US Army Corps of Engineers®

Department of the Army
Permit Number SAJ-2011-01869 (SP-JPF)

Attachment B

WATER QUALITY CERTIFICATION

Department of the Army
Permit Number SAJ-2011-01869 (SP-JPF)

Attachment B-1

Specific Conditions of the water quality permit/certification (FDEP ERP No. 0169281-015) issued August 31, 2015 in accordance with General Condition number 5 on page 2 of this DA permit. 54 pages.

transfer of the permit in accordance with Rule 62-330.340, F.A.C. This does not apply to the sale of lots or units in residential or commercial subdivisions or condominiums where the stormwater management system has been completed and converted to the operation phase.

13. Upon reasonable notice to the permittee, Agency staff with proper identification shall have permission to enter, inspect, sample and test the project or activities to ensure conformity with the plans and specifications authorized in the permit.

14. If any prehistoric or historic artifacts, such as pottery or ceramics, stone tools or metal implements, dugout canoes, or any other physical remains that could be associated with Native American cultures, or early colonial or American settlement are encountered at any time within the project site area, work involving subsurface disturbance in the immediate vicinity of such discoveries shall cease. The permittee or other designee shall contact the Florida Department of State, Division of Historical Resources, Compliance and Review Section, at (850) 245-6333 or (800) 847-7278, as well as the appropriate permitting agency office. Such subsurface work shall not resume without verbal or written authorization from the Division of Historical Resources. If unmarked human remains are encountered, all work shall stop immediately and notification shall be provided in accordance with Section 872.05, F.S.

15. Any delineation of the extent of a wetland or other surface water submitted as part of the permit application, including plans or other supporting documentation, shall not be considered binding unless a specific condition of this permit or a formal determination under Rule 62-330.201, F.A.C., provides otherwise.

16. The permittee shall provide routine maintenance of all components of the stormwater management system to remove trapped sediments and debris. Removed materials shall be disposed of in a landfill or other uplands in a manner that does not require a permit under Chapter 62-330, F.A.C., or cause violations of state water quality standards.

17. This permit is issued based on the applicant's submitted information that reasonably demonstrates that adverse water resource-related impacts will not be caused by the completed permit activity. If any adverse impacts result, the Agency will require the permittee to eliminate the cause, obtain any necessary permit modification, and take any necessary corrective actions to resolve the adverse impacts.

18. A Recorded Notice of Environmental Resource Permit may be recorded in the county public records in accordance with Rule 62-330.090(7), F.A.C. Such notice is not an encumbrance upon the property.

SPECIFIC CONDITIONS:

1. SUPERCEDED PERMIT: This permit supersedes and replaces in its entirety the Environmental Resource Permit (Permit Number: 0169281-001) that was issued by the Department on June 8, 2009.

2. SOVEREIGN SUBMERGED LANDS: The permittee is hereby advised that Florida law states: "No person shall commence any excavation, construction, or other activity involving the use of sovereign or other lands of the state, title to which is vested in the Board of Trustees of the Internal Improvement Trust Fund or the Department of Environmental Protection under Chapter 253, F.S., until such person has received from the Board of Trustees of the Internal Improvement Trust Fund the required lease, license, easement, or other form of consent authorizing the proposed use." Pursuant to Chapter 18-4, F.A.C., if such work is done without consent, or if a person otherwise damages state land or products of state land, the Board of Trustees may levy administrative fines of up to $10,000 per offense. No sovereign submerged lands have been identified on the property.

3. HISTORICAL AND ARCHAEOLOGICAL ARTIFACTS: Pursuant to General Condition 14, if historical or archaeological artifacts are discovered within the project site the permittee shall immediately notify the Bureau of Historic Preservation, Division of Historical Resources, R. A. Gray Building, 500 S. Bronough St., Tallahassee, Florida 32399-0250; the permittee shall also notify the Department, at MiningAndMitigation@dep.state.fl.us, 2600 Blair Stone Road, MS 3577, Tallahassee, Florida 32399, or contact our office at 850.245.8336.

4. FINANCIAL RESPONSIBILITY: Financial responsibility shall be provided by the applicant as follows:

   a. Prior to the initiation of mining operations, the final version of the financial responsibility mechanism for the mitigation costs shall be provided to and approved by the Department as required by Section 10.3.7.4(a), Applicant's Handbook (A.H.). **No work shall be initiated on any area authorized until the Department has approved, in writing, the executed final version of the financial responsibility mechanism.** Pursuant to subsection 373.414(19), F.S., the initial financial responsibility mechanism shall be equal to 110 percent (%) of the estimated mitigation costs for wetlands and other surface waters affected by the first three years of operations covered under this permit; and, for each year thereafter, the financial responsibility demonstration shall be updated, including to provide an amount equal to the 110 percent of the estimated mitigation costs for the next year of operations under the permit for which financial responsibility has not already been demonstrated. The amount shall be adjusted to reduce the financial responsibility, for areas complete through revegetation, to the amount covering the remaining monitoring and maintenance costs for that area. Financial responsibility amounts shall no longer be required for individual wetlands and other surface waters that have been released by the Department, as described in Specific Condition 36. Adjustments shall be submitted with the annual status report required in Specific Condition 13.

   b. The mitigation cost per acre for the wetland types shall be adjusted annually either by recalculating the cost of constructing, managing and monitoring the mitigation in current dollars or using an inflation factor based on the annual Construction Cost Index, as presented in the first issue of the Engineering News Record published in December of

each year. Adjustments shall be submitted with the annual status report required in Specific Condition 13.

c. In accordance with the Applicant's Handbook, Volume 1 (October 1, 2013):

1. A permittee must notify the Agency by certified mail of the commencement of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming the permittee as debtor within 10 business days after the commencement of the proceeding.

2. A permittee who fulfills the requirements of sections 10.3.7 through 10.3.7.9, by obtaining a letter of credit or performance bond will be deemed to be without the required financial assurance in the event of bankruptcy, insolvency or suspension or revocation of the license or charter of the issuing institution. The permittee must reestablish in accordance with sections 10.3.7 through 10.3.7.9, a financial responsibility mechanism within 60 days after such event.

3. When transferring a permit, the new owner or person with legal control shall submit documentation to satisfy the financial responsibility requirements of sections 10.3.7 through 10.3.7.9. The prior owner or person with legal control of the project shall continue the financial responsibility mechanism until the Agency has approved the permit transfer and substitute financial responsibility mechanism.

5. CONSERVATION EASEMENT AND LONG TERM MANAGEMENT: The permittee shall provide a phased perpetual conservation easement to the Department on approximately 8,442.1 acres, including 6,773.5 acres within the Ona Mine and 1,668.6 acres in the off-site Bowlegs, Payne Creek and Bay Systems Enhancement Project. A Long Term Management Plan (LTMP) (Appendix 4-4-C), covering all of these areas is incorporated as part of this permit. Onsite, the conservation easement area shall include approximately 3,704.6 acres of unmined lands within and adjacent to the 100-year floodplains of Brushy Creek, Horse Creek, the West Fork of Horse Creek and several wetlands, unnamed tributaries and supporting native upland habitats associated with Brushy Creek, Oak Creek and Hickory Creek [Phase A-1 and A-2 Lands, (Maps 4-8-B-iv and 4-8-C)]. The conservation easement shall also include approximately 3,068.9 acres of reclaimed land within the Ona Mine [Phase A-3 Lands, (Map 4-8-C)]. The reclaimed lands include 2,609.2 acres of wetlands and other surface waters, 80,317 linear feet of streams and 459.7 acres of uplands including an approximate 25-foot upland buffer around each mitigation wetland, stream or other surface water shown on Map 4-8-B-i. Additionally, a conservation easement shall be placed on the following off site projects [Phase B Lands]: 583.4 acres of created, restored and enhanced lands in the Bowlegs Creek Project (Map C-4 of the LTMP), 896.7 acres of created lands at the Payne Creek Project (Map Appendix D-2 in Appendix 4-1-C) and 188.5 acres of enhanced wetlands and upland buffers at the offsite Bay Systems Enhancement Project (Permit No. 332067-001 and Maps C-1 and C-2 of the LTMP).

A Baseline Documentation Report (Ecological Baseline Report) shall be completed in accordance with Section 3 of the LTMP, for each of the above categories of lands within the conservation easement prior to execution and recording of each segment of the easement. Baseline reports shall be submitted to the Department for review prior to execution of the easements and shall be recorded with the easement. The Baseline Documentation Report shall be modified for the Phase A-2 lands enhanced as required by Specific Condition 8 following release of all the enhancement areas from all mitigation requirements.

