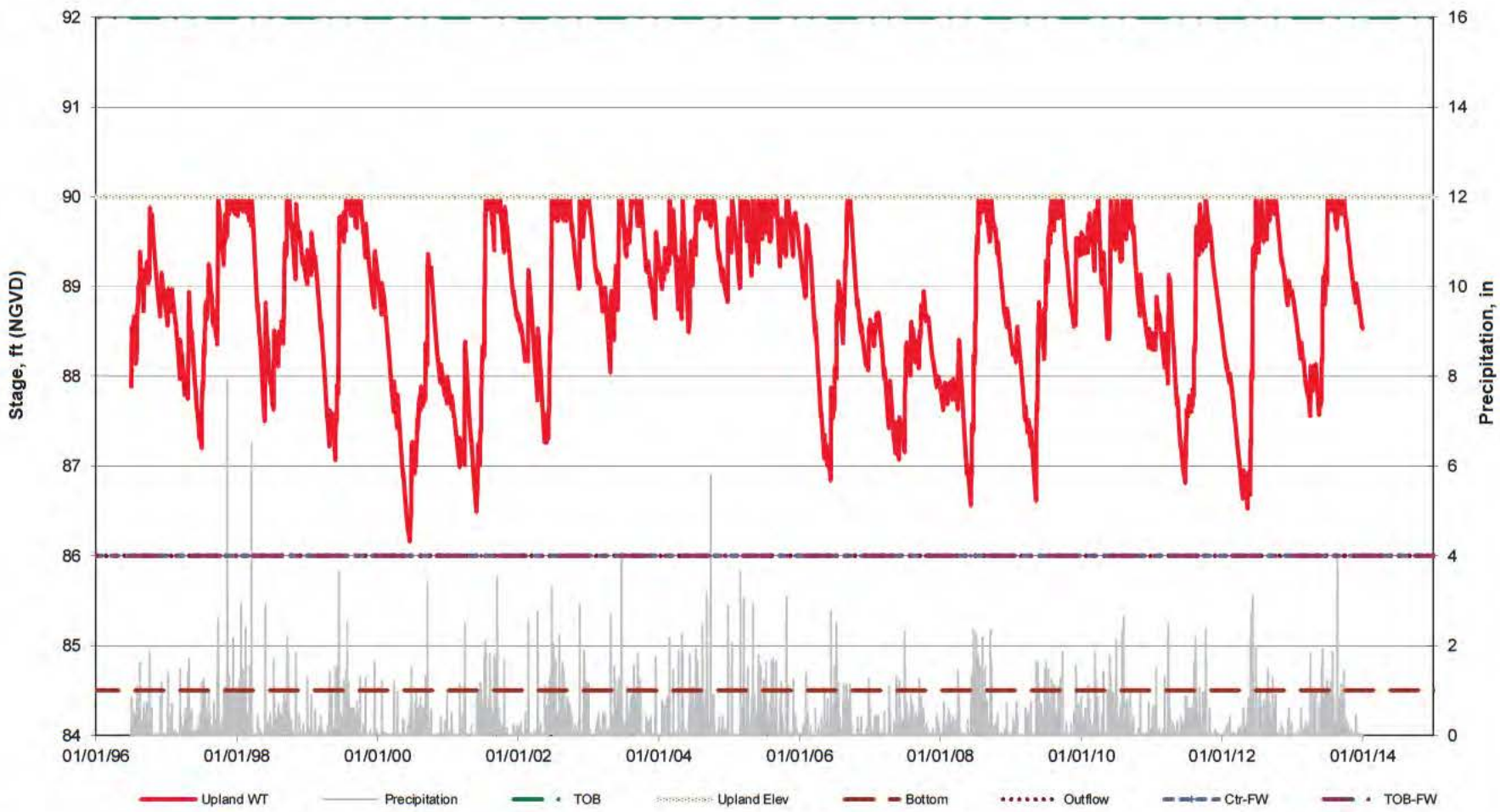
Wetland Surface Water Outflow

Figure A12-4
Modeled Outflow of Wetland 23W-1
Ona Mine
Hardee County, Florida

Gum Swamp
By: *ECT*
Date: *4/7/2015*

Source: Mosaic, 2014; ECT, 2015.

ECT Environmental Consulting & Technology, Inc.



	Elev. Ft.
Wetland Bottom =	84.5
Outflow =	86

Upland Hydroperiod

Figure A12-5
Modeled Upland Hydrograph of Wetland 23W-1
Ona Mine
Hardee County, Florida

Gum Swamp
By: *ECT*
Date: *4/7/2015*

Source: Mosaic, 2014; ECT, 2015.

ECT Environmental Consulting & Technology, Inc.

Copyright by ECT & Mosaic, 2011

TABLE A13
WETLANDS 23W-13 & 24-12 WATER BALANCE CALCULATIONS
Three Cell System (Upland-UG, Wetland & DG-Cell) with Daily Time Steps

	Primary	Fringe (if present)		
WETLAND NUMBER:	23W-13	24-12	By	ECT
WETLAND TYPE:	Freshwater Marsh	Mixed Wetland Hardwoods - Fringe/Slope	Date	November 3, 2014
MINE NAME	Ona Mine			
Permit Name:				
COUNTY:	Hardee County, Florida			

VERSION 2.1

CONSTANT & INITIAL/STARTING CONDITION INPUT PARAMETERS

UPLAND-UG INPUTS		Symbol	WETLAND INPUTS		Symbol	DG-CELL INPUTS		Symbol
Upland-UG Acres:	**7.89**		Wetland Acres:	**10.15**		DG-Cell Acres:	**1.03**	
Upland-UG Area (ft2):	343,688	Au-UG	Wetland Area (ft2):	442,134	Aw	DG-Cell Area (ft2):	44,867	
Highest Upland-UG Elevation (ft, NGVD):	91.5	El	Top of Bank Elevation (ft, NGVD):	84.0	TOB	Highest DG-Cell Elevation (ft, NGVD):	83	
Average Upland-UG Elevation (ft, NGVD):	87.0		Wetland Outflow Elevation (ft, NGVD):	83.0	OUT	Average DG-Cell Elevation (ft, NGVD):	82.5	
			Wetland Bottom Elevation (ft, NGVD):	81.8	BOT			
Initial Starting Depth to Water at Upland-UG (ft):	2.0		Initial Starting Depth to Water at Wetland (ft):	-1.2	Dsw	Initial Starting Depth to Water at DG-Cell (ft):	0.2	
Initial Starting Water Table Elevation at Upland-UG (ft, NGVD):	85.0		Initial Starting Water Table Elevation at Wetland (ft, NGVD):	83.0		Initial Starting Water Table Elevation at DG-Cell (ft, NGVD):	82.3	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu	Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu	Specific Yield [Sy]/Porosity [n] (ND):	0.27	
Distance between Centers of Upland-UG and Wetland (ft):	438		Distance between Centers of Wetland and DG-Cell (ft):	572		Distance between DG-Cell and DG Boundary (ft):	326	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Ku	Wetland Discharge Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Kw	Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Ku
Initial Upland Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0046	Gu	Initial Wetland Horizontal Hydraulic Gradient [ihw] (ft/ft):	0.0012	Gw	Water Table Elevation at DG Boundary Control Point (ft):	-9999.0	
Upland-UG Saturated Thickness [bu] (ft):	80	Tuug	Wetland/Downgradient Saturated Thickness [bd] (ft):	80	Tw	Initial DG-Cell Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0040	Gu
Upland-UG Ground Width entering Wetland [Wu] (ft):	1,000	Wu	Wetland Ground Width exiting Wetland [Wd] (ft):	250	Ww	DG-Cell Saturated Thickness [bu] (ft):	80	Tuug
		Cap. Suct.	Vertical Hydraulic Conductivity Confining Unit [Kv] (ft/day):	0.0013		DG-Cell Ground Width exiting system [Wu] (ft):	210	Wu
		[CS]-(in)	Vertical Distance Separating Surficial/Int. Aquifers [dv] (ft):	70				
			Wetland Outflow Channel Width (ft):	20.0				
			Wetland Outflow Channel Slope (ft/ft):	0.00100				
			Wetland Outflow Channel Manning Coeff (ND):	0.035				

Soil Type & Moisture Condition		AMC I	AMC II	AMC III	Cap. Suct. [CS]-(in)	Sat. Hyd Cd [Ks]-(ft/day)
Upland-UG -	Sand	0.404	0.375	0.346	-1.950	9.276
Wetland -	Sand	0.404	0.375	0.346	-1.950	9.276
DG-Cell -	Sand	0.404	0.375	0.346	-1.950	9.276

	Upland-UG	Wetland	DG-Cell
Evapotranspiration Extinction Depth (ft):	5	4.5	5
Minimum ET Rate (in/day):	0	0	0

Depth to Check for Wet Soil Conditions:	0.5
Distance to Wetland Fringe Inner Boundary*:	255
Distance to Wetland Fringe Center*:	280
Distance to Wetland Fringe Outer Boundary*:	305
Elevation of Wetland Fringe Inner Boundary:	83
Elevation of Wetland Fringe Center:	83.5
Elevation of Wetland Fringe Outer Boundary:	84

* distance from wetland centroid

Input Variables - site specific conditions
Input Variables - represent more regional/seasonal conditions
Input Variables - site specific conditions, but limited range of variation

Q:\WRG\Project\Mosaic_ONA_2013_RAI\GIS\MXD\Wetland_23W-13_24-12_layout.mxd By: abergmann Date: 4/9/2015

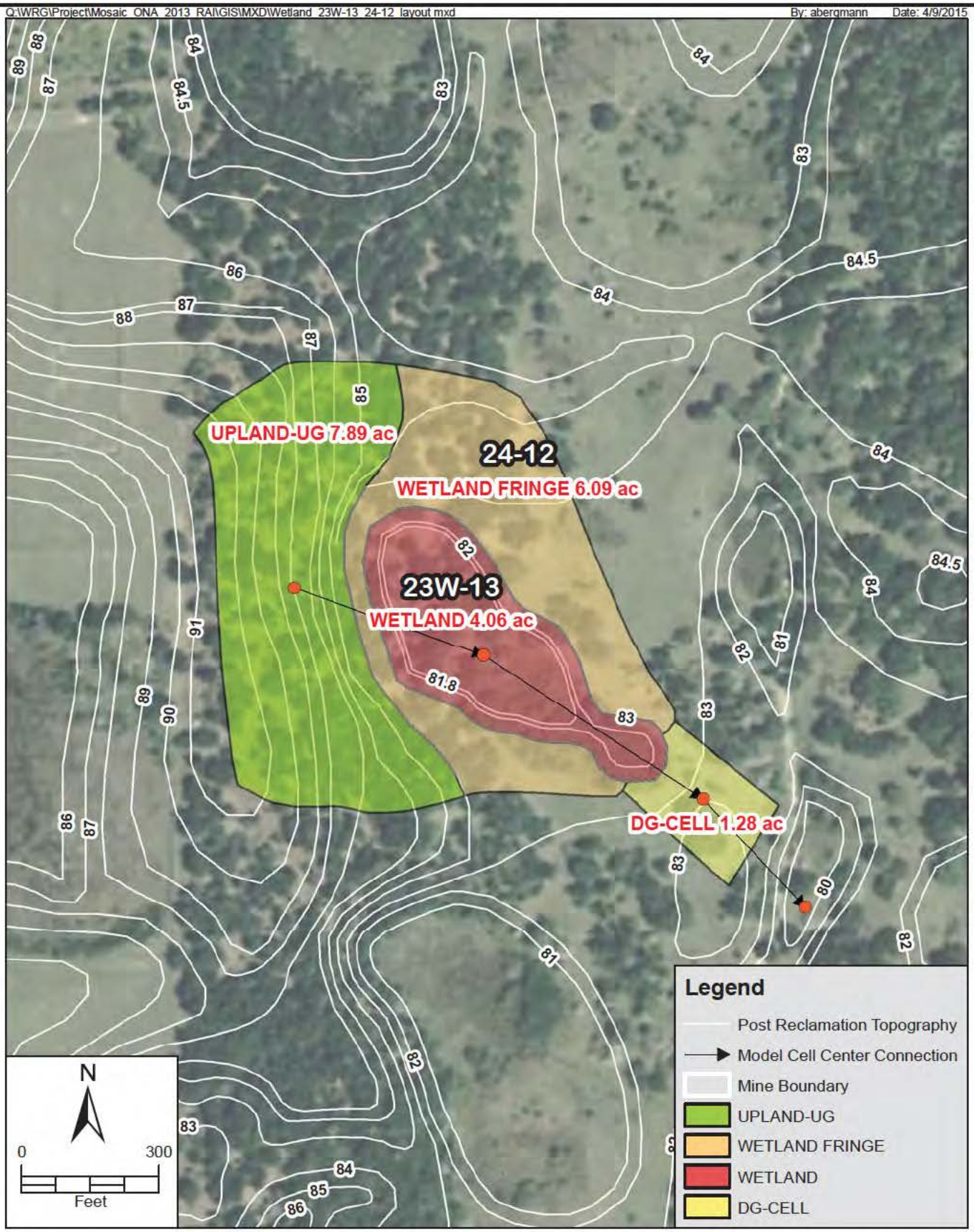
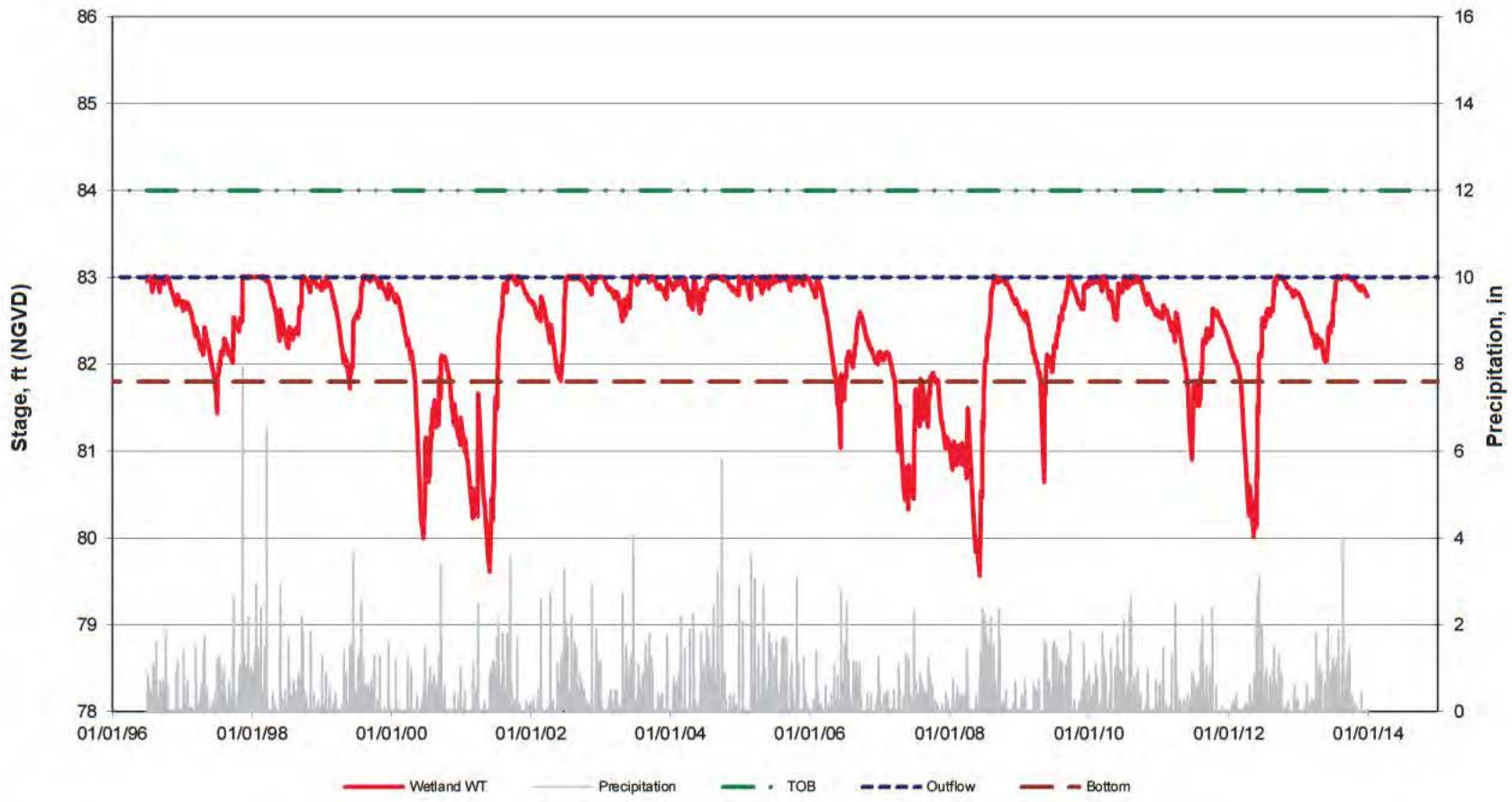


FIGURE A13-1
WETLANDS 23W-13 & 24-12 - HYDROPERIOD MODEL DIAGRAM
ONA MINE
HARDEE COUNTY, FLORIDA

Sources: ESRI, 2014; Mosaic, 2015; ECT, 2015.

ECT Environmental Consulting & Technology, Inc



	Elev. Ft.
Wetland Bottom =	81.8
Outflow =	83

Wetland Hydroperiod

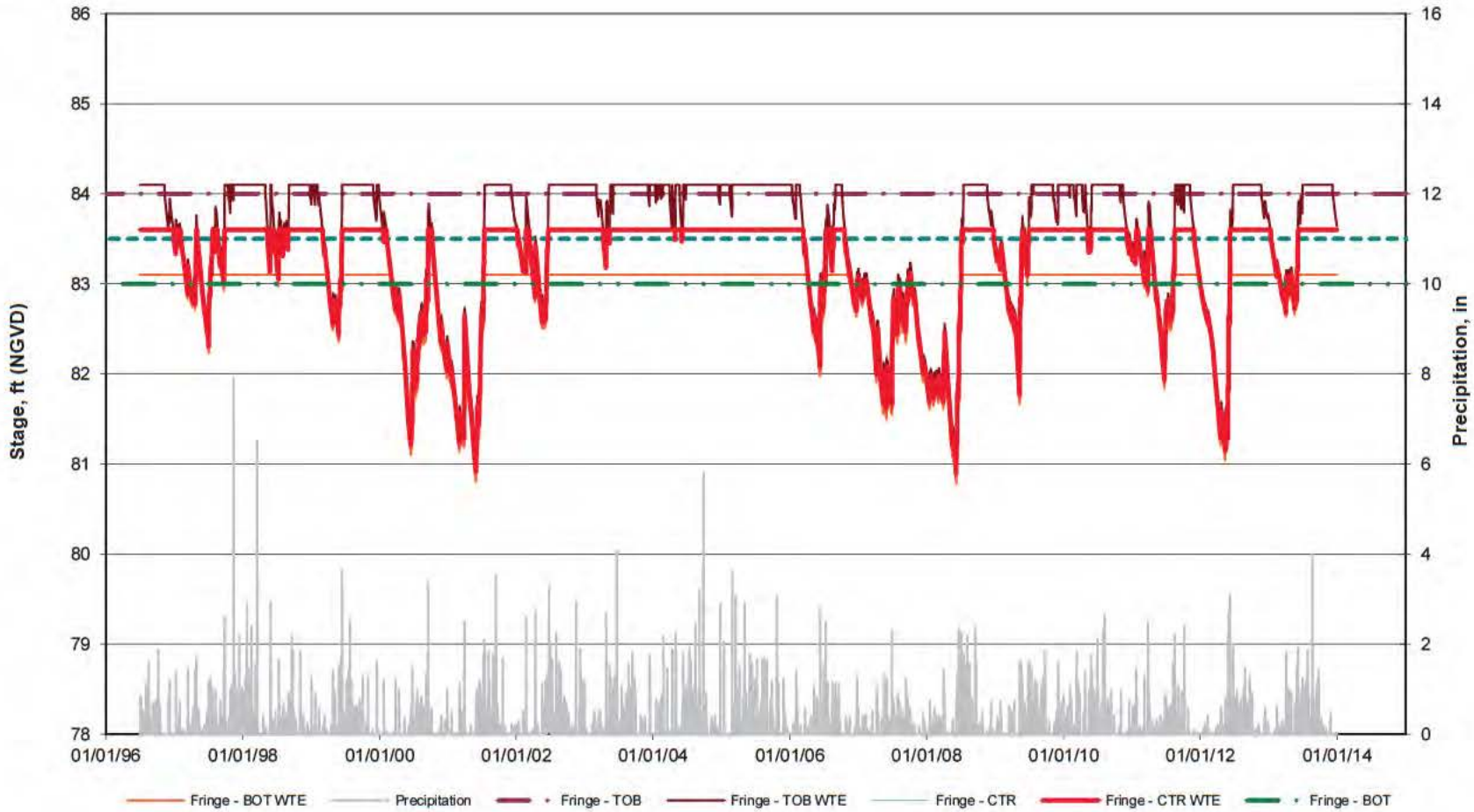
Starting WLE = 83

Figure A13-2
Modeled Hydrograph of Wetland 23W-13
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



	Elev. Ft.
Top of Bank - Fringe Wetland =	84
Center - Fringe Wetland =	83.5
Bottom - Fringe Wetland =	83

Fringe Wetland Hydroperiod

Starting WLE = 83

Figure A13-3
Modeled Hydrograph of Fringe/Slope Wetland 24-12
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods - Fringe/Slope
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

WETLAND DESCRIPTION:	23W-13	Freshwater Marsh
PROJECT& LOCATION:	Ona Mine	Hardee County, Florida

Top of Bank Elevation (ft, NGVD):	84.0
Wetland Outflow Elevation (ft, NGVD):	83.0
Wetland Bottom Elevation (ft, NGVD):	81.8

Average	82.4 ft, NGVD	Range	3.4 ft
Maximum	83.0 ft, NGVD	Step Size	0.25 ft
Minimum	79.6 ft, NGVD	No. of Steps	14
Median	82.7 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
83.27			83.27	
83.02	0	0	83.02	0.00%
82.77	2800	2800	82.77	43.80%
82.52	942	3742	82.52	58.53%
82.27	647	4389	82.27	68.65%
82.02	622	5011	82.02	78.38%
81.77	360	5371	81.77	84.01%
81.52	178	5549	81.52	86.80%
81.27	198	5747	81.27	89.90%
81.02	185	5932	81.02	92.79%
80.77	136	6068	80.77	94.92%
80.52	95	6163	80.52	96.40%
80.27	119	6282	80.27	98.26%
80.02	58	6340	80.02	99.17%
79.77	37	6377	79.77	99.75%
79.52	16	6393	79.52	100.00%
79.27	0	6393	79.27	100.00%
79.02	0	6393	79.02	100.00%

6393 Days
17.5 Years

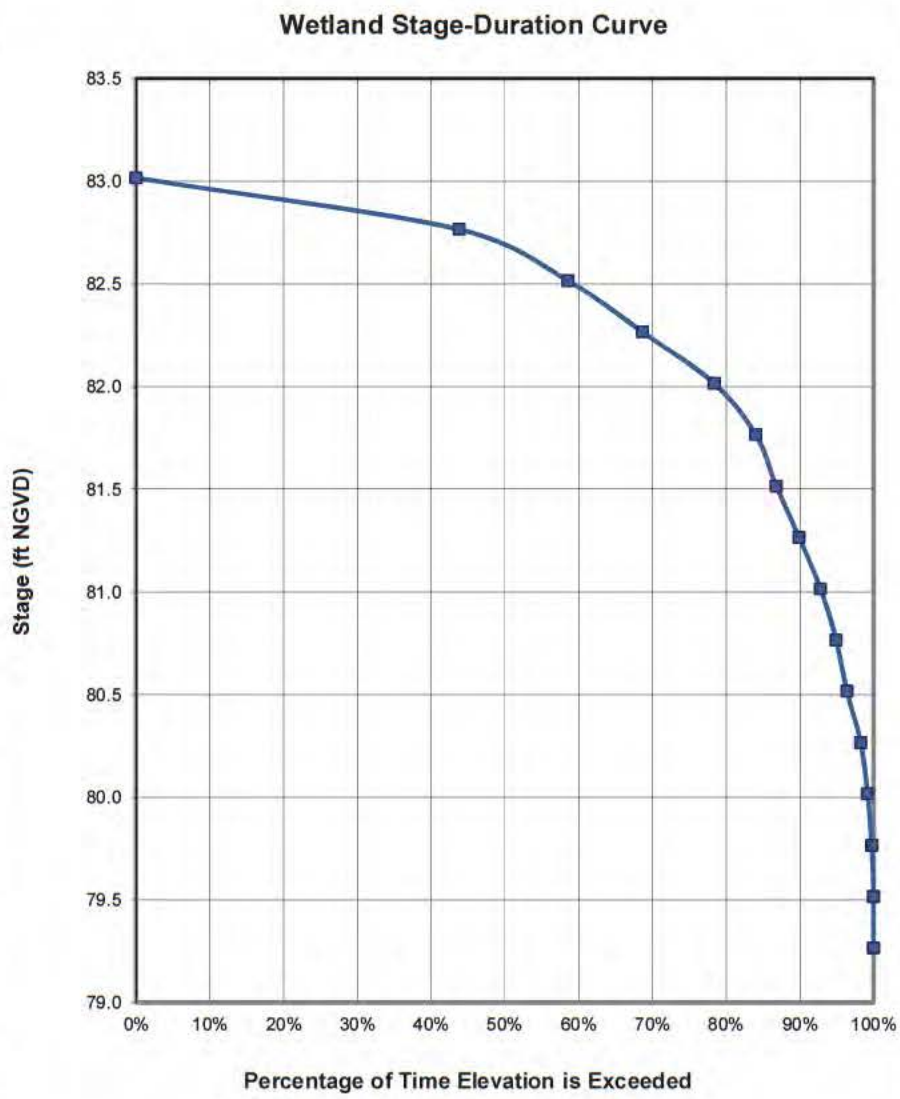


Figure A13-4
Modeled Stage-Duration Curve of Wetland 23W-13
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

WETLAND DESCRIPTION: 24-12 Mixed Wetland Hardwoods - Fringe/Slope
PROJECT& LOCATION: Ona Mine Hardee County, Florida

Fringe Wetland Top of Bank Elevation (ft, NGVD): 84.0
Fringe Wetland Center Elevation (ft, NGVD): 83.5
Fringe Wetland Bottom Elevation (ft, NGVD): 83.0

Data From Center of Fringe Wetland

Average	83.2 ft, NGVD	Range	2.7 ft
Maximum	83.6 ft, NGVD	Step Size	0.2 ft
Minimum	80.9 ft, NGVD	No. of Steps	13
Median	83.6 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
83.80			83.80	
83.60	0	0	83.60	0.00%
83.40	4006	4006	83.40	62.66%
83.20	366	4372	83.20	68.39%
83.00	341	4713	83.00	73.72%
82.80	359	5072	82.80	79.34%
82.60	345	5417	82.60	84.73%
82.40	235	5652	82.40	88.41%
82.20	122	5774	82.20	90.32%
82.00	142	5916	82.00	92.54%
81.80	170	6086	81.80	95.20%
81.60	106	6192	81.60	96.86%
81.40	80	6272	81.40	98.11%
81.20	87	6359	81.20	99.47%
81.00	25	6384	81.00	99.86%
80.80	9	6393	80.80	100.00%
80.60	0	6393	80.60	100.00%
80.40	0	6393	80.40	100.00%

6393 Days
17.5 Years

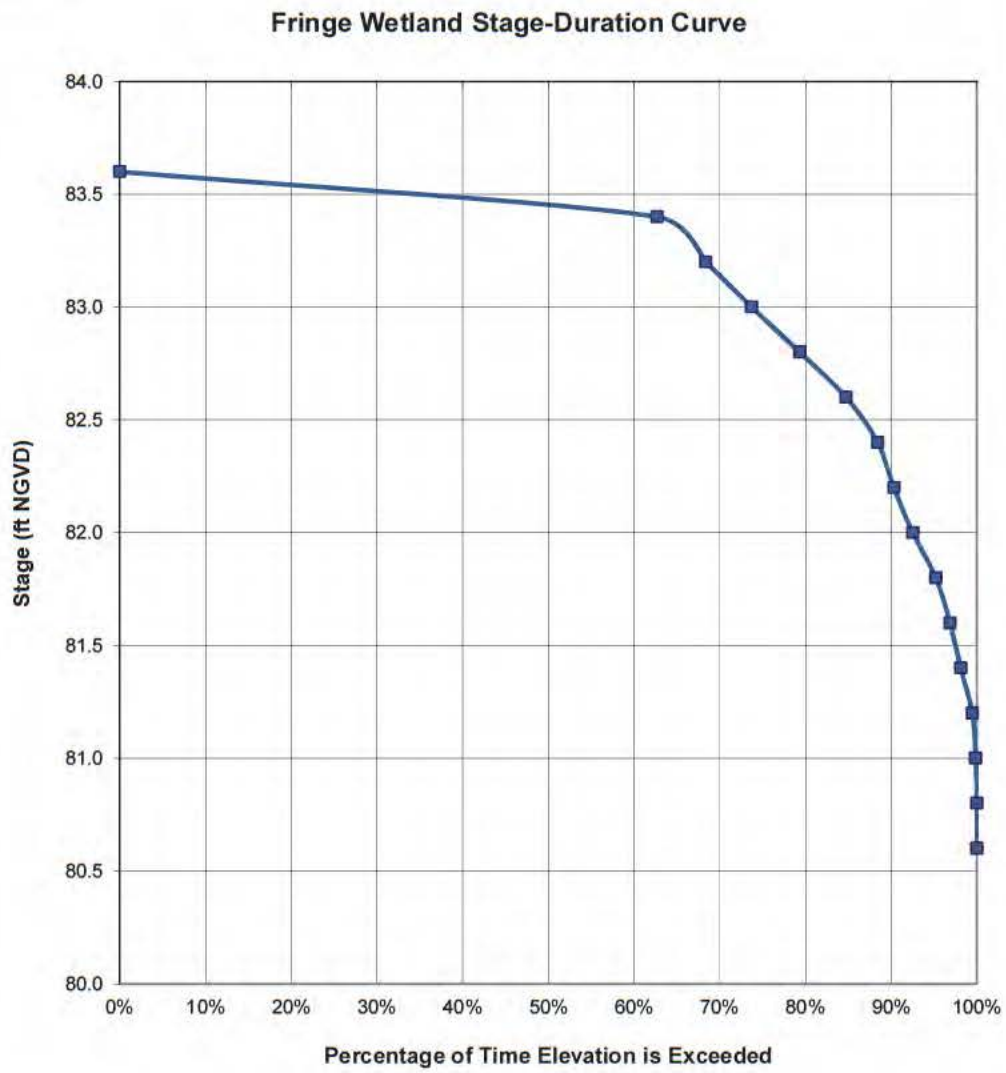
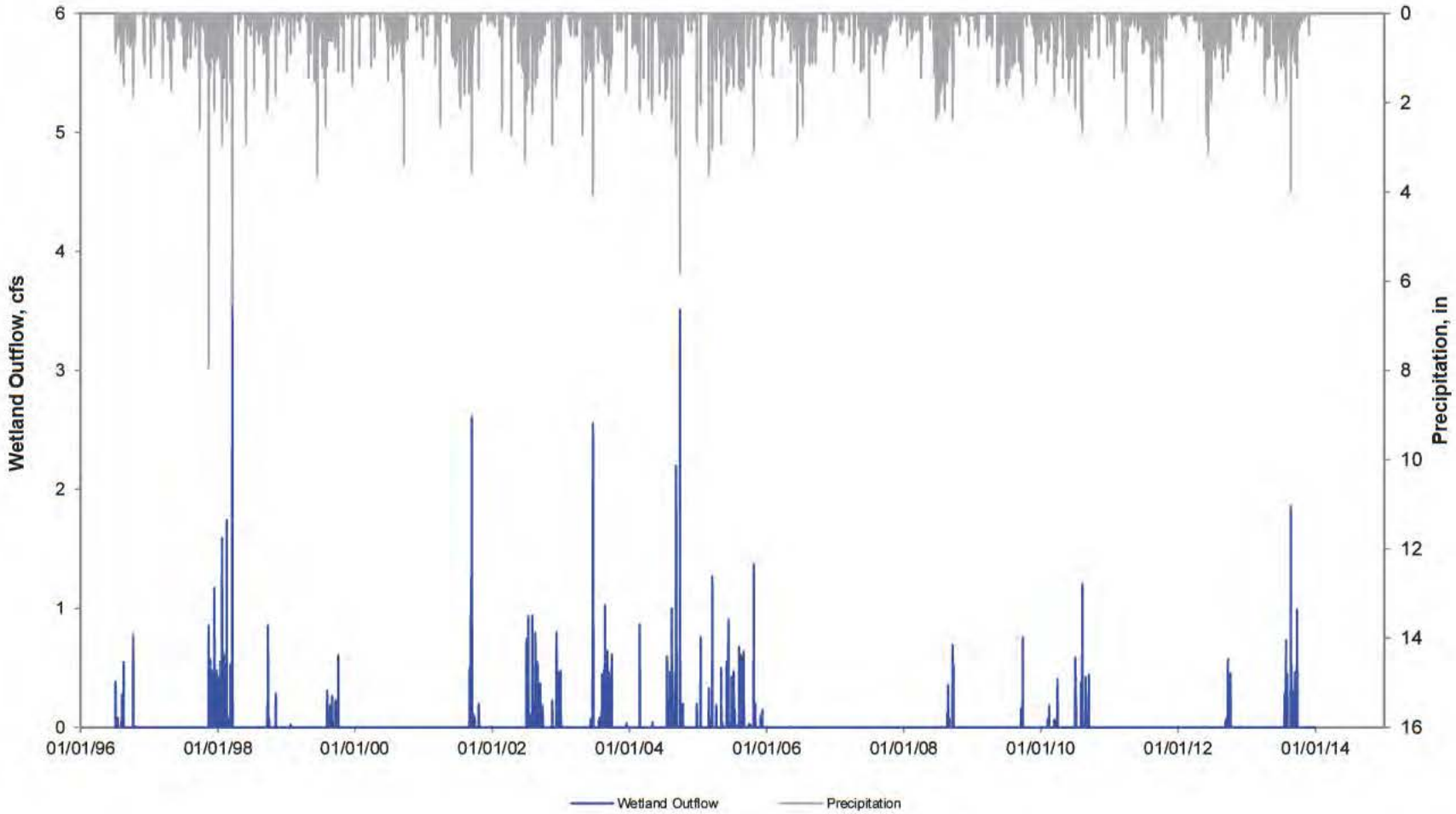


Figure A13-5
Modeled Stage-Duration Curve of Fringe/Slope Wetland 24-12
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods - Fringe/Slope
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



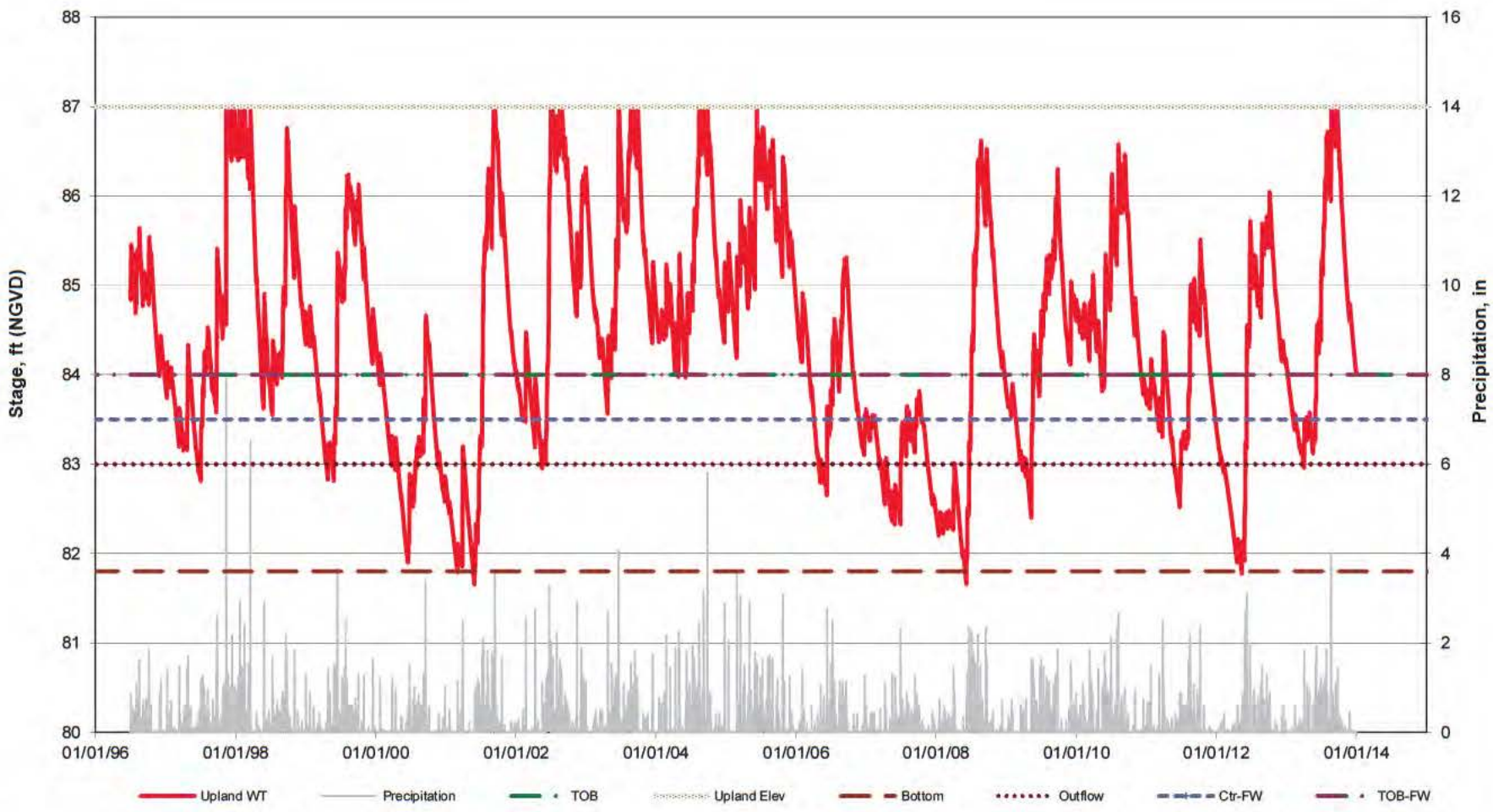
Wetland Surface Water Outflow

Figure A13-6
Modeled Outflow of Wetland 23W-13
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



	Elev. Ft.
Wetland Bottom =	81.8
Outflow =	83

Upland Hydroperiod

Figure A13-7
Modeled Upland Hydrograph of Wetland 23W-13
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

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TABLE A14
WETLAND 23W-15 WATER BALANCE CALCULATIONS
Three Cell System (Upland-UG, Wetland & DG-Cell) with Daily Time Steps

	Primary	Fringe (if present)
WETLAND NUMBER:	23W-15	
WETLAND TYPE:	Freshwater Marsh	
MINE NAME	Ona Mine	
Permit Name:		
COUNTY:	Hardee County, Florida	

By: ECT
Date: November 3, 2014

VERSION 2.1

CONSTANT & INITIAL/STARTING CONDITION INPUT PARAMETERS

UPLAND-UG INPUTS		Symbol
Upland-UG Acres:	**68.69**	
Upland-UG Area (ft2):	2,992,136	Au-UG
Highest Upland-UG Elevation (ft, NGVD):	138	El
Average Upland-UG Elevation (ft, NGVD):	95.0	
Initial Starting Depth to Water at Upland-UG (ft):	2.0	
Initial Starting Water Table Elevation at Upland-UG (ft, NGVD):	93.0	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu
Distance between Centers of Upland-UG and Wetland (ft):	616	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	3	Ku
Initial Upland Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0055	Gu
Upland-UG Saturated Thickness [bu] (ft):	75	Tuug
Upland-UG Ground Width entering Wetland [Wu] (ft):	2,000	Wu

WETLAND INPUTS		Symbol
Wetland Acres:	**21.84**	
Wetland Area (ft2):	951,350	Aw
Top of Bank Elevation (ft, NGVD):	95.0	TOB
Wetland Outflow Elevation (ft, NGVD):	90.0	OUT
Wetland Bottom Elevation (ft, NGVD):	88.6	BOT
Initial Starting Depth to Water at Wetland (ft):	-1.0	Dsw
Initial Starting Water Table Elevation at Wetland (ft, NGVD):	89.6	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu
Distance between Centers of Wetland and DG-Cell (ft):	1,142	
Wetland Discharge Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Kw
Initial Wetland Horizontal Hydraulic Gradient [ihw] (ft/ft):	0.0014	Gw
Wetland/Downgradient Saturated Thickness [bd] (ft):	55	Tw
Wetland Ground Width exiting Wetland [Wd] (ft):	250	Ww
Vertical Hydraulic Conductivity Confining Unit [Kv] (ft/day):	0.0011	
Vertical Distance Separating Surficial/Int. Aquifers [dv] (ft):	70	
Wetland Outflow Channel Width (ft):	20.0	
Wetland Outflow Channel Slope (ft/ft):	0.00300	
Wetland Outflow Channel Manning Coeff (ND):	0.035	
Depth to Check for Wet Soil Conditions:	0.5	
Distance to Wetland Fringe Inner Boundary*:	325	
Distance to Wetland Fringe Center*:	325	
Distance to Wetland Fringe Outer Boundary*:	325	
Elevation of Wetland Fringe Inner Boundary:	90	
Elevation of Wetland Fringe Center:	90	
Elevation of Wetland Fringe Outer Boundary:	90	

* distance from wetland centroid

DG-CELL INPUTS		Symbol
DG-Cell Acres:	**2.01**	
DG-Cell Area (ft2):	87,556	
Highest DG-Cell Elevation (ft, NGVD):	90	
Average DG-Cell Elevation (ft, NGVD):	89.0	
Initial Starting Depth to Water at DG-Cell (ft):	1.0	
Initial Starting Water Table Elevation at DG-Cell (ft, NGVD):	88.0	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	
Distance between DG-Cell and DG Boundary (ft):	597	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Ku
Water Table Elevation at DG Boundary Control Point (ft):	-9999.0	
Initial DG-Cell Horizontal Hydraulic Gradient [ihu] (ft/ft):	(0.0003)	Gu
DG-Cell Saturated Thickness [bu] (ft):	55	Tuug
DG-Cell Ground Width exiting system [Wu] (ft):	230	Wu

Soil Type & Moisture Condition		AMC I	AMC II	AMC III	Cap. Suct. [CS]-(in)	Sat. Hyd Cd [Ks]-(ft/day)
Upland-UG -	Sand	0.404	0.375	0.346	-1.950	9.276
Wetland -	Sand	0.404	0.375	0.346	-1.950	9.276
DG-Cell -	Sand	0.404	0.375	0.346	-1.950	9.276

	Upland-UG	Wetland	DG-Cell
Evapotranspiration Extinction Depth (ft):	5	4	5
Minimum ET Rate (in/day):	0	0	0

Input Variables - site specific conditions
Input Variables - represent more regional/seasonal conditions
Input Variables - site specific conditions, but limited range of variation

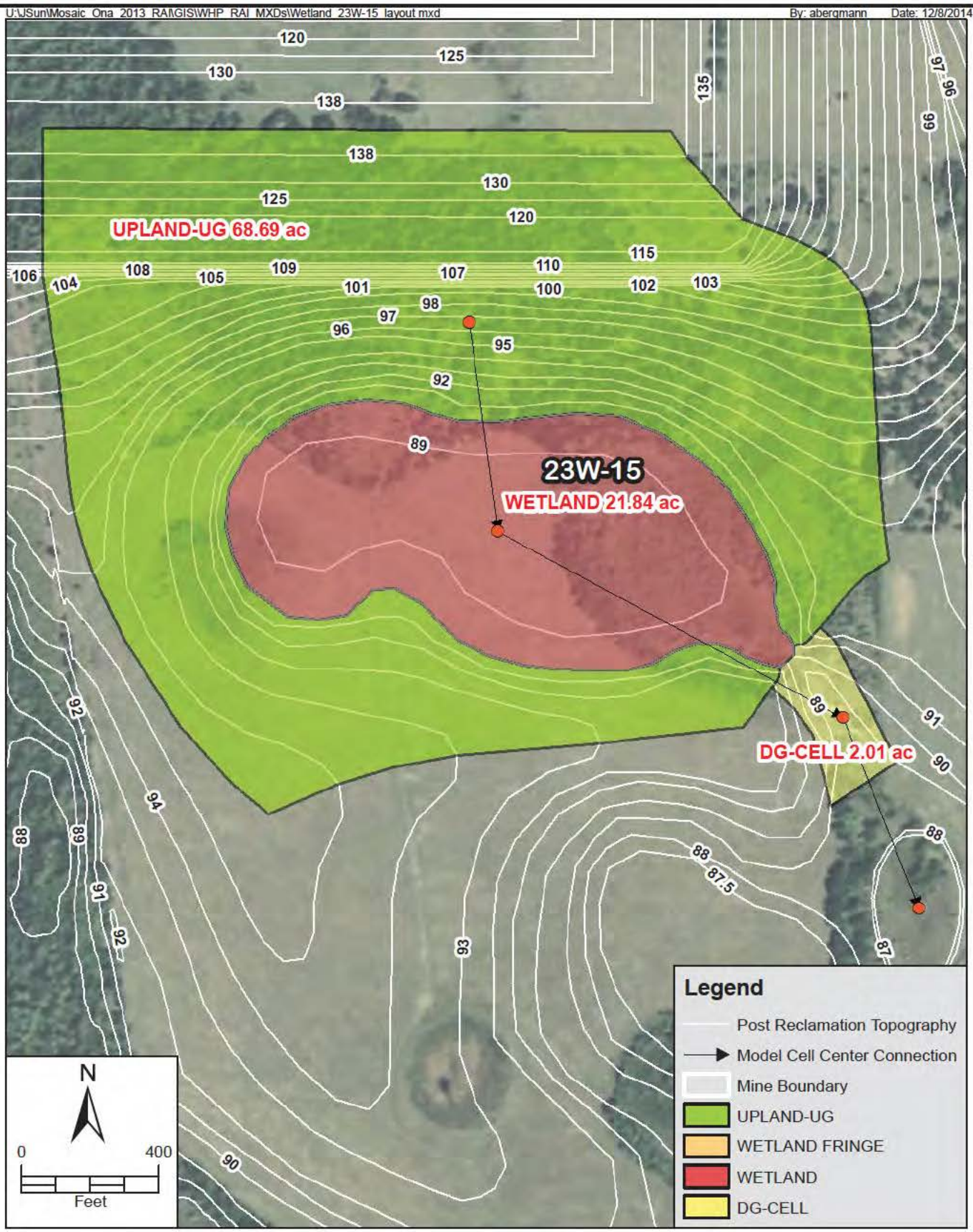
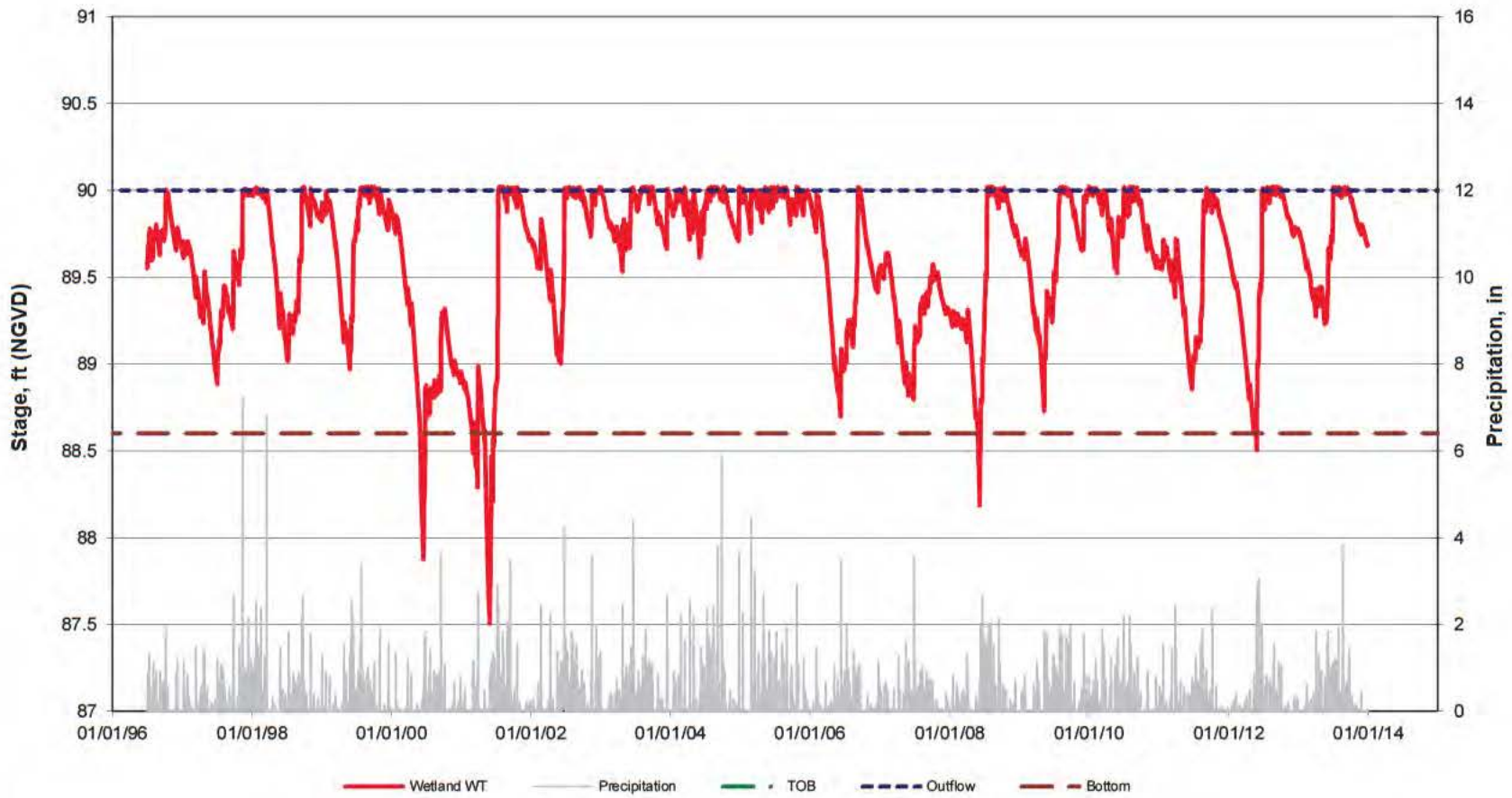


FIGURE A14-1
WETLAND 23W-15 - HYDROPERIOD MODEL DIAGRAM
ONA MINE
HARDEE COUNTY, FLORIDA

Sources: ESRI 2014; Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc



	Elev. Ft.
Wetland Bottom =	88.6
Outflow =	90

Wetland Hydroperiod

Starting WLE = 89.6

Figure A14-2
Modeled Hydrograph of Wetland 23W-15
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

WETLAND DESCRIPTION:	23W-15	Freshwater Marsh
PROJECT& LOCATION:	Ona Mine	Hardee County, Florida

Top of Bank Elevation (ft, NGVD):	95.0
Wetland Outflow Elevation (ft, NGVD):	90.0
Wetland Bottom Elevation (ft, NGVD):	88.6

Average	89.6 ft, NGVD	Range	2.5 ft
Maximum	90.0 ft, NGVD	Step Size	0.2 ft
Minimum	87.5 ft, NGVD	No. of Steps	13
Median	89.7 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
90.22			90.22	
90.02	0	0	90.02	0.00%
89.82	2591	2591	89.82	40.53%
89.62	1208	3799	89.62	59.42%
89.42	711	4510	89.42	70.55%
89.22	753	5263	89.22	82.32%
89.02	445	5708	89.02	89.29%
88.82	395	6103	88.82	95.46%
88.62	163	6266	88.62	98.01%
88.42	58	6324	88.42	98.92%
88.22	28	6352	88.22	99.36%
88.02	16	6368	88.02	99.61%
87.82	11	6379	87.82	99.78%
87.62	9	6388	87.62	99.92%
87.42	5	6393	87.42	100.00%
87.22	0	6393	87.22	100.00%
87.02	0	6393	87.02	100.00%
86.82	0	6393	86.82	100.00%

6393 Days
17.5 Years

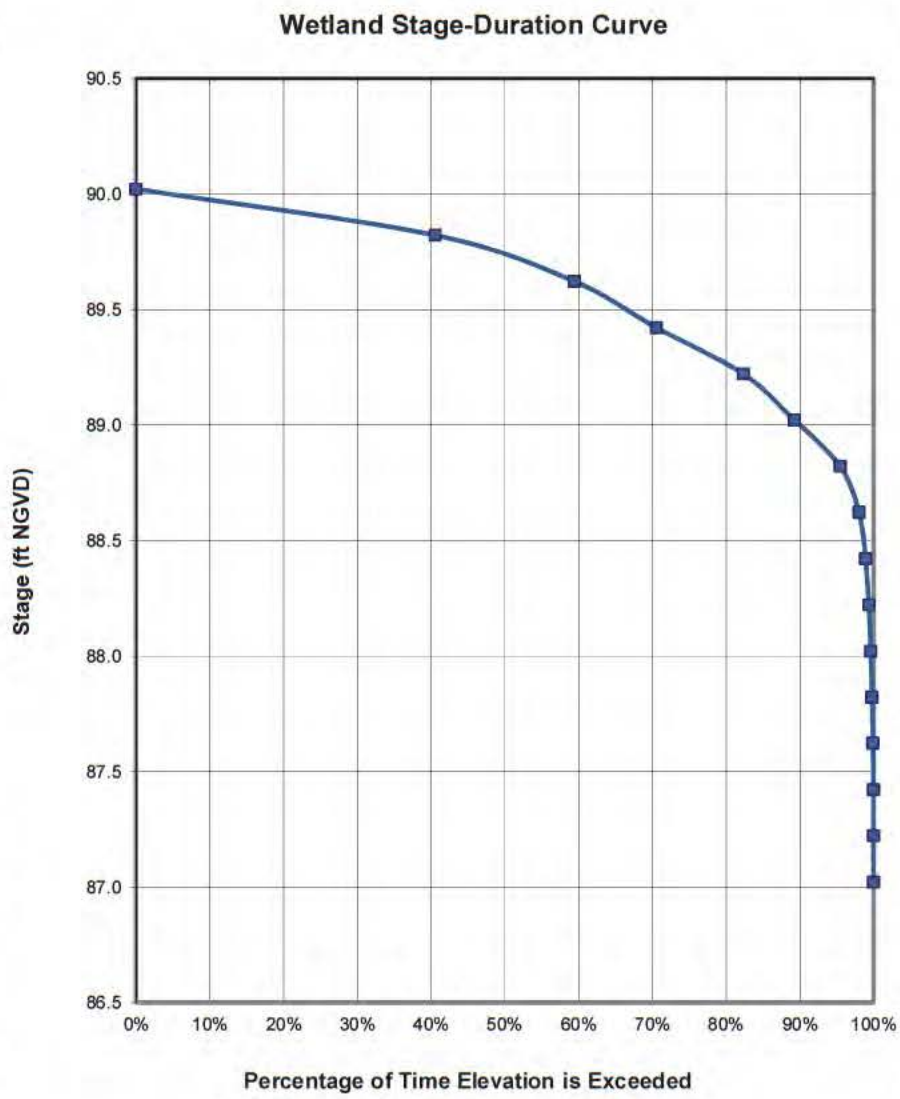
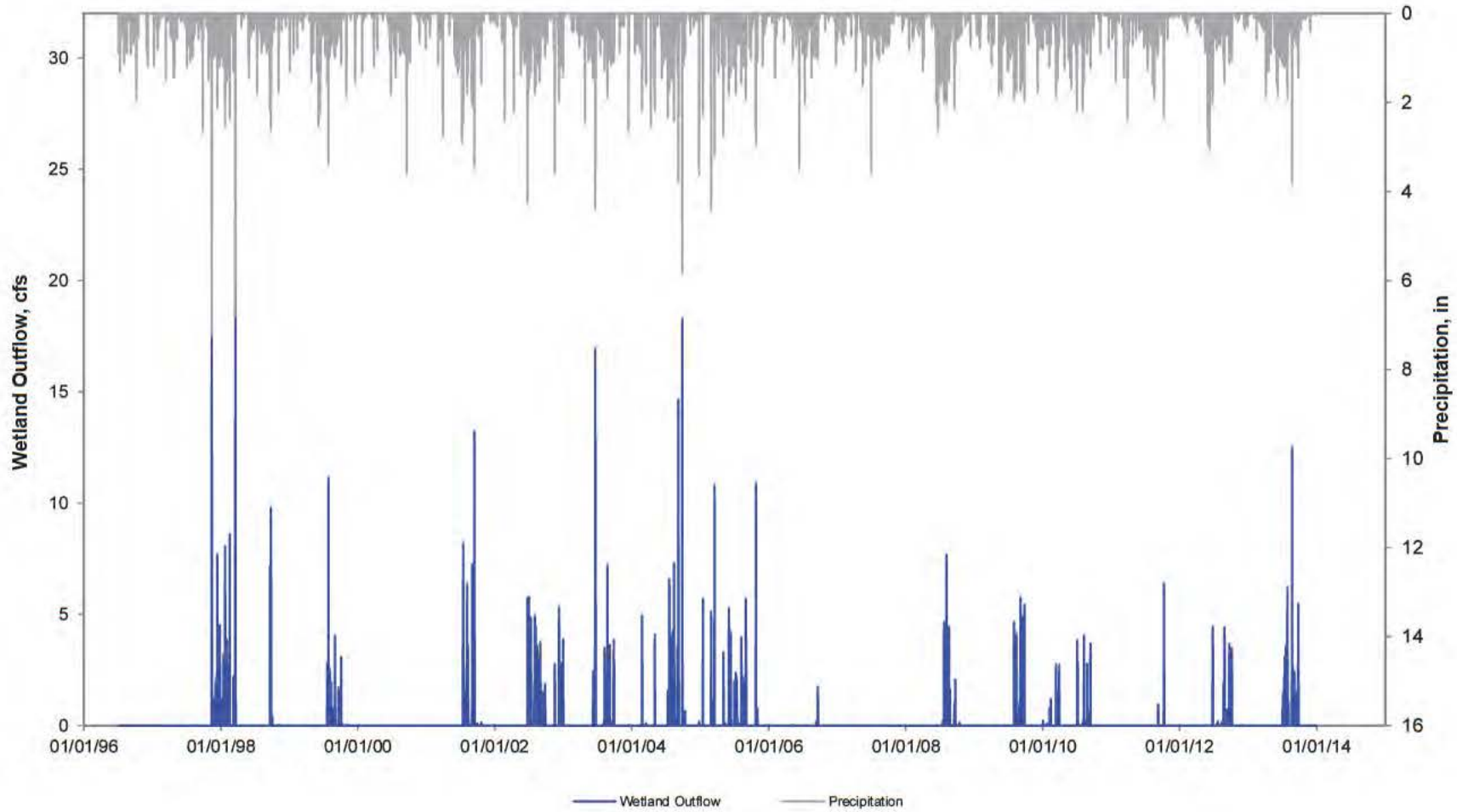


Figure A14-3
Modeled Stage-Duration Curve of Wetland 23W-15
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 11/3/2014

ECT Environmental Consulting & Technology, Inc.

Source: Mosaic, 2014; ECT, 2014.



Wetland Surface Water Outflow

Figure A14-4
Modeled Outflow of Wetland 23W-15
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

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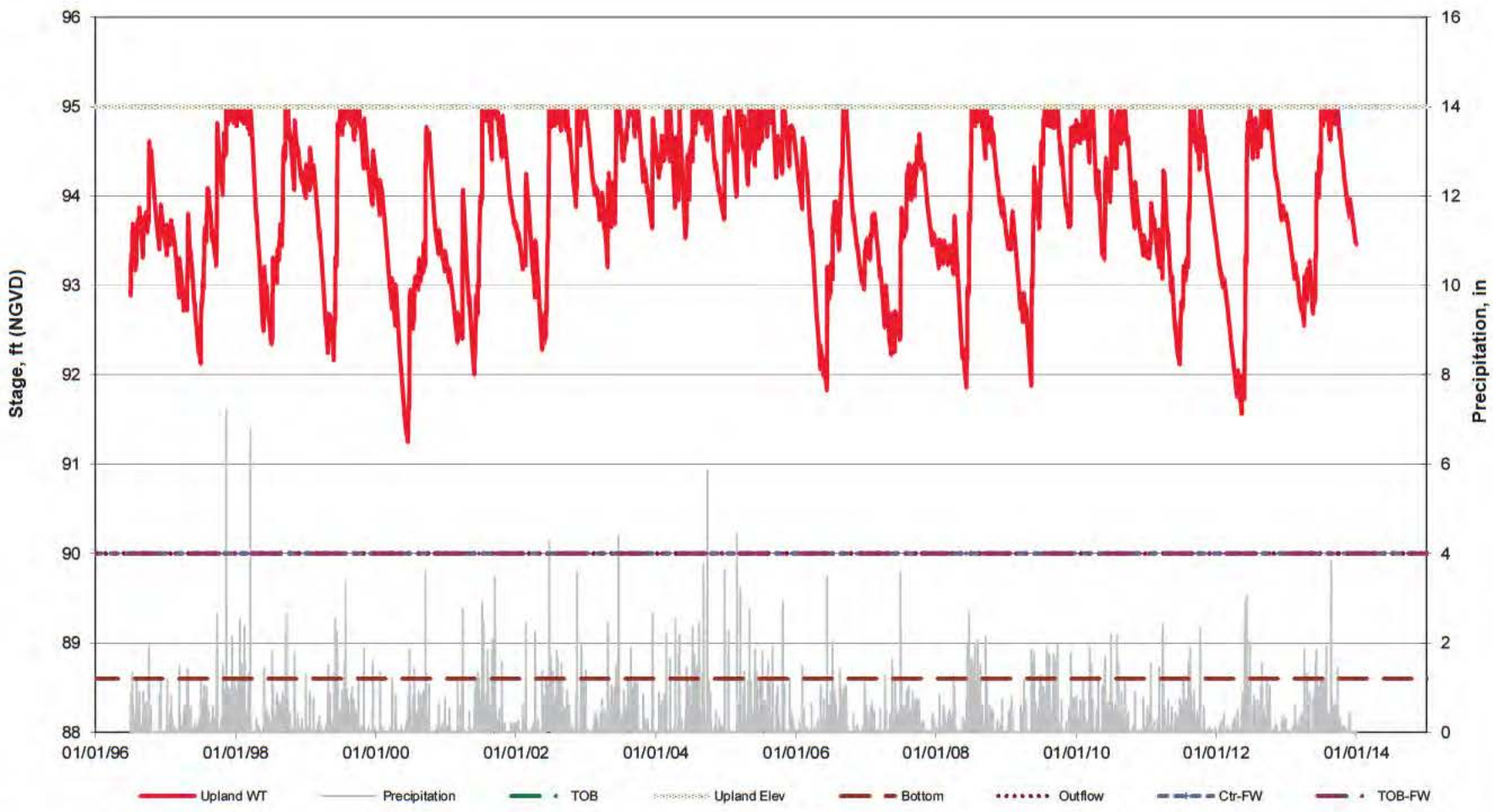

	Elev. Ft.
Wetland Bottom =	88.6
Outflow =	90

Upland Hydroperiod

Figure A14-5
Modeled Upland Hydrograph of Wetland 23W-15
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: *ECT*
Date: *11/3/2014*

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

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TABLE A15
WETLANDS 23W-16 & 24-12 WATER BALANCE CALCULATIONS
Three Cell System (Upland-UG, Wetland & DG-Cell) with Daily Time Steps

	Primary	Fringe (if present)
WETLAND NUMBER:	23W-16	24-12
WETLAND TYPE:	Freshwater Marsh	Mixed Wetland Hardwoods - Fringe/Slope
MINE NAME	Ona Mine	
Permit Name:		
COUNTY:	Hardee County, Florida	

By: ECT
Date: November 3, 2014

VERSION 2.1

CONSTANT & INITIAL/STARTING CONDITION INPUT PARAMETERS

UPLAND-UG INPUTS		Symbol
Upland-UG Acres:	**11.78**	
Upland-UG Area (ft2):	513,137	Au-UG
Highest Upland-UG Elevation (ft, NGVD):	92.5	El
Average Upland-UG Elevation (ft, NGVD):	90.0	
Initial Starting Depth to Water at Upland-UG (ft):	2.0	
Initial Starting Water Table Elevation at Upland-UG (ft, NGVD):	88.0	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu
Distance between Centers of Upland-UG and Wetland (ft):	699	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Ku
Initial Upland Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0054	Gu
Upland-UG Saturated Thickness [bu] (ft):	65	Tuug
Upland-UG Ground Width entering Wetland [Wu] (ft):	1,400	Wu

Soil Type & Moisture Condition		AMC I	AMC II	AMC III	Cap. Suct. [CS]-(in)	Sat. Hyd Cd [Ks]-(ft/day)
Upland-UG -	Sand	0.404	0.375	0.346	-1.950	9.276
Wetland -	Sand	0.404	0.375	0.346	-1.950	9.276
DG-Cell -	Sand	0.404	0.375	0.346	-1.950	9.276

	Upland-UG	Wetland	DG-Cell
Evapotranspiration Extinction Depth (ft):	5	4.5	5
Minimum ET Rate (in/day):	0	0	0

WETLAND INPUTS		Symbol
Wetland Acres:	**18.66**	
Wetland Area (ft2):	812,830	Aw
Top of Bank Elevation (ft, NGVD):	88.0	TOB
Wetland Outflow Elevation (ft, NGVD):	84.6	OUT
Wetland Bottom Elevation (ft, NGVD):	83.0	BOT
Initial Starting Depth to Water at Wetland (ft):	-1.2	Dsw
Initial Starting Water Table Elevation at Wetland (ft, NGVD):	84.2	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu
Distance between Centers of Wetland and DG-Cell (ft):	370	
Wetland Discharge Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Kw
Initial Wetland Horizontal Hydraulic Gradient [ihw] (ft/ft):	0.0003	Gw
Wetland/Downgradient Saturated Thickness [bd] (ft):	70	Tw
Wetland Ground Width exiting Wetland [Wd] (ft):	1,000	Ww
Vertical Hydraulic Conductivity Confining Unit [Kv] (ft/day):	0.0013	
Vertical Distance Separating Surficial/Int. Aquifers [dv] (ft):	70	
Wetland Outflow Channel Width (ft):	20.0	
Wetland Outflow Channel Slope (ft/ft):	0.00100	
Wetland Outflow Channel Manning Coeff (ND):	0.035	
Depth to Check for Wet Soil Conditions:	0.5	
Distance to Wetland Fringe Inner Boundary*:	300	
Distance to Wetland Fringe Center*:	440	
Distance to Wetland Fringe Outer Boundary*:	570	
Elevation of Wetland Fringe Inner Boundary:	84.6	
Elevation of Wetland Fringe Center:	86	
Elevation of Wetland Fringe Outer Boundary:	87	

* distance from wetland centroid

DG-CELL INPUTS		Symbol
DG-Cell Acres:	**2.87**	
DG-Cell Area (ft2):	125,017	
Highest DG-Cell Elevation (ft, NGVD):	84.5	
Average DG-Cell Elevation (ft, NGVD):	84.2	
Initial Starting Depth to Water at DG-Cell (ft):	0.1	
Initial Starting Water Table Elevation at DG-Cell (ft, NGVD):	84.1	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	
Distance between DG-Cell and DG Boundary (ft):	231	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Ku
Water Table Elevation at DG Boundary Control Point (ft):	-9999.0	
Initial DG-Cell Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0005	Gu
DG-Cell Saturated Thickness [bu] (ft):	75	Tuug
DG-Cell Ground Width exiting system [Wu] (ft):	1,100	Wu

Input Variables - site specific conditions
Input Variables - represent more regional/seasonal conditions
Input Variables - site specific conditions, but limited range of variation

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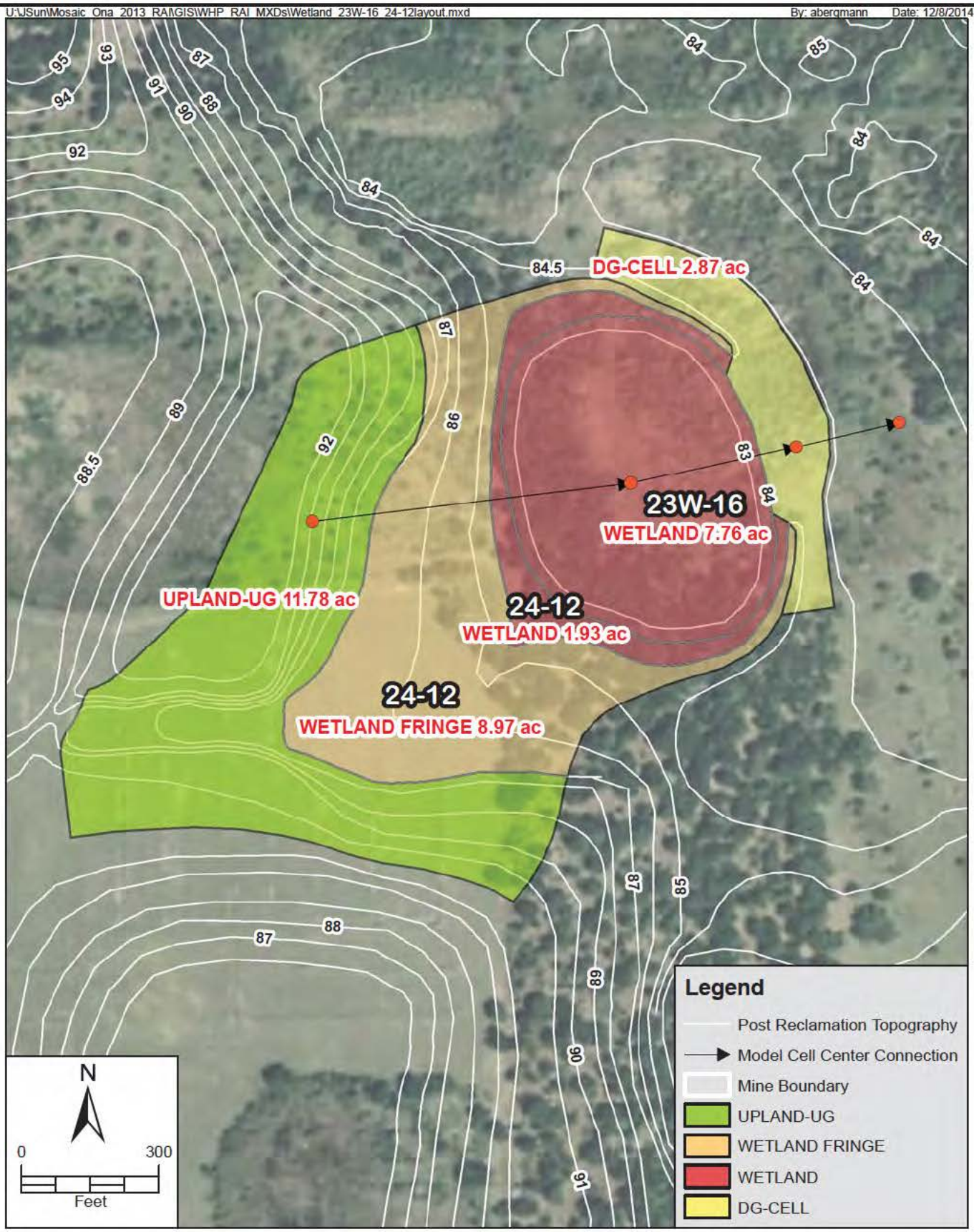
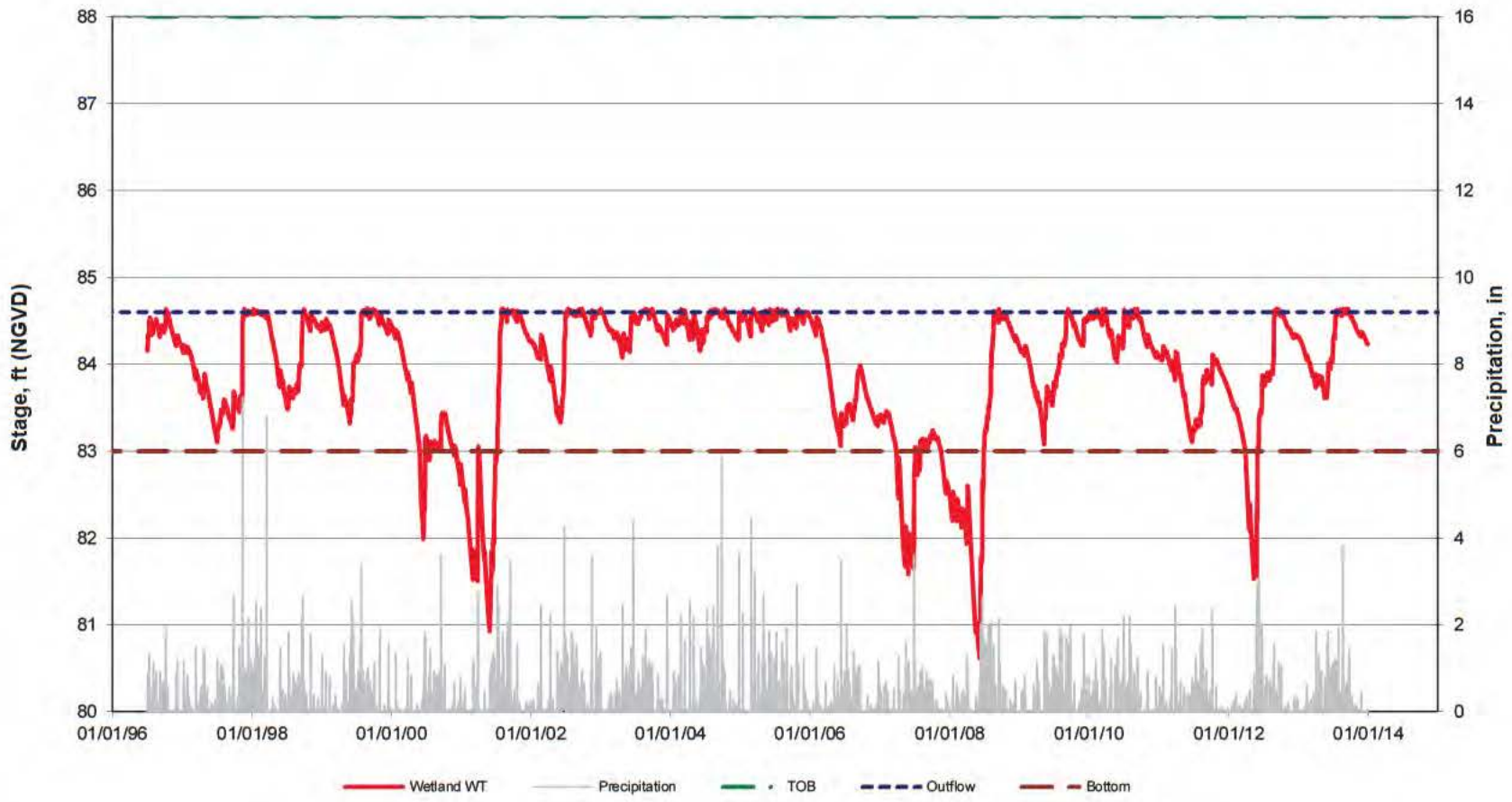


FIGURE A15-1
WETLANDS 23W-16 & 24-12 - HYDROPERIOD MODEL DIAGRAM
ONA MINE
HARDEE COUNTY, FLORIDA

Sources: ESRI 2014; Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc



	Elev. Ft.
Wetland Bottom =	83
Outflow =	84.6

Wetland Hydroperiod

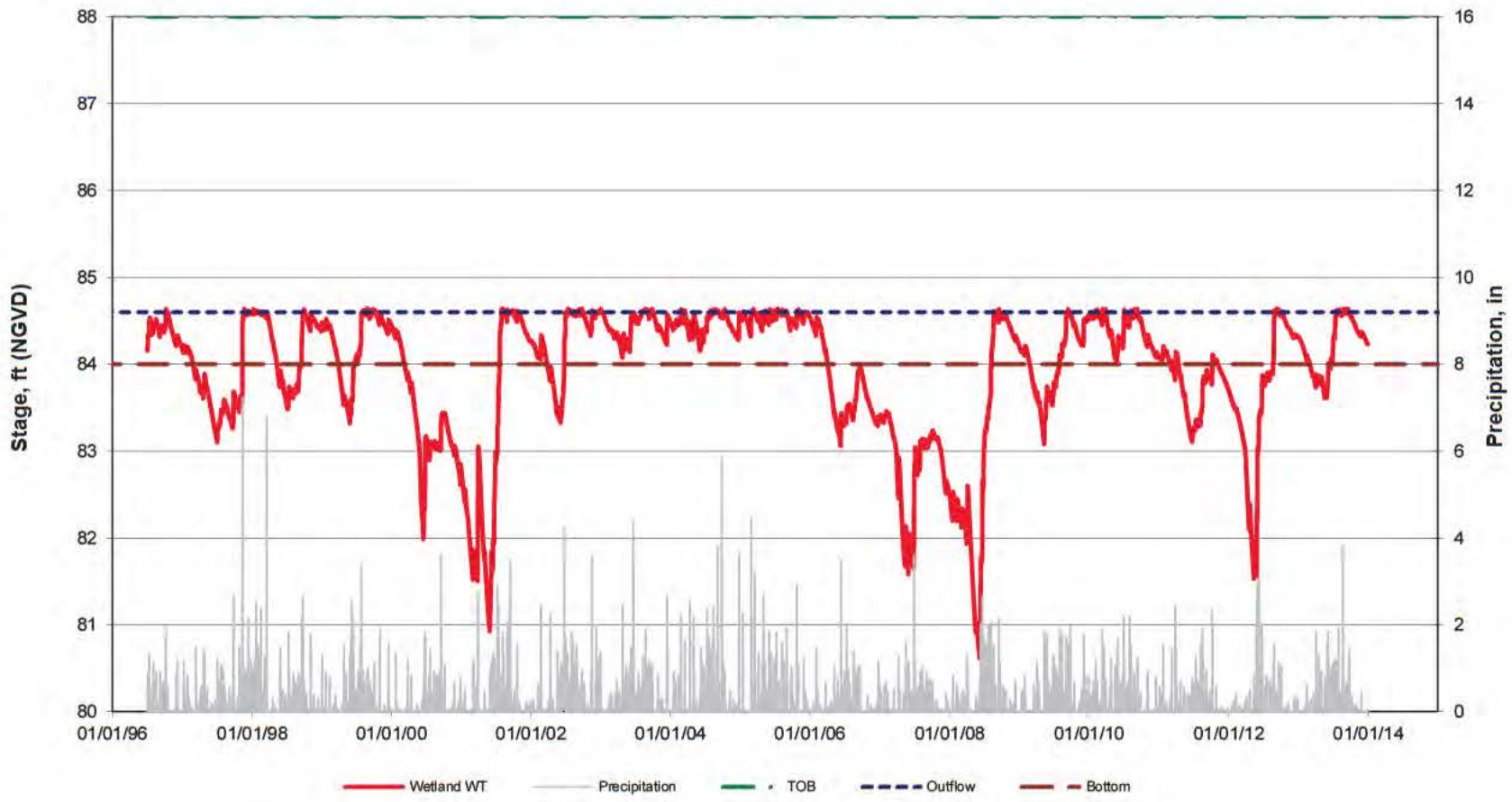
Starting WLE = 84.2

Figure A15-2
Modeled Hydrograph of Wetland 23W-16
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



	Elev. Ft.
Wetland Bottom =	84
Outflow =	84.6

Wetland Hydroperiod

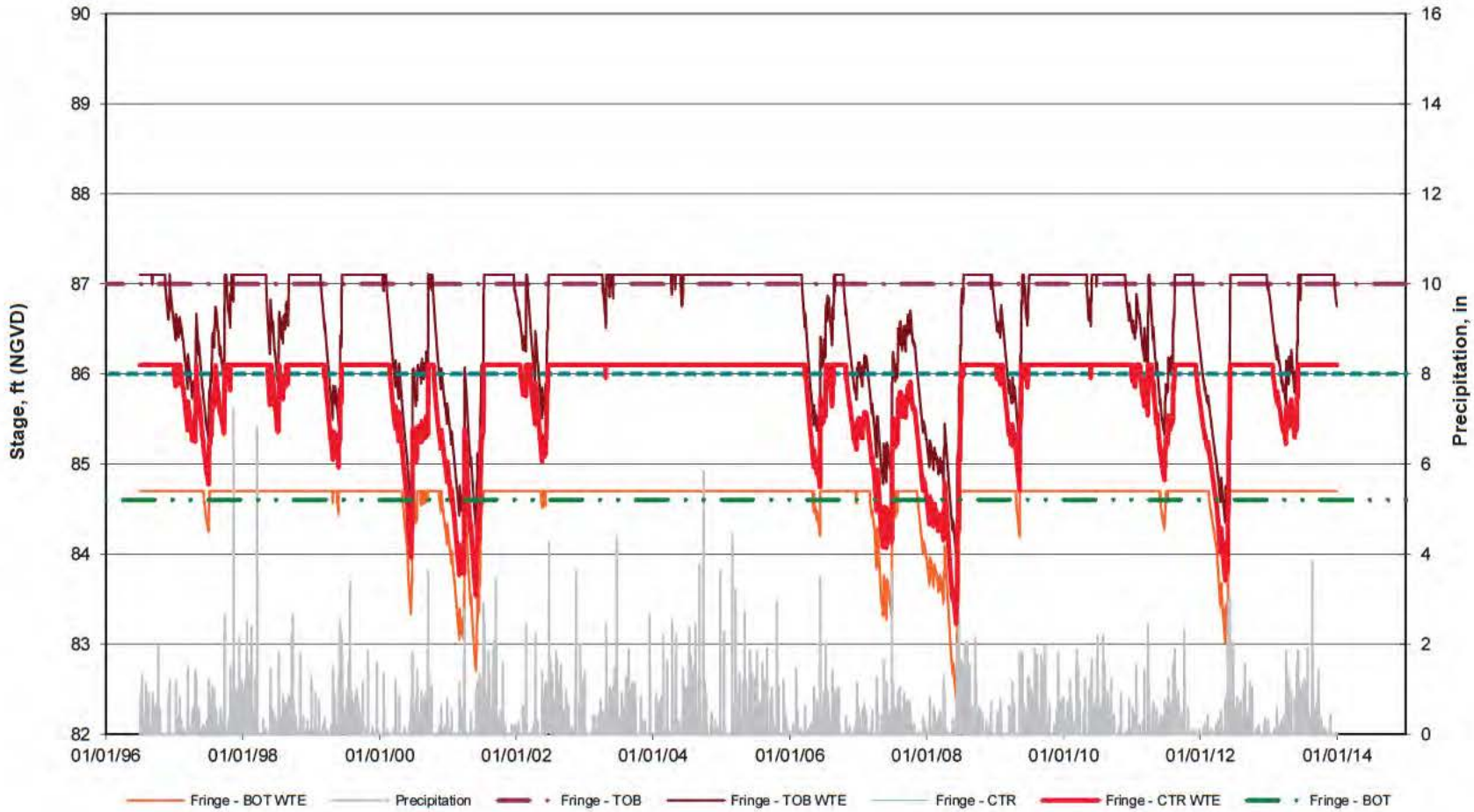
Starting WLE = 84.2

Figure A15-3
Modeled Hydrograph of Wetland 24-12
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



	Elev. Ft.
Top of Bank - Fringe Wetland =	87
Center - Fringe Wetland =	86
Bottom - Fringe Wetland =	84.6

Fringe Wetland Hydroperiod

Starting WLE = 84.2

Figure A15-4
Modeled Hydrograph of Fringe/Slope Wetland 24-12
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods - Fringe/Slope
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

WETLAND DESCRIPTION:	23W-16	Freshwater Marsh
PROJECT& LOCATION:	Ona Mine	Hardee County, Florida

Top of Bank Elevation (ft, NGVD):	88.0
Wetland Outflow Elevation (ft, NGVD):	84.6
Wetland Bottom Elevation (ft, NGVD):	83.0

Average	83.9 ft, NGVD	Range	4.0 ft
Maximum	84.6 ft, NGVD	Step Size	0.3 ft
Minimum	80.6 ft, NGVD	No. of Steps	13
Median	84.2 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
84.94			84.94	
84.64	0	0	84.64	0.00%
84.34	2592	2592	84.34	40.54%
84.04	1059	3651	84.04	57.11%
83.74	670	4321	83.74	67.59%
83.44	625	4946	83.44	77.37%
83.14	553	5499	83.14	86.02%
82.84	313	5812	82.84	90.91%
82.54	111	5923	82.54	92.65%
82.24	143	6066	82.24	94.89%
81.94	102	6168	81.94	96.48%
81.64	121	6289	81.64	98.37%
81.34	48	6337	81.34	99.12%
81.04	22	6359	81.04	99.47%
80.74	28	6387	80.74	99.91%
80.44	6	6393	80.44	100.00%
80.14	0	6393	80.14	100.00%
79.84	0	6393	79.84	100.00%

6393 Days
17.5 Years

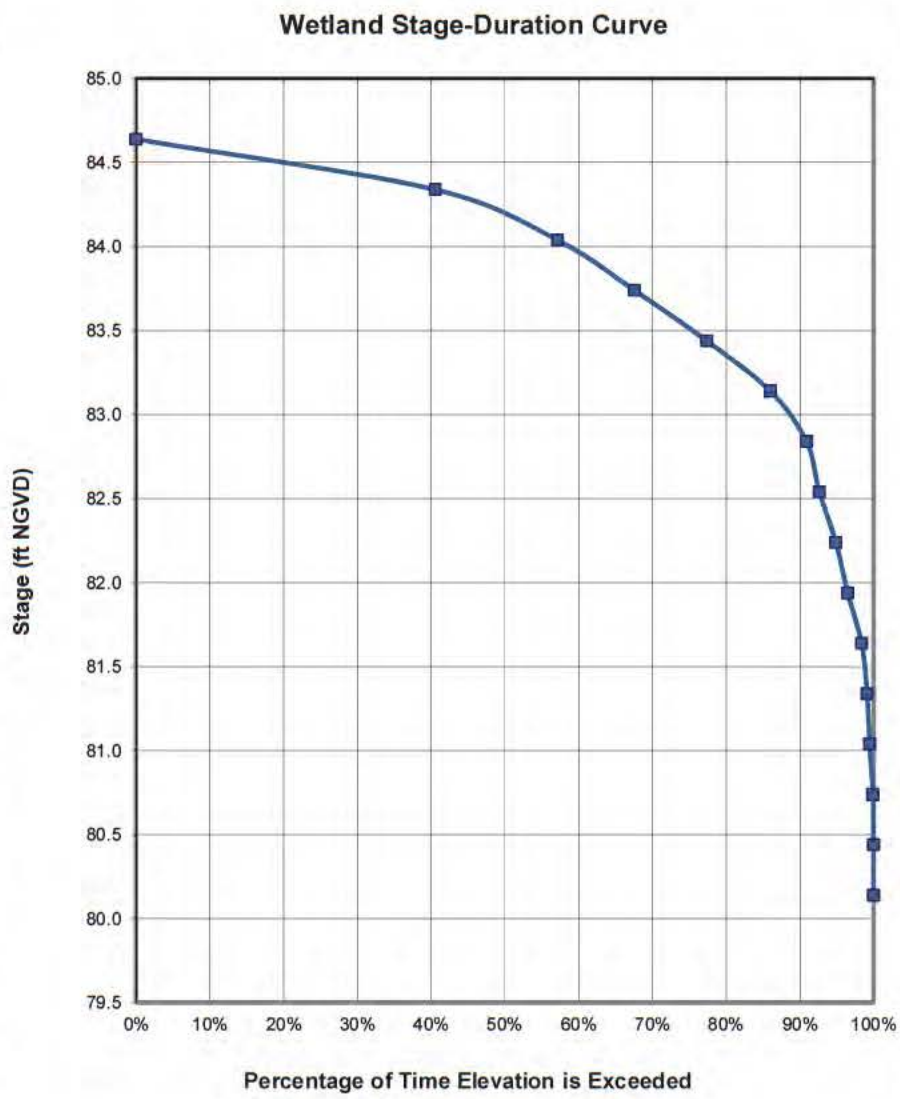


Figure A15-5
Modeled Stage-Duration Curve of Wetland 23W-16
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 11/3/2014

ECT Environmental Consulting & Technology, Inc.

Source: Mosaic, 2014; ECT, 2014.

WETLAND DESCRIPTION: 24-12 Mixed Wetland Hardwoods
PROJECT& LOCATION: Ona Mine Hardee County, Florida

Top of Bank Elevation (ft, NGVD):	88.0
Wetland Outflow Elevation (ft, NGVD):	84.6
Wetland Bottom Elevation (ft, NGVD):	84.0

Average	83.9 ft, NGVD	Range	4.0 ft
Maximum	84.6 ft, NGVD	Step Size	0.3 ft
Minimum	80.6 ft, NGVD	No. of Steps	13
Median	84.2 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
84.94			84.94	
84.64	0	0	84.64	0.00%
84.34	2592	2592	84.34	40.54%
84.04	1059	3651	84.04	57.11%
83.74	670	4321	83.74	67.59%
83.44	625	4946	83.44	77.37%
83.14	553	5499	83.14	86.02%
82.84	313	5812	82.84	90.91%
82.54	111	5923	82.54	92.65%
82.24	143	6066	82.24	94.89%
81.94	102	6168	81.94	96.48%
81.64	121	6289	81.64	98.37%
81.34	48	6337	81.34	99.12%
81.04	22	6359	81.04	99.47%
80.74	28	6387	80.74	99.91%
80.44	6	6393	80.44	100.00%
80.14	0	6393	80.14	100.00%
79.84	0	6393	79.84	100.00%

6393 Days
17.5 Years

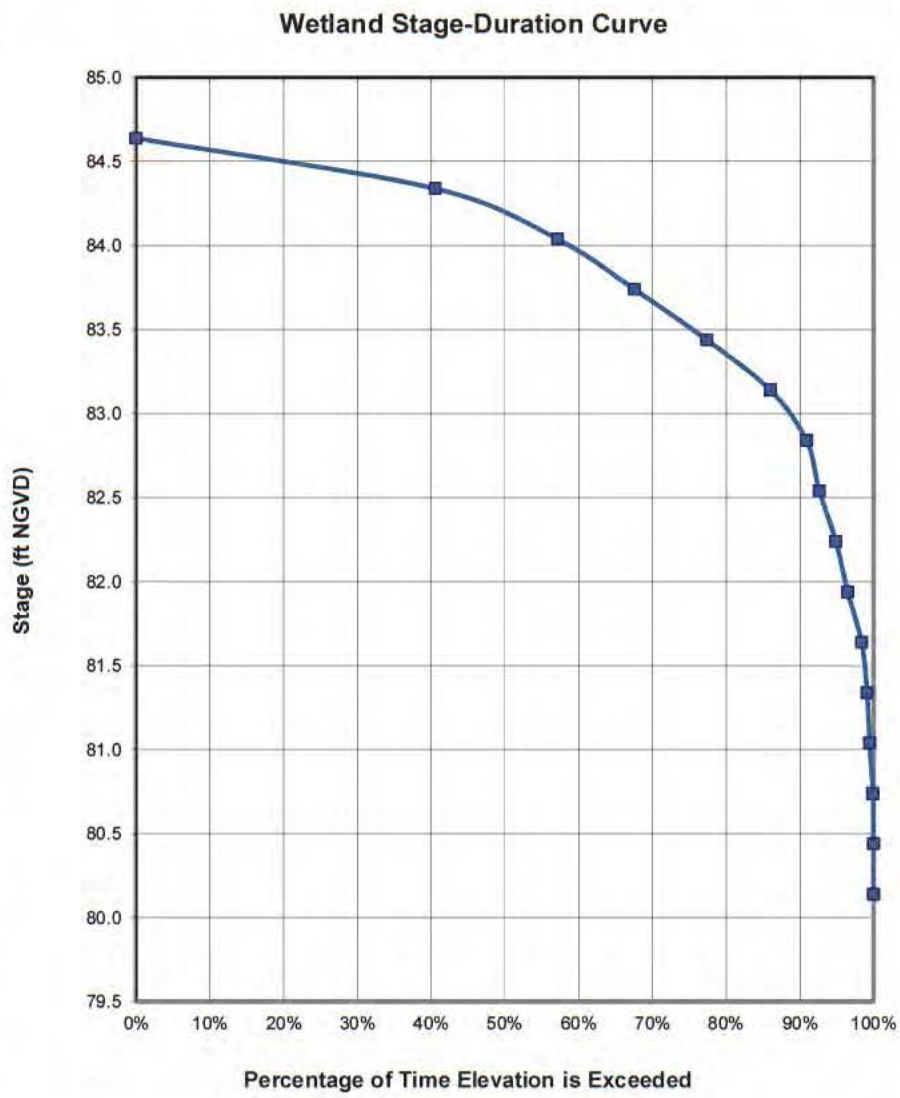


Figure A15-6
Modeled Stage-Duration Curve of Wetland 24-12
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

WETLAND DESCRIPTION: 24-12 Mixed Wetland Hardwoods - Fringe/Slope
PROJECT& LOCATION: Ona Mine Hardee County, Florida

Fringe Wetland Top of Bank Elevation (ft, NGVD): 87.0
Fringe Wetland Center Elevation (ft, NGVD): 86.0
Fringe Wetland Bottom Elevation (ft, NGVD): 84.6

Data From Center of Fringe Wetland

Average	85.8 ft, NGVD	Range	2.9 ft
Maximum	86.1 ft, NGVD	Step Size	0.2 ft
Minimum	83.2 ft, NGVD	No. of Steps	14
Median	86.1 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
86.30			86.30	
86.10	0	0	86.10	0.00%
85.90	4171	4171	85.90	65.24%
85.70	337	4508	85.70	70.51%
85.50	368	4876	85.50	76.27%
85.30	436	5312	85.30	83.09%
85.10	291	5603	85.10	87.64%
84.90	167	5770	84.90	90.25%
84.70	126	5896	84.70	92.23%
84.50	93	5989	84.50	93.68%
84.30	141	6130	84.30	95.89%
84.10	104	6234	84.10	97.51%
83.90	70	6304	83.90	98.61%
83.70	50	6354	83.70	99.39%
83.50	24	6378	83.50	99.77%
83.30	12	6390	83.30	99.95%
83.10	3	6393	83.10	100.00%
82.90	0	6393	82.90	100.00%

6393 Days
17.5 Years

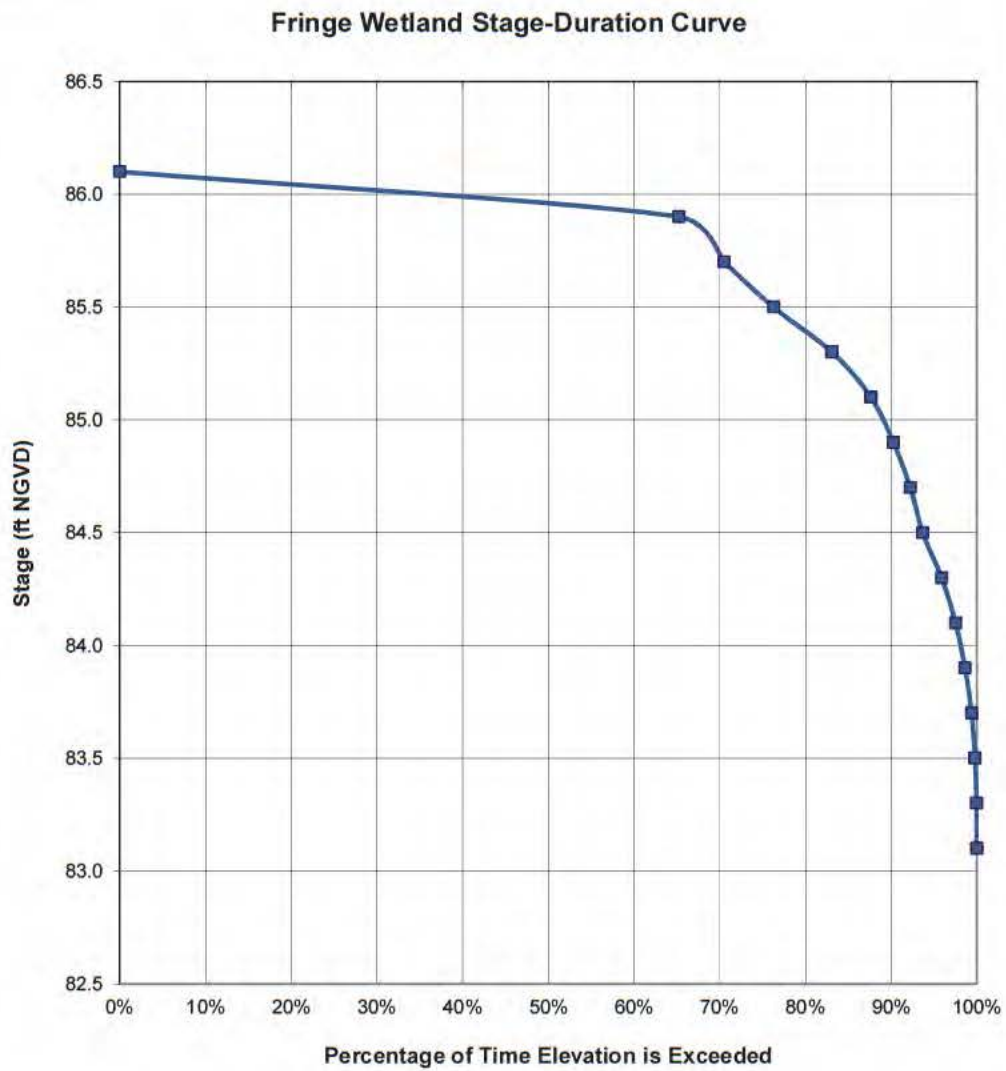
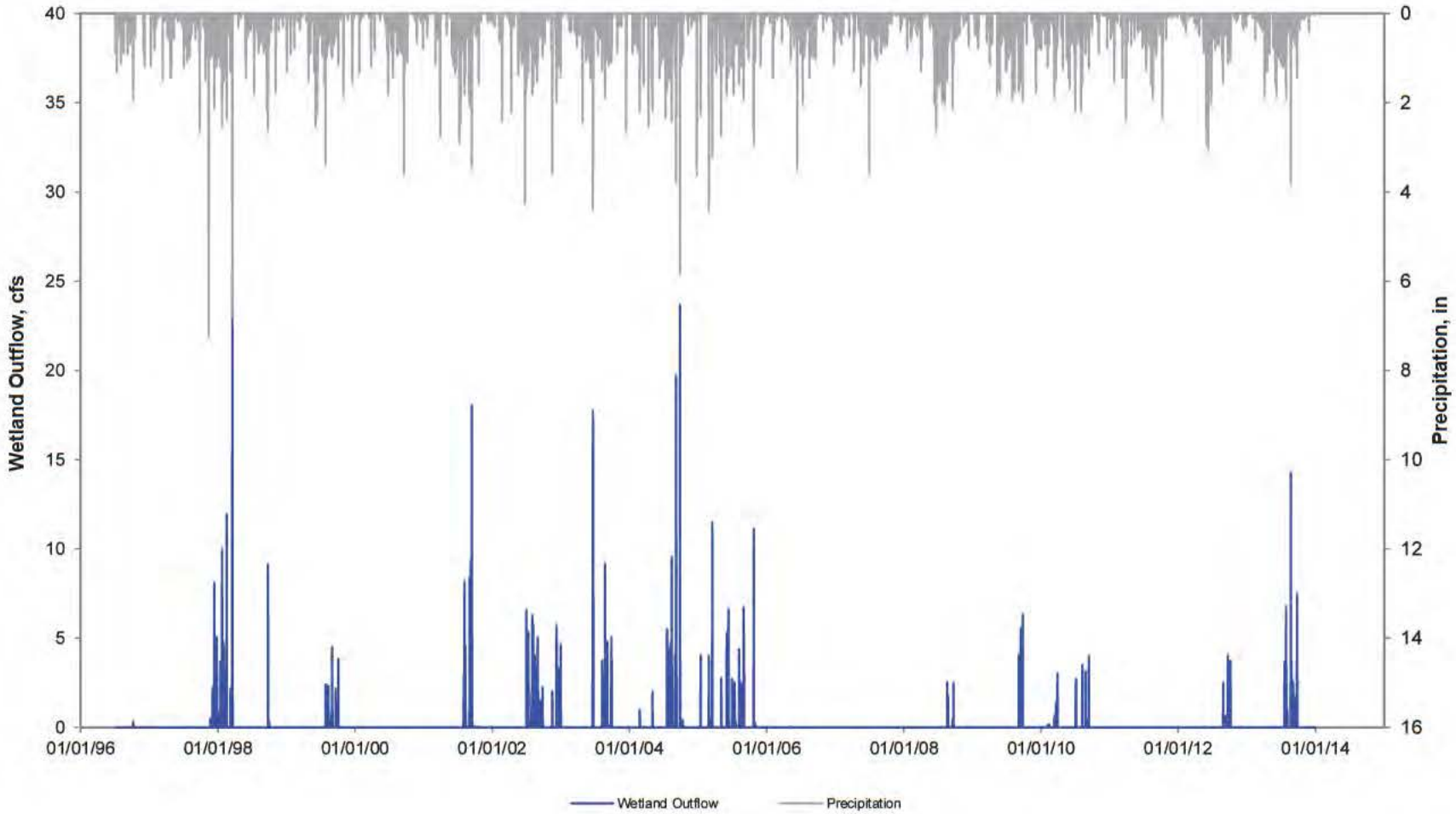


Figure A15-7
Modeled Stage-Duration Curve of Fringe/Slope Wetland 24-12
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods - Fringe/Slope
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



Wetland Surface Water Outflow

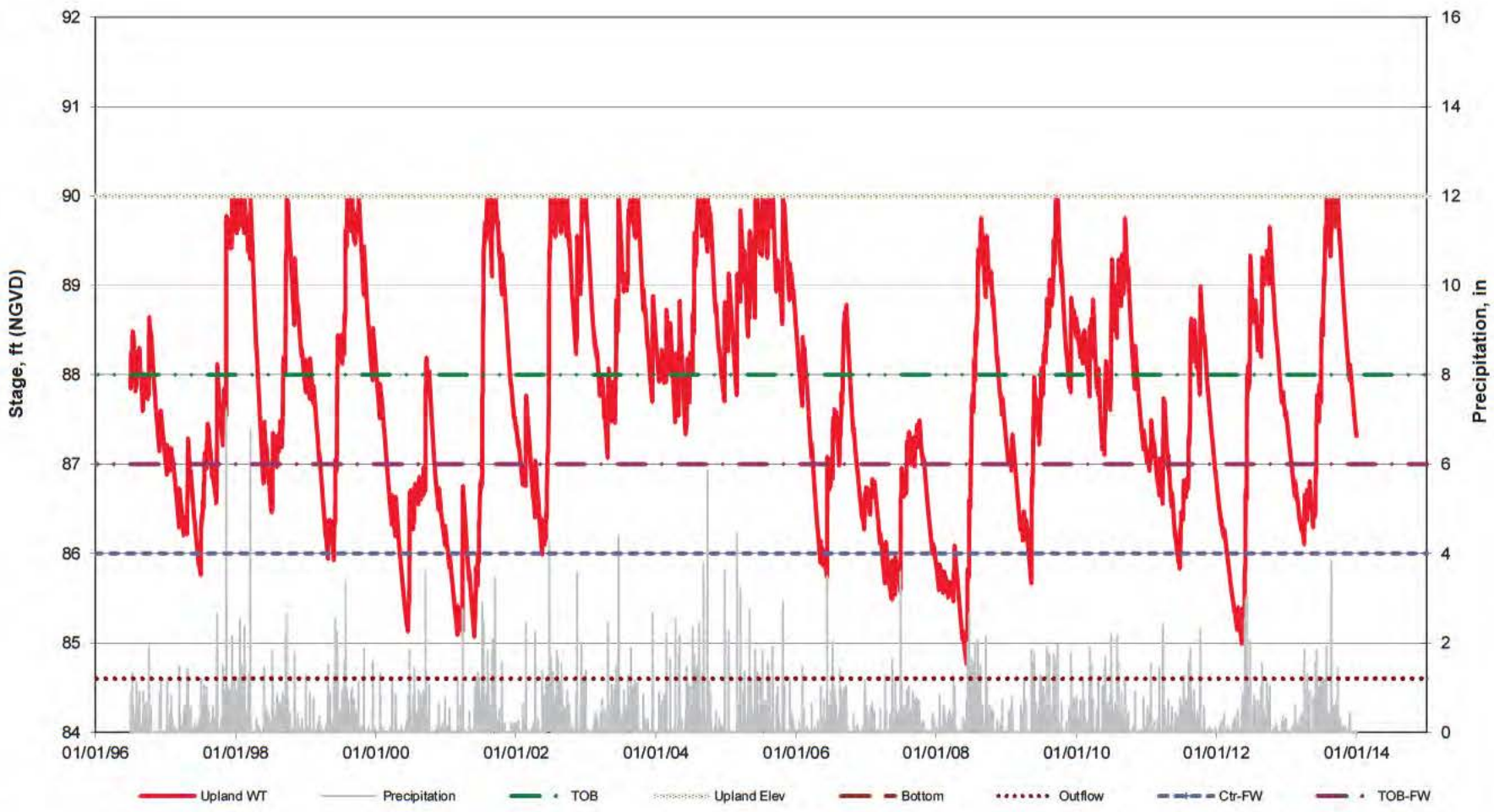
Figure A15-8
Modeled Outflow of Wetlands 23W-16 & 24-12
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

Printed on: 12/8/2014C:\Working\2-ECT\Projects\WHP_Model\ONA\Ona Dec 2013\Model\WHP_RAI\POST\Others\23W-16\Hydroperiod-Model-ONA-RAI_Post_Wetlands#23W-16_JS_20141103.xlsx



	Elev. Ft.
Wetland Bottom =	83
Outflow =	84.6

Upland Hydroperiod

Figure A15-9
Modeled Upland Hydrograph of Wetlands 23W-16 & 24-12
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

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TABLE A16
WETLAND 23W-17 WATER BALANCE CALCULATIONS
Three Cell System (Upland-UG, Wetland & DG-Cell) with Daily Time Steps

	Primary	Fringe (if present)
WETLAND NUMBER:	23W-17	
WETLAND TYPE:	Freshwater Marsh	
MINE NAME	Ona Mine	
Permit Name:		
COUNTY:	Hardee County, Florida	

By: ECT
Date: November 3, 2014

VERSION 2.1

CONSTANT & INITIAL/STARTING CONDITION INPUT PARAMETERS

UPLAND-UG INPUTS		Symbol
Upland-UG Acres:	**40.94**	
Upland-UG Area (ft2):	1,783,346	Au-UG
Highest Upland-UG Elevation (ft, NGVD):	138	El
Average Upland-UG Elevation (ft, NGVD):	95.0	
Initial Starting Depth to Water at Upland-UG (ft):	3.0	
Initial Starting Water Table Elevation at Upland-UG (ft, NGVD):	92.0	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu
Distance between Centers of Upland-UG and Wetland (ft):	737	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	2	Ku
Initial Upland Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0027	Gu
Upland-UG Saturated Thickness [bu] (ft):	70	Tuug
Upland-UG Ground Width entering Wetland [Wu] (ft):	1,600	Wu

Soil Type & Moisture Condition		AMC I	AMC II	AMC III	Cap. Suct. [CS]-(in)	Sat. Hyd Cd [Ks]-(ft/day)
Upland-UG -	Sand	0.404	0.375	0.346	-1.950	9.276
Wetland -	Sand	0.404	0.375	0.346	-1.950	9.276
DG-Cell -	Sand	0.404	0.375	0.346	-1.950	9.276

	Upland-UG	Wetland	DG-Cell
Evapotranspiration Extinction Depth (ft):	5	4	5
Minimum ET Rate (in/day):	0	0	0

WETLAND INPUTS		Symbol
Wetland Acres:	**24.4**	
Wetland Area (ft2):	1,062,864	Aw
Top of Bank Elevation (ft, NGVD):	91.5	TOB
Wetland Outflow Elevation (ft, NGVD):	90.0	OUT
Wetland Bottom Elevation (ft, NGVD):	88.5	BOT
Initial Starting Depth to Water at Wetland (ft):	-1.5	Dsw
Initial Starting Water Table Elevation at Wetland (ft, NGVD):	90.0	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu
Distance between Centers of Wetland and DG-Cell (ft):	703	
Wetland Discharge Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Kw
Initial Wetland Horizontal Hydraulic Gradient [ihw] (ft/ft):	0.0043	Gw
Wetland/Downgradient Saturated Thickness [bd] (ft):	65	Tw
Wetland Ground Width exiting Wetland [Wd] (ft):	150	Ww
Vertical Hydraulic Conductivity Confining Unit [Kv] (ft/day):	0.0013	
Vertical Distance Separating Surficial/Int. Aquifers [dv] (ft):	70	
Wetland Outflow Channel Width (ft):	20.0	
Wetland Outflow Channel Slope (ft/ft):	0.00400	
Wetland Outflow Channel Manning Coeff (ND):	0.035	
Depth to Check for Wet Soil Conditions:	0.5	
Distance to Wetland Fringe Inner Boundary*:	425	
Distance to Wetland Fringe Center*:	425	
Distance to Wetland Fringe Outer Boundary*:	425	
Elevation of Wetland Fringe Inner Boundary:	90	
Elevation of Wetland Fringe Center:	90	
Elevation of Wetland Fringe Outer Boundary:	90	

* distance from wetland centroid

DG-CELL INPUTS		Symbol
DG-Cell Acres:	**0.97**	
DG-Cell Area (ft2):	42,253	
Highest DG-Cell Elevation (ft, NGVD):	89	
Average DG-Cell Elevation (ft, NGVD):	88.0	
Initial Starting Depth to Water at DG-Cell (ft):	1.0	
Initial Starting Water Table Elevation at DG-Cell (ft, NGVD):	87.0	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	
Distance between DG-Cell and DG Boundary (ft):	1,125	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Ku
Water Table Elevation at DG Boundary Control Point (ft):	-9999.0	
Initial DG-Cell Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0025	Gu
DG-Cell Saturated Thickness [bu] (ft):	50	Tuug
DG-Cell Ground Width exiting system [Wu] (ft):	130	Wu

- Input Variables - site specific conditions
- Input Variables - represent more regional/seasonal conditions
- Input Variables - site specific conditions, but limited range of variation

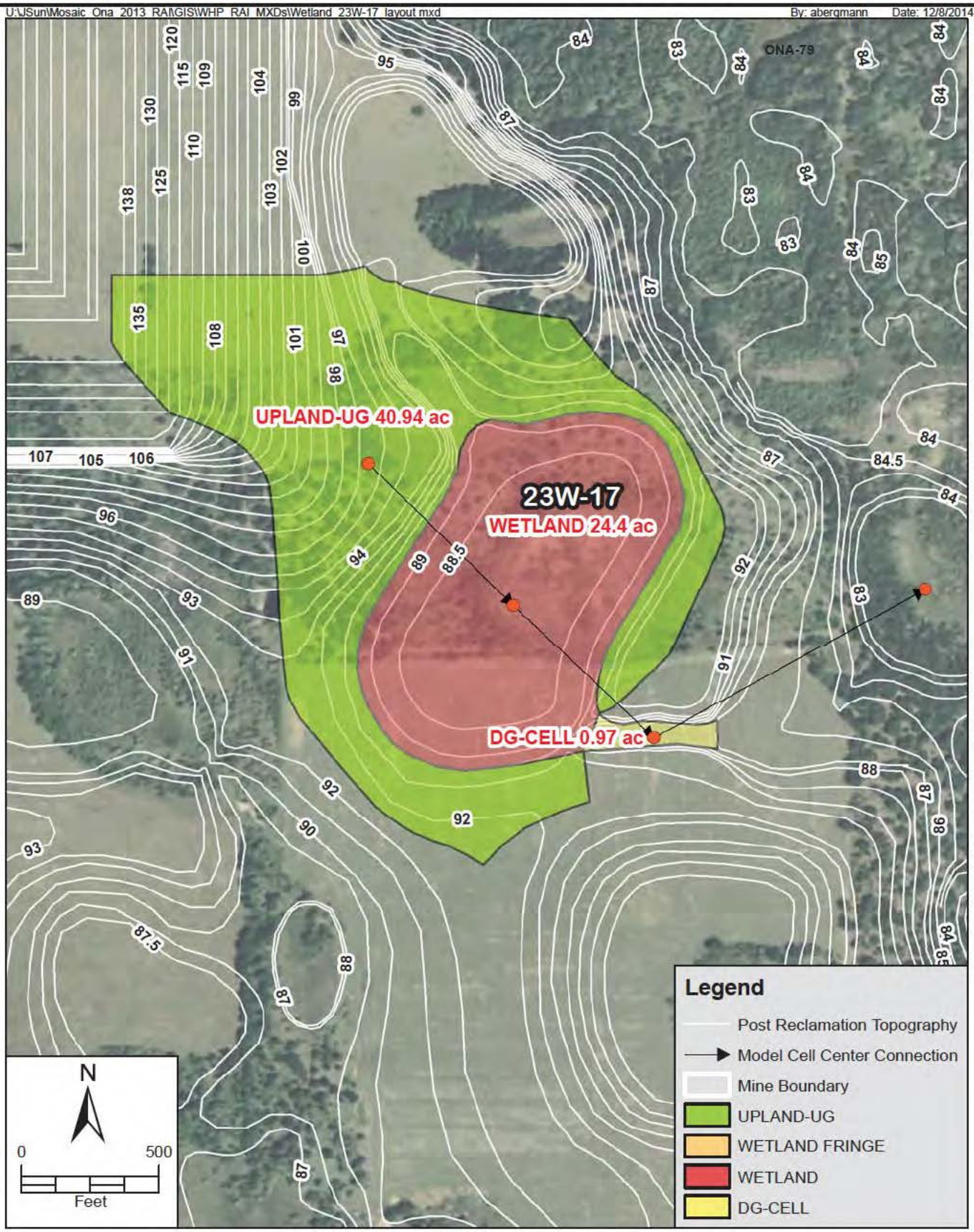
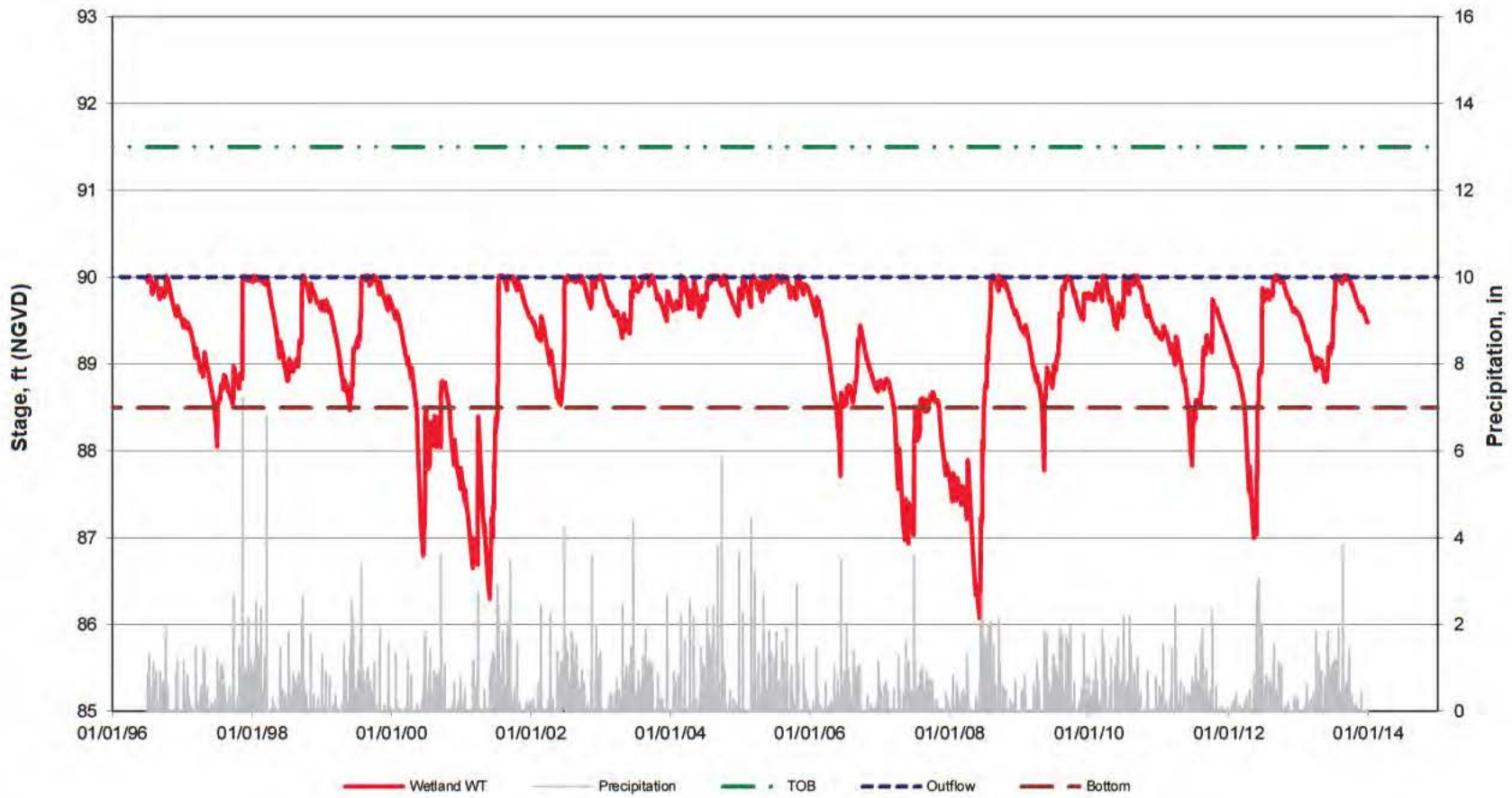


FIGURE A16-1
WETLANDS 23W-17 - HYDROPERIOD MODEL DIAGRAM
ONA MINE
HARDEE COUNTY, FLORIDA

Sources: ESRI 2014; Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc



	Elev. Ft.
Wetland Bottom =	88.5
Outflow =	90

Wetland Hydroperiod

Starting WLE = 90

Figure A16-2
Modeled Hydrograph of Wetland 23W-17
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

WETLAND DESCRIPTION:	23W-17	Freshwater Marsh
PROJECT& LOCATION:	Ona Mine	Hardee County, Florida

Top of Bank Elevation (ft, NGVD):	91.5
Wetland Outflow Elevation (ft, NGVD):	90.0
Wetland Bottom Elevation (ft, NGVD):	88.5

Average	89.2 ft, NGVD	Range	3.9 ft
Maximum	90.0 ft, NGVD	Step Size	0.25 ft
Minimum	86.1 ft, NGVD	No. of Steps	16
Median	89.5 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
90.27			90.27	
90.02	0	0	90.02	0.00%
89.77	2092	2092	89.77	32.72%
89.52	1096	3188	89.52	49.87%
89.27	600	3788	89.27	59.25%
89.02	508	4296	89.02	67.20%
88.77	580	4876	88.77	76.27%
88.52	576	5452	88.52	85.28%
88.27	160	5612	88.27	87.78%
88.02	152	5764	88.02	90.16%
87.77	114	5878	87.77	91.94%
87.52	151	6029	87.52	94.31%
87.27	113	6142	87.27	96.07%
87.02	114	6256	87.02	97.86%
86.77	61	6317	86.77	98.81%
86.52	34	6351	86.52	99.34%
86.27	31	6382	86.27	99.83%
86.02	11	6393	86.02	100.00%

6393 Days
17.5 Years

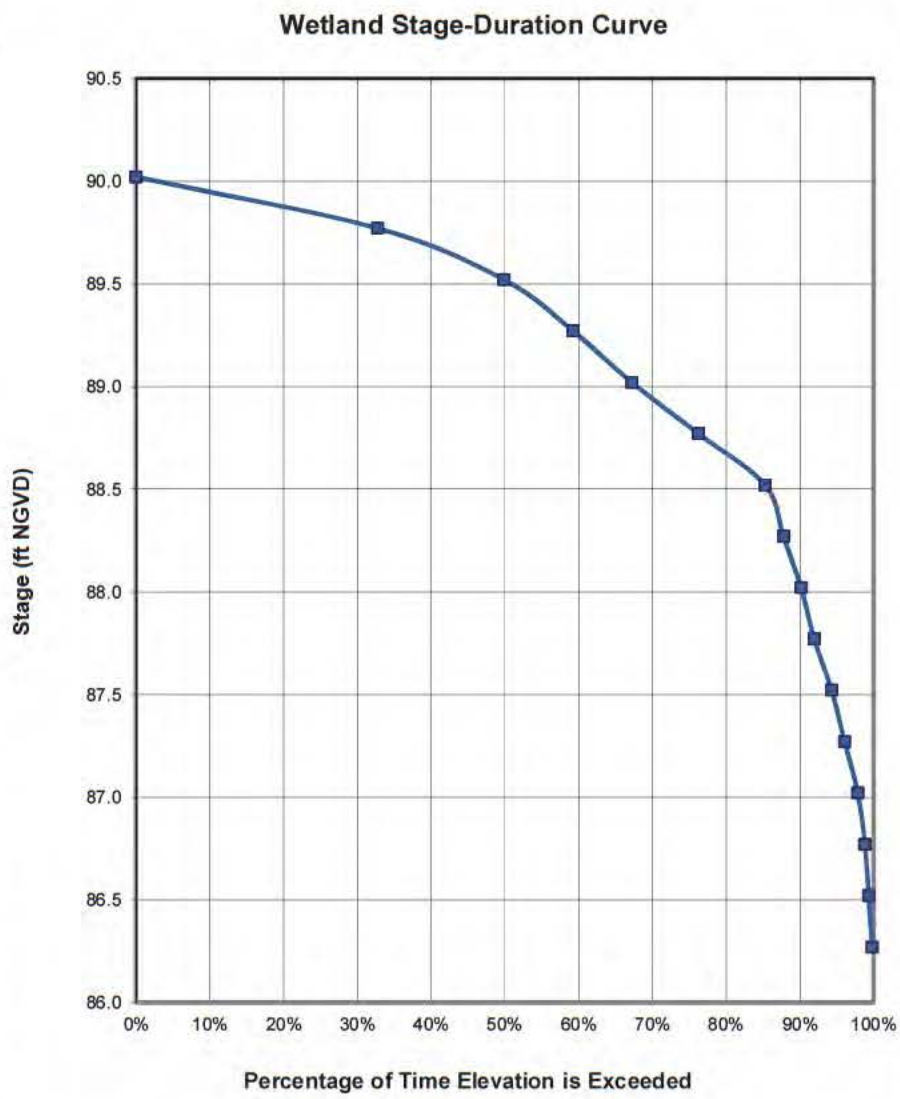
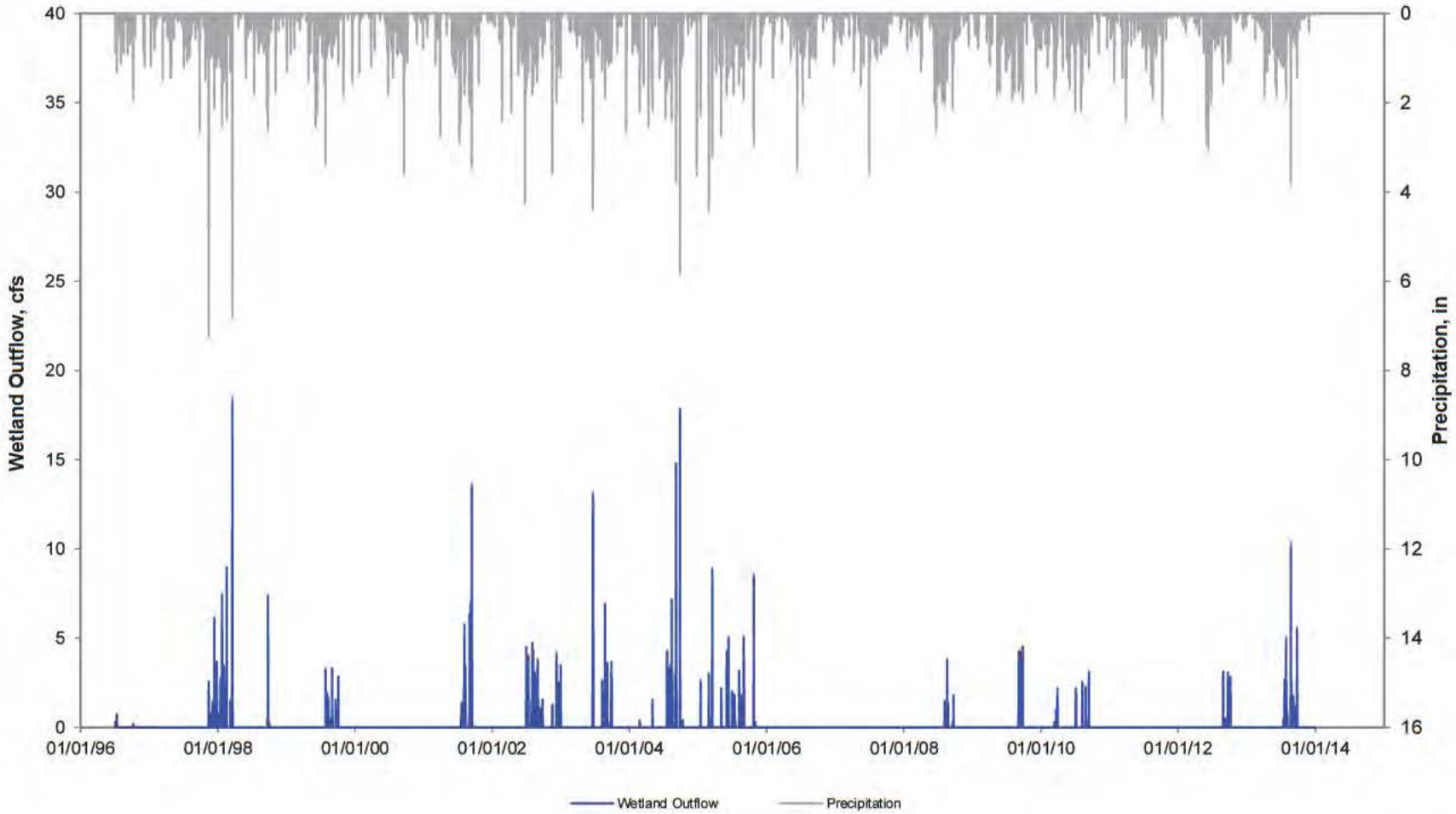


Figure A16-3
Modeled Stage-Duration Curve of Wetland 23W-17
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



Wetland Surface Water Outflow

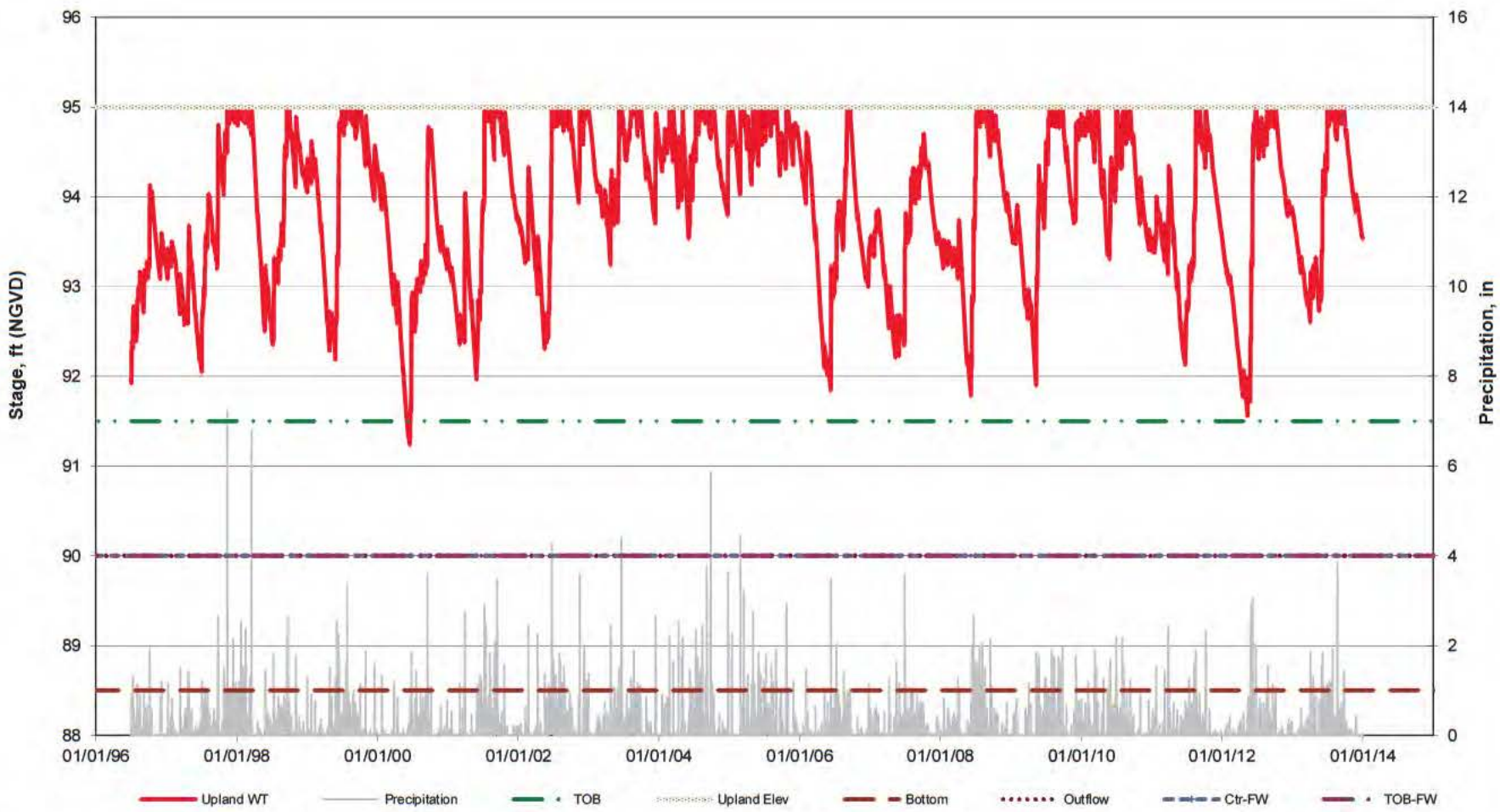
Figure A16-4
Modeled Outflow of Wetland 23W-17
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

Printed on: 12/8/2014C:\Working\2-ECT\Projects\WHP_Model\ONA\Ona Dec 2013\Model\WHP_RAI\POST\Others\23W-17\Hydroperiod-Model-ONA-RAI_Post_Wetlands#23W-17_JS_20141103.xlsx



	Elev. Ft.
Wetland Bottom =	88.5
Outflow =	90

Upland Hydroperiod

Figure A16-5
Modeled Upland Hydrograph of Wetland 23W-17
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: *ECT*
Date: *11/3/2014*

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

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TABLE A17
WETLANDS 23W-19 & OTHERS WATER BALANCE CALCULATIONS
Three Cell System (Upland-UG, Wetland & DG-Cell) with Daily Time Steps

	Primary	Fringe (if present)
WETLAND NUMBER:	23W-19	
WETLAND TYPE:	Mixed Wetland Hardwoods	
MINE NAME	Ona Mine	
Permit Name:		
COUNTY:	Hardee County, Florida	

By: ECT
Date: November 3, 2014

VERSION 2.1

CONSTANT & INITIAL/STARTING CONDITION INPUT PARAMETERS

UPLAND-UG INPUTS		Symbol
Upland-UG Acres:	**18.62**	
Upland-UG Area (ft2):	811,087	Au-UG
Highest Upland-UG Elevation (ft, NGVD):	89.5	El
Average Upland-UG Elevation (ft, NGVD):	88.7	
Initial Starting Depth to Water at Upland-UG (ft):	1.0	
Initial Starting Water Table Elevation at Upland-UG (ft, NGVD):	87.7	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu
Distance between Centers of Upland-UG and Wetland (ft):	447	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Ku
Initial Upland Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0007	Gu
Upland-UG Saturated Thickness [bu] (ft):	70	Tuug
Upland-UG Ground Width entering Wetland [Wu] (ft):	6,500	Wu

Soil Type & Moisture Condition		AMC I	AMC II	AMC III	Cap. Suct. [CS]-(in)	Sat. Hyd Cd [Ks]-(ft/day)
Upland-UG -	Sand	0.404	0.375	0.346	-1.950	9.276
Wetland -	Sand	0.404	0.375	0.346	-1.950	9.276
DG-Cell -	Sand	0.404	0.375	0.346	-1.950	9.276

	Upland-UG	Wetland	DG-Cell
Evapotranspiration Extinction Depth (ft):	4	5	5
Minimum ET Rate (in/day):	0	0	0

WETLAND INPUTS		Symbol
Wetland Acres:	**52.45**	
Wetland Area (ft2):	2,284,722	Aw
Top of Bank Elevation (ft, NGVD):	89.5	TOB
Wetland Outflow Elevation (ft, NGVD):	88.0	OUT
Wetland Bottom Elevation (ft, NGVD):	87.2	BOT
Initial Starting Depth to Water at Wetland (ft):	-0.2	Dsw
Initial Starting Water Table Elevation at Wetland (ft, NGVD):	87.4	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu
Distance between Centers of Wetland and DG-Cell (ft):	794	
Wetland Discharge Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Kw
Initial Wetland Horizontal Hydraulic Gradient [ihw] (ft/ft):	0.0024	Gw
Wetland/Downgradient Saturated Thickness [bd] (ft):	65	Tw
Wetland Ground Width exiting Wetland [Wd] (ft):	2,000	Ww
Vertical Hydraulic Conductivity Confining Unit [Kv] (ft/day):	0.0014	
Vertical Distance Separating Surficial/Int. Aquifers [dv] (ft):	70	
Wetland Outflow Channel Width (ft):	20.0	
Wetland Outflow Channel Slope (ft/ft):	0.002	
Wetland Outflow Channel Manning Coeff (ND):	0.035	
Depth to Check for Wet Soil Conditions:	0.5	
Distance to Wetland Fringe Inner Boundary*:	405	
Distance to Wetland Fringe Center*:	405	
Distance to Wetland Fringe Outer Boundary*:	405	
Elevation of Wetland Fringe Inner Boundary:	88.0	
Elevation of Wetland Fringe Center:	88.0	
Elevation of Wetland Fringe Outer Boundary:	88.0	

* distance from wetland centroid

DG-CELL INPUTS		Symbol
DG-Cell Acres:	**18.92**	
DG-Cell Area (ft2):	824,155	
Highest DG-Cell Elevation (ft, NGVD):	89	
Average DG-Cell Elevation (ft, NGVD):	87.5	
Initial Starting Depth to Water at DG-Cell (ft):	2.0	
Initial Starting Water Table Elevation at DG-Cell (ft, NGVD):	85.5	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	
Distance between DG-Cell and DG Boundary (ft):	539	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Ku
Water Table Elevation at DG Boundary Control Point (ft):	83.0	
Initial DG-Cell Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0046	Gu
DG-Cell Saturated Thickness [bu] (ft):	55	Tuug
DG-Cell Ground Width exiting system [Wu] (ft):	2,000	Wu

Input Variables - site specific conditions
Input Variables - represent more regional/seasonal conditions
Input Variables - site specific conditions, but limited range of variation

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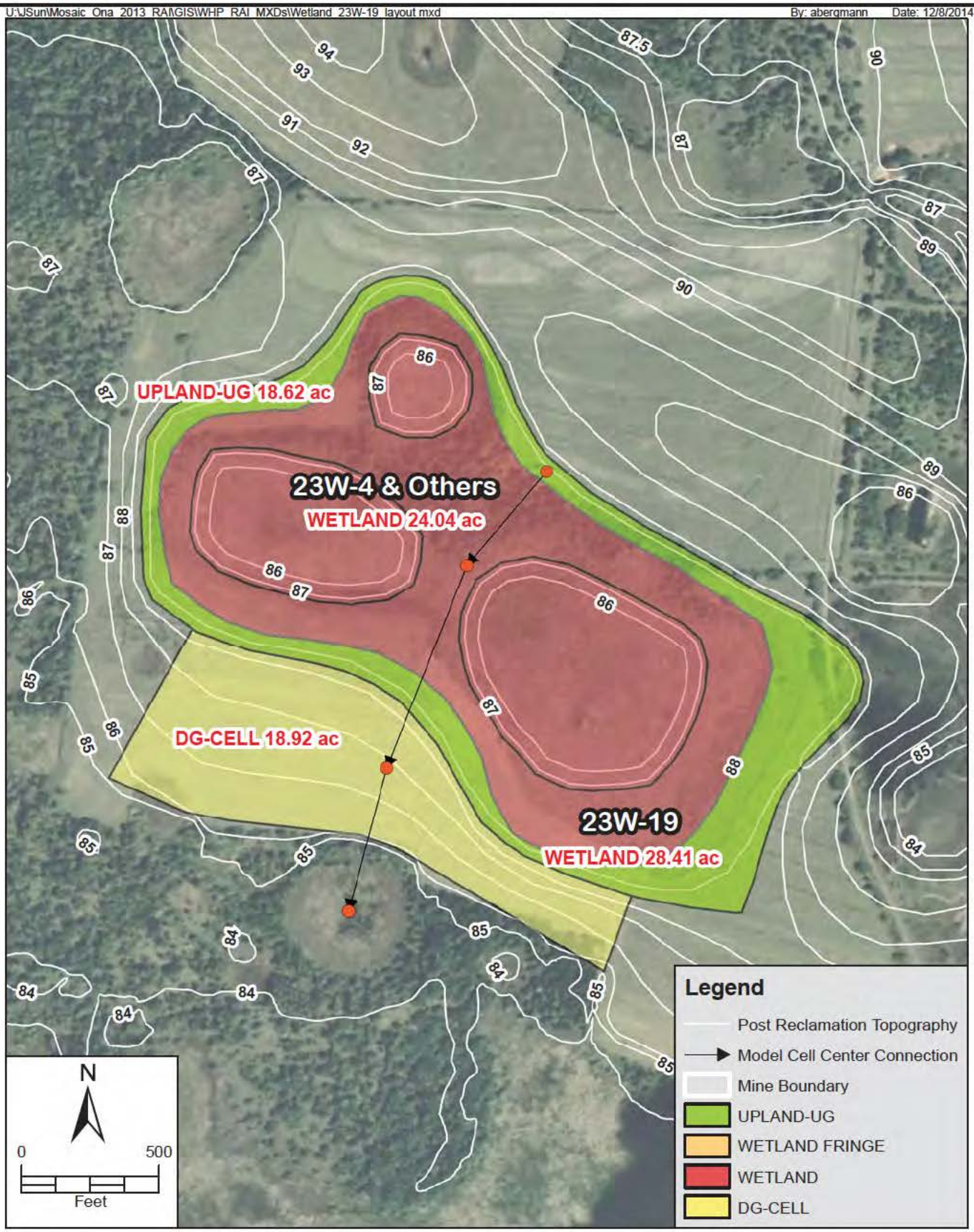
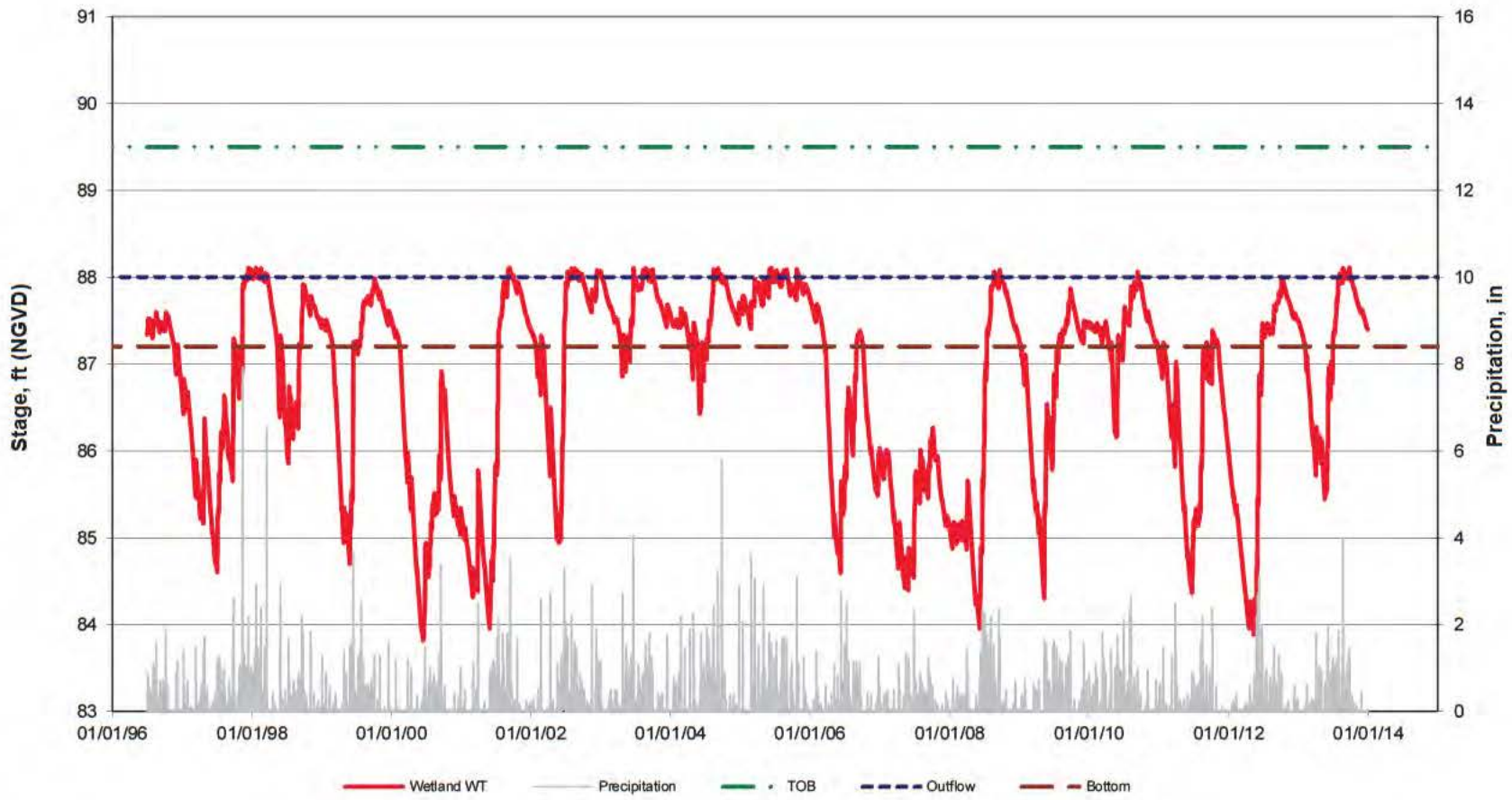


FIGURE A17-1
WETLANDS 23W-19 & OTHERS - HYDROPERIOD MODEL DIAGRAM
ONA MINE
HARDEE COUNTY, FLORIDA

Sources: ESRI 2014; Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc



	Elev. Ft.
Wetland Bottom =	87.2
Outflow =	88

Wetland Hydroperiod

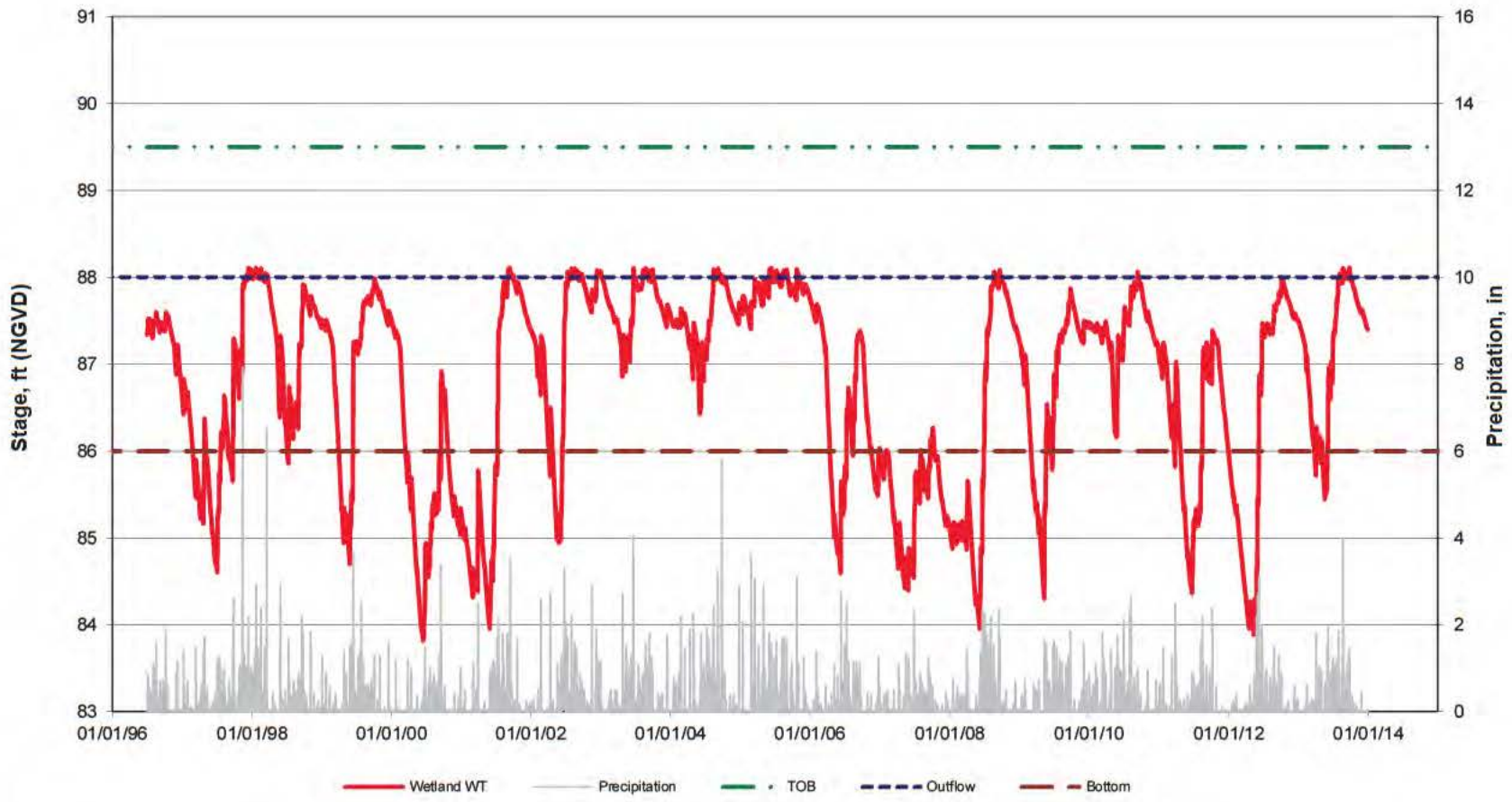
Starting WLE = 87.4

Figure A17-2
Modeled Hydrograph of Wetland 23W-19
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



	Elev. Ft.
Wetland Bottom =	86
Outflow =	88

Wetland Hydroperiod

Starting WLE = 87.4

Figure A17-3
Modeled Hydrograph of Wetlands 23W-4, 23W-6 & 23W-7
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

WETLAND DESCRIPTION:	23W-19	Mixed Wetland Hardwoods
PROJECT& LOCATION:	Ona Mine	Hardee County, Florida

Top of Bank Elevation (ft, NGVD):	89.5
Wetland Outflow Elevation (ft, NGVD):	88.0
Wetland Bottom Elevation (ft, NGVD):	87.2

Average	86.8 ft, NGVD	Range	4.3 ft
Maximum	88.1 ft, NGVD	Step Size	0.3 ft
Minimum	83.8 ft, NGVD	No. of Steps	14
Median	87.3 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
88.41			88.41	
88.11	0	0	88.11	0.00%
87.81	1183	1183	87.81	18.50%
87.51	991	2174	87.51	34.01%
87.21	1225	3399	87.21	53.17%
86.91	329	3728	86.91	58.31%
86.61	304	4032	86.61	63.07%
86.31	262	4294	86.31	67.17%
86.01	279	4573	86.01	71.53%
85.71	367	4940	85.71	77.27%
85.41	316	5256	85.41	82.21%
85.11	417	5673	85.11	88.74%
84.81	286	5959	84.81	93.21%
84.51	209	6168	84.51	96.48%
84.21	125	6293	84.21	98.44%
83.91	89	6382	83.91	99.83%
83.61	11	6393	83.61	100.00%
83.31	0	6393	83.31	100.00%

6393 Days
17.5 Years

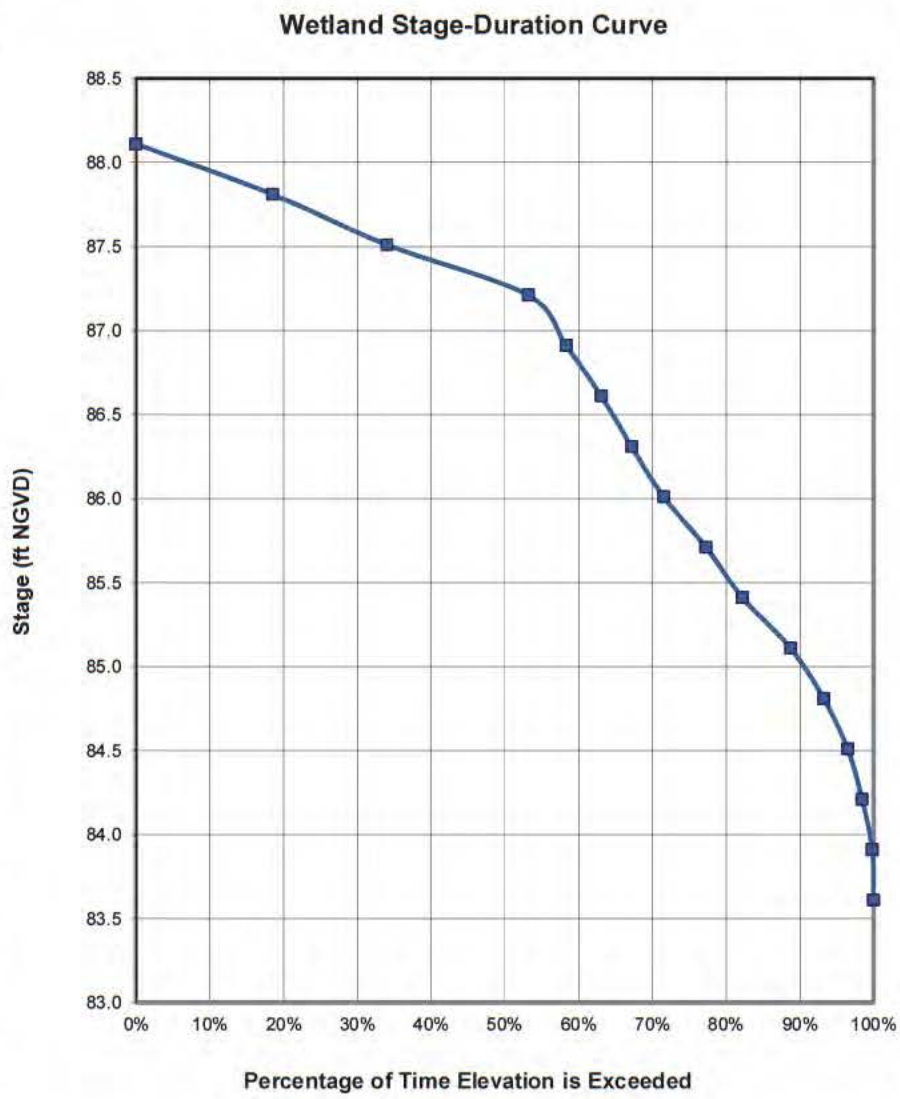


Figure A17-4
Modeled Stage-Duration Curve of Wetland 23W-19
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

WETLAND DESCRIPTION: 23W-4, 23W-6 Freshwater Marsh
PROJECT& LOCATION: Ona Mine Hardee County, Florida

Top of Bank Elevation (ft, NGVD):	89.5
Wetland Outflow Elevation (ft, NGVD):	88.0
Wetland Bottom Elevation (ft, NGVD):	86.0

Average	86.8 ft, NGVD	Range	4.3 ft
Maximum	88.1 ft, NGVD	Step Size	0.3 ft
Minimum	83.8 ft, NGVD	No. of Steps	14
Median	87.3 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
88.41			88.41	
88.11	0	0	88.11	0.00%
87.81	1183	1183	87.81	18.50%
87.51	991	2174	87.51	34.01%
87.21	1225	3399	87.21	53.17%
86.91	329	3728	86.91	58.31%
86.61	304	4032	86.61	63.07%
86.31	262	4294	86.31	67.17%
86.01	279	4573	86.01	71.53%
85.71	367	4940	85.71	77.27%
85.41	316	5256	85.41	82.21%
85.11	417	5673	85.11	88.74%
84.81	286	5959	84.81	93.21%
84.51	209	6168	84.51	96.48%
84.21	125	6293	84.21	98.44%
83.91	89	6382	83.91	99.83%
83.61	11	6393	83.61	100.00%
83.31	0	6393	83.31	100.00%

6393 Days
17.5 Years

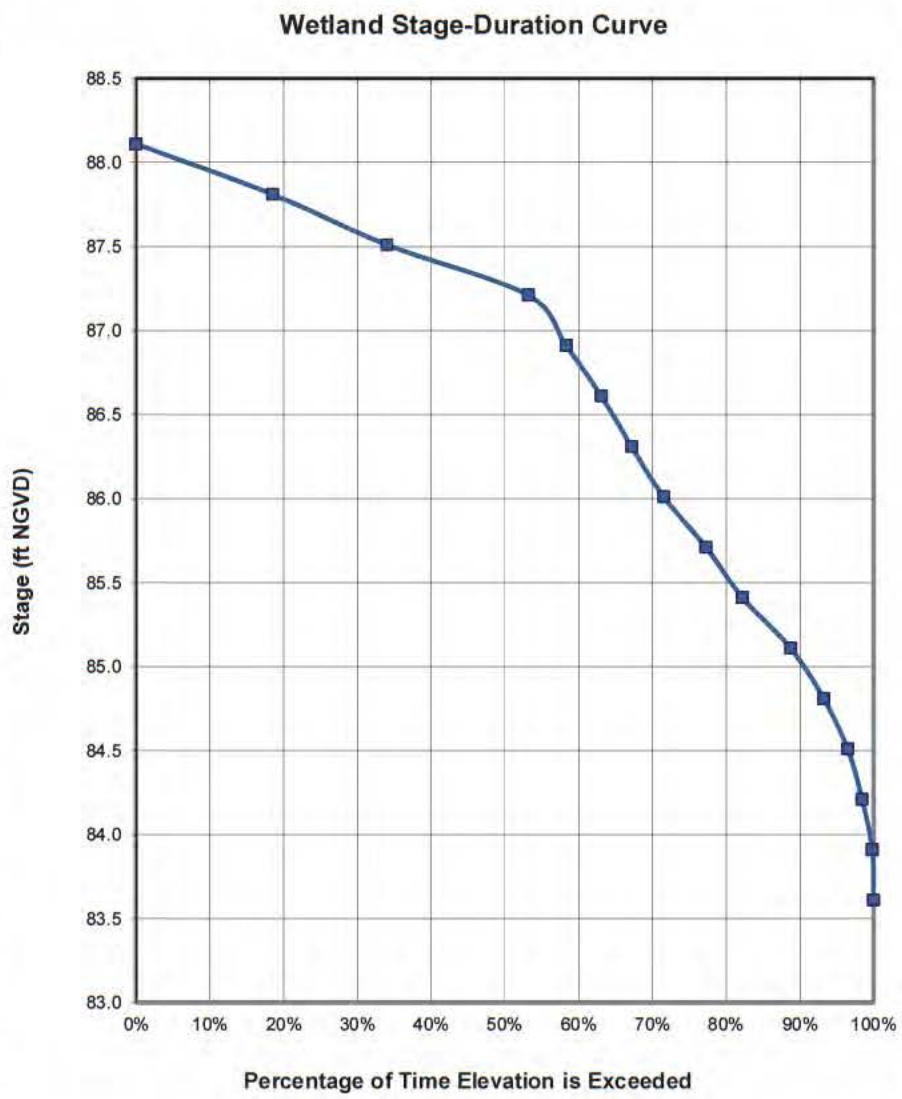
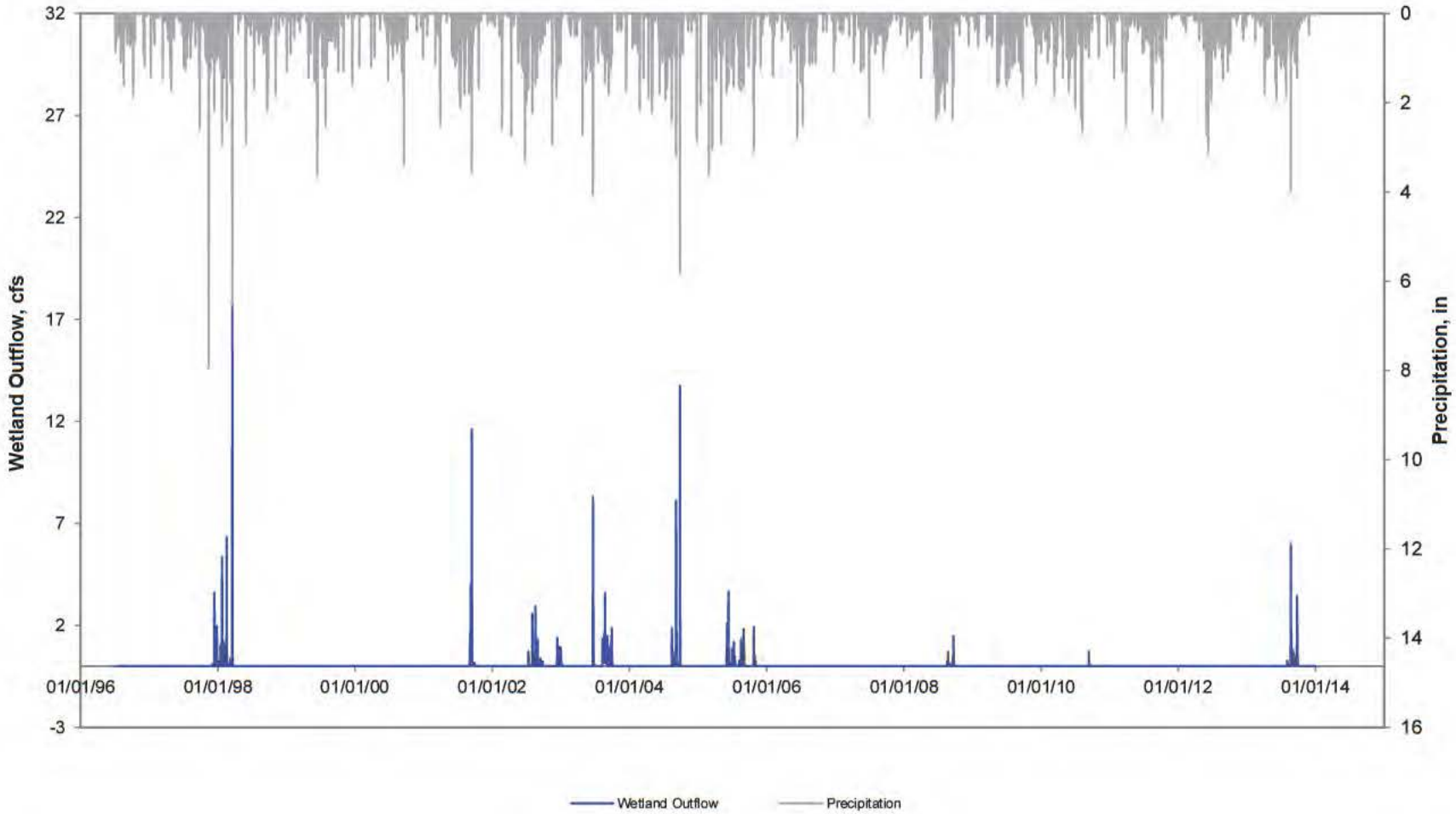


Figure A17-5
Modeled Stage-Duration Curve of Wetlands 23W-4, 23W-6 & 23W-7
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 11/3/2014

ECT Environmental Consulting & Technology, Inc.

Source: Mosaic, 2014; ECT, 2014.



Wetland Surface Water Outflow

Figure A17-6
Modeled Outflow of Wetlands 23W-19 & Others
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods
By: *ECT*
Date: *11/3/2014*

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

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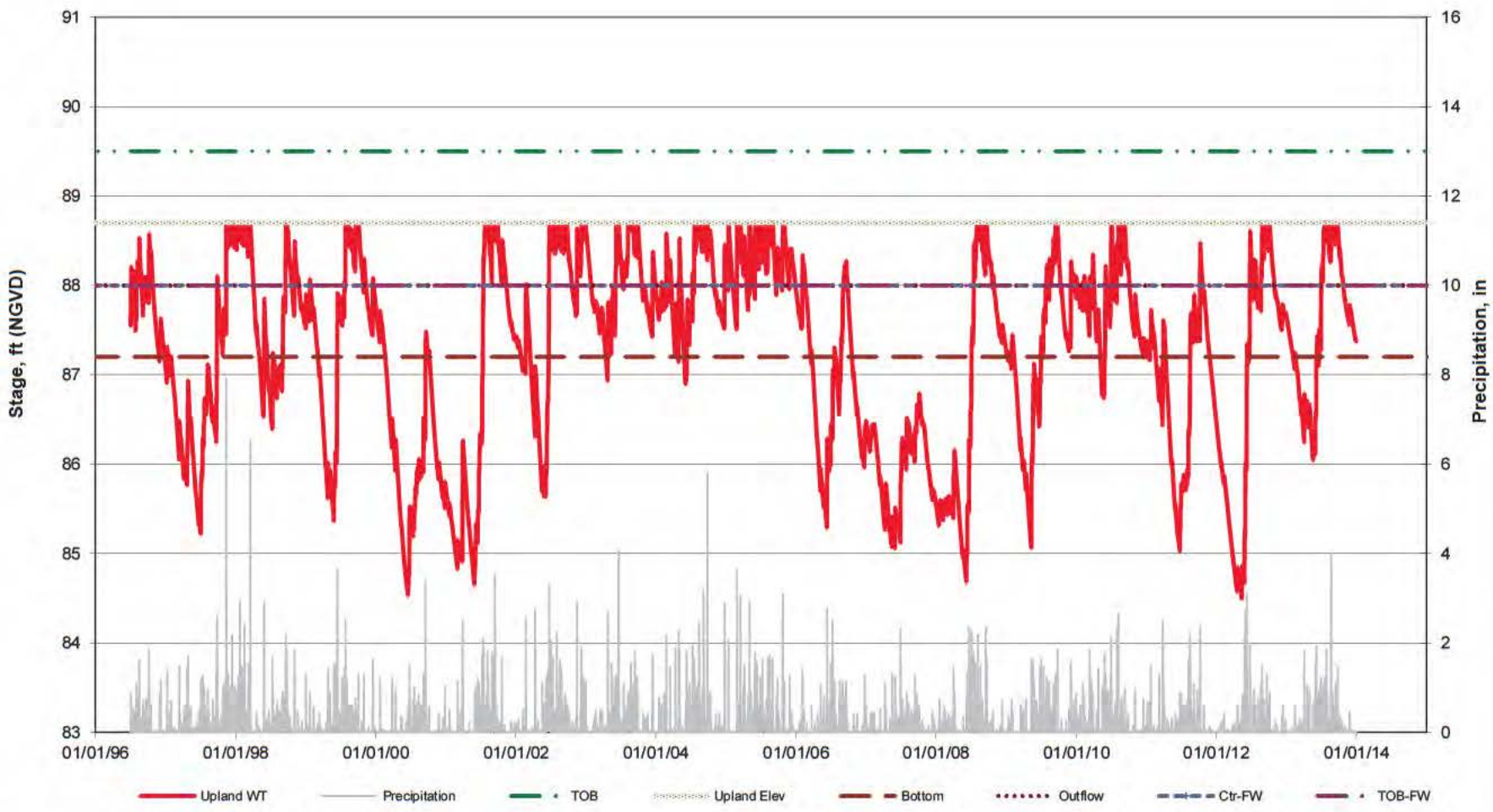

	Elev. Ft.
Wetland Bottom =	87.2
Outflow =	88

Upland Hydroperiod

Figure A17-7
Modeled Upland Hydrograph of Wetlands 23W-19 & Others
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

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TABLE A18
WETLANDS 23W-20 & OTHERS WATER BALANCE CALCULATIONS
Three Cell System (Upland-UG, Wetland & DG-Cell) with Daily Time Steps

	Primary	Fringe (if present)
WETLAND NUMBER:	23W-20	23W-20
WETLAND TYPE:	Mixed Wetland Hardwoods	Mixed Wetland Hardwoods - Fringe/Slope
MINE NAME	Ona Mine	
Permit Name:		
COUNTY:	Hardee County, Florida	

By: ECT
Date: November 3, 2014

VERSION 2.1

CONSTANT & INITIAL/STARTING CONDITION INPUT PARAMETERS

UPLAND-UG INPUTS		Symbol
Upland-UG Acres:	**54.43**	
Upland-UG Area (ft2):	2,370,971	Au-UG
Highest Upland-UG Elevation (ft, NGVD):	95.5	El
Average Upland-UG Elevation (ft, NGVD):	91.0	
Initial Starting Depth to Water at Upland-UG (ft):	2.0	
Initial Starting Water Table Elevation at Upland-UG (ft, NGVD):	89.0	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu
Distance between Centers of Upland-UG and Wetland (ft):	766	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Ku
Initial Upland Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0010	Gu
Upland-UG Saturated Thickness [bu] (ft):	50	Tuug
Upland-UG Ground Width entering Wetland [Wu] (ft):	3,500	Wu

Soil Type & Moisture Condition		AMC I	AMC II	AMC III	Cap. Suct. [CS]-(in)	Sat. Hyd Cd [Ks]-(ft/day)
Upland-UG -	Sand	0.404	0.375	0.346	-1.950	9.276
Wetland -	Sand	0.404	0.375	0.346	-1.950	9.276
DG-Cell -	Sand	0.404	0.375	0.346	-1.950	9.276

	Upland-UG	Wetland	DG-Cell
Evapotranspiration Extinction Depth (ft):	5	4.5	5
Minimum ET Rate (in/day):	0	0	0

WETLAND INPUTS		Symbol
Wetland Acres:	**32.95**	
Wetland Area (ft2):	1,435,302	Aw
Top of Bank Elevation (ft, NGVD):	91.5	TOB
Wetland Outflow Elevation (ft, NGVD):	88.0	OUT
Wetland Bottom Elevation (ft, NGVD):	87.2	BOT
Initial Starting Depth to Water at Wetland (ft):	-1.0	Dsw
Initial Starting Water Table Elevation at Wetland (ft, NGVD):	88.2	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu
Distance between Centers of Wetland and DG-Cell (ft):	1,365	
Wetland Discharge Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Kw
Initial Wetland Horizontal Hydraulic Gradient [ihw] (ft/ft):	0.0016	Gw
Wetland/Downgradient Saturated Thickness [bd] (ft):	45	Tw
Wetland Ground Width exiting Wetland [Wd] (ft):	180	Ww
Vertical Hydraulic Conductivity Confining Unit [Kv] (ft/day):	0.0012	
Vertical Distance Separating Surficial/Int. Aquifers [dv] (ft):	70	
Wetland Outflow Channel Width (ft):	20.0	
Wetland Outflow Channel Slope (ft/ft):	0.010	
Wetland Outflow Channel Manning Coeff (ND):	0.035	
Depth to Check for Wet Soil Conditions:	0.5	
Distance to Wetland Fringe Inner Boundary*:	340	
Distance to Wetland Fringe Center*:	380	
Distance to Wetland Fringe Outer Boundary*:	410	
Elevation of Wetland Fringe Inner Boundary:	88.0	
Elevation of Wetland Fringe Center:	88.5	
Elevation of Wetland Fringe Outer Boundary:	89.0	

* distance from wetland centroid

DG-CELL INPUTS		Symbol
DG-Cell Acres:	**4.23**	
DG-Cell Area (ft2):	184,259	
Highest DG-Cell Elevation (ft, NGVD):	89	
Average DG-Cell Elevation (ft, NGVD):	87.0	
Initial Starting Depth to Water at DG-Cell (ft):	1.0	
Initial Starting Water Table Elevation at DG-Cell (ft, NGVD):	86.0	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	
Distance between DG-Cell and DG Boundary (ft):	633	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Ku
Water Table Elevation at DG Boundary Control Point (ft):	-9999.0	
Initial DG-Cell Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0008	Gu
DG-Cell Saturated Thickness [bu] (ft):	45	Tuug
DG-Cell Ground Width exiting system [Wu] (ft):	270	Wu

Input Variables - site specific conditions
Input Variables - represent more regional/seasonal conditions
Input Variables - site specific conditions, but limited range of variation

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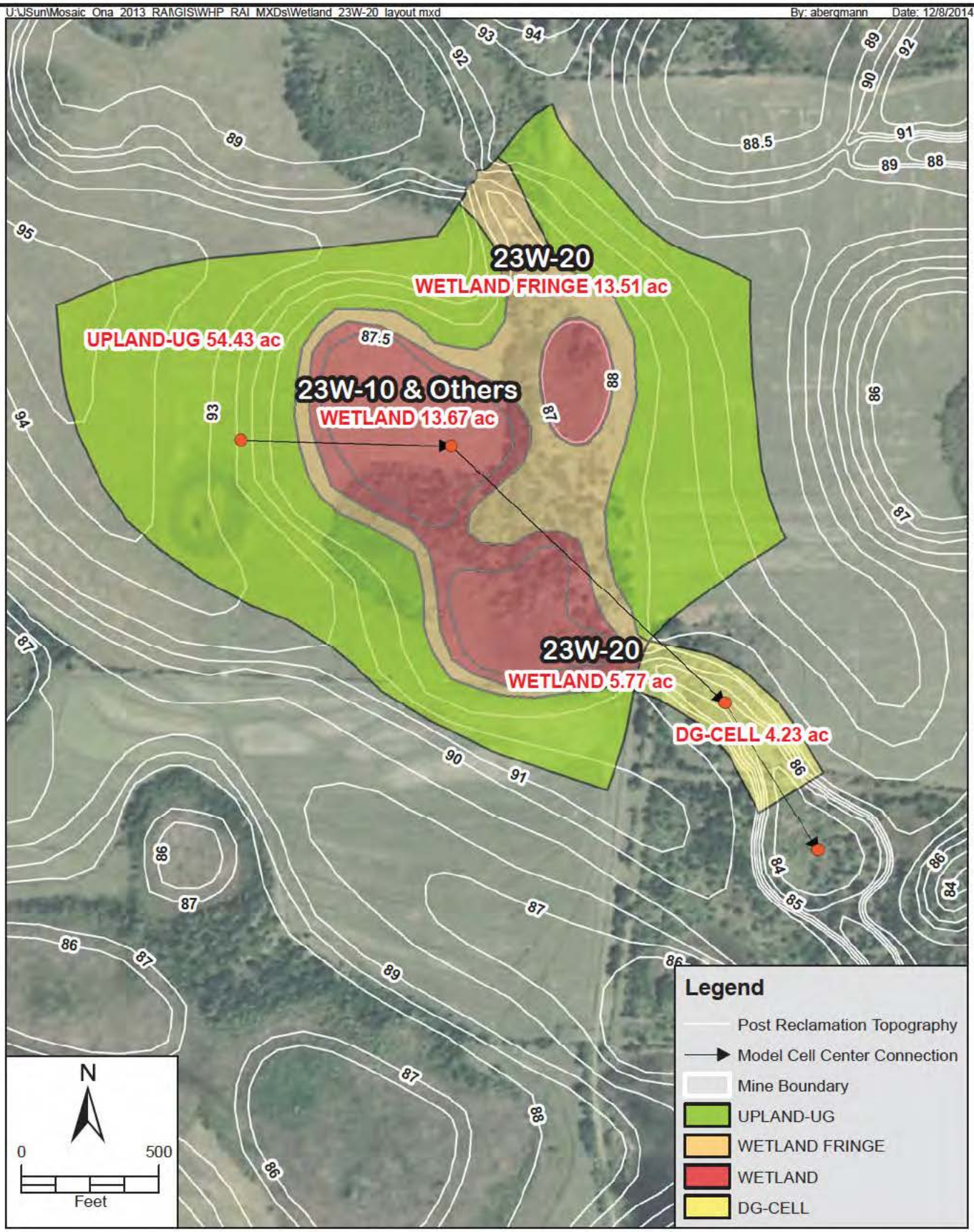
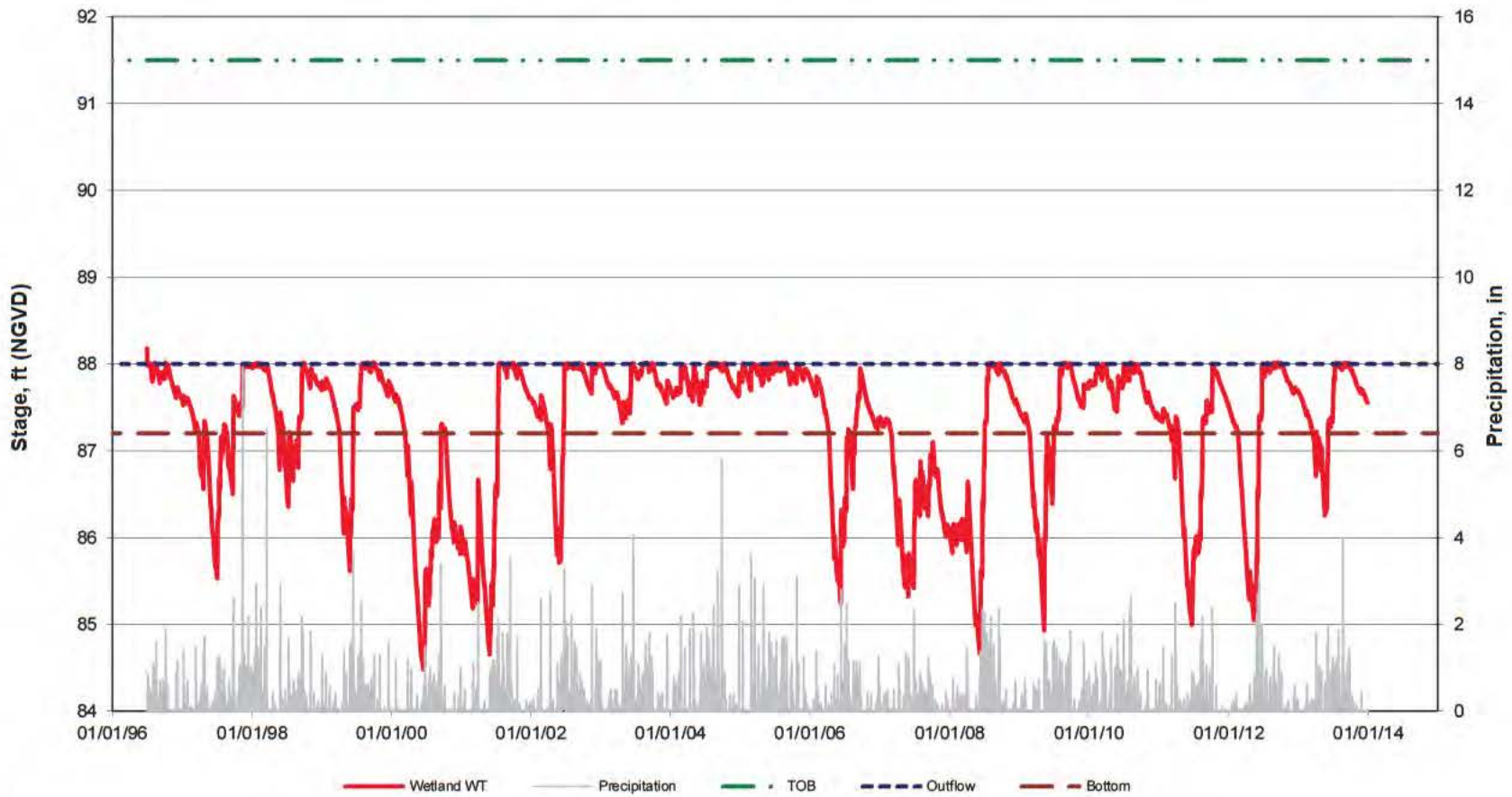