For Phase A-1 and A-2 lands, the Instrument of Perpetual Conservation Easement and an accurate legal description as granted by the landowner shall be executed by the permittee in a format acceptable to the Department prior to the initiation of any disturbance or site preparation within the Ona Mine. Within 90 days of execution by the Department, the permittee shall have the document recorded in the public records of Hardee County. Post-Reclamation Phase A-3 lands shall be addressed by modifying the easement following release of each of the individual reclamation units shown on Map CRP-10 that contain mitigation wetlands or other surface waters. Release of a reclamation unit (LRU) shall include release of all uplands, wetlands and other surface waters in that LRU from the reclamation requirements of Chapter 62C-16, F.A.C., and release of all mitigation wetlands and other surface waters from the requirements of Specific Condition 35. An accurate legal description and amendment to the Perpetual Conservation Easement shall be executed by the permittee in a format approved by the Department within one year from the date that the Department has released all lands within that LRU from all reclamation and mitigation requirements. Within 90 days of execution by the Department, the permittee shall have the document recorded in the public records of Hardee County. For each of the off-site Phase B lands, the Instrument of Perpetual Conservation Easement and an accurate legal description shall be executed by the permittee in a format approved by the Department within one year from the date that the Department has released all lands within that off-site area from all mitigation requirements. Within 90 days of execution by the Department, the permittee shall have the document recorded in the public records of the relevant county. The Perpetual Conservation Easements, Exhibits, Amendments, LTMP and the Easement Documentation Reports shall be incorporated and made part of this permit document.

6. LONG TERM MANAGEMENT PLAN: The long term management plan (LTMP) associated with the Conservation Easement (CE) required by Specific Condition 5, shall go into effect at different times for each phase of the CE. For Phase A-1 lands, the LTMP shall be effective following recording of the CE. For Phase A-2 lands, the LTMP shall go into effect following release of all mitigation areas from the requirements of Specific Condition 35 and approval of the revised Baseline Documentation Report required by Specific Condition 5. For Phase A-3 lands, the LTMP shall go into effect on the protected areas in each released LRU, as defined in Specific Condition 5, following modification of the CE to add these protected areas. For Phase B lands, the LTMP shall go into effect for each off-site area, once the project has been released from all mitigation requirements and the CE has been recorded.

7. CONSERVATION EASEMENT SIGNAGE: All areas within the Phase A-1 and A-2 conservation easement shall be clearly identified in the field with appropriate signage prior to initiation of mining operations and shall remain so for the duration of mining operations in the permitted area. All areas within each of the Phase A-3 and B lands shall be clearly identified in the field within 90 days of the Department's execution of the conservation easement document.

8. ON-SITE ENHANCEMENT: Prior to the commencement of mining operations at the Ona Mine, the following enhancement and restoration activities on approximately 435 acres of unmined uplands, wetlands and other surface waters shall be initiated. The Enhancements shall be conducted as shown on Map 4-8-B-iv and Maps PWP-1 through PWP-7 and described in Appendix 4-1A, Preservation Enhancement Plan for the Ona Mine. The On-Site Enhancement Project is summarized below:

   a. Restoration of 37.6 acres of pine flatwoods (FLUCFCS 411 and 411o) and 135 acres of palmetto prairie (FLUCFCS 321 and 321o).

   b. Restoration of 46.8 acres of pine flatwoods in UMAA 329-5-E.

   c. Creation of 14.7 acres of wet prairie (FLUCFCS 643) along Horse Creek, the West Fork of Horse Creek and northern Brushy Creek.

   d. Restoration/Enhancement of 189.7 acres of upland forest (FLUCFCS 425, 425o, 427, 427o, 434 and 434o).

   e. Restoration of 5.4 acres of wet prairie (FLUCFCS 643).

   f. Restoration of 2.7 acres of herbaceous marsh (FLUCFCS 641) and 0.6 acres of shrub marsh (FLUCFCS 647).

   g. Restoration of 2.5 acres of forested wetlands (FLUCFCS 617 and 630).

   h. Enhancement of existing palmetto prairie and pine flatwoods communities in Sections 22 and 27.

   i. Filling in or installing ditch blocks in the ditches identified on the maps and tables of Appendix 4-1A.

   j. Restoration of at least 10,000 linear feet of ditched stream reaches 100D, 105A, 105C, 105I, 300B, 502C and 502D.

   k. Wetland and stream designs and modeling results for created wetlands and restored streams, as specified in Appendix 4-1-A, shall be provided to the Department for review and approval at least 60 days prior to initiating construction. Enhancement activities shall also include control of nuisance and/or exotic species where necessary.

l. Upon completion of the mitigation activities identified above, monitoring shall be conducted as described in Specific Condition 43. Reports shall be submitted in accordance with Specific Condition 14.

m. The enhancement/restoration activities described in Appendix 4-1-A, shall be deemed complete once the Department has determined the project has met the success criteria for the community type/FLUCFCS code as described in Specific Condition 35. Ditch block/fill areas shall be deemed complete by the Department once the work has been completed, all areas have been initially revegetated in accordance with the appropriate reclamation land use as shown on Map 4-2-B-ii and there is no sign of erosion, channelization or wash outs for a period of at least 5 years. Streams restored in accordance with paragraph i above shall be deemed complete when the success criteria in Specific Condition 35 have been met. Streams 105 A and 105C shall be deemed complete once the ditched segments have been filled in, flow has been fully restored to the historical channel segments, and there is no erosion or evidence of channelization in the filled in ditch segments for a period of at least 5 years. Following completion of the enhancement activities, each enhancement area will be eligible for release in accordance with Specific Condition 36.

n. Once the Department has determined that the project has meet the success criteria described in Specific Condition 35, the Permittee shall modify the Baseline Documentation Report and have it rerecorded as described in Specific Condition 5.

9. BOWLEGS CREEK OFF-SITE MITIGATION: Prior to the commencement of mining operations at the Ona Mine, the creation, restoration, enhancement and preservation activities on 367.8 acres of uplands and 212.9 acres of wetlands and other surface waters shall be initiated as detailed in Appendix 4-1-B (Bowlegs Creek Offsite Mitigation Area Enhancement Plan, A Regional Benefit Project). The project includes:

a. Creation of 3.8 acres of Bay Swamp (FLUCFCS 611, WC-1), 3.7 acres of Cypress-Pine-Cabbage Palm (FLUCFCS 624, WC-3), 3.8 acres of Wet Prairie (FLUCFCS 643, WC-4), and 0.4 acres of Pine Flatwoods (FLUCFCS 411, UC-1).

b. Restoration of 277.3 acres of uplands, including 64 acres of Upland Hardwood - Conifer Mixed Forest (FLUCFCS 434, UR-1) and 213.3 acres of Pine Flatwoods (FLUCFCS 411, UR-2).

c. Restoration and enhancement of 92.2 acres of reclaimed wetlands. This includes restoration/enhancement of 20.4 acres of diverse marsh communities (FLUCFCS 641, WE-3 and WE-4), 46.4 acres of Inland Pond and Slough (FLUCFCS 616, WE-7), 0.1-acre of Cypress (FLUCFCS 621, WE-8), and 14.1 acres of Cypress-Pine-Cabbage Palm (FLUCFCS 624, WE-9), and restoration of 6 acres of Wet Prairie (FLUCFCS 643, WE-5) and 5.2 acres of Wet Savanna (FLUCFCS 646, WE-6).

d. Enhancement of 111.3 acres of reclaimed uplands and wetlands including 66.6 acres of Upland Hardwood - Conifer Mixed Forest (FLUCFCS 434, UE-1), 22.8 acres of Pine Flatwoods (FLUCFCS 411, UE-2), 13.5 acres of Bay Swamp communities (FLUCFCS 611,WE-10), 1-acre of Bottomland Swamp (FLUCFCS 615, WE-1) and 7.4 acres of Cypress Swamp (FLUCFCS 621, WE-2).

e. Minor enhancement of 16.4 acres of reclaimed shrubby marshes and swamps (FLUCFCS 631, WP-3).

f. Enhancement of 0.5-ac of eroded swale by converting it into a stream (FLUCFCS 511, SWE-1).

g. Preservation without enhancement of 43.8 acres of unmined Bottomland Hardwood Forest (FLUCFCS 615, WP-1), 16.9 acres of unmined Mixed Hardwood Swamp (FLUCFCS 617, WP-2) and 0.7 acres of reclaimed Upland Hardwood - Conifer Mixed Forest (FLUCFCS 434, UP-1)s and 9.9 acres of lakes (FLUCFCS 520, SWP-1).

h. Creation of 1,542 linear feet of stream, restoration/enhancement of 3,965 linear feet of stream and preservation of 802 linear feet of natural stream.

i. Replacement of four eroding culverts with bankfull passage culvert designs.

j. The permittee shall follow the diligent and aggressive standard operating procedures (SOPs) for nuisance vegetation maintenance through a multi-year establishment period as outlined in Appendix 4-1-B.

k. Upon completion of the mitigation activities identified in Appendix 4-1-B, monitoring shall be conducted as described in the Specific Condition 43. Reports shall be submitted in accordance with Specific Condition 14.

l. Once the Department has determined that the project has met the success criteria described in Specific Condition 35, the Permittee shall complete and execute an Easement Documentation Report (baseline environmental inventory) concurrent with the execution and recording of the Bowlegs Creek Off-Site Mitigation Area Conservation Easement as described in Specific Condition 5.

10. PAYNE CREEK OFF-SITE MITIGATION: Prior to the commencement of mining operations at the Ona Mine, creation of 306.4 acres of herbaceous marsh, (FLUCFCS 641), 111.7 acres of wet prairie (FLUCFCS 643), 51.8 acres of bay swamp (FLUCFCS 611), 36.8 acres of mixed hardwood swamp (FLUCFCS 617), 85 acres of xeric oak (FLUCFCS 421), 300.2 acres of upland hardwood forest (FLUCFCS 434) and 4.8 acres or 14,754 linear feet of stream (FLUCFCS 511) shall be initiated as described in Appendix 4-1-C (Payne Creek Restoration).

a. Mitigation Activities: Upland, wetland and stream mitigation areas shall be constructed in accordance with the design plans included in Appendix 4-1-C. Bay swamps shall receive a minimum of 6 inches of muck or a combination of muck and mulch or other appropriate organic material approved by the Department. Uplands and wetlands shall be constructed to meet the land uses shown on Map Appendix D-2 of Appendix 4-1-C and shall include sufficient tree, shrub and herbaceous species, as necessary to establish the densities, species richness and dominance characteristics appropriate for each community type in order to meet the requirements of Specific Condition 35.

b. By-Pass Canal removal: The entire by-pass canal shall be filled in, including both the 15.9 acres within the project boundary and the segment between the eastern project boundary and the Payne Creek preservation area. Fill from adjacent areas or off-site shall be used to completely fill in the by-pass canal and match the adjacent grades. The ditch shall be stabilized with vegetation in accordance with the land uses shown on Map Appendix D-2 of Appendix 4-1-C.

c. Documentation of As-Built Conditions: Within 60 days of final grading, the final contours of the project shall be surveyed in accordance with general survey procedures utilizing a 50-foot grid and spot elevations to 0.1 of a foot. An as-built contour map will be generated to show one (1) foot contours for uplands, 0.5 of a foot contours in wetlands/surface waters and the 0.1 of a foot spot elevations. For streams, the as-built survey shall include channel cross sections and profiles as outlined in Specific Condition 29r, to document that the as-built conditions are consistent with the specifications outlined in Table 3 of Appendix 4-1-C. The contour map(s) will reference NGVD and be certified by a land surveyor or professional engineer registered in the state of Florida. All topographic maps shall meet the minimum technical standards as set forth in Chapter 472, F.S.

d. Post-Construction Hydrology Monitoring and Second-Year Hydrology Assessment: Post construction monitoring, as described in Specific Condition 43 (outlined in Table MR-B), shall be performed for all mitigation areas. All piezometers, staff gauges, and flow meters shall be installed at mutually agreed-upon locations within 90 days of the completion of grading/contouring activities in the mitigation areas to be monitored. Hydrologic data collected for each mitigation monitoring site is to be compiled, analyzed and submitted in both tabular and graphical formats with the Annual Hydrology Reports required in Specific Condition 14.

   Initial assessment of the site hydrology shall be conducted for at least two (2) years after final contouring of each mitigation area. The results shall be submitted to the Department for review and approval within 30 days of completion of the analysis. Within 30 days of receipt of the data, the Department will review the results and approve the design hydrology, or require additional information or changes to the design. If the hydrology of the site does not meet the design objectives, the permittee shall have 60 days to submit a remedial action plan to ensure that design objectives will be met. Following the initial

hydrological assessment, monitoring of each mitigation area shall continue until the requirements of Specific Condition 35 have been met.

e. Upon completion of the mitigation activities identified in Appendix 4-1-C, monitoring shall be conducted as described in Specific Condition 43. Reports shall be submitted in accordance with Specific Condition 14.

f. Once the Department has determined that the project has met the success criteria described in Specific Condition 35, the Permittee shall complete and execute an Easement Documentation Report (baseline environmental inventory) concurrent with the execution and recording of the Payne Creek Off-Site Mitigation Area Conservation Easement as described in Specific Condition 5.

11. BAY SWAMP OFF-SITE MITIGATION: Prior to the commencement of mining operations at the Ona Mine, enhancement and restoration of approximately 151.7 acres of bay swamps (FLUCFCS 611) and 36.8 acres of adjacent upland buffers shall be initiated as described in the offsite Bay Systems Enhancement Project (Permit No. 332067-001).

12. TIMING OF ENHANCEMENT PROJECTS: The On-site and Off-Site Enhancement Projects required in Specific Conditions 8, 9, 10 and 11, shall be initiated within 90 days of receipt of all required permits and approvals. The Department shall be notified once all approvals are obtained.

13. ANNUAL STATUS REPORTS: Annual narrative reports shall be submitted to the Department in Tallahassee indicating the status of the project. These reports shall include the following information:

a. Date permitted activity was begun or projected commencement date if work has not begun on-site;

b. Brief description and extent of work (site preparation, mining operations, restoration) completed since the previous report or since the permit was issued. Indicate on copies of the permit drawings those areas where work has been completed. This description shall include details on construction of isolation berms adjacent to unmined wetlands, clearing, wetland severance, muck removal, storage and placement, and completed earthwork, and planting;

c. Brief description and extent of work (site preparation, mining operations, restoration) anticipated in the next year. Indicate on copies of the permit drawings those areas where it is anticipated that work will be done;

d. The results of any pre-mining wildlife and endangered/threatened species surveys conducted during the year. Copies of any permits obtained and a description of activities taken to avoid or relocate these species shall also be provided; and

e. The information required in Specific Conditions 4, 15c, 21, 22b, 35 and 39, as needed.

The status reports shall be incorporated into the annual reclamation report required by Chapter 62C-16, F.A.C. The reports should include: a description of problems encountered and solutions undertaken and anticipated work for the following year. The annual report for the previous calendar year is due on or before March 1 of each year following permit issuance.

14. ANNUAL HYDROLOGY/WATER QUALITY/VEGETATIVE MONITORING REPORTS: Annual hydrology and water quality reports that include the information required in Specific Conditions 16, 19, 29 and 43 shall be submitted to the Department. Vegetation statistical reports of the data required in Specific Condition 43 shall also be submitted to the Department beginning one year after initial planting and in years two, three, five, and biennially thereafter until release. Reports are due upon completion or no later than March 1 of the year following monitoring. Specific monitoring and reporting requirements are described in Specific Condition 43.

15. SURFACE WATER QUALITY PROTECTION: Water quality in wetlands or other surface waters adjacent and/or downstream from site preparation, mining operations, and reclamation activities shall be protected as follows:

a. Prior to any clearing or mining operations, the areas to be disturbed shall be severed from adjacent wetlands and other surface waters. This severance includes the construction of an isolation berm and ditch adjacent to, but not within, the undisturbed wetlands and other surface waters. The areas to remain undisturbed, shown as "Avoided" on Map 3-2, shall not be disturbed by mining operations.

b. Ditch, berm, and retention systems shall be designed and constructed prior to initiation of mining operations to manage or prevent discharge from a 25-year, 24-hour storm event. The Applicant's Handbook, Vol II (effective date October 1, 2013) shall be used to determine the design storm characteristics. Operation, maintenance and inspection of the berm, ditch and retention system shall be in accordance with the permittee's "Stormwater Management Plan" (Appendix 3-6-C), including the applicable requirements for impoundments specified therein.

c. Prior to the use of any ditch and berm systems, the permittee shall have in its possession, engineering design as-built drawings, signed and sealed by a Professional Engineer registered in the state of Florida, confirming that they have been constructed in accordance with the stormwater management plans attached to this permit and in accordance with the design drawings. As-built drawings shall be submitted to the Department, as they become available, or with the annual status reports required in Specific Condition 13.

d. The top of the outside berm (including temporary roads) on all recharge ditches adjacent to areas not designated for mining operations (including preservation areas) shall be

sloped such that they drain towards the recharge ditch. The top of the outside berm shall be at an elevation that is sufficiently higher than the designed height of the interior berm between the recharge ditch and the mine-cut, as determined by a registered professional engineer, to ensure that overflow of the recharge ditch, if any, will be directed to the mine cut and not undisturbed areas.