FIGURE A18-1
WETLANDS 23W-20 & OTHERS - HYDROPERIOD MODEL DIAGRAM
ONA MINE
HARDEE COUNTY, FLORIDA

Sources: ESRI 2014; Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc



	Elev. Ft.
Wetland Bottom =	87.2
Outflow =	88

Wetland Hydroperiod

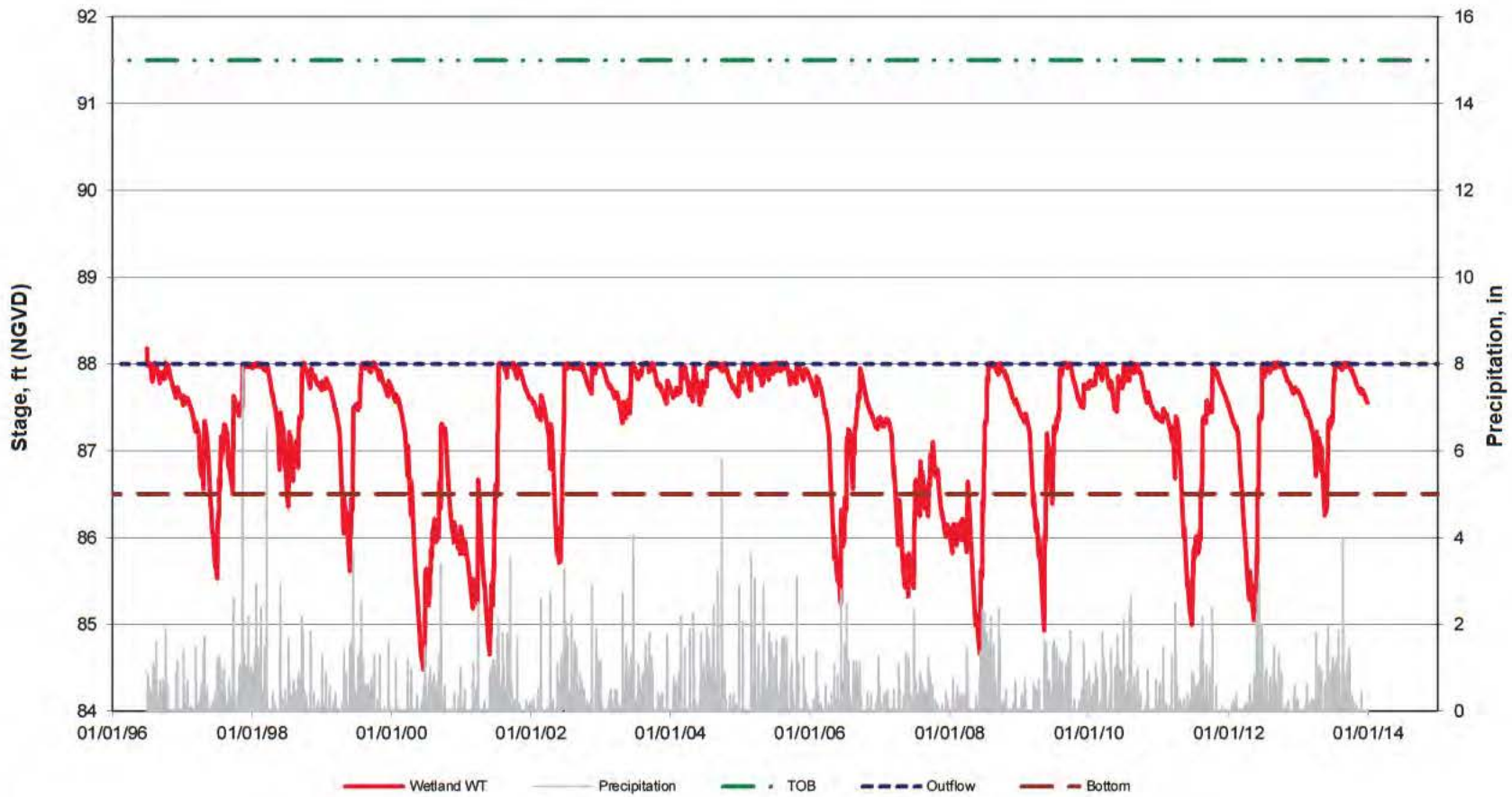
Starting WLE = 88.2

Figure A18-2
Modeled Hydrograph of Wetland 23W-20
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



	Elev. Ft.
Wetland Bottom =	86.5
Outflow =	88

Wetland Hydroperiod

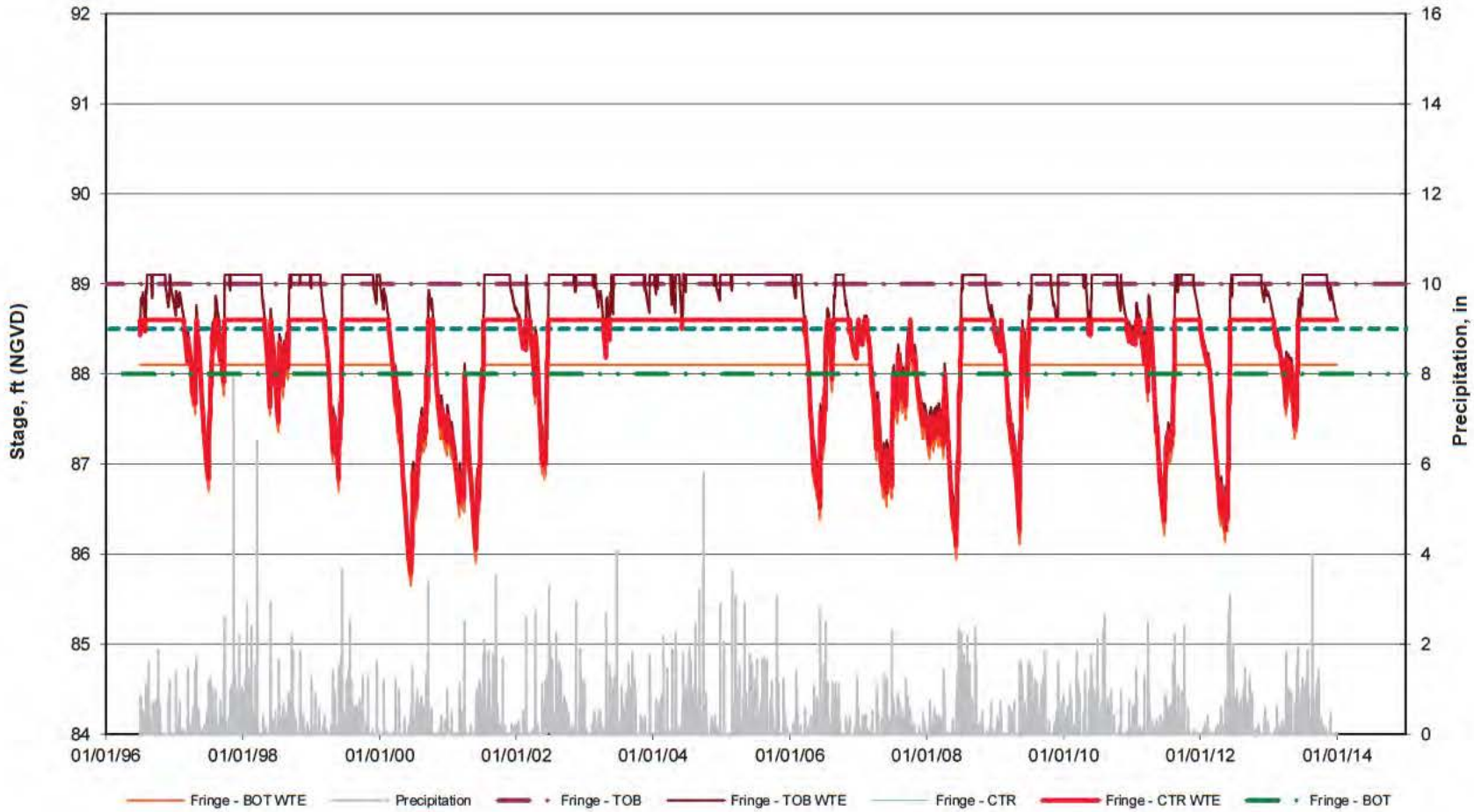
Starting WLE = 88.2

Figure A18-3
Modeled Hydrograph of Wetland 23W-10
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



	Elev. Ft.
Top of Bank - Fringe Wetland =	89
Center - Fringe Wetland =	88.5
Bottom - Fringe Wetland =	88

Fringe Wetland Hydroperiod

Starting WLE = 88.2

Figure A18-4
Modeled Hydrograph of Fringe/Slope Wetland 23W-20
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods - Fringe/Slope
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

WETLAND DESCRIPTION:	23W-20	Mixed Wetland Hardwoods
PROJECT& LOCATION:	Ona Mine	Hardee County, Florida

Top of Bank Elevation (ft, NGVD):	91.5
Wetland Outflow Elevation (ft, NGVD):	88.0
Wetland Bottom Elevation (ft, NGVD):	87.2

Average	87.3 ft, NGVD	Range	3.7 ft
Maximum	88.2 ft, NGVD	Step Size	0.25 ft
Minimum	84.5 ft, NGVD	No. of Steps	15
Median	87.6 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
88.43			88.43	
88.18	0	0	88.18	0.00%
87.93	1281	1281	87.93	20.04%
87.68	1529	2810	87.68	43.95%
87.43	975	3785	87.43	59.21%
87.18	728	4513	87.18	70.59%
86.93	216	4729	86.93	73.97%
86.68	242	4971	86.68	77.76%
86.43	222	5193	86.43	81.23%
86.18	226	5419	86.18	84.76%
85.93	343	5762	85.93	90.13%
85.68	200	5962	85.68	93.26%
85.43	168	6130	85.43	95.89%
85.18	146	6276	85.18	98.17%
84.93	62	6338	84.93	99.14%
84.68	35	6373	84.68	99.69%
84.43	20	6393	84.43	100.00%
84.18	0	6393	84.18	100.00%

6393 Days
17.5 Years

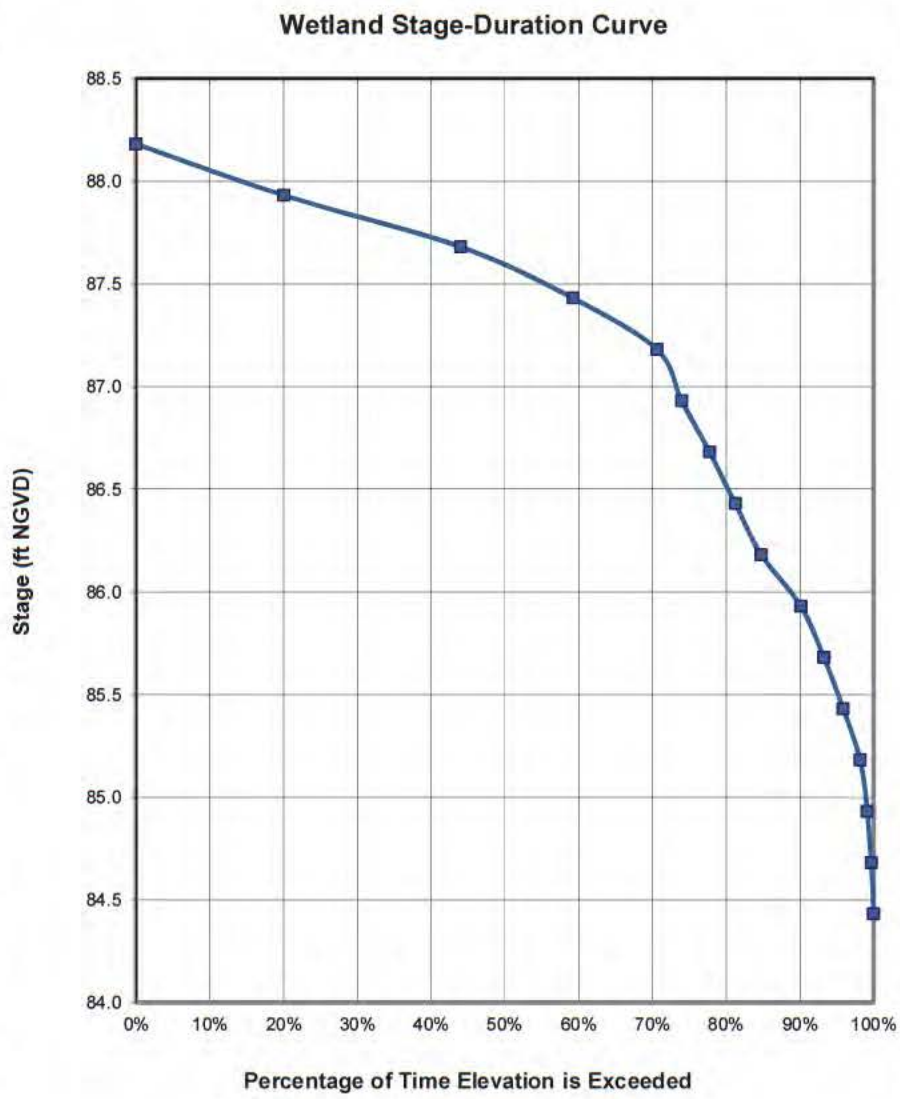


Figure A18-5
Modeled Stage-Duration Curve of Wetland 23W-20
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

WETLAND DESCRIPTION:	23W-10	Freshwater Marsh
PROJECT& LOCATION:	Ona Mine	Hardee County, Florida

Top of Bank Elevation (ft, NGVD):	91.5
Wetland Outflow Elevation (ft, NGVD):	88.0
Wetland Bottom Elevation (ft, NGVD):	86.5

Average	87.3 ft, NGVD	Range	3.7 ft
Maximum	88.2 ft, NGVD	Step Size	0.25 ft
Minimum	84.5 ft, NGVD	No. of Steps	15
Median	87.6 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
88.43			88.43	
88.18	0	0	88.18	0.00%
87.93	1281	1281	87.93	20.04%
87.68	1529	2810	87.68	43.95%
87.43	975	3785	87.43	59.21%
87.18	728	4513	87.18	70.59%
86.93	216	4729	86.93	73.97%
86.68	242	4971	86.68	77.76%
86.43	222	5193	86.43	81.23%
86.18	226	5419	86.18	84.76%
85.93	343	5762	85.93	90.13%
85.68	200	5962	85.68	93.26%
85.43	168	6130	85.43	95.89%
85.18	146	6276	85.18	98.17%
84.93	62	6338	84.93	99.14%
84.68	35	6373	84.68	99.69%
84.43	20	6393	84.43	100.00%
84.18	0	6393	84.18	100.00%

6393 Days
17.5 Years

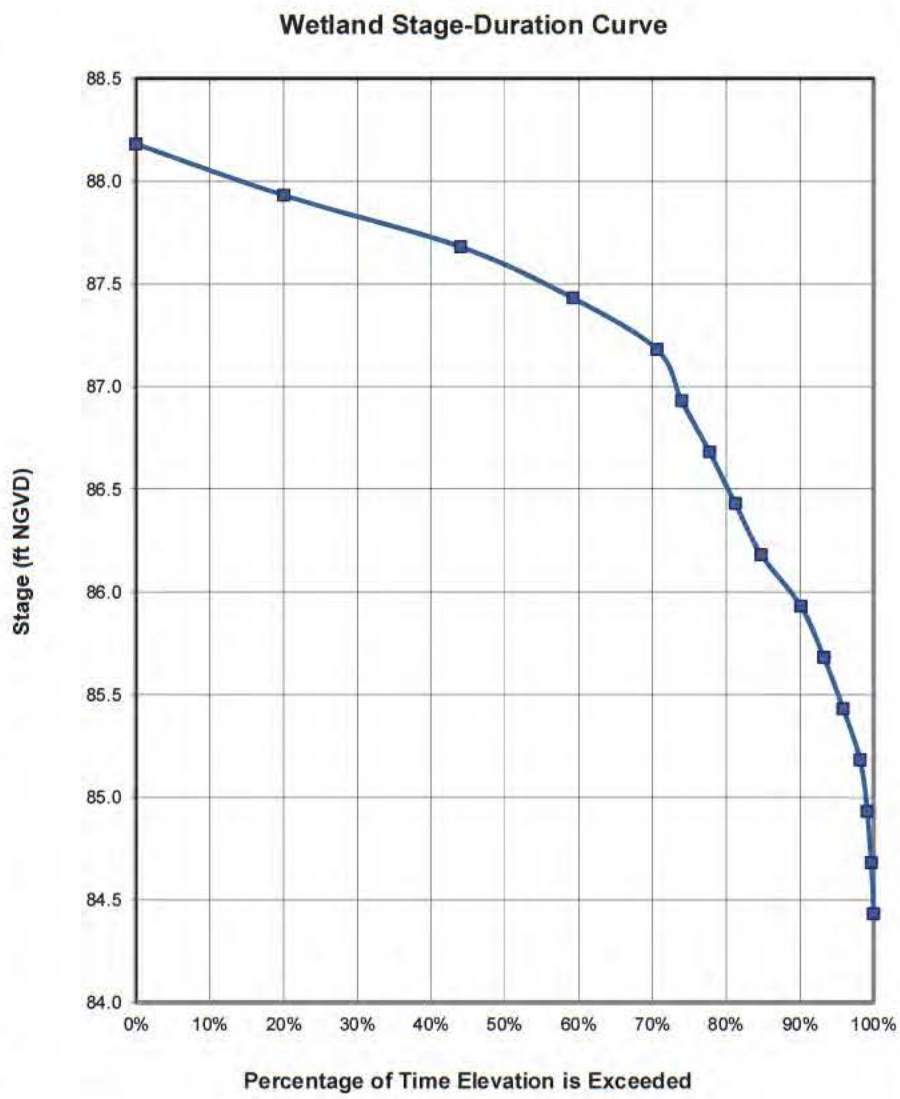


Figure A18-6
Modeled Stage-Duration Curve of Wetland 23W-10
Ona Mine
Hardee County, Florida

Freshwater Marsh
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

WETLAND DESCRIPTION: 23W-20 Mixed Wetland Hardwoods - Fringe/Slope
PROJECT& LOCATION: Ona Mine Hardee County, Florida

Fringe Wetland Top of Bank Elevation (ft, NGVD): 89.0
Fringe Wetland Center Elevation (ft, NGVD): 88.5
Fringe Wetland Bottom Elevation (ft, NGVD): 88.0

Data From Center of Fringe Wetland

Average	88.2 ft, NGVD	Range	2.8 ft
Maximum	88.6 ft, NGVD	Step Size	0.2 ft
Minimum	85.8 ft, NGVD	No. of Steps	14
Median	88.6 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
88.80			88.80	
88.60	0	0	88.60	0.00%
88.40	4160	4160	88.40	65.07%
88.20	406	4566	88.20	71.42%
88.00	277	4843	88.00	75.75%
87.80	237	5080	87.80	79.46%
87.60	200	5280	87.60	82.59%
87.40	261	5541	87.40	86.67%
87.20	256	5797	87.20	90.68%
87.00	148	5945	87.00	92.99%
86.80	149	6094	86.80	95.32%
86.60	128	6222	86.60	97.33%
86.40	91	6313	86.40	98.75%
86.20	41	6354	86.20	99.39%
86.00	22	6376	86.00	99.73%
85.80	15	6391	85.80	99.97%
85.60	2	6393	85.60	100.00%
85.40	0	6393	85.40	100.00%

6393 Days
17.5 Years

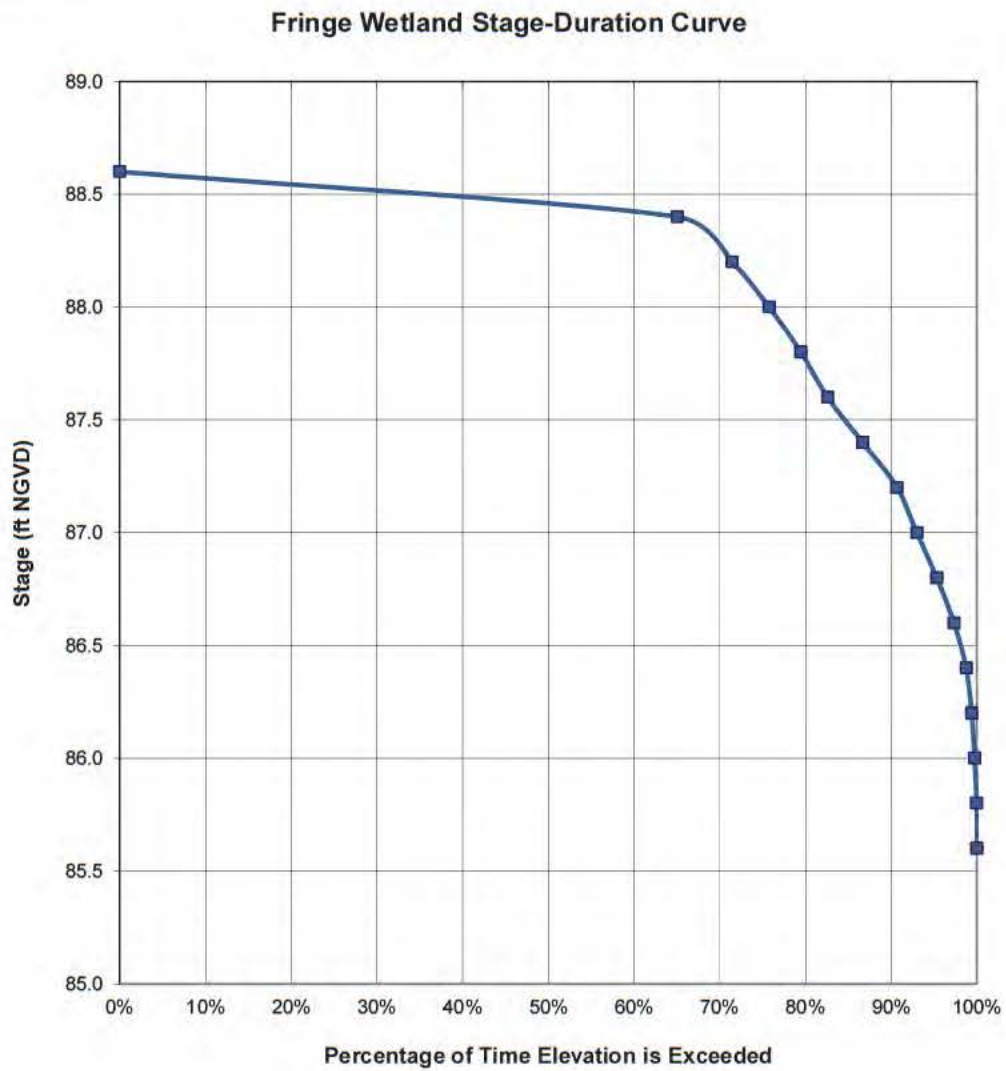
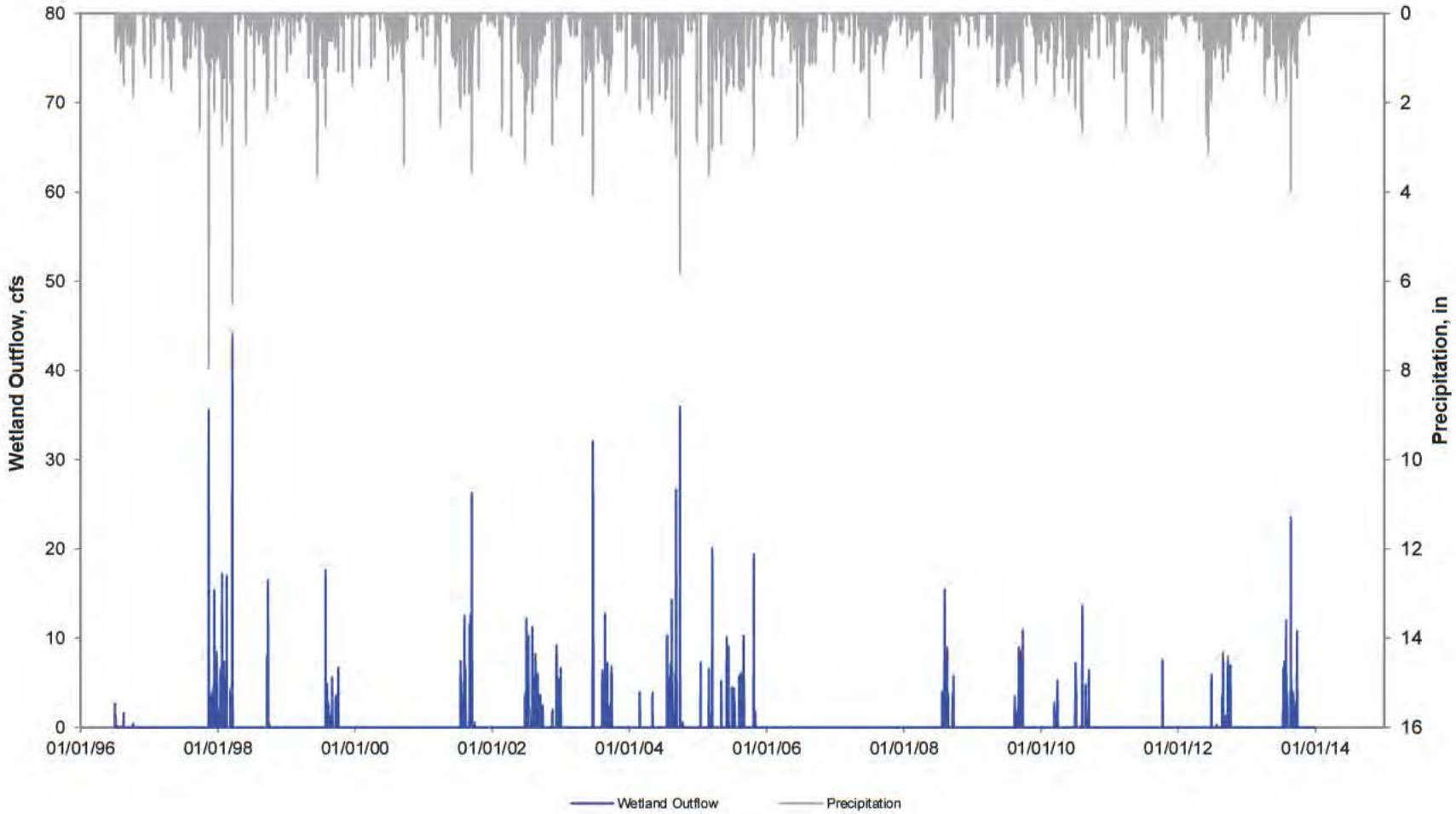


Figure A18-7
Modeled Stage-Duration Curve of Fringe/Slope Wetland 23W-20
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods - Fringe/Slope
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



Wetland Surface Water Outflow

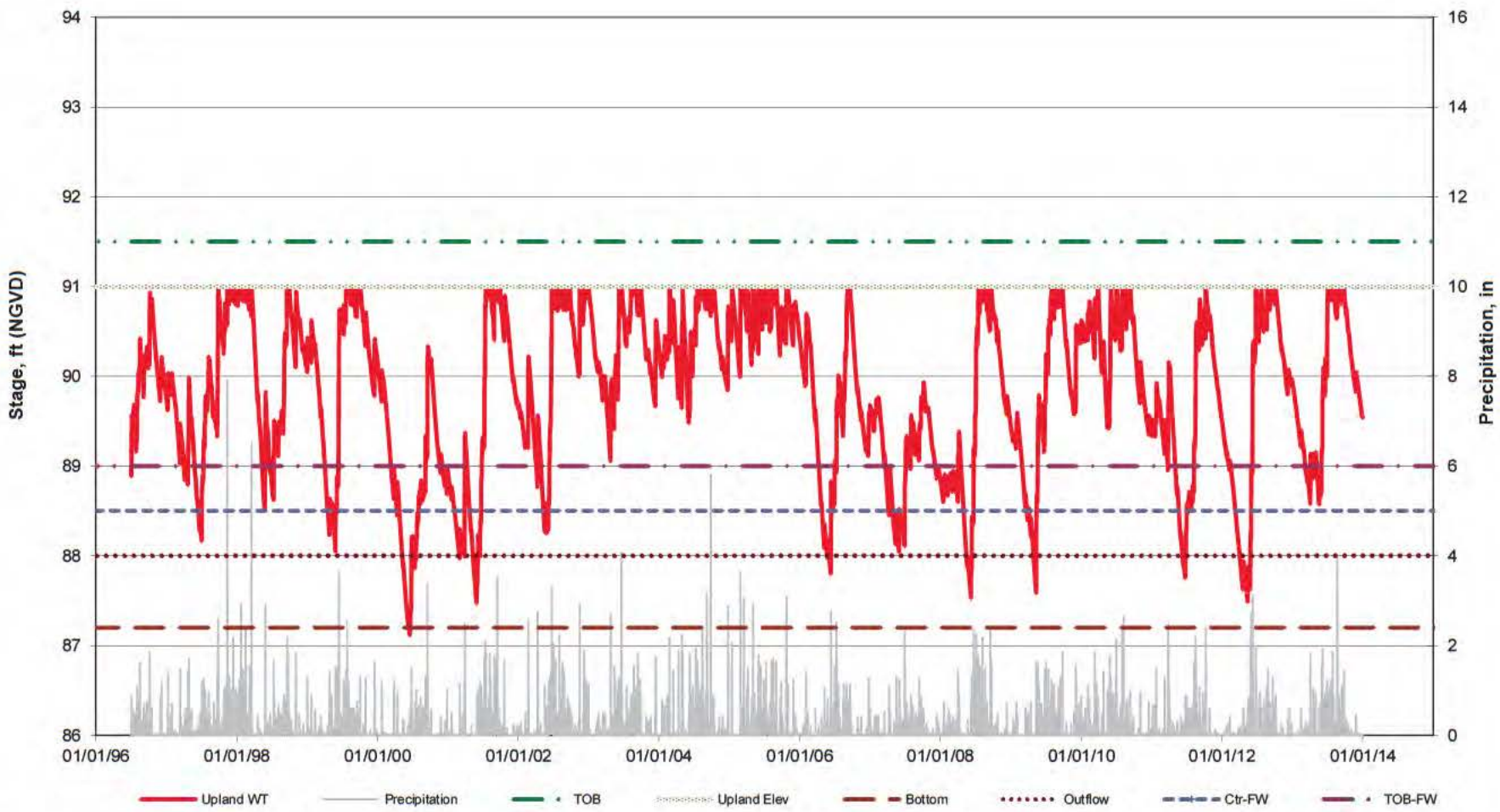
Figure A18-8
Modeled Outflow of Wetlands 23W-20 & Others
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods
By: *ECT*
Date: *11/3/2014*

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

Printed on: 12/8/2014C:\Working\2-ECT\Projects\WHP_Model\ONA\Ona Dec 2013\Model\WHP_RAI\POST\Others\23W-20\Hydroperiod-Model-ONA-RAI_Post_Wetlands#23W-20_JS_20141103.xlsx



	Elev. Ft.
Wetland Bottom =	87.2
Outflow =	88

Upland Hydroperiod

Figure A18-9
Modeled Upland Hydrograph of Wetlands 23W-20 & Others
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

Copyright by ECT & Mosaic, 2011

TABLE A19
WETLANDS 24-1 & 24-3 WATER BALANCE CALCULATIONS
Three Cell System (Upland-UG, Wetland & DG-Cell) with Daily Time Steps

	Primary	Fringe (if present)
WETLAND NUMBER:	24-1	24-3
WETLAND TYPE:	Bay Swamp	Mixed Wetland Hardwoods - Fringe/Slope
MINE NAME	Ona Mine	
Permit Name:		
COUNTY:	Hardee County, Florida	

By: ECT
Date: November 3, 2014

VERSION 2.1

CONSTANT & INITIAL/STARTING CONDITION INPUT PARAMETERS

UPLAND-UG INPUTS		Symbol
Upland-UG Acres:	**65.96**	
Upland-UG Area (ft2):	2,873,218	Au-UG
Highest Upland-UG Elevation (ft, NGVD):	150	El
Average Upland-UG Elevation (ft, NGVD):	88.0	
Initial Starting Depth to Water at Upland-UG (ft):	2.0	
Initial Starting Water Table Elevation at Upland-UG (ft, NGVD):	86.0	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu
Distance between Centers of Upland-UG and Wetland (ft):	1,248	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	10	Ku
Initial Upland Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0032	Gu
Upland-UG Saturated Thickness [bu] (ft):	65	Tuug
Upland-UG Ground Width entering Wetland [Wu] (ft):	3,200	Wu

WETLAND INPUTS		Symbol
Wetland Acres:	**50.5**	
Wetland Area (ft2):	2,199,780	Aw
Top of Bank Elevation (ft, NGVD):	83.5	TOB
Wetland Outflow Elevation (ft, NGVD):	82.0	OUT
Wetland Bottom Elevation (ft, NGVD):	81.5	BOT
Initial Starting Depth to Water at Wetland (ft):	-0.5	Dsw
Initial Starting Water Table Elevation at Wetland (ft, NGVD):	82.0	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu
Distance between Centers of Wetland and DG-Cell (ft):	1,194	
Wetland Discharge Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Kw
Initial Wetland Horizontal Hydraulic Gradient [ihw] (ft/ft):	0.0017	Gw
Wetland/Downgradient Saturated Thickness [bd] (ft):	65	Tw
Wetland Ground Width exiting Wetland [Wd] (ft):	440	Ww
Vertical Hydraulic Conductivity Confining Unit [Kv] (ft/day):	0.0015	
Vertical Distance Separating Surficial/Int. Aquifers [dv] (ft):	70	
Wetland Outflow Channel Width (ft):	20.0	
Wetland Outflow Channel Slope (ft/ft):	0.00180	
Wetland Outflow Channel Manning Coeff (ND):	0.035	
Depth to Check for Wet Soil Conditions:	0.5	
Distance to Wetland Fringe Inner Boundary*:	410	
Distance to Wetland Fringe Center*:	540	
Distance to Wetland Fringe Outer Boundary*:	660	
Elevation of Wetland Fringe Inner Boundary:	82.2	
Elevation of Wetland Fringe Center:	82.6	
Elevation of Wetland Fringe Outer Boundary:	83	

* distance from wetland centroid

DG-CELL INPUTS		Symbol
DG-Cell Acres:	**6.63**	
DG-Cell Area (ft2):	288,803	
Highest DG-Cell Elevation (ft, NGVD):	84	
Average DG-Cell Elevation (ft, NGVD):	81.0	
Initial Starting Depth to Water at DG-Cell (ft):	1.0	
Initial Starting Water Table Elevation at DG-Cell (ft, NGVD):	80.0	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	
Distance between DG-Cell and DG Boundary (ft):	883	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Ku
Water Table Elevation at DG Boundary Control Point (ft):	78.0	
Initial DG-Cell Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0023	Gu
DG-Cell Saturated Thickness [bu] (ft):	50	Tuug
DG-Cell Ground Width exiting system [Wu] (ft):	410	Wu

Soil Type & Moisture Condition		AMC I	AMC II	AMC III	Cap. Suct. [CS]-(in)	Sat. Hyd Cd [Ks]-(ft/day)
Upland-UG -	Sand	0.404	0.375	0.346	-1.950	9.276
Wetland -	Sand	0.404	0.375	0.346	-1.950	9.276
DG-Cell -	Sand	0.404	0.375	0.346	-1.950	9.276

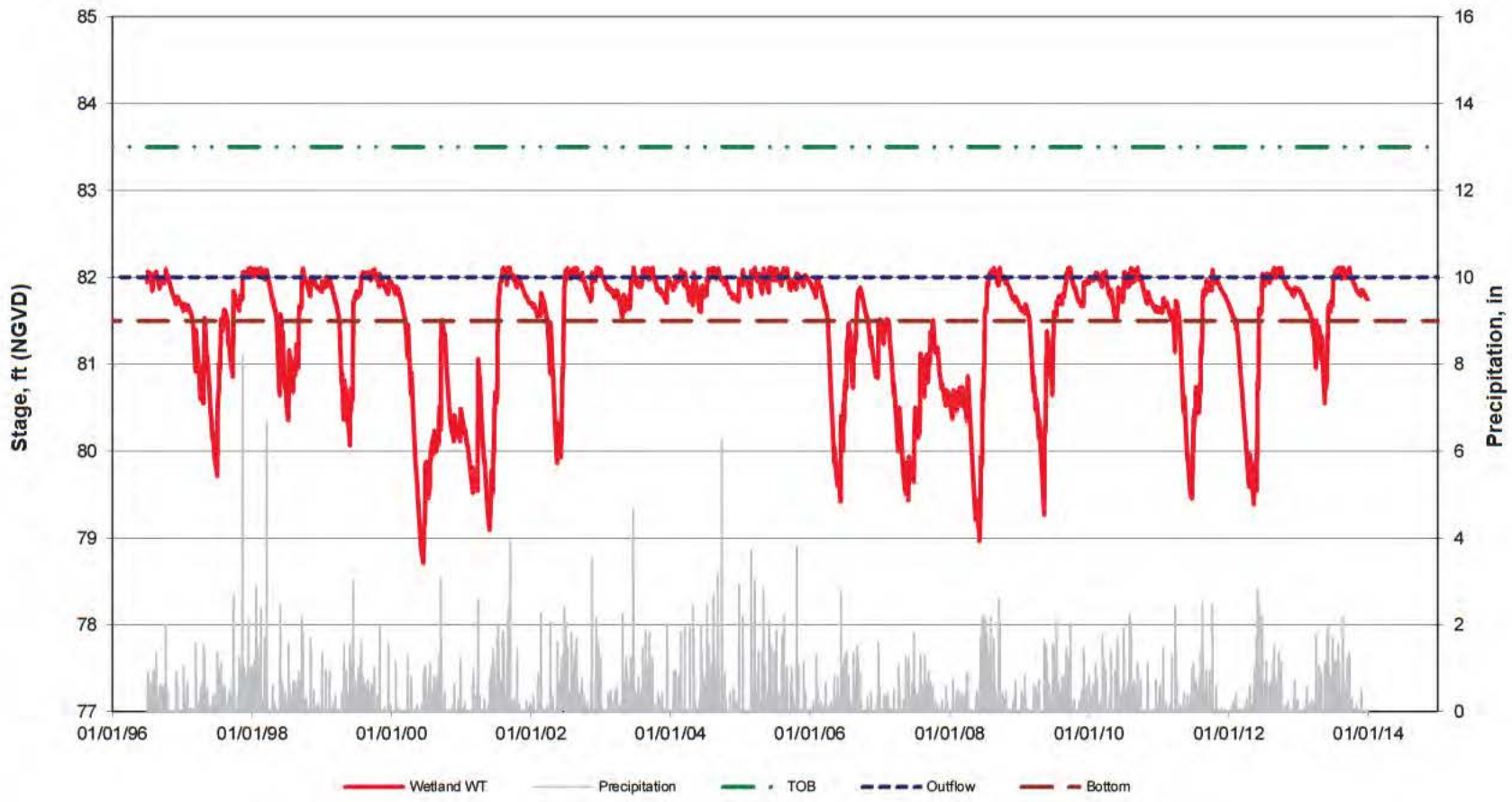
	Upland-UG	Wetland	DG-Cell
Evapotranspiration Extinction Depth (ft):	5	5	5
Minimum ET Rate (in/day):	0	0	0

Input Variables - site specific conditions
Input Variables - represent more regional/seasonal conditions
Input Variables - site specific conditions, but limited range of variation

FIGURE A19-1
WETLANDS 24-1 & 24-3 - HYDROPERIOD MODEL DIAGRAM
ONA MINE
HARDEE COUNTY, FLORIDA

Sources: ESRI, 2014; Mosaic, 2015; ECT, 2015.

ECT Environmental Consulting & Technology, Inc



	Elev. Ft.
Wetland Bottom =	81.5
Outflow =	82

Wetland Hydroperiod

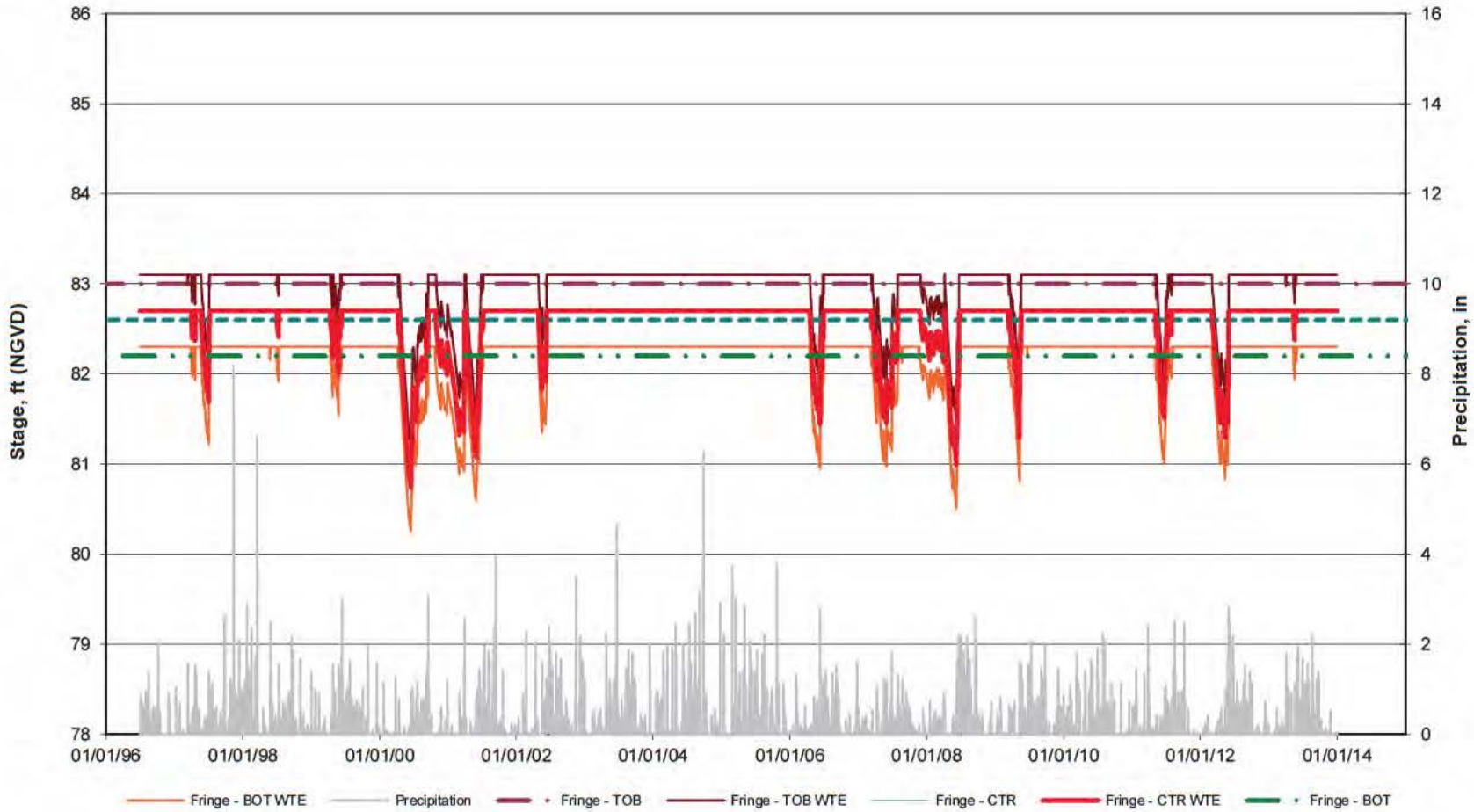
Starting WLE = 82

Figure A19-2
Modeled Hydrograph of Wetland 24-1
Ona Mine
Hardee County, Florida

Bay Swamp
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



	Elev. Ft.
Top of Bank - Fringe Wetland =	83
Center - Fringe Wetland =	82.6
Bottom - Fringe Wetland =	82.2

Fringe Wetland Hydroperiod

Starting WLE = 82

Figure A19-3
Modeled Hydrograph of Fringe/Slope Wetland 24-3
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods - Fringe/Slope
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

WETLAND DESCRIPTION:	24-1	Bay Swamp
PROJECT& LOCATION:	Ona Mine	Hardee County, Florida

Top of Bank Elevation (ft, NGVD):	83.5
Wetland Outflow Elevation (ft, NGVD):	82.0
Wetland Bottom Elevation (ft, NGVD):	81.5

Average	81.4 ft, NGVD	Range	3.4 ft
Maximum	82.1 ft, NGVD	Step Size	0.25 ft
Minimum	78.7 ft, NGVD	No. of Steps	14
Median	81.8 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
82.36			82.36	
82.11	0	0	82.11	0.00%
81.86	2446	2446	81.86	38.26%
81.61	1493	3939	81.61	61.61%
81.36	467	4406	81.36	68.92%
81.11	291	4697	81.11	73.47%
80.86	283	4980	80.86	77.90%
80.61	346	5326	80.61	83.31%
80.36	271	5597	80.36	87.55%
80.11	229	5826	80.11	91.13%
79.86	180	6006	79.86	93.95%
79.61	196	6202	79.61	97.01%
79.36	110	6312	79.36	98.73%
79.11	49	6361	79.11	99.50%
78.86	20	6381	78.86	99.81%
78.61	12	6393	78.61	100.00%
78.36	0	6393	78.36	100.00%
78.11	0	6393	78.11	100.00%

6393 Days
17.5 Years

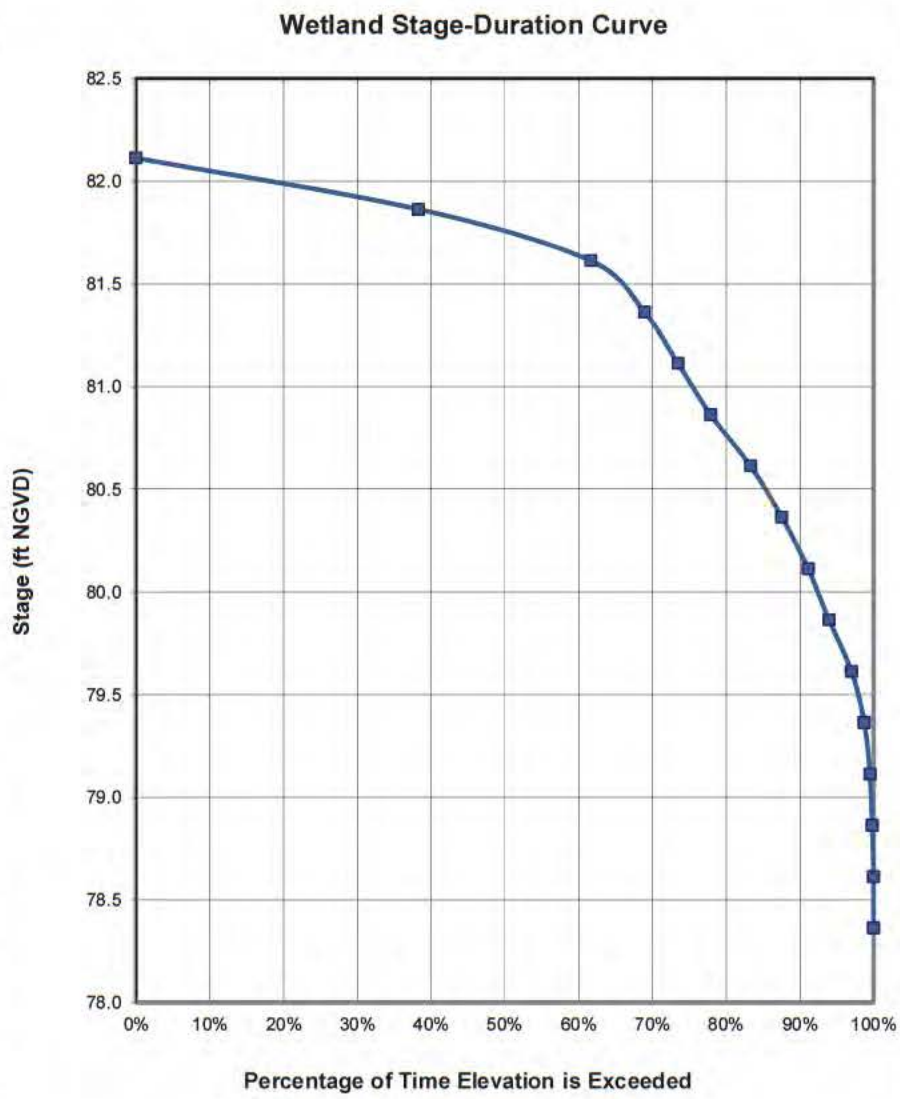


Figure A19-4
Modeled Stage-Duration Curve of Wetland 24-1
Ona Mine
Hardee County, Florida

Bay Swamp
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

WETLAND DESCRIPTION: 24-3 Mixed Wetland Hardwoods - Fringe/Slope
PROJECT& LOCATION: Ona Mine Hardee County, Florida

Fringe Wetland Top of Bank Elevation (ft, NGVD): 83.0
Fringe Wetland Center Elevation (ft, NGVD): 82.6
Fringe Wetland Bottom Elevation (ft, NGVD): 82.2

Data From Center of Fringe Wetland

Average	82.6 ft, NGVD	Range	2.0 ft
Maximum	82.7 ft, NGVD	Step Size	0.15 ft
Minimum	80.7 ft, NGVD	No. of Steps	13
Median	82.7 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
82.85			82.85	
82.70	0	0	82.70	0.00%
82.55	5220	5220	82.55	81.65%
82.40	204	5424	82.40	84.84%
82.25	186	5610	82.25	87.75%
82.10	160	5770	82.10	90.25%
81.95	133	5903	81.95	92.34%
81.80	115	6018	81.80	94.13%
81.65	113	6131	81.65	95.90%
81.50	104	6235	81.50	97.53%
81.35	73	6308	81.35	98.67%
81.20	39	6347	81.20	99.28%
81.05	24	6371	81.05	99.66%
80.90	10	6381	80.90	99.81%
80.75	10	6391	80.75	99.97%
80.60	2	6393	80.60	100.00%
80.45	0	6393	80.45	100.00%
80.30	0	6393	80.30	100.00%

6393 Days
17.5 Years

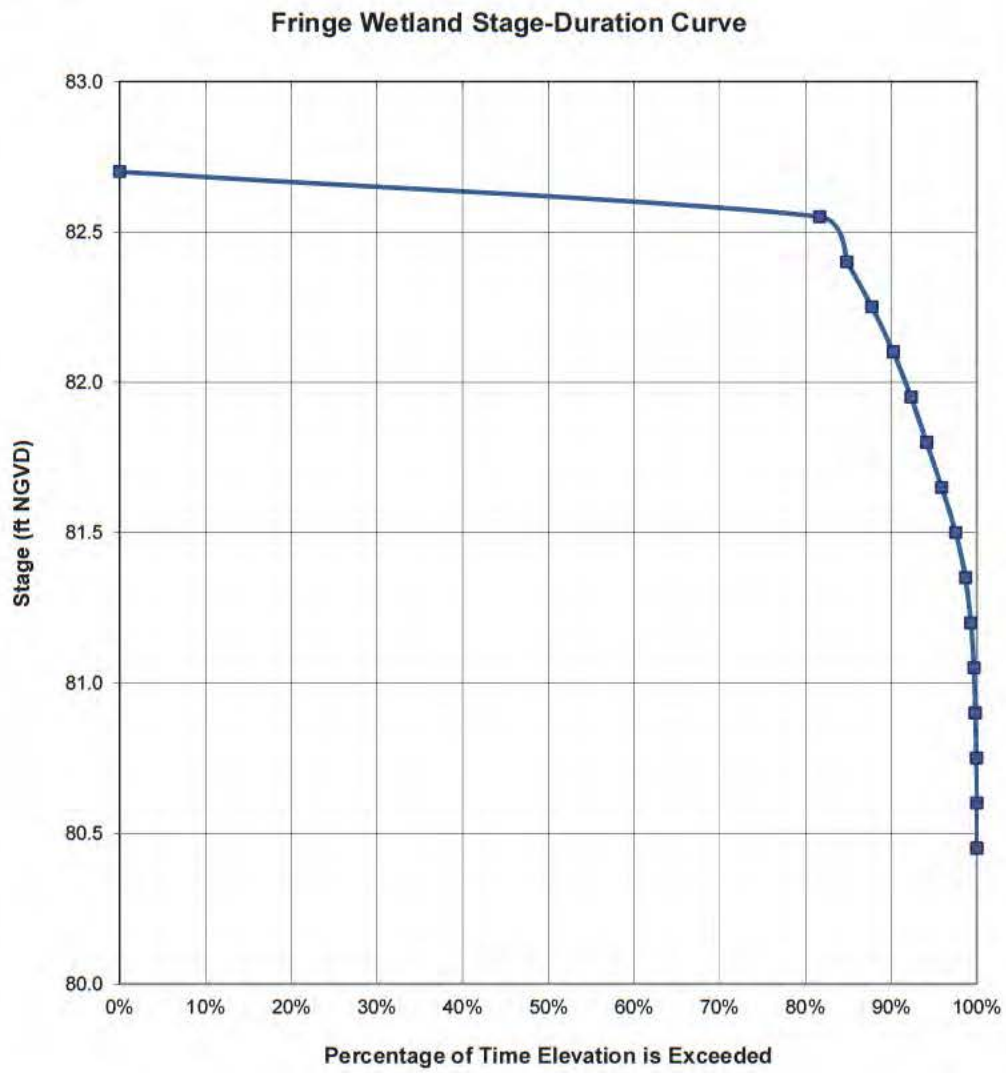
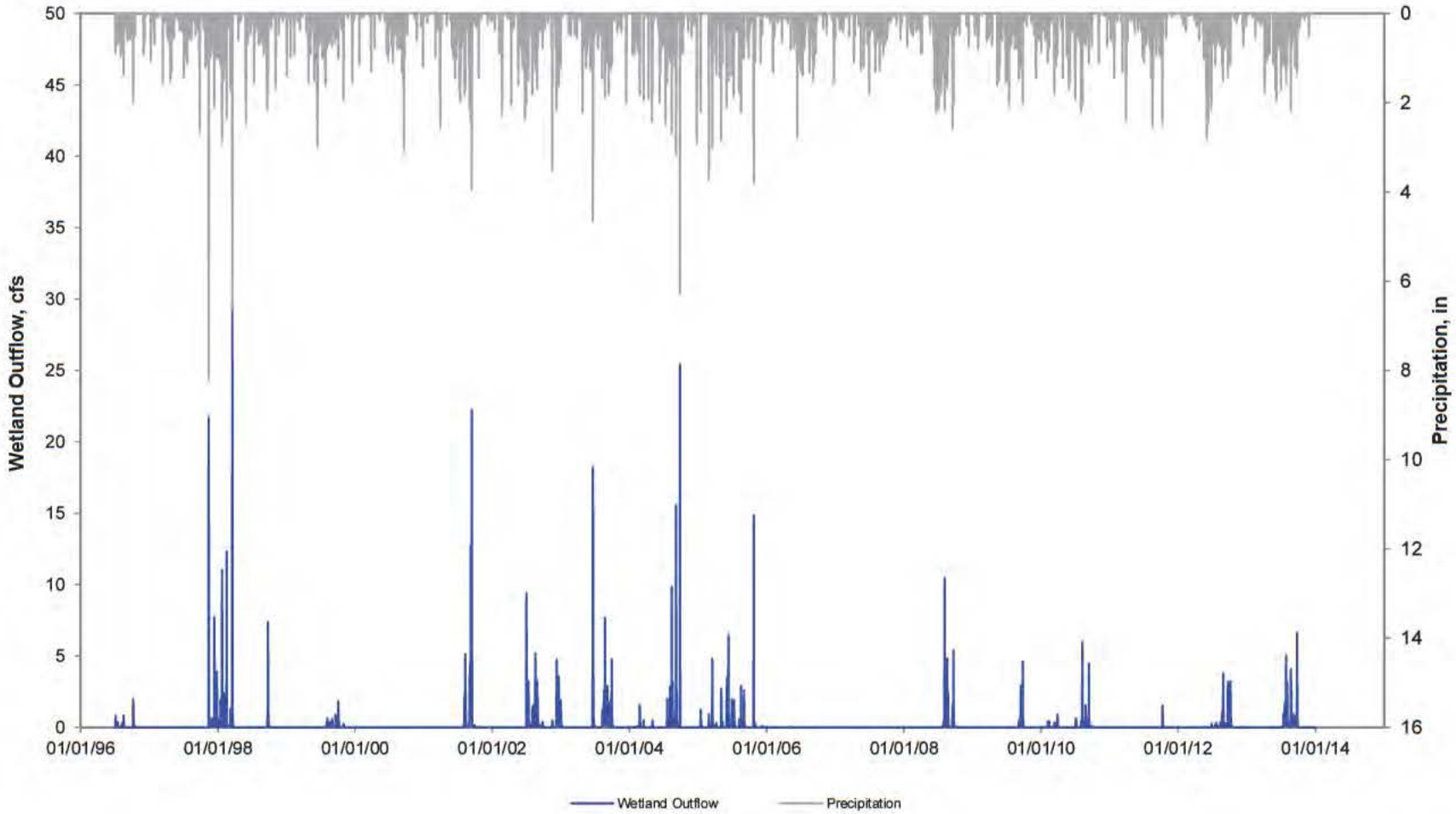


Figure A19-5
Modeled Stage-Duration Curve of Fringe/Slope Wetland 24-3
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods - Fringe/Slope
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



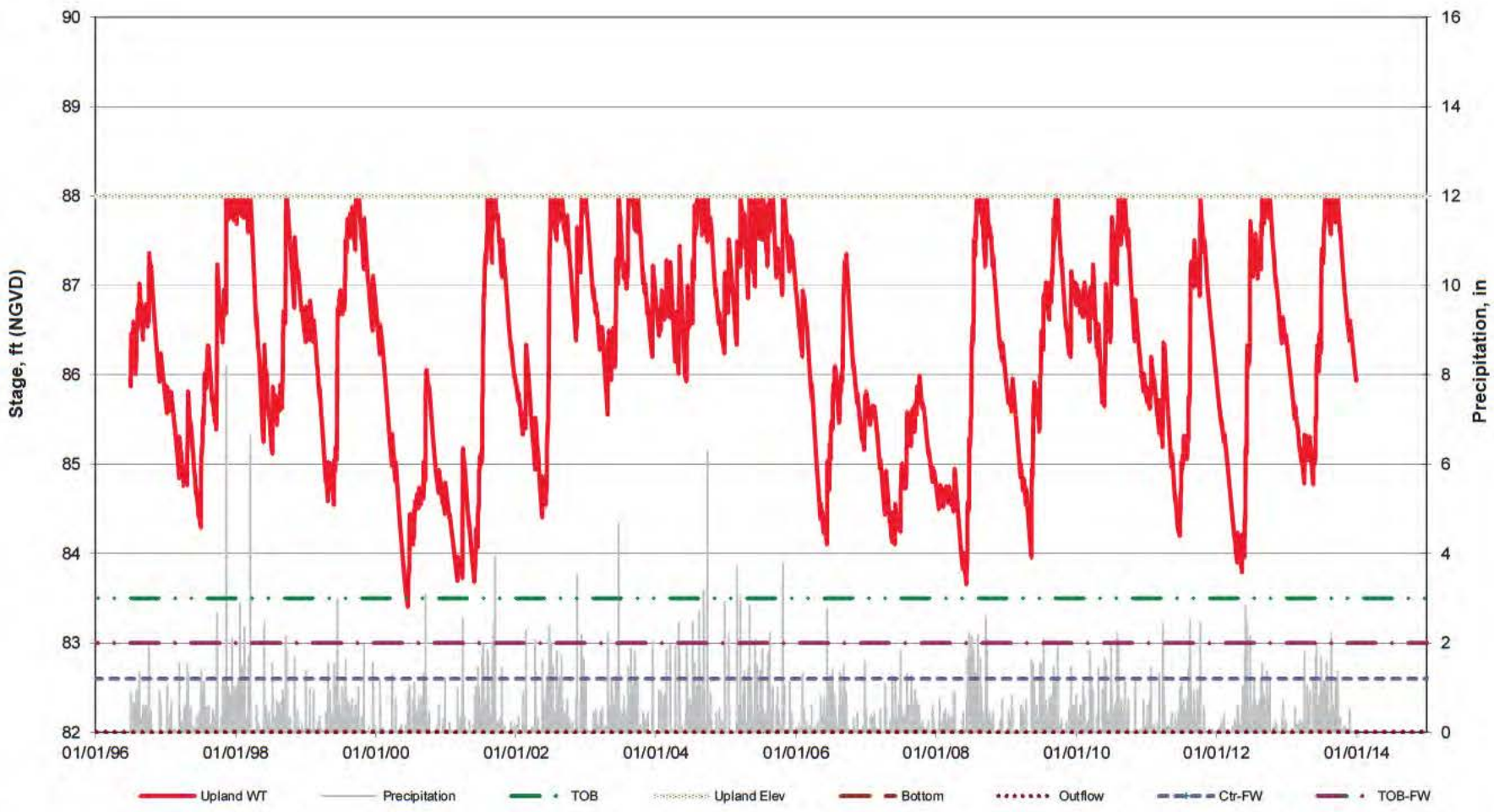
Wetland Surface Water Outflow

Figure A19-6
Modeled Outflow of Wetlands 24-1 & 24-3
Ona Mine
Hardee County, Florida

Bay Swamp
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



	Elev. Ft.
Wetland Bottom =	81.5
Outflow =	82

Upland Hydroperiod

Figure A19-7
Modeled Upland Hydrograph of Wetlands 24-1 & 24-3
Ona Mine
Hardee County, Florida

Bay Swamp
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

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TABLE A20
WETLANDS 24-2_Low & 24-12 WATER BALANCE CALCULATIONS
Three Cell System (Upland-UG, Wetland & DG-Cell) with Daily Time Steps

	Primary	Fringe (if present)
WETLAND NUMBER:	24-2_Low	24-12
WETLAND TYPE:	Inland Ponds and Sloughs	Mixed Wetland Hardwoods - Fringe/Slope
MINE NAME	Ona Mine	
Permit Name:		
COUNTY:	Hardee County, Florida	

By: ECT
Date: November 3, 2014

VERSION 2.1

CONSTANT & INITIAL/STARTING CONDITION INPUT PARAMETERS

UPLAND-UG INPUTS		Symbol
Upland-UG Acres:	**3.33**	
Upland-UG Area (ft2):	145,055	Au-UG
Highest Upland-UG Elevation (ft, NGVD):	87	El
Average Upland-UG Elevation (ft, NGVD):	84.5	
Initial Starting Depth to Water at Upland-UG (ft):	2.0	
Initial Starting Water Table Elevation at Upland-UG (ft, NGVD):	82.5	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu
Distance between Centers of Upland-UG and Wetland (ft):	850	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	3	Ku
Initial Upland Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0024	Gu
Upland-UG Saturated Thickness [bu] (ft):	80	Tuug
Upland-UG Ground Width entering Wetland [Wu] (ft):	900	Wu

WETLAND INPUTS		Symbol
Wetland Acres:	**20.51**	
Wetland Area (ft2):	893,416	Aw
Top of Bank Elevation (ft, NGVD):	87.0	TOB
Wetland Outflow Elevation (ft, NGVD):	81.0	OUT
Wetland Bottom Elevation (ft, NGVD):	79.5	BOT
Initial Starting Depth to Water at Wetland (ft):	-1.0	Dsw
Initial Starting Water Table Elevation at Wetland (ft, NGVD):	80.5	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu
Distance between Centers of Wetland and DG-Cell (ft):	439	
Wetland Discharge Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Kw
Initial Wetland Horizontal Hydraulic Gradient [ihw] (ft/ft):	0.0016	Gw
Wetland/Downgradient Saturated Thickness [bd] (ft):	70	Tw
Wetland Ground Width exiting Wetland [Wd] (ft):	620	Ww
Vertical Hydraulic Conductivity Confining Unit [Kv] (ft/day):	0.0014	
Vertical Distance Separating Surficial/Int. Aquifers [dv] (ft):	70	
Wetland Outflow Channel Width (ft):	20.0	
Wetland Outflow Channel Slope (ft/ft):	0.00300	
Wetland Outflow Channel Manning Coeff (ND):	0.035	
Depth to Check for Wet Soil Conditions:	0.5	
Distance to Wetland Fringe Inner Boundary*:	180	
Distance to Wetland Fringe Center*:	470	
Distance to Wetland Fringe Outer Boundary*:	750	
Elevation of Wetland Fringe Inner Boundary:	81	
Elevation of Wetland Fringe Center:	82	
Elevation of Wetland Fringe Outer Boundary:	83	

* distance from wetland centroid

DG-CELL INPUTS		Symbol
DG-Cell Acres:	**3.96**	
DG-Cell Area (ft2):	172,498	
Highest DG-Cell Elevation (ft, NGVD):	82	
Average DG-Cell Elevation (ft, NGVD):	81.0	
Initial Starting Depth to Water at DG-Cell (ft):	1.2	
Initial Starting Water Table Elevation at DG-Cell (ft, NGVD):	79.8	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	
Distance between DG-Cell and DG Boundary (ft):	541	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Ku
Water Table Elevation at DG Boundary Control Point (ft):	79.0	
Initial DG-Cell Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0015	Gu
DG-Cell Saturated Thickness [bu] (ft):	45	Tuug
DG-Cell Ground Width exiting system [Wu] (ft):	470	Wu

Soil Type & Moisture Condition		AMC I	AMC II	AMC III	Cap. Suct. [CS]-(in)	Sat. Hyd Cd [Ks]-(ft/day)
Upland-UG -	Sand	0.404	0.375	0.346	-1.950	9.276
Wetland -	Sand	0.404	0.375	0.346	-1.950	9.276
DG-Cell -	Sand	0.404	0.375	0.346	-1.950	9.276

	Upland-UG	Wetland	DG-Cell
Evapotranspiration Extinction Depth (ft):	5	5	5
Minimum ET Rate (in/day):	0	0	0

Input Variables - site specific conditions
Input Variables - represent more regional/seasonal conditions
Input Variables - site specific conditions, but limited range of variation

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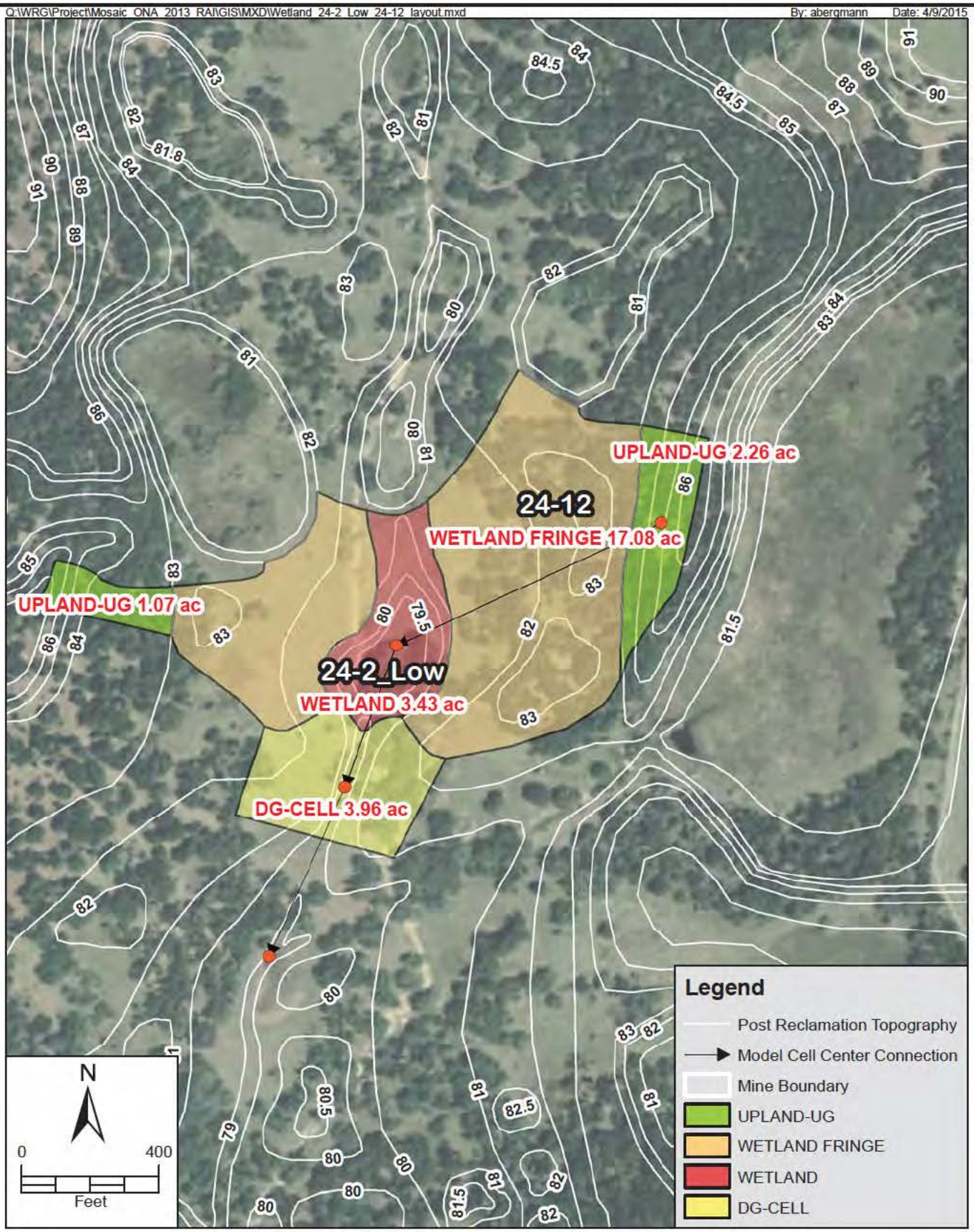
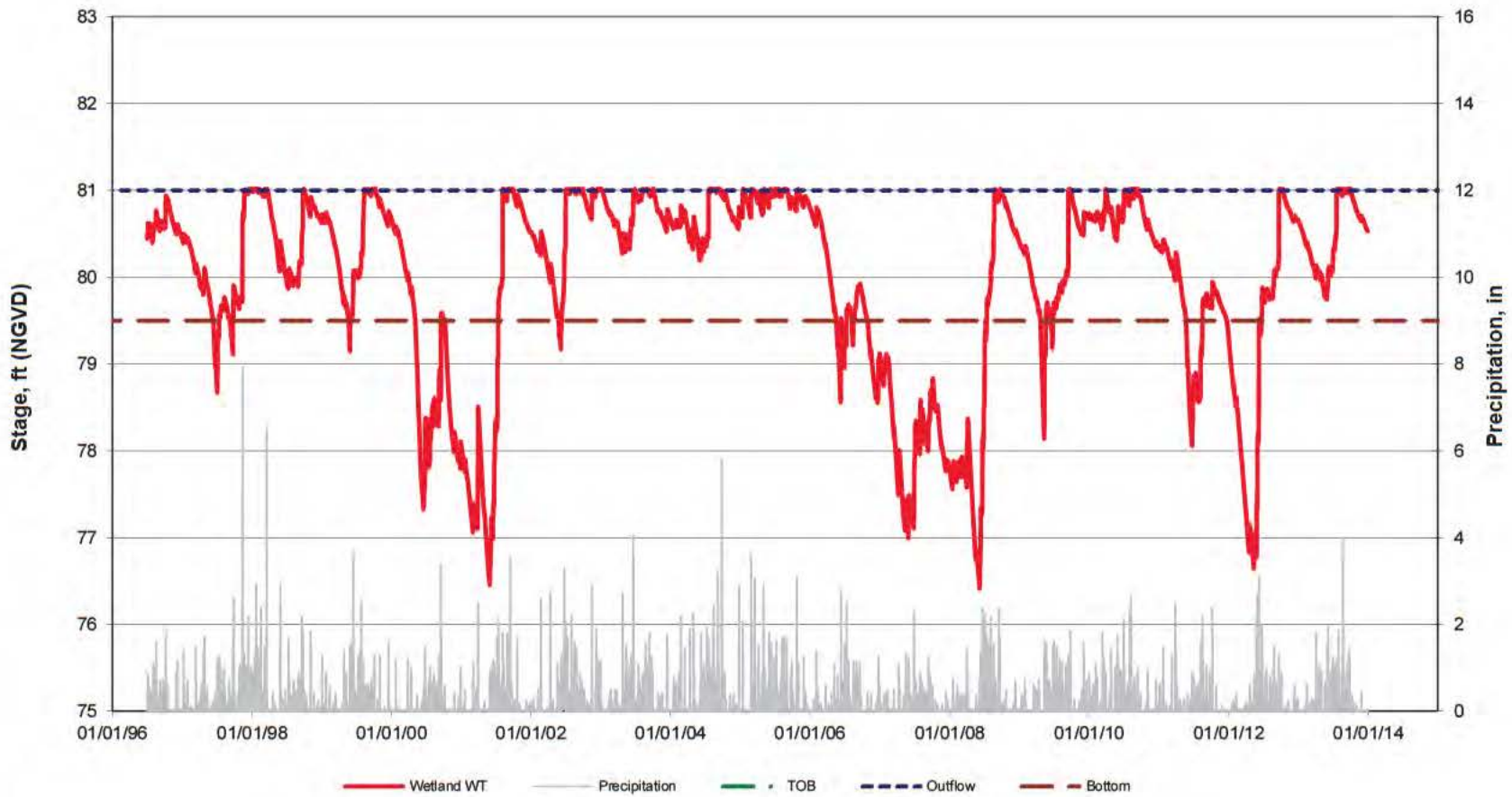


FIGURE A20-1
WETLANDS 24-2_Low & 24-12 - HYDROPERIOD MODEL DIAGRAM
ONA MINE
HARDEE COUNTY, FLORIDA

Sources: ESRI, 2014; Mosaic, 2015; ECT, 2015.

ECT Environmental Consulting & Technology, Inc



	Elev. Ft.
Wetland Bottom =	79.5
Outflow =	81

Wetland Hydroperiod

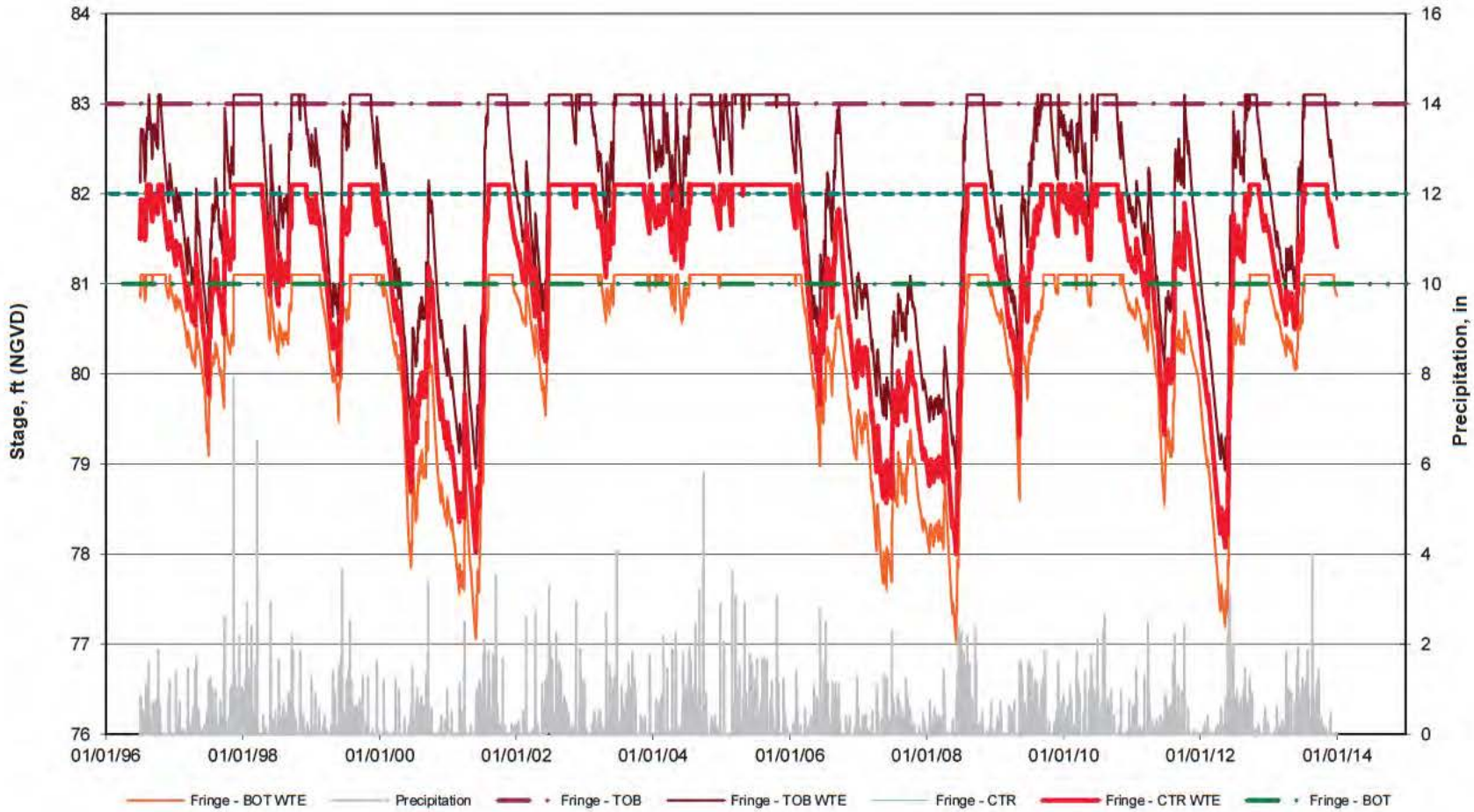
Starting WLE = 80.5

Figure A20-2
Modeled Hydrograph of Wetland 24-2_Low
Ona Mine
Hardee County, Florida

Inland Ponds and Sloughs
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



	Elev. Ft.
Top of Bank - Fringe Wetland =	83
Center - Fringe Wetland =	82
Bottom - Fringe Wetland =	81

Fringe Wetland Hydroperiod

Starting WLE = 80.5

Figure A20-3
Modeled Hydrograph of Fringe/Slope Wetland 24-12
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods - Fringe/Slope
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

WETLAND DESCRIPTION: 24-2_Low Inland Ponds and Sloughs
PROJECT& LOCATION: Ona Mine Hardee County, Florida

Top of Bank Elevation (ft, NGVD):	87.0
Wetland Outflow Elevation (ft, NGVD):	81.0
Wetland Bottom Elevation (ft, NGVD):	79.5

Average	80.0 ft, NGVD	Range	4.6 ft
Maximum	81.0 ft, NGVD	Step Size	0.35 ft
Minimum	76.4 ft, NGVD	No. of Steps	13
Median	80.4 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
81.37			81.37	
81.02	0	0	81.02	0.00%
80.67	2134	2134	80.67	33.38%
80.32	1222	3356	80.32	52.49%
79.97	623	3979	79.97	62.24%
79.62	738	4717	79.62	73.78%
79.27	335	5052	79.27	79.02%
78.92	181	5233	78.92	81.86%
78.57	182	5415	78.57	84.70%
78.22	226	5641	78.22	88.24%
77.87	247	5888	77.87	92.10%
77.52	202	6090	77.52	95.26%
77.17	145	6235	77.17	97.53%
76.82	103	6338	76.82	99.14%
76.47	51	6389	76.47	99.94%
76.12	4	6393	76.12	100.00%
75.77	0	6393	75.77	100.00%
75.42	0	6393	75.42	100.00%

6393 Days
17.5 Years

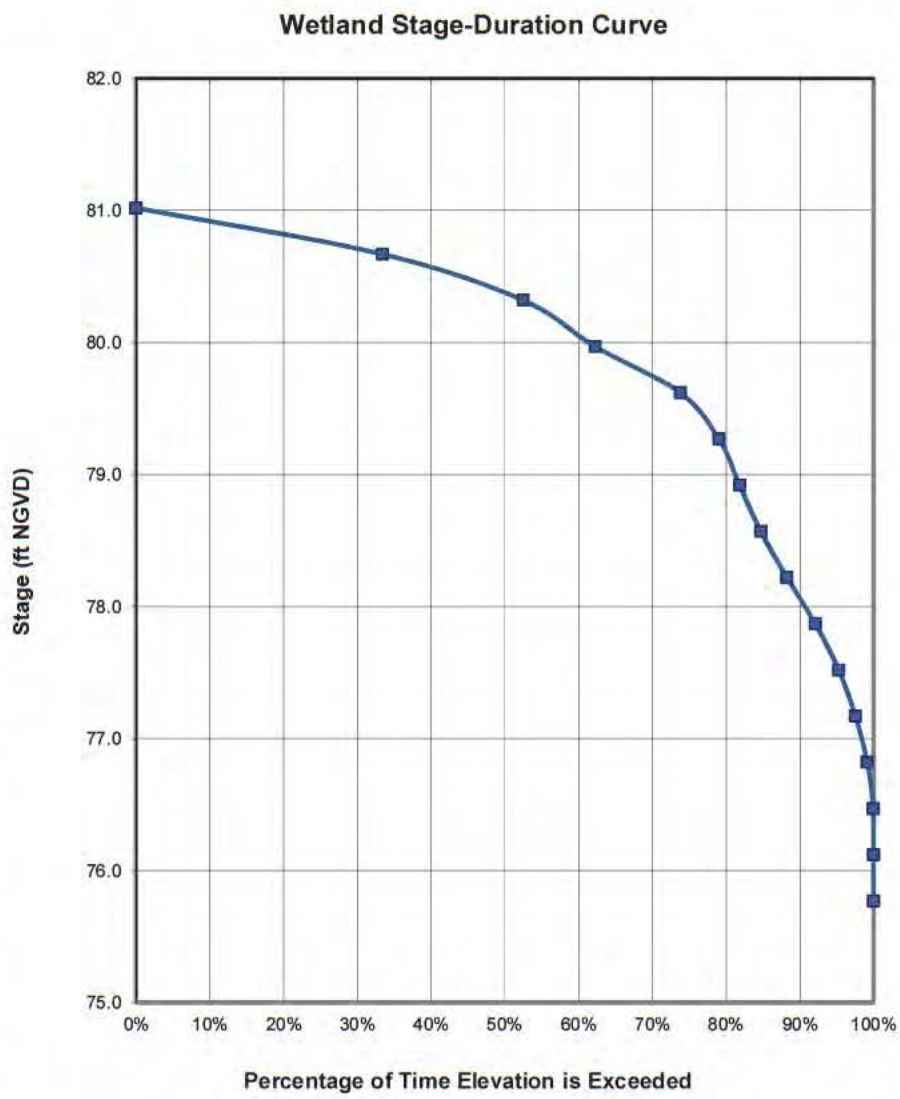


Figure A20-4
Modeled Stage-Duration Curve of Wetland 24-2_Low
Ona Mine
Hardee County, Florida

Inland Ponds and Sloughs
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

WETLAND DESCRIPTION: 24-12 Mixed Wetland Hardwoods - Fringe/Slope
PROJECT& LOCATION: Ona Mine Hardee County, Florida

Fringe Wetland Top of Bank Elevation (ft, NGVD): 83.0
Fringe Wetland Center Elevation (ft, NGVD): 82.0
Fringe Wetland Bottom Elevation (ft, NGVD): 81.0

Data From Center of Fringe Wetland

Average	81.2 ft, NGVD	Range	4.1 ft
Maximum	82.1 ft, NGVD	Step Size	0.3 ft
Minimum	78.0 ft, NGVD	No. of Steps	14
Median	81.5 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
82.40			82.40	
82.10	0	0	82.10	0.00%
81.80	2440	2440	81.80	38.17%
81.50	807	3247	81.50	50.79%
81.20	642	3889	81.20	60.83%
80.90	509	4398	80.90	68.79%
80.60	391	4789	80.60	74.91%
80.30	296	5085	80.30	79.54%
80.00	237	5322	80.00	83.25%
79.70	241	5563	79.70	87.02%
79.40	206	5769	79.40	90.24%
79.10	154	5923	79.10	92.65%
78.80	223	6146	78.80	96.14%
78.50	121	6267	78.50	98.03%
78.20	101	6368	78.20	99.61%
77.90	25	6393	77.90	100.00%
77.60	0	6393	77.60	100.00%
77.30	0	6393	77.30	100.00%

6393 Days
17.5 Years

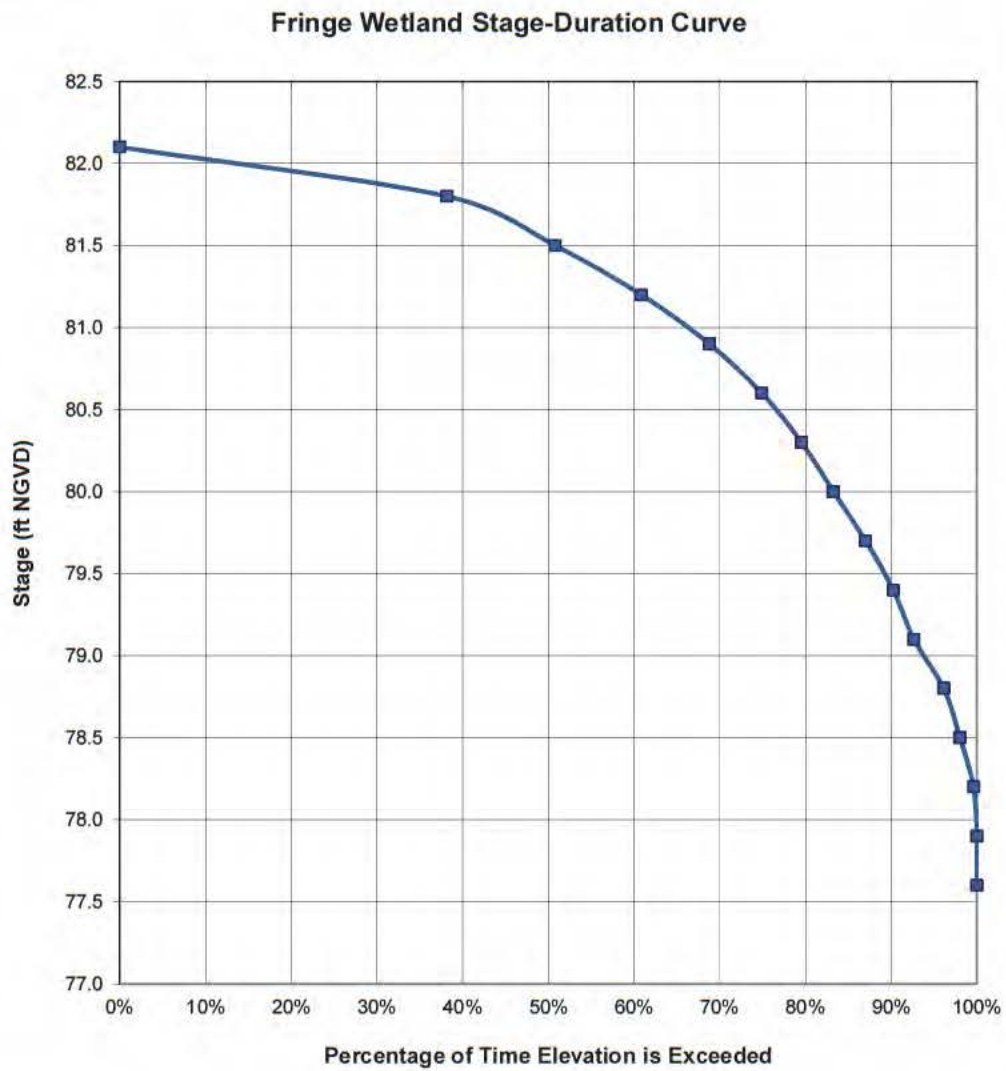
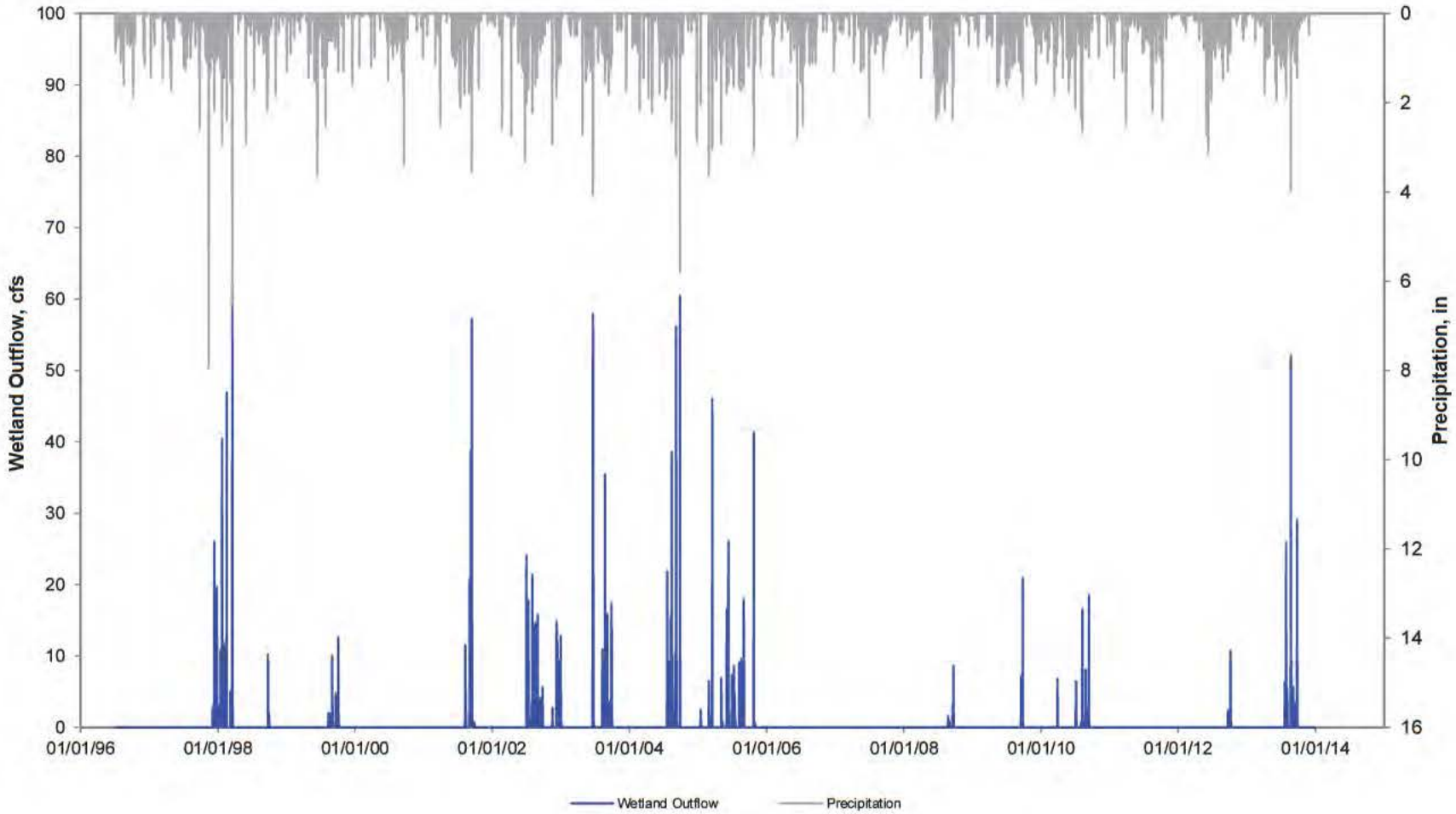