e. The ditch and berm shall remain in place until mining operations and reclamation have been completed, all applicable monitoring indicates that no violations of State Water Quality Standards are expected to occur, and the Department has determined that the reclaimed wetlands are adequately stabilized and sufficiently acclimated to ambient hydrological conditions. The determination of when the ditch and berm may be removed shall be made by the Department, in writing, upon the written request of the permittee. This determination shall be based on a site inspection and water quality monitoring data collected in accordance with Specific Condition 16h. At that time, the ditch and berm shall be removed and revegetated to meet the topography and land use(s) identified on Map 4-5 and Map 4-2-B-ii, respectively.

f. Best management practices or any other Department approved practices for turbidity and erosion control shall be implemented and maintained to prevent siltation and turbid discharges outside of the disturbance area. Methods shall include, but are not limited to, the use of staked filter cloth, silt-control polymers, sodding, seeding, mulching, and the deployment of turbidity screens around the immediate project site, as appropriate for each area. Except as otherwise provided in this permit, in no case shall offsite discharges result in exceedance of State water quality standards pursuant to Chapter 62-302, F.A.C.

g. During all phases of ditch and berm construction and removal authorized by this permit, the permittee shall be responsible for ensuring that erosion control procedures are followed and that erosion and turbidity control devices are inspected and maintained daily and after each rainfall event >1/2 inch. Erosion and turbidity control devices shall also be inspected and maintained on a regular basis during all phases of mining operations and reclamation. Inspectors shall have completed stormwater erosion control training and be familiar with all BMP plans. Records of inspections shall be maintained on site for a period of three (3) years and shall be available to Department staff upon request. Erosion control devices shall remain in place until all areas are sufficiently stabilized to prevent erosion, siltation, and turbid discharges. If the berm impounds water above the downstream toe of the outside berm, then the berm shall also be visually inspected daily to ensure its integrity and stability during the period(s) that water is impounded by the berm. The ditch and berm shall be maintained so as to prevent breach of the berm or erosion sufficient to cause violations of state water quality standards for turbidity.

h. There shall be no discharges unless specifically authorized by this permit, the permittee's Industrial Wastewater Facility Permit, or a Water Use Permit / Consumptive Use Permit.

16. SURFACE- AND GROUND-WATER QUALITY MONITORING: A surface and groundwater quality monitoring program shall be implemented as part of this permit and shall continue through the end of mine life. Data shall be submitted to the Department with the annual water quality reports required under Specific Condition 14. Data shall be collected as specified in Table MR-A, and as follows:

    a. The following parameters shall be monitored quarterly prior to and through the construction phase at surface water stations SW-1, SW-2, SW-3, SW-5, SW-5a, SW-7, and SW-8 (shown on Map 2-3-B): temperature, pH, dissolved oxygen (DO), conductivity, turbidity, total alkalinity, total suspended solids (TSS), total phosphorus (TP), ammonia, orthophosphate, total nitrogen (TN), total kjeldahl nitrogen (TKN), nitrate/nitrite, fluoride, sulfate, total organic carbon (TOC), chloride, chlorophyll-a, color, hardness, aluminum, selenium, calcium, magnesium, arsenic, cadmium, chromium, iron, lead, nickel, and zinc.

    b. The following parameters shall be monitored semi-annually prior to and through the construction phase in surficial aquifer groundwater monitoring wells Ona GW 3, Ona GW 6, Ona GW 9, and Ona GW 12 (Overburden Zone); and Ona GW 2, Ona GW 5, Ona GW 8, and Ona GW 11 (Ore Zone); as well as in the Intermediate Aquifer System groundwater monitoring wells Ona GW 1, Ona GW 4, Ona GW 7, and Ona GW 10 (Upper Arcadia Formation): pH, temperature, conductivity, turbidity, TDS, total alkalinity, TP, orthophosphate, total nitrogen, TKN, nitrate/nitrite, hardness, fluoride, sulfate, chloride, aluminum, selenium, calcium, magnesium, arsenic, cadmium, chromium, iron, lead, nickel, and zinc. The groundwater monitoring well locations are shown in Map 2-3-A.

    c. The following parameters shall be sampled annually prior to and through the construction phase at surface water stations SW-1, SW 2, SW-3, SW-4, SW-5 and SW-5a and in groundwater monitoring wells Ona GW 1, Ona GW 2, Ona GW 3, Ona GW 4, Ona GW 5, Ona GW 6, Ona GW 7, Ona GW 8, Ona GW 9, Ona GW 10, Ona GW 11, and Ona GW 12: gross alpha and radium 226/228. If gross alpha is greater than 15, then uranium shall also be monitored.

    d. The permittee shall obtain approval by the Department prior to relocating a surface water monitoring station or groundwater quality monitoring well specified in this permit. The location and elevations of each replacement station and well shall be resurveyed.

    e. The permittee may submit a request for the cessation of water quality sampling at specific surface water or groundwater monitoring locations once at least five (5) years of data has been collected following completion of the adjacent reclamation. Each submittal shall contain sufficient information, including analytical results and the progression of mining and reclamation activities, to support the request. Sampling shall continue in these monitoring locations until Department approval.

f. The following parameter shall be monitored daily during construction and removal of the dragline/utility corridor crossings at locations 50m upstream and 50m downstream of the construction area: Turbidity.

g. The following parameter shall be monitored daily during severance from or reconnection to any preserved or offsite connected wetland or other surface water at locations 50m upstream and 50m downstream of the construction area: Turbidity.

h. In all created streams and wetlands designed to reconnect to preserved or off-site wetlands or other surface waters, the following parameters shall be monitored monthly from June to October prior to reconnection: turbidity, temperature, DO, pH, conductivity, and each parameter for which a Total Maximum Daily Load has been established for the immediate receiving waterbody.

i. The water quality sampling required above in Specific Conditions 16.a, b, and c may be suspended for surface water stations and groundwater monitoring wells when their locations are within the boundary of an active NPDES system. Water quality sampling shall be resumed at each station and well in accordance with Specific Condition 16 a, b, and c above when the sample location is no longer within the boundary of an active NPDES system.

j. The industrial wastewater (IW) facility permit, issued in accordance with Chapter 62-620 constitutes authorization to discharge to waters of the state under the National Pollutant Discharge Elimination System (NPDES) Program in accordance with Section 403.0885, F.S.

The IW Permit shall establish the following:

i. The water within the NPDES system shall be discharged through designated outfalls and discharge points. Per 62-620.620(2), F.A.C., specific conditions established in the IW Permit shall regulate effluent limitations, standards and prohibitions at outfalls and discharge points, require discharge sampling, with frequency, procedures, methods, analyses and reporting requirements, and specify corrective measures and confirmation sampling procedures and frequency, and request the revision of any condition.

ii. Best management practices and pollution prevention procedures and standard operating procedures for wastewater management.

The permittee shall contemporaneously send copies of all IW Permit related correspondence, reports, and applications submitted to the Department's Industrial Wastewater Program, to the Department's Mining & Mitigation Program (2600 Blair Stone Road, MS 3577, Tallahassee, FL 32399 or MiningAndMitigation@dep.state.fl.us). The permittee shall also send a copy of all IW Permit revisions within 30 days of receipt to the Department's Mining & Mitigation Program.

17. EXCEEDANCES OF WATER QUALITY STANDARDS: The following measures shall be taken immediately by the permittee if mining related activities cause turbidity levels within waters of the State on or adjacent to the project site exceed State Water Quality Standards established pursuant to Chapter 62-302, F.A.C.:

    a. Immediately cease all work contributing to the water quality violation;

    b. Stabilize all exposed soils contributing to the violation. Modify the work procedures that were responsible for the violation, and install more turbidity containment devices and repair any non-functioning turbidity containment devices;

    c. Notify the Department in Tallahassee (phone 850.245.7554) within 24 hours of the time the violation is first detected.

18. SPILL REPORTING: The permittee shall report all unauthorized releases or spills of untreated or treated wastewater or stormwater in excess of 1,000 gallons per incident, or where public health or the environment may be endangered, to the **Florida State Watch Office, Toll Free Number (800) 320-0519, and the Department's Mining and Mitigation Program** at the phone number listed below, as soon as practical, but no later than 24 hours from the time the permittee becomes aware of the discharge. The permittee, to the extent known, shall provide the following information:

    a. Name, address, and telephone number of person reporting.
    b. Name, address, and telephone number of permittee or responsible person for the discharge.
    c. Date and time of the discharge and status of discharge (ongoing or ceased).
    d. Characteristics of the wastewater spilled or released (untreated or treated, industrial or domestic wastewater or stormwater).
    e. Estimated amount of the discharge.
    f. Location or address of the discharge.
    g. Source and cause of the discharge.
    h. Whether the discharge was contained on site and cleanup actions taken to date.
    i. Description of area affected by the discharge, including name of water body affected, if any.
    j. Other persons or agencies contacted.

    For unauthorized releases or spills of 1,000 gallons or less, per incident, oral reports, or facsimiles when used in lieu thereof, shall be provided to the Department at the address listed below, within 24 hours from the time the permittee becomes aware of the discharge.

Phosphate Management	**Mining and Mitigation Program**	**Homeland Field Office**
13051 N. Telecom Parkway Temple Terrace, FL 33637-0926 Phone: (813)470-5911 DWRMIW.PM@dep.state.fl.us	2600 Blair Stone Road, MS 3577 Tallahassee, FL 32399 Phone: (850)245-8336 MiningAndMitigation@dep.state.fl.us	2001 Homeland Garfield Road Bartow, FL 33830 Phone: (863) 534-7077 Fax: (863)534-7143

A written submission shall also be provided to the Department at the address listed above, within five (5) days of the time the permittee becomes aware of the unauthorized release or spill, greater than 1,000 gallons. The written submission shall contain: all of the information listed above, a description of the unauthorized discharge and its cause; the period of the unauthorized discharge including exact dates and time, and if the unauthorized discharge has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the unauthorized discharge.

19. WATER QUANTITY PROTECTION: Water levels and flows in wetlands and other surface waters adjacent and downstream from site preparation, mining operations, and reclamation activities shall be protected as follows:

    a. **Water Quantity Protection Measures:** To provide protection from potential water quantity impacts to wetlands, other surface waters, streams, existing surface water storage, and adjacent lands pursuant to Chapter 62-330.301, F.A.C., the permittee shall implement and comply with Special Conditions 10 through 12, 16 and 17 in the Southwest Florida Water Management District's integrated Water Use Permit (WUP) No. 20011400.025, and the Environmental Management Plan (EMP), dated January 25, 2012, that is incorporated therein as Exhibit "E".

    b. **Water Quantity Protection and EMP Performance:** Appropriate water levels, considering normal seasonal fluctuations and other climatic conditions that may affect the natural system, shall be maintained to ensure that there are no adverse impacts from mining activities. Where mining operations have commenced within the applicable Mandatory Mitigation Distance (MMD), as defined in the EMP, conditions in the protected area shall also be verified by both monthly visual inspections by the permittee and in conjunction with periodic mine inspections performed with Department staff. When monitoring under the EMP indicates that water quantity protections are not maintaining the protected wetland functions and values as documented by Section 5.0 of the EMP, the permittee shall separately notify the Department in writing. In addition, the permittee shall contemporaneously submit to the Department a copy of any correspondence with SWFWMD regarding the EMP, including reports specified under Section 10.0 of the EMP and any correspondence related to corrective actions or Adverse Impacts as defined in the EMP. The permittee shall ensure that such reports highlight and specifically identify whenever an External Backstop trigger has occurred as

described under Section 6.0 of the EMP, and whenever it is determined that mining activities are or were the cause of deviations from historical water level ranges within the surficial aquifer system (SAS) as described under Section 7.0 of the EMP. The Department may require independent corrective action where water quantity protection and EMP performance are not preventing an adverse impact related to mining activities.

c. **Documentation of Surficial Aquifer Restoration**: Surface and groundwater modeling shall be conducted to verify that the final post-reclamation topography and lithology will maintain the existing hydroperiods and provide adequate groundwater seepage to the preserved wetlands and other surface waters. A model similar to that used in Appendix 2-2-A-Vii (Hydroperiods in Certain Preserved Wetlands) may be used as part of the modeling effort. Data from the existing monitoring wells shown on Map 2-2-B-i and others installed as a requirement of the IWUP and EMP in Specific Condition 19a and 19b (4 year baseline data), shall be used to help determine the appropriate hydroperiods that shall be maintained. Modeling results shall be submitted to the Department for approval. In addition to the modeling reports, the permittee shall provide the Department waste disposal and reclamation plans that ensure reclaimed subsurface flows will maintain the existing hydroperiods of the preserved wetland and other surface waters. The plans should include an analysis of post-reclamation topography, mine cut directions, sand tailings and overburden depths and locations, the locations of any overburden saddles and overburden composition. Approval of the modeling and disposal/reclamation plan constitutes Department approval to proceed with contouring of the area adjacent to the preserved wetland.

d. **Protection of Stream Flow**: At all times during the life of the Ona Mine, the permittee shall maintain a minimum 500-foot-wide buffer of either natural ground or backfilled lands that have been contoured to the post-reclamation elevations shown on Map 4-5 along at least one bank of each linear foot of preserved stream systems, including the preserved portions of Horse Creek, the West Fork of Horse Creek, Brushy Creek, Oak Creek, and Hickory Creek, shown within the avoided area boundary on Map 2-2-B-i.

   Downstream flows from the project area shall not be reduced by mining activities to cause adverse impacts to Brushy Creek, Horse Creek, West Fork of Horse Creek, Oak Creek or Hickory Creek. Surface water levels shall be monitored continuously at monitoring stations SW-1, SW-2, SW-3, SW-5, SW-7, and SW-8 as shown on Map 2-3-B. If MFLs are adopted, the MFLs will control. Monitoring results shall be submitted with the Annual Hydrology Reports required under Specific Condition 14.

e. Rainfall amounts shall be monitored daily from a minimum of two representative stations. Surface water levels, groundwater levels, and rainfall monitoring at these stations shall continue until all reclamation activities are completed and have been released by the Department. Monitoring results shall be submitted with the Annual Hydrology Reports required under Specific Condition 14.

20. BRUSHY AND OAK CREEK TEMPORARY REROUTES: Prior to disturbing the portions of Oak and Brushy Creeks approved for mining, the permittee shall submit final design plans to construct the temporary re-route ditches shown in Appendix 3-5, (Ona Mine Brushy Creek and Oak Creek Reroute Ditch Conceptual Design). Flow shall not be introduced into a reroute ditch until vegetation along the ditch is well established. Each re-route ditch segment shall remain operational until the reclaimed stream or wetland conveyances designed to accept its flow has been reclaimed, stream banks are stable and vegetation is well established. When no longer operational, each ditch segment shall be filled in and planted in accordance with Map 4-2-B-ii.

21. WILDLIFE MANAGEMENT: The permittee shall follow the Ona Mine Wildlife and Habitat Management Plan (Appendix 2-6-B) for all preclearing wildlife surveys, timing of habitat disturbance and relocation activities or as required by Florida Fish and Wildlife Conservation Commission/ US Fish and Wildlife Service (FFWCC/USFWS) permits or management plans. The appropriate FFWCC/USFWS coordination shall be initiated prior to the disturbance of habitat if it is being utilized/occupied by listed species, or relocation of any listed wildlife species. Copies of all correspondence, permits, authorizations and reports to or from these agencies shall be provided to the Department with the Annual Status Reports required in Specific Condition 13.

22. TIMETABLES AND MINING OPERATIONS: The mining operations and reclamation activities authorized by this permit shall be completed according to the following generalized timetable except as otherwise noted:

    a. Generalized Timetable for Work in Wetlands and Other Surface Waters:

Activity	Relative Time Frame
Commencement of Severance/Site preparation	No more than six (6) months prior to mining operations (unless approved by the Department for the purposes of directly transferring topsoil/muck to a contoured mitigation site), except as otherwise authorized herein.
Final grading, including muck placement	No later than 18 months after completion of mining operations, including backfilling with sand tailings.
Phase A planting (species that tolerate a wider range of water levels)	No later than six (6) months after final grading or 1 year after muck placement
Hydrological Assessment	For two (2) years after contouring in accordance with Specific Condition 29 and 43.

Phase B planting (species that tolerate a more narrow range of water levels)	Up to 12 months after the completion of the hydrological assessment.
Phase C planting (shade-adapted ground cover and shrub species, additional trees and shrubs to meet density and diversity requirements in Specific Condition 35)	At least two (2) years prior to release in forested wetlands

b. Disturbance, mining, and reclamation of wetlands, streams and other surface waters (Maps 2-2-B-i and 2-2-B-ii), shall proceed as shown on Maps 3-1 and 4-1, Table CRP-2, and Tables 4-6 and 4-7. The permittee shall submit updates to the approved schedule with the Annual Status Reports required in Specific Condition 13. Anticipated deviations from these schedules shall be submitted prior to initiating impacts to wetlands, streams and other surface waters out of sequence and significant changes may require a modification to this permit. Changes in sequence of wetland, stream and other surface water disturbance shall be acceptable provided a) there are no additional adverse impacts or b) an acceptable mitigation plan to offset these impacts is provided.