Figure A20-5
Modeled Stage-Duration Curve of Fringe/Slope Wetland 24-12
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods - Fringe/Slope
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



Wetland Surface Water Outflow

Figure A20-6
Modeled Outflow of Wetlands 24-2_Low & 24-12
Ona Mine
Hardee County, Florida

Inland Ponds and Sloughs
By: *ECT*
Date: *11/3/2014*

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

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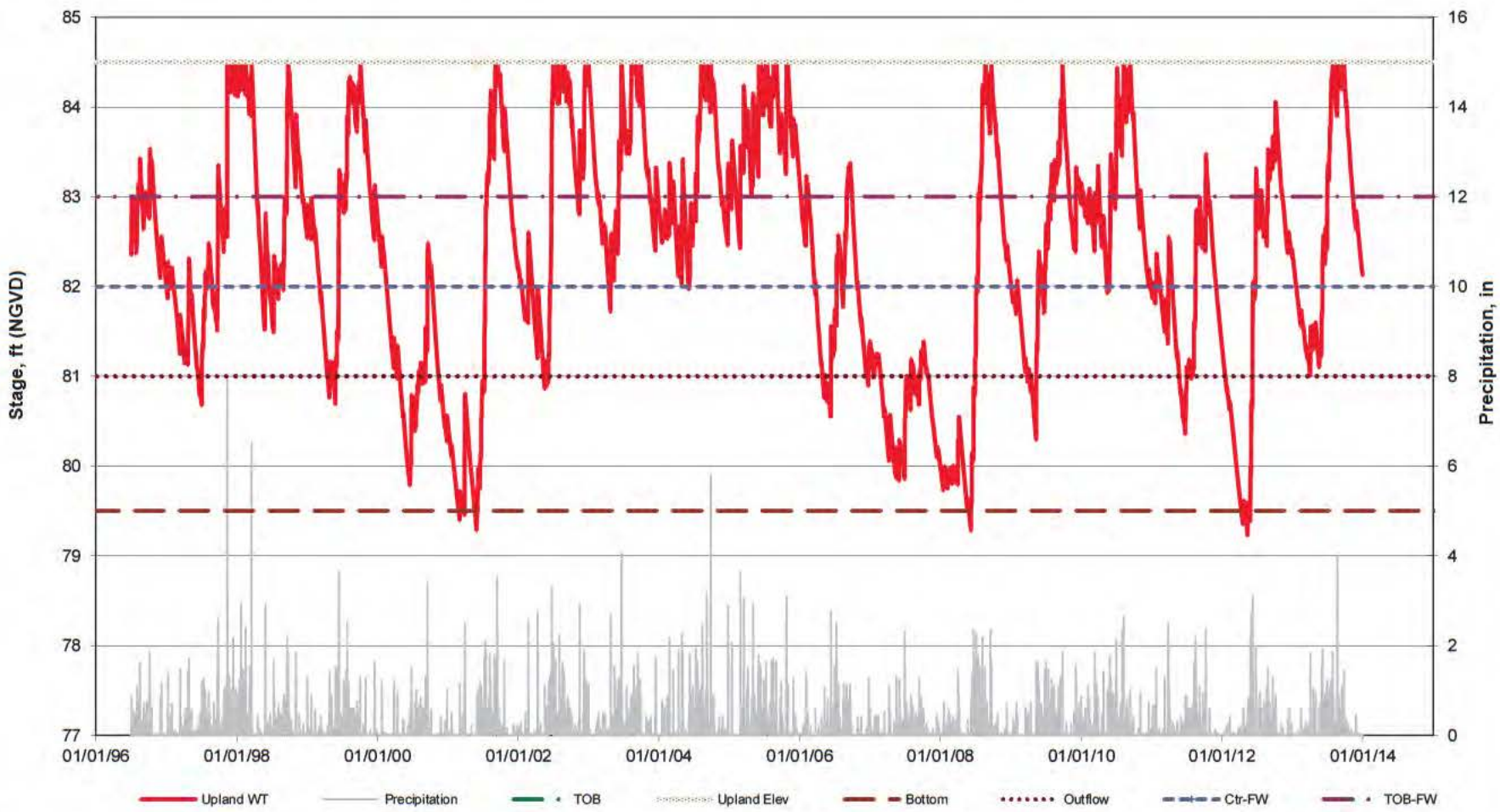

	Elev. Ft.
Wetland Bottom =	79.5
Outflow =	81

Upland Hydroperiod

Figure A20-7
Modeled Upland Hydrograph of Wetlands 24-2_Low & 24-12
Ona Mine
Hardee County, Florida

Inland Ponds and Sloughs
By: *ECT*
Date: *11/3/2014*

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

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TABLE A21
WETLANDS 24-2_Mid & 24-12 WATER BALANCE CALCULATIONS
Three Cell System (Upland-UG, Wetland & DG-Cell) with Daily Time Steps

	Primary	Fringe (if present)
WETLAND NUMBER:	24-2_Mid	24-12
WETLAND TYPE:	Inland Ponds and Sloughs	Mixed Wetland Hardwoods - Fringe/Slope
MINE NAME	Ona Mine	
Permit Name:		
COUNTY:	Hardee County, Florida	

By: ECT
Date: November 3, 2014

VERSION 2.1

CONSTANT & INITIAL/STARTING CONDITION INPUT PARAMETERS

UPLAND-UG INPUTS		Symbol
Upland-UG Acres:	**19.48**	
Upland-UG Area (ft2):	848,549	Au-UG
Highest Upland-UG Elevation (ft, NGVD):	84.5	El
Average Upland-UG Elevation (ft, NGVD):	84.0	
Initial Starting Depth to Water at Upland-UG (ft):	2.0	
Initial Starting Water Table Elevation at Upland-UG (ft, NGVD):	82.0	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu
Distance between Centers of Upland-UG and Wetland (ft):	859	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Ku
Initial Upland Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0012	Gu
Upland-UG Saturated Thickness [bu] (ft):	85	Tuug
Upland-UG Ground Width entering Wetland [Wu] (ft):	630	Wu

WETLAND INPUTS		Symbol
Wetland Acres:	**12.56**	
Wetland Area (ft2):	547,114	Aw
Top of Bank Elevation (ft, NGVD):	89.0	TOB
Wetland Outflow Elevation (ft, NGVD):	81.5	OUT
Wetland Bottom Elevation (ft, NGVD):	80.0	BOT
Initial Starting Depth to Water at Wetland (ft):	-1.0	Dsw
Initial Starting Water Table Elevation at Wetland (ft, NGVD):	81.0	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu
Distance between Centers of Wetland and DG-Cell (ft):	646	
Wetland Discharge Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Kw
Initial Wetland Horizontal Hydraulic Gradient [ihw] (ft/ft):	0.0011	Gw
Wetland/Downgradient Saturated Thickness [bd] (ft):	80	Tw
Wetland Ground Width exiting Wetland [Wd] (ft):	540	Ww
Vertical Hydraulic Conductivity Confining Unit [Kv] (ft/day):	0.0014	
Vertical Distance Separating Surficial/Int. Aquifers [dv] (ft):	70	
Wetland Outflow Channel Width (ft):	20.0	
Wetland Outflow Channel Slope (ft/ft):	0.00300	
Wetland Outflow Channel Manning Coeff (ND):	0.035	
Depth to Check for Wet Soil Conditions:	0.5	
Distance to Wetland Fringe Inner Boundary*:	280	
Distance to Wetland Fringe Center*:	450	
Distance to Wetland Fringe Outer Boundary*:	600	
Elevation of Wetland Fringe Inner Boundary:	81.5	
Elevation of Wetland Fringe Center:	82	
Elevation of Wetland Fringe Outer Boundary:	83	

* distance from wetland centroid

DG-CELL INPUTS		Symbol
DG-Cell Acres:	**2.33**	
DG-Cell Area (ft2):	101,495	
Highest DG-Cell Elevation (ft, NGVD):	82	
Average DG-Cell Elevation (ft, NGVD):	81.5	
Initial Starting Depth to Water at DG-Cell (ft):	1.2	
Initial Starting Water Table Elevation at DG-Cell (ft, NGVD):	80.3	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	
Distance between DG-Cell and DG Boundary (ft):	305	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Ku
Water Table Elevation at DG Boundary Control Point (ft):	-9999.0	
Initial DG-Cell Horizontal Hydraulic Gradient [ihu] (ft/ft):	(0.0006)	Gu
DG-Cell Saturated Thickness [bu] (ft):	75	Tuug
DG-Cell Ground Width exiting system [Wu] (ft):	640	Wu

Soil Type & Moisture Condition		AMC I	AMC II	AMC III	Cap. Suct. [CS]-(in)	Sat. Hyd Cd [Ks]-(ft/day)
Upland-UG -	Sand	0.404	0.375	0.346	-1.950	9.276
Wetland -	Sand	0.404	0.375	0.346	-1.950	9.276
DG-Cell -	Sand	0.404	0.375	0.346	-1.950	9.276

	Upland-UG	Wetland	DG-Cell
Evapotranspiration Extinction Depth (ft):	5	5	5
Minimum ET Rate (in/day):	0	0	0

Input Variables - site specific conditions
Input Variables - represent more regional/seasonal conditions
Input Variables - site specific conditions, but limited range of variation

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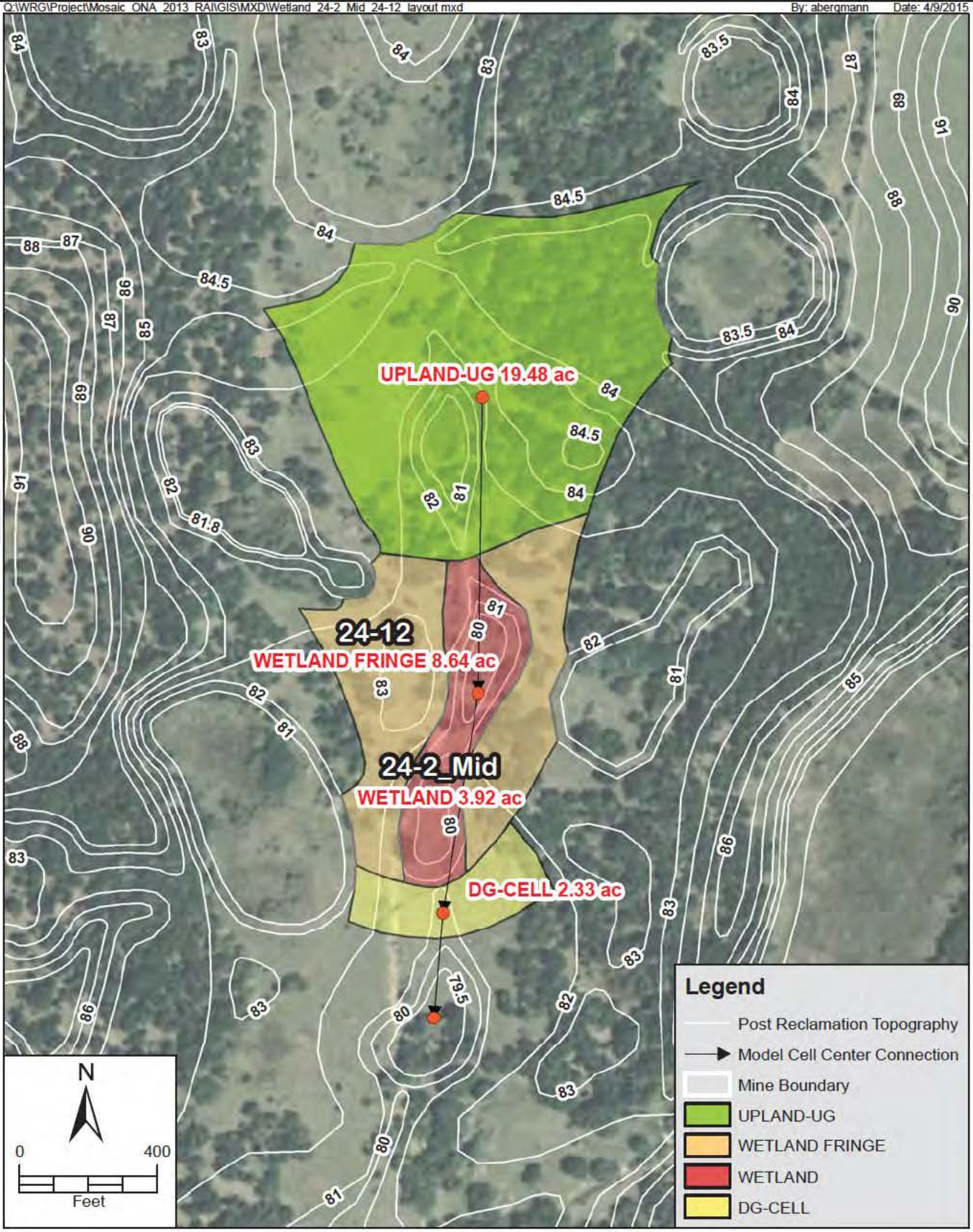
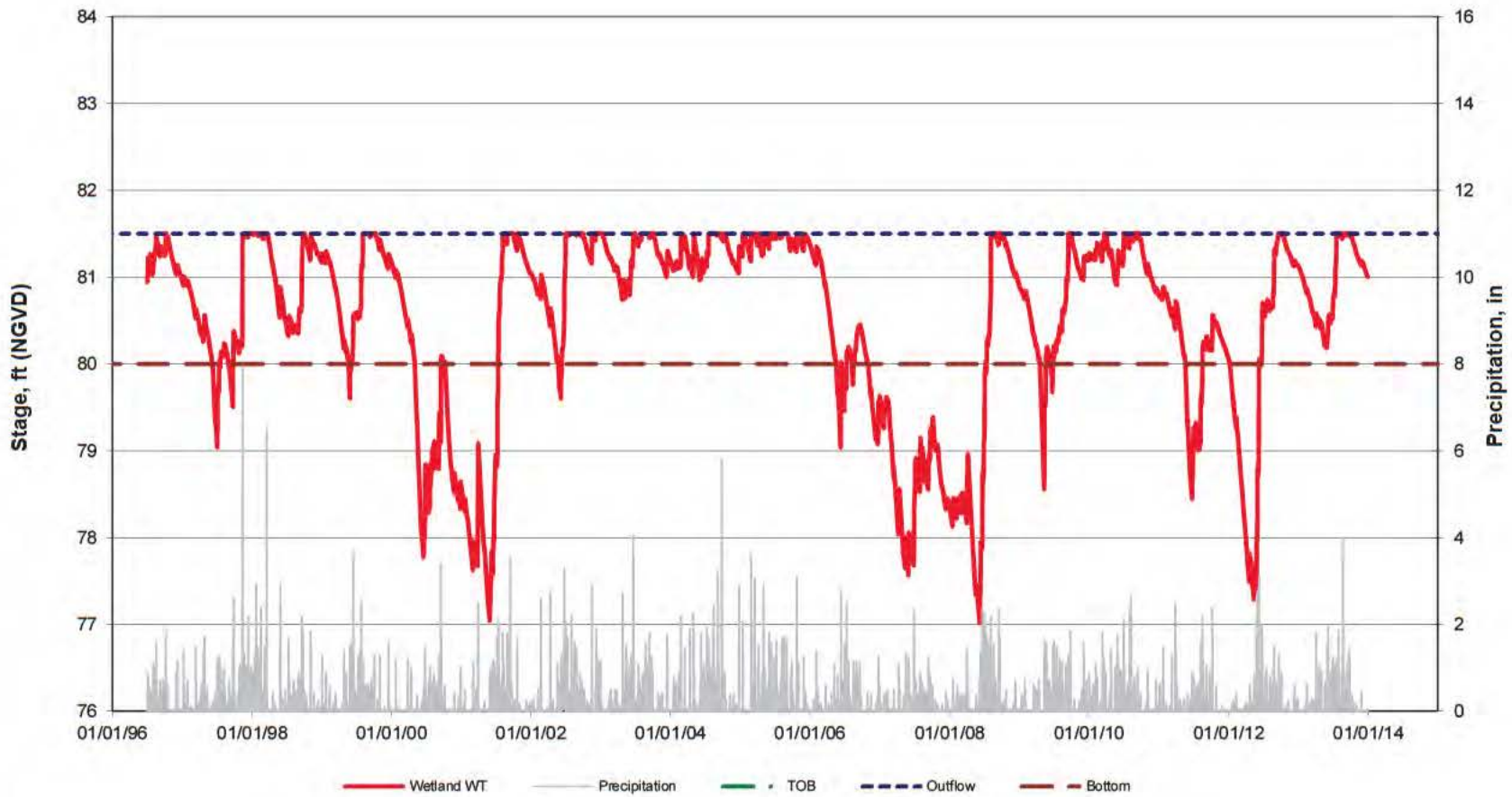


FIGURE A21-1
WETLANDS 24-2_Mid & 24-12 - HYDROPERIOD MODEL DIAGRAM
ONA MINE
HARDEE COUNTY, FLORIDA

Sources: ESRI, 2014; Mosaic, 2015; ECT, 2015.

ECT Environmental Consulting & Technology, Inc



	Elev. Ft.
Wetland Bottom =	80
Outflow =	81.5

Wetland Hydroperiod

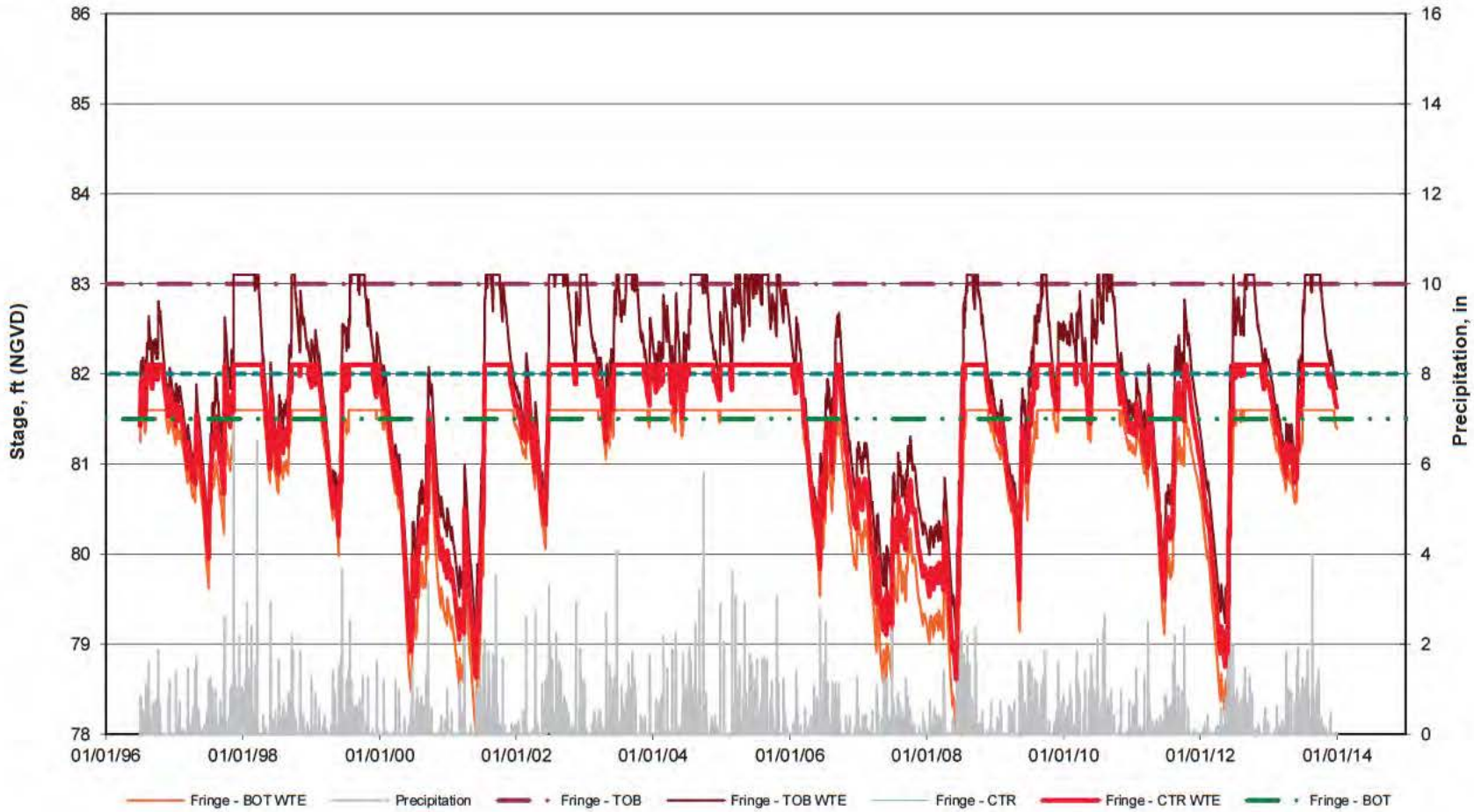
Starting WLE = 81

Figure A21-2
Modeled Hydrograph of Wetland 24-2_Mid
Ona Mine
Hardee County, Florida

Inland Ponds and Sloughs
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



	Elev. Ft.
Top of Bank - Fringe Wetland =	83
Center - Fringe Wetland =	82
Bottom - Fringe Wetland =	81.5

Fringe Wetland Hydroperiod

Starting WLE = 81

Figure A21-3
Modeled Hydrograph of Fringe/Slope Wetland 24-12
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods - Fringe/Slope
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

WETLAND DESCRIPTION: 24-2_Mid Inland Ponds and Sloughs
PROJECT& LOCATION: Ona Mine Hardee County, Florida

Top of Bank Elevation (ft, NGVD):	89.0
Wetland Outflow Elevation (ft, NGVD):	81.5
Wetland Bottom Elevation (ft, NGVD):	80.0

Average	80.5 ft, NGVD	Range	4.5 ft
Maximum	81.5 ft, NGVD	Step Size	0.3 ft
Minimum	77.0 ft, NGVD	No. of Steps	15
Median	80.9 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
81.81			81.81	
81.51	0	0	81.51	0.00%
81.21	2208	2208	81.21	34.54%
80.91	1022	3230	80.91	50.52%
80.61	536	3766	80.61	58.91%
80.31	582	4348	80.31	68.01%
80.01	564	4912	80.01	76.83%
79.71	165	5077	79.71	79.41%
79.41	156	5233	79.41	81.86%
79.11	171	5404	79.11	84.53%
78.81	195	5599	78.81	87.58%
78.51	221	5820	78.51	91.04%
78.21	226	6046	78.21	94.57%
77.91	110	6156	77.91	96.29%
77.61	140	6296	77.61	98.48%
77.31	70	6366	77.31	99.58%
77.01	27	6393	77.01	100.00%
76.71	0	6393	76.71	100.00%

6393 Days
17.5 Years

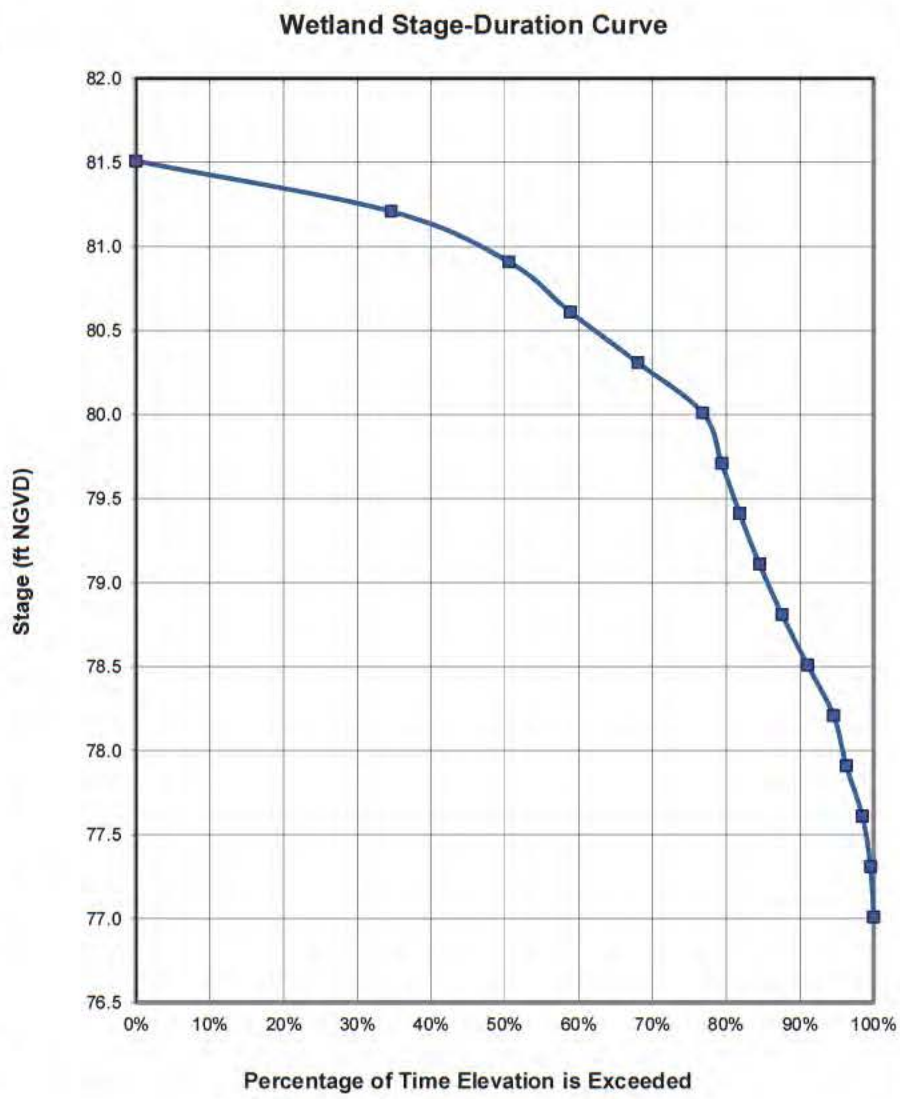


Figure A21-4
Modeled Stage-Duration Curve of Wetland 24-2_Mid
Ona Mine
Hardee County, Florida

Inland Ponds and Sloughs
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

WETLAND DESCRIPTION: 24-12 Mixed Wetland Hardwoods - Fringe/Slope
PROJECT& LOCATION: Ona Mine Hardee County, Florida

Fringe Wetland Top of Bank Elevation (ft, NGVD): 83.0
Fringe Wetland Center Elevation (ft, NGVD): 82.0
Fringe Wetland Bottom Elevation (ft, NGVD): 81.5

Data From Center of Fringe Wetland

Average	81.4 ft, NGVD	Range	3.5 ft
Maximum	82.1 ft, NGVD	Step Size	0.25 ft
Minimum	78.6 ft, NGVD	No. of Steps	14
Median	81.7 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
82.35			82.35	
82.10	0	0	82.10	0.00%
81.85	2913	2913	81.85	45.57%
81.60	607	3520	81.60	55.06%
81.35	553	4073	81.35	63.71%
81.10	433	4506	81.10	70.48%
80.85	293	4799	80.85	75.07%
80.60	318	5117	80.60	80.04%
80.35	260	5377	80.35	84.11%
80.10	248	5625	80.10	87.99%
79.85	187	5812	79.85	90.91%
79.60	220	6032	79.60	94.35%
79.35	127	6159	79.35	96.34%
79.10	121	6280	79.10	98.23%
78.85	83	6363	78.85	99.53%
78.60	30	6393	78.60	100.00%
78.35	0	6393	78.35	100.00%
78.10	0	6393	78.10	100.00%

6393 Days
17.5 Years

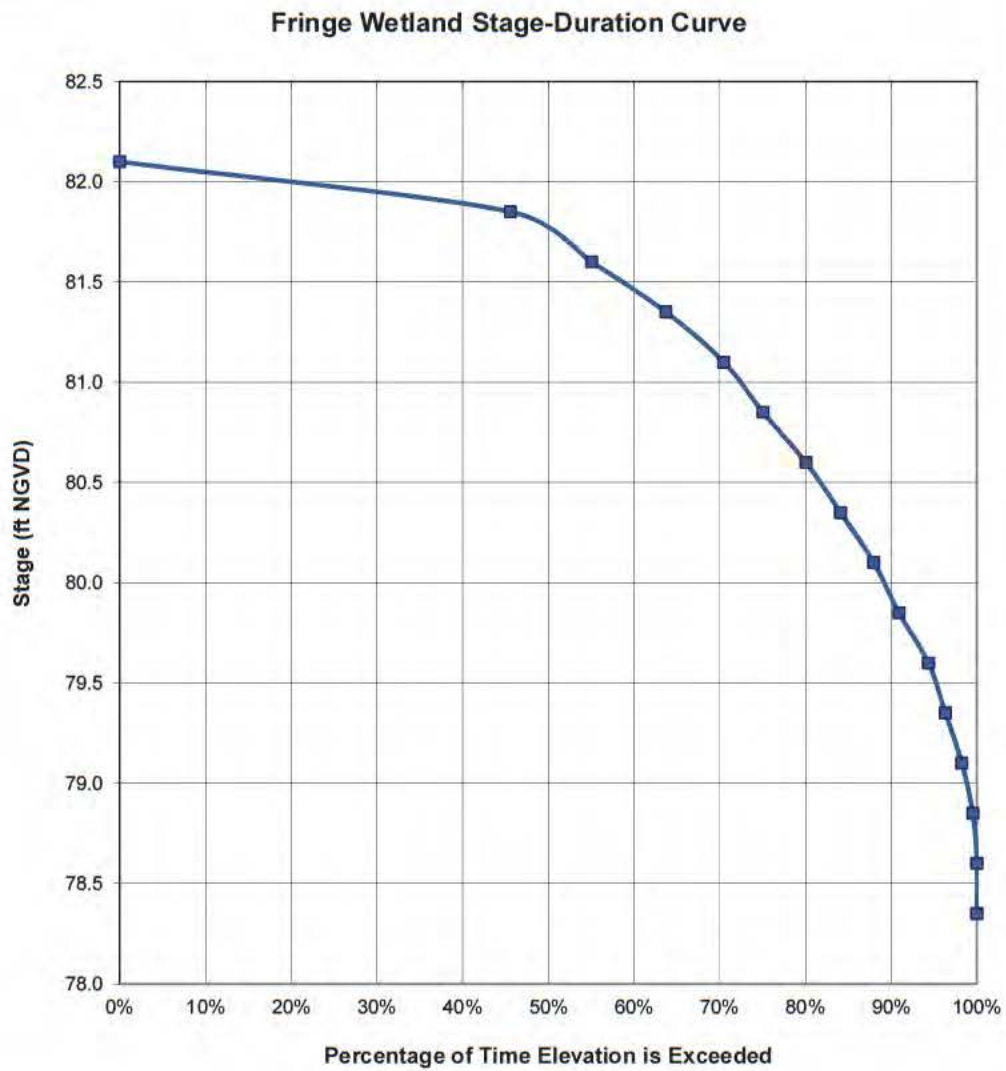
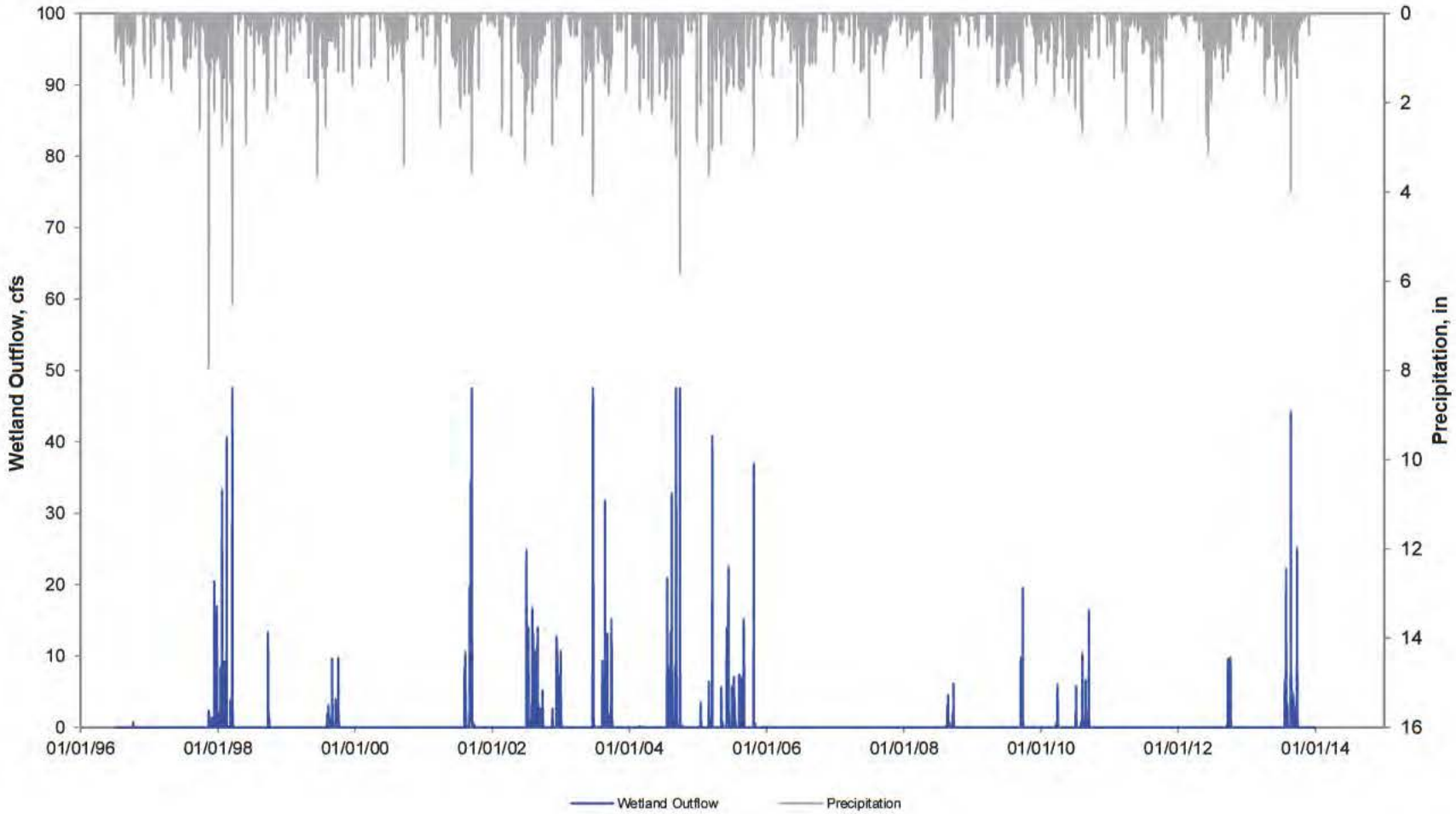


Figure A21-5
Modeled Stage-Duration Curve of Fringe/Slope Wetland 24-12
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods - Fringe/Slope
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



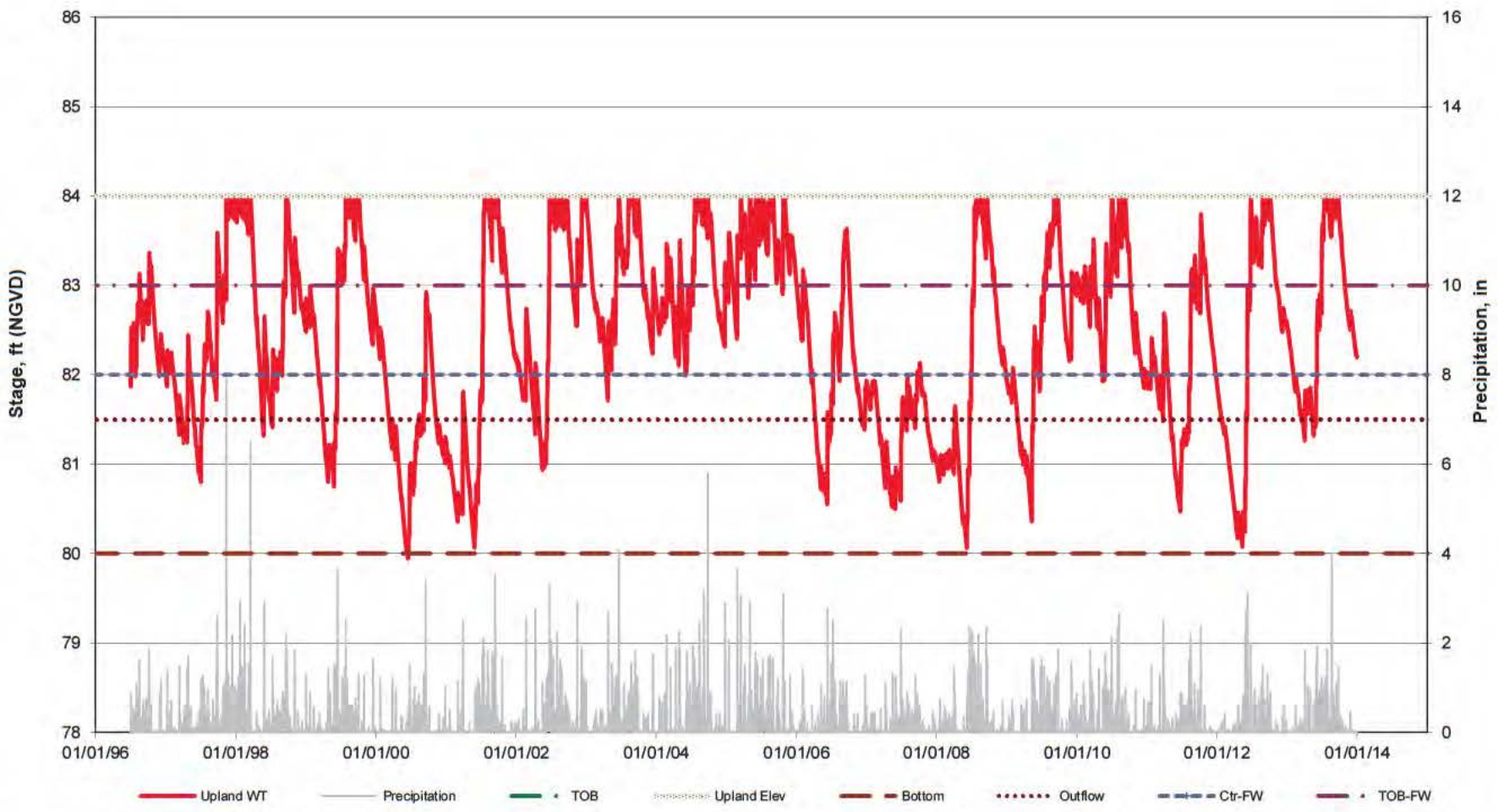
Wetland Surface Water Outflow

Figure A21-6
Modeled Outflow of Wetlands 24-2_Mid & 24-12
Ona Mine
Hardee County, Florida

Inland Ponds and Sloughs
By: *ECT*
Date: *11/3/2014*

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



	Elev. Ft.
Wetland Bottom =	80
Outflow =	81.5

Upland Hydroperiod

Figure A21-7
Modeled Upland Hydrograph of Wetlands 24-2_Mid & 24-12
Ona Mine
Hardee County, Florida

Inland Ponds and Sloughs
By: *ECT*
Date: *11/3/2014*

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

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TABLE A22
WETLANDS 24-2_Up & 24-12 WATER BALANCE CALCULATIONS
Three Cell System (Upland-UG, Wetland & DG-Cell) with Daily Time Steps

	Primary	Fringe (if present)
WETLAND NUMBER:	24-2_Up	24-12
WETLAND TYPE:	Inland Ponds and Sloughs	Mixed Wetland Hardwoods - Fringe/Slope
MINE NAME	Ona Mine	
Permit Name:		
COUNTY:	Hardee County, Florida	

By: ECT
Date: November 3, 2014

VERSION 2.1

CONSTANT & INITIAL/STARTING CONDITION INPUT PARAMETERS

UPLAND-UG INPUTS		Symbol
Upland-UG Acres:	**35.81**	
Upland-UG Area (ft2):	1,559,884	Au-UG
Highest Upland-UG Elevation (ft, NGVD):	92.5	El
Average Upland-UG Elevation (ft, NGVD):	88.0	
Initial Starting Depth to Water at Upland-UG (ft):	2.0	
Initial Starting Water Table Elevation at Upland-UG (ft, NGVD):	86.0	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu
Distance between Centers of Upland-UG and Wetland (ft):	928	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Ku
Initial Upland Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0022	Gu
Upland-UG Saturated Thickness [bu] (ft):	70	Tuug
Upland-UG Ground Width entering Wetland [Wu] (ft):	1,500	Wu

WETLAND INPUTS		Symbol
Wetland Acres:	**75.25**	
Wetland Area (ft2):	3,277,890	Aw
Top of Bank Elevation (ft, NGVD):	86.0	TOB
Wetland Outflow Elevation (ft, NGVD):	84.5	OUT
Wetland Bottom Elevation (ft, NGVD):	83.0	BOT
Initial Starting Depth to Water at Wetland (ft):	-1.0	Dsw
Initial Starting Water Table Elevation at Wetland (ft, NGVD):	84.0	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	Pu
Distance between Centers of Wetland and DG-Cell (ft):	479	
Wetland Discharge Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Kw
Initial Wetland Horizontal Hydraulic Gradient [ihw] (ft/ft):	0.0017	Gw
Wetland/Downgradient Saturated Thickness [bd] (ft):	70	Tw
Wetland Ground Width exiting Wetland [Wd] (ft):	325	Ww
Vertical Hydraulic Conductivity Confining Unit [Kv] (ft/day):	0.0014	
Vertical Distance Separating Surficial/Int. Aquifers [dv] (ft):	70	
Wetland Outflow Channel Width (ft):	20.0	
Wetland Outflow Channel Slope (ft/ft):	0.00300	
Wetland Outflow Channel Manning Coeff (ND):	0.035	
Depth to Check for Wet Soil Conditions:	0.5	
Distance to Wetland Fringe Inner Boundary*:	680	
Distance to Wetland Fringe Center*:	740	
Distance to Wetland Fringe Outer Boundary*:	810	
Elevation of Wetland Fringe Inner Boundary:	84.5	
Elevation of Wetland Fringe Center:	86	
Elevation of Wetland Fringe Outer Boundary:	87	

* distance from wetland centroid

DG-CELL INPUTS		Symbol
DG-Cell Acres:	**4.87**	
DG-Cell Area (ft2):	212,137	
Highest DG-Cell Elevation (ft, NGVD):	84.5	
Average DG-Cell Elevation (ft, NGVD):	84.0	
Initial Starting Depth to Water at DG-Cell (ft):	0.8	
Initial Starting Water Table Elevation at DG-Cell (ft, NGVD):	83.2	
Specific Yield [Sy]/Porosity [n] (ND):	0.27	
Distance between DG-Cell and DG Boundary (ft):	1,212	
Horizontal Hydraulic Conductivity [Kh] (ft/day):	5	Ku
Water Table Elevation at DG Boundary Control Point (ft):	-9999.0	
Initial DG-Cell Horizontal Hydraulic Gradient [ihu] (ft/ft):	0.0018	Gu
DG-Cell Saturated Thickness [bu] (ft):	85	Tuug
DG-Cell Ground Width exiting system [Wu] (ft):	325	Wu

Soil Type & Moisture Condition		AMC I	AMC II	AMC III	Cap. Suct. [CS]-(in)	Sat. Hyd Cd [Ks]-(ft/day)
Upland-UG -	Sand	0.404	0.375	0.346	-1.950	9.276
Wetland -	Sand	0.404	0.375	0.346	-1.950	9.276
DG-Cell -	Sand	0.404	0.375	0.346	-1.950	9.276

	Upland-UG	Wetland	DG-Cell
Evapotranspiration Extinction Depth (ft):	5	5	5
Minimum ET Rate (in/day):	0	0	0

Input Variables - site specific conditions
Input Variables - represent more regional/seasonal conditions
Input Variables - site specific conditions, but limited range of variation

Q:\WRG\Project\Mosaic_ONA_2013_RAI\GIS\MXD\Wetland_24-2_Up_24-12_layout.mxd By: abergmann Date: 4/9/2015

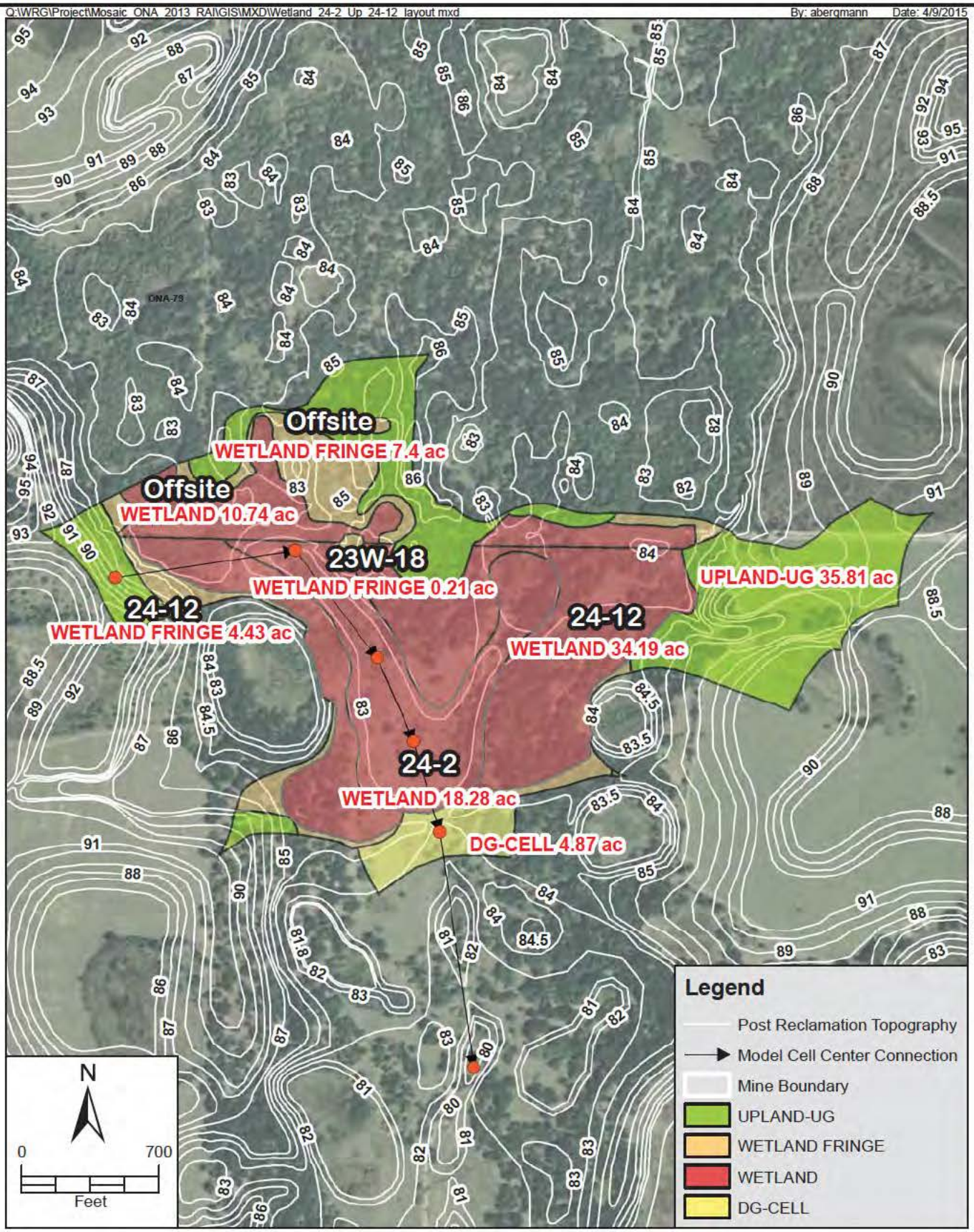
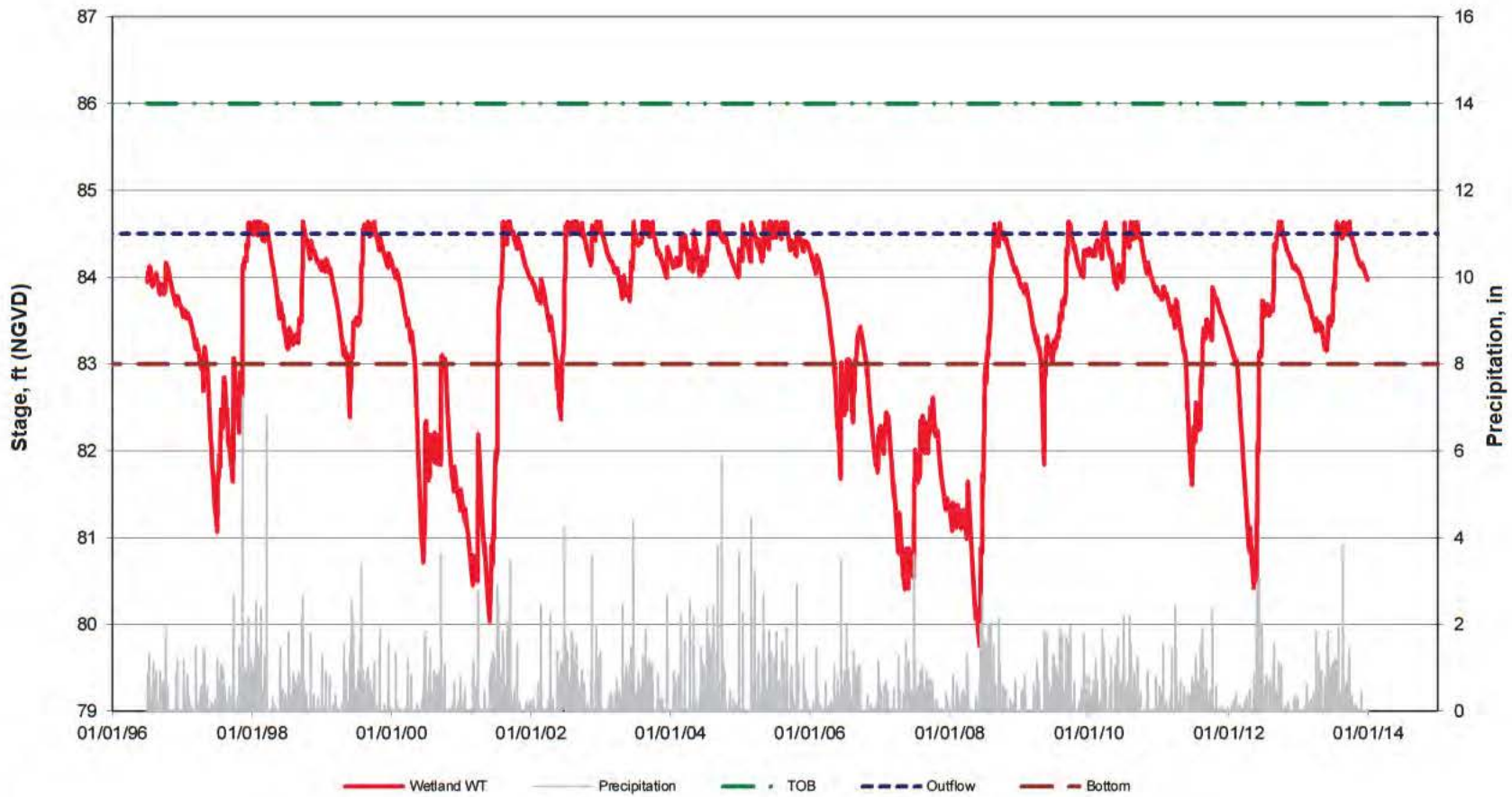


FIGURE A22-1
WETLANDS 24-2_Up & 24-12 - HYDROPERIOD MODEL DIAGRAM
ONA MINE
HARDEE COUNTY, FLORIDA

Sources: ESRI, 2014; Mosaic, 2015; ECT, 2015.

ECT Environmental Consulting & Technology, Inc



	Elev. Ft.
Wetland Bottom =	83
Outflow =	84.5

Wetland Hydroperiod

Starting WLE = 84

Figure A22-2
Modeled Hydrograph of Wetland 24-2_Up
Ona Mine
Hardee County, Florida

Inland Ponds and Sloughs
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

WETLAND DESCRIPTION: 24-2_Up Inland Ponds and Sloughs
PROJECT& LOCATION: Ona Mine Hardee County, Florida

Top of Bank Elevation (ft, NGVD):	86.0
Wetland Outflow Elevation (ft, NGVD):	84.5
Wetland Bottom Elevation (ft, NGVD):	83.0

Average	83.5 ft, NGVD	Range	4.9 ft
Maximum	84.6 ft, NGVD	Step Size	0.35 ft
Minimum	79.8 ft, NGVD	No. of Steps	14
Median	83.9 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
84.99			84.99	
84.64	0	0	84.64	0.00%
84.29	1700	1700	84.29	26.59%
83.94	1302	3002	83.94	46.96%
83.59	727	3729	83.59	58.33%
83.24	684	4413	83.24	69.03%
82.89	450	4863	82.89	76.07%
82.54	190	5053	82.54	79.04%
82.19	271	5324	82.19	83.28%
81.84	290	5614	81.84	87.81%
81.49	202	5816	81.49	90.97%
81.14	226	6042	81.14	94.51%
80.79	149	6191	80.79	96.84%
80.44	141	6332	80.44	99.05%
80.09	40	6372	80.09	99.67%
79.74	21	6393	79.74	100.00%
79.39	0	6393	79.39	100.00%
79.04	0	6393	79.04	100.00%

6393 Days
17.5 Years

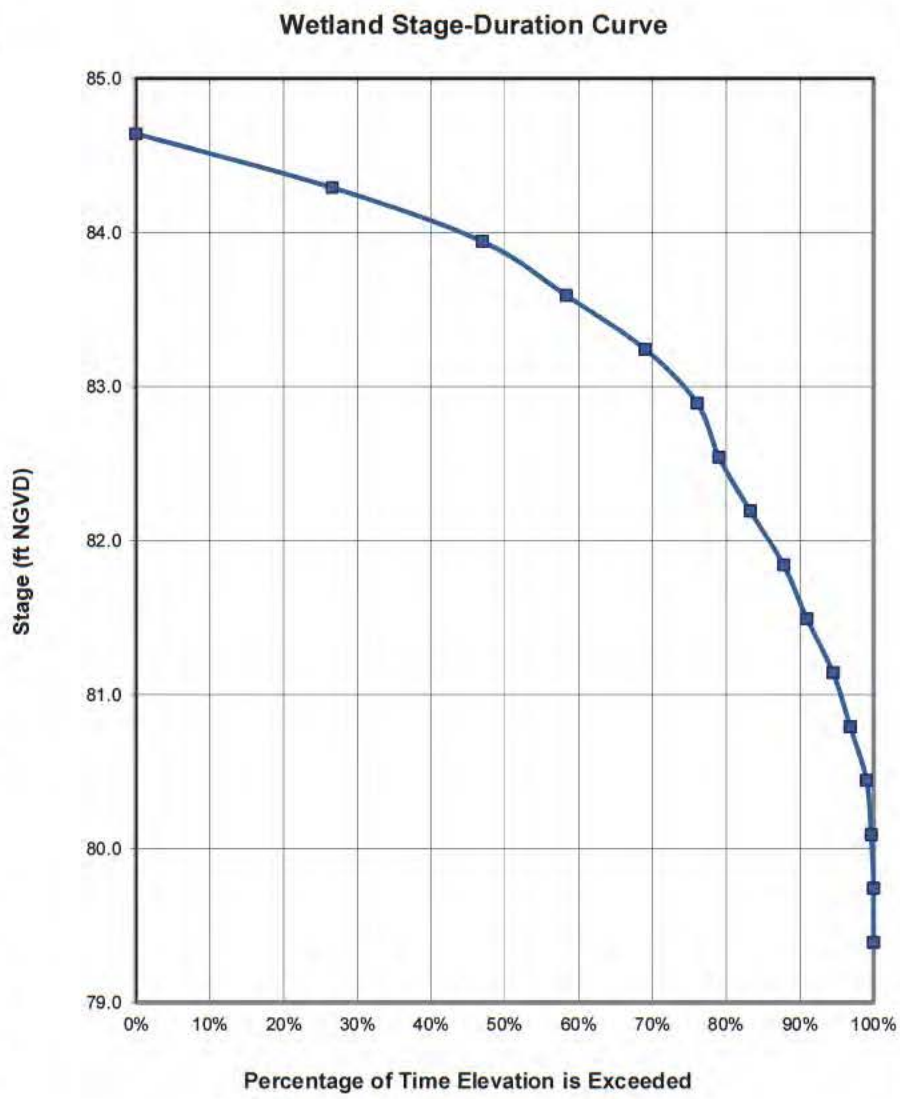
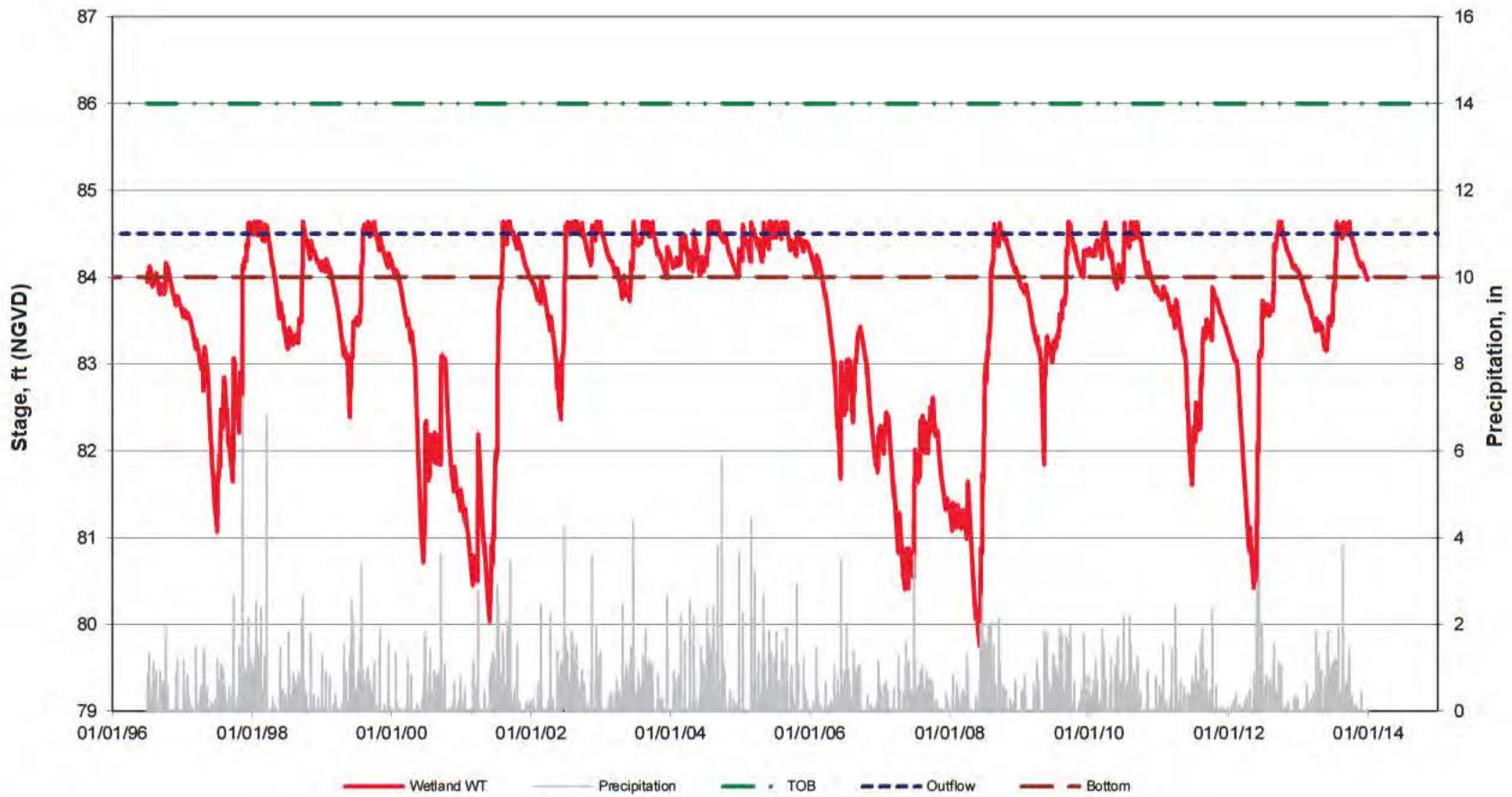


Figure A22-5
Modeled Stage-Duration Curve of Wetland 24-2_Up
Ona Mine
Hardee County, Florida

Inland Ponds and Sloughs
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



	Elev. Ft.
Wetland Bottom =	84
Outflow =	84.5

Wetland Hydroperiod

Starting WLE = 84

Figure A22-3
Modeled Hydrograph of Wetland 24-12
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

WETLAND DESCRIPTION:	24-12	Mixed Wetland Hardwoods
PROJECT& LOCATION:	Ona Mine	Hardee County, Florida

Top of Bank Elevation (ft, NGVD):	86.0
Wetland Outflow Elevation (ft, NGVD):	84.5
Wetland Bottom Elevation (ft, NGVD):	84.0

Average	83.5 ft, NGVD	Range	4.9 ft
Maximum	84.6 ft, NGVD	Step Size	0.35 ft
Minimum	79.8 ft, NGVD	No. of Steps	14
Median	83.9 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
84.99			84.99	
84.64	0	0	84.64	0.00%
84.29	1700	1700	84.29	26.59%
83.94	1302	3002	83.94	46.96%
83.59	727	3729	83.59	58.33%
83.24	684	4413	83.24	69.03%
82.89	450	4863	82.89	76.07%
82.54	190	5053	82.54	79.04%
82.19	271	5324	82.19	83.28%
81.84	290	5614	81.84	87.81%
81.49	202	5816	81.49	90.97%
81.14	226	6042	81.14	94.51%
80.79	149	6191	80.79	96.84%
80.44	141	6332	80.44	99.05%
80.09	40	6372	80.09	99.67%
79.74	21	6393	79.74	100.00%
79.39	0	6393	79.39	100.00%
79.04	0	6393	79.04	100.00%

6393 Days
17.5 Years

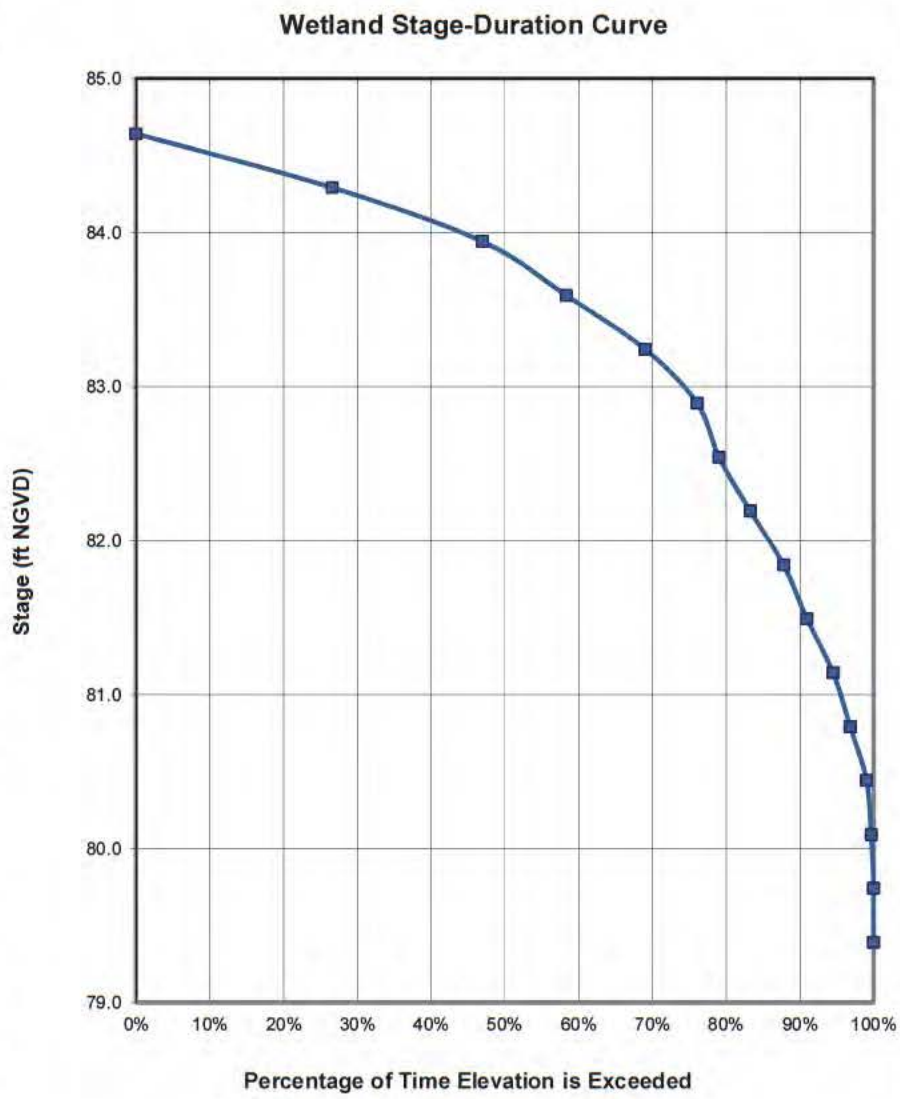
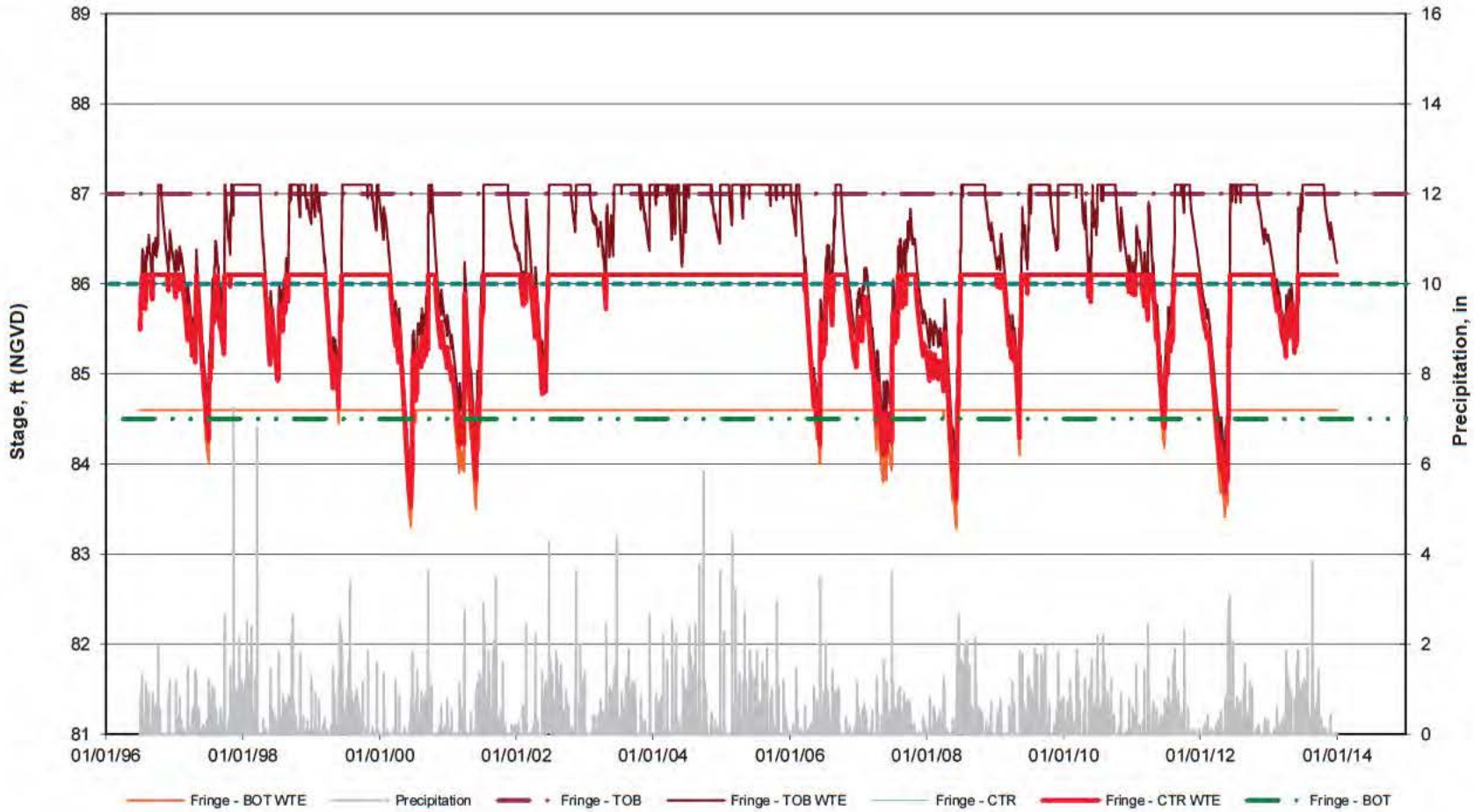


Figure A22-6
Modeled Stage-Duration Curve of Wetland 24-12
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



	Elev. Ft.
Top of Bank - Fringe Wetland =	87
Center - Fringe Wetland =	86
Bottom - Fringe Wetland =	84.5

Fringe Wetland Hydroperiod

Starting WLE = 84

Figure A22-4
Modeled Hydrograph of Fringe/Slope Wetland 24-12
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods - Fringe/Slope
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

WETLAND DESCRIPTION: 24-12 Mixed Wetland Hardwoods - Fringe/Slope
PROJECT& LOCATION: Ona Mine Hardee County, Florida

Fringe Wetland Top of Bank Elevation (ft, NGVD): 87.0
Fringe Wetland Center Elevation (ft, NGVD): 86.0
Fringe Wetland Bottom Elevation (ft, NGVD): 84.5

Data From Center of Fringe Wetland

Average	85.8 ft, NGVD	Range	2.6 ft
Maximum	86.1 ft, NGVD	Step Size	0.2 ft
Minimum	83.5 ft, NGVD	No. of Steps	13
Median	86.1 ft, NGVD		

Data Range	Exceedance Frequency	Cumulative Exceedance Frequency	Elevation Range (ft, NGVD)	Percentage of Time Elevation is Exceeded (%)
86.30			86.30	
86.10	0	0	86.10	0.00%
85.90	4253	4253	85.90	66.53%
85.70	318	4571	85.70	71.50%
85.50	323	4894	85.50	76.55%
85.30	385	5279	85.30	82.57%
85.10	327	5606	85.10	87.69%
84.90	219	5825	84.90	91.12%
84.70	132	5957	84.70	93.18%
84.50	122	6079	84.50	95.09%
84.30	122	6201	84.30	97.00%
84.10	76	6277	84.10	98.19%
83.90	57	6334	83.90	99.08%
83.70	40	6374	83.70	99.70%
83.50	19	6393	83.50	100.00%
83.30	0	6393	83.30	100.00%
83.10	0	6393	83.10	100.00%
82.90	0	6393	82.90	100.00%

6393 Days
17.5 Years

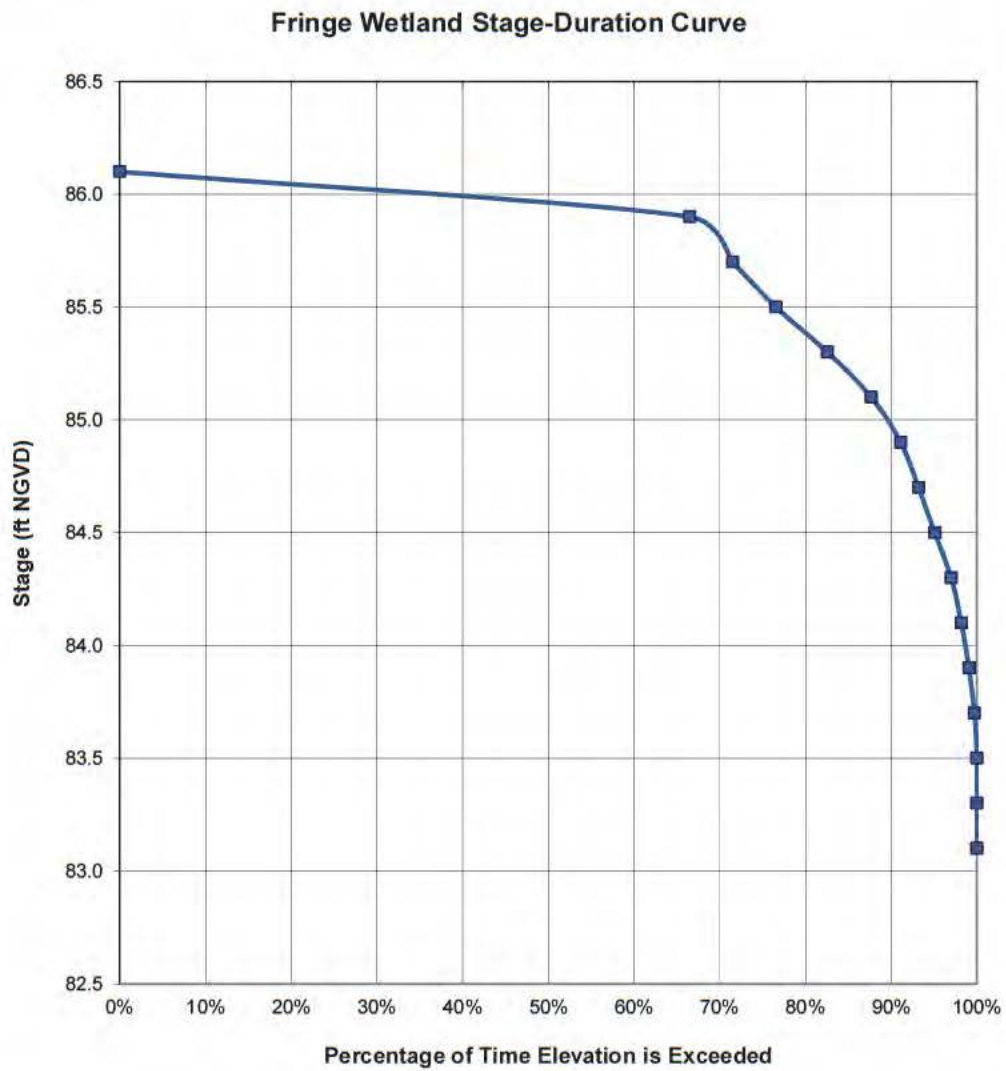
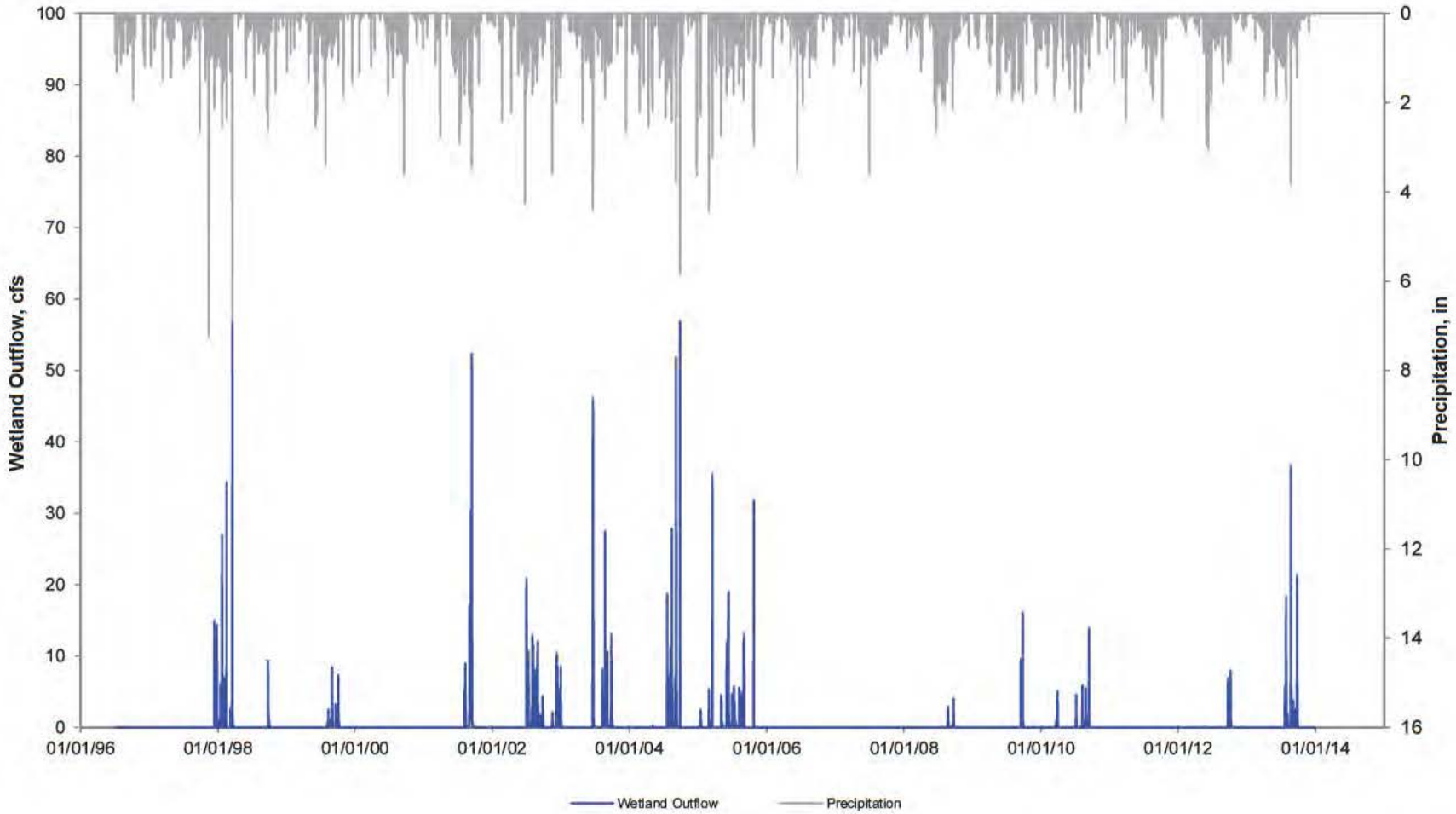


Figure A22-7
Modeled Stage-Duration Curve of Fringe/Slope Wetland 24-12
Ona Mine
Hardee County, Florida

Mixed Wetland Hardwoods - Fringe/Slope
By: ECT
Date: 11/3/2014

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



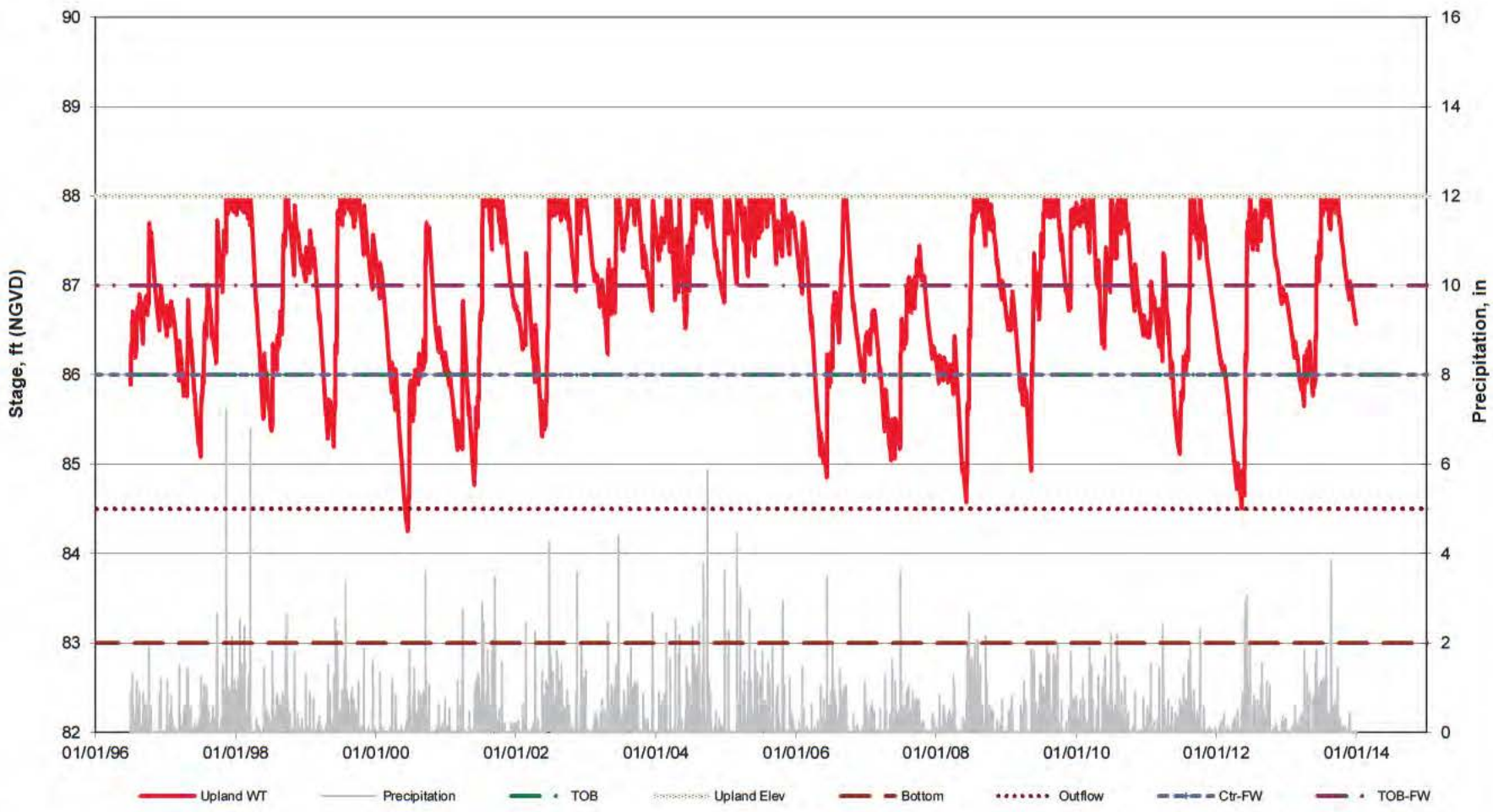
Wetland Surface Water Outflow

Figure A22-8
Modeled Outflow of Wetlands 24-2_Up & 24-12
Ona Mine
Hardee County, Florida

Inland Ponds and Sloughs
By: *ECT*
Date: *11/3/2014*

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.



	Elev. Ft.
Wetland Bottom =	83
Outflow =	84.5

Upland Hydroperiod

Figure A22-9
Modeled Upland Hydrograph of Wetlands 24-2_Up & 24-12
Ona Mine
Hardee County, Florida

Inland Ponds and Sloughs
By: *ECT*
Date: *11/3/2014*

Source: Mosaic, 2014; ECT, 2014.

ECT Environmental Consulting & Technology, Inc.

APPENDIX 2-2-B-i

STREAM MAPPING, ASSESSMENT, AND RECLAMATION DESIGN GUIDANCE ONA MINE HARDEE COUNTY, FLORIDA

Prepared for:

MOSAIC FERTILIZER, L.L.C.
LITHIA, FLORIDA

Prepared by:

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Ann Arbor, Michigan 48105
(734) 769-3004
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Revised
June 2015

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1.0 INTRODUCTION & OVERVIEW

Mosaic Fertilizer, LLC (Mosaic) is proposing to mine or disturb and reclaim 18,776 acres within the boundaries of the proposed 22,483-acre Ona Mine in Hardee County, Florida (Application Table 3-2). Mosaic's proposed mining plan includes mining or disturbing 90,405 feet of natural and ditched natural streams and 13,456 feet of sloughs and strands (Application Table 2-2-D-i). In order to obtain approvals necessary to permit mining on the Ona Mine, Mosaic has submitted an Environmental Resource Permit (ERP) application and Conceptual Reclamation Plan (CRP) to the Florida Department of Environmental Protection (FDEP).

In order to prepare its Application, Mosaic retained Environmental Consulting & Technology, Inc. (ECT) to prepare this "**S**tream Mapping, Assessment, and Reclamation Design Guidance" for Mosaic's Ona Mine. This document describes the mapping, classification, and characterization of existing streams on the Ona Mine. This document also describes the collection of reference reach morphology data and use of that data in a natural channel design process for developing stream design guidance. The design guidance can be used by Mosaic to prepare the necessary plan, profile, and cross-section construction drawings of the streams to be re-established on the Ona Mine when the reclamation design and construction field effort is ready to begin. The design guidance is applied in this document to the reclaimed land surface (i.e. topography) and stream valleys. Following this design guidance, Mosaic can create 93,146 feet of reclaimed streams and 14,751 feet of sloughs/strands in the post-mining landscape. The majority of reclaimed streams will be first order streams, with a few second order streams (order based on the Strahler stream ordering method). All of the reclaimed streams will be Rosgen Level II C5 and E5 stream type classifications.

Map 2-9-A of the Application illustrates the sub-basins that lie within the Peace River and Myakka River basins on the Ona Mine. Generally speaking, the Ona Mine is drained by several tributaries that flow from north to south through the site (named from east to west): Troublesome Creek, Hickory Creek, Oak Creek, Brushy Creek (including its Brady Creek tributary), Horse Creek, West Fork of Horse Creek, and the Myakka River. Most of these streams are ephemeral or intermittent, with only Horse Creek having perennial flow patterns. None of these streams are navigable on or in the vicinity of the Ona Mine. Troublesome Creek,

Hickory Creek, Oak Creek, and Horse Creek are tributaries of the Peace River. Brushy Creek is a tributary of Horse Creek and Brady Creek is a tributary of Brushy Creek. There are no natural tributaries of the Myakka River or Troublesome Creek on the Ona Mine Site.

Brushy Creek and Oak Creek drain the majority of the site from Dink Albritton Road (east of Ona) to Sidney Roberts Road (west of Brushy Creek). Both tributaries flow from north to south through the Ona Mine and their drainage areas extend north of the site.

Horse Creek and West Fork Horse Creek drain the majority of the western one-quarter of the Ona Mine. Horse Creek flows north to south through the site and its drainage extends north of the site. West Fork Horse Creek originates on Mosaic's Manson Jenkins Tract and flows in a southeasterly direction before joining Horse Creek in Section 29 just north of Highway 64 and west of Sidney Roberts Road.

Only a small portion of the Ona Mine site occurs within the Myakka River drainage basin in the extreme southwest corner of the site. Likewise, only a small portion of the site occurs in the Troublesome Creek drainage basin in the extreme northeast corner of the site. Drainage in these areas is by sheet flow only; there are no natural tributaries of the Myakka River or Troublesome Creek on the Ona Mine Site.

Appendix 1-3-A-i of the Application contains historical aerials photographs from 1940 and 1951. The Ona Mine site was in a relatively natural state in 1940, but man-made ditches and ditched natural streams were present. Since 1940, natural drainage on the Ona Mine site has been altered by historical agricultural practices. Ditching of natural streams, ditching in wetlands, and upland ditching are common throughout Ona. The 1951 historical aerial illustrates extensive site alterations and ditching. In particular, long reaches of the existing Brushy Creek (north of 64) and Oak Creek (south of 64) channel networks are ditches that were constructed in large wetland complexes.

2.0 STREAM MAPPING

2.1 *METHODS*

All features were mapped that meet the definition of a Stream as listed in Chapter 373.019 (20), Florida Statutes:

> "*Stream" means any river, creek, slough, or natural watercourse in which water usually flows in a defined bed or channel. It is not essential that the flowing be uniform or uninterrupted. The fact that some part of the bed or channel has been dredged or improved does not prevent the watercourse from being a stream.*"

Potential streams were investigated and mapped using a combination of hydrologic modeling (flow routing in geographic information system (GIS) Software using LIDAR topographic data), topography, historic and current aerial photography, and the National Hydrographic Dataset as a guide to locating streams in the field. The above information was used to guide field crews in systematic searching for streams within the Ona Mine based on 1940 aerial photograph signatures, modeled flow routing, topographic valley forms, and previously mapped stream locations. Once the presence of a stream was confirmed in the field, the center lines of all natural and ditched natural streams meeting the statutory definition above were mapped on the ground using a differential global positioning system (dGPS) to locate stream channels and determine their lengths. Center line points were connected using GIS to develop a stream center line geodatabase.

Natural stream channels typically only occur along natural valleys or natural drainage patterns defined by topography. Wetlands, including sloughs and strands, are frequently associated with such drainage features as well. To aid in the identification of alluvial streams versus sloughs, strands, and artificial ditches Mosaic applied data and research conducted by Kiefer (2010) throughout Peninsular Florida. A slough is defined as a somewhat channelized or linear extension or backwater of a flooded forested wetland or freshwater marsh. The flooded condition often extends from the down-gradient flooded wetland to the up-gradient connected wetland and flow is driven primarily by head differential between the two wetlands rather than valley slope; the flow velocity is typically less than 0.1 m/s or imperceptible. A strand is defined

by a multi-threaded, unconfined flow through flooded vegetation in a freshwater marsh or forested wetland. Again, the flow velocity is less than 0.1 m/s or imperceptible. Artificial channelization of historical wetlands promotes drainage and creates enhanced drainage features that have naturalized over time (typically 50 or more years). Without the artificial channelization, such wetland drainage systems would naturally be sloughs or strands. Historical aerial photographs from the 1940s and 1950s, in conjunction with the analysis of the drainage area and valley slope relationship, was used to help identify or confirm man-made ditches that would otherwise be historical sloughs or strands.

Kiefer (2010) evaluated the relationship between catchment drainage area and valley segment slope for natural undisturbed streams and found that this relationship adequately defined alluvial stream forms versus wetland-dominated systems that are more accurately described as sloughs or strands that support lentic habitats and biological communities similar to the wetland systems to which they are connected. Such systems are natural and common in some landscapes of Central Florida. This relationship is also capable of identifying drainages that have been artificially created on topographic slopes that would otherwise not support or result in alluvial stream formation. Such drainage modifications are extremely common throughout the Central Florida agricultural landscape.

Drainage features observed at Ona that plot below the lower 95% prediction limits of Kiefer's stream zone of confidence curve typically have drainages that are too small and/or valley segment slopes that are too flat to support alluvial stream forms with lotic habitat and lotic biological communities. Furthermore, they are morphologically simple and typically do not conform well to Rosgen stream types or are difficult to classify because they lack channel definition. It is important to stress that the GIS analysis of valley slope is an estimate of valley slope used in lieu of detailed field surveys and those estimates have a margin of error associated with them. Furthermore, the stream zone of confidence curve is not a precise tool and a weight-of-evidence approach to identifying and classifying streams was used. Some drainages that plot above the 95% prediction threshold may actually be sloughs or strands, while some that plot below the threshold may actually be alluvial streams. Therefore, the relationship between drainage area and valley segment slope is used as one tool along with the historical aerials and

field observations of morphological indicators to identify true alluvial streams, or sloughs or strands.

Mapped alluvial stream reaches and sloughs and strands were assigned unique alpha-numeric identifications (IDs). Reaches were assigned a number based on drainage basin, tributary number, and a letter based on approximate hierarchical order (downstream to upstream). The Ona Mine contains five major drainage basins that were assigned numeric IDs for the purpose of assigning stream reach IDs:

100 Brushy Creek
200 Brady Creek
300 Oak Creek
400 Hickory Creek
500 Horse Creek

The furthest downstream reach of a named creek was given the letter "A" and each consecutive upstream reach received the next corresponding letter of the alphabet. The resulting reach IDs for each named creek were then 100A, 100B, 100C, 100D, and so forth. Unnamed tributary streams to the named creeks were then numbered consecutively in an upstream direction – 101, 102, 103, and so forth. The furthest downstream reach of a tributary was given the letter "A" and each consecutive upstream reach received the next corresponding letter of the alphabet – 101A, 101B, 101C, and so forth.

2.2 *RESULTS*

Table 1 lists the mapped stream reaches along with classification and habitat assessment data (Sections 3 and 4). Map 2-2-B-ii of the Application illustrates the existing stream segments on the property as mapped for this report. A total of 234 natural stream reaches, ditched natural stream reaches, or reaches classified as sloughs or strands. The total length of natural (511) and ditched natural (512) streams mapped is 215,237 feet (Application Table 2-2-D-i). The total length of reaches mapped as sloughs or strands is 13,616 feet. (Application Table 2-2-D-i). Representative photographs of mapped streams Mosaic is proposing to mine or disturb are provided in Appendix F.

2.3 *ONA FORT GREEN EXTENSION MAPPING*

Mosaic received permit #0169281-001 on June 8, 2009 for mining on the Ona Fort Green Extension (OFGE) property along the Horse Creek corridor. Stream mapping was conducted for that effort. Mosaic has added the formerly permitted OFGE property to the Ona Mine property for its current ERP application and associated CRP approval and will be vacating the previous OFGE permit. Mosaic completed mapping for the OFGE property as part of the Ona stream mapping effort. Differences between former and current mapping are presented in Table 2. As noted, seventeen of the reaches were not changed, four new stream reaches were added (i.e. are present but not previously mapped), and eleven reaches were modified.

3.0 STREAM CLASSIFICATION

3.1 *FLORIDA LAND USE, COVER AND FORMS CLASSIFICATION SYSTEM*

Mapped stream channels on the Ona Mine were classified using the Florida Land Use, Cover, and Forms Classification System (FLUCFCS). Under Florida Administrative Code Rule 62C-16.0051, land use classification according to FLUCFCS includes:

- 511 for natural streams
- 512 for ditched natural streams
- 513 for man-made ditches in wetlands
- 514 for man-made ditches in uplands

As described in Section 2.1 natural drainages were identified as natural alluvial streams or sloughs or strands based on the relationship between drainage area and valley slope. In order to account for sloughs and strands for reclamation design, a new FLUCFCS code was defined. FLUCFCS code 516 was used to identify sloughs and strands.

Streams and sloughs or strands were mapped as center lines only for the land use classifications; polygons are not used to map streams as 511, 512, or 516 land uses. Historical aerial photographs and field evidence of ditching were used to determine whether a mapped channel was (513/514) or a ditched natural stream (512). Streams appearing in the 1940 historical aerial were assumed to be natural (511) unless evidence of ditching was observed in the field or in the 1952/1970 historical aerials. Mapped streams that were not visible in the 1940/1952 historical aerial photographs were mapped as man-made (FLUCFCS 513 or 514), provided further field evidence did not suggest that the channel was natural. Streams mapped as channelized natural streams (512) had evidence of ditching and/or spoils, including observable disturbances in historical aerial photographs after 1940 (*i.e.,* 1950s and 1970s). In addition to aerial photograph interpretation, several physical characteristics were used during field work to determine if a stream was natural (511), natural but altered (512), or man-made (513/514): lack of sinuosity; presence of overbank spoils; cross-sectional uniformity; unnatural landscape position; lack of natural valley form; and size relative to drainage area (*i.e.,* man-made or altered natural streams are often larger than expected).

FLUCFCS classification of streams is summarized in Table 1 and Map 2-2-B-ii of the Application. FLUCFCS classification resulted in 182,240 feet of 511 natural streams, 32,997 feet of ditched natural streams, and 13,616 feet of 516 sloughs and strands (Application Table 2-2-D-i).

3.2 *ROSGEN LEVEL-II CLASSIFICATION*

The Rosgen Level-II classification system was used to classify mapped streams for this report. Only natural alluvial streams were classified using this method. Drainage features that were classified as sloughs and strands were not classified using the Rosgen classification system because their lack of defined morphology and reliable bankfull channel indicators make classification by this method unreliable. Rosgen Level-II classification is a morphological classification of stream channels; it is published in *Applied River Morphology*[1-1]. Like all classification systems, the Rosgen classification system places streams with similar morphological characteristics into categories. Rosgen's classification system is a morphology-based classification of streams based on channel cross-sectional dimensions relative to the flood prone width. Specifically, Rosgen's classification system uses the width-to-depth relationship of the channel and entrenchment ratio to classify streams. The entrenchment ratio is the flood prone width divided by the bankfull channel width. For consistency in measurement, Rosgen defines the flood prone width as the width of the valley cross-section at an elevation equal to two times the maximum bankfull depth.

In order to apply the Rosgen classification system, it is necessary to accurately identify bankfull stage in the field. The bankfull stage is the elevation of water in the channel that is near or at bankfull, meaning the water is about to leave the channel and enter the adjoining floodplain. Bankfull is a surrogate for the channel forming or effective discharge. In theory, the effective discharge is the discharge at which most of the work, channel formation, and sediment transport occurs. It is the flow that is of sufficient magnitude and frequency to have the greatest influence over channel formation.

[1-1] Rosgen. D.R. 1996. *Applied River Morphology.*

In this sense, the term "bankfull" can be misleading because it does not always correspond with the top of bank.

The bankfull flow stage is field-determined using morphological characteristics of stream channels or "bankfull indicators." Multiple sources were consulted for identification of bankfull stage on the Ona Mine, including the U.S. Department of Agriculture[1-2], U.S. Environmental Protection Agency[1-3], North Carolina Stream Restoration Institute[1-4], and Rosgen.[1-5] Typical bankfull indicators include:

- Back of a point bar.
- Upper break in slope of the bank.
- Small bench or partial floodplain within the channel.
- Change in vegetation.
- Top of bank, where appropriate.
- Uppermost scour line.
- Inner berm (defined by topographic breaks below top of bank).

As is most appropriate, multiple corresponding bankfull indicators were used when present to estimate the bankfull elevation for Rosgen Level-II morphological classification. The most common and reliable indicators of bankfull stage on most small headwater streams in Central Florida are the upper break in slope of the bank corresponding with a change in vegetation. Scour is often associated with this point as well.

Once the bankfull stage was determined, the channel cross-section was measured at a representative riffle/run within the classification reaches to obtain bankfull cross-sectional

[1-2] USDA, 2003. Identifying Bankfull Stage in Forested Streams in the Eastern United States [DVD]. Rocky Mountain Forest and Range Experiment Station, Stream Systems Technology Center, Fort Collins, Colorado.
[1-3] USEPA, 2006. Watershed Assessment of River Stability & Sediment Supply (WARSSS). Channel Processes: Stream Channel Succession. United States Environmental Protection Agency. www.epa.gov/warsss/sedsource/successn.htm.
[1-4] Jennings, G.D., et al. 2003. Stream Restoration, A Natural Channel Design Handbook. North Carolina Stream Restoration Institute and North Carolina Sea Grant. 128 pp.
[1-5] Rosgen, D.L. 1996. Applied River Morphology. Wild land Hydrology, Pagosa Springs, CO. 246 pp

dimensions (width and average depth). A survey tape was laid perpendicular to the stream at the highest available location (top of bank or a location within the floodplain). A bubble level was used to ensure that the tape was level and measurements were taken from the water surface at the right and left edges if water was present at the time of the survey. The elevation from the ground to the tape was measured along the cross section, intentionally recording distinct changes in ground elevation/slope. For constant or flat slopes, elevations were measured approximately every five feet. Classification cross-section data area provided in Appendix D.

Because many of the streams on the Ona Mine have very broad riparian areas with low relief, the channel cross-section survey was not extended to the flood-prone riparian zones each side of the stream. Instead, a minimum cross-section width of two to three times the channel width was surveyed, and the cross-section length was doubled as an estimate of flood prone width. This proved to be sufficient to calculate the entrenchment ratio and allow differentiation between Rosgen C/E and F/G stream types.

The bed material type is a qualitative descriptor of the observable median bed material size (D_{50}). Rosgen uses the bed material type to determine the Level-II classification. The possible qualitative descriptors in the Rosgen classification system are 1) Bedrock; 2) Boulders; 3) Cobble; 4) Gravel; 5) Sand; and 6) Silt/Clay. The bed material type was determined by field observation of the primary bed material size; the stream bed of mapped streams is comprised of particles in the sand size range. This information was used in determining which numerical postfix to assign to the Rosgen Level II classification. All of the classified stream reaches have a sand bed resulting in a Level-II classification of “5” with the exception of 502H which is located within a wetland and has an organic silt bed. Stream reach 502H was classified as a C6 stream type.

Table 1 lists the Rosgen stream types for the reaches that were classified using the Rosgen classification systen. The distribution of classes is presented in Table 3. The Rosgen class was determined for a total of 104 stream reaches (44% of 236 mapped stream reaches). The predominant Rosgen level-I stream type on the Ona Mine is the C stream type (62%, 64 of 104 classified reaches). The E-type was the second most common (33%, 34 of 104 classified reaches). Combined, these two classes account for 95% of the classified stream reaches. The

remaining stream types were the B (2 reaches), F (1 reach), and G (3 reach) stream types. The results are consistent with expectations. The C and E stream types are the most common naturally occurring stream types in Central Florida and the coastal plain in general. Both types occur naturally in broad, shallow alluvial and colluvial valleys – in the case of Central Florida (coastal plains), this is Valley Type X as described by Rosgen. The F stream type is normally not a naturally occurring stream type in Central Florida, but stable streams in palmetto prairie and flatwoods communities that resemble E-type streams may sometimes classify as an F-type stream, especially given the degree of overlap in the data supporting Rosgen's classification system. The B-type stream appears to occur naturally in Central Florida when supported by valley form (high slope and valley confinement, conditions that do not exist on the Ona Mine). However, they can also be the result of minor instability in E-type and C-type streams. The G-type stream is not naturally occurring in Florida and is usually the result of gully erosion or pronounced channel incision caused by lowering of a stream's base elevation over time or by ditching natural streams.

3.3 *HYDROLOGY*

Streams are typically placed into one of three hydrological classes: ephemeral, intermittent, or perennial. These three hydrological classes are based on the persistence and source of flow in a stream. Ephemeral streams flow only in response to precipitation runoff; hydrology is dependent on surface water runoff only. Intermittent streams flow continuously when the water table is elevated above the bed of the stream over some portions of a stream reach; this typically occurs seasonally when precipitation is high. During this period of continuous flow, ground water is a major component of stream flow in intermittent streams. However, intermittent streams also receive flow from surface water runoff during precipitation events. When the water table is below the streambed, intermittent streams are like ephemeral streams in that they flow only in response to precipitation events and surface water runoff. Perennial streams flow continuously throughout the year because ground water is always a component of flow (i.e. the water table is always above the bed). However, perennial streams can also be dominated by surface water when drainage area is high due to the large upstream contributing drainage area and perennial flows.

Due to the role of ground water in defining the above hydrological classifications, either stream flow data or ground water elevation data are required throughout a typical hydrological year to determine which class a stream should be placed within. These data are infrequently available for the many first and second order streams on Mosaic's mine sites including the Ona Mine. Mosaic has conducted research to develop a GIS-based method for classifying the hydrological flow regime of streams on its mine sites. The method depends on landscape-scale variables that can be readily quantified and applied using GIS software along with limited field data and knowledge (Figure 1). The method was developed specifically for Mosaic's mine permitting efforts using research conducted by Kiefer (2010)[6] and data collected by AMEC on behalf of FDEP in support of nutrient criteria development (FDEP, 2013)[7]. This research shows that in peninsular Florida soils and drainage area are major determinants of hydrologic flow regime.

Table 1 shows the resulting hydrological classification of mapped stream reaches on the Ona Mine. Applying the decision tree in Figure 1 results in most of the mapped streams classifying as intermittent (7%) or ephemeral (93%). Only Horse Creek has been classified as perennial. However, water level stage data and field observations confirm that this tributary is intermittent on the Ona Mine; Horse Creek does not flow for a portion of the year. The classifications are confirmed by low-flow data (Table 7) and field observations (Appendix A) for many of the reaches. For example, low-flow gaging stations C767F (300D), C752F (300E), and C742F (300F) all show that Oak Creek contains water above the bed for 40% to 50% of the time or 140 to 170 days per year on average over the period of record (Table 7). Oak Creek has been observed dry at SW-7 (Map 2-3-B) on multiple occasions by field biologists since 2009. Furthermore, the flow hydrographs show that the flow is not continuous, is spread throughout the year, and is typically in response to rainfall. This flow pattern is indicative of surface runoff as opposed to ground water.

[6] Kiefer, J.H. 2010. Hydrobiogeomorphology of fluvial systems in peninsular Florida: implications to classification, conservation, and restoration. Ph.D. Dissertation. University of Florida.
[7] FDEP. 2013. Technical Support for Nutrient Concentration Sensitivities Associated With Different Types of Florida Freshwater Streams. Florida Department of Environmental Protection. February 2013.

4.0 STREAM ASSESSMENTS

4.1 *HABITAT ASSESSMENT*

Mapped streams were assessed using FDEP-Standard Operating Procedure (SOP) 001/01, FT 3100, Stream and River Habitat Assessment.[1-8] Most of the assessed streams on the Ona Mine were dry at the time the habitat assessments were conducted. The FDEP protocol contains a "Water Velocity" parameter that could not be assessed if the stream was dry. When no flow was present, the "Water Velocity" parameter was assigned the minimum score of one as an indication that the stream's seasonal hydrology influences biota. This is not inappropriate as much of the time the streams are dry (ephemeral – intermittent), thereby limiting biological productivity. This does not suggest the streams are "impaired." It simply reflects the influence of seasonal hydrology or sporadic flow on biota.

Habitat assessment forms are attached in Appendix A. Resulting habitat assessment scores are tabulated in Table 1. The distribution of habitat assessment scores is shown in Table 4. The habitat scores for assessed stream reaches ranged from poor to optimal. The scores ranged from 29 (307A, an unnamed tributary reach of Oak Creek) to 160 (502I, West Fork Horse Creek), with an average value of 98 and a median value of 100. Streams classified as 511 had an average score of 106, slightly higher than the average and median scores. In contrast, streams classified as 512 had an average score of 85, indicating the degree of impact ditching has on stream habitat. Strands and sloughs classified as 516 had an average score of 81, indicating the typical lack of stream habitat diversity.

4.2 *WATER QUALITY*

Water quality monitoring stations are shown on Map 2-3-B of the Application. See Table 2-3-B of the Application for a summary of surface water quality data collected in existing streams mapped on the Ona Mine.

[1-8] FDEP 2008. Department of Environmental Protection Standard Operating Procedures for Field Activities. DEP-SOP-001/01. Florida Department of Environmental Protection Bureau of Assessment and Restoration Support, Standards and Assessment Section. Tallahassee, FL. Effective 12/3/08.

4.3 *STREAM FLOW*

Stream flows have been continuously gauged by Mosaic in cooperation with SWFWMD on the Ona site since late 1999 on Hickory, Oak and Brushy Creeks and the West Fork of Horse Creek (Table 5).[1-9] Appendix 2-2-B-iii presents stage hydrographs recorded at these SWFWMD gaging locations.

The USGS has maintained a gauging station on Horse Creek at SR 64 since 1977 (Table 6, gauge 02297155). The USGS also established gauges for short periods of time on Oak Creek, West Fork Horse Creek, and Hickory Creek near the south boundary of the Ona Mine (Table 6, generally located at SR 64). Those gauges were maintained for approximately two water years or less. USGS data for the long-term Horse Creek gaging station are provided in Appendix 2-2-B-iii

Map 2-3-B of the Application shows the location of flow monitoring stations. Stream stage recorders were installed on the main streams near the exit to the property in 1999, and additional low-flow stage recorders were installed on selected stream systems in late 2009 (Table 7).

Nineteen low-flow stage level recorders were installed by Mosaic in the summer of 2009 on previously unmonitored stream reaches to provide information on hydrology of the typical first and second order streams on the Ona Mine (Table 7). The data were used to characterize the typical hydrology of first and second order streams on Ona. Map 2-3-B of the Application shows the location of the 2009 low-flow monitoring stations. Table 7 summarizes the number of days with valid logged levels that the logged water levels were above the streambed elevation, indicating that either standing water or flow was present. The number of days with valid logged water stage ranges from 763 (G155F, the latest station installed) to 1,411. The number of days water levels were recorded above the streambed ranged from 80 to 767. The percent of days when water levels were logged as being above the streambed ranged from 7 percent to 60 percent, indicating that none of the streams monitored with low-flow gaging stations are perennial. The number of days was annualized by dividing the number of days with logged

[1-9] Data may be obtained at:
http://www8.swfwmd.state.fl.us/WMIS/ResourceData/ExtDefault.aspx?reset=n&function=return

water levels by 365 and dividing the number of days with levels logged above the streambed by the resulting number of years. At least for the period of record, which is about three years, the annualized number of days when the water levels were logged above the bed ranged from 25 to 220 days with a median of 148 days. These data indicate that none of the first and second order streams monitored had perennial flow (not consistent flow all year). Instead, the streams experienced seasonal flow to varying degrees during the period of record. Streams with water above the bed for less than 120 days or less (annualized) were most likely dominated by surface run-off (*i.e.,* most likely ephemeral hydrology). Streams with water above their bed for more than 120 days may receive ground water for a portion of the period of record, but are dominated by surface run-off (*i.e.,* could have intermittent hydrology). Some of the streams such as Stations E477F and E131F, with water above the bed for more than an annualized 200 days receive groundwater seepage flow from large headwater wetlands.

Manual depth and velocity measurements were recorded during periodic data download sessions at all eighteen low flow stations to develop flow rating curves. The rating curves are provided in Appendix B. Reliable rating curves could not be developed for stations C157F, E445F, E466F and G155F due to poor regression statistics or too few manual measurements (the channel was dry or flow velocity was zero - stranded pools/ponding - during most of the data download sessions.) However, reliable rating curves were developed for fifteen of the low-flow stations, allowing estimation of discharge from stage data. Resulting stage and discharge hydrographs and duration curves are provided in Appendix B. The hydrographs and duration curves show that all of the streams monitored have flashy flows in response to precipitation and are dry for several months of the year in all years monitoring was conducted. These flow characteristics are indicative of the predominantly ephemeral and intermittent hydrology of the streams monitored and streams elsewhere on the Ona Mine with similar drainage area, land use/cover patterns, and soils. Consequently, reclaimed first and second order streams should have similar hydrology.

4.4 *STREAM BIOTA*

Map 2-3-B of the Application shows the location of biological sampling stations. A list of sampling stations with descriptions is contained in Table 8. Two indices of stream condition based on macroinvertebrate communities in streams were used: FDEP's BioRecon and Stream Condition Index (SCI) procedures. FDEP standard operating procedures (SOP) FS7320 and

FS7310 were followed to collect macroinvertebrate samples for the SCI and BioRecon indices respectively. These Florida SOPs were created and are applied to evaluate designated use impairments under Section 305(b) and 303(d) of the Clean Water Act. However, use these indices on Mosaic's Ona mine was not intended as an assessment of water quality impairment. In fact, many of the stream sampled contained water continuously for less than 120 days, which violates use criteria for SCI and BioRecon. Furthermore, FDEP is evaluating the applicability of these indices to small ephemeral and intermittent headwater streams in central Florida because application of the indices on such streams routinely result in failing scores. Mosaic's use of SCI and BioRecon indices is only intended to provide a comparative basis.

Macroinvertebrate sampling was conducted on the Ona Mine site in Hardee County in 2009, 2010, 2011, and 2012. All sampling was conducted near the end of the rainy season in Central Florida (August through early October) to ensure that the aquatic habitats sampled contained water long enough for macroinvertebrates to colonize the available habitat. A total of 28 stations including three SCI stations and twenty-five BioRecon stations were sampled unless dry at the time of sampling (see Map 2-3-B and Table 8). Fish sampling was conducted using a dip net whenever SCI or BioRecon sampling was conducted. Fish were collected until no new species were observed. The results of fish collections are reported based on species and number collected at each station.

BioRecon has been used at twenty-five stations. During 2009 sampling, 20 BioRecon stations (BR-1 through BR-20) were sampled. All of the 2009 BioRecon stations were sampled again in 2010 and five new BioRecon stations were added (BR-21 through BR-25) in 2010. Seven of the original 20 BioRecon stations were dry in 2009 and could not be sampled (BR-2, BR-3, BR-10, BR-12, BR-13, BR-17, and BR-19). It was possible to sample BR-17 in 2010, but the other six stations that were dry in 2009 were also dry in 2010. BioRecon sampling was not conducted in 2011. Eight of the 25 BioRecon stations were sampled in 2012 and 2013, but SCI was used to evaluate the sampling results (Table 9). The annual and seasonal rainfall was higher in 2012 than in 2009 and 2010.

SCI sampling was conducted at three stations in 2009 and 2010. Of those three SCI stations, only SCI-3 was sampled in both 2009 and 2010. Because additional property was acquired

following the 2009 sampling, SCI-1 and SCI-2 were relocated downstream so the sampling location would be near the points where the respective streams exited Mosaic's mine property. All three 2009 and 2010 SCI stations were sampled in 2011. In addition, BR-22 was converted to an SCI sampling station (SCI-4) in 2011 due to changes in the mine property. In 2012, sampling was conducted at SCI-1 and SCI-2 only, while SCI-3 and SCI-4 were sampled in 2013. Sampling results are summarized in Table 9 and discussed in the following sections. Sampling field and lab forms are provided in Appendix C.

4.4.1 2009 SCI AND BIORECON RESULTS

In 2009, Stream Condition Index sampling produced 41 taxa of aquatic macroinvertebrates. SCI-1 was dry at the time of sampling in 2009. SCI scores were 3.6 for SCI-2 and 19.6 for SCI-3. Neither station produced any Trichoptera taxa, clinger taxa, Tanytarsini, or sensitive taxa. Both stations had similar percentages of filter-feeding organisms. Only SCI-3 had any long-lived taxa. At SCI-2, the most abundant organisms comprised 54% of the fauna (percent dominance), while at SCI-3, the most abundant organism comprised 39%. A high percent dominance usually indicates a low diversity of organisms. SCI-2 had a higher percentage of very tolerant organisms compared to SCI-3 (54% versus 6%).

In 2009, BioRecon sampling resulted in collection of 28 taxa of aquatic macroinvertebrates. The minimum and maximum BioRecon scores were 0 and 0.67 with a mean of 0.19. Seven stations had scores of zero. Among the metrics used for computing the BioRecon score, the number of Trichoptera taxa, clinger taxa, and sensitive taxa was zero at all stations. The number of Ephemeroptera taxa was one at station BR-9 and two at BR-11; there were no Ephemeroptera taxa at the other stations sampled. The number of long-lived taxa was two at BR-20; one at BR-8, BR-9, BR-14, and BR-16; and zero at the remaining stations.

4.4.2 2010 SCI AND BIORECON RESULTS

In 2010, Stream Condition Index sampling resulted in collection of 58 taxa. Only SCI-2 and SCI-3 were sampled in 2010. As in 2009 and 2010, the SCI score for SCI-2 falls within Category III, "Impaired". The SCI score for station SCI-3 falls within Category II, "Healthy".

In 2010, 64 taxa were collected by BioRecon sampling. During the 2010 survey 19 of the 25 BioRecon stations were sampled; the remaining 6 stations were dry. Scores ranged from 0.24 to 6.28 with a mean score of 1.69. The highest scoring sites were Stations BR-21 and BR-22 (6.28 and 5.95 respectively); both are located on the West Fork Horse Creek which is perennial. The West Fork Horse Creek will not be mined or disturbed with the exception of one temporary dragline/infrastructure crossing.

Only Stream Condition Index stations were sampled in 2011 due to dry conditions across the Ona Mine site in 2011 including one new site (SCI-4) that was formerly sampled in 2010 as a BioRecon station (BR-22). SCI-1, SCI-3, and SCI-4 all had scores higher than 37.6. However, SCI-2 had a score of 19.23.

The low BioRecon scores in 2009 and 2010 are not unexpected due to the flow conditions discussed in the sub-sections above. The flow regimes of streams where the bio-recon stations are located (with the exception of BR-21 and BR-22) are ephemeral to intermittent seasonal flow regimes. The combination of ephemeral, intermittent, or seasonal flow in the streams with low levels of dissolved oxygen naturally result in low counts of long-lived and sensitive taxa used for BioRecon and SCI scoring.

4.4.3 2011 SCI RESULTS

Only the four SCI sampling stations were sampled in 2011 (Table 9). SCI scores were similar to 2010 SCI scores, but were much higher than the 2009 scores (2009 was a drier than normal year). The total number of taxa ranged from 28 at SCI-2 to 40 at SCI-1 and SCI-4. The number of taxa at SCI-3 (39) was similar to SCI-1 and SCI-4. Ephemeroptera/trichoptera taxa and long-lived taxa were present at all four stations, but in low abundance. Sensitive taxa were not found at any of the four stations, while the percent of very tolerant organisms was high at all four sites. Percent-dominance was low.

4.4.4 2012 SCI RESULTS

Given 2012 was a wetter than normal year and much wetter than 2009 and 2010, a select subset of BioRecon stations and SCI stations were selected for sampling in 2012 to better reflect the macroinvertebrate communities over a greater range of flow and meteorological conditions

(Table 9). Some of the BioRecon stations that were dry in 2009 and 2010 and could not be sampled were chosen for sampling in 2012. Others that were selected had been sampled in 2009 and 2010 but received low BioRecon scores were also sampled. In total, 8 of the 25 BioRecon stations were sampled in 2012 using SCI (Table 9). In addition, SCI-1 and SCI-2 were also sampled because they were either dry in 2009 (SCI-1) or received a low SCI score in one or more of the previous sampling events (SCI-2).

BR-2, BR-3, and BR-10 were all dry in 2009 and 2010, but contained at least standing water and were sampled in 2012. In all three cases, however, the SCI scores were low (two below the "Healthy" threshold and on just above). SCI scores for the other five BioRecon stations that had been previously sampled in 2009 or 2010 but received low BioRecon scores showed some improvement during 2012. BR-4 and BR-18., for example, received BioRecon scores in 2009 and 2010 that were below the "Healthy" threshold, but received a SCI score that was just above the threshold in 2012 (37). BR-23 on the other hand received a BioRecon score below the "Healthy" threshold in 2010 and an SCI score below the threshold in 2012. The macroinvertbrate communities seemed to change significantly at BR-9 and BR-25 where previous BioRecon scores fell below the "Healthy" threshold but 2012 SCI scores were well above the threshold. In fact, those two stations received higher SCI scores than any of the ten stations sampled in 2012. Despite the low number of taxa, both stations had sensitive taxa, long-lived taxa, and ephemeroptera/trichoptera taxa present when compared to most of the other sites. They also had a low percent dominance and low percent very tolerant taxa.

The two SCI stations sampled in 2012 received unexpected SCI scores. While SCI-2 received SCI scores below the "Healthy" threshold in 2009, 2010, and 2011, it received a SCI score well above the threshold in 2012, indicating the wetter conditions in 2012 improved habitat for macroinvertebrates. In contrast, SCI-1 received a SCI score above the "Healthy" threshold in 2011, but below it in 2012. The 2012 SCI score was 12 points lower than the 2011 score. This result could be related to the ditched nature of the channel at SCI-1. The channel is substantially oversized at this location and flood events are completely contained to the channel. Floods preceding the sampling event may have reduced the number of macroinvertebrates present due to high energy flows.

4.4.5 2013 SCI RESULTS

SCI Sampling results for SCI-3 and SCI-4 were similar to previous sampling events in 2010 and 2011. SCI-3 scores have always been higher than 35, while SCI-4 scores have always been higher than 50. Both of those stations are located on streams not proposed for mining (West Fork Horse Creek and Brushy Creek at downstream exit point). BR-2, BR-10, BR-18, BR-23, and BR-25 were all sampled in 2012 and 2013 and the scores from both years were very similar. BR-18 and BR-25 scored within the Healthy range in both years, while the other BioRecon stations scores in the impaired range in both years. BR-2, BR-10- and BR-23 were all sampled in 2010 and then again in 2012 and 2013. BR-2 aqnd BR-10 were dry in 2010, but contained water in 2012 and 2013. However, the SCI scores for 2012 and 2013 remained in the Impaired range. BR-18 and BR-25 were both sampled in 2010 and again in 2012 and 2013. Both could be sampled in 2010, but the BioRecon scores fell within the Impaired range. However, SCI scores for 2012 and 2013 at both stations were in the Healthy range. SCI scores at those two stations were similar to SCI-3 and SCI-4. The 2013 sampling results indicate that some small streams that contain too little water or flow to sample during dry years still do not score well during wetter years due to their small drainage areas and short hydroperiods (e.g. BR-2). However, even some stations located on larger portions of Oak Creek and Brady Creek that have larger drainage areas (e.g., BR-23 and BR-10) still scored in the Impaired range in wetter years. Still, some stations that can be sampled in dry years but score poorly, can show improvement during wet years (e.g. BR-18 and BR-25).

4.4.6 2009/2010 FISH SAMPLING RESULTS

In 2009, a total of 236 fish and crayfish belonging to six taxa were collected at Ona (Table 10). The highest number of taxa collected was four at BF-1 and BF-18. The lowest number of taxa collected was 1 at BF-6, BF-7, and BF-11. The mean number of taxa at each station was 2. Eastern mosquitofish (Gambusia holbrooki) was the most numerous fish at Ona in 2009 (195 individuals collected, 83%) and was present at every station that contained water. Least killifish (Heterandria formosa) was the second most abundant (21 specimens) and were present at five of the 12 stations that contained water. The introduced exotic African jewelfish (Hemichromis letourneuxi), eight specimens, and brown hoplo (Hoplosternum littorale), four specimens, were present at five and one stations respectively.

In 2010, a total of 1,048 fishes, tadpoles, crayfish, and shrimp belonging to 15 taxa were collected at Ona (Table 10). The highest number of taxa collected was eight at Station BF-6. The lowest number of taxa collected (2) was two collected at Stations BF-7, BF-21, and BF-22. The mean number of taxa per station was five. Eastern mosquitofish (Gambusia holbrooki) were the most numerous fish at Ona (637 individuals collected) and were present at every station that contained water. Least killifish (Heterandria formosa) were the second most abundant (213 specimens) and were present at 18 of the 22 stations that contained water. Crayfish (Procambarus sp.), while less abundant (71 specimens), were present at 20 stations. Four of the species collected on the site were introduced exotic species: oriental weatherfish (Misgurnus anguillicaudatus), one specimen; walking catfish (Clarius batrachus), three specimens; brown hoplo (Hoplosternum littorale), two specimens; and African jewelfish (Hemichromis letourneuxi), two specimens.

5.0 LAND USE & COVER CHARACTERISTICS

The dominant land use and cover along the corridors of mapped streams Mosaic is proposing to mine or disturb was analyzed using spatial analysis techniques in GIS software. Pre-mining land use and land cover data for the Ona Mine is shown in Map 2-1-B-ii of the Application. The purpose of analyzing land use and cover is to guide the reclamation planning process. Land use and cover adjacent to streams plays a role in determining ecological functions. Mosaic has produced a post-reclamation design that replaces natural stream and landscape associations to the extent practicable so that the reclaimed streams will provide similar ecological functions compared to existing conditions.

The Ona Mine site is located in the Southwestern Florida Flatwoods ecoregion. Kiefer (2010) proposed fifteen classifications of streams for peninsular Florida including stream classifications specific to flatwoods ecoregions. Two of Kiefer's proposed class delineators are catchment area and hydrology. Based on Kiefer's data and analysis, flatwoods-type streams are dominated by surface runoff due to poorly drained soils (hydrologic soil groups B and D). The Ona Mine site is comprised of greater than 80% B+D soil groups, confirming that the landscape and streams reflect flatwood stream tendencies. Based on catchment area, valley slopes, and observed alluvial tendencies, three of Kiefer's proposed flatwood streams classification represent all of the streams on the Ona Mine site: Compact Complex Alluvial Corridors (FW-AF-CC), Narrow Channels of Colluvial Valleys (FW-CV-NC), and Wide Channels of Colluvial Valleys (FW-CV-WC).

These three classes include streams with catchment areas ranging from 0.1 to 20 square miles. Most of the stream mapped on the Ona Mine site fall within the FW-CV-NC and FW-CV-WC classes with catchment areas of less than 3 square miles. Many of those streams have colluvial valleys because the streams lack the energy to develop pronounced alluvial features or alluvial floodplains. According to Kiefer (2010), the corridor of the FW-AF-CC stream class can consist of any wetland bottomland species, but is dominated by wetland hardwoods. The corridor of the FW-CV-NC class consists of mesic or hydric hammocks or hardwood swamps. Pine and palmetto can occur in areas affected by fire. The corridor of the FW-CV-WC class is similar, consisting of mesic or hydric hammocks or shallow hardwood swamps. Pines and palmettos are

also common. Many of the tendencies observed and reported by Kiefer (2010) for the three flatwoods stream classifications summarized above can be observed on the Ona Mine.

Land use and cover types based on FLUCFCS are variable throughout the Ona Mine property. Some areas of the property are dominated by natural cover types while other areas are dominated by agricultural land uses and fragmented natural cover types. Table 11 presents a summary of land uses present in the corridors of the mapped natural and ditched natural streams that Mosaic is proposing to mine or disturb. The analysis was conducted with GIS by intersecting mapped stream channels with land use spatial data. Table 11 shows that 51% of the land cover types intersected by mapped streams are upland communities (excluding 211 and 213), while 38% are wetland communities. Four cover types comprise 65% of the stream length: mixed wetland hardwoods forest (617, 16%), live oak forest (427, 17%), wetland forested mixed (630, 14%), and hardwood - conifer mixed forest (434, 18%). Those are also the only four land cover types that account for 10% or more of the stream length. The other eighteen land use/cover types intersected by mapped stream channels Mosaic is proposing to mine or disturb comprise the remaining 35% combined.

The following sections summarize the existing corridor land use and cover information used to develop Mosaic's CRP by major drainage basins of the named streams present on the Ona Mine. The following sections pertain to all mapped streams on Ona rather than just the streams Mosaic is proposing to mine or disturb.

5.1.1 BRUSHY CREEK BASIN (100)

Brushy Creek is the main drainage basin running north-to-south through the center of the Ona Mine. The main stem of Brushy Creek is mapped in seven distinct segments. Fourteen tributaries were also mapped (101 through 114). Each tributary was further mapped into distinct reaches based on substantial changes in physical characteristics or wetland interruptions. The following sections describe the dominant vegetative land uses/cover present within the corridor of the main stem and each tributary sub-basin.

5.1.1.1 Brushy Creek Main stem

The mapped length of Brushy Creek is 22,669 feet, including 2,305 feet of ditched natural streams north of 64 (Reach 100C). Land use and cover is different north of SR64 than it is south of SR64. Mosaic is proposing to preserve all of Brushy Creek south of SR64. Along the 8,857 feet located south of SR64, the stream courses through primarily temperate hardwoods (FLUCCS 425, 62%). Brushy Creek also flows through grazed forests (213, 21%) and mixed hardwood-conifer forest (434, 16%). North of 64, land use/cover varies considerably from north to south. Reaches 100B and 100C primarily intersect grazed forests (213, 66%). Temperate hardwoods (425, 14%) is also a dominant land cover. About 20% of the stream length also bisects live oak (427) communities. The northern reaches of Brushy Creek flow through predominantly mixed wetland hardwoods (617) and some inland ponds and sloughs (616). Mosaic has proposed to preserve this northern section.

5.1.1.2 Tributary 101

Mosaic has proposed to preserve this small tributary of Brushy Creek located south of SR64. It flows through mixed wetland hardwoods (617) nested within the temperate hardwood corridor of Brushy Creek.

5.1.1.3 Tributary 102

This small tributary drains a forested wetland located east of Brushy Creek and south of 64. The majority of the stream length intersects mixed wetland hardwoods (617, 75%), while a small portion intersects the temperate hardwood forest (425, 25%) of the Brushy Creek corridor.

5.1.1.4 Tributary 103

Tributary 103 drains a marsh located east of Brushy Creek and north of 64. It joins Brushy Creek just north of 64. Most of its length is located in mixed conifer-hardwoods (434, 52%) and grazed forest (213, 26%).

5.1.1.5 Tributary 104

The corridor of tributary 104 is dominated by live oak (427) that is nested within a mixed conifer-hardwood forest (434).

5.1.1.6 Tributary 105

Tributary 105 was mapped in seventeen reaches totaling 15,542 feet of stream. Five of the reaches are ditched natural streams. The drainage basin is dominated by several large forested wetland complexes and wetland corridors. The predominant wetland community types are forested mixed (630), mixed wetland hardwoods (617), and hydric pine flatwoods (625). The hydric pine flatwoods are common in some of the stream corridors. The surrounding upland areas are predominantly natural communities with minimal disturbances: pine flatwoods (411), mixed conifer-hardwood forest (434), and palmetto prairie (321). Smaller areas of pasture are present as well. The maximum habitat assessment score is 152. The minimum is 75. The average score is 108. Mosaic is proposing to preserve the majority of this tributary basin with the exception of pasture areas.

Two low-flow gaging stations were installed in Reaches 105M and 105P in 2009 (Table 7). The percentage of days with valid water stage data and the annualized number of days per year water was present above the bed were calculated. Valid water stage data were collected over 1,233 days in Reach 105M between July 2009 and April 2013. The percentage of days water was present above the bed is 41%. That equates to 148 days per year when water was present above the bed, less than six months. Valid water stage data were collected over 1,274 days in Reach 105P between July 2009 and April 2013. The percentage of days water was present above the bed is 60% (the highest of all low-flow monitoring stations (Table 7). That equates to 220 days per year when water was present above the bed, greater than six months.

5.1.1.7 Tributary 106

Tributary 106 was mapped in seven reaches totaling 4,879 feet of stream; two of the reaches are ditched natural streams. A large bay swamp forms the headwaters. Unlike tributary 105, the 106 sub-basin is dominated by agricultural land uses that have impacted the stream and its corridor. Sod fields and pastures make up a large area of the basin outside of the stream corridor, and flank the stream to the west, east, and north. Agricultural ditching is also prevalent. The stream corridor is dominated by live oak (427), hardwood-conifer mix (434), and mixed wetland hardwoods (617). However, the corridor has several interruptions in these land cover types, particularly through the middle third. Reach 106A at the downstream end is the least impacted and highest quality reach, with the maximum habitat score of 127. Reach 106A is one of the

reference reaches that was used to obtain morphological data for designing reclaimed streams. The minimum habitat score is 64 and the mean is 83.

Three low-flow gaging stations were installed in Reaches 106C, 106E, and 106G in 2009 (Table 7). The percentage of days with valid water stage data and the annualized number of days per year water was present above the bed were calculated. Valid water stage data were collected over 1,161 days in Reach 106C between July 2009 and April 2013. The percentage of days water was present above the bed is 42%. That equates to 155 days per year when water was present above the bed, less than six months. Valid water stage data were collected over 1,252 days in Reach 106E between July 2009 and April 2013. The percentage of days water was present above the bed is 56%. That equates to 205 days per year when water was present above the bed, greater than six months. Valid water stage data were collected over 1,144 days in Reach 106G between July 2009 and April 2013. The percentage of days water was present above the bed is 60%. That equates to 218 days per year when water was present above the bed, greater than six months.

5.1.1.8 Tributary 107

Tributary 107 was mapped in nine reaches totaling 5,037 feet of stream; three of the reaches are ditched natural streams. Two large forested wetlands form the headwaters northeast of the confluence with the Brushy Creek corridor. The tributary 107 sub-basin is similar to the 106 sub-basin, but the stream corridor is more fragmented and agricultural land uses make up a larger portion of the drainage area, particularly through the middle third. Native land covers are present primarily surrounding the two large headwater wetlands and the downstream end where tributary 107 enters the Brushy Creek corridor. Thirty-one percent (31%) of the mapped stream length flows through improved pasture. The remainder of the stream length flows primarily through live oak (26%), mixed wetland hardwoods (19%), and marshes (7%). Stream impacts are reflective of the surrounding land uses/cover. The minimum, maximum, and mean habitat scores are 30, 92, and 61 respectively.

5.1.1.9 Tributary 108

This small tributary drains a freshwater marsh west of Brushy Creek. It is mapped in two reaches totaling 567 feet. The two reaches are separated by a marsh located in the Brushy Creek corridor. Most (72%) of the stream length is located in a live oak community. The remainder is

located in the fresh water marshes or mixed wetland hardwoods located on the edges of fresh waters. Tributary 108 is relatively undisturbed and in good condition, but lacks habitat diversity and abundance, primarily due to the small drainage area. The reach upstream of the marsh (108B) has been identified as a simple channel with low sinuosity, low depth diversity with no pools, no aquatic vegetation, and little large woody debris. The habitat score is 88.

5.1.1.10 Tributary 109

Tributary 109 has been mapped in three reaches totaling 1,325 feet of stream. Reaches 109A and 109C are part of the same drainage system. Both drain freshwater marshes. Reach 109C is part of a separate drainage system located north of 109A/109C. It also drains a marsh. The two drainage systems are small systems that drain to the portion of Brushy Creek that is a large ditched wetland complex. The two systems are bordered by a sod field to the south and pasture to the northwest. However, the marshes and the stream corridors are located within natural community areas. Reach 109B flows through a live oak community. Reaches 109A/C flow through other shrub and brush (329) that is dominated by palmettos and wax myrtle. The habitat score for Reach A is 131. It is a more diverse reach than the other two. Reach B has a habitat score of 83. The Reach C habitat score is 71. The system are relatively undisturbed. Reaches B and C have low habitat scores primarily due to low habitat diversity and abundance. Reach C in particular is a simple channel. It lacks sinuosity, depth diversity, woody debris, and aquatic vegetation.

5.1.1.11 Tributary 110

Tributary 110 is mapped in three reaches totaling 1,265 feet of stream. Reaches 110B and 110C are part of the same drainage. Both are small streams connecting freshwater marshes that flow entirely through palmetto prairie. The direction of flow is toward Brushy Creek, but a stream channel does not connect the downstream most freshwater marsh to the Brushy Creek corridor. Rather, water exiting the downstream marsh flows toward Brushy Creek via sheet flow through a pine flatwoods. Reach 110A is part of a small drainage located just south of 110B/C. It drains a small freshwater marsh through pine flatwoods onto the Brushy Creek floodplain. All three streams are small and rather featureless due to the small drainage areas. The habitat scores are similar, ranging from 111 to 118.

5.1.1.12 Tributary 111

Tributary 111 is mapped in ten reaches totaling 7,090 feet of stream. The main branch is known as Lettis Creek. Five of the reaches are ditched natural streams. The upper end of the drainage basin to the east of Brushy Creek is dominated by improved pasture. Agricultural land uses are also present to the north of the Ona Mine property. Most of the channel length flows through mixed wetland hardwoods. The downstream end flows through a live oak community in the Brushy Creek corridor. Unlike many of the other Brushy Creek tributaries, 111 flows directly into Brushy Creek via a natural channel. Habitat quality is variable along the length. Habitat scores range from 17 in ditched natural streams located in pasture to 139, with an average score of 92.

5.1.1.13 Tributary 112

Tributary 112 is mapped in 15 reaches totaling 12,082 feet of stream. The upper part of the drainage system is highly fragmented by forested wetlands connected with short stream segments. The drainage has been significantly altered by ditching in wetlands, including a large west-east ditch that reroutes flow from the natural channel at 112A to the northeast. Reaches 112I, 112K, and 112L all flows through live oak communities. Reach 112A flows through a conifer-hardwood mixed forest. Reach 112N flows through temperate hardwoods. Reach 112M flows through equal parts pine flatwoods and hardwood-conifer mix. Reach 112O is completely located in improved pasture. The remainder of the reaches flow primarily through either bay swamps or wetland forest mixed. Improved pasture also encroaches on some of the stream reaches including 112P, 112Q, and 112I, as well as some of the wetlands drained by the streams. In fact, the entire headwater wetland system is surrounded by improved pasture. Although largely intact still, the hydrology of Reach 112A is substantially impacted by the large canal that diverts flow from the west and north (tributary 113) to the northeast. Stream habitat conditions are similar to tributary 111, ranging from 29 (Reach 112O) to 122 with an average value of 87.

5.1.1.14 Tributary 113

This small tributary is mapped in three reaches totaling 2,265 feet of stream. The drainage area is dominated by natural community types, primarily palmetto prairie. The stream corridors are primarily forested with the exception of a significant portion (41%) of Reach 113B that flows through the palmetto prairie. The remainder of Reach 113B is located in live oak and hardwood-

conifer mixed forest. All of Reach 113C is located in pine flatwoods. Reach 113A drains the large freshwater marsh to the Brushy Creek corridor. The habitat scores for Reaches 113A and 113B are 128 and 142 respectively. The score for Reach 113C is 93. Reach 113C has a lower habitat score due to lack of habitat diversity and abundance. It is considered a simple channel with low sinuosity and depth diversity. Approximately half of Reach 113A and the downstream end of Reach 112A will be preserved.

5.1.1.15 Tributary 114

This small tributary drains a freshwater marsh into the Brushy Creek corridor. A small portion of the downstream end will be preserved. Reach 114A is the only reach mapped. It flows through equal parts palmetto prairie and live oak. The habitat assessment score is 108. The score is affected by the small drainage area and stream size, which results in low habitat diversity.

5.1.2 BRADY CREEK BASIN (200)

Brady Creek is a tributary of Brushy Creek (most of which is located south of SR64) that generally flows from the northeast to the southwest between Brushy Creek and Oak Creek. The main stem of Brady Creek is mapped in five six distinct segments, two north of SR64 and three south of SR64; all five reaches are separated by ditched wetlands. Four tributaries were also mapped (201 through 204). Each tributary was further mapped into distinct reaches based on substantial changes in physical characteristics or wetland interruptions. The following sections describe the dominant vegetative land uses/cover present within the corridor of the main stem and each tributary sub-basin.

5.1.2.1 Main stem Brady Creek

The main stem of Brady Creek was mapped in five reaches totaling 3,378 feet. Two of the mapped reaches are located north of SR64 and three south of SR64. All three reaches located south of 64 are ditched natural streams connected by man-made ditches through wetland and upland areas to form a continuous channel. Most of the drainage area is comprised of hardwood-conifer mixed and live oak forest communities with interspersed freshwater marshes, mixed hardwood forested wetlands, and mixed forested wetlands. The majority of the stream length is located in hardwood-conifer mixed forest (72%). The remainder is located in the wetland communities mentioned above (17%) and the live oak community type (11%). While the

riparian corridor is comprised of natural community types, the stream channels have been impacted by ditching and improved drainage. The habitat scores for the five reaches ranged from 83 to 98 with an average score of 92. Four tributaries to Brady Creek were also mapped as described below.

5.1.2.2 Tributary 201

Tributary 201 was mapped as a single reach that is 548 feet long. The reach is a ditched natural stream. While the reach is not directly connected to Brady Creek, it drains wetlands towards Brady Creek and is located in the same drainage basin. Reach 201A drains a large freshwater marsh. Due to its location near the eastern extents of the Brady Creek drainage area, it is located near improved pasture area that encroaches on the corridors. Reach 201A flows through remnant palmetto prairie and live oak that is surrounded by improved pasture. Habitat quality is similar to the Brady Creek main stem with a score of 100.

5.1.2.3 Tributary 202

Tributary 202 is mapped as one reach with a length of 198 feet. It is a small tributary that drains a small freshwater marsh at the western extents of the Brady Creek drainage basin. The land cover is comprised of temperate hardwood forest to the north and hardwood-conifer mixed forest to the south. The small channel has a very small drainage area, which results in low habitat diversity and abundance. The habitat score is 67, due primarily to low sinuosity, low depth diversity, and a lack of physical habitat features.

5.1.2.4 Tributary 203

Tributary 203 is mapped in two reaches totaling 1,271 feet of stream length. They are both located in the northern extents of the Brady Creek drainage basin, but they are not part of the same drainage system. Reach 203A drains a small freshwater marsh located in the middle of improved pasture. Drainage is southward through several naturally disconnected wetlands. Many of the wetlands have been connected with man-made ditches through upland that all drain southward toward Brady Creek. Half of Reach 203A is located in improved pasture, while the other half is located in woodland pasture. Reach 203B is a small natural channel located in the narrows of a large wetland complex containing forested wetland and freshwater marsh. Most of Reach 203B is located within mixed hardwood forested wetland. As would be expected given

the dominant land covers at both reaches, Reach 203B has a higher habitat score (109) than Reach 203A (65).

5.1.3 OAK CREEK BASIN (300)

Oak Creek is a tributary of the Peace River that generally flows from northeast to south along the County Road 663 (i.e. Ona Road) corridor. The main stem of Oak Creek is mapped in nine reaches totaling 12,943 feet of stream, only two of which are located south of SR64. Oak Creek drains through a large ditched wetland complex located south of SR64. Ten tributaries were also mapped (301 through 310). Each tributary was further mapped into distinct reaches based on substantial changes in physical characteristics or wetland interruptions.

Several low-flow gaging stations were installed in Oak Creek and its tributaries (301, 302, 303, and 305) in 2009 and 2010 (Table 7). The data confirm that most of the streams, including Oak Creek, are ephemeral or intermittent (Section 3.3, Table 1). The percentage of days with valid stage data when water level was recorded above the streambed ranged from 7% to 50% (mean = 28%). The annualized number of days when water was above the streambed ranged from 25 to 183 (mean = 102 days). The tributaries showed shorter duration flows than reaches of the Oak Creek main stem on average. The average number of days monitored tributary reaches contained water above their beds was 84 days (n = 9). The average number of days monitored main stem reaches contained water above their beds was 142 days (n = 4).

The following sections describe the dominant vegetative land uses/cover present within the corridor of the main stem and each tributary sub-basin.

5.1.3.1 Main stem Oak Creek

Like Brushy Creek, Oak Creek spans the Ona Mine property from north to south. Its drainage area extends north of the Ona Mine. Oak Creek is mapped in nine reaches totaling 12,943 feet of stream length. Most of the natural stream reaches are located north of SR64, one of which is a ditched natural stream at SR64 (300B); only two reaches are mapped south of SR64, both ditched natural streams. Several large man-made ditches created through wetlands create one continuous channel south of SR64.

On the Ona Mine, the most significant headwater feature is a large forested wetland, which is the origin of the main stem. Most of the main stem is located in natural cover types that are grazed to varying degrees, but improved pasture encroaches in a few areas. North of SR64, the main stem is located primarily in hardwood-conifer mixed, mixed hardwood wetland, live oak, and wetland forested mixed communities. Mosaic is proposing to preserve the south end of Oak Creek (Reaches 300B, 300C, and south end of 300D). South of SR64, Reach 300A at SR64 is primarily located in freshwater marsh. Reach 300 is completely located in woodland pasture.

5.1.3.2 Tributary 301

Tributary 301 is mapped in fourteen reaches extending east of County Road 663, totaling 15,213 feet of stream. The headwaters just west of Dink AlbrittonAlbritton Road consist of improved pasture and row crops that encroaches on the two headwater wetlands. However, the remainder of the drainage basin consists of natural community types, primarily palmetto prairie, hardwood-conifer mixed forest, live oak forest, and pine flatwoods. Within the stream corridor east of County Road 663, land use and cover is highly variable; the channel intersects mixed wetland hardwoods, hydric pine flatwoods, temperate hardwood, live oak, pine flatwoods, and palmetto prairie. West of County Road 663, the channel intersects hardwood-conifer mixed forest and mixed wetland hardwoods. Mosaic has proposed to preserve this part of tributary 301 (Reach 301A and 301B). Due to the abundance of natural community types, low grazing pressure, and lack of man-made ditches and ditched natural streams, habitat quality is higher than in other tributary basins on the Ona Mine property. Scores ranged from 73 to 133 with an average of 113. Lower scores are due primarily to low habitat diversity rather than stream impairments.

5.1.3.3 Tributary 302

Tributary 302 is mapped in eleven reaches totaling 7,460 feet of stream. All but one stream reach is located east of County Road 663. Two of the mapped reaches are ditched natural streams. The sub-basin is marked by several short stream reaches interrupted by freshwater marshes. Land use/cover in the basin is very similar to tributary 301. Pine flatwoods and palmetto prairie are the dominant land covers. The stream channel also intersects portions of the wetland forest mixed community type surrounding the freshwater marshes. Reach 302A is located west of 663. It flows through mixed hardwood-conifer forest. Mosaic is proposing to preserve the south end of the Oak Creek drainage area including Reach 302A. Stream habitat is

also similar to tributary 301. Scores ranged from 63 to 135 with an average score of 112. Low scores occurred in the ditched natural stream reaches (302B and 302C) near SR64.

5.1.3.4 Tributary 303

Tributary 303 is mapped in nine reaches totaling 13,352 feet of stream. The majority of the tributary 303 stream length is located west of County Road 663. East of CR663 the tributary is marked by several short reaches interrupted by wetlands. Two of the five reaches located east of CR663 are ditched natural streams, while three of the reaches located west of CR663 are ditched natural streams. Sixty-nine percent (69%) of the mapped stream length is ditched natural stream. Land use/cover in the headwaters east of CR663 is similar to tributaries 301 and 302; palmetto prairie and pine flatwoods are the dominant cover types. However, man-made ditching is much more prevalent in the headwaters of tributary 303. Ditches have been excavated between most of the wetlands, and through upland areas, to improve drainage. Within the stream corridors, the channels intersect hydric pine flatwoods, wetland forested mixed, palmetto prairie, and mixed wetland hardwoods.

Land use/cover west of CR663 contains more improved pasture, but the corridor is still dominated by natural cover types with varying degrees of cattle grazing. Upland cover types within the stream corridor includes primarily pine flatwoods and hardwood-conifer mixed forests. The stream channel intersects mixed wetland hardwoods and wetland forested mixed wetland cover types.

Scores ranged from 94 to 132 with an average score of 111.

5.1.3.5 Tributary 304

Tributary 304 drains a freshwater marsh in the headwaters into the large forested headwater wetland. Approximately two-thirds of the channel length is mapped as slough/strand. The dominant cover types are palmetto prairie along the south side of the corridor and pine flatwoods along the north side. The habitat score is 95. Habitat is abundant in the form of aquatic vegetation, but lacks diversity.

5.1.3.6 Tributary 305

Tributary 305 is mapped in four reaches totaling 1,525 feet of stream. The four reaches drain and connect several fresh water marshes in the headwaters that all drain into the large forested headwater wetland south of tributary 304. The drainage basin extends east of County Road 663, but there are no natural stream channels east of CR663. The dominant land cover is palmetto prairie, but the southern extents of the drainage area incorporates improved pasture. The stream channels intersect palmetto prairie, live oak, and mixed wetland hardwoods. Habitat scores ranged from 82 to 118 with an average of 100.

5.1.3.7 Tributary 306

This small tributary drains a small freshwater marsh located in improved pasture west of the large forested headwater wetland. Approximately three-fourths of its length is ditched natural stream. Half of its length is located in improved pasture. The other half is located in live oak and mixed wetland hardwoods. The habitat score is 115.

5.1.3.8 Tributary 307

Tributary 307 is mapped as two separate reaches that connect wetlands. They are located south of SR64. Reach 307A connects two small freshwater marshes in the middle of improved pasture. Reach 307B is located in the narrows of a mixed wetland hardwoods forested wetland and provides internal wetland drainage. Reach 307A is located completely within improved pasture and has been ditched. Reach 307B is located completely within mixed wetland hardwoods. The habitat scores are 29 (307A) and 112 (307B).

5.1.3.9 Tributary 308

This small tributary drains a freshwater marsh directly to Oak Creek. It is mapped as a single reach. The channel is located within palmetto prairie and hardwood-conifer mixed forest adjacent to Oak Creek. The channel is small and featureless due to the small drainage area. It lacks habitat diversity, sinuosity, and depth diversity. The habitat score is 76.

5.1.3.10 Tributary 309

This small tributary drains a small freshwater marsh into the Oak Creek corridor. It is a ditched natural stream. Wetland forested mixed is the dominant land cover in the stream corridor. The

drainage area is dominated by improved pasture. The habitat score is reflective of the ditched channel and dominance of improved pasture. Due to disturbances and a lack of habitat diversity, the score is 44.

5.1.3.11 Tributary 310

Tributary 310 is a small channel connecting two freshwater marshes. The dominant cover type is hardwood-conifer mixed forest. The habitat score is 87. Tributary 310 will be preserved.

5.1.4 HICKORY CREEK BASIN (400)

Hickory Creek is a tributary of the Peace River that generally flows from north to south along the east end of the Ona Mine. The main stem of Hickory Creek is mapped in five distinct reaches, all north of SR64. Six tributaries were also mapped (401 through 408, excepting 403 and 405). Each tributary was further mapped into distinct reaches based on substantial changes in physical characteristics or wetland interruptions. The following sections describe the dominant vegetative land uses/cover present within the corridor of the main stem and each tributary sub-basin.

5.1.4.1 Main stem Hickory Creek

The main stem of Hickory Creek is mapped in five reaches totaling 5,713 feet of stream length. Three of the reaches are ditched natural streams. The drainage basin is dominated by improved pasture and row crop fields. Natural cover types are present in the stream corridor. The channel primarily intersects live oak (33%) and mixed wetland hardwoods (49%). Combined these two cover types represent 82% of the stream length. Other community types include bay swamp, woodland pasture, and improved pasture. The habitat scores range from 49 to 121 with an average of 84.

5.1.4.2 Tributary 401

Tributary 401 is mapped as a single reach located at the southern end of Hickory Creek just before it exists the Ona Mine property. It drains a freshwater marsh located to the northeast within the Ona Mine, but the drainage extends off the property. It flow entirely through live oak forest on the Ona Mine. However, the dominant land use is improved pasture off the property. The habitat score is 87. The low score is reflective of low habitat diversity. However, the stream is stable and was surveyed as a reference reach for reclaimed stream design (Section 6).

5.1.4.3 Tributary 402

Tributary 402 is mapped as two reaches that drain freshwater marshes into the Hickory Creek corridor. Reach 402B is located completely within palmetto prairie surrounding the freshwater marshes. Reach 402A intersects primarily palmetto prairie and live oak forest. Both channels are small and featureless. The habitat scores are 93 and 109. The low scores are reflective of low habitat diversity.

5.1.4.4 Tributary 404

Tributary 404 drains a bay swamp. The bay swamp and stream corridor are surrounded by improved pasture. The channel is straight and contains abundant aquatic vegetation. The habitat score is 65.

5.1.4.5 Tributary 406

Tributary 406 is a very small stream that drains a freshwater marsh into the Hickory Creek corridor. The marsh and stream corridor are surrounded by row crop fields. A 2-track also crosses the stream just before it enters the Hickory Creek corridor. The channel is small and featureless due to the small drainage area. It lacks sinuosity, depth diversity, and habitat diversity. The habitat score is 53.

5.1.4.6 Tributary 407

Tributary 407 is mapped as two reaches that drain a mixed wetland hardwoods forested wetland and a freshwater marsh into the Hickory Creek corridor. Reach 407A is a ditched natural stream. Improved pasture encroaches from the south, west, and north and makes up the majority of the drainage area land use. Both reaches are located within mixed wetland hardwoods. The habitat scores are 45 and 70 due to low sinuosity, low depth diversity, grazing impacts, and low habitat diversity and abundance.

5.1.4.7 Tributary 408

Tributary 408 is a small featureless channel that drains a freshwater marsh and forested wetland complex into the Hickory Creek corridor. The wetlands are surrounded by improved pasture to the south, east, and north. The channel intersects the freshwater marsh and forested/scrub-shrub

wetland land covers. The habitat scores is 57, which reflects the low sinuosity, low depth diversity, and low habitat diversity.

5.1.5 HORSE CREEK BASIN (500)

Horse Creek is a tributary of the Peace River that generally flows from north to south along the west end of the Ona Mine. The West Fork Horse Creek is a major tributary that flows northwest to southeast, joining Horse Creek just north of SR64. The main stem of Horse Creek is mapped as one continuous segment, all north of SR64. Twenty-seven tributaries were also mapped (501 through 528, excepting 527), including the West Fork Horse Creek (tributary 502). Each tributary was further mapped into distinct reaches based on substantial changes in physical characteristics or wetland interruptions. The following sections describe the dominant vegetative land uses/cover present within the corridor of the main stem and each tributary sub-basin.

5.1.5.1 Main stem Horse Creek

The main stem of Horse Creek is mapped as a single reach that is 26,225 feet in length. The channel extends from north to south through the Ona Mine and the drainage area extends north of the property. The drainage basin within the Ona Mine property is generally characterized by natural community types along the stream corridor that is flanked by improved pasture to the east and west. Within the stream corridor, the channel is located primarily in live oak forest (5%) and mixed wetland hardwoods forested wetland (92%). Woodland pasture, temperate hardwood, and palmetto prairie make up the remaining 3%. Horse Creek is considered a perennial stream. However, the channel can be observed dry at times. USGS has maintained a gage on the north side of SR64 since 1977 (Table 6, Appendix 2-2-B-iii). Mosaic is proposing to preserve the Horse Creek corridor, but is also proposing one dragline and utility crossing. Habitat was assessed near the proposed crossing location. The score is 138.

5.1.5.2 Tributary 501

Tributary 501 is mapped in two reaches totaling 1,493 feet of stream. A portion of this drainage system is located outside of the Ona Mine property. Reach 501C is a ditched natural stream located entirely in improved pasture. Reach 501B is also a ditched natural streams, but it is located in natural cover types, primarily hardwood-conifer mixed forest (39%) and wetland forested mixed (60%). The headwaters consists of a large forested wetland and freshwater

marsh. Land cover in the headwaters consists primarily of improved pasture. Reach 501A connects directly to Horse Creek just north of 64. The dominant cover type is mixed wetland hardwoods (70%) followed by temperate hardwood (19%) and live oak forest (10%). The channel is incised, most likely due to the altered landscape and upstream ditching. The habitat assessment score is 107. Reach 501A will be preserved as part of the West Fork Horse Creek corridor.

5.1.5.3 Tributary 502

Tributary 502 is the entire West Fork Horse Creek. It is mapped in twenty five reaches totaling 27,935 feet of stream. West Fork Horse Creek itself is mapped in three reaches (502A, 502F, and 502I) totaling 18,372 feet. Mosaic is proposing to preserve the entire corridor. The remaining reaches and stream length are tributaries of West Fork Horse Creek. The drainage area within the Ona Mine property is characterized by fragmented natural cover types interspersed with improved pasture. Most of the natural cover types are associated with wetlands and the stream corridors. Reach 502A intersects primarily mixed wetland hardwoods (78%) and wetland forested mixed (17%). The habitat assessment score for Reach 502A is 140. Thirteen short tributaries join Reach 502A. Most of them encounter natural cover types within the stream corridors: mixed wetland hardwoods (53%), wetland forested mixed (16%), live oak (8%), and hardwood-conifer mixed (6%). The habitat assessment scores of those thirteen reaches range from 45 to 133 with an average of 94.

Reach 502F intersects primarily mixed wetland hardwoods (94%). The habitat assessment score for Reach 502F is 158. Two tributaries (502N and 502G) flow into Reach 502F of the West Fork Horse Creek. Reach 502N drains a small mixed wetland hardwood wetland. The stream flows through the same community type. The drainage area of 502N is dominated by hardwood-conifer mixed forest, but also includes improved pasture to the south and west. The habitat assessment score is 104. Due to the small drainage area, the channel lacks sinuosity, depth diversity, and habitat diversity. Reach 502G drains a forested wetland comprised of mixed wetland hardwood and wetland coniferous forest cover types. If flows through improved pasture. The habitat assessment score of Reach 502G is 63.

Reach 502I intersects primarily mixed wetland hardwoods (58%) and hydric pine flatwoods (22%). The habitat assessment score is 160. Six tributary reaches drain into the West Fork Horse Creek in Reach 502I: 502H, 502J, 502K, 502L, 502M, and 502X. Reaches 502J, 502K, 502L, and 502M are part of the same drainage. Reach 502J is located in the floodplain of West Fork Horse Creek. It is a remnant channel of West Fork Horse Creek that received flow from 502K, 502L, and 502M. Reach 502J does not contain flow when West Fork Horse Creek is flowing at base flow discharge, but does when discharge is high in West Fork Horse Creek. Reach 502J flows entirely through mixed wetland hardwoods. It habitat assessment score is 84. The upper drainage area is comprised of hardwood-conifer mixed forest, mixed wetland hardwoods, and improved pasture. Reaches 502K, 502L, and 502M are located completely within the mixed wetland hardwoods community type. The habitat scores for those three reaches are 118, 107, and 98 respectively.

5.1.5.4 Tributary 503

Tributary 503 is mapped as a single reach. It drains a mixed wetland hardwoods community and is completely located within that community type. Improved pasture encroaches from the south and cattle grazing is moderate within the forested community. The habitat assessment score is 76. Tributary 503 will be preserved as part of the West Fork Horse Creek corridor.

5.1.5.5 Tributary 504

Tributary 504 is mapped as a single reach. It drains a small mixed wetland hardwoods community that extends east off of the Ona Mine property. The channel is completely located within the mixed wetland hardwoods community type. Improved pasture encroaches from the south. The habitat assessment score is 101. Tributary 504 will be preserved as part of the West Fork Horse Creek corridor.

5.1.5.6 Tributary 505

Tributary 504 is mapped as three reaches that drain a forested wetland comprised of the mixed wetland hardwoods cover type. All three reaches are completely located within that community type. The habitat assessment score for all three reaches is 123. Tributary 505 will be preserved as part of the West Fork Horse Creek corridor.

5.1.5.7 Tributary 506

Tributary 506 is mapped as two reaches: 506A and 506B. Reach 506B is a small channel that drains a small freshwater marsh with a cattle pond into a larger forested wetland. Reach 506A drains the entire system into Horse Creek. Reach 506B is completely located within mixed wetland hardwoods, while Reach 506A is located within palmetto prairie (45%) and improved pasture (47%). The habitat reaches for the two reaches are 115 (Reach 506A) and 88 (Reach 506B). Reach 506A habitat was assessed in the palmetto prairie community. The score would be much lower within the improved pasture. Reach 506B has a low habitat score because it is a small channel with low sinuosity, low depth diversity, and low habitat diversity. It is also severely impacted by hogs.

5.1.5.8 Tributary 507

Tributary 507 is mapped as a single reach that drains upland. A long upland ditch drains into the natural reach and extends its drainage basin to the east. Live oak forest (84%) and mixed wetland hardwoods (16%) are the two cover types intersected by the stream channel. Improved pasture encroaches from the east and cattle grazing is moderate to heavy within the forested community. The habitat assessment score is 92.

5.1.5.9 Tributary 508

Tributary 508 is mapped as a single reach that drains a freshwater marsh with a cattle pond. The upstream half is completely located within improved pasture (39%), while the downstream half is located within the woodland pasture (26%), live oak (23%), and wetland mixed hardwood (11%) cover types. The habitat assessment score is 65.

5.1.5.10 Tributary 509

Tributary 509 is a small stream providing drainage from a wetland mixed hardwood forested wetland extending eastward from the Horse Creek corridor. It is completely contained within that cover type. The habitats assessment score is 117. Tributary 509 will be preserved as part of the West Fork Horse Creek corridor.

5.1.5.11 Tributary 510

Tributary 510 is mapped as a single reach that drains a forested wetland (mixed wetland hardwoods) and freshwater marsh. The upstream half is located in improved pasture (61%) and the downstream half is located in live oak forest (39%). The habitat assessment score is 59.

5.1.5.12 Tributary 511

Tributary 511 is mapped as a single reach that drains wet improved pasture that may have historically been wet prairie. A long man-made ditch extends west and provides improved drainage in the pasture. The upper half is located within the improved pasture (62%) and the downstream half is located in live oak forest (33%). The habitat assessment score is 100.

5.1.5.13 Tributary 512

Tributary 512 is mapped as a single channel that drains a freshwater marsh. It is almost entirely located in improved pasture (82%). The downstream end is located in live oak forest (12%) and mixed wetland hardwoods (6%) where the stream enters the Horse Creek corridor. Reach 512A joins Horse Creek off of the Ona Mine property. The habitat assessment score is 89.

5.1.5.14 Tributary 513

Tributary 513 is mapped as a single reach that drains small forested and freshwater marsh wetlands east of Horse Creek. Man-made ditches provide improved drainage. The upstream end is located in improved pasture (19%). The remainder of the channel is located in live oak forest (38%), mixed wetland hardwoods (40%), and wet prairie (1%). The habitat assessment score is 105.

5.1.5.15 Tributary 514

Tributary 514 is mapped as a single reach that drains a large forested wetland. The two dominant cover types intersected by the stream channel are wetland mixed hardwood (43%) and live oak forest (54%). The habitat assessment score is 115.

5.1.5.16 Tributary 515

Tributary 515 is mapped as three reaches that drain a freshwater marsh and mixed wetland hardwoods. Reach 515A is located completely within the mixed wetland hardwoods cover type

and provides internal drainage within the forested wetland. Reach 515B-1 and 515B-2 are part of the same reach that drain the freshwater marsh at the head of the drainage. Reach 515B-2 is mapped as a separate reach because it is sample swale-like channel that lacks sinuosity, depth diversity, and habitat diversity. Both reaches are located within a live oak forest. The habitat assessment score for Reach 515B-1 is 103. Reach 515B-2 was not assessed, but would have a lower score. Reaches 515A and 515B-1 will be preserved as part of the West Fork Horse Creek corridor.

5.1.5.17 Tributary 516

Tributary 516 is mapped as five reaches that all drain forested wetlands extending east of the Horse Creek corridor. A portion of the forested wetland is a bay swamp (6% of the stream length). The other cover types are mixed wetland hardwoods (52%) and wetland forested mixed (42%). The habitat assessment scores range from 85 to 122 with an average of 100. Tributary 516 will be preserved as part of the West Fork Horse Creek corridor.

5.1.5.18 Tributary 517

Tributary 517 is mapped as a single reach that drains a bay swamp extending east from the Horse Creek corridor. The channel is located primarily in mixed wetland hardwoods (74%) and live oak forest (20%). The remainder is located within the bay swamp community. The habitat assessment score is 113. Tributary 517 will be preserved as part of the West Fork Horse Creek corridor.

5.1.5.19 Tributary 518

Tributary 518 is mapped as two reaches that drain a large wet prairie at the head of the drainage and a smaller bay swamp. Natural drainage from the headwater wet prairie was historically overland flow. A man-made ditch was constructed between the wet prairie and head of the natural stream to improve drainage. The upstream half of Reach 518B is located in improved pasture (68%). The remainder is located in the bay swamp (32%). Reach 515A is located in live oak forest (76%) and mixed wetland hardwoods (19%). Tributary 518 will be preserved as part of the West Fork Horse Creek corridor.

5.1.5.20 Tributary 519

Tributary 519 is mapped as a single reach that drains a bay swamp that extends east from the Horse Creek corridor. Approximately half of the stream is located in the bay swamp community, while the other half is located in the mixed wetland hardwoods community along Horse Creek. The stream and bay swamp are both impacted by a large man-made ditch extending northeast from the stream along the north edge of the bay swamp. The habitat assessment score is 126. Tributary 519 will be preserved as part of the West Fork Horse Creek corridor.

5.1.5.21 Tributary 520

Tributary 520 is mapped as two reaches that drain a bay swamp. Reach 520B is located entirely within the wetland forested mixed cover type extending east of the bay swamp. The habitat assessment score is 97. Reach 520A is located in mixed wetland hardwoods, live oak forest, and pine flatwoods. The habitat assessment score is 100. Tributary 520 will be preserved as part of the West Fork Horse Creek corridor.

5.1.5.22 Tributary 521

Tributary 521 is mapped as two reaches that drain forested wetland extending east of the Horse. Creek corridor. Reach 521B drains a bay swamp and mixed wetland hardwoods community. The channel is located in mixed wetland hardwoods (85%) and wetland forested mixed (15%). The habitat assessment score is 123. Reach 521A drains the forested wetland drainage into Horse Creek. It is completely located within the mixed wetland hardwoods adjacent to Horse Creek. The habitat assessment score is 112. Tributary 521 will be preserved as part of the West Fork Horse Creek corridor.

5.1.5.23 Tributary 522

Tributary 522 is mapped as two reaches that drain a freshwater marsh. Reach 522B is a small, simple channel with low sinuosity, low depth diversity, and low habitat diversity. It is entirely located within the wetland forested mixed cover type downstream of the freshwater marsh. The Reach 522B habitat score is 87. Reach 522A intersects pine flatwoods (60%), hydric pine flatwoods (25%) and mixed wetland hardwoods (13%). The habitat score is 107. Tributary 522 will be preserved as part of the West Fork Horse Creek corridor.

A low-flow monitoring station (G155F) was installed in 2010 at which flow stage was logged from May of 2010 through April of 2013. Valid stage data were logged for 763 days. The water stage was above the bed for 312 days, or 41% of the days flow was logged. When annualized, the number of days stage was logged above the bed equates to 149 days per year over the period of record.

5.1.5.24 Tributary 523

Tributary 523 is mapped in eight reaches totaling 5,597 feet of stream. One of the reaches is a ditched natural stream (523G). The drainage is characterized by several short stream reaches interrupted by forested wetlands and freshwater marshes. The entire drainage is located in natural cover types including palmetto prairie, hardwood-conifer mixed forests, pine flatwoods, and live oak. Improved pasture flanks these natural cover types to the northeast, east, and west. Cattle grazing is light to moderate throughout the drainage. Reach 523A is the longest reach, comprising 44% of the entire stream length. It drains the system into Horse Creek. The channel intersects mixed wetland hardwoods (63%), wetland forested mixed (29%), and hydric pine flatwoods (7%). The Reach 523A habitat assessment score is 133. Approximately two-thirds of Reach 523A will be preserved as part of the Horse Creek corridor. Combined the other reaches intersect four primary cover types that account for 83% of the stream length: wetland forested mixed (38%), hardwood-conifer mixed (25%), mixed wetland hardwoods (13%), and palmetto prairie (8%). The habitat assessment scores range from 70 to 96 with an average score of 86. Lower scores are primarily due to low sinuosity, low depth diversity, and low habitat diversity in several of the reaches.

5.1.5.25 Tributary 524

Tributary 524 is mapped as a single reach that drains a bay swamp. The channel intersects live oak forest (60%), palmetto prairie (32%), and mixed wetland hardwoods (8%). The habitat assessment score is 118. Tributary 524 will be preserved as part of the West Fork Horse Creek corridor.

5.1.5.26 Tributary 525

Tributary 525 is mapped as a single short reach that drains upland. It is primarily located within a live oak forest. The habitat assessment score is 97. Reach 525A will be preserved as part of the Horse Creek corridor.

5.1.5.27 Tributary 526

Tributary 526 is mapped as a single reach that drains a forested wetland extending wets from the Horse Creek corridor. It is entirely located within the mixed wetland hardwoods cover type. The habitat assessment score is 121. Tributary 526 will be preserved as part of the West Fork Horse Creek corridor.

5.1.5.28 Tributary 528

Tributary 528 is mapped as a single reach that drains a small wet prairie. It is located within mixed wetland hardwoods (74%) and adjacent live oak forest (26%). The habitat assessment score is 90. Tributary 528 will be preserved as part of the West Fork Horse Creek corridor.

6.0 REFERENCE STREAM SURVEYS

Stream reference reaches are used to provide morphological design data. The approach is commonly called the analogue method of stream design because the reference stream provides a morphological analogy (or template) that can be translated to other streams/drainages. The various morphological parameters measured are related to each other to allow scaling based on drainage area, bankfull depth, and bankfull width. The most basic and important of these relationships is the relationship between drainage area and channel cross-sectional area. This morphological relationship defines the size of the stream related to its drainage area size. It is used as a scaling factor to design the size of stream channels based on post-mining topography and drainage areas. To supplement reference reach survey data, the cross-sectional channel area and drainage area were determined for stream reaches where flow monitoring stations were installed. This provided an additional fifteen data points.

6.1 *METHODS*

Nine (9) reference reaches were surveyed on existing stream channels throughout the Ona Mine (Table 12), four E-type and five C-type streams. The reference reaches were not surveyed to provide stream reclamation performance criteria. The data will be used in design only. The reference reaches were chosen based on geographic location, drainage basin, and stability. Selected reference streams are natural streams that had not been previously ditched or substantially altered. An effort was made to select reference reaches within all major drainage basins on the Ona site and to cover the east to west geographic extent of the site. The reference reaches were not selected based on habitat assessment scores or optimal condition, but were selected if relatively stable and absent of major disturbances. The existing drainage areas of the reference reaches were estimated using GIS software and 3-D spatial analysis of a Digital Elevation Model (DEM). The named drainage basin, upstream drainage area, Rosgen Level-II stream type, and habitat assessment scores are provided in Table 12. In addition to the morphological reference reach data described above, the bankfull cross-sectional dimensions were measured at fifteen additional locations where low-flow monitoring equipment was installed (Map 2-3-B of the Application).

Reference streams and low flow monitoring station cross-sections were surveyed using a surveying site level. Elevations were recorded relative to instrument height. Profile and cross-section positional data were collected using measured distances along a fiberglass tape measure. For the profile survey, elevations and distances were recorded at bed features including head of riffle and maximum pool depth. Pool width and length were measured using a fiberglass tape measure. Meander radius of curvature was measured using a fiberglass tape measure. Data were entered into a customized Excel spreadsheet and summarized using Excel tools. Plots of the profile and cross-section data for the reference reaches and low flow monitoring stations are provided in Appendix E.

These bankfull cross-sectional area data along with the reference reach cross-sectional data were used to evaluate the relationship between drainage area and bankfull cross-sectional area using regression analysis; this relationship is used to size the reclaimed stream channels based on post-mining topography and drainage areas (see Section 8). Figure 2 plots the bankfull cross-sectional area and drainage area data for the nine reference reaches and fifteen low-flow monitoring stations. The data contain a fair degree of scatter ($r^2 = 0.7$).

Mosaic collected similar data for the previously permitted Ona Fort Green Extension (OFGE) mining parcel. Figure 3 shows the site-wide Ona data plotted in Figure 2 compared to the Ona Fort Green Extension data (August 30, 2006 Stream Reclamation Plan). The current Ona data compare favorably with the OFGE data, indicating that bankfull indicators are being consistently interpreted and applied over time when measuring bankfull dimensions.

The Ona cross-sectional area and drainage area data were further evaluated to determine if a subset of the data would be best suited for developing a bankfull design curve. Data collected in the Brushy Creek drainage were grouped, while data collected in the Oak Creek drainage were grouped (Figure 4). The regression lines are similar for both basins, but the Brushy Creek data contain more scatter and a lower correlation coefficient value ($r^2 = 0.49$ versus 0.87), which will results in narrower 95% prediction limits and a higher level of confidence for the stream design.

As a common practice, other regional curves or data are used as a check against site-specific data. Peer-reviewed regional curves for Southwestern Florida have not been published. However, John Kiefer[1-10] published Peninsular Florida regional data in his 2010 dissertation. Kiefer segregated his data based on physiographic region and studied streams in the Southwestern Florida Flatwoods ecoregion. Ona Mine is located in the Southwestern Florida Flatwoods. Kiefer's data do have some limitations when making comparisons to other data sets. Kiefer did not report his data by Rosgen stream type, so comparison by stream type is not possible. Furthermore, Kiefer's bankfull discharge estimates are not all based on actual measured flows. Kiefer calculated bankfull discharge estimates using various methods that differ from those used by Mosaic in Appendix 2.2.B.i. Lastly, Kiefer's data set includes primarily intermittent and perennial stream types, all of which have a drainage area of 0.2 square miles or larger. Therefore, the data are not very representative of the numerous small ephemeral streams on Ona Mine with drainage areas of less than 0.2 square miles. Despite these limitations, Kiefer has published the only regional data available.

Mosaic used Kiefer's dissertation data for flatwoods streams for estimated bankfull discharge, bankfull channel width, width-to-depth ratio, and hydraulic channel depth (bankfull area divided by width, he did not report mean bankfull depths) to compare the morphology of Mosaic's surveyed reference reaches and low flow station cross-sections. Given Mosaic uses the reference stream and low flow station data to design all of the reclaimed streams in its reclamation plan, this is a valid comparison. Reference reaches and low flow stations with drainage areas less than 0.1 square miles were not used for comparison because Kiefer's data set does not include any streams with drainage areas less than 0.2 square miles (Mosaic's dataset does not include any reference reaches with drainage areas between 0.1 and 0.2 square miles). Figure 5 below shows the results of this analysis. All of the reference reaches show good agreement with the Kiefer flatwoods data.

Given the high correlation coefficient, high agreement with Kiefer 2010 flatwoods streams data, and similarity between the Brushy Creek and Oak Creek data, the Oak Creek data set would be

[1-10] Kiefer, J.H. 2010. Hydrobiogeomorphology of fluvial systems in peninsular Florida: implications to classification, conservation, and restoration. Ph.D. Dissertation. University of Florida.

best suited for designing the bankfull cross-sectional area of the Ona Mine reclaimed streams. The resulting regression equation that will be used for reclaimed stream design is shown in Figure 6 with 95% prediction limits. Figure 6 can be recreated using reference reach and low flow station data provided in Table 13 of revised Appendix 2-2-B-i of Mosaic's RAI Response, which contains data for reference reaches 301I, 300E, and 301G, and stream reaches at eleven low flow monitoring stations (see also Table 7 of Appendix 2-2-B-i). The reference reach data are summarized in Table 14A/B. The morphological data describe the plan form, profile, and dimension of the reference reach streams. The reference reach surveys provide a detailed morphological dataset that will be used by Mosaic to design reclaimed streams as described in Section 8 of this report.

7.0 STREAM RECLAMATION PLAN

7.1 *DRAINAGE*

Map 4-6 of the Application illustrates the drainage patterns and major sub-basins on the Ona Mine site after mining, resulting from Mosaic's designed post-reclamation topography. Upon completion of mining, the Ona Mine site will continue to drain to Troublesome Creek, Hickory Creek, Oak Creek, Brushy Creek, Horse Creek, West Fork Horse Creek, and the Myakka River. The acreage draining to each of these streams will approximate pre-mining conditions.

7.2 *RECLAIMED STREAMS*

Mosaic has developed post-mining vegetative cover/land use, stream valleys, and topography. Maps 4-2-B-ii, 4-3-B and 4-5 of the Application present these respective plans. Map 4-6 of the Application shows the post-mining drainage basins and patterns. As shown in Table 2-2-D-i of the Application, the total length of mapped natural and ditched natural stream reaches currently present within those portions of the Ona Mine that are proposed to be mined or disturbed is 90,040 feet. Map 4-3-B shows 67 restored stream valleys where Mosaic will re-establish natural alluvial streams, sloughs, and strands using the design guidance presented in this document; the total stream valley length shown on Map 4-3-B is 74,807 feet. Application of the design guidance in this report to 61,397 feet of that valley length can result in creation of 93,146 linear feet of natural alluvial stream channel. Multi-part Table 15 summarizes the design dimensions, profile, and plan form for 52 restored stream reaches by major drainage basin using the design guidance and procedures described in Section 8. Section 9 describes aspects of construction and habitat creation.

7.2.1 STREAM VALLEY TYPE

Stream valley type is the first attribute selected in a natural channel design because the valley type determines in large part the applicable channels available for design. Rosgen (1996) lists 11 distinct valley types and presents the natural stream types that correspond to each valley. Often a single valley type may have several corresponding river classifications; however, the majority of the valley types usually have between one and three applicable river types.

The appropriate valley type for the Ona Mine is the Valley Type X, which consists of very wide floodplains on gentle relief. This valley type is described as an alluvial valley, is found throughout the coastal plains, and often contains floodplain wetlands. Valley Type X is the only valley type currently present on the Ona Mine. The only deviation is that some of the floodplains along small streams are poorly developed and lack alluvial features. Some of the floodplains are colluvial rather than alluvial because the streams have small drainage areas and they do not transport large sediment loads. Nonetheless, those streams and their valleys still morphologically resemble Rosgen's Type X valley. According to Rosgen (1996), the "C", "E", and "DA" stream types are the predominant natural stream types for the Type X valley system. The DA-type stream does not exist on the Ona Mine.