23. DRAGLINE/UTILITY CORRIDOR CROSSING: Construction, removal, and revegetation of the three temporary dragline/utility crossings over the unmined streams shown on Maps 3-2 and 3-5-A, B and C, and the three crossings that may be needed over the portions of Oak and Brushy Creeks approved for mining, shall be completed as outlined in Appendix 3-1 (Dragline/Utility Crossings, Update of Engineering Design) and as follows:

a. Best management practices for turbidity and erosion control as outlined in Specific Condition 15 shall be used and maintained at all times beginning prior to construction and through crossing removal and stabilization.

b. A temporary mixing zone of 50 m shall be allowed adjacent to construction in waters of the State pursuant to rule 62-4.244, F.A.C. This 50-m zone applies only during construction, including removal and restoration of the dragline/utility crossing described in Specific Condition 23. This 50-m zone shall be considered the limits of the temporary mixing zone for turbidity during construction. If monitoring reveals levels at the compliance site more than 41 NTUs above the level at the corresponding background site upstream from the activity, construction activities shall cease immediately and not resume until corrective measures have been taken and turbidity has returned to acceptable levels. Any such occurrence shall also be immediately reported as described in Specific Condition 18.

c. Geotextile fabric shall be installed over the crossing area prior to fill placement. Clean sand shall be compacted over the crossing area and the ground and side slopes sodded within 48-hours to stabilize the crossing area and prevent turbid runoff. Protective riprap shall be installed on the upstream face of the transition slope and at the culvert discharge areas to prevent erosion.

d. Pipelines for transport of any substance other than clear water shall be double walled, i.e., each pipe shall be fully encased in continuous welded smooth steel or HDPE pipe. The encasement conduits will extend to spill protection basins lying entirely within the BMP's of the mining operations area. Each basin shall be equipped with a spill detection device and shall be designed to contain a pipeline leak of 800 gpm for a period of eight hours.

e. The construction and removal of all structures and fill material will be timed to coincide with periods of low flow and shall not be initiated at any time when such work will be ongoing during the months of July, August, or September.

f. For crossings on unmined streams, the following will also apply:

i. Certified as-built engineering drawings for the dragline/utility crossing shall be submitted to the Department within 60 days of completion of construction.

ii. Fill, geotextile fabric, culverts and all structures shall be removed and the area contoured to the elevations shown on Map 4-5. All exposed soil will be seeded and mulched or sodded within 72 hours after final contouring.

iii. The final contours of the restored crossing area shall be surveyed in accordance with general survey procedures utilizing a 50-foot grid and showing elevations to 0.1 foot. Within 60 days of final grading, both a cross section and a topographic map of the crossing site extending the width of the 25-year floodplain, showing sampled points and 0.5-foot contours referenced to NGVD, and certified by a land surveyor or professional engineer registered in the state of Florida, shall be submitted to the Bureau of Mine Reclamation for approval. All topographic maps shall meet the minimum technical standards as set forth in Chapter 472, F.S.

iv. Revegetation shall be done in accordance with the land uses listed on Table 3-5 and Specific Condition 29.

24. TOPSOIL UTILIZATION: Prior to conducting mining operations in permitted wetlands, wetland muck, topsoil, or sod shall be removed from the site for use in wetland restoration. The upper 18 inches of wetland muck or topsoil shall be harvested from impacted wetland areas, as practicable, prior to mining and shall be used to establish the final design contours in reclaimed wetland areas. Neither muck, nor topsoil nor sod shall be collected from wetlands that are highly degraded (have minimal cover of desirable species). If the permittee believes a donor wetland is highly degraded and contains unsuitable soil material, the permittee shall notify the Department, which shall determine if the wetland is degraded to an extent that it meets this condition. Timing between the clearing of donor sites and the completion of wetland restoration shall be optimized to provide greater opportunities for direct transfer of wetland muck or topsoil. In some instances, wetland muck or topsoil may be removed from donor sites more than six (6) months in advance of mining operations. If no

contoured mitigation site is available to receive the wetland topsoil, it shall be stored in a manner that minimizes oxidation and colonization by nuisance species.

Whenever practicable, the permittee is encouraged to harvest topsoil from upland areas prior to mining and use the topsoil to establish the final design contours in reclaimed upland areas.

25. LISTED PLANTS: The permittee is encouraged to relocate any threatened or endangered plant species encountered to appropriate unmined or reclaimed community types.

26. SOIL ESTABLISHMENT: Surface soils shall be established for each post-reclamation land use/vegetation community as follows: In all areas proposed to be reclaimed as wetlands, other surface waters or natural upland systems, several feet of sand tailings shall be placed over the contoured overburden spoil, unless otherwise specified in hydroperiod or other modeling/engineering and design, for the specific habitat type to establish the parent materials for the surface soils and promote water infiltration. Additional overburden may be added to the surface soils, as needed, to enhance water holding capacity, cation exchange capacity, and nutrient retention, provided that the infiltration zone remains composed of predominantly sandy material and could be classified as sand, loamy sand, or sandy loam pursuant to the USDA-NRCS soil texture classification. Re-graded overburden will be used in former ditch and berm areas and in reclamation of the lake. A mixture of overburden and sand tailings may be used in areas reclaimed as pasture.

    Whenever practicable, topsoil harvested from upland areas prior to mining, shall be used to establish the final design contours in reclaimed habitat areas. Incorporation of additional organic materials into the upland soils through green manuring or amendment with composts or other organic materials is encouraged when topsoil is not available.

    Wetland muck that is reasonably free of nuisance and exotic species and harvested from wetland sites prior to mining shall be used to establish the final design contours in reclaimed wetland areas as described in Specific Condition 29.

27. POST-MINING LANDSCAPE ELEVATIONS: Within 90 days of the completion of contouring and soil establishment in each reclamation parcel, the permittee shall submit as-built topographic surveys to demonstrate that the land surface elevations have been established as shown on Map 4-5. Substantial deviations from the approved reclaimed land surface elevations that have the potential to adversely affect the functions of preserved, off-site, and/or reclaimed wetlands or other surface waters shall be corrected within 90 days of detection.

28. LAKE AND LAKE LITTORAL SHELF CONSTRUCTION: The lake and associated littoral shelf wetlands shall be constructed in accordance with rule 62C-16.0051(6), F.A.C. The littoral zone shall represent no less than 25% of the highwater surface area and shall be planted with appropriate species for a freshwater marsh or wet prairie, as indicated in Tables 4-3-E and 4-3-F. The lake and headwater wetlands shall be designed to ensure post reclamation flow volumes will be similar to the pre-mining flow volumes in Hickory Creek.

29. ON-SITE MITIGATION CONSTRUCTION STANDARDS: The permittee shall create as mitigation 2,584.8 acres of wetlands (This number does not include the 16.3 created herbaceous wetland acres required under On-Site Enhancement in Specific Condition 8), 24.4 acres of other surface waters and 80,317 linear feet of stream channels, as shown on Maps 4-2-B-ii, 4-3-B, 4-8-B-i and listed on Tables 4-5 and 4-6. The mitigation wetlands to be constructed include 1179.9 acres of freshwater marsh (FLUCFCS 641), 31.0 acres of wet prairie (FLUCFCS 643), 70.8 acres of shrub swamp (FLUCFCS 647), 29.0 acres of hydric palmetto prairie (FLUCFCS 649), 74.1 acres of bay swamp (FLUCFCS 611), 5.1 acres of gum swamp (FLUCFCS 613), 95.4 acres of inland ponds and sloughs (FLUCFCS 616), 872.5 acres of mixed wetland hardwood forest (FLUCFCS 617), 36.6 acres of hydric pine flatwoods (FLUCFCS 625), 6.6 acres of coniferous forest (FLUCFCS 620), and 183.7 acres of hardwood-conifer mixed wetland forest (FLUCFCS 630). The other surface waters to be created include 1.8 acres palmetto prairie (FLUCFCS 321o), 0.2-acre of pine flatwoods (FLUCFCS 411o), 0.1-acre of temperate hardwood forest (FLUCFCS 425o), 12.3 acres of live oak forest (FLUCFCS 427o), and 10 acres of hardwood-conifer mixed forest (FLUCFCS 434o). These numbers include restoration of the 15.3 acres wetlands and other surface waters in the temporary dragline/utility crossing areas shown on Maps 3-2, 3-5-A, 3-5-B and 3-5-C. The wetland and other surface water mitigation and restoration shall be accomplished in accordance with the timetables in Specific Condition 22, Map 4-5, Appendix 2-2-A-iii (Post Reclamation Wetland Cross Sections), and in the following manner:

For All Mitigation Areas:

a. **Final Hydroperiod Modeling**: The designs of representative wetlands were modeled as part of the application process based on predicted subsurface conditions following mining and backfilling of mine cuts with sand tailings and overburden (Appendix 2-2-A-iv, Wetland Hydroperiods in the Post-Reclamation Landscape at the Ona Mine). Representative wetlands are those wetlands selected based on their FLUCFCS code and position in the post reclamation landscape to demonstrate that the hydro periods of the post reclamation wetlands are adequate. Prior to construction, hydroperiod modeling, using similar modeling concepts and techniques, shall be used to finalize the design of the sub-surface lithology, land surface elevations and topographic gradients in each wetland and other surface water mitigation area and contributing upland watershed. The hydroperiod modeling results shall confirm that the wetland bottom and output elevations, the side slopes, and the subsurface lithology will result in hydroperiod depths and durations appropriate for the community types planned for each mitigation area. A similarly calibrated model shall be used to design the remaining mitigation wetlands and other surface waters to be constructed to achieve the design criteria set forth in Appendix 2-2-A-iv. Modeling results shall be submitted to the Department for review and approval least 90 days prior to commencement of contouring.