7.2.2 ROSGEN LEVEL II STREAM CLASSIFICATION

The predominant Rosgen level-I stream types on the Ona Mine are the C and E stream types (95% combined, Table 2). The classification results are consistent with expectations. The Rosgen C and E stream types are the most common naturally occurring stream types in Central Florida and the coastal plain in general. Both types occur naturally in broad, shallow alluvial valleys – in the case of Central Florida (coastal plains), this is Valley Type X as described by Rosgen.

Given the C and E-type streams are common and widespread on the Ona Mine and are the naturally occurring Rosgen stream types within Valley Type X and coastal plains, Mosaic will create C and E-type streams. This will be accomplished using the design procedures described below. The design method described employs the analog method of stream design, which is based on mimicking natural systems using morphological data obtained from reference streams. Existing stable C- and E-type streams on the Ona Mine are used as reference streams so that their natural morphologies can be mimicked in reclaimed streams. The reference stream morphological data are used to develop the plan, profile, and dimension of reclaimed streams that are consistent morphologically with the Rosgen C and E stream types.

The natural stream types on the Ona Mine are the C5 and E5 stream types. The level II classification incorporates the dominant bed material type. In this case, the numerical

designation "5" refers to sand as the dominant bed material. Therefore, the restored streams will be designed and constructed to conform to the C- and E-type morphologies with sand beds.

7.2.3 STREAM CORRIDOR LAND USE AND COVER CHARACTERISTICS

The dominant land use and cover along the corridors of post-reclamation stream valleys was analyzed using spatial analysis in GIS software. Post-reclamation land use and land cover for the Ona Mine is shown in Map 4-2-B-ii of the Application. Mosaic's CRP attempts to replicate the variation and distribution of habitats adjacent to streams so that the reclaimed streams will provide similar ecological functions compared to existing conditions.

Table 16 presents a summary of land uses intersected by Mosaic's design reclaimed streams compared to the existing streams Mosaic is proposing to mine or disturb (Table 11, Section 5.0). Table 16 shows that 82% of the designed stream length intersects four dominant land use/cover types: mixed wetland hardwoods forest (617, 61.0%), wetland forested mixed (630, 14%), hardwood - conifer mixed forest (434, 5%), and palmetto prairie (321, 7%). The other eleven land use/cover types intersected by reclaimed stream valleys comprise the remaining 13% combined. Wetland cover types account for 84% of the total valley length, while upland cover types account for 16% of the total.

7.3 RECLAIMED SLOUGHS AND STRANDS

Reclaimed valleys shown in Map 4-3-B of the Application that have a combination of low valley slope and small drainage area have been designed by Mosaic to support sloughs and strands to replace pre-mining sloughs and strands foot-for-foot. As shown in Table 2-2-D-i of the Application, the total length of sloughs and strands present within portions of the Ona Mine that are proposed to be mined or disturbed is 13,616 feet. Mosaic has designed 13,410 feet of valley to support creation of sloughs/strands after mining. Mosaic will construct a minimum of 14,751 feet of sloughs and strands on those reclaimed valleys. Sloughs and strands will not be designed using stream design guidance in Section 8.0. The reclaimed valleys designed to support sloughs and strands will be constructed to create a simple hydrological connection on the valley flat. The width of the valley flat will vary as reflected in Map 4-5 of the Application and Mosaic's post-reclamation design. A flow conveyance channel will not be constructed, but one may develop

over time. However, the combination of low drainage area and valley slope will not lead to development of a well-defined channel or excessive erosion. The reclaimed valleys constructed to support sloughs and strands will be vegetated according to Mosaic's post-reclamation design reflected in Map 4-2-B-ii.

8.0 FINAL STREAM DESIGN PROCESS

Mosaic has developed a post-reclamation design that shows the total length of impacted stream length can be restored with reasonable assurance. The restored streams will resemble existing streams that are proposed to be mined or disturbed in terms of their morphology and ecological function to meet the foot-for-foot requirement of the Reclamation Rule. Mosaic's Application includes establishment of native vegetative land cover along restored streams that is similar to the character and distribution along existing streams with the exception of pasture. Mosaic will be mining or disturbing streams located in pastures, but will replace those streams with streams containing native vegetative cover in the stream corridors.

During actual reclamation following mining, Mosaic will conduct final design and prepare construction drawings for all 67 of the reclaimed stream reaches shown in Map 4-8-B-i of the Application using the following procedures. The final designs and construction drawings will be submitted to FDEP for review and approval before beginning reclaimed stream construction. The following procedures do not apply to reclaimed valleys shown in Map 4-8-B-i designed to support sloughs and strands. Because many of the streams will be associated with reclaimed wetlands and wetland hydrology, the final stream design will normally be coupled with final wetland designs as well. Wetland design procedures are described in Section 2.10 of the Application. During final wetland and stream design, revisions to the post-reclamation topography and land cover may be required. The stream construction drawings will account for required changes in topography, land use, and connected wetland hydrology.

8.1 *POST-MINING TOPOGRAPHY AND LAND COVER*

Post-mining topography will be based on actual soil material balancing, stream valley grading, and wetland design. The actual post-mining topography will be surveyed and used to determine the upstream and downstream invert elevations of the stream channel and to estimate the actual drainage area of the reclaimed stream reaches. As necessary, post-mining topography will be revised to create a uniform valley capable of supporting a stable stream channel and Mosaic's designed land cover and land use types. The upstream and downstream channel inverts may also be determined from the wetland design if a reclaimed stream drains a wetland and/or discharges to a wetland. Land cover revisions will be limited to spatial orientation and grading required by

stream design. The land cover areas will remain consistent to the extent practicable. Mosaic will submit all post-mining topographic and vegetative land cover revisions to the appropriate agencies for approval as part of reclaimed stream final design.

8.2 *MORPHOLOGICAL DESIGN PARAMETERS*

There are numerous parameters of design that must be estimated to construct reclaimed natural streams on the Ona Mine. Mosaic's stream reclamation designs are based on application of mean reference values without modifications. Final reclaimed stream design may require some deviation from the mean while remaining within the ranges in order to best fit the stream to actual post-mining conditions. The following sub-sections describe how the design parameters will be calculated and adjusted as necessary for final stream design.

8.2.1 CHANNEL DIMENSIONS

The channel dimensions that need to be determined for the reclaimed streams are bankfull cross-sectional area, bankfull width, and bankfull depth for both riffles and pools. The bankfull width and depth need to be determined such that they result in the desired E-type or C-type channel width to depth relationship of the reference streams. The reference reach data described in Section 6 will be used to design the dimensions of the reclaimed streams. As presented in Section 6, Tables 14A/B summarize the reference reach data that will be used in the form that will be directly applied to the design as described below.

8.2.1.1 Bankfull Cross-sectional Area

One of the primary reasons for conducting reference reach surveys is to develop a relationship between drainage area and bankfull cross-sectional area. Establishing the relationship between bankfull area and drainage area creates the ability to scale the bankfull channel dimensions of reclaimed streams based on post-mining drainage areas. Stream channels form under the influence of bankfull flows and the prevailing hydrology of their watersheds. Consequently, they naturally become sized to convey the bankfull discharge. It is critical to size the cross-sectional area of a naturally designed stream channel to convey the bankfull flow expected given planned watershed conditions in the post-mining landscape (*e.g.* topography, slopes, soils, and vegetation).

As discussed in Section 6.0, the regression analysis shown in Figure 6 provides a reliable means of estimating the bankfull cross-sectional area of restored streams using post-mining drainage basins determined from the post-mining topography shown on Map 4-5 of the Application.

$$RA_{bkf} \quad 8.9881 DA_{post}^{0\ 4864}$$

Where:

RA_{bkf}	riffle bankfull cross-sectional area of reclaimed streams
DA_{post}	drainage area of restored streams Bankfull Width

8.2.1.2 Riffle Bankfull Width

The riffle bankfull width (RW_{bkf}) of reclaimed streams was determined by applying the riffle bankfull area calculated above and desired reference stream width-to-depth ratio ($[W/D]_{ref}$) from Tables 14A/B:

$$RW_{bkf} = [W/D]_{ref} \times \sqrt{(RA_{bkf}/([W/D]_{ref} - 1))}$$

The pool bankfull width (PW_{bkf}) of reclaimed streams is determined by multiplying the riffle bankfull width above (RW_{bkf}) and reference stream pool width ratio ($[PW/RW]_{ref}$) from Tables 14A/B:

$$PW_{bkf} \quad RW_{bkf} \times [PW/W]_{ref}$$

8.2.1.3 Riffle Bankfull Depth

The riffle bankfull depth (RD_{bkf}) of reclaimed streams is determined by dividing the riffle bankfull width calculated above by the desired reference stream width-to-depth ratio ($[W/D]_{ref}$) from Tables 14A/B:

$$RD_{bkf} \quad RW_{bkf} / [W/D]_{ref}$$

8.2.1.4 Pool Maximum Depth

The max pool depth of reclaimed streams is determined by multiplying the riffle bankfull depth calculated above by the reference stream max pool depth ratio ($[PD_{max}/D]_{ref}$) from Tables 14A/B:

$$PD_{\max} \quad RD_{bkf} \times \left[PD_{\max} / RD\right]_{ref}$$

8.2.2 CHANNEL PROFILE

8.2.2.1 Pool Spacing

The distance between max pool stations will be calculated using reference stream profile data. Tables 14A/B show the mean pool spacing ratios ($[PS/RW_{bkf}]_{ref}$) for the C-type and E-type reference streams. Pool spacing will be calculated using those ratios, the riffle bankfull width calculated above in section 8.2.1.2, and the following equation.

$$PS = RW_{bkf} \times \left[PS/RW_{bkf}\right]_{ref}$$

8.2.2.2 Pool Length

Pool length will be calculated using reference stream profile data. Tables 14A/B show the mean pool length ratios ($[PS/RW_{bkf}]_{ref}$) for the C-type and E-type reference streams. Pool length will be calculated using those ratios, the riffle bankfull width calculated above in section 8.2.1.2, and the following equation.

$$PL = RW_{bkf} \times \left[PL/RW_{bkf}\right]_{ref}$$

8.2.3 CHANNEL PLAN FORM GEOMETRY

The channel plan form geometry parameters determined for the reclaimed streams are meander radius, meander length, and meander beltwidth. The reference reach data described in Section 6 will be used to design the dimensions of the reclaimed streams.

8.2.3.1 Sinuosity

Sinuosity is derived from the reference stream data. A mean sinuosity was calculated for Rosgen E and C-type streams. The stream designs presented in Tables 14A/B are based on the mean sinuosity values for E and C-type streams. During final design, the sinuosity value may be

adjusted within the range presented in Tables 14A/B to achieve desirable bankfull discharge channel capacity and sediment transport characteristics.

8.2.3.2 Meander Radius of Curvature

The design meander radius of reclaimed streams is determined by multiplying the riffle bankfull width determined in Section 8.2.1.2 above by the reference stream meander radius ratio ($[R_m/RW_{bkf}]_{ref}$):

$$R_m \quad RW_{bkf} \times \lfloor R_m / RW_{bkf} \rfloor_{ref}$$

8.2.3.3 Meander Length

The design meander length of reclaimed streams is determined by multiplying the riffle bankfull width determined in Section 8.2.1.2 above by the reference stream meander length ratio ($[L_m/RW_{bkf}]_{ref}$):

$$L_m \quad RW_{bkf} \times \lfloor L_m / RW_{bkf} \rfloor_{ref}$$

8.2.3.4 Meander Beltwidth

The design meander beltwidth of reclaimed streams is determined by multiplying the riffle bankfull width determined in Section 8.2.1.2 above by the reference stream meander beltwidth ratio ($[BW_m/RW_{bkf}]_{ref}$):

$$BW_m \quad RW_{bkf} \times \lfloor BW_m / RW_{bkf} \rfloor_{ref}$$

8.3 *HYDROLOGICAL ANALYSIS*

During final design hydrological modeling will be conducted to estimate bankfull discharge based on actual post-reclamation conditions at the time of final design and construction. Mosaic will prepare a final design document and construction drawings for submittal and approval by the DEP prior to reclaimed stream construction. To support the final design, Mosaic will perform event-based hydrological modeling using the mean annual flood. Runoff will be estimated for the contributing drainage area. If reclaimed wetlands are hydrologically connected to a

reclaimed stream, a wetland hydroperiod model will also be used to calculate contributing runoff to the reclaimed stream reach from the connected wetlands. The hydrological modeling output will then be used to verify the bankfull discharge of the stream, the frequency of bankfull flow events, and make final design adjustments to achieve the desired hydraulic and sediment transport characteristics. This is the same process Mosaic is currently using successfully at its South Fort Meade Mine in Hardee County.

Low flow data described in Section 4.0 were collected by Mosaic to characterize the typical hydrology of existing first and second order streams that will be mined or disturbed. Those data suggested that the existing first and second order streams are ephemeral or intermittent. Therefore, Mosaic's reclaimed stream design will result in reclaimed streams with similar hydrology. During final design Mosaic will compare the hydrological modeling results above to the low flow data collected to confirm that this objective is met.

Where a reclaimed stream will discharge to a preserved section of stream, the hydrological analysis proposed above will be extended to the preserved section of the stream by including a section of the preserved stream in the hydraulic model that will be developed for the reclaimed stream. To accomplish this, cross-sections along a 100-meter reach of the preserved stream starting at the connection point and extending downstream will be surveyed. This approach does not include modeling of a preserved connecting stream when the reclaimed stream is directly tributary to the preserved connecting stream. It will only apply where a preserved stream represents a continuation of the reclaimed stream.

9.0 STREAM CONSTRUCTION PROCESS

9.1 *CONSTRUCTION STAKING*

Establishing the layout and vertical controls for the new channel is the first step in the construction process once the final post-mining topography has been established. Mosaic's stream reclamation design contractors provide Mosaic with CAD files containing channel center line stationing and design elevations. The stations and control elevations are then used to install construction staking in the field. Construction stakes will be labeled with the stream center line station and final design elevation so that staking can be cross-referenced with drawings in the field. Proper stake labeling will provide an additional quality assurance step.

9.2 *SOIL EROSION CONTROL*

Mosaic uses a combination of methods to control soil erosion adjacent to the stream channels during and after construction. Erosion of soils from the riparian corridor and adjacent slopes can lead to excessive sediment loading until vegetation has been established and can control sediment loading. Excessive sediment loading can cause a delay in aquatic habitat development and/or channel instability, erosion, and avulsion. Mosaic uses silt barriers and construction site storm water controls to manage sediment and erosion. Construction site stormwater carries sediment into the stream. Mosaic uses lateral berms, flumes, and diversion channels to route collected storm water runoff around the channel during construction and until vegetation is well established. Storm water is collected at the downstream end of stream valleys in sumps and/or routed into Mosaic's mine-wide ditch-and-berm system. Construction stormwater is not discharged to surface water bodies outside of the mine-wide ditch-and-berm system until demonstration that the project meets state water quality standards and re-connection approval is obtained from the DEP.

9.3 *CONSTRUCTION METHODS*

Mosaic uses mechanical construction techniques to construct the majority of reclaimed streams. Traditional mechanical techniques include the use of heavy equipment and manual labor to move and shape soil. The size and type of equipment used depends on the size of the stream. Manual

labor is required for shaping streambanks, placing and securing large woody debris, installing and securing erosion control fabrics, seeding, and installing plants.

Mosaic also uses hydraulic carving techniques to construct larger stream channels when site conditions are suitable. Hydraulic carving involves pumping large volumes of water at the design bankfull discharge for an extended period over a graded valley floor. The water is used to move soil under natural conditions as opposed to moving soil using heavy equipment. This technique results in a channel near bankfull conditions for the design bankfull discharge. Minor construction using heavy equipment and manual labor is necessary once the channel has been "carved" for shaping and stabilizing streambanks, installing erosion control fabrics, seeding, and installing plants. This technique requires a large source of water and large sump basin for collecting eroded soils. Therefore, its application is more limited than mechanical construction techniques.

9.4 *STREAMBANK CONSTRUCTION*

Streambank structure is an important aspect of both channel stability and in-stream habitat. Streambanks should be constructed using encapsulation and bioengineering techniques. This approach creates a relatively vertical streambank profile with a range of slopes between 1:1 to 1:3 (v:h). Establishing vegetation within the encapsulated soil will stabilize the soils before the encapsulation fabric biodegrades. Revegetation of streambanks in this manner is an integral part of vegetating the riparian corridor as described below. The plant species and establishment methods used by Mosaic will vary along streams depending on the cover types being reclaimed. Map 4-2-B-ii of the Application shows the post-reclamation land uses and cover types design by Mosaic.

Soil encapsulation involves the shaping and encapsulation of soils in a biodegradable blanket such as those manufactured with coir fibers and in wide use today. This technique is used with success throughout the United States to stabilize eroding streambanks and construct streambanks in new channels. Soil encapsulation allows the streambank to be shaped, vegetated, and stabilized until natural soil mechanics and vegetation creates sufficient cohesiveness and resistance to stabilize the streambank. Figure 7 illustrates the use of soil encapsulation Mosaic will use to construct streambanks along reclaimed streams.

Erosion control blankets can be used to encapsulate or shape streambanks for construction throughout the restored streams because erosion control blankets are manufactured in a variety of weights today. Light-weight, short-term blankets can be used in straight reaches or inside of meander bends. Heavy-weight, long-term blankets are limited to the outside of meander bends to reduce overall construction costs.

Native vegetation will be incorporated into constructed streambanks and adjacent floodplain using the same techniques Mosaic has been using to establish native plant communities on reclamation sites for over the last decade. Native topsoil, trees/shrubs from future mining areas and nursery-grown plant propagules (including seed mixes, plugs, and potted shrubs and trees) will be placed and/or planted within the constructed streambank/floodplain. When native topsoil is used to provide plant propagules, the topsoil will be integrated into the soil encapsulation used to construct the streambank/floodplain or spread on constructed streambanks/floodplain where encapsulation is not used prior to installation of erosion control blanket. Whether topsoil is placed or not, Mosaic will plant herbs, forbs, shrubs, and/or trees using nursery stock or transplanted trees/shrubs and densities required to meet reclamation/mitigation requirements, depending on the designed community type.

9.5 *SOILS*

The actual soil types used to construct reclaimed channels may vary based on site-specific needs and availability. It is most desirable to construct streambanks with soils containing higher clay content than the tailings sands because the additional cohesive soil strength will contribute to streambank and channel stability, while improving plant growth. In this case, overburden specifically may be used to construct streambanks. Restored stream valleys will be constructed with a minimum of three feet of tailings sand overlain with overburden. The sand tailings promote lateral shallow ground water flow to the stream channel and form the bed of the reclaimed stream channel (overburden will not be used to construct the bed). Approximately six inches of overburden will be applied over sand tailings. The overburden will be disked into the sand tailings. Therefore, the predominant bed material type will be sand based on the Rosgen Level II classification. Where topsoil will be used to establish specific wetland or upland plant

communities, native topsoil borrowed from disturbed and mined areas will be used rather than overburden.

9.6 *RIPARIAN CORRIDOR VEGETATION*

In general, the riparian corridor can be defined by the geomorphic relationships developed and described in Section 8. Specifically, the meander belt-width described in Section 8.2.2.4 establishes a minimum stream corridor width. This concept is illustrated in Figures 8 and 9. The actual width of the vegetated riparian corridor of restored streams will vary depending on the post-mining topography and the specific plant community revegetation plans described in Mosaic's Application. The riparian corridor is important to overall stream function including channel stability and ecology. Establishing vegetation within the riparian corridor ensures soil stability, hence channel stability, and provides organic inputs to reclaimed streams. Riparian vegetation is particularly important during overbank flows to maintain channel stability. The mix of wetland and upland vegetation to be planted within the riparian corridor is described in Section 5.3 of the Application.

9.7 *IN-STREAM HABITAT*

Establishing a stream channel with natural fluvial processes for a specific geomorphic setting will facilitate creation of functional in-stream habitat. Natural fluvial processes create sediment transport/sorting characteristics and hydraulic gradients that are important aspects of fish and macroinvertebrate habitat. The channel design guidance presented will create a naturally functioning fluvial system with the capability of forming and maintaining fish and macroinvertebrate habitat features such as pools, runs, glides, large woody debris complexes, overhanging vegetation, exposed roots, and undercut banks. Still, many of these habitats are not fully functional or present at the time streams are first constructed. Therefore, Mosaic proposes to employ specific habitat improvement techniques to establish functional habitat at the outset of reclamation. Employing the following techniques for creating habitat in the restored streams will provide equal or better habitat than currently exists in the Ona Mine streams.

Existing streams within the Ona Mine area contain habitat that is predominantly associated with large woody debris, meander bends (pools), and streambank vegetation (including fine roots).

These physical aspects of the channel create a variety of habitat types that meet the habitat requirements of a variety of aquatic animals and life stages. Similar habitat types can be created in restored streams using the following techniques and structures.

9.7.1 MEANDER BENDS AND POOLS

The stream design guidance above will create stream channels with natural sinuosity and numerous meander bends at a frequency similar to existing streams within the Ona Mine. Pools form in meander bends as a result of secondary flow circulation patterns from the outside of the bend toward the inside of the bend, causing scour of the streambed along the outside of the meander and deposition or point-bar formation on the inside. Pools can be created in the meanders of reclaimed streams by excavating the streambed to create a cross-section that is deeper along the outside of the meander bend than along the inside of the meander bend. In addition, vertical stumps can be constructed into the outside streambank to promote scour and add cover. Figures 10 and 11 illustrate the typical cross-sections for C5 and E5 meander bends respectively, showing how the channel cross-section varies from runs and results in the formation of meander bend pools. Because this stream reclamation plan proposes a typical meander bend profile, pools will be created at the same frequency as meander bends using reference reach data presented in Section 6.

As noted in Section 8.7.3 below, large woody debris can also be used to create obstruction pools in addition to meander pools.

9.7.2 OVERHANGING VEGETATION

Construction of streambanks and establishment of vegetation as discussed in this Section and shown in Figure 7 will establish vegetation that overhangs the stream channel, providing important juvenile fish and macroinvertebrate habitat along the edges of reclaimed stream channels. In addition, overhanging vegetation provides an important source of organic matter to reclaimed streams.

9.7.3 LARGE WOODY DEBRIS

Large woody debris is perhaps the most important habitat component of the existing sand bed streams within the Ona Mine. In fact, large woody debris is an important component of the structure and ecology of coastal plain sand bed streams throughout the southeastern United

States. Large woody debris serves as an attachment site for macroinvertebrates, creates scour pools, promotes sediment sorting, establishes hydraulic gradients, adds organic matter and nutrients, and provides overhead cover. Overall, large woody debris serves to increase the habitat complexity and diversity of streams. Mosaic will use large woody debris in reclaimed streams to create habitat.

Figure 12 illustrates the variety of ways Mosaic will add large woody debris in reclaimed streams to provide scour pools and cover. The use of large woody debris as illustrated in Figure 12 can provide the in-stream habitat that is required for aquatic organisms to readily establish in reclaimed streams. Large woody debris structures will be installed in reclaimed streams at intervals of approximately 2 to 3 times the bankfull width throughout runs, glides, and pools. Large woody debris used at that rate produces a frequency of large woody debris similar to that observed in the existing streams within the Ona Mine.

Large woody debris will be salvaged from mined areas during the land clearing process and stockpiled for later use during reclaimed stream construction. Wood can be anchored by partially burying the wood in the streambed and banks during construction. In addition, stakes can be fashioned from branches by cutting one side of the "Y" to form a hook near the top of the stake. These construction techniques have already been used successfully by Mosaic to install and secure large woody debris in reclaimed streams.

10.0 TABLES

Table 1-A. Ona Mine Stream Mapping, Classification, and Assessment Summary

Reach ID	Length (feet)	Width (feet)	Rosgen Class[1]	FLUCFCS[2]	Habitat Assessment Score[3]	Hydrological Class[4]
100A	8,857	30	E5/G5	511	119	Intermittent
100B	6,995	15	G5	511	111	Intermittent
100C	2,305	20	E5	512	83	Intermittent
100D	2,460		C5	511	118	Intermittent
100E	1,148	9		511	95	Intermittent
100F	820	13	C5	511	119	Intermittent
100G	84	5	E5	511	88	Intermittent
101A	766	7	C5	511	98	Intermittent
102A	170	8	B5	511	73	Ephemeral
103A	806	8	E5	512	107	Ephemeral
104A	757	6	E5	512	99	Ephemeral
105A	3,019	20	C5	511	105	Intermittent
105C	1,372	10	C5	511	152	Intermittent
105D	246	6		516	116	Ephemeral
105F	832	12	C5	512	101	Ephemeral
105G-1	468	6		511	99	Ephemeral
105G-2	158	6	C5	511	99	Ephemeral
105H	787	8	E5	511	127	Ephemeral
105I	3,317	12	C5	512	75	Ephemeral
105J	374	6		512	122	Ephemeral
105K	230	4	E5	511	120	Ephemeral
105L	1,548	8	E5	511	114	Ephemeral
105M	533	8	C5	511	98	Ephemeral
105N	810	8		511	98	Ephemeral
105O	352	6	E5	511	108	Ephemeral
105P	764	5	C5	511	129	Ephemeral
105U	153	9		516	77	Ephemeral
105V	579	6	C5	511	106	Ephemeral
106A	1,699	5	C5	511	127	Ephemeral
106B	211	10		511	100	Ephemeral
106C	857	15	C5	511	111	Ephemeral
106D	701	12		516	67	Ephemeral
106E	665	15		516	64	Ephemeral
106F	356	8		511	64	Ephemeral
106G	391	8	C5	512	69	Ephemeral
107A	1,026	13		511	92	Ephemeral
107B	516	6		511	55	Ephemeral
107C	421	5		516	30	Ephemeral
107D-1	264	10		516	66	Ephemeral
107D-2	298	10		516	66	Ephemeral

1 Rosgen Level I/II classification based on Applied River Morphology (Rosgen, 1996). See Section 3.2. Not all streams were classified, but a large representative sample of streams were classified.
2 Florida Land Use, Cover, and Forms Classification System (FLUCFCS). See Section 3.1.
3 Based on FDEP SOP #001/01, FT3100. See Section 4.1.
4 See Section 3.4 and Figure 1.

Table 1-B. Ona Mine Stream Mapping, Classification, and Assessment Summary

Reach ID	Length (feet)	Width (feet)	Rosgen Class[1]	FLUCFCS[2]	Habitat Assessment Score[3]	Hydrological Class[4]
107E	1,366	10	C5	511	83	Ephemeral
107F	564	12		516	43	Ephemeral
107G	426	4		516	51	Ephemeral
107I	157	4	C5	511	64	Ephemeral
108A	221	5		516	88	Ephemeral
108B	346	5		512	88	Ephemeral
109A-1	605	5		511	131	Ephemeral
109A-2	166	5		511	131	Ephemeral
109B	315	4	C5	511	93	Ephemeral
109C	239	5		516	71	Ephemeral
110A	323	6		516	111	Ephemeral
110B	469	4	E5	511	118	Ephemeral
110C	473	4		516	112	Ephemeral
111A	708	8		511	107	Ephemeral
111B	634	7	C5	512	85	Ephemeral
111C	809	20	C5	511	99	Ephemeral
111D	1,585	15	C5	511	125	Ephemeral
111E	1,180	15		511	87	Ephemeral
111F	690	10	C5	512	117	Ephemeral
111G	347	15	C5	512	56	Ephemeral
111I	419	12	C5	511	91	Ephemeral
111J	333	6	C5	511	139	Ephemeral
111K	386	8	C5	512	85	Ephemeral
112A	5,212	9	E5	511	122	Ephemeral
112B	1,375	30	C5	512	79	Ephemeral
112F	376	4		511	101	Ephemeral
112G	587	8	C5	511	115	Ephemeral
112H	278	18		512	35	Ephemeral
112I	539	11	C5	511	101	Ephemeral
112J	79	10	C5	512	68	Ephemeral
112K	385	10		516	80	Ephemeral
112L	275	10		516	80	Ephemeral
112M	661	5		511	111	Ephemeral
112N	501	5		511	105	Ephemeral
112O	962	4		512	29	Ephemeral
112P	183	9		516	104	Ephemeral
112Q	176	9		516	104	Ephemeral
112R	492	8	C5	511	105	Ephemeral
113A	875	8	C5	511	128	Ephemeral
113B	1,043	4	C5	511	142	Ephemeral

1 Rosgen Level I/II classification based on Applied River Morphology (Rosgen, 1996). See Section 3.2. Not all streams were classified, but a large representative sample of streams were classified.
2 Florida Land Use, Cover, and Forms Classification System (FLUCFCS). See Section 3.1.
3 Based on FDEP SOP #001/01, FT3100. See Section 4.1.
4 See Section 3.4 and Figure 1.

Table 1-C. Ona Mine Stream Mapping, Classification, and Assessment Summary

Reach ID	Length (feet)	Width (feet)	Rosgen Class[1]	FLUCFCS[2]	Habitat Assessment Score[3]	Hydrological Class[4]
113C	347	3		511	93	Ephemeral
114A	668	5		511	108	Ephemeral
200A	1,599	12		512	98	Ephemeral
200B-1	219	12		516	98	Ephemeral
200B-2	201	12		516	98	Ephemeral
200C	675	12	C5	512	98	Ephemeral
200D	474	12	B5	511	83	Ephemeral
200E	437	12		516	83	Ephemeral
201A	494	10	G5	512	84	Ephemeral
202A	198	8		516	67	Ephemeral
203A	547	6	C5	512	65	Ephemeral
203B	724	8		511	109	Ephemeral
300	721	35	C5	512	83	Intermittent
300A-1	937	40	C5	516	56	Intermittent
300A-2	333	40	C5	512	56	Intermittent
300B	829	35		512	106	Intermittent
300C	664	25	C5	511	121	Ephemeral
300D	4,070	20	C5	511	107	Intermittent
300E	3,628	10	E5	511	130	Ephemeral
300F	1,171	20	C5	511	90	Ephemeral
300H	337	9	C5	512	98	Ephemeral
300I	1,190	9	C5	511	98	Ephemeral
301B	2,370	8	C5	511	133	Ephemeral
301C	1,318	12	E5	511	125	Ephemeral
301D	848	6		511	117	Ephemeral
301E	410	12		511	102	Ephemeral
301F	233	14		516	85	Ephemeral
301G	2,149	8	C5	511	126	Ephemeral
301H	610	7	C5	511	127	Ephemeral
301I	972	8	E5	511	99	Ephemeral
301J	525	4	E5	511	113	Ephemeral
301K	1,580	6	E5	511	129	Ephemeral
301L	945	8	C5	511	117	Ephemeral
301M	2,729	8	C5	511	126	Ephemeral
301N	379	5	E5	511	102	Ephemeral
301O	145	7		516	76	Ephemeral
302A	2,056	8		511	118	Ephemeral
302B	520	6		512	65	Ephemeral
302C	174	6	E5	512	82	Ephemeral

1 Rosgen Level I/II classification based on Applied River Morphology (Rosgen, 1996). See Section 3.2. Not all streams were classified, but a large representative sample of streams were classified.
2 Florida Land Use, Cover, and Forms Classification System (FLUCFCS). See Section 3.1.
3 Based on FDEP SOP #001/01, FT3100. See Section 4.1.
4 See Section 3.4 and Figure 1.

Table 1-D. Ona Mine Stream Mapping, Classification, and Assessment Summary

Reach ID	Length (feet)	Width (feet)	Rosgen Class[1]	FLUCFCS[2]	Habitat Assessment Score[3]	Hydrological Class[4]
302D	824	12		511	116	Ephemeral
302E	1,667	5		511	135	Ephemeral
302F	328	4	E5	516	114	Ephemeral
302G	936	8	C5	511	127	Ephemeral
302H	161	6		516	121	Ephemeral
302I	243	3		516	118	Ephemeral
302J	376	6	C5	511	124	Ephemeral
302K	176	6		511	113	Ephemeral
303A	917	15		511	119	Ephemeral
303B	2,034	12		512	94	Ephemeral
303C	4,612	12		512	105	Ephemeral
303D	1,556	25		512	100	Ephemeral
303E	1,916	12	C5	511	112	Ephemeral
303F	433	15	C5	512	103	Ephemeral
303G	797	6		512	101	Ephemeral
303H	609	4		511	132	Ephemeral
303I	477	6	E5	511	126	Ephemeral
304A-1	906	6		511	95	Ephemeral
304A-2	684	6		516	95	Ephemeral
305A	705	6	E5	511	118	Ephemeral
305B	384	5		516	94	Ephemeral
305C	311	2		511	106	Ephemeral
305D	126	25		511	82	Ephemeral
306A	508	5		516	115	Ephemeral
307A	115	4		516	29	Ephemeral
307B	430	8	C5	511	112	Ephemeral
308A	365	9		511	76	Ephemeral
309A	442			516	44	Ephemeral
309B	184		E5	511		Ephemeral
310A	367			511	87	Ephemeral
400A	2,021	15		511	121	Ephemeral
400B	239	10	E5	511	49	Ephemeral
400C	532	22	E5	511	84	Ephemeral
400D	1,194	16	C5	511	112	Ephemeral
400G	1,727	10		512	63	Ephemeral
401A	277	4		511	87	Ephemeral
402A	554	5		511	93	Ephemeral
402B	193	4		516	109	Ephemeral
404A	275	6	C5	511	65	Ephemeral

1 Rosgen Level I/II classification based on Applied River Morphology (Rosgen, 1996). See Section 3.2. Not all streams were classified, but a large representative sample of streams were classified.
2 Florida Land Use, Cover, and Forms Classification System (FLUCFCS). See Section 3.1.
3 Based on FDEP SOP #001/01, FT3100. See Section 4.1.
4 See Section 3.4 and Figure 1.

Table 1-E. Ona Mine Stream Mapping, Classification, and Assessment Summary

Reach ID	Length (feet)	Width (feet)	Rosgen Class[1]	FLUCFCS[2]	Habitat Assessment Score[3]	Hydrological Class[4]
406A	186	2		511	53	Ephemeral
407A	328	12		516	45	Ephemeral
407B	274	10		516	70	Ephemeral
408A	339	6		516	57	Ephemeral
500A	26,225	15	E5	511	138	Perennial
501A	902	6	E5	511	107	Ephemeral
501C	591	12		516	72	Ephemeral
502A	13,964	12	E5	511	140	Intermittent
502B	613	5	E5	511	94	Ephemeral
502C	621	3	E5	512	94	Ephemeral
502D	360	8	C5	512	79	Ephemeral
502E	464	5	E5	511	122	Ephemeral
502F	1,753	17		511	158	Intermittent
502G	891	12	C5	511	63	Ephemeral
502H	115	5	C5	511	133	Ephemeral
502I	4,208	16		511	160	Intermittent
502J	999	12	E5	511	84	Ephemeral
502K	710	8	E5	511	118	Ephemeral
502L	98	10		511	107	Ephemeral
502M	134	8		511	98	Ephemeral
502N	190	4		511	104	Ephemeral
502O	183	5	E5	511	68	Ephemeral
502P	241	4		511	133	Ephemeral
502Q	199	4		511	133	Ephemeral
502R	225	6		511	74	Ephemeral
502S	142	12		511	123	Ephemeral
502T	564	3		511	123	Ephemeral
502U	268	5	C5	511	64	Ephemeral
502V	323	9	C5	511	83	Ephemeral
502W	315	15		516	45	Ephemeral
502X	29	2	C5	511	130	Ephemeral
502Y	326			516	74	Ephemeral
503A	290	5	C5	511	76	Ephemeral
504A	298	4	C5	511	101	Ephemeral
505A	234	4	C5	511	123	Ephemeral
505B	62	4	C5	511	123	Ephemeral
505C	93	4	C5	511	123	Ephemeral
506A	1,369	10	F5	511	115	Ephemeral
507A	364	5	E5	511	92	Ephemeral
508A	1,406	5	C5	511	65	Ephemeral

1 Rosgen Level I/II classification based on Applied River Morphology (Rosgen, 1996). See Section 3.2. Not all streams were classified, but a large representative sample of streams were classified.
2 Florida Land Use, Cover, and Forms Classification System (FLUCFCS). See Section 3.1.
3 Based on FDEP SOP #001/01, FT3100. See Section 4.1.
4 See Section 3.4 and Figure 1.

Table 1-F. Ona Mine Stream Mapping, Classification, and Assessment Summary

Reach ID	Length (feet)	Width (feet)	Rosgen Class[1]	FLUCFCS[2]	Habitat Assessment Score[3]	Hydrological Class[4]
509A	131	5	G5	511	117	Ephemeral
510A	1,022	3		511	59	Ephemeral
511A	1,629	5		511	100	Ephemeral
512A	1,656	6		511	89	Ephemeral
513A	1,430	8		511	105	Ephemeral
514A	3,408	5		511	115	Ephemeral
515A	63	5		511	103	Ephemeral
515B-1	362	5		511	103	Ephemeral
515B-2	195	5		511	103	Ephemeral
516A	479	5		511	100	Ephemeral
516B	1,032	4		511	122	Ephemeral
516C	320	7		511	85	Ephemeral
516D	267	6		511	95	Ephemeral
516E	318	6		511	100	Ephemeral
517A	283	5		511	113	Ephemeral
518A	648	6		511	100	Ephemeral
518B	593	10		511	86	Ephemeral
519A	174	3		511	126	Ephemeral
520A	359	12		511	100	Ephemeral
520B	376	15		511	97	Ephemeral
521A	319	12		511	112	Ephemeral
521B	614	4		511	123	Ephemeral
522A	742	3		511	107	Ephemeral
522B	130	2		511	87	Ephemeral
523A	2,478	12		511	133	Ephemeral
523B	826	10		511	85	Ephemeral
523C	244	8		511	86	Ephemeral
523D	244	15		511	91	Ephemeral
523E	420	12		511	84	Ephemeral
523G	112	8		512	70	Ephemeral
523H	638	4		511	96	Ephemeral
523I	635	8		512	87	Ephemeral
524A	665	6		511	118	Ephemeral
525A	290			511	97	Ephemeral
526A	612	12		511	121	Ephemeral
528A	339	5		511	90	Ephemeral

1 Rosgen Level I/II classification based on Applied River Morphology (Rosgen, 1996). See Section 3.2. Not all streams were classified, but a large representative sample of streams were classified.
2 Florida Land Use, Cover, and Forms Classification System (FLUCFCS). See Section 3.1.
3 Based on FDEP SOP #001/01, FT3100. See Section 4.1.
4 See Section 3.4 and Figure 1.

Table 2. Ona Fort Green Extension previously mapped stream revisions.

OFGE Permit Stream Reach ID	Current Reach ID	Change	Basis for Change
NEW	519A	Added	
NEW	528A	Added	
NEW	506B	Added	
NEW	525A	Added	
3e	523H	None	
3e'	523I	None	
1ef	523G	None	
1eb	523E	None	
1ec	523D	None	
1ed	523C	None	
1ee	523B	None	
2e	523A	None	
6e	522A/522B	None	
7e	521A/521B	Created two reaches by adding a forested wetland break.	Forested wetland with lack of channel. Inspected w/ FDEP.
8e	520A/520B	Reclassified middle section as 514	Unnatural landscape position, parallel to contours
9w	515A/515B	Reclassified upper section as 514. Broke lower section at wetland.	Upper section clearly not visible in 1940 aerial, straight channel, spoils
4e	517A	Eliminated stream upstream of wetland	No channel present.
8w	524A	Shortened upstream end.	Ditched in upstream wetland.
9e	516A-D	Added wetland break. Altered course.	No channel present through wetland. Previous mapping followed flooded wetland rather than natural channel.
7w		Added wetland break.	No channel present through wetland.
6w	514A	Shortened upstream end.	Channel does not continue upstream through wetland.
5e	513A	No change	
5w	512A	No change	
4w	511A	No change	
3w	510A	Shortened upstream end.	Ditched in upstream wetland.
10e	509A	No change	
2w	508A	No change	
11e	507A	Shortened upstream end.	Presence of spoils, straight channel tansitions to natural, lack of stream signature in 1940 aerial
1w	506A	No change	
12e	505A	No change	
13e	504A	No change	
0w	503A	Shortened upstream end	Lack of channel in upstream wetland

Table 3. Distribution of Rosgen Stream Classes

Class	Number	Percent of Number	Total Length (feet)	Percent Of Length
B	2	2	644	<1
C	64	62	57,704	40
E	34	33	77,220	53
F	1	1	1,369	1
G	3	5	7,620	5
Totals	**104**		**144,557**	

Table 4. Distribution of Stream Habitat Assessment Scores

Habitat Assessment Score Range	Qualitative Ranking	Number Reaches	Length (feet)	Percent of Total
0-40	Poor	5	1,777	1
41-80	Marginal	48	22,587	10
81-120	Sub-optimal	145	114,711	50
121-160	Optimal	47	89,311	39
Totals		**245**	**228,385**	**100**

Table 5. List of SWFWMD Gauge Stations

SWFWMD Gauge Station No.	Stream Name	Location	Period of Record	% of Year No Flow
23941	Hickory Creek	SR 64	12/1999 to Present	Est. 40 %
23920	Oak Creek	CR 663	12/1999 to Present	62 %
23925	Brushy Creek	1 mile So. SR 64	12/1999 to Present	64%
23950	West Fork Horse	Owen Roberts Rd.	12/1999 to Present	Est. 68%

Table 6. List of USGS Gauge Stations

USGS Gauge Station No.	Stream Name	Drainage Area (mi^2)	Location	Period of Record
02297155	Horse Creek	42	SR 64	10/77 – Present
02295755	Hickory Creek	3.75	SR 64	2/83 – 9/84
02297153	West Fork Horse Creek	14	Owen Roberts Rd	10/92 – 9/94
02295850	Oak Creek	15	South of Ona	7/81 – 9/83

Table 7. Ona Mine Summary of Low Flow Stream Level Gauging

Station ID	Stream Reach ID	Drainage Area (mi^2)	Date Range (m/yy)	Number Days Stage Logged	Number Days Level Above Bed	Percentage Days Above Bed	Annualized Number Days Above Bed
G155F	522A		5/10 – 4/13	763	312	40.9%	149
C131F	302E	0.29	8/09 – 7/13	1,362	167	12.3%	45
C354F-E24	301D	0.19	2/10 – 7/13	1,181	80	6.8%	25
C333F-E10	301M	0.35	7/09 – 7/13	1,281	190	14.9%	54
C382F-E12	301G	0.48	4/10 – 7/13	1,133	210	18.5%	68
C714F-W8	305A	0.26	7/10 – 7/13	966	325	33.6%	123
C313F-E8	301I	0.21	7/09 – 7/13	1,411	328	23.2%	85
C157F-E14	301K	0.10	7/09 – 7/13	1,360	223	16.4%	60
C387F-E27	301C	1.02	1/10 – 7/13	1,218	384	31.5%	115
C736F-W13	300I	1.05	7/09 – 7/13	1,374	322	23.4%	86
C767F-W22	300D	5.71	7/09 – 7/13	1,389	624	45.0%	164
C752F-W20	300E	2.05	7/09 – 7/13	1,353	549	40.6%	148
E463F-B16	106C	0.48	7/09 – 4/13	1,161	492	42.3%	155
C752F-W21	303A	3.26	7/09 – 7/13	1,265	634	50.1%	183
E474F	105M	0.33	7/09 – 4/13	1,233	500	40.5%	148
C742F-W17	300F	1.76	7/09 – 7/13	1,369	636	46.5%	170
E131F-B9	106G	0.22	7/09 – 4/13	1,144	685	59.9%	218
E445F-B14	106E	0.33	7/09 – 4/13	1,252	702	56.1%	205
E477F	105P	0.21	7/09 – 4/13	1,274	767	60.2%	220

Table 8. Summary of Biological Monitoring Stations for Streams on the Ona Mine.

Station ID	FDEP Index	Stream Name	Location Description
BR-1	BioRecon	Hickory Creek	Section 26, Mapped Stream 400E
BR-2	BioRecon	Unnamed Trib.	Section 21, Oak Creek Basin, Mapped Stream 302E
BR-3	BioRecon	Unnamed Trib.	Section 28, Oak Creek Basin, Mapped Stream 301F
BR-4	BioRecon	Unnamed Trib.	Section 17, Brady Creek Basin, Mapped Stream 304A
BR-5	BioRecon	Brady Creek	Section 20, Mapped Stream 300I
BR-6	BioRecon	Brady Creek	Section 20, Mapped Stream 300F
BR-7	BioRecon	Brady Creek	Section 20, Mapped Stream 300E
BR-8	BioRecon	Brady Creek	Section 29, Mapped Stream 303A
BR-9	BioRecon	Brady Creek	Section 29, Mapped Stream 300D
BR-10	BioRecon	Brady Creek	Section 31, Mapped Stream 200A
BR-11	BioRecon	Unnamed Trib.	Section 24, Brushy Creek Basin, Stream 107A
BR-12	BioRecon	Unnamed Trib.	Section 14, Brushy Creek Basin, Stream 112M
BR-13	BioRecon	Unnamed Trib.	Section 14, Brushy Creek Basin, Stream 112A
BR-14	BioRecon	Unnamed Trib.	Section 22, Brushy Creek Basin, Stream 105P
BR-15	BioRecon	Unnamed Trib.	Section 22, Brushy Creek Basin, Stream 105N
BR-16	BioRecon	Unnamed Trib.	Section 22, Brushy Creek Basin, Stream 105K
BR-17	BioRecon	Unnamed Trib.	Section 23, Brushy Creek Basin, Stream 106C
BR-18	BioRecon	Unnamed Trib.	Section 26, Brushy Creek Basin, Stream 105C
BR-19	BioRecon	Unnamed Trib.	Section 23, Brushy Creek Basin, Mapped Stream 106A
BR-20	BioRecon	Unnamed Trib.	Section 20, Brady Creek Basin, Mapped Stream 303C
BR-21	BioRecon	West Fork Horse Ck.	Section 19, Mapped Stream 502I(
BR-22	BioRecon	West Fork Horse Ck.	Section 29, Mapped Stream 502A
BR-23	BioRecon	Oak Creek	Section 32, Mapped Stream 300B
BR-24	BioRecon	Man-made Channel	Section 13, Man-made channel (513)
BR-25	BioRecon	Brushy Creek	Section 25, Mapped Stream 100B
SCI-1	SCI	Hickory Creek	State Road 64, near Surface Water Station SW-8
SCI-2	SCI	Oak Creek	At County Road 663, near Surface Water Station SW-7
SCI-3	SCI	Brushy Creek	Section 36, near Surface Water Station SW-5
SCI-4	SCI	West Fork Horse Ck.	Owen Roberts Road, near Surface Water Station SW-1

Table 9. Stream Condition Index and BioRecon macroinvertebrate sampling results. Zero values are true scores. Blank cells indicate no sampling.

Station ID	FDEP Index[1]	2009 BioRecon Score	2010 BioRecon Score	2011 SCI Score	2012 SCI Score	2013 SCI Score
BR-1	BioRecon	0	0.24	BIORECON STATIONS NOT SAMPLED IN 2011		42
BR-2	BioRecon	Dry	Dry		33	29
BR-3	BioRecon	Dry	Dry		36	
BR-4	BioRecon	0	1.55		38	23.4
BR-5	BioRecon	0	0.24			
BR-6	BioRecon	0	1.39			27
BR-7	BioRecon	0	0.57			
BR-8	BioRecon	0.24	1.04			
BR-9	BioRecon	0.64	1.48		60	37.6
BR-10	BioRecon	Dry	Dry		24	27
BR-11	BioRecon	0.67	1.58			
BR-12	BioRecon	Dry	Dry			
BR-13	BioRecon	Dry	Dry			
BR-14	BioRecon	0.24	0.30			
BR-15	BioRecon	0	0.57			
BR-16	BioRecon	0.24	0.57			
BR-17	BioRecon	Dry	0.57			
BR-18	BioRecon	0	1.10		37	31.5
BR-19	BioRecon	Dry	Dry			40.6
BR-20	BioRecon	0.48	1.86			51
BR-21	BioRecon		6.28			
BR-22	BioRecon		5.95			
BR-23	BioRecon		2.17		25	22
BR-24	BioRecon		2.14			
BR-25	BioRecon		2.45		50	40.8
SCI-1[2]	SCI	Dry		41.1	29	
SCI-2[3]	SCI	3.6	21.41	19.2	42	
SCI-3	SCI	19.6	44.11	37.6		35.2
SCI-4[4]	SCI			54.5		53

1 SCI = Stream Condition Index, FDEP SOP LT7200; BioRecon, FDEP SOP LT7100
2 2010 location is downstream of the 2009 location due to a change in the property boundary
3 2010 location is downstream of the 2009 location due to a change in the property boundary
4 New SCI sampling station added in 2011 at the BR-22 BioRecon sampling station.

Table 10. 2009 and 2010 fish sampling results.

Station ID	Fish Collection Station ID	2009		2010	
		Unique Number Species	Number Specimens	Unique Number Species	Number Specimens
BR-1	BF-1	4	78	4	97
BR-2	BF-2	Dry		Dry	
BR-3	BF-3	Dry		Dry	
BR-4	BF-4	0	0	4	38
BR-5	BF-5	3	2	5	48
BR-6	BF-6	1	20	8	50
BR-7	BF-7	1	19	2	41
BR-8	BF-8	3	9	5	51
BR-9	BF-9	1	4	6	31
BR-10	BF-10	Dry		Dry	
BR-11	BF-11	1	28	5	64
BR-12	BF-12	Dry		Dry	
BR-13	BF-13	Dry		Dry	
BR-14	BF-14	2	25	6	57
BR-15	BF-15	3	18	4	68
BR-16	BF-16	3	3	4	16
BR-17	BF-17	Dry		6	31
BR-18	BF-18	4	29	5	85
BR-19	BF-19	Dry		Dry	
BR-20	BF-20	3	1	4	65
BR-21	BF-21	NOT SAMPLED IN 2009		2	4
BR-22	BF-22			2	8
BR-23	BF-23			7	90
BR-24	BF-24			7	74
BR-25	BF-25			6	20
SCI-1	SCI-1			6	37
SCI-2	SCI-2			4	24
SCI-3	SCI-3			6	49
SCI-4	SCI-4			See BF-22	
Total		5	236	13	1,048
Mean		2	18	5	48
Min		0	0	2	4
Max		4	78	8	97

Table 11. Summary of land use and cover types intersected by mapped stream channels Mosaic is proposing to mine or disturb.

Land Use/Cover Code†	Land Use/Cover Description†	Stream Length (feet)	Percent of Total Stream Length
211	Improved Pastures	6,305	8%
213	Woodland Pastures	2,297	3%
321	Palmetto Prairies	6,372	8%
329	Other Shrubs and Brush	269	<1%
411	Pine Flatwoods	3,691	5%
425	Temperate Hardwood	2,727	3%
427	Live Oak	13,843	17%
434	Hardwood - Conifer Mixed	14,521	18%
611	Bay Swamps	588	1%
617	Mixed Wetland Hardwoods	13,277	16%
620	Wetland Coniferous Forests	20	<1%
625	Hydric Pine Flatwoods	1,798	2%
630	Wetland Forested Mixed	11,277	14%
641	Freshwater Marshes	1,044	1%
643	Wet Prairies	135	<1%
647	Shrub Marsh	1,041	1%
648	Improved Pasture	1,230	2%
649	Palmetto Prairie (Hydric Rangeland)	19	<1%

† Florida Land Use, Cover, and Forms Classification System. Florida Department of Transportation Surveying and Mapping Office Geographic Mapping Section Handbook, January 1999 (Third Edition).

Table 12. Summary of Ona Mine Morphological Reference Reaches

Reach ID	Named Stream Drainage Basin	Drainage Area (mi^2)	Rosgen Class	Habitat Assessment Score
105L	Brushy Creek	0.81	E5	114
106A	Brushy Creek	0.56	E5	127
112A	Brushy Creek	0.04	C5	122
113B	Brushy Creek	0.01	C5	142
300E	Oak Creek	2.06	C5	130
301G	Oak Creek	0.48	C5	126
301I	Oak Creek	0.21	E5	99
401A	Hickory Creek	0.27	C5	87
502I	Horse Creek	11.08	E5	160

Table 13. Drainage Area and Bankfull Channel Cross-sectional Area Data Used to Create the Site-specific Reclaimed Stream Design Curve Shown in Figure 6.

Reach ID	Data Source	Drainage Area (mi^2)	Bankfull Area (ft^2)
301G	Low Flow Station	0.48	5.22
300I	Low Flow Station	1.05	7.11
300E	Low Flow Station	2.05	10.01
300F	Low Flow Station	1.76	14.91
302E	Low Flow Station	0.29	4.65
303A	Low Flow Station	3.26	18.06
300D	Low Flow Station	5.71	28.68
301D	Low Flow Station	0.19	3.26
301I	Low Flow Station	0.21	4.79
301M	Low Flow Station	0.35	4.61
301K	Low Flow Station	0.10	4.42
301I	Reference Reach	0.21	4.00
300E	Reference Reach	2.06	9.96
301G	Reference Reach	0.48	7.89

Table 14A. Ona Mine Rosgen E-Type Reference Stream Morphology Data.

Morphological Parameter	Design Parameter	Reference Reach ID				
		105L	106A	301I	502I	Means
Drainage Basin		Brushy	Brushy	Oak	Horse	All
Drainage Area (mi^2)	DA	0.81	0.56	0.21	11.08	3.17
Mean Chanel Slope (ft/ft)	S_{ave}	0.0021	0.0037	0.0004	0.0016	0.0020
Riffle Bankfull Area (ft^2)	RA_{bkf}	6.3	6.3	4.0	13.4	7.5
Riffle Bankfull Width	RW_{bkf}	6.2	8.7	8.2	11.9	8.7
Riffle Bankfull Depth	RD_{bkf}	1.0	0.7	0.5	1.1	0.8
Riffle Max Depth	RD_{max}	1.3	1.2	0.7	1.9	1.3
Pool Bankfull Area (ft^2)	PA_{bkf}	8.3	7.6	5.8	17.9	9.9
Pool Bankfull Width	PW_{bkf}	11.8	8.1	6.9	11.8	9.7
Pool Bankfull Depth	PD_{bkf}	0.7	0.9	0.8	1.5	1.0
Pool Max Depth	PD_{max}	1.2	1.4	1.1	2.7	1.6
Pool Spacing	PS	29.7	63.5	35.3	37.3	41.5
Pool Length	PL	23.0	25.7	24.5	25.6	24.7
Meander Radius	R_m	29	18	37	19	26
Meander Length	L_m	89	50	67	69	69
Meander Beltwidth	BW_m	36	43	37	89	51
Sinuosity	K	1.24	1.18	1.13	2.49	1.51
Entrenchment Ratio		6.5	5.8	1.2	3.4	4.2
Riffle Width:Depth Ratio	$[W_{bkf}/D_{bkf}]$	6.07	12.07	16.76	10.51	11.35
Riffle Max Depth Ratio	$[RD_{max}/RD_{bkf}]$	1.29	1.60	1.51	1.64	1.51
Pool Width Ratio	$[PW_{bkf}/RW_{bkf}]$	1.91	0.94	0.85	1.00	1.17
Pool Max Depth Ratio	$[PD_{max}/RD_{bkf}]$	1.19	1.99	2.24	2.35	1.94
Pool Spacing Ratio	$[PS/RW_{bkf}]$	4.8	7.31	4.3	3.14	4.89
Pool Length Ratio	$[PL/RW_{bkf}]$	3.72	2.96	2.98	2.15	2.95
Meander Radius Ratio	$[R_m/RW_{bkf}]$	4.68	2.04	4.47	1.60	3.20
Meander Length Ratio	$[L_m/RW_{bkf}]$	14.38	5.73	8.10	5.81	8.50
Meander Beltwidth Ratio	$[BW_m/RW_{bkf}]$	5.82	4.95	4.51	7.49	5.69
Bankfull Discharge (cfs)		8.3	8.8	1.4	16.8	8.6
Bankfull Velocity (ft/s)		1.3	1.4	0.4	1.2	1.1
Unit Stream Power (lb/s/ft)		0.17	0.23	0.004	0.14	0.12
Shear Stress (lb/ft2)		0.12	0.16	0.01	0.11	0.10

Table 14B. Ona Mine Rosgen C-Type Reference Stream Morphology Data.

Morphological Parameter	Design Parameter	Reference Reach ID					
		112A	113B	300E	301G	401A	Means
Drainage Basin		Brushy	Brushy	Oak	Oak	Hickory	All
Drainage Area (mi^2)	DA	0.04	0.01	2.06	0.48	0.27	0.57
Mean Chanel Slope (ft/ft)	S_{ave}	0.0015	0.0029	0.0004	0.0009	0.0051	0.0022
Riffle Bankfull Area (ft^2)	RA_{bkf}	5.6	3.6	10.0	7.9	8.3	7.1
Riffle Bankfull Width	RW_{bkf}	9.9	9.0	12.2	10.7	10.5	10.5
Riffle Bankfull Depth	RD_{bkf}	0.6	0.4	0.8	0.7	0.8	0.7
Riffle Max Depth	RD_{max}	1.0	0.7	1.4	1.3	1.1	1.1
Pool Bankfull Area (ft^2)	PA_{bkf}	16.3	5.6	23.0	7.5	14.6	13.4
Pool Bankfull Width	PW_{bkf}	15.5	10.8	14.4	9.3	15.0	13.0
Pool Bankfull Depth	PD_{bkf}	1.1	0.5	1.6	0.8	1.0	1.0
Pool Max Depth	PD_{max}	1.6	0.9	2.4	1.3	1.6	1.5
Pool Spacing	PS	60.3	21.7	41.8	31.0	30.0	37.0
Pool Length	PL	37.3	16.3	30.5	28.5	16.0	25.7
Meander Radius	R_m	29	13	12	12	30	19
Meander Length	L_m	110	24	43	41	43	52
Meander Beltwidth	BW_m	65	37	50	85	21	52
Sinuosity	K	1.26	1.12	1.35	2.75	1.12	1.52
Entrenchment Ratio		4.5	3.7	3.6	3.3	8.5	4.7
Riffle Width:Depth Ratio	$[W_{bkf}/D_{bkf}]$	17.40	23.18	14.87	14.42	13.32	16.64
Riffle Max Depth Ratio	$[RD_{max}/RD_{bkf}]$	1.72	1.74	1.72	1.74	1.42	1.67
Pool Width Ratio	$[PW_{bkf}/RW_{bkf}]$	1.57	1.20	1.18	0.87	1.43	1.25
Pool Max Depth Ratio	$[PD_{max}/RD_{bkf}]$	2.88	2.31	2.87	1.69	2.03	2.35
Pool Spacing Ratio	$[PS/RW_{bkf}]$	6.08	2.40	3.43	2.91	2.86	3.53
Pool Length Ratio	$[PL/RW_{bkf}]$	3.76	1.8	2.5	2.67	1.53	2.45
Meander Radius Ratio	$[R_m/RW_{bkf}]$	2.95	1.47	0.96	1.15	2.86	1.88
Meander Length Ratio	$[L_m/RW_{bkf}]$	11.12	2.65	3.53	3.84	4.10	5.05
Meander Beltwidth Ratio	$[BW_m/RW_{bkf}]$	6.55	4.09	4.10	7.97	2.00	4.75
Bankfull Discharge (cfs)		4.3	3.0	5.1	5.6	14.5	7.3
Bankfull Velocity (ft/s)		0.8	0.8	0.5	0.7	1.8	1.1
Unit Stream Power (lb/s/ft)		0.04	0.06	0.01	0.03	0.44	0.10
Shear Stress (lb/ft2)		0.05	0.07	0.02	0.04	0.24	0.09

Table 15A. Brady Creek Drainage Basin Restored Stream Design Table.

Design Parameter	Reclaimed Stream Reach ID				
	BA-MA	BA-T3	BA-T4	BA-T5	BA-T6A
Rosgen Class	C5	C5	E5	E5	C5
Drainage Area (mi2)	3.06	0.55	0.29	1.27	0.42
Upstream Elevation	76.0	80.0	78.5	89.0	79.5
Downstream Elevation	74.0	75.5	77.5	81.5	78.0
Fall (ft)	2	4.5	1	7.5	1.5
Valley Length (ft)	2061	2387	182	1129	488
Valley Slope (ft/ft)	0.0010	0.0019	0.0055	0.0066	0.0031
Mean Stream Slope (ft/ft)	0.0006	0.0012	0.0036	0.0044	0.0020
Mean Stream Slope (%)	0.06%	0.12%	0.36%	0.44%	0.20%
Sinuosity	1.52	1.52	1.51	1.51	1.52
Stream Length (ft)	3133	3628	275	1705	742
Width:Depth Ratio	17	17	11	11	17
Riffle Bankfull Area (ft2)	15.5	6.7	4.9	10.1	5.9
Riffle Bankfull Width (ft)	16.7	11.0	7.7	11.0	10.3
Riffle Bankfull Depth (ft)	1.0	0.6	0.7	1.0	0.6
Riffle Max Depth (ft)	1.6	1.1	1.1	1.5	1.0
Pool Width (ft)	20.9	13.8	9.2	13.3	12.9
Pool Max Depth (ft)	2.3	1.5	1.4	1.9	1.4
Pool Spacing (ft)	58.6	38.6	37.8	54.1	36.1
Pool Length (ft)	41.0	27.0	22.7	32.6	25.2
Meander Radius (ft)	32	21	25	35	20
Meander Length (ft)	84	56	66	94	52
Meander Beltwidth (ft)	79	52	44	63	49
Bankfull Discharge (cfs)	10.9	5.0	6.3	18.2	5.3
Bankfull Velocity (ft/s)	0.70	0.74	1.29	1.81	0.90
Bankfull Unit Stream Power (lb/s/ft)	0.03	0.03	0.19	0.45	0.06
Bankfull Shear Stress (lb/ft2)	0.04	0.05	0.14	0.24	0.07

Table 15B-1. Oak Creek Drainage Basin Restored Stream Design Table.

Design Parameter	Reclaimed Stream Reach ID							
	O-MA	O-T1A	O-T3C	O-T3D	O-T3E	O-T3F	O-T3G	O-T4A
Rosgen Class	C5	E5	C5	E5	E5	E5	E5	C5
Drainage Area (mi2)	9.59	0.10	0.25	0.06	0.03	0.07	0.38	0.92
Upstream Elevation	74.2	85.5	90.5	95.5	96.2	101.5	102.5	94.0
Downstream Elevation	72.0	80.0	88.0	91.0	91.0	97.0	98.5	91.8
Fall (ft)	2.2	5.5	2.5	4.5	5.2	4.5	4	2.2
Valley Length (ft)	2250	938	796	936	491	913	855	655
Valley Slope (ft/ft)	0.0010	0.0059	0.0031	0.0048	0.0106	0.0049	0.0047	0.0034
Mean Stream Slope (ft/ft)	0.0006	0.0039	0.0021	0.0032	0.0070	0.0033	0.0031	0.0022
Mean Stream Slope (%)	0.06%	0.39%	0.21%	0.32%	0.70%	0.33%	0.31%	0.22%
Sinuosity	1.52	1.51	1.52	1.51	1.51	1.51	1.51	1.52
Stream Length (ft)	3421	1416	1210	1414	742	1379	1291	995
Width:Depth Ratio	17	11	17	11	11	11	11	17
Riffle Bankfull Area (ft2)	27.0	2.9	4.6	2.4	1.7	2.4	5.6	8.6
Riffle Bankfull Width (ft)	22.1	6.0	9.1	5.3	4.5	5.4	8.3	12.5
Riffle Bankfull Depth (ft)	1.3	0.5	0.5	0.5	0.4	0.5	0.8	0.7
Riffle Max Depth (ft)	2.2	0.8	0.9	0.7	0.6	0.7	1.1	1.2
Pool Width (ft)	27.6	7.1	11.4	6.4	5.4	6.5	9.9	15.6
Pool Max Depth (ft)	3.1	1.1	1.3	0.9	0.8	1.0	1.5	1.7
Pool Spacing (ft)	77.3	29.2	31.8	26.2	22.1	26.6	40.5	43.7
Pool Length (ft)	54.1	17.6	22.3	15.8	13.3	16.0	24.4	30.6
Meander Radius (ft)	42	19	17	17	14	17	26	24
Meander Length (ft)	112	51	46	45	38	46	70	63
Meander Beltwidth (ft)	105	34	43	30	26	31	47	59
Bankfull Discharge (cfs)	22.9	3.3	3.8	2.2	2.1	2.4	7.1	9.3
Bankfull Velocity (ft/s)	0.85	1.12	0.84	0.95	1.25	0.97	1.25	1.07
Bankfull Unit Stream Power (lb/s/ft)	0.04	0.13	0.05	0.08	0.20	0.09	0.16	0.10
Bankfull Shear Stress (lb/ft2)	0.05	0.11	0.06	0.08	0.16	0.09	0.13	0.09

Table 15B-2. Oak Creek Drainage Basin Restored Stream Design Table.

Design Parameter	Reclaimed Stream Reach ID							
	O-T4B	O-T6A	O-T6B	O-T8A	O-T8B	O-T8C	O-T8F1	O-T8F2
Rosgen Class	C5	C5	C5	C5	E5	E5	C5	E5
Drainage Area (mi2)	0.88	4.87	1.52	0.24	0.21	0.17	0.34	0.34
Upstream Elevation	97.5	95.0	100.5	87.5	90.5	96.5	92.0	97.5
Downstream Elevation	94.0	82.8	97.0	85.0	89.0	89.8	86.0	92.8
Fall (ft)	3.5	12.2	3.5	2.5	1.5	6.7	6	4.7
Valley Length (ft)	870	8665	1474	594	287	474	2243	950
Valley Slope (ft/ft)	0.0040	0.0014	0.0024	0.0042	0.0052	0.0141	0.0027	0.0049
Mean Stream Slope (ft/ft)	0.0026	0.0009	0.0016	0.0028	0.0035	0.0094	0.0018	0.0033
Mean Stream Slope (%)	0.26%	0.09%	0.16%	0.28%	0.35%	0.94%	0.18%	0.33%
Sinuosity	1.52	1.52	1.52	1.52	1.51	1.51	1.52	1.51
Stream Length (ft)	1322	13171	2241	902	433	716	3409	1435
Width:Depth Ratio	17	17	17	17	11	11	17	11
Riffle Bankfull Area (ft2)	8.4	19.4	11.0	4.5	4.2	3.8	5.3	5.3
Riffle Bankfull Width (ft)	12.4	18.7	14.1	9.0	7.1	6.8	9.8	8.0
Riffle Bankfull Depth (ft)	0.7	1.1	0.8	0.5	0.6	0.6	0.6	0.7
Riffle Max Depth (ft)	1.2	1.8	1.4	0.9	1.0	0.9	1.0	1.1
Pool Width (ft)	15.4	23.4	17.6	11.2	8.6	8.1	12.2	9.6
Pool Max Depth (ft)	1.7	2.6	1.9	1.2	1.3	1.2	1.4	1.4
Pool Spacing (ft)	43.2	65.5	49.4	31.5	35.0	33.2	34.2	39.2
Pool Length (ft)	30.3	45.9	34.5	22.0	21.1	20.0	24.0	23.6
Meander Radius (ft)	23	36	27	17	23	22	19	26
Meander Length (ft)	62	95	71	45	61	58	49	68
Meander Beltwidth (ft)	59	89	67	43	41	39	46	46
Bankfull Discharge (cfs)	9.9	17.7	10.8	4.3	5.1	7.2	4.3	0.0
Bankfull Velocity (ft/s)	1.17	0.91	0.98	0.97	1.20	1.90	0.81	0.00
Bankfull Unit Stream Power (lb/s/ft)	0.13	0.05	0.07	0.08	0.15	0.62	0.05	0.00
Bankfull Shear Stress (lb/ft2)	0.11	0.06	0.07	0.08	0.12	0.31	0.06	0.00

Table 15C-1. Brushy Creek Drainage Basin Restored Stream Design Table.

Design Parameter	Reclaimed Stream Reach ID					
	BU-M1	BU-T10	BU-T12	BU-T13	BU-T3A	BU-T3B
Rosgen Class	C5	E5	C5	E5	C5	E5
Drainage Area (mi2)	12.79	0.17	0.37	0.39	0.49	0.30
Upstream Elevation	80.0	89.5	83.0	81.5	85.5	87.5
Downstream Elevation	76.0	83.9	79.5	79.3	78.8	84.5
Fall (ft)	4	5.6	3.5	2.2	6.7	3
Valley Length (ft)	4405	1142	835	407	2338	678
Valley Slope (ft/ft)	0.0009	0.0049	0.0042	0.0054	0.0029	0.0044
Mean Stream Slope (ft/ft)	0.0006	0.0032	0.0028	0.0036	0.0019	0.0029
Mean Stream Slope (%)	0.06%	0.32%	0.28%	0.36%	0.19%	0.29%
Sinuosity	1.52	1.51	1.52	1.51	1.52	1.51
Stream Length (ft)	6695	1724	1268	615	3554	1024
Width:Depth Ratio	17	11	17	11	17	11
Riffle Bankfull Area (ft2)	31.1	3.8	5.5	5.7	6.4	5.0
Riffle Bankfull Width (ft)	23.7	6.8	10.0	8.3	10.7	7.8
Riffle Bankfull Depth (ft)	1.4	0.6	0.6	0.8	0.6	0.7
Riffle Max Depth (ft)	2.3	0.9	1.0	1.1	1.1	1.1
Pool Width (ft)	29.6	8.1	12.5	9.9	13.4	9.3
Pool Max Depth (ft)	3.3	1.2	1.4	1.5	1.5	1.4
Pool Spacing (ft)	82.9	33.2	34.9	40.6	37.5	38.0
Pool Length (ft)	58.0	20.0	24.5	24.4	26.3	22.9
Meander Radius (ft)	45	22	19	27	20	25
Meander Length (ft)	120	58	50	70	54	66
Meander Beltwidth (ft)	112	39	47	47	51	44
Bankfull Discharge (cfs)	26.6	4.3	5.7	7.6	5.7	5.8
Bankfull Velocity (ft/s)	0.86	1.12	1.03	1.34	0.90	1.17
Bankfull Unit Stream Power (lb/s/ft)	0.04	0.13	0.10	0.21	0.06	0.14
Bankfull Shear Stress (lb/ft2)	0.05	0.11	0.09	0.15	0.07	0.11

Table 15C-2. Brushy Creek Drainage Basin Restored Stream Design Table.

Design Parameter	Reclaimed Stream Reach ID					
	BU-T5	BU-T7	BU-T8D	BU-T9A	BU-T9C	BU-T9D
Rosgen Class	C5	C5	E5	C5	C5	C5
Drainage Area (mi2)	0.14	0.19	1.07	1.07	1.01	0.95
Upstream Elevation	88.5	91.2	96.0	88.5	90.0	95.0
Downstream Elevation	83.8	87.5	90.0	87.8	88.5	91.0
Fall (ft)	4.7	3.7	6	0.7	1.5	4
Valley Length (ft)	1125	1677	419	265	662	1135
Valley Slope (ft/ft)	0.0042	0.0022	0.0143	0.0026	0.0023	0.0035
Mean Stream Slope (ft/ft)	0.0027	0.0015	0.0095	0.0017	0.0015	0.0023
Mean Stream Slope (%)	0.27%	0.15%	0.95%	0.17%	0.15%	0.23%
Sinuosity	1.52	1.52	1.51	1.52	1.52	1.52
Stream Length (ft)	1710	2550	632	403	1006	1726
Width:Depth Ratio	17	17	11	17	17	17
Riffle Bankfull Area (ft2)	3.4	4.0	9.3	9.3	9.0	8.8
Riffle Bankfull Width (ft)	7.9	8.5	10.6	12.9	12.8	12.6
Riffle Bankfull Depth (ft)	0.5	0.5	1.0	0.8	0.8	0.7
Riffle Max Depth (ft)	0.8	0.8	1.5	1.3	1.3	1.2
Pool Width (ft)	9.8	10.6	12.7	16.2	16.0	15.7
Pool Max Depth (ft)	1.1	1.2	1.9	1.8	1.8	1.7
Pool Spacing (ft)	27.5	29.6	52.0	45.3	44.7	44.1
Pool Length (ft)	19.3	20.7	31.3	31.7	31.3	30.8
Meander Radius (ft)	15	16	34	25	24	24
Meander Length (ft)	40	43	90	65	64	64
Meander Beltwidth (ft)	37	40	60	61	61	60
Bankfull Discharge (cfs)	3.0	2.7	24.0	9.0	8.1	9.7
Bankfull Velocity (ft/s)	0.88	0.67	2.58	0.98	0.90	1.11
Bankfull Unit Stream Power (lb/s/ft)	0.07	0.03	1.34	0.08	0.06	0.11
Bankfull Shear Stress (lb/ft2)	0.07	0.04	0.50	0.08	0.06	0.10

Table 15D. Hickory Creek Drainage Basin Restored Stream Design Table.

Design Parameter	Reclaimed Stream Reach ID					
	H-M1	H-T2B	H-T2C	H-T5	H-T5A	H-T5B
Rosgen Class	C5	E5	E5	E5	C5	C5
Drainage Area (mi2)	2.68	0.06	0.04	0.05	0.17	0.15
Upstream Elevation	100.4	94.5	98.5	95.2	103.5	104.5
Downstream Elevation	90.6	91.5	95.2	93.4	99.5	103.8
Fall (ft)	9.8	3	3.3	1.8	4	0.7
Valley Length (ft)	4267	591	422	272	1012	224
Valley Slope (ft/ft)	0.0023	0.0051	0.0078	0.0066	0.0040	0.0031
Mean Stream Slope (ft/ft)	0.0015	0.0034	0.0052	0.0044	0.0026	0.0021
Mean Stream Slope (%)	0.15%	0.34%	0.52%	0.44%	0.26%	0.21%
Sinuosity	1.52	1.51	1.51	1.51	1.52	1.52
Stream Length (ft)	6486	892	637	411	1538	341
Width:Depth Ratio	17	11	11	11	17	17
Riffle Bankfull Area (ft2)	14.5	2.2	2.0	2.2	3.8	3.5
Riffle Bankfull Width (ft)	16.2	5.2	4.9	5.1	8.3	8.0
Riffle Bankfull Depth (ft)	1.0	0.5	0.4	0.5	0.5	0.5
Riffle Max Depth (ft)	1.6	0.7	0.7	0.7	0.8	0.8
Pool Width (ft)	20.2	6.2	5.8	6.1	10.4	10.0
Pool Max Depth (ft)	2.2	0.9	0.9	0.9	1.1	1.1
Pool Spacing (ft)	56.7	25.3	23.9	25.0	29.1	28.0
Pool Length (ft)	39.7	15.3	14.4	15.1	20.4	19.6
Meander Radius (ft)	31	17	16	16	16	15
Meander Length (ft)	82	44	41	43	42	40
Meander Beltwidth (ft)	77	29	28	29	40	38
Bankfull Discharge (cfs)	15.3	2.1	2.2	2.3	3.4	2.7
Bankfull Velocity (ft/s)	1.06	0.95	1.13	1.08	0.89	0.77
Bankfull Unit Stream Power (lb/s/ft)	0.09	0.09	0.15	0.12	0.07	0.04
Bankfull Shear Stress (lb/ft2)	0.08	0.09	0.12	0.11	0.07	0.06

Table 15E. Horse Creek Drainage Basin Restored Stream Design Table.

Design Parameter	Reclaimed Stream Reach ID						
	HO-T10	HO-T12A	HO-T13	HO-T6	HO-T7A	HO-T8A	HO-T9
Rosgen Class	E5	E5	E5	E5	E5	C5	C5
Drainage Area (mi2)	0.04	1.01	0.02	0.06	0.10	0.69	1.10
Upstream Elevation	99.5	96.0	92.2	98.2	110.8	109.8	113.0
Downstream Elevation	98.5	87.0	89.5	96.8	105.5	106.5	110.6
Fall (ft)	1	9	2.7	1.4	5.3	3.3	2.4
Valley Length (ft)	152	1102	332	218	715	1327	1151
Valley Slope (ft/ft)	0.0066	0.0082	0.0081	0.0064	0.0074	0.0025	0.0021
Mean Stream Slope (ft/ft)	0.0044	0.0054	0.0054	0.0043	0.0049	0.0016	0.0014
Mean Stream Slope (%)	0.44%	0.54%	0.54%	0.43%	0.49%	0.16%	0.14%
Sinuosity	1.51	1.51	1.51	1.51	1.51	1.52	1.52
Stream Length (ft)	229	1665	501	329	1079	2017	1750
Width:Depth Ratio	11	11	11	11	11	17	17
Riffle Bankfull Area (ft2)	1.8	9.0	1.3	2.4	2.9	7.5	9.4
Riffle Bankfull Width (ft)	4.6	10.4	4.0	5.3	6.0	11.6	13.0
Riffle Bankfull Depth (ft)	0.4	0.9	0.4	0.5	0.5	0.7	0.8
Riffle Max Depth (ft)	0.6	1.4	0.6	0.7	0.8	1.1	1.3
Pool Width (ft)	5.6	12.5	4.8	6.4	7.2	14.6	16.3
Pool Max Depth (ft)	0.8	1.8	0.7	0.9	1.1	1.6	1.8
Pool Spacing (ft)	22.7	51.2	19.8	26.2	29.2	40.7	45.6
Pool Length (ft)	13.7	30.8	11.9	15.8	17.6	28.5	31.9
Meander Radius (ft)	15	33	13	17	19	22	25
Meander Length (ft)	39	89	34	45	51	59	66
Meander Beltwidth (ft)	26	59	23	30	34	55	62
Bankfull Discharge (cfs)	1.8	17.4	1.4	2.6	3.7	6.6	8.2
Bankfull Velocity (ft/s)	1.01	1.93	1.02	1.09	1.26	0.88	0.87
Bankfull Unit Stream Power (lb/s/ft)	0.10	0.56	0.11	0.13	0.19	0.06	0.05
Bankfull Shear Stress (lb/ft2)	0.10	0.28	0.11	0.11	0.14	0.06	0.06

Table 15F. West Fork Horse Creek Drainage Basin Restored Stream Design Table.

Design Parameter	Reclaimed Stream Reach ID					
	WF-T1A	WF-T2	WF-T3B	WF-T3C	WF-T4A	WF-T5
Rosgen Class	E5	E5	E5	E5	C5	E5
Drainage Area (mi2)	0.11	0.12	0.11	0.07	0.82	0.20
Upstream Elevation	91.0	99.2	113.5	107.9	104.0	103.5
Downstream Elevation	89.0	92.5	103.5	103.5	101.0	98.5
Fall (ft)	2	6.7	10	4.4	3	5
Valley Length (ft)	289	633	1723	863	722	656
Valley Slope (ft/ft)	0.0069	0.0106	0.0058	0.0051	0.0042	0.0076
Mean Stream Slope (ft/ft)	0.0046	0.0070	0.0038	0.0034	0.0027	0.0051
Mean Stream Slope (%)	0.46%	0.70%	0.38%	0.34%	0.27%	0.51%
Sinuosity	1.51	1.51	1.51	1.51	1.52	1.51
Stream Length (ft)	436	956	2601	1304	1098	990
Width:Depth Ratio	11	11	11	11	17	11
Riffle Bankfull Area (ft2)	3.1	3.1	3.0	2.4	8.2	4.1
Riffle Bankfull Width (ft)	6.1	6.2	6.1	5.4	12.2	7.0
Riffle Bankfull Depth (ft)	0.6	0.6	0.6	0.5	0.7	0.6
Riffle Max Depth (ft)	0.8	0.8	0.8	0.7	1.2	1.0
Pool Width (ft)	7.3	7.4	7.3	6.4	15.2	8.5
Pool Max Depth (ft)	1.1	1.1	1.1	0.9	1.7	1.2
Pool Spacing (ft)	29.8	30.2	29.8	26.3	42.5	34.5
Pool Length (ft)	18.0	18.2	17.9	15.9	29.8	20.8
Meander Radius (ft)	19	20	19	17	23	23
Meander Length (ft)	52	52	52	46	61	60
Meander Beltwidth (ft)	35	35	35	31	58	40
Bankfull Discharge (cfs)	3.8	4.9	3.5	2.3	9.6	5.9
Bankfull Velocity (ft/s)	1.24	1.54	1.13	0.98	1.17	1.43
Bankfull Unit Stream Power (lb/s/ft)	0.18	0.34	0.14	0.09	0.13	0.26
Bankfull Shear Stress (lb/ft2)	0.14	0.21	0.12	0.09	0.11	0.18

Table 16. Summary of land use and cover types intersected by reclaimed streams.

Land Use/Cover Code†	Land Use/Cover Description†	Valley Length (feet)	Percent of Total Valley Length
211	Improved Pastures	0	0%
213	Woodland Pastures	0	0%
321	Palmetto Prairies	7,749	7%
410	Upland Coniferous Forests	563	1%
411	Pine Flatwoods	1,158	1%
425	Temperate Hardwood	953	1%
427	Live Oak	737	1%
434	Hardwood - Conifer Mixed	5,260	5%
611	Bay Swamps	5,169	5%
613	Gum Swamps	275	<1%
617	Mixed Wetland Hardwoods	63,850	61%
620	Wetland Coniferous Forests	99	<1%
625	Hydric Pine Flatwoods	2,183	2%
630	Wetland Forested Mixed	14,678	14%
641	Freshwater Marshes	2,064	2%
643	Wet Prairies	5	<1

† Florida Land Use, Cover, and Forms Classification System. Florida Department of Transportation Surveying and Mapping Office Geographic Mapping Section Handbook, January 1999 (Third Edition).

11.0 FIGURES

Figure 1. Hydrological classification decision tree applied to the Ona Mine existing streams.

IF the Hydrological Soil Group (HSG) of the drainage area (DA) is > 40% A+B+C (i.e. less than 60% D), THEN the DA is dominantly a groundwater delivery system referred to as a "Highlands" watershed, ELSE it is dominantly a surface water delivery system referred to as a "Flatwoods" watershed.

For, HIGHLANDS Watersheds;
IF the DA is > 1 square mile THEN the site is likely to be PERENNIAL.
IF DA is < 1 square mile,

AND the reach is flanked by a dominance of wetland species with root-steps crossing the channel bed formed by species commonly associated with groundwater seepage (e.g. sweet bay, loblolly bay, blackgum, or, THEN the site is INTERMITTENT to PERENNIAL;

ELSE, AND the reach is flanked by a dominance of non-wetland species with root-steps crossing the channel bed formed by saw palmettos, slash or long-leaf pines, or other FAC species, THEN the site is EPHEMERAL.

For, FLATWOODS Watersheds;
IF the DA is > 50 square miles, THEN the site is PERENNIAL.
IF DA is > 4 and < 50 square miles, THEN site is INTERMITTENT to PERENNIAL.
IF DA is > 1 and < 4 square miles,

AND the reach occupies an interior link along a chain of wetlands, OR the reach directly connects to another stream channel at its outlet AND lacks all but sporadic alluvial surfaces in its floodplain, THEN the site is EPHEMERAL,

ELSE, AND the reach is either not part of chain of wetlands AND has persistent alluvial surfaces in the floodplain, OR is an exterior link from a chain of wetlands that connects to a larger Strahler order stream AND has persistent alluvial features in the floodplain, THEN the site is INTERMITTENT.

IF DA is < 1 square mile, THEN the site is EPHEMERAL.

Alluvial surfaces include any combination of the following;

- Sandy alluvial ridges (levees) bordering the majority of the channel margin.
- Linear backswamps consisting of depressions roughly paralleling the flood flow path along most of the floodplain length and dominated by clay or silt sediments that are vegetated with bottomland hardwood and/or cypress trees.
- A ubiquitous valley flat dominated by clay or silt and occupied by mixed cypress and hardwoods or by cypress swamp.
- Floodplain chutes occurring at frequencies at least one-fourth that of main channel. Chutes are looping side-channels with inorganic substrates that exit the main channel and course briefly through the floodplain before returning to the main channel. They are smaller in width and at higher elevation than the main channel.
- At least one oxbow lake or swamp in a typical reach 20-30 bankfull widths in length. These are abandoned channels in the floodplain of similar width to the active main channel.

Figure 2. Ona Mine site-specific reference reach drainage area and bankfull cross-sectional area data compared to available regional curves.

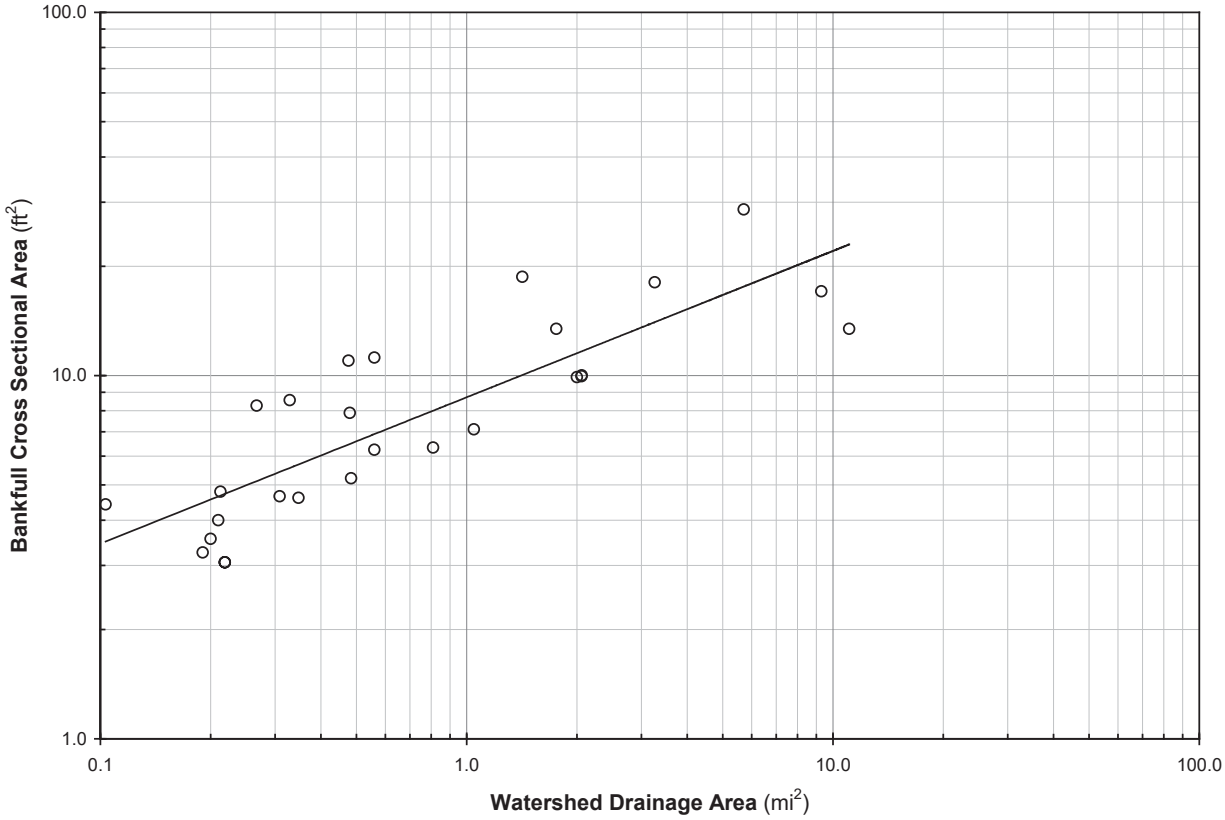


Figure 3. Ona Mine site-specific drainage area and bankfull cross-sectional area data compared to Ona Fort Green Extension data collected in 2006.