For Forested Wetlands:

b. **Soil Establishment:** After mining operations and backfilling with sand tailings, forested wetland mitigation areas (FLUCFCS 611, 613, 616, 617, 620, 625 and 630) shall be graded and capped with several inches of wetland muck or topsoil to achieve the final elevations

indicated in the attached permit drawings. In the event that sufficient wetland muck or topsoil is not available, the permittee shall coordinate the use of other appropriate materials with the Department. However, all bay swamps shall receive a minimum of one foot of muck or a combination of muck and mulch or other appropriate organic material such as mucky-sand or sandy-muck. Direct transfer of topsoil and live material (stumps, shrubs, small trees) shall be used where feasible. Wetland topsoil should be reasonably free of nuisance and exotic plant species before application to wetland mitigation areas.

c. **Hydropattern and Habitat Heterogeneity:** The permittee shall construct hummocks, leave some areas roughly graded and install stumps, logs, and/or woody debris piles several inches above the seasonal high water line to provide habitat heterogeneity. Snags shall also be placed within the forested wetlands to encourage wildlife usage. Direct transfer of small shrubs and trees from future mining areas shall also be utilized if feasible.

d. **Restoration of the Vegetation Community:** Forested wetlands shall be planted with sufficient tree, shrub, and herbaceous species to establish the densities and species richness and dominance characteristics appropriate for each community type in accordance with Tables 4-3-A-i through 4-3-D in order to meet the requirements of Specific Condition 35. Appropriate species shall be planted based on the design elevations, the results of the hydrology monitoring, and the goals of the mitigation. Up to 49% of the trees and shrubs planted in the upper transitional zone (defined as the uppermost one foot change in elevation within the wetland boundary) may consist of appropriate upland and facultative species as found in the reference wetlands.

e. **Successional Plantings:** Additional plantings of shade tolerant shrubs and herbaceous vegetation shall occur after establishment of suitable canopy/subcanopy cover within the forested wetlands. This shall include a selection of at least 5 of the following species: swamp azalea (*Rhododendron viscosum*), highbush blueberry (*Vaccinium corymbosum*), swamp fern (*Blechnum serrulatum*), cinnamon fern (*Osmunda cinnamomea*), woodoats (*Chasmanthium latifolium*), swamp dogwood (*Cornus foemina*), royal fern (*Osmunda regalis*), netted chain fern (*Woodwardia areolata*), chain fern (*Woodwardia virginica*) and lizard's tail (*Saururus cernuus*).

<u>For Herbaceous Wetlands (FLUCFCS 641, 643, 647 and 649)</u>:

f. **Soil Establishment:** After mining operations and backfilling with sand tailings, herbaceous wetland mitigation areas (FLUCFCS 641, 643 and 647) shall be graded and capped with several inches of wetland muck or topsoil, when available, to achieve the final elevations indicated in the attached permit drawings. Hydric rangeland/palmetto prairie areas (FLUCFCS 649) shall receive several inches of hydric rangeland/palmetto prairie, wet prairie, wet flatwoods or pine flatwoods topsoil, if available. Direct transfer shall be used where feasible. The muck or topsoil should be reasonably free of nuisance and exotic plant

species before application to wetland mitigation areas. Green manuring or amendment with composts or other organic materials is encouraged when topsoil is not available.

g. **Hydropattern and Habitat Heterogeneity:** Marshes and wet prairies shall be designed to maintain the diversity of community types that existed prior to mining operations in order to support a wide range of wildlife species including birds, reptiles, and amphibians. Both depression marshes and basin marshes shall be constructed. Hydroperiods shall range from seasonal saturation to almost continual inundation. Marshes and wet prairies shall be constructed with variations in topography and slope in order to provide a diversity of hydroperiods, depths of inundation and available habitat. The outer slopes in most marshes shall be gradual enough to support wide transition zones with a diversity of vegetation. A general guidance slope range is between 0.4 percent (1 foot/250 feet) and 2 percent (1 foot/50 feet). Depression marshes shall exhibit the distinct zonation patterns typical of the least disturbed depression marshes occurring at the Ona Mine.

h. **Vegetation Establishment**: If muck or topsoil are unavailable, herbaceous wetland species shall be planted on 3-foot centers according to the species listed on Table 4-3-E, 4-3-F, 4-3-G and 4-3-J, as appropriate for the community type, to establish vegetation density, species richness, dominance characteristics, and ecotone zonation patterns that are typical of reference wetlands of the designed community type and to meet the requirements of Specific Condition 35. Supplemental planting shall be done in mucked or topsoiled wetlands as necessary to meet the requirements of Specific Condition 35.

i. **Ecotone Development within Herbaceous Marshes:** Most herbaceous marshes shall be rim-mulched with several inches of wet prairie, pine flatwoods, or palmetto prairie topsoil or sod unless suitable material is not available within a reasonable hauling distance. Direct transfer shall be used where feasible. Where top-soiling is not feasible, other methods that are likely to achieve similar diversity of wet prairie/shallow marsh forbs and grasses such as direct seeding or planting in accordance with Tables 4-3-F shall be used as approved by the Department.

j. **Additional Requirements for Wet Prairies and Hydric Rangeland:** The uplands immediately surrounding wet prairie and hydric rangeland areas shall be direct seeded or planted with native grasses such as creeping bluestem (*Schizachyrium scoparium*), sand cordgrass (*Spartina bakeri*), blue maidencane (*Amphicarpum muhlenbergianum*), broom grass (*Andropogon* spp), lovegrass (*Eragrostis* spp.), and eastern gama grass (*Tripsacum dactyloides*) to help prevent invasion by range grasses and other non-native grasses.

<u>For Non-Stream Other Surface Waters</u>:

k. Palmetto prairie (FLUCFCS 321o), and pine flatwoods (FLUCFCS 411o) other surface waters shall receive at least 3-6 inches of palmetto prairie or pine flatwoods topsoil, unless suitable material is not available within a reasonable hauling distance. Direct transfer shall be used where feasible. Where top-soiling is not feasible, a green manure crop will be seeded, allowed to mature, and disked in before applying a native groundcover seed mix. Trees,

shrubs and additional groundcover species listed in Tables 4-3-C-ii, 4-3-J, 4-4-A and 4-4-B-ii, as appropriate for the community type and hydrology, shall be planted in order to meet the requirements of Specific Condition 35.

l. Forested other surface waters shall be planted with native groundcover, shrub, and tree species, as listed in Tables 4-4-D and 4-4-E, as appropriate for the specific community type (FLUCFCS 427o, 434o, and 438o) in order to meet the requirements of Specific Condition 35.