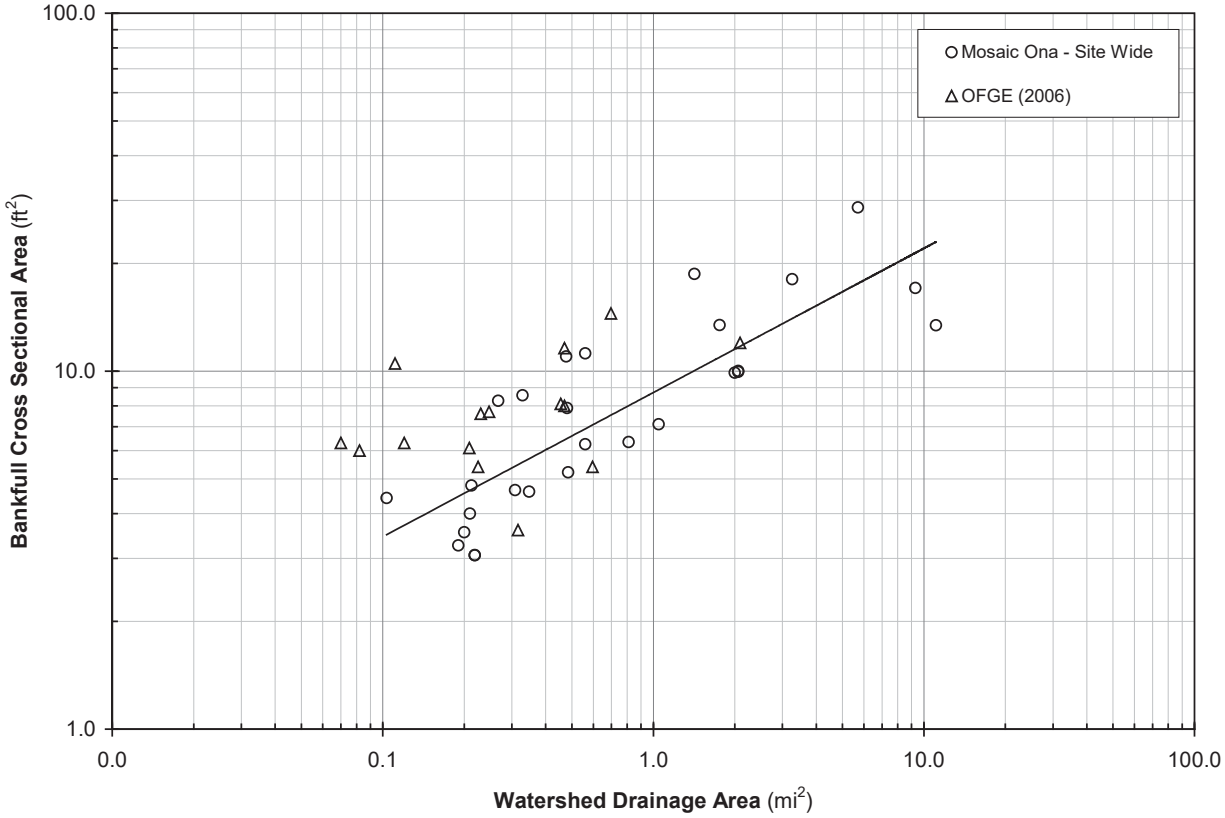


Figure 4. Ona Mine site-specific reference reach drainage area and bankfull cross-sectional area data for the Oak Creek and Brushy Creek drainage basins.

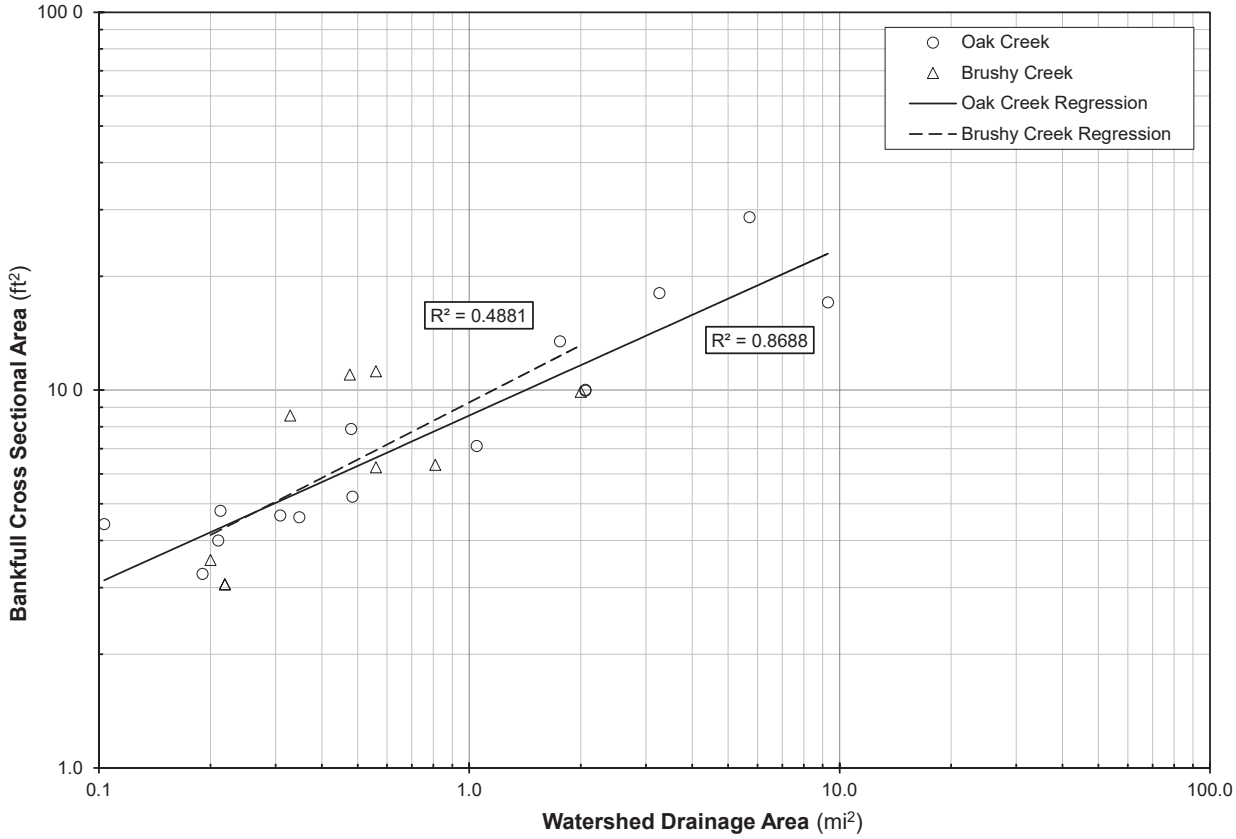


Figure 5. Ona Mine Oak Creek site-specific reference reach hydraulic geometry compared to Kiefer's 2010 data (for flatwoods streams.

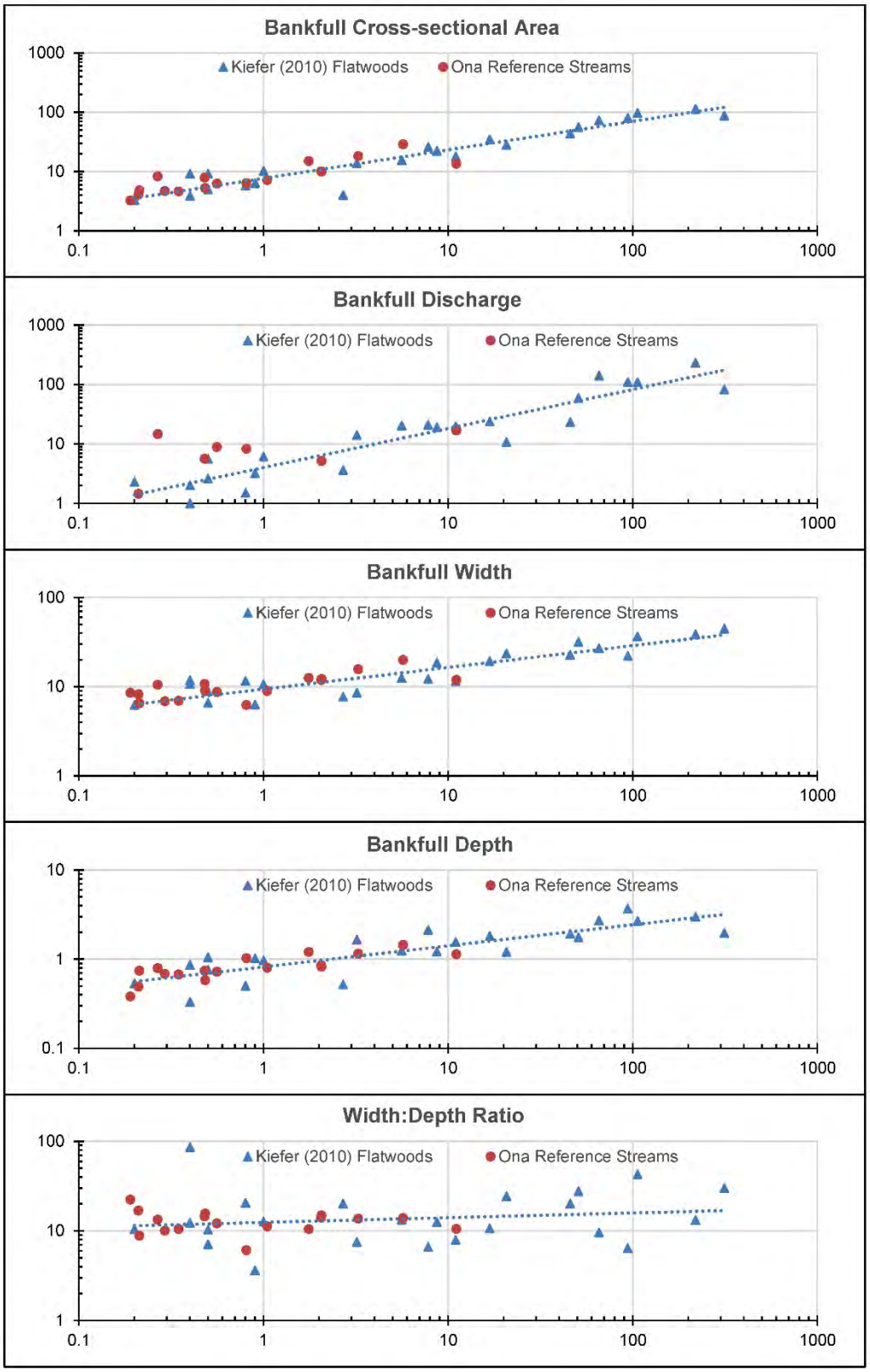


Figure 6. Ona Mine bankfull cross-sectional area (RA_{bkf}) regression equation with 95% prediction limits for stream reclamation design.

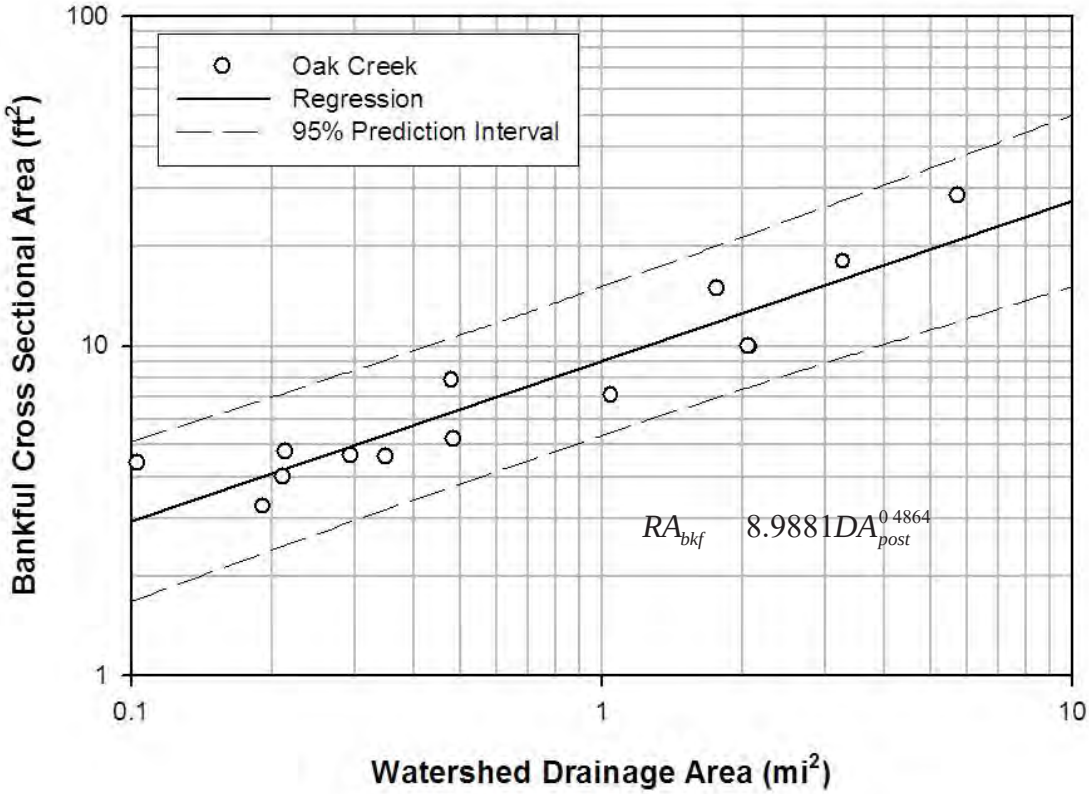


Figure 7. Typical Streambank Construction and Riparian Corridor Vegetation Establishment.

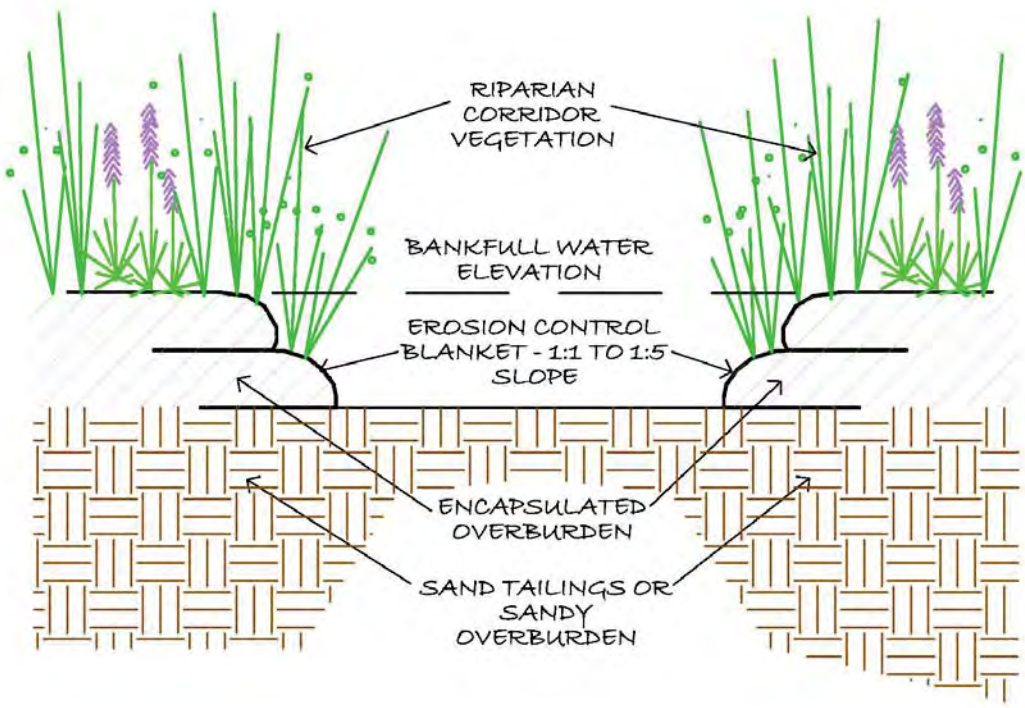


Figure 8. Typical E-type Channel Cross-section.

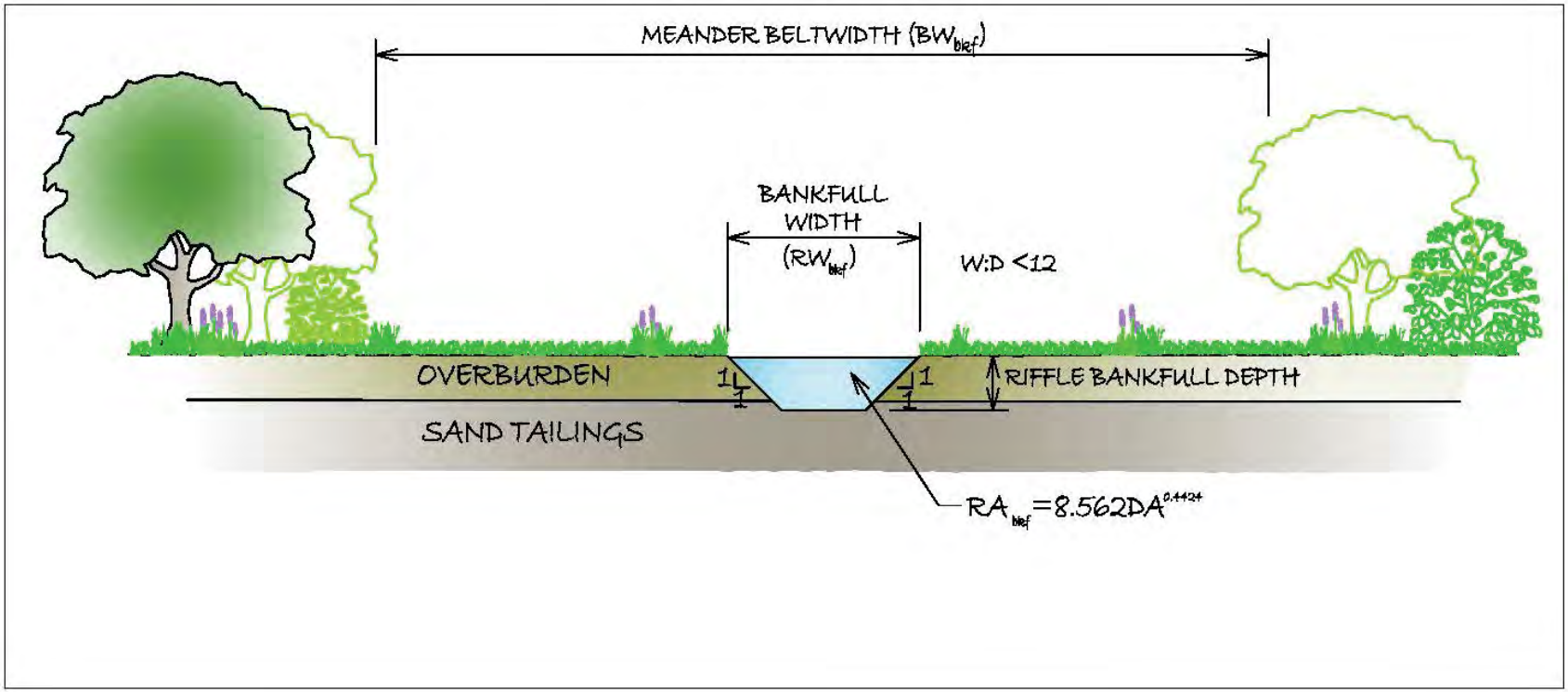


Figure 9. Typical C-type Channel Cross-section.

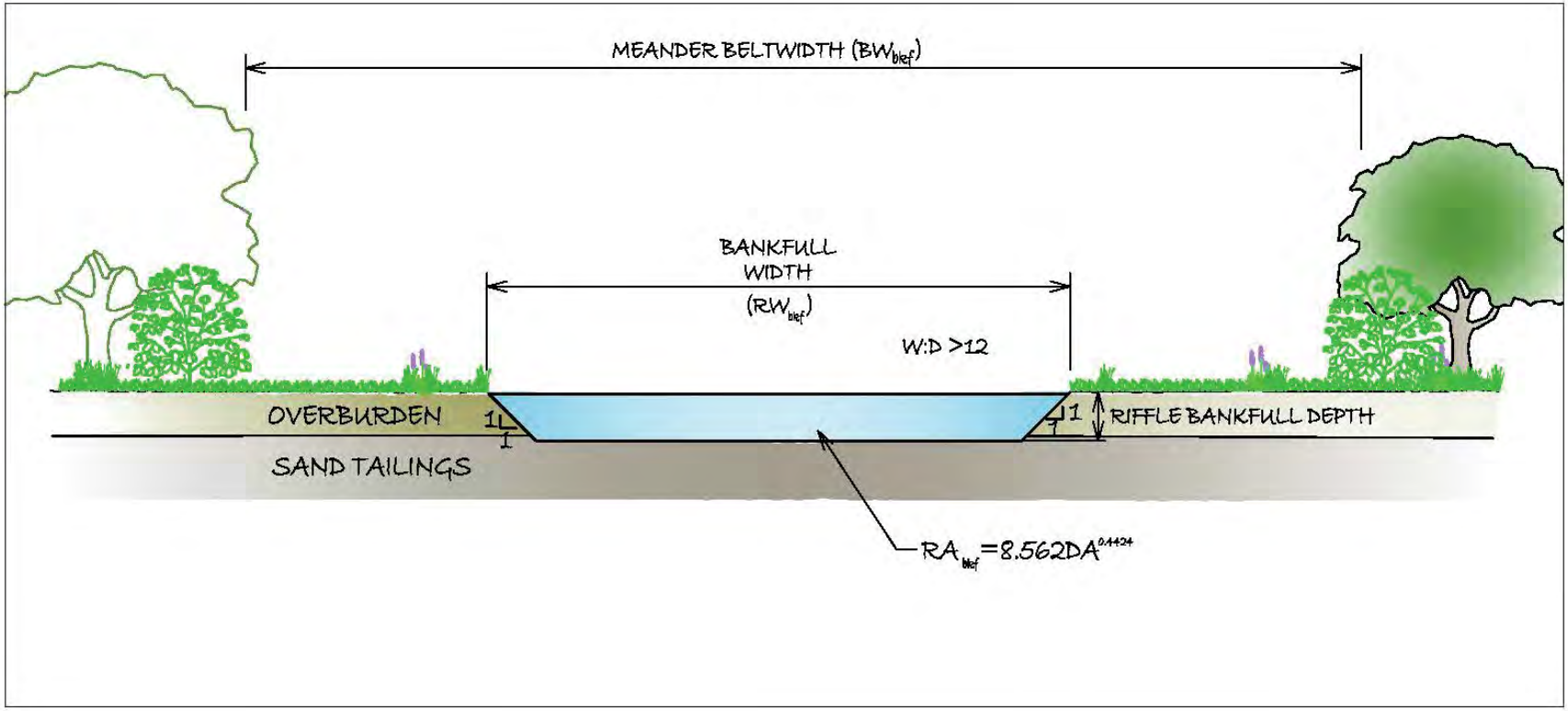


Figure 10. Typical E-type Meander and Pool Cross-section.

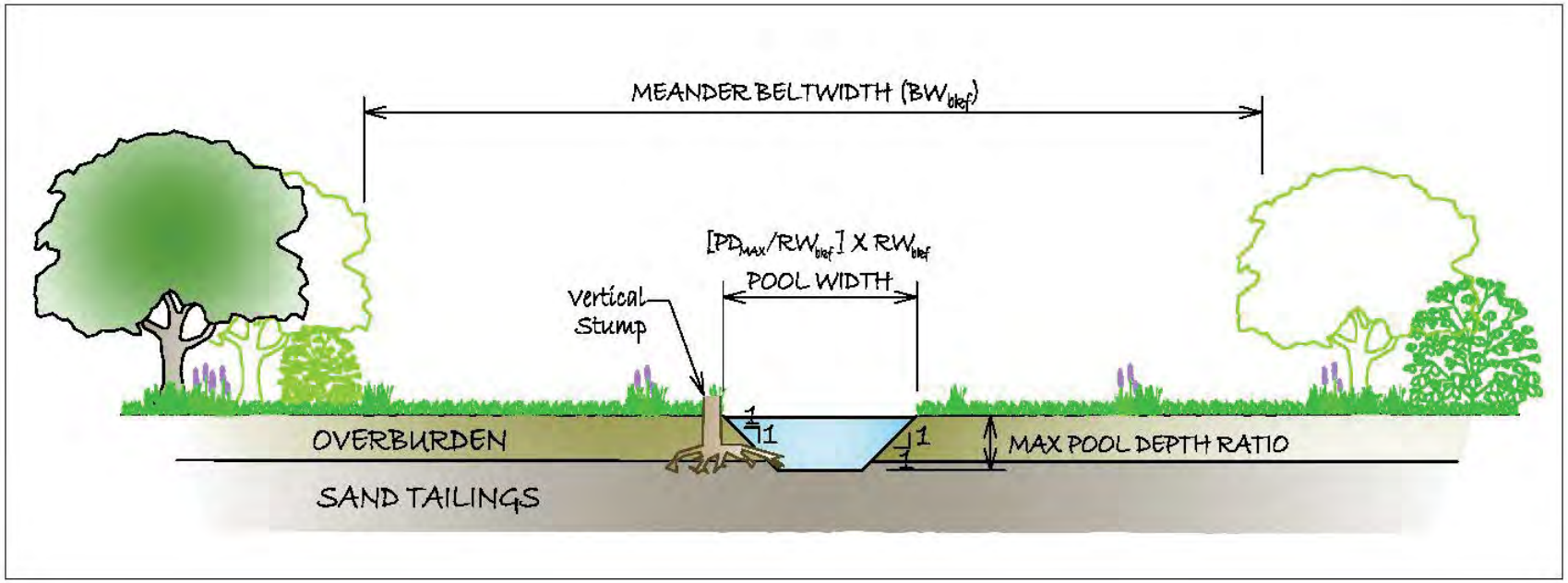


Figure 11. Typical C-type Meander and Pool Cross-section.

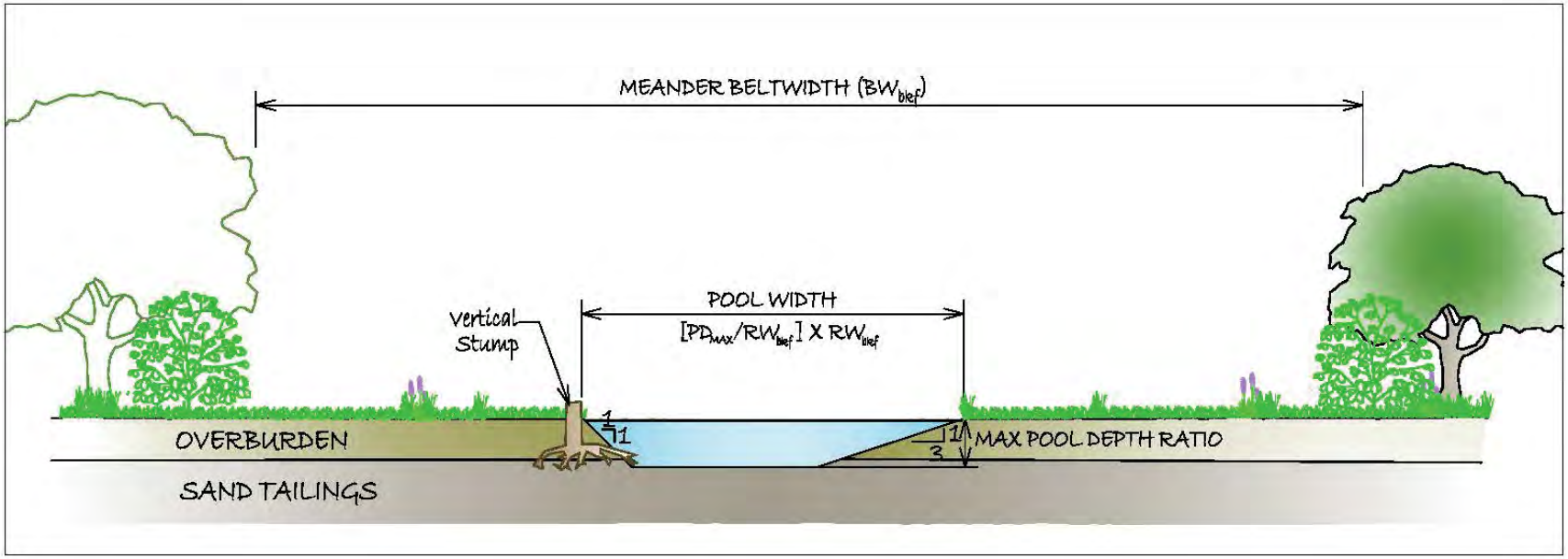
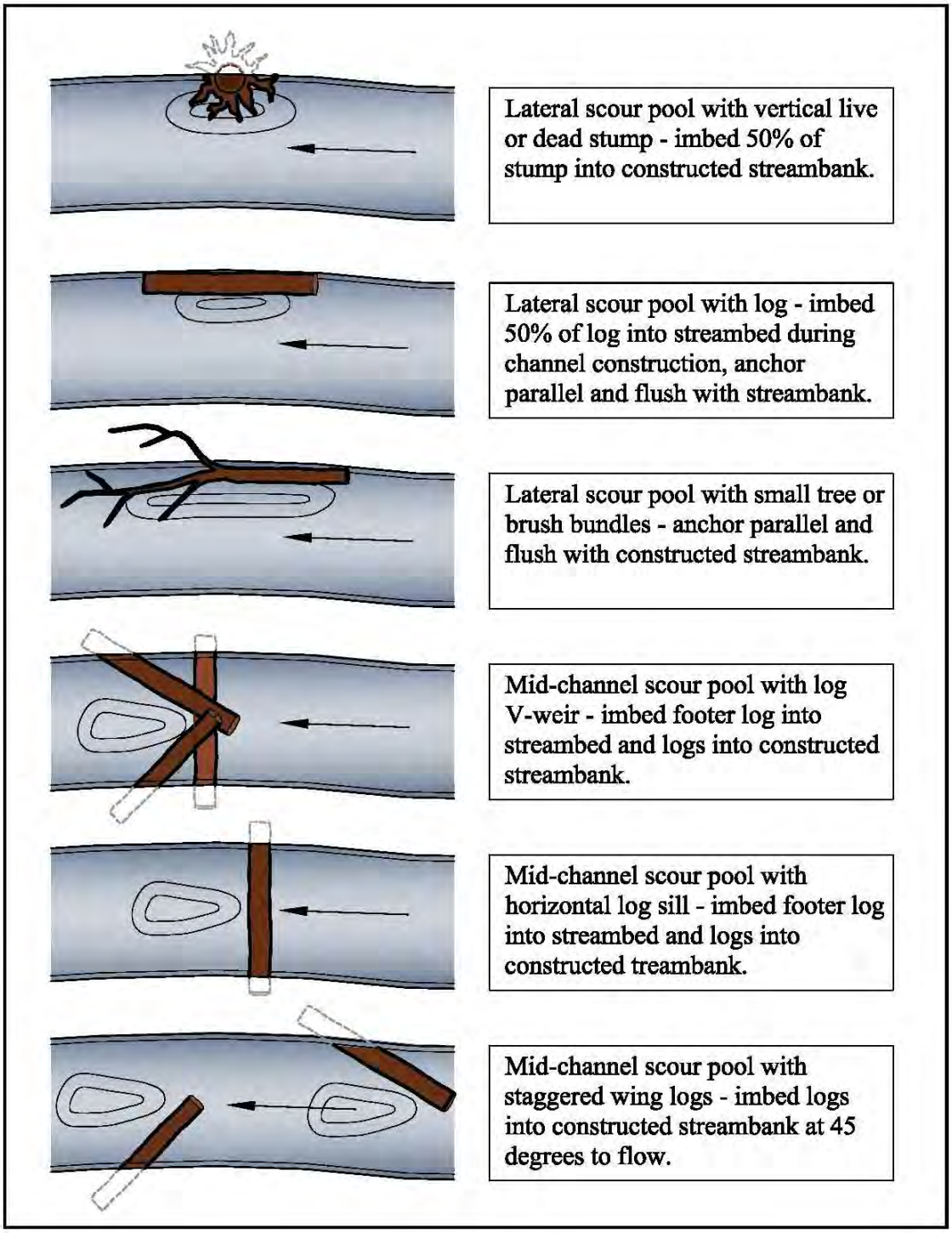


Figure 12. Large Woody Debris Placement.



APPENDIX A

Habitat Assessment Forms

APPENDIX B

Low-flow Rating Curves and Hydrographs

APPENDIX C

Stream Condition Index and Biorecon Sampling and Lab Forms

APPENDIX D

Stream Classification Cross-section Data

APPENDIX E

Reference Stream and Low Flow Monitoring Cross-section Survey Data

APPENDIX F

Example Stream Photographs

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 4/23/2009	Crew: MB/BH	BCI Reach ID: C-5Eb ECT Reach: 301K Assessment Reach	Photo No:	Width 6 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☐ Moderate ☑ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		4/23/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		301K

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **18**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **18**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16** Primary Score: **53**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

129 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 4/23/2009	Crew: MB/BH	BCI Reach ID: C-6E Assessment Reach	ECT Reach: 301D	Photo No:	Width 6 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☑ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☐ Moderate ☑ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:
Extended stream through forested area on downstream end of reach.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		4/23/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		301D

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **18**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **16**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **51**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **9** Left Bank: **9**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **66**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

117 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 4/23/2009	Crew: MB/BH	BCI Reach ID: C-1Mc ECT Reach: 300E Assessment Reach AR1	Photo No:	Width 10 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

AR1 is upstream of C8Ea confluence - AR2 is downstream.

This is main stem of Oak Creek.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		4/23/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		300E

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **18**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **18**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **15** Primary Score: **52**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **20**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **78**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

130 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/22/2009	Crew: MB/BH	BCI Reach ID: C-1Mc ECT Reach: 300D Assessment Reach AR2	Photo No: 16, 17	Width 20 feet
Basin: Peace River		Receiving Stream: Horse Creek		BCI FLUCCS 511 ECT FLUCCS 511	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☐ Moderate ☑ Severe ☑ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☐ Moderate ☑ Severe ☑ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☑ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☑ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☑ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☑ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

AR2 located downstream of tributary C-8Ea, AR1 located upstream of C-8Ea.

AR-2 is more incised and erosional than AR-1. Some standing water in-between pools. Some indirect banks, but unstable and above bankfull discharge.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/22/2009	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		300D

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **13**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **11**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16** Primary Score: **41**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **18**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **6** Left Bank: **6**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **66**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

107 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 4/23/2009	Crew: MB/BH	BCI Reach ID: C-1Md ECT Reach: 300F Assessment Reach AR2	Photo No:	Width see notes

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☐ Moderate ☑ Severe ☑ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☐ Moderate ☑ Severe ☑ Common ☑ Disturbed
Left Bank Land Cover: ☑ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☑ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☑ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☐ High ☑ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☑ Plane Bed ☐ R-P	Stability:	☑ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

AR2 located downstream of pop ash wetland interruption.

Can't determine bankfull dimensions accurately due to lack of field indicators.

Vegetative changes.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		4/23/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		300F

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **16**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **13** Primary Score: **45**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **10**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **2** Left Bank: **2**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **6**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **6** Secondary Score: **45**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

90 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 4/23/2009	Crew: MB/BH	BCI Reach ID: C-2M ECT Reach: 300I Assessment Reach AR1, AR2	Photo No:	Width 9 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 512 ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☑ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
Most of reach has been altered, I would classify as a 512.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		4/23/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		300I

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **13**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **13**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **11** Primary Score: **38**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **5** Left Bank: **5**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **8**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **60**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

98 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 4/23/2009	Crew: MB/BH	BCI Reach ID: C-4Ee ECT Reach: 301G Assessment Reach	Photo No:	Width 8 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☐ Moderate ☑ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

Mapped a few short reaches that are located in forested areas and are more disturbed, of lesser quality but did not assess small pieces.

Mapped a small wetland interruption.

Disturbed in short sections.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		4/23/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		301G

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **18**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **50**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

126 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 4/23/2009	Crew: MB/BH	BCI Reach ID: C-4Ef ECT Reach: 301H Assessment Reach	Photo No:	Width 7 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		4/23/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		301H

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **18**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **16**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **51**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

127 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 4/23/2009	Crew: MB/BH	BCI Reach ID: C-4Eq ECT Reach: 301I Assessment Reach	Photo No:	Width 8 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☑ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☑ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
Over-widened in areas where disturbed.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		4/23/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		301I

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **16**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **16**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **49**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **7** Left Bank: **7**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **4** Left Bank: **4**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **6** Left Bank: **6** Secondary Score: **50**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

99 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/18/2009	Crew: MB/BH	BCI Reach ID: E-10Wa ECT Reach: 106A Assessment Reach AR1	Photo No: 808, 809	Width 5 feet
Basin: Peace River		Receiving Stream: Brushy Creek		BCI FLUCCS 511 ECT FLUCCS 511	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☑ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☑ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☐ Moderate ☑ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

Assessed in three sections.

Vegetation community changes significantly between AR1 and AR2, so does stream morphology and habitat, as expected.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/18/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		106A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **18**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **18**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **18** Primary Score: **55**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **9** Left Bank: **9**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **72**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

127 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/18/2009	Crew: MB/BH	BCI Reach ID: E-10Wa ECT Reach: 106B Assessment Reach AR2	Photo No: 806, 805	Width 10 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☑ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

Picture 807-003 where reach starts on downstream side of wetland.
Picture 804-006 where reach ends on upstream side of wetland.

This is an interruption in E-10Wa that wasn't previously mapped.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/18/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		106B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **12**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **13**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **10** Primary Score: **36**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **6** Left Bank: **6**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **64**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

100 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/18/2009	Crew: MB/BH	BCI Reach ID: E-10Wa ECT Reach: 106C Assessment Reach AR3	Photo No: 804, 803	Width Unknown

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☑ Severe ☑ Cattle ☑ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☑ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☑ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☑ Widening ☑ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☑ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

Check historical aerials for channelization.

Appears to have been straightened.

Width and depth vary greatly due to unstable form 6-20+ feet.

Very unstable form and non-uniform, could not classify this reach.

Disturbance/alteration by pigs.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/18/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		106C

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **13**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **13**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **18** Primary Score: **45**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **8**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **66**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

111 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/18/2009	Crew: MB/BH	BCI Reach ID: E-10Wb ECT Reach: 106D Assessment Reach	Photo No: 800, 799	Width 12 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 512 ☑ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☑ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☑ Mixed	Right Bank Land Cover: ☑ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☑ Mixed
Buffer Width: L Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☑ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☑ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

Upper 2/3 of reach is a 512, therefore I would class the reach as a 512.

Reach courses through thin forest in downstream third before entering wetland. Upper two-thirds crossed by road, has a cattle pond, and is mostly pasture. Assessment whole reach together because so short.

Upper 2/3 straight, low entrenchment. Lower 1/3 low sinuosity.

Disturbance/alteration - crossing.

Light rain time of assessment.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/18/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		106D

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **5**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **10**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **5** Primary Score: **21**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **5** Left Bank: **5**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **2** Left Bank: **2** Secondary Score: **46**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

67 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/18/2009	Crew: MB/BH	BCI Reach ID: E-10Wc ECT Reach: 106E Assessment Reach	Photo Missed No:	Width 15 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS ECT FLUCCS 512 ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☑ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☑ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

Need photographs.

Light rain at time of assessment.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/18/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		106E

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **2**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **5**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **5** Primary Score: **13**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **7**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **9** Left Bank: **7**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **6** Left Bank: **6** Secondary Score: **51**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

64 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/18/2009	Crew: MB/BH	BCI Reach ID: E-10Wd ECT Reach: 106F Assessment Reach	Photo No: 798, 797	Width 8 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☑ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:

Upstream half has a poorly defined channel that was either channelized or created within the downstream end of the wetland.

Vegetative channel - wetland vegetation.

Upper end channelized, straight.

Lower end, some sinuosity, but low and disturbed.

Light rain at time of assessment.

Vegetative clearing.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/18/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		106F

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: 2	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 13 12 11	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. 5 4 3 2 1
Substrate Availability: 4	Greater than 30% productive habitat present at site. 20 19 18 17 16	16% to 30% productive habitat, by aerial extent. 15 14 13 12 11	6% to 15% productive habitat. 10 9 8 7 6	Less than 5% productive habitat. 5 4 3 2 1
Water Velocity: 1	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. 20 19 18 17 16	Maximum observed at typical transect >0.1 to 0.25 m/sec. 15 14 13 12 11	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. 10 9 8 7 6	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. 5 4 3 2 1
Habitat Smothering 3	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: 10	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Secondary Habitat Components Artificial Channelization: 16	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. 20 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth with no pools. 5 4 3 2 1
Bank Stability Right Bank: 9 Left Bank: 9	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width: Right Bank: 9 Left Bank: 3	Width of vegetation greater than 18 m. 10 9	With of vegeation >12 to 18 m. 8 7 6	With of vegetation 6 to 12 m. Human activities still close to system. 5 4	Less than 6 m of buffer zone due to intensive human activities. 3 2 1
Riparian Zone Vegetation Quality Right Bank: 6 Left Bank: 2 Secondary Score: 54	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

64 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/18/2009	Crew: MB/BH	BCI Reach ID: E-10We ECT Reach: 106G Assessment Reach	Photo 796, 795 No:	Width 8 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 512 ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☑ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☑ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

Significantly altered natural channel.

Heavily vegetated channel with high degree of alteration.

Upper small section coursing out of wetland still fairly natural.

Only the small upper portion immediately below wetland has not been channelized.

Bed erosion: crossing vegetation.

Disturbance/alteration: crossing.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/18/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		106G

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **5**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **8**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **5** Primary Score: **19**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **6**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **9** Left Bank: **9**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **4** Left Bank: **4** Secondary Score: **50**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

69 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/18/2009	Crew: MB/BH	BCI Reach ID: E-9W ECT Reach: 105P Assessment Reach	Photo No: 794, 793	Width 5 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☐ None ☑ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☐ Moderate ☑ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

Small pockets of standing water in pools. Similar upstream and downstream of road crossing. Observed hardpan downstream of road crossing. Buffer width is forested corridor, but blends into flatwoods.

Rain at time of assessment.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/18/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		105P

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **16**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **18**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **18**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **53**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

129 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/18/2009	Crew: MB/BH	BCI Reach ID: E-8Wa ECT Reach: 105M Assessment Reach	Photo 792, 791 No:	Width 8 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☐ Bed Scour ☑ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☑ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:

Vegetated channel. Poor bank structure. Fire disturbance and land clearing. Diseased pines?

Two reaches exactly the same, so combined under one assessment.

Cattle, hogs.

Disturbance/alteration: crossing, land clearing.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/18/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		105M

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **11**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **13**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **15**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **40**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **8** Left Bank: **8**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **5** Left Bank: **5** Secondary Score: **58**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

98 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/18/2009	Crew: MB/BH	BCI Reach ID: E-8Wb ECT Reach: 105N Assessment Reach	Photo No: 790, 789	Width 8 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☐ Bed Scour ☑ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☑ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:

Vegetated channel. Poor bank structure. Fire disturbance and land clearing. Diseased pines?

Two reaches exactly the same, so combined under one assessment.

Cattle, hogs.

Disturbance/alteration: crossing, land clearing.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/18/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		105N

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **11**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **13**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **15**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **40**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **8** Left Bank: **8**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **5** Left Bank: **5** Secondary Score: **58**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

98 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/18/2009	Crew: MB/BH	BCI Reach ID: E-6Wb ECT Reach: 105J Assessment Reach	Photo No: 788, 787	Width 6 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☑ Calm Temperature: °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☑ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☐ Moderate ☑ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:
Disturbance/alteration: crossing.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/18/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		105J

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **16**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **48**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **74**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

122 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/18/2009	Crew: MB/BH	BCI Reach ID: E-5Wc ECT Reach: 105I Assessment Reach	Photo No: 786, 785	Width See Note

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☑ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☑ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☐ Plane Bed ☑ R-P	Stability:	☑ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:

Need to review historical aerials - given very low sinuosity, incision, and instability, I think this is a partially recovered 512.

Width varies considerably - difficult to determine bankfull width, can't accurately classify.

Check historical aerials to see if previously channelized - very low sinuosity and incised by overburden not obvious.

Light rain at time of assessment.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/18/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		105I

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **8**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **8**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16** Primary Score: **33**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **8**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **3** Left Bank: **3**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **9** Left Bank: **9**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **5** Left Bank: **5** Secondary Score: **42**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

75 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/18/2009	Crew: MB/BH	BCI Reach ID: E-6Wa ECT Reach: 105H Assessment Reach	Photo No: 786, 785	Width 8 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☑ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

Need to check historical aerials to make sure this is not a created ditch in wetland (513).

Raining at time of assessment.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/18/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		105H

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **16**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **18**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **51**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

127 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/18/2009	Crew: MB/BH	BCI Reach ID: E-5Wb ECT Reach: 105G Assessment Reach	Photo 784, 783 No:	Width 6 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 70 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:
Check historical aerials.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/18/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		105G

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **8**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **10**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **12** Primary Score: **31**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **7** Left Bank: **7** Secondary Score: **68**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

99 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/19/2009	Crew: MB/BH	BCI Reach ID: E-8Wc ECT Reach: 105O Assessment Reach	Photo No: 779, 778	Width 6 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS New ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☑ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☑ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☐ Moderate ☑ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

New reach coming out of bayhead upstream of road crossing - wetland interruption extends upstream and downstream of road crossing.

Light rain at time of assessment.

Disturbance/alteration by hogs.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/19/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		105O

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **16**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **16**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **13**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **46**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **7** Left Bank: **9**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **6** Left Bank: **6** Secondary Score: **62**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

108 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/19/2009	Crew: MB/BH	BCI Reach ID: E-7W ECT Reach: 105L Assessment Reach	Photo No: 777, 776	Width 8 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☑ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☑ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☑ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

No label for ID on map. Used section number and a/b to define reaches.

One spot on left bank where buffer only 6-12 meters. Comes close to east pasture at this point.

Fine vegetation.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/19/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		105L

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **16**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **13**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **18**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **48**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **8** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **66**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

114 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/19/2009	Crew: MB/BH	BCI Reach ID: E-15Wa ECT Reach: 109A Assessment Reach	Photo 772, 771 No:	Width 5 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☐ Moderate ☑ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

E-15Wb not a stream. Photograph 770-045.

Disturbance/alteration: Crossing

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/19/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		109A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **18**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **18**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **18**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **55**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

131 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/19/2009	Crew: MB/BH	BCI Reach ID: E-13Wb ECT Reach: 108B Assessment Reach	Photo No: 769, 768	Width 5 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS See ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☑ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

May be 511, but very straight with laid-back banks - need to check historical aerials. I think its has been channelized in the past and is mostly recovered.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/19/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		108B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **12**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **13**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **10** Primary Score: **36**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **6**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **8**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **6** Left Bank: **6** Secondary Score: **52**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

88 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/19/2009	Crew: MB/BH	BCI Reach ID: E-6Ec ECT Reach: 107F Assessment Reach AR1	Photo No: 767, 766	Width 12 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 512 ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☑ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☑ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☑ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☑ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

Pasture portion may be 514, definitely 512 - check history aerials - assessed in two reaches (pasture and thin woods): AR1 in pasture.

AR-1 is upstream half in pasture. Extended east as 514 to cattle pond. Need to check historical aerials to verify man-made. Check historical aerials to see if downstream portion is channelized (512) or man-made (513).

Upstream portion is 514/512 - channelized.

Did not assess portion upstream in open pasture that may be 514 or 512.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/19/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		107F

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **6**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **10**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **3** Primary Score: **20**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **1**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **6** Left Bank: **6**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **3** Left Bank: **3**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **2** Left Bank: **2** Secondary Score: **23**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

43 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/19/2009	Crew: MB/BH	BCI Reach ID: E-6Ec ECT Reach: 107E Assessment Reach AR2	Photo No: 764, 765	Width 10 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 512 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☐ Common ☑ Disturbed ☑ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☑ Point Bars ☑ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☑ Widening ☑ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☐ Moderate ☑ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☑ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

Pasture portion may be 514, definitely 512 - check history aerials - assessed in two reaches (pasture and thin woods): AR2 in woods.

Upstream channelization and land clearing has de-stabilized.

AR-2 is downstream half within woods.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/19/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		107E

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **13**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **10**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **15**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **39**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **18**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **4** Left Bank: **4**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **5** Left Bank: **5**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **4** Left Bank: **4** Secondary Score: **44**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

83 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/19/2009	Crew: MB/BH	BCI Reach ID: S24-1 ECT Reach: 107I Assessment Reach	Photo 763, 762 No:	Width 4 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS New ECT FLUCCS 511 ☑ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☑ Common ☐ Disturbed ☑ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☑ None ☐ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☑ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☑ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

Could this have formed as a result of channelization of the receiving stream? - check historical aerials.

New channel not previously mapped. Could be a channel that formed as a result of channelization of the natural watercourse it joins (E-6Ec).

Bank erosion: Storm damage.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/19/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		107I

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: 8	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 13 12 11	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. 5 4 3 2 1
Substrate Availability: 8	Greater than 30% productive habitat present at site. 20 19 18 17 16	16% to 30% productive habitat, by aerial extent. 15 14 13 12 11	6% to 15% productive habitat. 10 9 8 7 6	Less than 5% productive habitat. 5 4 3 2 1
Water Velocity: 1	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. 20 19 18 17 16	Maximum observed at typical transect >0.1 to 0.25 m/sec. 15 14 13 12 11	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. 10 9 8 7 6	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. 5 4 3 2 1
Habitat Smothering 11	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: 28	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Secondary Habitat Components Artificial Channelization: 12	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. 20 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth with no pools. 5 4 3 2 1
Bank Stability Right Bank: 7 Left Bank: 7	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width: Right Bank: 3 Left Bank: 3	Width of vegetation greater than 18 m. 10 9	With of vegeation >12 to 18 m. 8 7 6	With of vegetation 6 to 12 m. Human activities still close to system. 5 4	Less than 6 m of buffer zone due to intensive human activities. 3 2 1
Riparian Zone Vegetation Quality Right Bank: 2 Left Bank: 2	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1
Secondary Score: 36				

64 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/19/2009	Crew: MB/BH	BCI Reach ID: E-8E Assessment Reach	ECT Reach: 107D	Photo 761, 760 No:	Width See Note

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS ☐ 511 ☐ 512 ☐ 513 ☑ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☑ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☑ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☑ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:

No discernable channel through palmettos (upper half), poorly defined but sinuous channel in pasture (downstream half) - at least a 512 through palmettos, perhaps a 514 that resulted in creation of a channel downstream by concentrating flow - check historical aerials.

I doubt this is a stream. They mapped a road through palmettos. Could be a 514 if a stream at all. Some channel in field with natural sinuosity, but may have developed only since land changes.

Need to check historical aerials to see if a stream ever existed.

Cannot determine channel dimensions because channel is not defined.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/19/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		107D

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **5**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **5**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **3** Primary Score: **14**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **4** Left Bank: **4**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **4** Left Bank: **4** Secondary Score: **52**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

66 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/19/2009	Crew: MB/BH	BCI Reach ID: E-7Eb Assessment Reach	ECT Reach: 107C	Photo 759, 758 No:	Width see note

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS ECT FLUCCS ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☑ None ☐ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☑ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☑ None ☐ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:

Need photographs; this is at least a 512, but need to review historical aerials to verify it is not a 514.

Last site of the day - finished at 5:15 p.m. Need to review historical aerial photos. Could be a 514 with a small section of natural channel that developed after excavation, or small sections of palmettos could be remnant plant community and channel. Could not determine bankfull width given alterations and could not classify.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/19/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		107C

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: 1	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 13 12 11	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. 5 4 3 2 1
Substrate Availability: 1	Greater than 30% productive habitat present at site. 20 19 18 17 16	16% to 30% productive habitat, by aerial extent. 15 14 13 12 11	6% to 15% productive habitat. 10 9 8 7 6	Less than 5% productive habitat. 5 4 3 2 1
Water Velocity: 1	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. 20 19 18 17 16	Maximum observed at typical transect >0.1 to 0.25 m/sec. 15 14 13 12 11	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. 10 9 8 7 6	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. 5 4 3 2 1
Habitat Smothering 1 Primary Score: 4	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 18 17 16	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 13 12 11	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). 10 9 8 7 6	Pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components Artificial Channelization: 2	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. 20 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth with no pools. 5 4 3 2 1
Bank Stability Right Bank: 10 Left Bank: 10	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width: Right Bank: 1 Left Bank: 1	Width of vegetation greater than 18 m. 10 9	With of vegeation >12 to 18 m. 8 7 6	With of vegetation 6 to 12 m. Human activities still close to system. 5 4	Less than 6 m of buffer zone due to intensive human activities. 3 2 1
Riparian Zone Vegetation Quality Right Bank: 1 Left Bank: 1 Secondary Score: 26	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

30 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/20/2009	Crew: MB/BH	BCI Reach ID: E-6Ed ECT Reach: 107G Assessment Reach	Photo No: 756, 755	Width see note

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 512 ECT FLUCCS 512 ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 70 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☑ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☑ Mixed	Right Bank Land Cover: ☑ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☑ Mixed
Buffer Width: L Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☑ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

Check historical aerials to verify a historical channel existed.

Need to check historical aerials to see if a natural stream existed here.

Cannot determine bankfull - no indicators, no discernible channel. Could not classify.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/20/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		107G

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **6**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **6**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **3** Primary Score: **16**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **1**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **7** Left Bank: **7**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **5** Left Bank: **5**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **5** Left Bank: **5** Secondary Score: **35**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

51 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/20/2009	Crew: MB/BH	BCI Reach ID: E-14Eb ECT Reach: 111G Assessment Reach AR2	Photo No: 751, 750	Width 15 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☑ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☑ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☑ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

Need to check historical aerial to verify this is not a 514; if present in historical aerials then class is 512.

Right bank well vegetated with natural, wide corridor. Left bank pasture.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/20/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		111G

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **6**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **8**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **5** Primary Score: **20**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **5**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **6** Left Bank: **3**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **1**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **1** Secondary Score: **36**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

56 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/20/2009	Crew: MB/BH	BCI Reach ID: E-14Ea Assessment Reach	ECT Reach: 111F	Photo 749, 748 No:	Width 10 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS ECT FLUCCS ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☑ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☑ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☑ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

Downstream 75 feet is 512 channelized with no native vegetation corridor.

* Need to check ID - only one on map and two streams. E-14Eb is north-south stream, E-14Eb AR-1 and AR-2 are east-west stream.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/20/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		111F

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **16**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **48**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **15**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **69**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

117 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/20/2009	Crew: MB/BH	BCI Reach ID: E-13Ed ECT Reach: 111E Assessment Reach	Photo 743-747 No:	Width 15 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 512 ECT FLUCCS ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 85 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

Only very downstream before wetland is possibly 511 - check historical aerials.

Bankfull width estimated from stable section in woods (downstream third).

Reach is mixed somewhat; lower third runs through forested wetland and has more habitat, but one portion appears to have been straightened (#747, 746).

Middle third Is incised with eroding banks and very narrow corridor (#745, 744) - channelized in past? Channel also appears very wide for the size of DA.

Upper third is like middle third with a little more riparian habitat in left bank (#743).

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/20/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		111E

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **13**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **13**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **8** Primary Score: **35**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **6** Left Bank: **6**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **6** Left Bank: **6**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **6** Left Bank: **6** Secondary Score: **52**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

87 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/20/2009	Crew: MB/BH	BCI Reach ID: E-13Ec ECT Reach: 111C Assessment Reach AR1	Photo 740-742 No:	Width 20 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☑ None ☑ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☐ Disturbed ☑ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☑ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☐ High ☑ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

Assessed reaches upstream (AR2) and downstream (AR1) of pop ash wetland.

This is the downstream reach. Wetland (popash with gator dens) interrupts stream.

Flow conditions: pools in wetland.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/20/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		111C

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **10**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **10**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **10** Primary Score: **31**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **6** Left Bank: **6**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **68**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

99 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/20/2009	Crew: MB/BH	BCI Reach ID: E-13Ec ECT Reach: 111D Assessment Reach AR2	Photo No: 739, 738	Width 15 feet
Basin: Peace River		Receiving Stream: Brushy Creek		BCI FLUCCS ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: °F
Flow Conditions: ☑ None ☑ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

Assessed reaches upstream (AR2) and downstream (AR1) of pop ash wetland.

This is the upstream portion - the stream is interrupted by a wetland (popash wetland with gator dens).

Flow conditions: pools in wetland.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/20/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		111D

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **16**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **16**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **49**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

125 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/20/2009	Crew: MB/BH	BCI Reach ID: E-7Ea Assessment Reach	ECT Reach: 107B	Photo 737, 736 No:	Width 6 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 512 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☑ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☑ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☑ Disturbed
Left Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☑ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

land clearing and cattle grazing has altered channel but does not appear to have been channelized - can check historical aerials.

Land clearing and cattle grazing has altered channel but does not appear to have been channelized. Check historical aerials.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/20/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		107B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **8**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **8**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **6** Primary Score: **23**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **5** Left Bank: **5**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **2** Left Bank: **2**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **1** Left Bank: **1** Secondary Score: **32**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

55 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/20/2009	Crew: MB/BH	BCI Reach ID: E-6Eb ECT Reach: 107A Assessment Reach	Photo No: 735, 734	Width 13 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 512 ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☑ Windy ☐ Calm Temperature: 85 °F
Flow Conditions: ☑ None ☑ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☑ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:
Pools in wetland.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/20/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		107A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **11**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **11**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **10** Primary Score: **33**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **10**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **8**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **6** Secondary Score: **59**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

92 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/20/2009	Crew: MB/BH	BCI Reach ID: B-1Ma ECT Reach: 400D Assessment Reach	Photo No: 732, 733	Width 16 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 512 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☐ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☑ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☑ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

If this reach was previously channelized, then it has mostly recovered - I think it is a natural channel, no evidence of overbank material, natural banks.

If previously channelized, then significant recovery.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/20/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		400D

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **16**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **18** Primary Score: **50**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **6** Left Bank: **6**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **8** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **7** Secondary Score: **62**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

112 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/20/2009	Crew: MB/BH	BCI Reach ID: B-1Md ECT Reach: 400G Assessment Reach	Photo No: 728, 729	Width 10 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 512 ECT FLUCCS 512 ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☑ Disturbed
Left Bank Land Cover: ☑ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☑ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☑ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☑ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

Upper half runs through forest, lower half through pasture. Upper half was slightly better habitat, but is also channelized.

Light rain at time of assessment.

Canopy cover: southern half open.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/20/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		400G

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **6**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **8**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **6** Primary Score: **21**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **8**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **5** Left Bank: **5**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **6** Left Bank: **6**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **6** Left Bank: **6** Secondary Score: **42**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

63 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/20/2009	Crew: MB/BH	BCI Reach ID: B-13W ECT Reach: 402B Assessment Reach	Photo No: 724, 725	Width 4 feet

Basin: Peace River	Receiving Stream: Hickory Creek	BCI FLUCCS 512 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

Given size and density of palmettos it is doubtful that this channel was channelized - check hist. aerials.

Review historical aerials to see if previously altered.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/20/2009	Hickory Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		402B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **11**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **6** Primary Score: **33**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

109 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/21/2009	Crew: MB/BH	BCI Reach ID: E-26Wc ECT Reach: 112O Assessment Reach AR1	Photo No: 723, 722	Width Unknown

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☑ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☑ Calm Temperature: 70 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☑ None ☐ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☑ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☑ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☑ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☑ None ☐ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☐ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:

Assessed in two reaches but need to check historical aerials - portion in pasture does not have a defined channel; definitely not a 511, perhaps a 514; 511 channel starts in palmettos but may have been created by improved drainage in pasture.

Assessment reach #1 (AR-1) - E26Wc located in pasture approximately 150-200 years (upstream two-thirds).
Assessment reach #2 (AR-2) - E26Wb located in palmettos/flatwoods (downstream third).

Check historical aerials for AR-1 through pasture - no defined stream channel. Seems to be a wide shallow valley with some sheet flow.

Stream doesn't begin until into palmettos.

Can't determine bankfull - no defined channel.

Canopy cover open.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/21/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		112O

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: 1	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 13 12 11	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. 5 4 3 2 1
Substrate Availability: 1	Greater than 30% productive habitat present at site. 20 19 18 17 16	16% to 30% productive habitat, by aerial extent. 15 14 13 12 11	6% to 15% productive habitat. 10 9 8 7 6	Less than 5% productive habitat. 5 4 3 2 1
Water Velocity: 1	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. 20 19 18 17 16	Maximum observed at typical transect >0.1 to 0.25 m/sec. 15 14 13 12 11	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. 10 9 8 7 6	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. 5 4 3 2 1
Habitat Smothering 1 Primary Score: 4	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 18 17 16	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 13 12 11	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). 10 9 8 7 6	Pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components Artificial Channelization: 1	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. 20 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth with no pools. 5 4 3 2 1
Bank Stability Right Bank: 10 Left Bank: 10	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width: Right Bank: 1 Left Bank: 1	Width of vegetation greater than 18 m. 10 9	With of vegeation >12 to 18 m. 8 7 6	With of vegetation 6 to 12 m. Human activities still close to system. 5 4	Less than 6 m of buffer zone due to intensive human activities. 3 2 1
Riparian Zone Vegetation Quality Right Bank: 1 Left Bank: 1 Secondary Score: 25	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

29 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/21/2009	Crew: MB/BH	BCI Reach ID: E-26Wb ECT Reach: 112N Assessment Reach AR2	Photo No: 721, 720	Width 5 feet
Basin: Peace River		Receiving Stream: Brushy Creek		BCI FLUCCS ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☑ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☑ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☑ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

Assessed in two reaches but need to check historical aerials - portion in pasture does not have a defined channel; definitely not a 511, perhaps a 514; 511 channel starts in palmettos but may have been created by improved drainage in pasture.

Stream starts approximately 15 feet east of fence where topographic grade starts to increase.

This channel may have developed from alteration of vegetation to pasture to the west. Channel meanders but is otherwise poorly defined and appears erosional.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/21/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		112N

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **11**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **11**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **8** Primary Score: **31**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **74**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

105 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/21/2009	Crew: MB/BH	BCI Reach ID: E-28W ECT Reach: 113C Assessment Reach	Photo No: 719, 718	Width 3 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☑ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☑ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

need to check historical aerials to see if a stream existed.

This channel has a poorly defined channel, really no defined banks, soils in channel same as upland soils adjacent. Check historical aerials. Very small watershed. Topographic does show a defined natural valley.

Want to check this with Rick -- good example of where term "banks" needs to be practically defined.

Right bank land cover: field.

Overbank vegetation: one side only.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/21/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		113C

Habitat Parameter		Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity:	10	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 13 12 11	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. 5 4 3 2 1
Substrate Availability:	10	Greater than 30% productive habitat present at site. 20 19 18 17 16	16% to 30% productive habitat, by aerial extent. 15 14 13 12 11	6% to 15% productive habitat. 10 9 8 7 6	Less than 5% productive habitat. 5 4 3 2 1
Water Velocity:	1	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. 20 19 18 17 16	Maximum observed at typical transect >0.1 to 0.25 m/sec. 15 14 13 12 11	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. 10 9 8 7 6	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. 5 4 3 2 1
Habitat Smothering	6	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score:	27	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Secondary Habitat Components Artificial Channelization:	12	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. 20 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth with no pools. 5 4 3 2 1
Bank Stability		Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas.	Only meets 2 of the 3 requirements for optimal bank stability.	Only meets 1 of the 3 requirements for optimal bank stability.	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas.
Right Bank:	10				
Left Bank:	10	10 9	8 7 6	5 4	3 2 1
Riparian Buffer Zone Width:		Width of vegetation greater than 18 m.	With of vegeation >12 to 18 m.	With of vegetation 6 to 12 m. Human activities still close to system.	Less than 6 m of buffer zone due to intensive human activities.
Right Bank:	8				
Left Bank:	10	10 9	8 7 6	5 4	3 2 1
Riparian Zone Vegetation Quality		Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance.	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed.	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious.	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions).
Right Bank:	6				
Left Bank:	10				
Secondary Score:	66	10 9	8 7 6	5 4	3 2 1

93 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/21/2009	Crew: MB/BH	BCI Reach ID: E-26Wa ECT Reach: 112M Assessment Reach	Photo No: 717, 716	Width 5 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☑ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☐ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☑ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
Light rain at time of assessment.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/21/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		112M

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **13**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **13**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **11**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **38**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **13**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **73**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

111 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/21/2009	Crew: MB/BH	BCI Reach ID: E-21Wa ECT Reach: 113A Assessment Reach	Photo No: 715, 714	Width 8 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☑ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☐ None ☑ Stagnant ☐ Baseflow ☐ 25% Bkf ☑ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☑ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

flows into a wetland that flows into E1M. E1M then flows into a wetland that connects to E-20W and eventually Brushy Creek.

Water flowing upstream where road crossing located otherwise water is fairly stagnant, with very little discernible flow.

Appears to be part (tributary to) of E-1M system. E-21Wa ditch connects to this reach.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/21/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		113A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **18**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **18**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **10**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16** Primary Score: **62**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **72**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

134 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/21/2009	Crew: MB/BH	BCI Reach ID: E-20W ECT Reach: 112A Assessment Reach	Photo No: 713 ,712	Width 9 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☑ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☑ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☑ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☐ Moderate ☑ High	Width:Depth:	☐ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

used to obtain flow from west and north, but large ditch (E-21 system) routes flow east to E-21Wa instead; once connected to wetland on north side of ditch that connected E-26Wa to the north and E-21 system from the west.

Receives less flow than historically due to large ditch - leaf litter and woody debris has accumulated due to less flow.

Light rain at time of assessment.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/21/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		112A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **16**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **16**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **15** Primary Score: **48**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **20**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **74**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

122 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/21/2009	Crew: MB/BH	BCI Reach ID: E-19Wb ECT Reach: 110C Assessment Reach	Photo No: 711, 710	Width 4 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☑ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☐ Moderate ☑ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
Good reference reach.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/21/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		110C

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **16**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **16**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **3** Primary Score: **36**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

112 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/21/2009	Crew: MB/BH	BCI Reach ID: E-19Wa ECT Reach: 110B Assessment Reach	Photo No: 702, 701	Width 4 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☑ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☐ Moderate ☑ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

checked downstream end of wetland for stream but none found.

Good reference reach.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/21/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		110B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **15**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **16**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **10**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **42**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

118 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/21/2009	Crew: MB/BH	BCI Reach ID: E-30W ECT Reach: 112G Assessment Reach	Photo No: 686, 685	Width 8 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS ECT FLUCCS ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☑ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 85 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☑ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/21/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		112G

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **16**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **16**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16** Primary Score: **49**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **7** Left Bank: **7**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **8**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **66**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

115 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/21/2009	Crew: MB/BH	BCI Reach ID: E-30Wa ECT Reach: 112H Assessment Reach	Photo None No:	Width

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 512 ECT FLUCCS 512 ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☑ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 85 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☑ Severe ☑ Cattle ☐ Sedimentation ☑ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☑ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:
Approximately 30 feet located in forest, remainder in pasture.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/21/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		112H

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **5**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **5**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **1** Primary Score: **12**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **1**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **5** Left Bank: **5**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **3** Left Bank: **3**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **3** Left Bank: **3** Secondary Score: **23**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

35 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/21/2009	Crew: MB/BH	BCI Reach ID: E-30Wc ECT Reach: 112K Assessment Reach	Photo No: 698, 697	Width 10 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☑ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☐ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☑ None ☐ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☑ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☐ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

Rather straight and odd shaped - check historical aerials to make sure these are not 514 streams - very flat topography in this area as well.

These channels have been partly by-passed by a ditch on the edge of the pasture. Check this area on historical aerials. This sheet combines two short segments that have a short wetland interruption between. The two reaches are identical. Historical logging/vegetative alteration may have impacted channel morphology. Part of the mapped 514 along pasture is 512. Bottom part of actual stream not mapped (E-30Wb). E-31W should be E-31Wa and E-31Wb far below and above the 512 section.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/21/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		112K

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **6**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **6**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **1** Primary Score: **14**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **10**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **66**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

80 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/21/2009	Crew: MB/BH	BCI Reach ID: E-30Wd ECT Reach: 112L Assessment Reach	Photo No: 700, 699	Width 10 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☑ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☐ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☑ None ☐ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☑ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

These channels have been partly by-passed by a ditch on the edge of the pasture. Check this area on historical aerials. This sheet combines two short segments that have a short wetland interruption between. The two reaches are identical. Historical logging/vegetative alteration may have impacted channel morphology. Part of the mapped 514 along pasture is 512. Bottom part of actual stream not mapped (E-30Wb). E-31W should be E-31Wa and E-31Wb far below and above the 512 section.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/21/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		112L

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: 6	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 13 12 11	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. 5 4 3 2 1
Substrate Availability: 6	Greater than 30% productive habitat present at site. 20 19 18 17 16	16% to 30% productive habitat, by aerial extent. 15 14 13 12 11	6% to 15% productive habitat. 10 9 8 7 6	Less than 5% productive habitat. 5 4 3 2 1
Water Velocity: 1	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. 20 19 18 17 16	Maximum observed at typical transect >0.1 to 0.25 m/sec. 15 14 13 12 11	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. 10 9 8 7 6	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. 5 4 3 2 1
Habitat Smothering 1	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: 14	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Secondary Habitat Components Artificial Channelization: 10	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. 20 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth with no pools. 5 4 3 2 1
Bank Stability Right Bank: 10 Left Bank: 10	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width: Right Bank: 10 Left Bank: 10	Width of vegetation greater than 18 m. 10 9	With of vegeation >12 to 18 m. 8 7 6	With of vegetation 6 to 12 m. Human activities still close to system. 5 4	Less than 6 m of buffer zone due to intensive human activities. 3 2 1
Riparian Zone Vegetation Quality Right Bank: 8 Left Bank: 8	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1
Secondary Score: 66				

80 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/21/2009	Crew: MB/BH	BCI Reach ID: E-30Wb ECT Reach: 112I Assessment Reach	Photo No: 696, 695	Width 11 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS New ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☑ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☑ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☑ Mixed	Right Bank Land Cover: ☑ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☑ Mixed
Buffer Width: L Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☑ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☑ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

This is actually a natural stream channel not the 514 along the pasture as previously mapped.

Upstream 514 along pasture has altered hydrology and morphology somewhat - leaf litter and CWP accumulating due to lower flows.

Short reach appears channelized with some overbanks. Straightness along west pasture approximately 75 feet.

This 511 reach not previously mapped - 514 reach along pasture only was mapped. ECT mapped center line using GPS.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/21/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
			112I

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **16**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **13**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **15**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **45**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **5** Left Bank: **5**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **7** Left Bank: **7**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**
Secondary Score: **56**				

101 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/11/2009	Crew: MB/CK	BCI Reach ID: C-24E ECT Reach: 305A Assessment Reach	Photo 18-21 No:	Width 6 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☑ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

Assessment conducted with Christine Keenan. Could check historical aerials to see if corridor was logged at one time.

Lower third has a more disturbed corridor/canopy and hence structure not as good.

Upper two-thirds has less cattle impact and better corridor/canopy and channel has better structure.

Upper two-thirds has higher canopy coverage than lower upper third.

Score riparian habitat width using natural communities.

Bank erosion: disturbed by cattle.

Canopy cover: lower 50-75%, upper 75-100%.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/11/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		305A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **17**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **17**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **13**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **48**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **18**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**
Secondary Score: **70**				

118 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/11/2009	Crew: MB/CK	BCI Reach ID: C-27E ECT Reach: 304A Assessment Reach	Photo No: 16, 17	Width see note

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 511 ECT FLUCCS 512 ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☑ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

Assessment conducted with Christine Keenan. Verify that stream was channelized in historical aerials.

Switches from 512 to 511 at a distinct point that needs to be mapped. Small diversion at road crossing within preserve section in proposed min area is 512. Evidence that water is stagnant, slow moving when present. Over-widened channel for 512 reach due to channelization approximately 8 feet - 511 reach approximately 5 feet.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/11/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		304A

Habitat Parameter		Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity:	14	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 13 12 11	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. 5 4 3 2 1
Substrate Availability:	13	Greater than 30% productive habitat present at site. 20 19 18 17 16	16% to 30% productive habitat, by aerial extent. 15 14 13 12 11	6% to 15% productive habitat. 10 9 8 7 6	Less than 5% productive habitat. 5 4 3 2 1
Water Velocity:	1	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. 20 19 18 17 16	Maximum observed at typical transect >0.1 to 0.25 m/sec. 15 14 13 12 11	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. 10 9 8 7 6	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. 5 4 3 2 1
Habitat Smothering	3	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score:	31	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Secondary Habitat Components Artificial Channelization:	8	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. 20 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth with no pools. 5 4 3 2 1
Bank Stability Right Bank: Left Bank:	10 10	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width: Right Bank: Left Bank:	10 10	Width of vegetation greater than 18 m. 10 9	With of vegeation >12 to 18 m. 8 7 6	With of vegetation 6 to 12 m. Human activities still close to system. 5 4	Less than 6 m of buffer zone due to intensive human activities. 3 2 1
Riparian Zone Vegetation Quality Right Bank: Left Bank:	8 8	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1
Secondary Score:	64				

95 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/22/2009	Crew: MB/BH	BCI Reach ID: C-26E ECT Reach: 305B Assessment Reach	Photo No: 1, 2	Width see notes

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

poor, unreliable bankfull indicators.

Poor bankfull indicators, poor channel definition approximately 4-6 feet, shallow.

Narrow tree-lined corridor within palmetto prairie.

Disturbance/alteration: vegetative clearing.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/22/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		305B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **10**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **8**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **5** Primary Score: **24**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **7** Left Bank: **7** Secondary Score: **70**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

94 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/22/2009	Crew: MB/BH	BCI Reach ID: C-8Ea ECT Reach: 303A Assessment Reach AR1	Photo No: 18, 19	Width 15 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☑ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☑ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☑ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

AR1 located downstream of wetland interruption.

Downstream end more incised and erosional.

Disturbance/alteration: land clearing.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/22/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		303A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **15**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **13**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **45**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **18**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**
Secondary Score: **74**				

119 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/22/2009	Crew: MB/BH	BCI Reach ID: C-8Ea ECT Reach: 303B Assessment Reach AR2	Photo No: 20, 21	Width 10-12 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 512 ECT FLUCCS 512 ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☑ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☐ Cattle ☑ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☑ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☑ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

AR2 located upstream of wetland interruption.

Unreliable bankfull indicators due to channelization.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/22/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		303B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **11**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **10**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **6** Primary Score: **28**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **10**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **66**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

94 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/22/2009	Crew: MB/BH	BCI Reach ID: C-9Ea ECT Reach: 303E Assessment Reach	Photo No: 22, 23	Width 12 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 512 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☑ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☑ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

Narrow tree canopy downstream end with palmetto prairie and pasture beyond.

Mostly forested canopy upstream end.

Disturbance/alteration: pasture.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/22/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		303E

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **18**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock].	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags).	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed.	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Substrate Availability: **20**	Greater than 30% productive habitat present at site.	16% to 30% productive habitat, by aerial extent.	6% to 15% productive habitat.	Less than 5% productive habitat.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec.	Maximum observed at typical transect >0.1 to 0.25 m/sec.	Maximum observed at typical transect: 0.05 to 0.1 mg/sec.	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Habitat Smothering **6** Primary Score: **45**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **20**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered.	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth with no pools.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas.	Only meets 2 of the 3 requirements for optimal bank stability.	Only meets 1 of the 3 requirements for optimal bank stability.	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas.
	10 9	**8 7 6**	**5 4**	**3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **5**	Width of vegetation greater than 18 m.	With of vegeation >12 to 18 m.	With of vegetation 6 to 12 m. Human activities still close to system.	Less than 6 m of buffer zone due to intensive human activities.
	10 9	**8 7 6**	**5 4**	**3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **5** Secondary Score: **67**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance.	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed.	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious.	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions).
	10 9	**8 7 6**	**5 4**	**3 2 1**

112 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/22/2009	Crew: MB/BH	BCI Reach ID: C-9Eb ECT Reach: 303F Assessment Reach	Photo No: 24, 25	Width 15 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 512 ECT FLUCCS 512 ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☑ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☑ Widening ☑ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

check historical aerials and make sure a stream existed here - could be a 514.

Channelized - unreliable bankfull discharge indicators.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/22/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		303F

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **15**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **16**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **8** Primary Score: **40**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **11**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **9** Left Bank: **9**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **63**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

103 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/22/2009	Crew: MB/BH	BCI Reach ID: C-8Eb ECT Reach: 303C Assessment Reach	Photo No: 26, 27	Width 12 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 512 ECT FLUCCS 512 ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☑ Windy ☐ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☑ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☑ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/22/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		303C

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **15**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **12** Primary Score: **43**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **10**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **7** Left Bank: **7**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **62**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

105 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/23/2009	Crew: MB/BH	BCI Reach ID: C-7Eb ECT Reach: 302D Assessment Reach AR1	Photo No: 44, 45	Width see notes
Basin: Peace River		Receiving Stream: Oak Creek		BCI FLUCCS 511 ECT FLUCCS 512	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☑ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☑ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☑ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:

Check historical aerials to confirm prior channelization.

Width varies, portions look straightened, approximately 12 foot Bkfw.

Bed form not well developed, some R-P but low.

Natural portion upstream of wetland.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/23/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		302D

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **12**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **12** Primary Score: **40**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

116 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/23/2009	Crew: MB/BH	BCI Reach ID: C-7Eb ECT Reach: 302C Assessment Reach AR3	Photo No: 42, 43	Width see notes

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 511 ECT FLUCCS 512 ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 85 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☑ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☑ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☑ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

check historical aerials to confirm prior channelization

Lacking reliable bankfull indicators.

Above wetland.

Immediately upstream of wetland in woods.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/23/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		302C

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **8**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **8**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **3** Primary Score: **20**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **6**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **62**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

82 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/23/2009	Crew: MB/BH	BCI Reach ID: C-7Eb ECT Reach: 302B Assessment Reach AR2	Photo No: 40, 41	Width see notes

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 85 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:

Reach upstream of wetland.

No good bankfull indicators - bank score = 6 feet downstream of wetland.

Mapped new wetland interruption.

Below wetland.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/23/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		302B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: 5	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 13 12 11	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. 5 4 3 2 1
Substrate Availability: 8	Greater than 30% productive habitat present at site. 20 19 18 17 16	16% to 30% productive habitat, by aerial extent. 15 14 13 12 11	6% to 15% productive habitat. 10 9 8 7 6	Less than 5% productive habitat. 5 4 3 2 1
Water Velocity: 1	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. 20 19 18 17 16	Maximum observed at typical transect >0.1 to 0.25 m/sec. 15 14 13 12 11	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. 10 9 8 7 6	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. 5 4 3 2 1
Habitat Smothering 3	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: 17	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Secondary Habitat Components Artificial Channelization: 6	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. 20 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth with no pools. 5 4 3 2 1
Bank Stability Right Bank: 9 Left Bank: 9	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width: Right Bank: 9 Left Bank: 7	Width of vegetation greater than 18 m. 10 9	With of vegeation >12 to 18 m. 8 7 6	With of vegetation 6 to 12 m. Human activities still close to system. 5 4	Less than 6 m of buffer zone due to intensive human activities. 3 2 1
Riparian Zone Vegetation Quality Right Bank: 4 Left Bank: 4 Secondary Score: 48	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

65 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/23/2009	Crew: MB/BH	BCI Reach ID: C-29E ECT Reach: 302J Assessment Reach	Photo No: 46, 47	Width 5-6 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☑ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:
Wide forested corridor with palmetto prairie beyond.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/23/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
			302J

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **18**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **18**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **15** Primary Score: **52**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **72**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

124 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC FERTILIZER LLC

Stream Reach-Level Assessment Forms

~~302Z~~ 302K

Site: Ona	Date: 5/11/11	Crew: MB/RN	Reach ID: 302Z	Photo No.: 11/12	Width Bkf: 6'
Basin: Peace R.		Receiving Stream: Oak Ck.		FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514	

Recent Rain:	☑ None ☐ Trace ☐ Moderate ☐ Heavy	**Weather Conditions:**	☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature 75 F°
Flow Conditions:	☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	**Canopy Cover:**	☐ <25% ☐ 25% - 50% ☐ 50% - 75% ☐ 75% - 100%
Bed Erosion:	☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	**Bank Erosion:**	☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover:	☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☑ Flatwoods ☐ Mixed	**Right Bank Land Cover:**	☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width:	L Bank: ☐ <6m ☐ 6-12m ☑ 12-18m ☐ >18m R Bank: ☐ <6m ☐ 6-12m ☐ 12-18m ☑ >18m	**Overbank Vegetation:**	☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration:	☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	**Fluvial Processes:**	☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50 Bkf%
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf Litter:	☐ None ☐ Low ☑ Moderate ☐ High

NOTES:

new trib. to 302A

STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (MM/DD/YY): 5/11/11	RECEIVING BODY OF WATER: Oak Ck.
REMARKS:	COUNTY: Hardee	LOCATION:	FIELD ID/NAME: 302Z

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 9	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock] 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags) 15 14 13 12 11	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered 5 4 3 2 1
Substrate Availability 12	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 14 13 12 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity 1 no flow	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering 18 Primary Score ____	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 18 17 16	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 13 12 11	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). 10 9 8 7 6	Pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components **Artificial Channelization** 16	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. 20 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth with no pools. 5 4 3 2 1
Bank Stability Right Bank 10 Left Bank 10	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank 10 Left Bank 8	Width of vegetation greater than 18 m 10 9	Width of vegetation >12 to 18 m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank 10 Left Bank 9 Secondary Score ____	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

112/113 **TOTAL SCORE**

Date: 5/11/11	Analyst:	Signature:

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/23/2009	Crew: MB/BH	BCI Reach ID: C-7Ec ECT Reach: 302E Assessment Reach	Photo 48-50 No:	Width 5 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☑ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☑ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☐ Moderate ☑ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/23/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		302E

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **18**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **20**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **18**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **57**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **18**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **78**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

135 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/23/2009	Crew: MB/BH	BCI Reach ID: C-7Ed ECT Reach: 302F Assessment Reach	Photo No: 51, 52	Width 4 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☑ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/23/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		302F

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **12**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **13**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **12** Primary Score: **38**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

114 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/23/2009	Crew: MB/BH	BCI Reach ID: C-7Ee ECT Reach: 302G Assessment Reach	Photo 53-56 No:	Width 8 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

Photos #53 and 54 taken downstream from road.
Photos #55 and 56 taken upstream from road.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/23/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		302G

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **18**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **16**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16** Primary Score: **51**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

127 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/23/2009	Crew: MB/BH	BCI Reach ID: C-11Eb ECT Reach: 303H Assessment Reach	Photo 57-60 No:	Width 4 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 95 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☐ Moderate ☑ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

check historical aerials to make sure not previously channelized, rather low sinuosity with some straight reaches; very similar to C-10Ea but not as incised as C-10Ea.

Upper half 512.
Lower half 511 - through palmettos.

Upper half through more woods, very similar to C-10Ea.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/23/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		303H

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **18**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **20**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16** Primary Score: **55**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **17**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **77**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

132 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/23/2009	Crew: MB/BH	BCI Reach ID: C-10Ea ECT Reach: 303I Assessment Reach	Photo 61, 62 No:	Width 6 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 95 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☑ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☑ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

Gradually becomes more incised toward downstream end; very similar to C-11Eb but C11Eb not as incised.

Gradually becomes more incised at downstream end. Very similar to C-11Eb except C-11Eb is not incised.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/23/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		303I

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **18**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **18**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16** Primary Score: **53**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **17**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **73**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

126 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/23/2009	Crew: MB/BH	BCI Reach ID: C-5Ea ECT Reach: 301J Assessment Reach	Photo No: 63, 64	Width 4 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:
Wide forest.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/23/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		301J

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **16**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **11** Primary Score: **43**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **70**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

113 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/23/2009	Crew: MB/BH	BCI Reach ID: E-5Wa ECT Reach: 105F Assessment Reach	Photo 77, 78 No:	Width see notes

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 512 ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☑ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☑ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☐ Cattle ☑ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☑ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

Check historical aerials to make sure not manmade (513).

Channelized with poor bank indicators (~12 feet).

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/23/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		105F

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **15**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **11** Primary Score: **42**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **10**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **7** Left Bank: **6** Secondary Score: **59**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

101 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/23/2009	Crew: MB/BH	BCI Reach ID: E-25W ECT Reach: 109B Assessment Reach	Photo No: 79, 80	Width 4 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☑ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/23/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		109B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: 6	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 13 12 11	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. 5 4 3 2 1
Substrate Availability: 10	Greater than 30% productive habitat present at site. 20 19 18 17 16	16% to 30% productive habitat, by aerial extent. 15 14 13 12 11	6% to 15% productive habitat. 10 9 8 7 6	Less than 5% productive habitat. 5 4 3 2 1
Water Velocity: 1	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. 20 19 18 17 16	Maximum observed at typical transect >0.1 to 0.25 m/sec. 15 14 13 12 11	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. 10 9 8 7 6	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. 5 4 3 2 1
Habitat Smothering 8	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: 25	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Secondary Habitat Components Artificial Channelization: 16	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. 20 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth with no pools. 5 4 3 2 1
Bank Stability Right Bank: 8 Left Bank: 8	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width: Right Bank: 10 Left Bank: 10	Width of vegetation greater than 18 m. 10 9	With of vegeation >12 to 18 m. 8 7 6	With of vegetation 6 to 12 m. Human activities still close to system. 5 4	Less than 6 m of buffer zone due to intensive human activities. 3 2 1
Riparian Zone Vegetation Quality Right Bank: 8 Left Bank: 8	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1
Secondary Score: 68				

93 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/23/2009	Crew: MB/BH	BCI Reach ID: E-21We ECT Reach: 112B Assessment Reach	Photo 81, 82 No:	Width 30 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 512 ECT FLUCCS 512 ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☑ Calm Temperature: 90 °F
Flow Conditions: ☐ None ☑ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☑ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☑ Severe ☐ Cattle ☐ Sedimentation ☑ Diversion ☑ Channelized ☑ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☐ High ☑ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☑ Silt/Clay ☐ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

historical channel still present along south side of canal - looks very similar to E-20W as suspected.

Approximately 25% of length is a pasture at upstream end. Historical channel still present along south side. Pictures 83 and 84 or historical channel.

Total score would be 74 without flow.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/23/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		112B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **16**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **5**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **5**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **5** Primary Score: **31**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **6**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **7** Left Bank: **5**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **7** Left Bank: **7** Secondary Score: **48**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

79 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/24/2009	Crew: MB/BH	BCI Reach ID: C-8Ec ECT Reach: 303D Assessment Reach	Photo No: 86, 87	Width 25 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 512 ECT FLUCCS 512 ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☑ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☑ Severe ☐ Cattle ☑ Sedimentation ☑ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☑ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

there is an unmapped stream near Ona Road that is the historical channel - a channel was constructed to reroute the stream, did not map the historical channel - mapped stream is the manmade portion.

Bottom end at Ona forest has been diverted and channelized - historical channel still present.

Picture 85 is of small connection between a wetland and stream on Hickory Creek.

Christine Keenan questioned if a stream.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/24/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		303D

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **12**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **13**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **10** Primary Score: **36**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **10**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **64**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

100 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/24/2009	Crew: MB/BH	BCI Reach ID: C-9Ec ECT Reach: 303G Assessment Reach	Photo No: 88, 89	Width 6 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 512 ECT FLUCCS 512 ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☑ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 85 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☑ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

Check historical aerials to verify previous channelization - spoils are not obvious but very straight.

Pigs have caused bed erosion, disturbance/alteration.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/24/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		303G

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **15**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **16**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **10** Primary Score: **42**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **10**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **8** Left Bank: **9**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **7** Left Bank: **9** Secondary Score: **59**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

101 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/24/2009	Crew: MB/BH	BCI Reach ID: C-2Wb1 ECT Reach: 306A Assessment Reach	Photo No: 90, 91	Width 5 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 512 ECT FLUCCS 512 ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☑ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☑ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☑ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
check historical aerials to confirm this is not a 514

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/24/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		306A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **15**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **18**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **10**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **44**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **11**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **71**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

115 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/24/2009	Crew: MB/BH	BCI Reach ID: E-31e Assessment Reach	ECT Reach: 200F	Photo 92, 93 No:	Width 8 feet

Basin: Peace River	Receiving Stream: Brady Creek	BCI FLUCCS 511 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☑ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☑ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☑ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☑ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☑ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/24/2009	Brady Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		200F

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **13**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **11**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **12** Primary Score: **37**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **72**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

109 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/24/2009	Crew: MB/BH	BCI Reach ID: E-2W ECT Reach: 105D Assessment Reach AR1	Photo 96 No:	Width 6 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 512 ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☑ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 95 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

Upstream of wetland and 514.

Photos 97 and 98 of 514 channel.

Directed stream in 514 channel along west side of wetland, used to flow through wetlands.

Fluvial processes: Sediment transport alluvial bed.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/24/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		105D

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **16**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **18**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **5** Primary Score: **40**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

116 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/24/2009	Crew: MB/BH	BCI Reach ID: D-1Mb ECT Reach: 300A Assessment Reach	Photo No: 101, 102	Width 40 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS 512 ECT FLUCCS 512 ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☑ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 95 °F
Flow Conditions: ☑ None ☑ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☑ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☑ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☑ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☑ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☑ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/24/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		300A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **10**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **10**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **3** Primary Score: **24**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **6**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **7** Left Bank: **7**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **3** Left Bank: **3**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **3** Left Bank: **3** Secondary Score: **32**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

56 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/24/2009	Crew: MB/BH	BCI Reach ID: F-1Ea ECT Reach: 201B Assessment Reach	Photo No: 103, 104	Width 15 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 511 ECT FLUCCS 512 ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☑ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:
Photograph #105 = tree roots at edge of stream.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		6/24/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		201B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **12**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **11**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **8** Primary Score: **32**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **12**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **68**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

100 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 6/24/2009	Crew: MB/BH	BCI Reach ID: C-2E Assessment Reach	ECT Reach: 301L	Photo 108, 109 No:	Width see notes

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS 512 ECT FLUCCS 512 ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☑ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☑ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☐ Moderate ☑ Severe ☑ Common ☐ Disturbed ☑ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☑ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

Not sure if a natural stream a- need to check historical aerials.

May have been man-made and now is incising and developing more natural features.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code: _____ Submitting Agency Name: _____	Storet Station Number:	Date 6/24/2009	Receiving Body of Water: Oak Creek
Remarks:	County:	Location:	Field ID/Name: 301L

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **15**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16** Primary Score: **47**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **70**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

117 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/19/2009	Crew: MB/BH	BCI Reach ID: S22-2a ECT Reach: 105K Assessment Reach	Photo 772-775 No:	Width 4 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS New ECT FLUCCS 511 ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

New stream coming out of wetland and joining E-7W.

Some good reference conditions.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/19/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		105K

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **15**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **13**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **44**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

120 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/21/2009	Crew: MB/BH	BCI Reach ID: E-29Wa ECT Reach: 112F Assessment Reach	Photo No: 690, 689	Width 4 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☑ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: °F
Flow Conditions: ☐ None ☑ Stagnant ☐ Baseflow ☐ 25% Bkf ☑ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☑ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

Upper third is disturbed by road crossing and clearing. Very short reach. Downstream two-thirds nice and would be good reference condition. E-29Wb does not exist. Mapped forested wetland.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/21/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		112F

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **18**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **13**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **6**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **13**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **50**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **18**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **7** Left Bank: **4**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **6** Left Bank: **8** Secondary Score: **61**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

111 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 9/17/2012	Crew: MB/JP	BCI Reach ID: Assessment Reach — ECT Reach: 500A	Photo No: 26/27	Width 20-25'

Basin: Peace River	Receiving Stream: Peace River	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 0 °F
Flow Conditions: ☐ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☑ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:
Dragline crossing location?

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		9/17/2012	Peace River

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	500A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **18**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **18**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **20**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **18**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **74**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **19**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **9** Left Bank: **5**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **71**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

145 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/12/2011	Crew: MB/RN	BCI Reach ID: Assessment Reach	ECT Reach: 501A	Photo No: 5/6	Width 6 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☐ Moderate ☑ Severe ☑ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☐ High ☑ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:
Disturbed from ups. Ditching?

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/12/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		501A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **11**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **9**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **36**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **9** Secondary Score: **71**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

107 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/12/2011	Crew: MB/RN	BCI Reach ID: Assessment Reach / ECT Reach: 501C	Photo No: 1/2	Width 12 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 70 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☑ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☑ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☑ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☑ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:

Overgrown sod farms, some being pastured,mostly disturbed prairie community

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/12/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		501C

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **3**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **20**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **5** Primary Score: **29**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **6**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **5** Left Bank: **3**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **5** Left Bank: **4** Secondary Score: **43**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

72 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/11/2011	Crew: MB/RN	BCI Reach ID: Assessment Reach	ECT Reach: 502A	Photo No:	Width

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 0 °F
Flow Conditions: ☐ None ☐ Stagnant ☑ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☑ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☑ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☑ Point Bars ☑ Lateral Bars ☑ Pool-Riffle ☑ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☐ Moderate ☑ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
Impacted by crossing

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/11/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		502A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **15**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **18**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **17**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **18** Primary Score: **68**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **18**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **72**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

140 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/19/2011	Crew: ML/AS	BCI Reach ID: Assessment Reach	ECT Reach: 502B	Photo No:	Width 5 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS ☐ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 0 °F
Flow Conditions: ☐ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☐ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☐ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/19/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		502B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: 6	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 13 12 11	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. 5 4 3 2 1
Substrate Availability: 6	Greater than 30% productive habitat present at site. 20 19 18 17 16	16% to 30% productive habitat, by aerial extent. 15 14 13 12 11	6% to 15% productive habitat. 10 9 8 7 6	Less than 5% productive habitat. 5 4 3 2 1
Water Velocity: 1	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. 20 19 18 17 16	Maximum observed at typical transect >0.1 to 0.25 m/sec. 15 14 13 12 11	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. 10 9 8 7 6	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. 5 4 3 2 1
Habitat Smothering 8	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: 21	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Secondary Habitat Components Artificial Channelization: 17	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. 20 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth with no pools. 5 4 3 2 1
Bank Stability Right Bank: 8 Left Bank: 8	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width: Right Bank: 10 Left Bank: 10	Width of vegetation greater than 18 m. 10 9	With of vegeation >12 to 18 m. 8 7 6	With of vegetation 6 to 12 m. Human activities still close to system. 5 4	Less than 6 m of buffer zone due to intensive human activities. 3 2 1
Riparian Zone Vegetation Quality Right Bank: 10 Left Bank: 10	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1
Secondary Score: 73				

94 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 9/17/2012	Crew: MB/JP	BCI Reach ID: Assessment Reach — ECT Reach: 502C	Photo 9/10 No:	Width 3'

Basin: Peace River	Receiving Stream: WFHC	BCI FLUCCS / ECT FLUCCS: ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☑ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☐ None ☐ Stagnant ☐ Baseflow ☑ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☑ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☑ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m; R Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☑ Point Bars ☑ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☑ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

Check aerials for previous disturbances - 511 or 512?

Forested upper 1/2
Pasture lower 1/2 with mixed forest

Buffer width larger upstream 1/2

Entrenched in bottom of larger ditch with banks - floodplain terrace in bottom ~2-3' below pasture

9/10 lower 1/2
11/12 upper 1/2

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		9/17/2012	WFHC

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	502C

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **11**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **9**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **12**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **12** Primary Score: **44**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **14**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **4** Left Bank: **4**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **5** Left Bank: **5** Secondary Score: **50**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

94 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/19/2011	Crew: ML/AS	BCI Reach ID: Assessment Reach	ECT Reach: 502D	Photo No:	Width 8 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS ☐ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 0 °F
Flow Conditions: ☐ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☐ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☐ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/19/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		502D

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **10**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **8**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **5** Primary Score: **24**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **10**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **6** Left Bank: **9**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **6** Left Bank: **8** Secondary Score: **55**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

79 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/19/2011	Crew: ML/AS	BCI Reach ID: Assessment Reach	ECT Reach: 502E	Photo No:	Width 5 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS ☐ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 0 °F
Flow Conditions: ☐ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☐ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☐ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/19/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		502E

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **15**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **15** Primary Score: **46**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **18**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

122 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 1/27/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 502F	Photo No: 29ups/30d ns	Width

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☑ Windy ☐ Calm Temperature: 50 °F
Flow Conditions: ☐ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☑ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☑ Point Bars ☑ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☐ Moderate ☑ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		1/27/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		502F

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **20**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **20**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **20**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **20** Primary Score: **80**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **20**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **78**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

158 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 1/27/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 502G	Photo No: 27dns/2ups	Width

Basin: Peace River	Receiving Stream: W. Fork Horse Creek	BCI FLUCCS / ECT FLUCCS ☐ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☑ Windy ☐ Calm Temperature: 50 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☑ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☑ Common ☑ Disturbed
Left Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m; R Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:
Check hist aerieals to see if present in 1940 and if altered later or manmade

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		1/27/2011	W. Fork Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		502G

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **3**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **17**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **6** Primary Score: **27**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **1** Left Bank: **1**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **1** Left Bank: **1** Secondary Score: **36**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

63 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/7/2011	Crew: MB	BCI Reach ID: Assessment Reach / ECT Reach: 502H	Photo No: 15, 16	Width 5 feet

Basin: Peace River	Receiving Stream: W. Fork Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 70 °F
Flow Conditions: ☐ None ☐ Stagnant ☑ Baseflow ☐ 25% Bkf ☑ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☐ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/7/2011	W. Fork Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		502H

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **10**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **20**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **8**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **5**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **43**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

119 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 1/27/2011	Crew: MB/BH	BCI Reach ID: Assessment Reach — ECT Reach: 502I	Photo No: 25ups/26d ns	Width 16 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☑ Windy ☐ Calm Temperature: 55 °F
Flow Conditions: ☐ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☑ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☑ Point Bars ☑ Lateral Bars ☑ Pool-Riffle ☑ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☐ Moderate ☑ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		1/27/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		502I

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **20**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **20**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **20**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **20** Primary Score: **80**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **20**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **80**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

160 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 1/27/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 502K	Photo No: 21dns/22u ps	Width 8 feet
Basin: Peace River		Receiving Stream: W. Fork Horse Creek	BCI FLUCCS / ECT FLUCCS	☐ 511 ☐ 512 ☐ 513 ☐ 514	

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 60 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☑ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☑ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☐ Moderate ☑ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		1/27/2011	W. Fork Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		502K

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **13**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **17**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **18** Primary Score: **49**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **19**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **7** Left Bank: **7**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **8**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **69**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

118 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/12/2011	Crew: MB/RN	BCI Reach ID: Assessment Reach	ECT Reach: 502L	Photo No: 17, 18	Width 10 feet

Basin: Peace River	Receiving Stream: W. Fork Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/12/2011	W. Fork Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		502L

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **12**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock].	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags).	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed.	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site.	16% to 30% productive habitat, by aerial extent.	6% to 15% productive habitat.	Less than 5% productive habitat.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec.	Maximum observed at typical transect >0.1 to 0.25 m/sec.	Maximum observed at typical transect: 0.05 to 0.1 mg/sec.	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Habitat Smothering **11**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **39**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered.	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth with no pools.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas.	Only meets 2 of the 3 requirements for optimal bank stability.	Only meets 1 of the 3 requirements for optimal bank stability.	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas.
	10 9	**8 7 6**	**5 4**	**3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **5**	Width of vegetation greater than 18 m.	With of vegeation >12 to 18 m.	With of vegetation 6 to 12 m. Human activities still close to system.	Less than 6 m of buffer zone due to intensive human activities.
	10 9	**8 7 6**	**5 4**	**3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **7** Secondary Score: **68**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance.	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed.	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious.	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions).
	10 9	**8 7 6**	**5 4**	**3 2 1**

107 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 10/20/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 502M	Photo No:	Width 8 feet
Basin: Peace River		Receiving Stream: W. Fork Horse Creek	BCI FLUCCS / ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514	

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☐ Windy ☑ Calm Temperature: 70 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:
Adjacent to reclaimed land to north

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		10/20/2011	W. Fork Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		502M

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **11**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **12**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **8**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **32**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **8** Left Bank: **9**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **7** Left Bank: **8** Secondary Score: **66**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

98 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/23/2011	Crew: MB/BH	BCI Reach ID: Assessment Reach — ECT Reach: 503A	Photo No: 1, 2	Width ~5 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 82 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☑ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☑ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/23/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		503A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **6**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **7**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **11** Primary Score: **25**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **4** Left Bank: **4**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **4** Left Bank: **9**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **4** Left Bank: **10** Secondary Score: **51**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

76 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/22/2011	Crew: MB/BH	BCI Reach ID: Assessment Reach	ECT Reach: 504A	Photo 3, 4 No:	Width ~4 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 82 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☑ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/22/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		504A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **10**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **10**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **18** Primary Score: **39**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **18**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **9** Left Bank: **4**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **4** Secondary Score: **62**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

101 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/22/2011	Crew: MB/BH	BCI Reach ID: Assessment Reach — ECT Reach: 505A	Photo No: 5, 6	Width ~4 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 82 °F
Flow Conditions: ☐ None ☐ Stagnant ☑ Baseflow ☑ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/22/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		505A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **13**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **13**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **3**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **18** Primary Score: **47**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **18**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

123 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/22/2011	Crew: MB/BH	BCI Reach ID: Assessment Reach — ECT Reach: 505B	Photo No: 5, 6	Width ~4 feet
Basin: Peace River		Receiving Stream: Horse Creek		BCI FLUCCS / ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 82 °F
Flow Conditions: ☐ None ☐ Stagnant ☑ Baseflow ☑ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/22/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		505B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **13**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **13**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **3**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **18** Primary Score: **47**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **18**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

123 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/22/2011	Crew: MB/BH	BCI Reach ID: Assessment Reach — ECT Reach: 505C	Photo No: 5, 6	Width ~4 feet
Basin: Peace River		Receiving Stream: Horse Creek		BCI FLUCCS / ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 82 °F
Flow Conditions: ☐ None ☐ Stagnant ☑ Baseflow ☑ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/22/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		505C

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **13**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **13**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **3**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **18** Primary Score: **47**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **18**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

123 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/8/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 506A	Photo No: 70, 71	Width 10 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☐ Windy ☑ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

72- dns ditched portion
73-dns ditched portion through pasture

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/8/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		506A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **12**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **14**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16** Primary Score: **43**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **72**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

115 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/22/2011	Crew: MB/BH	BCI Reach ID: Assessment Reach	ECT Reach: 507A	Photo 7, 8 No:	Width 5 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 82 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☑ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☑ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/22/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		507A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **11**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **11**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **17** Primary Score: **40**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **17**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **4** Left Bank: **4**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **4** Left Bank: **5** Secondary Score: **52**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

92 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/8/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 508A	Photo No: 68, 69	Width 5 feet
Basin: Peace River		Receiving Stream: Horse Creek		BCI FLUCCS / ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☐ Windy ☑ Calm Temperature: 79 °F
Flow Conditions: ☐ None ☑ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m; R Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/8/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		508A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **5**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **7**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **11** Primary Score: **24**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **17**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **2** Left Bank: **2**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **2** Left Bank: **2** Secondary Score: **41**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

65 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/22/2011	Crew: MB/BH	BCI Reach ID: Assessment Reach — ECT Reach: 509A	Photo No: 9, 10	Width ~5 feet
Basin: Peace River		Receiving Stream: Horse Creek		BCI FLUCCS / ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 82 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☑ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/22/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		509A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **13**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **13**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **15** Primary Score: **42**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **17**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **75**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

117 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/8/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 510A	Photo No: 66, 67	Width 3 feet
Basin: Peace River		Receiving Stream: Horse Creek		BCI FLUCCS / ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☐ None ☑ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☑ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m; R Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☑ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:
Check historicals for possible 514

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/8/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		510A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **2**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **20**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **6** Primary Score: **29**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **5** Left Bank: **5**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **1** Left Bank: **1**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **1** Left Bank: **1** Secondary Score: **30**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

59 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/8/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 511A	Photo No: 64, 65	Width 5 feet
Basin: Peace River		Receiving Stream: Horse Creek		BCI FLUCCS / ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☑ Windy ☐ Calm Temperature: 85 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/8/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		511A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **13**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **16**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **15** Primary Score: **45**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **2** Left Bank: **5**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **55**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

100 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/8/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach	ECT Reach: 512A	Photo 62, 63 No:	Width 6 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m R Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/8/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		512A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **9**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **14**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **10** Primary Score: **34**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **17**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **3** Left Bank: **3**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **7** Left Bank: **7** Secondary Score: **55**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

89 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/8/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 513A	Photo No: 52, 53	Width 8 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☑ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☑ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/8/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		513A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **10**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **17**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16** Primary Score: **44**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **17**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **3** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **1** Left Bank: **10** Secondary Score: **61**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

105 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/8/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 514A	Photo No: 60, 61	Width 5 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☑ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☐ None ☐ Stagnant ☑ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/8/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		514A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **12**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **18**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **10**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **11** Primary Score: **51**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **74**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

125 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/8/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 515A	Photo No: 58, 59	Width 5 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/8/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		515A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **8**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **11**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **14** Primary Score: **34**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **5** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **69**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

103 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/8/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 515B	Photo No: 58, 59	Width 5 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/8/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		515B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **8**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **11**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **14** Primary Score: **34**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **5** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **69**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

103 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/12/2011	Crew: MB/RN	BCI Reach ID: Assessment Reach — ECT Reach: 516A	Photo No: 15, 16	Width 5 feet
Basin: Peace River		Receiving Stream: Horse Creek		BCI FLUCCS / ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/12/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		516A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **8**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **12**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **9** Primary Score: **30**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **17**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **5**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **8** Secondary Score: **70**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

100 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/8/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 516B	Photo No: 50, 51	Width 4 feet
Basin: Peace River		Receiving Stream: Horse Creek		BCI FLUCCS / ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 70 °F
Flow Conditions: ☐ None ☐ Stagnant ☑ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☑ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/8/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		516B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **10**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **14**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **13**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **11** Primary Score: **48**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **18**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **10** Secondary Score: **74**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

122 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/8/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 516C	Photo No: 48, 49	Width 7 feet
Basin: Peace River		Receiving Stream: Horse Creek		BCI FLUCCS / ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☑ Windy ☐ Calm Temperature: 70 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

2- channels, forks just ups of road crossing

left channel=9e-1
right channel=9e-2
9e-1 comes from a wetland

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/8/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		516C

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: 3	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 13 12 11	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. 5 4 3 2 1
Substrate Availability: 5	Greater than 30% productive habitat present at site. 20 19 18 17 16	16% to 30% productive habitat, by aerial extent. 15 14 13 12 11	6% to 15% productive habitat. 10 9 8 7 6	Less than 5% productive habitat. 5 4 3 2 1
Water Velocity: 1	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. 20 19 18 17 16	Maximum observed at typical transect >0.1 to 0.25 m/sec. 15 14 13 12 11	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. 10 9 8 7 6	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. 5 4 3 2 1
Habitat Smothering 7	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: 16	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Secondary Habitat Components Artificial Channelization: 17	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. 20 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth with no pools. 5 4 3 2 1
Bank Stability Right Bank: 8 Left Bank: 8	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width: Right Bank: 10 Left Bank: 10	Width of vegetation greater than 18 m. 10 9	With of vegeation >12 to 18 m. 8 7 6	With of vegetation 6 to 12 m. Human activities still close to system. 5 4	Less than 6 m of buffer zone due to intensive human activities. 3 2 1
Riparian Zone Vegetation Quality Right Bank: 8 Left Bank: 8	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1
Secondary Score: 69				

85 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/12/2011	Crew: MB/RN	BCI Reach ID: Assessment Reach — ECT Reach: 516D	Photo No: 13, 14	Width 6 feet
Basin: Peace River		Receiving Stream: Horse Creek		BCI FLUCCS / ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☑ Common ☐ Disturbed ☑ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☑ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
Gully forming off pasture

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/12/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		516D

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: 6	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 13 12 11	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. 5 4 3 2 1
Substrate Availability: 13	Greater than 30% productive habitat present at site. 20 19 18 17 16	16% to 30% productive habitat, by aerial extent. 15 14 13 12 11	6% to 15% productive habitat. 10 9 8 7 6	Less than 5% productive habitat. 5 4 3 2 1
Water Velocity: 1	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. 20 19 18 17 16	Maximum observed at typical transect >0.1 to 0.25 m/sec. 15 14 13 12 11	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. 10 9 8 7 6	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. 5 4 3 2 1
Habitat Smothering 10	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: 30	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Secondary Habitat Components Artificial Channelization: 16	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. 20 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth with no pools. 5 4 3 2 1
Bank Stability Right Bank: 6 Left Bank: 6	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width: Right Bank: 10 Left Bank: 7	Width of vegetation greater than 18 m. 10 9	With of vegeation >12 to 18 m. 8 7 6	With of vegetation 6 to 12 m. Human activities still close to system. 5 4	Less than 6 m of buffer zone due to intensive human activities. 3 2 1
Riparian Zone Vegetation Quality Right Bank: 10 Left Bank: 10	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance.	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed.	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious.	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions).
Secondary Score: 65	10 9	8 7 6	5 4	3 2 1

95 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/12/2011	Crew: MB/RN	BCI Reach ID: Assessment Reach — ECT Reach: 516E	Photo No: 11, 12	Width 6 feet
Basin: Peace River		Receiving Stream: Horse Creek		BCI FLUCCS / ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/12/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		516E

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **6**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **10**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **9** Primary Score: **26**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **74**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

100 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/8/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 517A	Photo No: 46, 47	Width 5 feet
Basin: Peace River		Receiving Stream: Horse Creek		BCI FLUCCS / ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☑ Windy ☐ Calm Temperature: 70 °F
Flow Conditions: ☐ None ☐ Stagnant ☑ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

Stream at bottom end
ditch at top end in field and into woods
see page slope
road crossing at bottom end is disturbed
stream does not continue ups of road crossing

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/8/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		517A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **7**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **11**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **12**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **9** Primary Score: **39**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **17**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **8** Secondary Score: **74**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

113 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/12/2011	Crew: MB/RN	BCI Reach ID: Assessment Reach / ECT Reach: 518A	Photo No: 9, 10	Width 6 feet
Basin: Peace River		Receiving Stream: Horse Creek		BCI FLUCCS / ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☑ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☑ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/12/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		518A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **7**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **12**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **10** Primary Score: **30**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **70**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

100 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/12/2011	Crew: MB/RN	BCI Reach ID: Assessment Reach — ECT Reach: 518B	Photo No: 7, 8	Width 10 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 80 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☑ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☑ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:
Is this 9W?
Standing water in a few pools disturbed by pigs and/or cows

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/12/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		518B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **8**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **13**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **12** Primary Score: **34**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **5** Left Bank: **3**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **5** Left Bank: **3** Secondary Score: **52**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

86 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/8/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 519A	Photo No: 44, 45	Width 3 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 0 °F
Flow Conditions: ☐ None ☐ Stagnant ☑ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☑ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

see page slope
head cut @ Horse Creek
Not mapped? Thought was 4e but is further north

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/8/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		519A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **10**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **20**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **12**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **7** Primary Score: **49**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **17**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **77**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

126 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/8/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach	ECT Reach: 520A	Photo No: 32, 33	Width 12 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☑ Windy ☐ Calm Temperature: 65 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

28/29 - possible drainage path just dns of road
30/31 - wetland break looking ups/dns
32/33 - dns end of stream near Horse Creek

dns end near Horse Creek after wetland interruption

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/8/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		520A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **12**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **6**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **34**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

110 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/12/2011	Crew: MB/RN	BCI Reach ID: Assessment Reach	ECT Reach: 520B	Photo No:	Width 3 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☑ None ☐ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☑ None ☐ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/12/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		520B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **4**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **10**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **6** Primary Score: **21**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **7**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **9**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **62**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

83 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/8/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 521A	Photo No: 26, 27	Width 12 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☑ Windy ☐ Calm Temperature: 60 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

upstream of road in flatwoods

dns section in wetland/floodplain along east side of Horse Creek - break in stream, starts again at bottom end near Horse Creek

Near well G128C1 - metal tag#2758

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/8/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		521A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **10**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **11**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **13**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **35**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **17**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **77**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

112 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/8/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 521B	Photo No: 24, 25	Width 4 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☑ Windy ☐ Calm Temperature: 60 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☐ Moderate ☑ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:
Palmetto prairie stream upstream of woods in flatwoods

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/8/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		521B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **5**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **20**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **18** Primary Score: **44**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **19**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **79**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

123 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/8/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 522A	Photo No: 36, 37	Width 3 feet
Basin: Peace River		Receiving Stream: Horse Creek		BCI FLUCCS / ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 0 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/8/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		522A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **8**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **12**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **8** Primary Score: **29**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **18**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **78**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

107 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/24/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 522B	Photo No: 11, 12	Width 2 feet
Basin: Peace River		Receiving Stream: Horse Creek		BCI FLUCCS / ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 82 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/24/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		522B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **2**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **2**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **6** Primary Score: **11**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

87 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/7/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 523A-	Photo No: 22, 23	Width 12 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 70 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/7/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		523A-Ups

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **11**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **10**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **10** Primary Score: **32**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **18**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **74**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

106 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/8/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach / ECT Reach: 523A-	Photo No: 34, 35	Width 12 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☑ Windy ☐ Calm Temperature: 65 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☐ Moderate ☑ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:
Staff gauge where near edge of woods where closest to 2-track

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/8/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		523A-Dns

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **15**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **18**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **19** Primary Score: **53**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **20**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **80**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

133 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/7/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 523B	Photo No: 18, 19	Width 10 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/7/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		523B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **5**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **3**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **7** Primary Score: **16**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **17**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **69**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

85 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/7/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 523C	Photo No: 16, 17	Width 8 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☑ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

Some sediment transport exident, esp around trees roots where bed scour occurring

Weak channel signature with poorly defined banks between two wetlands

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/7/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		523C

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **2**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **2**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **6** Primary Score: **11**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **17**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **75**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

86 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/7/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach	ECT Reach: 523D	Photo No: 14, 15	Width

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS ☐ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☑ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

don't believe this is a stream - ditch? Wetland connection?

No OHWM, no bankul indicators

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/7/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		523D

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: 4	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 13 12 11	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. 5 4 3 2 1
Substrate Availability: 8	Greater than 30% productive habitat present at site. 20 19 18 17 16	16% to 30% productive habitat, by aerial extent. 15 14 13 12 11	6% to 15% productive habitat. 10 9 8 7 6	Less than 5% productive habitat. 5 4 3 2 1
Water Velocity: 1	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. 20 19 18 17 16	Maximum observed at typical transect >0.1 to 0.25 m/sec. 15 14 13 12 11	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. 10 9 8 7 6	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. 5 4 3 2 1
Habitat Smothering 5	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: 18	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Secondary Habitat Components Artificial Channelization: 16	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. 20 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth with no pools. 5 4 3 2 1
Bank Stability Right Bank: 10 Left Bank: 10	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width: Right Bank: 10 Left Bank: 10	Width of vegetation greater than 18 m. 10 9	With of vegeation >12 to 18 m. 8 7 6	With of vegetation 6 to 12 m. Human activities still close to system. 5 4	Less than 6 m of buffer zone due to intensive human activities. 3 2 1
Riparian Zone Vegetation Quality Right Bank: 9 Left Bank: 9	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1
Secondary Score: 74				

92 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/7/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach	ECT Reach: 523E	Photo 6, 7 No:	Width 12 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS ☐ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☑ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
Stream by wetland with monitoring well - metal tag#0422 G121C

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/7/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		523E

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **7**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **8**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **3** Primary Score: **19**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **17**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **75**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

94 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/7/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 523G	Photo No: 4, 5	Width 8 feet
Basin: Peace River		Receiving Stream: Horse Creek		BCI FLUCCS / ECT FLUCCS	☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

Check historical aerials to see if 512, def. ditch

Confirmed should be 512

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/7/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		523G

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **2**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **3**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **5** Primary Score: **11**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **6**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **6** Left Bank: **6**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **5** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **7** Left Bank: **9** Secondary Score: **49**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

60 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/7/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 523H	Photo No: 20, 21	Width 4 feet
Basin: Peace River		Receiving Stream: Horse Creek		BCI FLUCCS / ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/7/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		523H

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **9**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **8**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **9** Primary Score: **27**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **17**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **69**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

96 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/8/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 524A	Photo No: 54, 55	Width 6 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☑ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/8/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		524A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **5**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **20**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **42**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

118 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 1/27/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 400A	Photo 5ups/6dns No:	Width 15 feet
Basin: Peace River		Receiving Stream: Horse Creek		BCI FLUCCS / ECT FLUCCS ☐ 511 ☐ 512 ☐ 513 ☐ 514	

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 55 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☑ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
Need to check historical aerials to see if dredged. Some spoils present, but channel is sinuous.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		1/27/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		400A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **16**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **17**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **17** Primary Score: **51**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **18**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **70**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

121 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 1/27/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 400B	Photo 7dns/8ups No:	Width 10 feet
Basin: Peace River		Receiving Stream: Horse Creek		BCI FLUCCS / ECT FLUCCS ☐ 511 ☐ 512 ☐ 513 ☐ 514	

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 55 °F
Flow Conditions: ☐ None ☑ Stagnant ☐ Baseflow ☑ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☑ Mixed	Right Bank Land Cover: ☑ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☑ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☑ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☑ Lateral Bars ☐ Pool-Riffle ☑ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:

Into woods to edge of palmettos.

Pastured palmetto prairie on both sides
native vegetation clearing

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		1/27/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		400B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **3**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **2**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **4** Primary Score: **10**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **18**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **6** Left Bank: **6**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **4** Left Bank: **1**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **3** Left Bank: **1** Secondary Score: **39**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

49 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 1/27/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 400C	Photo No: 9ups/10dns	Width 22 feet
Basin: Peace River		Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS	☐ 511 ☐ 512 ☐ 513 ☐ 514	

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 55 °F
Flow Conditions: ☐ None ☑ Stagnant ☐ Baseflow ☑ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☑ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☑ Mixed	Right Bank Land Cover: ☑ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☑ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☑ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☑ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

Appears to be dredged with some spoil
- check aerials historical
- cattle pond within reach
- channel overwidened and oversized

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		1/27/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		400C

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **13**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **12**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **9** Primary Score: **35**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **6** Left Bank: **6**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **9** Left Bank: **2**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **2** Secondary Score: **49**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

84 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 1/27/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 401A	Photo 3dns/4ups No:	Width 4 feet
Basin: Peace River		Receiving Stream: Hickory Creek		BCI FLUCCS / ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 50 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		1/27/2011	Hickory Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		401A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **5**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **8**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **6** Primary Score: **20**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **17**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **9** Left Bank: **5**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **7** Secondary Score: **67**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

87 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 1/27/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 402A	Photo 1ups/2dns No:	Width 5 feet
Basin: Peace River		Receiving Stream: Hickory Creek		BCI FLUCCS / ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 0 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:
Draining marsh in palmetto prairie. Drains to Hickory Creek floodplain.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		1/27/2011	Hickory Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		402A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **5**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **5**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **6** Primary Score: **17**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

93 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 8/20/2009	Crew: MB/BH	BCI Reach ID: Assessment Reach — ECT Reach: 403A	Photo No: 35, 36	Width See Note

Basin: Peace River	Receiving Stream: Hickory Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 95 °F
Flow Conditions: ☐ None ☑ Stagnant ☐ Baseflow ☐ 25% Bkf ☑ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☑ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☐ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:
Check 1930s aerials to see if created before 1940 - shows in 1940

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		8/20/2009	Hickory Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		403A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **15**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **20**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **8** Primary Score: **44**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **11**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **69**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

113 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 8/20/2009	Crew: MB/BH	BCI Reach ID: Assessment Reach — ECT Reach: 404A	Photo 37-39 No:	Width 6 feet

Basin: Peace River	Receiving Stream: Hickory Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 0 °F
Flow Conditions: ☐ None ☑ Stagnant ☐ Baseflow ☐ 25% Bkf ☑ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m; R Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☐ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:
No bkf indicators - top of bank 6' wide - looks ditched but spoils not exident.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		8/20/2009	Hickory Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		404A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **8**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **20**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **5** Primary Score: **34**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **8**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **1** Left Bank: **1**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **1** Left Bank: **1** Secondary Score: **32**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

66 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/8/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 300	Photo No: 25, 26	Width 35 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☑ Windy ☐ Calm Temperature: 70 °F
Flow Conditions: ☐ None ☑ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☑ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☑ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☑ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:
Check historical aerials to verify 512, spoils clearly present

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/8/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		300

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **9**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **8**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **6** Primary Score: **24**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **6**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **8** Secondary Score: **59**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

83 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/11/2011	Crew: MB/RN	BCI Reach ID: Assessment Reach — ECT Reach: 300B	Photo No: 17, 18	Width 35 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 85 °F
Flow Conditions: ☑ None ☑ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☑ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☑ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:
few pools with standing water

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/11/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		300B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **7**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **19**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **13** Primary Score: **40**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **12**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **66**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

106 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/11/2011	Crew: MB/RN	BCI Reach ID: Assessment Reach — ECT Reach: 300C	Photo No: 15, 16	Width 20 feet

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 85 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/11/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		300C

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **10**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **18**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **19** Primary Score: **48**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **17**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **75**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

123 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/11/2011	Crew: MB/RN	BCI Reach ID: Assessment Reach	ECT Reach: 301B	Photo 7, 8 No:	Width 8 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:
Disturbed under power line corridor from vegetation management

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/11/2011	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		301B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **18**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock].	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags).	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed.	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Substrate Availability: **20**	Greater than 30% productive habitat present at site.	16% to 30% productive habitat, by aerial extent.	6% to 15% productive habitat.	Less than 5% productive habitat.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec.	Maximum observed at typical transect >0.1 to 0.25 m/sec.	Maximum observed at typical transect: 0.05 to 0.1 mg/sec.	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Habitat Smothering **17** Primary Score: **56**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **19**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered.	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth with no pools.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas.	Only meets 2 of the 3 requirements for optimal bank stability.	Only meets 1 of the 3 requirements for optimal bank stability.	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas.
	10 9	**8 7 6**	**5 4**	**3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m.	With of vegeation >12 to 18 m.	With of vegetation 6 to 12 m. Human activities still close to system.	Less than 6 m of buffer zone due to intensive human activities.
	10 9	**8 7 6**	**5 4**	**3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **77**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance.	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed.	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious.	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions).
	10 9	**8 7 6**	**5 4**	**3 2 1**

133 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/11/2011	Crew: MB/RN	BCI Reach ID: Assessment Reach — ECT Reach: 301C	Photo No: 1, 2	Width 12 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 65 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☑ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/11/2011	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		301C

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **15**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **17**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16** Primary Score: **49**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **18**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

125 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/11/2011	Crew: MB/RN	BCI Reach ID: Assessment Reach	ECT Reach: 301E	Photo 3, 4 No:	Width 12 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS / ECT FLUCCS ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 65 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
Rick Cantrel had previously called this a 514 rather than 512 during a site visit

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/11/2011	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		301E

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **5**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **16**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **6** Primary Score: **28**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **74**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

102 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/11/2011	Crew: MB/RN	BCI Reach ID: Assessment Reach	ECT Reach: 301F	Photo 5, 6 No:	Width 14 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS / ECT FLUCCS ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 65 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
Very wide and straight but no evidence of dredging

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/11/2011	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		301F

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **2**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **3**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **5** Primary Score: **11**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **74**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

85 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/11/2011	Crew: MB/RN	BCI Reach ID: Assessment Reach — ECT Reach: 302A	Photo No: 9, 10	Width 8 feet
Basin: Peace River		Receiving Stream: Oak Creek	BCI FLUCCS / ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514	

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
Found new stream flowing from P.L. through 2 sm marshes and into 302A near "crook" in stream. Mapped as 302Z

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/11/2011	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		302A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **11**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **12**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **40**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **18**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **78**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

118 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 8/20/2009	Crew: MB/BH	BCI Reach ID: C-7Ef ECT Reach: 302H Assessment Reach	Photo 31, 32 No:	Width 6 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS ECT FLUCCS ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:

BCI mapped as a 514 - looks natural, although straight, and shows an 1940 aerial as natural. Could be 512 but no signs of overbank spoils either - similar to other very small palmetto prairie streams connecting wetlands on property

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		8/20/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		302H

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **13**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16** Primary Score: **45**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

121 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 8/20/2009	Crew: MB/BH	BCI Reach ID: Assessment Reach	ECT Reach: 302I	Photo 33, 34 No:	Width 3 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:
BCI previously mapped as a ST4 - looks natural - no evidence on spoils shows on 1940 aerial.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		8/20/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		302I

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **13**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **13**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **42**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

118 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 8/20/2009	Crew: MB/BH	BCI Reach ID: Assessment Reach — ECT Reach: 305C	Photo No: 28, 29, 30	Width 2 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:

Previously FLUCCS as 514, but show, in 1940 aerial - no spoils observed - natural drainage pattern - small but defined channel

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		8/20/2009	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
			305C

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **12**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **12**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **5** Primary Score: **30**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

106 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 1/27/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 307A	Photo No:	Width 4 feet

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS / ECT FLUCCS: ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 60 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m; R Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☑ None ☐ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☑ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☑ None ☐ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:

Check historical aerial to see if manmade

*historical aerial shows a stream between 2 largest wetlands

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		1/27/2011	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		307A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: 1	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 13 12 11	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. 5 4 3 2 1
Substrate Availability: 1	Greater than 30% productive habitat present at site. 20 19 18 17 16	16% to 30% productive habitat, by aerial extent. 15 14 13 12 11	6% to 15% productive habitat. 10 9 8 7 6	Less than 5% productive habitat. 5 4 3 2 1
Water Velocity: 1	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. 20 19 18 17 16	Maximum observed at typical transect >0.1 to 0.25 m/sec. 15 14 13 12 11	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. 10 9 8 7 6	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. 5 4 3 2 1
Habitat Smothering 1 Primary Score: 4	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 18 17 16	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 13 12 11	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). 10 9 8 7 6	Pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components Artificial Channelization: 3	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. 20 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth with no pools. 5 4 3 2 1
Bank Stability Right Bank: 9 Left Bank: 9	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width: Right Bank: 1 Left Bank: 1	Width of vegetation greater than 18 m. 10 9	With of vegeation >12 to 18 m. 8 7 6	With of vegetation 6 to 12 m. Human activities still close to system. 5 4	Less than 6 m of buffer zone due to intensive human activities. 3 2 1
Riparian Zone Vegetation Quality Right Bank: 1 Left Bank: 1 Secondary Score: 25	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

29 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/11/2011	Crew: MB/RN	BCI Reach ID: Assessment Reach — ECT Reach: 307B	Photo No: 19, 20	Width 8 feet
Basin: Peace River		Receiving Stream: Oak Creek		BCI FLUCCS / ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/11/2011	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		307B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **11**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **11**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **17** Primary Score: **40**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **18**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **8**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **7** Left Bank: **9** Secondary Score: **72**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

112 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/8/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 201A	Photo No: 27, 28	Width 10 feet

Basin: Peace River | Receiving Stream: Brushy Creek | BCI FLUCCS / ECT FLUCCS: ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy

Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☑ Windy ☐ Calm Temperature: 70 °F

Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf

Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%

Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting

Bank Erosion: ☐ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed

Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed

Right Bank Land Cover: ☑ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☑ Mixed

Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m

Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted

Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage

Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity: ☐ Straight ☑ Low ☐ Moderate ☐ High
Entrenchment: ☐ Low ☑ Moderate ☐ High ☐ Severe
Bed Form: ☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P
Width:Depth: ☑ Normal ☐ High ☐ Very High
Bank Heights: ☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Stability: ☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools: ☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD: ☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD: ☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks: ☑ None ☐ Low ☐ Moderate ☐ Abundant
Macrophytes: ☑ None ☐ Low ☐ Moderate ☐ Abundant
Large Roots: ☐ None ☑ Low ☐ Moderate ☐ Abundant
Fine Roots: ☑ None ☐ Low ☐ Moderate ☐ Abundant
Overhanging Veg: ☐ None ☐ Low ☑ Moderate ☐ Abundant
Substrates: ☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Leaf LItter: ☐ None ☑ Low ☐ Moderate ☐ High

Notes:
Stream presentin 1940 aerial that appears natural. Present channel straight with spoils.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/8/2011	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		201A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **12**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **11**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **7** Primary Score: **31**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **8**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **5** Left Bank: **8**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **6** Left Bank: **8** Secondary Score: **53**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

84 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 8/18/2009	Crew: MB/BH	BCI Reach ID: Assessment Reach	ECT Reach: 200A	Photo 27 No:	Width

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 85 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☑ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☑ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
This is the Brady Creek main channel south of 62. BCI classed as 513/514 but stream shows in 1940 aerial

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		8/18/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		200A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **15**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **13** Primary Score: **44**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **10**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **6** Left Bank: **6**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **6** Left Bank: **6** Secondary Score: **54**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

98 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 8/18/2009	Crew: MB/BH	BCI Reach ID: Assessment Reach	ECT Reach: 200B	Photo 27 No:	Width

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 85 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☑ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☐ Moderate ☐ Severe ☑ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☑ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
This is the Brady Creek main channel south of 62. BCI classed as 513/514 but stream shows in 1940 aerial

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		8/18/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		200B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **15**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **13**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **44**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **10**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **6** Left Bank: **6**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **6** Left Bank: **6** Secondary Score: **54**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

98 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 8/18/2009	Crew: MB/BH	BCI Reach ID: Assessment Reach — ECT Reach: 200C	Photo 27 No:	Width

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 85 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☑ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☑ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
This is the Brady Creek main channel south of 62. BCI classed as 513/514 but stream shows in 1940 aerial

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		8/18/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		200C

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **15**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **13**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **44**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **10**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **6** Left Bank: **6**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **6** Left Bank: **6** Secondary Score: **54**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

98 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 8/18/2009	Crew: MB/BH	BCI Reach ID: Assessment Reach	ECT Reach: 200D	Photo 27 No:	Width

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 85 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☑ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☑ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
This is the Brady Creek main channel south of 62. BCI classed as 513/514 but stream shows in 1940 aerial

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		8/18/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		200D

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **15**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **13**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **44**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **10**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **6** Left Bank: **6**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **6** Left Bank: **6** Secondary Score: **54**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

98 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 8/18/2009	Crew: MB/BH	BCI Reach ID: Assessment Reach — ECT Reach: 200E	Photo 27 No:	Width

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 85 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☑ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☑ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
This is the Brady Creek main channel south of 62. BCI classed as 513/514 but stream shows in 1940 aerial

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		8/18/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		200E

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **15**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **13**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **44**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **10**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **6** Left Bank: **6**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **6** Left Bank: **6** Secondary Score: **54**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

98 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/11/2011	Crew: MB/RN	BCI Reach ID: Assessment Reach — ECT Reach: 100B	Photo No: 29, 30	Width 15 feet
Basin: Peace River		Receiving Stream: Horse Creek		BCI FLUCCS / ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 95 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☑ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☑ Point Bars ☑ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:
Pastured forest both sides

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/11/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		100B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **10**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **12**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16** Primary Score: **39**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **18**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **72**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

111 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/11/2011	Crew: MB/RN	BCI Reach ID: Assessment Reach — ECT Reach: 100C	Photo No: 27, 28	Width 20 feet
Basin: Peace River		Receiving Stream: Horse Creek		BCI FLUCCS / ECT FLUCCS	☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 95 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☑ Point Bars ☑ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☑ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

Sure 512? Check historical aerials to make sure this wasn't all wetland

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/11/2011	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		100C

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **2**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **12** Primary Score: **30**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **11**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **5** Left Bank: **5**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **8** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **6** Left Bank: **8** Secondary Score: **53**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

83 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/11/2011	Crew: MB/RN	BCI Reach ID: Assessment Reach — ECT Reach: 103A	Photo No: 21, 22	Width 8 feet
Basin: Peace River		Receiving Stream: Brushy Creek		BCI FLUCCS / ECT FLUCCS	☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:
Upstream 1/5 is in pasture

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/11/2011	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		103A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **12**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16** Primary Score: **44**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **11**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **9** Left Bank: **9**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **9** Secondary Score: **63**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

107 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/11/2011	Crew: MB/RN	BCI Reach ID: Assessment Reach	ECT Reach: 104A	Photo 33, 34 No:	Width 6 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☑ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/11/2011	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		104A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **12**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **10**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **9**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **32**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **9**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **67**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

99 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/11/2011	Crew: MB	BCI Reach ID: Assessment Reach — ECT Reach: 105A	Photo No: 31, 32	Width 20 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☑ Windy ☐ Calm Temperature: 95 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/11/2011	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		105A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **8**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **16**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **10** Primary Score: **35**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **70**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

105 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 8/18/2009	Crew: MB/BH	BCI Reach ID: Assessment Reach — ECT Reach: 105C	Photo No: 18-20	Width 10 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 85 °F
Flow Conditions: ☐ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☑ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☑ Lateral Bars ☑ Pool-Riffle ☑ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☐ Moderate ☑ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

Some sections overwidened could be evidence of previous dredging

Looks fairly natural, but BCI classed as 512

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		8/18/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		105C

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **20**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **20**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **18**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **18** Primary Score: **76**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

152 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 8/18/2009	Crew: MB/BH	BCI Reach ID: Assessment Reach — ECT Reach: 107J	Photo No: 21, 22	Width 6 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 85 °F
Flow Conditions: ☐ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☑ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m; R Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☑ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☑ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:

dns end mod. Entrenches - ups end over widened

Entire reach is 512 including 514 portion mapped by BCI - stream shows in 1940 aerial from wetland in pasture south to forested wetland.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		8/18/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		107J

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **5**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **5**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **13**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **6** Primary Score: **29**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **10**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **3** Left Bank: **3**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **2** Left Bank: **2** Secondary Score: **36**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

65 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/11/2011	Crew: MB/RN	BCI Reach ID: Assessment Reach — ECT Reach: 110A	Photo No: 25, 26	Width 6 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☑ Windy ☐ Calm Temperature: 90 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:
Brushy Creek floodplain - ends before creek on floodplain. Originates at large marsh.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/11/2011	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		110A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: 9	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 13 12 11	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. 5 4 3 2 1
Substrate Availability: 14	Greater than 30% productive habitat present at site. 20 19 18 17 16	16% to 30% productive habitat, by aerial extent. 15 14 13 12 11	6% to 15% productive habitat. 10 9 8 7 6	Less than 5% productive habitat. 5 4 3 2 1
Water Velocity: 1	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. 20 19 18 17 16	Maximum observed at typical transect >0.1 to 0.25 m/sec. 15 14 13 12 11	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. 10 9 8 7 6	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. 5 4 3 2 1
Habitat Smothering 10	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: 34	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Secondary Habitat Components Artificial Channelization: 17	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. 20 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth with no pools. 5 4 3 2 1
Bank Stability Right Bank: 10 Left Bank: 10	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width: Right Bank: 10 Left Bank: 10	Width of vegetation greater than 18 m. 10 9	With of vegeation >12 to 18 m. 8 7 6	With of vegetation 6 to 12 m. Human activities still close to system. 5 4	Less than 6 m of buffer zone due to intensive human activities. 3 2 1
Riparian Zone Vegetation Quality Right Bank: 10 Left Bank: 10	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1
Secondary Score: 77				

111 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/20/2009	Crew: MB/BH	BCI Reach ID: Assessment Reach — ECT Reach: 111G	Photo No: 750, 751	Width 15 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☑ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☑ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☑ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:
Right bank well vegetated with natural, wide corridor left bank pasture.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/20/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		111G

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **6**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **8**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **5** Primary Score: **20**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **5**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **6** Left Bank: **3**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **1**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **1** Secondary Score: **36**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

56 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 8/18/2009	Crew: MB/BH	BCI Reach ID: Assessment Reach — ECT Reach: 111J	Photo No: 23, 24	Width 6 feet
Basin: Peace River		Receiving Stream: Brushy Creek		BCI FLUCCS / ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 80 °F
Flow Conditions: ☐ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☑ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

dns 75 feet lacks channel definition before joining tributary and channel is filled with herbaceors vegetation.

New stream not reappend - identified an 1940 aerial.

Habitat dominated by long slack water pools.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		8/18/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		111J

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **17**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **18**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **10**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **18** Primary Score: **63**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

139 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 8/18/2009	Crew: MB/BH	BCI Reach ID: Assessment Reach — ECT Reach: 112P	Photo No: 16, 17	Width See notes

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☐ None ☑ Stagnant ☐ Baseflow ☐ 25% Bkf ☑ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

Check historical aerials - dns reach is straight and appears to be manmade channel upstram reach slightly ____ 2 reaches interrupted by small wetland.

No bankfill indicators top-of-bank width is 8 feet in ups reach/10 feet in dns reach

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		8/18/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		112P

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **15**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **6**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **6** Primary Score: **42**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **7** Left Bank: **7**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **6** Left Bank: **6** Secondary Score: **62**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

104 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 8/18/2009	Crew: MB/BH	BCI Reach ID: Assessment Reach — ECT Reach: 112Q	Photo No: 16, 17	Width See Note

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☐ None ☑ Stagnant ☐ Baseflow ☐ 25% Bkf ☑ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☑ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

Check historical aerials - dns reach is straight and appears to be manmade channel upstram reach slightly ____ 2 reaches interrupted by small wetland.

No bankfill indicators top-of-bank width is 8 feet in ups reach/10 feet in dns reach

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		8/18/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		112Q

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **15**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **6**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **6**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **42**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **7** Left Bank: **7**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **6** Left Bank: **6** Secondary Score: **62**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

104 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/7/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach	ECT Reach: 112R	Photo 1ups/2dns No:	Width 8 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 0 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

Pastured woods

Pools shallow - <2x normal depth, but abundant

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/7/2011	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		112R

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **10**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **11**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **10** Primary Score: **32**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **18**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **8** Secondary Score: **73**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

105 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 8/18/2009	Crew: MB/BH	BCI Reach ID: Assessment Reach	ECT Reach: 113B	Photo 13-15 No:	Width 4 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☐ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☑ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☐ Moderate ☑ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☐ Moderate ☑ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:
New stream reach identified on 1940 aerial.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		8/18/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		113B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **18**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **18**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **16**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **10** Primary Score: **62**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **20**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **80**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

142 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/7/2011	Crew: MB/ML	BCI Reach ID: Assessment Reach — ECT Reach: 114A	Photo No: 1, 2	Width 5 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 70 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:
Double check historical aerials 0 dns end looks like spoils from dredging.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/7/2011	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		114A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **9**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **16**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **6**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **32**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **76**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

108 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 4/23/2009	Crew: MB/BH	BCI Reach ID: Assessment Reach — ECT Reach: 300H	Photo No:	Width 9 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☑ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☑ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☑ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
300H is 512 portion as confimed by aerial photos

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		4/23/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		300H

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **13**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **13**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **11**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **38**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **5** Left Bank: **5**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **8**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **60**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

98 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/21/2009	Crew: MB/BH	BCI Reach ID: Assessment Reach	ECT Reach: 112J	Photo No:	Width 10 feet

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☑ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☑ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

Only a small portion that is ditched is part of historical stream - See S15-1 for actual stream channel ups and dns S14

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/21/2009	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		112J

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **4**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **14**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **5** Primary Score: **24**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **6**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **9** Left Bank: **2**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **7** Left Bank: **2** Secondary Score: **44**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

68 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/6/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach — ECT Reach: 100F	Photo No:	Width 13

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 77 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☐ Bed Scour ☑ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
Minimal impacts from hog rooting/wallowing. Adjacent systems minimally disturbed.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/6/2013	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	100F

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **15**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **12**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **17**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **45**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **18**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**
Secondary Score: **74**				

119 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/6/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach — ECT Reach: 100E	Photo No:	Width 9

Basin: Peace River	Receiving Stream: Peace River	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 77 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
Some minor impacts from hog rooting/wallowing. Few impacts to adjacent systems.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/6/2013	Peace River

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	100E

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **7**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **5**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **10** Primary Score: **23**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **14**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **72**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

95 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/28/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach — ECT Reach: 1009G	Photo No:	Width 4.5

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 72 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☐ Moderate ☑ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
Minimal cattle and hog impacts.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/28/2013	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	1009G

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **10**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **5**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **2** Primary Score: **18**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **10**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **70**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

88 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/6/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach	ECT Reach: 407A	Photo No:	Width 12

Basin: Peace River	Receiving Stream: Hickory Creek	BCI FLUCCS / ECT FLUCCS: ☐ 511 ☐ 512 ☑ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 69 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☐ Moderate ☑ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☑ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☑ None ☐ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☑ None ☐ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

Bed is 90% eroded by hog rooting. The vast ajority of vegetation in unrooted areas is upland. "Channel" origin may be artificial, with spol incorporated onto adjacent cattle pond spoil banks. Cattle pond is less than six meters from right "bank". No clear banks present. No evidence of recent flow or inundation. Area is highly trampled and grazed.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/6/2013	Hickory Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	407A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: 1	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 13 12 11	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. 5 4 3 2 1
Substrate Availability: 1	Greater than 30% productive habitat present at site. 20 19 18 17 16	16% to 30% productive habitat, by aerial extent. 15 14 13 12 11	6% to 15% productive habitat. 10 9 8 7 6	Less than 5% productive habitat. 5 4 3 2 1
Water Velocity: 1	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. 20 19 18 17 16	Maximum observed at typical transect >0.1 to 0.25 m/sec. 15 14 13 12 11	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. 10 9 8 7 6	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. 5 4 3 2 1
Habitat Smothering 1 Primary Score: 4	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 18 17 16	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 13 12 11	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). 10 9 8 7 6	Pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components Artificial Channelization: 2	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. 20 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth with no pools. 5 4 3 2 1
Bank Stability Right Bank: 10 Left Bank: 10	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width: Right Bank: 2 Left Bank: 10	Width of vegetation greater than 18 m. 10 9	With of vegeation >12 to 18 m. 8 7 6	With of vegetation 6 to 12 m. Human activities still close to system. 5 4	Less than 6 m of buffer zone due to intensive human activities. 3 2 1
Riparian Zone Vegetation Quality Right Bank: 3 Left Bank: 4 Secondary Score: 41	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

45 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/7/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach	ECT Reach: 204A	Photo No:	Width 4.5

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 0 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☑ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:
Severe hog rooting throughout the channel has obscured natrual microtopography and the extents and angle of the banks.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/7/2013	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	204A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **8**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock].	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags).	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed.	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Substrate Availability: **3**	Greater than 30% productive habitat present at site.	16% to 30% productive habitat, by aerial extent.	6% to 15% productive habitat.	Less than 5% productive habitat.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec.	Maximum observed at typical transect >0.1 to 0.25 m/sec.	Maximum observed at typical transect: 0.05 to 0.1 mg/sec.	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Habitat Smothering **11** Primary Score: **23**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **14**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered.	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth with no pools.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas.	Only meets 2 of the 3 requirements for optimal bank stability.	Only meets 1 of the 3 requirements for optimal bank stability.	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas.
	10 9	**8 7 6**	**5 4**	**3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m.	With of vegeation >12 to 18 m.	With of vegetation 6 to 12 m. Human activities still close to system.	Less than 6 m of buffer zone due to intensive human activities.
	10 9	**8 7 6**	**5 4**	**3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **70**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance.	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed.	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious.	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions).
	10 9	**8 7 6**	**5 4**	**3 2 1**

93 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/6/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach	ECT Reach: 502U	Photo No:	Width 5

Basin: Peace River	Receiving Stream: W. Fork Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 76 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

Increased vine cover and invasive exotic vegetation. Upland growth in "channel". No indication of recent inundation or flow. Multiple cattle paths cutting through "channel", but limited impact. Lack of distinct banks or bankfull indicators.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/6/2013	W. Fork Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	502U

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: 1	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 13 12 11	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. 5 4 3 2 1
Substrate Availability: 1	Greater than 30% productive habitat present at site. 20 19 18 17 16	16% to 30% productive habitat, by aerial extent. 15 14 13 12 11	6% to 15% productive habitat. 10 9 8 7 6	Less than 5% productive habitat. 5 4 3 2 1
Water Velocity: 1	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. 20 19 18 17 16	Maximum observed at typical transect >0.1 to 0.25 m/sec. 15 14 13 12 11	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. 10 9 8 7 6	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. 5 4 3 2 1
Habitat Smothering 1 Primary Score: 4	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 18 17 16	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 13 12 11	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). 10 9 8 7 6	Pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components Artificial Channelization: 4	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. 20 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth with no pools. 5 4 3 2 1
Bank Stability Right Bank: 10 Left Bank: 10	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width: Right Bank: 10 Left Bank: 10	Width of vegetation greater than 18 m. 10 9	With of vegeation >12 to 18 m. 8 7 6	With of vegetation 6 to 12 m. Human activities still close to system. 5 4	Less than 6 m of buffer zone due to intensive human activities. 3 2 1
Riparian Zone Vegetation Quality Right Bank: 8 Left Bank: 8 Secondary Score: 60	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

64 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 3/6/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach — ECT Reach: 502O	Photo No:	Width 4.5

Basin: Peace River	Receiving Stream: W. Fork Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 76 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:
Feral pigs have rooted the entire length of the bed, leaving it nothing but loose sand.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		3/6/2013	W. Fork Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	502O

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **1**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **1**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **1** Primary Score: **4**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **8**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **64**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

68 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/28/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach — ECT Reach: 528A	Photo No:	Width 5

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 76 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☑ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
Some hog rooting in channel.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/28/2013	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	528A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **12**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **10**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **13** Primary Score: **36**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **19**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **4** Left Bank: **4**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **3** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **5** Left Bank: **9** Secondary Score: **54**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

90 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/25/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach — ECT Reach: 406A	Photo No:	Width 2

Basin: Peace River	Receiving Stream: Hickory Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 78 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☑ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☑ Mixed
Buffer Width: L Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☑ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☑ None ☐ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:
Fire break cuts through channel. Cattle trampling has obliterated channel near receiving wetland.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/25/2013	Hickory Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		406A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **1**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **2**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **1** Primary Score: **5**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **8**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **5** Left Bank: **5**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **5** Left Bank: **5** Secondary Score: **48**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

53 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/25/2013	Crew: MB/BH	BCI Reach ID: Assessment Reach — ECT Reach: 407B	Photo No:	Width 21.1

Basin: Peace River	Receiving Stream: Hickory Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 78 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☑ Mixed	Right Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:
No evidence of recent flow. Obvious cattle trampling.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/25/2013	Hickory Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee		407B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **3**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **8**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **8** Primary Score: **20**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **6**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **3** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **3** Left Bank: **8** Secondary Score: **50**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

70 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/25/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach — ECT Reach: 408A	Photo No:	Width ~6

Basin: Peace River	Receiving Stream: Hickory Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 79 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☑ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☑ Mixed
Buffer Width: L Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☑ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☑ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:
Totally disturbed by cattle trampling, hog rooting, fire break and ditching.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/25/2013	Hickory Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	408A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **3**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **3**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **1** Primary Score: **8**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **3**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **5** Left Bank: **5**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **49**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

57 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/25/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach — ECT Reach: 301N	Photo No:	Width 5

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 79 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☑ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/25/2013	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	301N

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **11**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock].	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags).	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed.	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Substrate Availability: **10**	Greater than 30% productive habitat present at site.	16% to 30% productive habitat, by aerial extent.	6% to 15% productive habitat.	Less than 5% productive habitat.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec.	Maximum observed at typical transect >0.1 to 0.25 m/sec.	Maximum observed at typical transect: 0.05 to 0.1 mg/sec.	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Habitat Smothering **10**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **32**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **13**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered.	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth with no pools.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas.	Only meets 2 of the 3 requirements for optimal bank stability.	Only meets 1 of the 3 requirements for optimal bank stability.	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas.
	10 9	**8 7 6**	**5 4**	**3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m.	With of vegeation >12 to 18 m.	With of vegetation 6 to 12 m. Human activities still close to system.	Less than 6 m of buffer zone due to intensive human activities.
	10 9	**8 7 6**	**5 4**	**3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **10** Secondary Score: **70**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance.	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed.	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious.	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions).
	10 9	**8 7 6**	**5 4**	**3 2 1**

102 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/25/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach — ECT Reach: 301O	Photo No:	Width 7

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 79 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:
Appears to be a broken straight ditch. No evidence of low.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/25/2013	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	301O

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **5**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **10**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **5** Primary Score: **21**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **4**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **5**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **6** Secondary Score: **55**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

76 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/26/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach — ECT Reach: 308A	Photo No:	Width 9

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 70 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

Appears to be ephemeral, and hydrologic connectivity between adjacent wetland and Oak Creek maybe limited to periods of abnormally high water.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/26/2013	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	308A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **4**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **1**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **1** Primary Score: **7**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **9**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **69**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

76 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/26/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach — ECT Reach: 305D	Photo No:	Width ~25

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 73 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/26/2013	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	305D

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **4**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **8**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **3** Primary Score: **16**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **6**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **66**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

82 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/26/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach — ECT Reach: 202A	Photo No:	Width ~7.8

Basin: Peace River	Receiving Stream: Brady Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 72 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☑ None ☐ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
Moderate hog rooting.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/26/2013	Brady Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	202A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **1**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **2**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **1** Primary Score: **5**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **6**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **62**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

67 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/26/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach	ECT Reach: 102A	Photo No:	Width 8

Basin: Peace River	Receiving Stream: Brady Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☑ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☑ Windy ☐ Calm Temperature: 72 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☑ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☑ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☑ None ☐ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:
Minor impact to banks and bed from vehicular trail.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/26/2013	Brady Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	102A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: 4	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 13 12 11	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. 5 4 3 2 1
Substrate Availability: 8	Greater than 30% productive habitat present at site. 20 19 18 17 16	16% to 30% productive habitat, by aerial extent. 15 14 13 12 11	6% to 15% productive habitat. 10 9 8 7 6	Less than 5% productive habitat. 5 4 3 2 1
Water Velocity: 1	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. 20 19 18 17 16	Maximum observed at typical transect >0.1 to 0.25 m/sec. 15 14 13 12 11	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. 10 9 8 7 6	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. 5 4 3 2 1
Habitat Smothering 5	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: 18	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Secondary Habitat Components Artificial Channelization: 5	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. 20 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth with no pools. 5 4 3 2 1
Bank Stability Right Bank: 10 Left Bank: 10	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width: Right Bank: 10 Left Bank: 10	Width of vegetation greater than 18 m. 10 9	With of vegeation >12 to 18 m. 8 7 6	With of vegetation 6 to 12 m. Human activities still close to system. 5 4	Less than 6 m of buffer zone due to intensive human activities. 3 2 1
Riparian Zone Vegetation Quality Right Bank: 5 Left Bank: 5	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1
Secondary Score: 55				

73 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/27/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach — ECT Reach: 526A	Photo No:	Width 12
Basin: Peace River		Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS	☐ 511 ☐ 512 ☐ 513 ☐ 514	

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 70 °F
Flow Conditions: ☐ None ☐ Stagnant ☑ Baseflow ☐ 25% Bkf ☑ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☑ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☐ Bed Scour ☑ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☐ Moderate ☑ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
Minimal disturbance at upstream end, where vehicular trail obliterated banks.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/27/2013	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	526A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **13**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **14**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **4**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **13** Primary Score: **44**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **17**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **77**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

121 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/27/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach	ECT Reach: 105V	Photo No:	Width 6

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 74 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☑ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☐ Moderate ☑ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:
Minor bank erosion at vehicular trail crossing. Abundant hog rooting appears to reduce senocity and homogenize depths.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/27/2013	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	105V

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **13**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **13**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **10** Primary Score: **37**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **9**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **69**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

106 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/27/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach — ECT Reach: 502X	Photo No:	Width 2

Basin: Peace River	Receiving Stream: W. Fork Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☐ None ☐ Stagnant ☐ Baseflow ☑ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☐ Bed Scour ☑ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Large Roots:	☐ None ☐ Low ☐ Moderate ☑ Abundant
LWD:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:
Appears to be a braided "stream" system consistent with low floodplain.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/27/2013	W. Fork Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	502X

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **15**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **18**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **17** Primary Score: **51**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **19**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **79**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

130 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC FERTILIZER LLC

Stream Reach-Level Assessment Forms 5024

Site: Ora	Date: 03/18/13	Crew: B. Debus, M. Bartl	Reach ID: 29-5	Photo No.:	Width Bkf:
Basin: ~~WF HC~~ Peace River		Receiving Stream: WF HC		FLUCCS: ☐ 511 ☐ 512 ☐ 513 ☐ 514	

Recent Rain:	☐ None ☑ Trace ☐ Moderate ☐ Heavy	Weather Conditions:	☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature_____ F°
Flow Conditions:	☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover:	☐ <25% ☐ 25% - 50% ☐ 50% - 75% ☑ 75% - 100%
Bed Erosion:	☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion:	☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover:	☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover:	☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☑ Mixed
Buffer Width:	L Bank: ☐ <6m ☐ 6-12m ☐ 12-18m ☑ >18m R Bank: ☐ <6m ☐ 6-12m ☐ 12-18m ☑ >18m	Overbank Vegetation:	☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration:	☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes:	☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☐ >50 Bkf%
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf Litter:	☐ None ☐ Low ☐ Moderate ☑ High

NOTES: Channel has some hog rooting along banks and bed.

STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (MM/DD/YY): 03/18/13	RECEIVING BODY OF WATER: LOFHC
REMARKS:	COUNTY: Hardee	LOCATION: Ona	FIELD ID/NAME: 29-5

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity 1	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock] 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags) 15 14 13 12 11	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered 5 4 3 2 1
Substrate Availability 1	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 14 13 12 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity 1	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering 5 Primary Score 8	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 18 17 16	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 13 12 11	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). 10 9 8 7 6	Pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components Artificial Channelization 12	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. 20 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth with no pools. 5 4 3 2 1
Bank Stability Right Bank 9 Left Bank 9	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank 9 Left Bank 10	Width of vegetation greater than 18 m 10 9	Width of vegetation >12 to 18 m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank 8 Left Bank 9 Secondary Score 66	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

74 **TOTAL SCORE**

Date: 03/18/13	Analyst: Bryan Ko Deleas	Signature: [signature]

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/27/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach — ECT Reach: 502V	Photo No:	Width 9
Basin: Peace River		Receiving Stream: W. Fork Horse Creek	BCI FLUCCS / ECT FLUCCS	☑ 511 ☐ 512 ☐ 513 ☐ 514	

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 76 °F
Flow Conditions: ☐ None ☑ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☑ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
Minimal topographic low in floodplain.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/27/2013	W. Fork Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	502V

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **8**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **8**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **4**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **21**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **7**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **7** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **10**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**
Secondary Score: **62**				

83 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/27/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach — ECT Reach: 502J	Photo No:	Width 12

Basin: Peace River	Receiving Stream: W. Fork Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 74 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:
Appears to be a back water oxbow from WFHC. Upland vegetation present in channel. Cogon grass along left bank.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/27/2013	W. Fork Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	502J

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **3**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **3**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **7** Primary Score: **14**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **12**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **8** Secondary Score: **70**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

84 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/27/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach — ECT Reach: 502S	Photo No:	Width 12

Basin: Peace River	Receiving Stream: W. Fork Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 72 °F
Flow Conditions: ☐ None ☐ Stagnant ☑ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☑ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☑ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☑ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☑ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☑ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/27/2013	W. Fork Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	502S

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **19**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **8**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **20**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **14** Primary Score: **61**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **18**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **5** Left Bank: **7**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **62**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

123 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/27/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach — ECT Reach: 502P	Photo No:	Width 4

Basin: Peace River	Receiving Stream: W. Fork Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 73 °F
Flow Conditions: ☐ None ☐ Stagnant ☑ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☐ Bed Scour ☑ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☐ Moderate ☑ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/27/2013	W. Fork Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	502P

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **18**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **13**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **4**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **18** Primary Score: **53**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **20**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **80**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

133 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/27/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach — ECT Reach: 502Q	Photo No:	Width 4

Basin: Peace River	Receiving Stream: W. Fork Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☑ Overcast ☐ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 73 °F
Flow Conditions: ☐ None ☐ Stagnant ☑ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☐ Bed Scour ☑ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☐ Moderate ☑ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/27/2013	W. Fork Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	502Q

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **18**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **13**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **4**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **18** Primary Score: **53**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **20**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **80**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

133 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/27/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach — ECT Reach: 502R	Photo No:	Width 6

Basin: Peace River	Receiving Stream: W. Fork Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☐ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 74 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/27/2013	W. Fork Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	502R

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **1**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **1**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **1** Primary Score: **4**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **10**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **70**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

74 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/27/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach — ECT Reach: 502W	Photo No:	Width 15

Basin: Peace River	Receiving Stream: W. Fork Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 71 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☐ Moderate ☑ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☐ Minor ☐ Moderate ☑ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☑ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☑ None ☐ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☑ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☑ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☑ None ☐ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:

Within 1m of "channel", fire break has been made with tractor and dish. Area is severely hog rooted. "Channel" is in distinct, broken and dominated by upland vegetation.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/27/2013	W. Fork Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	502W

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **1**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **1**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **1** Primary Score: **4**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **4**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **1**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **5** Left Bank: **1** Secondary Score: **41**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

45 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/28/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach — ECT Reach: 111K	Photo No:	Width 8

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 66 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☑ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☑ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☐ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:

Channel is dry and sandy with moderate impacts from a combination of cattle trampling, hog rooting and vehicular trails. Adjacent riparian buffer has increased invasive exotic cover and vine growth.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/28/2013	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	111K

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **7**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **5**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **8** Primary Score: **21**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **8**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **64**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

85 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/28/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach — ECT Reach: 111A	Photo No:	Width 8

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 69 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☑ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

No sign of recent inundation or flow. Minor cattle trampling and hot rooting. Some adjacent invasive exotic cover and increased vine cover suggests agricultural impacts.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/28/2013	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	111A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **7**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock].	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags).	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed.	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Substrate Availability: **8**	Greater than 30% productive habitat present at site.	16% to 30% productive habitat, by aerial extent.	6% to 15% productive habitat.	Less than 5% productive habitat.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec.	Maximum observed at typical transect >0.1 to 0.25 m/sec.	Maximum observed at typical transect: 0.05 to 0.1 mg/sec.	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Habitat Smothering **10**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **26**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **13**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered.	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth with no pools.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas.	Only meets 2 of the 3 requirements for optimal bank stability.	Only meets 1 of the 3 requirements for optimal bank stability.	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas.
	10 9	**8 7 6**	**5 4**	**3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m.	With of vegeation >12 to 18 m.	With of vegetation 6 to 12 m. Human activities still close to system.	Less than 6 m of buffer zone due to intensive human activities.
	10 9	**8 7 6**	**5 4**	**3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **71**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance.	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed.	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious.	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions).
	10 9	**8 7 6**	**5 4**	**3 2 1**

97 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/28/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach — ECT Reach: 111B	Photo No:	Width 7
Basin: Peace River		Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS	☐ 511 ☑ 512 ☐ 513 ☐ 514	

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 68 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☐ Moderate ☑ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

Minimal cattle and hog impacts. No signs of recent flow or inundation. Some invasive exotic cover and increased vine recruitment suggests grazing pressure.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/28/2013	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	111B

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **7**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock].	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags).	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed.	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Substrate Availability: **6**	Greater than 30% productive habitat present at site.	16% to 30% productive habitat, by aerial extent.	6% to 15% productive habitat.	Less than 5% productive habitat.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec.	Maximum observed at typical transect >0.1 to 0.25 m/sec.	Maximum observed at typical transect: 0.05 to 0.1 mg/sec.	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Habitat Smothering **3**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **17**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **10**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered.	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth with no pools.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas.	Only meets 2 of the 3 requirements for optimal bank stability.	Only meets 1 of the 3 requirements for optimal bank stability.	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas.
	10 9	**8 7 6**	**5 4**	**3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m.	With of vegeation >12 to 18 m.	With of vegetation 6 to 12 m. Human activities still close to system.	Less than 6 m of buffer zone due to intensive human activities.
	10 9	**8 7 6**	**5 4**	**3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **68**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance.	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed.	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious.	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions).
	10 9	**8 7 6**	**5 4**	**3 2 1**

85 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/28/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach	ECT Reach: 111I	Photo No:	Width 12

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 70 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:
No evidence of recent flow or inundation. Some invasive exotic cover and increased vine recruitment suggests grazing pressure.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/28/2013	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	111I

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **7**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock].	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags).	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed.	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Substrate Availability: **7**	Greater than 30% productive habitat present at site.	16% to 30% productive habitat, by aerial extent.	6% to 15% productive habitat.	Less than 5% productive habitat.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec.	Maximum observed at typical transect >0.1 to 0.25 m/sec.	Maximum observed at typical transect: 0.05 to 0.1 mg/sec.	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Habitat Smothering **8**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **23**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **10**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered.	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth with no pools.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas.	Only meets 2 of the 3 requirements for optimal bank stability.	Only meets 1 of the 3 requirements for optimal bank stability.	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas.
	10 9	**8 7 6**	**5 4**	**3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m.	With of vegeation >12 to 18 m.	With of vegetation 6 to 12 m. Human activities still close to system.	Less than 6 m of buffer zone due to intensive human activities.
	10 9	**8 7 6**	**5 4**	**3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **68**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance.	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed.	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious.	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions).
	10 9	**8 7 6**	**5 4**	**3 2 1**

91 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/28/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach — ECT Reach: 109C	Photo No:	Width 5

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 73 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☑ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

No evidence of recent flow or inundation. The vast majority of vegetation growing in the "channel" is indicative of an upland community. Cattle and hogs are present on property, but do not appear to have signficantly impacted the system.

Confirmed 511 from 1940 aerial and no evidence of ditching observed. (MJB)

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/28/2013	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	109C

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **2**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **1**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **1** Primary Score: **5**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **6**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **66**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

71 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/28/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach	ECT Reach: 105U	Photo No:	Width 8.5

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 76 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

Minor bank erosion from vehicular trail. No evidence of recent flow or inundation.

Straightened and evidence of spoils (MJB)

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/28/2013	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	105U

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **6**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock].	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags).	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed.	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Substrate Availability: **6**	Greater than 30% productive habitat present at site.	16% to 30% productive habitat, by aerial extent.	6% to 15% productive habitat.	Less than 5% productive habitat.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec.	Maximum observed at typical transect >0.1 to 0.25 m/sec.	Maximum observed at typical transect: 0.05 to 0.1 mg/sec.	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Habitat Smothering **1** Primary Score: **14**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **3**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered.	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth with no pools.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas.	Only meets 2 of the 3 requirements for optimal bank stability.	Only meets 1 of the 3 requirements for optimal bank stability.	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas.
	10 9	**8 7 6**	**5 4**	**3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m.	With of vegeation >12 to 18 m.	With of vegetation 6 to 12 m. Human activities still close to system.	Less than 6 m of buffer zone due to intensive human activities.
	10 9	**8 7 6**	**5 4**	**3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **63**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance.	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed.	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious.	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions).
	10 9	**8 7 6**	**5 4**	**3 2 1**

77 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/28/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach	ECT Reach: 101A	Photo No:	Width 7

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☑ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

This tributary may have been dredged decades ago, but seems to be recovering. Appears to be two sets of banks, one within the other. The larger which is generally straight, and the smaller of which is moderately sinuous. Adjacent uplands have high amounts of vines, which indicates heavy grazing pressure, and there is some evidence of understory removal which may increase available grazing area. No evidence of recent flow or inundation.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/28/2013	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	101A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **18**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **14**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **1** Primary Score: **34**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **10**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **64**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

98 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 2/28/2013	Crew: BD/ML	BCI Reach ID: Assessment Reach	ECT Reach: 100A	Photo No:	Width 30

Basin: Peace River	Receiving Stream: Peace River	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☑ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☑ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☐ Moderate ☑ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

Minimal impacts from cattles, hogs and vehicular trails. Adjacent riparian zone indicates heavy grazing pressure and removal of understory to increase grazing area.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		2/28/2013	Peace River

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	100A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **20**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock].	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags).	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed.	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Substrate Availability: **18**	Greater than 30% productive habitat present at site.	16% to 30% productive habitat, by aerial extent.	6% to 15% productive habitat.	Less than 5% productive habitat.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec.	Maximum observed at typical transect >0.1 to 0.25 m/sec.	Maximum observed at typical transect: 0.05 to 0.1 mg/sec.	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Habitat Smothering **13**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **52**	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Secondary Habitat Components Artificial Channelization: **15**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered.	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth with no pools.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas.	Only meets 2 of the 3 requirements for optimal bank stability.	Only meets 1 of the 3 requirements for optimal bank stability.	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas.
	10 9	8 7 6	5 4	3 2 1
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m.	With of vegeation >12 to 18 m.	With of vegetation 6 to 12 m. Human activities still close to system.	Less than 6 m of buffer zone due to intensive human activities.
	10 9	8 7 6	5 4	3 2 1
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **67**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance.	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed.	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious.	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions).
	10 9	8 7 6	5 4	3 2 1

119 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 9/17/2012	Crew: MB/JP	BCI Reach ID: Assessment Reach	ECT Reach: 525A	Photo 21/22 No:	Width 4'

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 90 °F
Flow Conditions: ☐ None ☑ Stagnant ☑ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☑ Flatwoods ☑ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☑ Palmetto Prairie ☑ Flatwoods ☑ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☑ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☐ Moderate ☑ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☑ Low ☐ Moderate ☐ High

Notes:

Lots of iron precip. Throughout.

See photos 18, 19, 20 near Horse Creek.

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		9/17/2012	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	525A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **6**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **10**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **5** Primary Score: **22**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **10** Secondary Score: **75**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

97 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 9/17/2012	Crew: MB/JP	BCI Reach ID: Assessment Reach	ECT Reach: 502N	Photo 1/2 No:	Width 4'

Basin: Peace River	Receiving Stream: WFHC	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☑ Calm Temperature: 75 °F
Flow Conditions: ☐ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☑ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☑ None ☐ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☑ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:
Leaf packs present, caused by recent high flows - lacking

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		9/17/2012	WFHC

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona Mine	502N

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **8**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **14**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **12**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **16**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **50**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **8** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **10** Secondary Score: **74**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

124 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 9/17/2012	Crew: MB/JP	BCI Reach ID: Assessment Reach	ECT Reach: 502T	Photo 11/12 No:	Width

Basin: Horse Creek	Receiving Stream: WFHC	BCI FLUCCS / ECT FLUCCS ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☑ Windy ☐ Calm Temperature: 80 °F
Flow Conditions: ☐ None ☐ Stagnant ☐ Baseflow ☑ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☑ 12-18 m ☐ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☐ Moderate ☑ High ☑ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☑ 0-25% Bkf ☐ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☑ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☑ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		9/17/2012	WFHC

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	502T

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **14**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **15**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **12**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **11**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **52**	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **16**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **10** Left Bank: **10**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **7**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **10** Left Bank: **8** Secondary Score: **71**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

123 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/7/2013	Crew: ML/CV	BCI Reach ID: Assessment Reach — ECT Reach: 309A	Photo 2,3 No:	Width 5'

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS / ECT FLUCCS: ☐ 511 ☑ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 70 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☑ <25% ☐ 25%-50% ☐ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☑ Pasture ☐ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m; R Bank: ☑ <6 m ☐ 6-12 m ☐ 12-18 m ☐ >18 m	Overbank Vegetation: ☑ None ☐ Low ☐ Moderate ☐ High ☐ Continuous ☐ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☑ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☑ Channelized ☑ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☑ Straight ☐ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☐ Low ☑ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☐ Good ☑ Excellent

In-Stream Habitats:

Pools:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Large Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
LWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☑ None ☐ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☐ Moderate ☑ Abundant	Leaf LItter:	☑ None ☐ Low ☐ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/7/2013	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	309A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **3**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock].	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags).	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed.	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Substrate Availability: **10**	Greater than 30% productive habitat present at site.	16% to 30% productive habitat, by aerial extent.	6% to 15% productive habitat.	Less than 5% productive habitat.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec.	Maximum observed at typical transect >0.1 to 0.25 m/sec.	Maximum observed at typical transect: 0.05 to 0.1 mg/sec.	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Habitat Smothering **3** Primary Score: **17**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **3**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered.	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth with no pools.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas.	Only meets 2 of the 3 requirements for optimal bank stability.	Only meets 1 of the 3 requirements for optimal bank stability.	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas.
	10 9	**8 7 6**	**5 4**	**3 2 1**
Riparian Buffer Zone Width: Right Bank: **2** Left Bank: **2**	Width of vegetation greater than 18 m.	With of vegeation >12 to 18 m.	With of vegetation 6 to 12 m. Human activities still close to system.	Less than 6 m of buffer zone due to intensive human activities.
	10 9	**8 7 6**	**5 4**	**3 2 1**
Riparian Zone Vegetation Quality Right Bank: **2** Left Bank: **2** Secondary Score: **27**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance.	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed.	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious.	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions).
	10 9	**8 7 6**	**5 4**	**3 2 1**

44 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/7/2013	Crew: ML/CV	BCI Reach ID: Assessment Reach	ECT Reach: 310A	Photo 4,5 No:	Width 10'

Basin: Peace River	Receiving Stream: Oak Creek	BCI FLUCCS / ECT FLUCCS ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 71 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☐ Moderate ☑ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
Heavy hog damage with no water

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/7/2013	Oak Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	310A

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **11**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **6**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **6** Primary Score: **24**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **11**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **63**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

87 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/7/2013	Crew: ML/CV	BCI Reach ID: Assessment Reach — ECT Reach: 200E	Photo No: 6,7	Width 8'

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☑ Partly Sunny ☐ Mostly Sunny ☐ Windy ☐ Calm Temperature: 73 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☑ Low ☐ Moderate ☐ Severe ☐ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☐ Moderate ☑ High

Notes:
No water

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/7/2013	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	200E

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **9**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock].	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags).	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed.	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Substrate Availability: **5**	Greater than 30% productive habitat present at site.	16% to 30% productive habitat, by aerial extent.	6% to 15% productive habitat.	Less than 5% productive habitat.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec.	Maximum observed at typical transect >0.1 to 0.25 m/sec.	Maximum observed at typical transect: 0.05 to 0.1 mg/sec.	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Habitat Smothering **6**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score: **21**	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Secondary Habitat Components Artificial Channelization: **10**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered.	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth with no pools.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Bank Stability Right Bank: **8** Left Bank: **8**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas.	Only meets 2 of the 3 requirements for optimal bank stability.	Only meets 1 of the 3 requirements for optimal bank stability.	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas.
	10 9	8 7 6	5 4	3 2 1
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m.	With of vegeation >12 to 18 m.	With of vegetation 6 to 12 m. Human activities still close to system.	Less than 6 m of buffer zone due to intensive human activities.
	10 9	8 7 6	5 4	3 2 1
Riparian Zone Vegetation Quality Right Bank: **8** Left Bank: **8** Secondary Score: **62**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance.	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed.	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious.	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions).
	10 9	8 7 6	5 4	3 2 1

83 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/7/2013	Crew:	BCI Reach ID: Assessment Reach — ECT Reach: 200D	Photo No: 8,9,10	Width 10'

Basin: Peace River	Receiving Stream: Brushy Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 74 °F
Flow Conditions: ☑ None ☐ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☑ 50%-75% ☐ 75%-100%
Bed Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed ☐ Headcutting	Bank Erosion: ☑ None ☐ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☑ Low ☐ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☐ Lateral Bars ☐ Pool-Riffle ☐ Dunes ☐ Bed Scour ☐ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☑ Low ☐ Moderate ☐ High	Width:Depth:	☑ Normal ☐ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☑ Stable ☐ Unstable ☐ Plane Bed ☐ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Large Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
LWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Fine Roots:	☑ None ☐ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☑ Low ☐ Moderate ☐ Abundant
Undercut Banks:	☑ None ☐ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/7/2013	Brushy Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	200D

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **9**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock].	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags).	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed.	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Substrate Availability: **4**	Greater than 30% productive habitat present at site.	16% to 30% productive habitat, by aerial extent.	6% to 15% productive habitat.	Less than 5% productive habitat.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec.	Maximum observed at typical transect >0.1 to 0.25 m/sec.	Maximum observed at typical transect: 0.05 to 0.1 mg/sec.	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Habitat Smothering **8** Primary Score: **22**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth).	Pools are absent. Most habitats affected by sand or silt accumulation.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **11**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered.	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth with no pools.
	20 19 18 17 16	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1**
Bank Stability Right Bank: **7** Left Bank: **7**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas.	Only meets 2 of the 3 requirements for optimal bank stability.	Only meets 1 of the 3 requirements for optimal bank stability.	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas.
	10 9	**8 7 6**	**5 4**	**3 2 1**
Riparian Buffer Zone Width: Right Bank: **9** Left Bank: **9**	Width of vegetation greater than 18 m.	With of vegeation >12 to 18 m.	With of vegetation 6 to 12 m. Human activities still close to system.	Less than 6 m of buffer zone due to intensive human activities.
	10 9	**8 7 6**	**5 4**	**3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **61**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance.	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed.	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious.	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions).
	10 9	**8 7 6**	**5 4**	**3 2 1**

83 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)

MOSAIC
ONA PERMITTING
Stream Reach-Level Assessment Forms

Site: **Ona**	Date 5/7/2013	Crew: ML/CV	BCI Reach ID: Assessment Reach — ECT Reach: 100D	Photo No: 11,12	Width 30'

Basin: Peace River	Receiving Stream: Horse Creek	BCI FLUCCS / ECT FLUCCS: ☑ 511 ☐ 512 ☐ 513 ☐ 514

Recent Rain: ☐ None ☐ Trace ☑ Moderate ☐ Heavy	Weather Conditions: ☐ Overcast ☐ Partly Sunny ☑ Mostly Sunny ☐ Windy ☐ Calm Temperature: 75 °F
Flow Conditions: ☑ None ☑ Stagnant ☐ Baseflow ☐ 25% Bkf ☐ 50% Bkf ☐ 75% Bkf ☐ 100% Bkf	Canopy Cover: ☐ <25% ☐ 25%-50% ☐ 50%-75% ☑ 75%-100%
Bed Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☑ Disturbed ☐ Headcutting	Bank Erosion: ☐ None ☑ Minor ☐ Moderate ☐ Severe ☐ Common ☐ Disturbed
Left Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed	Right Bank Land Cover: ☐ Pasture ☑ Forest ☐ Crops/Grove ☐ Prairie ☐ Palmetto Prairie ☐ Flatwoods ☐ Mixed
Buffer Width: L Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m; R Bank: ☐ <6 m ☐ 6-12 m ☐ 12-18 m ☑ >18 m	Overbank Vegetation: ☐ None ☐ Low ☑ Moderate ☐ High ☐ Continuous ☑ Interrupted
Disturbance/ Alteration: ☐ None ☐ Low ☑ Moderate ☐ Severe ☑ Cattle ☐ Sedimentation ☐ Diversion ☐ Channelized ☐ Manmade ☐ Storm Damage	Fluvial Processes: ☐ Sorting ☐ Point Bars ☑ Lateral Bars ☑ Pool-Riffle ☐ Dunes ☐ Bed Scour ☑ Widening ☐ Aggrading ☐ Bank Scour

Morphology:

Sinuosity:	☐ Straight ☐ Low ☑ Moderate ☐ High	Width:Depth:	☐ Normal ☑ High ☐ Very High
Entrenchment:	☑ Low ☐ Moderate ☐ High ☐ Severe	Bank Heights:	☐ 0-25% Bkf ☑ 25-50% Bkf ☐ >50% Bkf
Bed Form:	☐ Stable ☐ Unstable ☐ Plane Bed ☑ R-P	Stability:	☐ Poor ☐ Fair ☑ Good ☐ Excellent

In-Stream Habitats:

Pools:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Large Roots:	☐ None ☐ Low ☑ Moderate ☐ Abundant
LWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Fine Roots:	☐ None ☑ Low ☐ Moderate ☐ Abundant
CWD:	☐ None ☐ Low ☑ Moderate ☐ Abundant	Overhanging Veg:	☐ None ☐ Low ☑ Moderate ☐ Abundant
Undercut Banks:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Substrates:	☐ Organic ☐ Silt/Clay ☑ Sand ☐ Gravel
Macrophytes:	☐ None ☑ Low ☐ Moderate ☐ Abundant	Leaf LItter:	☐ None ☐ Low ☑ Moderate ☐ High

Notes:
- Some small stagnent pools, but mostly dry
- Hog rooting

DEP-SOP-001/01: Form FFD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

Submitting Agency Code:	Storet Station Number:	Date	Receiving Body of Water:
Submitting Agency Name:		5/7/2013	Horse Creek

Remarks:	County:	Location:	Field ID/Name:
	Hardee	Ona	100D

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity: **15**	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (parially decayed), rock]. **20 19 18 17 16**	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). **15 14 13 12 11**	Two productive habitats prseent. Less than desirable habitat, frequently disturbed or removed. **10 9 8 7 6**	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. **5 4 3 2 1**
Substrate Availability: **11**	Greater than 30% productive habitat present at site. **20 19 18 17 16**	16% to 30% productive habitat, by aerial extent. **15 14 13 12 11**	6% to 15% productive habitat. **10 9 8 7 6**	Less than 5% productive habitat. **5 4 3 2 1**
Water Velocity: **1**	Maximum observed at typical transect: >0.25 m/sec but <1 mg/sec. **20 19 18 17 16**	Maximum observed at typical transect >0.1 to 0.25 m/sec. **15 14 13 12 11**	Maximum observed at typical transect: 0.05 to 0.1 mg/sec. **10 9 8 7 6**	Maximum observed at typical transect: <0.05 m/sec; or spate occurring: >1 mg/sec. **5 4 3 2 1**
Habitat Smothering **17** Primary Score: **44**	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. **20 19 18 17 16**	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. **15 14 13 12 11**	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). **10 9 8 7 6**	Pools are absent. Most habitats affected by sand or silt accumulation. **5 4 3 2 1**
Secondary Habitat Components Artificial Channelization: **18**	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. **20 19 18 17 16**	Good sinuosity within old channelized area and a diversity of depths. Evidence of dreding in the past (>10 years) but mostly recovered. **15 14 13 12 11**	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. **10 9 8 7 6**	Straightened with spoil banks. Box-cut, monotypic depth with no pools. **5 4 3 2 1**
Bank Stability Right Bank: **9** Left Bank: **9**	Bankfull >60% of bank height. Slope of bank ≤60°. Bankfull is within or above the root zone with few raw, eroded areas. **10 9**	Only meets 2 of the 3 requirements for optimal bank stability. **8 7 6**	Only meets 1 of the 3 requirements for optimal bank stability. **5 4**	Bankfull <50% of bank height. Slope of bank >60°. Bankfull is below the root zone with raw, eroded areas. **3 2 1**
Riparian Buffer Zone Width: Right Bank: **10** Left Bank: **10**	Width of vegetation greater than 18 m. **10 9**	With of vegeation >12 to 18 m. **8 7 6**	With of vegetation 6 to 12 m. Human activities still close to system. **5 4**	Less than 6 m of buffer zone due to intensive human activities. **3 2 1**
Riparian Zone Vegetation Quality Right Bank: **9** Left Bank: **9** Secondary Score: **74**	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. **10 9**	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. **8 7 6**	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. **5 4**	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). **3 2 1**

118 TOTAL SCORE

Date:	Analyst:	Signature:

Form FD 9000-5 Revision Date: March 31, 2008 (Effective 12/3/08)