For Streams:

m. Stream systems (FLUCFCS 511) shall be constructed in accordance with the design criteria set forth in Appendix 2-2-B-i (Stream Mapping, Assessment, and Reclamation Design Guidance, Ona Mine, Hardee County, Florida) to achieve the approximate thalweg lengths listed on Table 4-5 until a minimum of 71,991 feet is reached. Individual stream lengths in Table 4-5 may vary based on Department approval of final design plans. Prior to construction, final design plans based on the actual post mining conditions shall be developed based on hydrologic modeling that includes estimating bankfull flow. Hydrologic modeling results shall be compared to the low flow data collected on the existing first and second order streams within the project to confirm that designed stream flow and the percent of time that water is present above the bed is at least within the range of existing streams. Modeling results, final design documents and construction drawings shall be submitted to the Department for approval.

n. Reclaimed stream valleys (FLUCFCS 511) shall be constructed with a minimum of 3 feet of sand tailings overlain with up to 6 inches of overburden that is disked into the tailings or as otherwise approved by the Department following review of final design plans. Topsoil shall be used instead of overburden in areas where it is used to establish specific upland or wetland plant communities adjacent to the stream. Overburden may be used to construct the banks if added cohesive strength is necessary. However, stream beds should be constructed from sand tailings.

o. Stream system O-T8F1, O-T8F2 and O-T8G shall include restoration of at least 4,844 linear feet of stream channel (FLUCFCS 511), including Rosgen C and E segments, and 822 linear feet of slough/strand (FLUCFS 516). The final design plans shall demonstrate the degree of similarity to the existing stream system (segments 301G, 301H, 301I and 301M). At least sixty percent (60%) of the total stream length shall include palmetto lined banks on both banks to mimic the characteristics of the existing stream system.

p. Reclaimed valleys designed to support sloughs and strands (FLUCFCS 516) shall be constructed to create a simple hydrologic connection on the valley flat. Valleys shall be constructed at the widths and elevations shown on Map 4-5 to ultimately achieve the lengths listed on Table 4-5. Flow conveyance channels will not be constructed, but may develop over time.

q. An experienced stream restoration scientist shall be utilized by the permittee as staff or consultant for the period of stream mitigation construction through release to provide project guidance and conduct regular inspections during construction and planting activities. A list of proposed candidates and their qualifications shall be submitted to the Department for approval.

r. No more than 90 days after final grading, the permittee shall prepare an as-built construction report that documents that the restored reach has been constructed in accordance with the specifications outlined in Appendix 2-2-B-i and the final design plans. The as-built survey shall include a longitudinal profile of the entire stream reach that includes mapping of each pool and riffle with thalweg, water surface (if present) and top of bank elevations noted, and representative cross sections measured at a frequency of one per 20 bankfull-widths with locations selected to represent approximately 50% pools and 50% riffles. Cross section surveys shall including the flood prone width. Repeat surveys shall be required as outlined in Specific Condition 43. The as-built report shall also document the successful establishment of all habitat amendments, including number of bends/pools, number of large woody debris (LWD) snags, number of root wads, number of fine woody fascines, and percent palmetto lining the banks, as applicable for each restored stream reach. As-built reports shall include photo documentation at each cross section and representative structures.

Post Construction Requirements:

s. Documentation of As-Built Conditions: Within 60 days of final grading, the final contours of each created wetland and other surface water shall be surveyed in accordance with general survey procedures utilizing a 50-foot grid and spot elevations to 0.1 of a foot. An as-built contour map will be generated to show one (1) foot contours for uplands, 0.5 of a foot contours in wetlands/surface waters and the 0.1 of a foot spot elevations, extending at least 200 feet into the adjacent uplands. The contour map(s) will reference NGVD and be certified by a land surveyor or professional engineer registered in the state of Florida. All topographic maps shall meet the minimum technical standards as set forth in Chapter 472, F.S.

t. Post-Construction Hydrology Monitoring and Second-Year Hydrology Assessment: Post construction monitoring, as described in Specific Condition 43 (outlined in Table MR-B), shall be performed for all mitigation areas. All piezometers, staff gauges, and flow meters shall be installed at mutually agreed-upon locations within 90 days of the completion of grading/contouring activities in the mitigation areas to be monitored. Hydrologic data collected for each mitigation monitoring site is to be compiled, analyzed and submitted in both tabular and graphical formats with the Annual Hydrology Reports required in Specific Condition 14.

   Initial assessment of the site hydrology shall be conducted for at least two (2) years after final contouring of each mitigation area. The results shall be submitted to the Department for review and approval within 30 days of completion of the analysis. Within 30 days of receipt of the data, the Department will review the results and approve the design hydrology, or require additional information or changes to the design. If the hydrology of the site does not

meet the design objectives, the permittee shall have 60 days to submit a remedial action plan to ensure that design objectives will be met. Following the initial hydrological assessment, monitoring of each mitigation area shall continue until the requirements of Specific Condition 35 have been met.

u. Upon completion of the mitigation activities, monitoring of each created wetland, stream and other surface water shall be conducted as described in Specific Condition 43. Reports shall be submitted in accordance with Specific Condition 14.

30. **Brushy Creek Restoration**: The overall objective of the design plan for Brushy Creek is to restore the area to pre-development conditions, prior to the ditching of many of the wetlands and portions of the creek itself. In addition to restoration of the stream channel and the immediate floodplain, this includes restoring the diverse topography in the wider floodplain and adjacent lands. In addition to the construction requirements listed in Specific Condition 29, the following shall also apply:

    a. Final design plans for the restored creek shall include those of the channel itself and the adjacent wetlands and other surface waters and shall be based on the modeling described in Specific Condition 29. Final design plans and modeling results shall be provided to the Department for review and approval.

    b. The restored stream shall include restoration of at least 6,695 linear feet of channel (FLUCFCS 511).

    c. Wetlands and other surface waters in the floodplain area shall be constructed to match the varied topography shown on Map 4-5.

    d. The as-built reports required by Specific Condition 29s, shall include the elevations of the entire floodplain area, roughly defined as the 85-foot contour interval for most of the project, in order to compare it to Map 4-5 and Appendix 2-2-A-vi, Map 9.

31. **Prairie Dog Restoration**: Wetlands 21-1, 21-11 and 21-15 comprise a wetland system designed to replicate, to the greatest extent practical, wetlands Oak 417-8A, B, C and Oak-417-12, also known as the Prairie Dog. The Prairie Dog (PD) is a mature, mostly forested system comprised of nine different community types. Appendix 2-5-A-iii (Ona Mine, Prairie Dog Wetland, Detailed Assessment of Vegetation, Soils and Hydrology), includes a detailed description of the wetland system that will be impacted and the specific ways that the vegetation, soils, hydrology and microtopography will be replaced following mining. Appendix 2-5-A-iii also includes the results of surface and groundwater modeling done on both the existing PD wetland and the post reclamation design to verify that similar hydrologic conditions will be established following reclamation. In addition to the design criteria listed in Specific Condition 29, the following shall also be incorporated into the construction:

a. **Hydrology modeling and Final Design:** Several types of modeling will be done to determine the final, pre-construction design. Reproduction of the existing storm event response hydrology will be verified through ICPR or a similar model approved by the Department. Actual locations and elevations of cast overburden and the hydraulic conductivity of the overburden spoil will be sampled and used to refine the final design through MODFLOW or a similar model approved by the Department to ensure similar ground water flow volumes will be provided to the mitigation wetlands. Sub-surface lithological zones and final elevations will be adjusted to achieve the post reclamation hydroperiod depths and durations that are similar to the existing Prairie Dog wetland as verified with a wetland hydroperiod model approved by the Department.

b. **Topographic and Hydrologic Variability:** The topographic variability of the existing PD shall be replaced including incorporating a seepage slope on around the upper most section and creating two topographic "saddles" that separate the wetland into an upper, middle and lower zone and retard flow through the system and allow for separate seasonal high water levels in each zone. Additional variability will be incorporated by constructing hummocks, leaving areas roughly graded and installing stumps, logs, and/or woody debris piles several inches above the seasonal high water line.

c. **Soils:** Overburden shall be graded and sand tailings limited in the central zone to mimic the existing loamy, sometimes clayey, soils of the central zone of the existing PD. Final soil types for each community type shall be documented in accordance with the Soils section of the Specific Condition 43, with each community type representing a wetland.

d. **Muck Depths:** Muck depths were correlated with community types in the existing PD. These depths range from none to up to two feet in small areas. Muck depths throughout most of the wetland tend to be shallower, at between 4 to 8 inches. Muck shall be applied in the reclaimed system to achieve the maximum depths for each community type as shown on the Post Reclamation Muck Depth Map and the Post Reclamation Cross Sections in Appendix F of the report. Final muck depths for each community types shall be documented in accordance with the Soils section of the Specific Condition 43, with each community type representing a wetland.

e. **Revegetation**: The wetland shall be planted as follows:

1. Trees, shrub and groundcover species shall be planted to restore the acreages as specified in Appendix 2-5-A-iii of eight (8) different community and sub-community types as shown on the Post Reclamation Detailed Land Cover Map of the report, each of which is present within the existing Prairie Dog. These community types are: cabbage palm hammock, mesic oak and cabbage palm hammock, popash swamp, mixed wetland hardwoods, mixed wetland hardwoods with elm, sweetgum and laurel oak dominant, mixed wetland hardwoods with maple, pop ash, and swamp tupelo dominant, mixed wetland hardwoods with myrsine dominant subcanopy, and herbaceous marsh. Species planted in each community type shall be based on the planting tables in Appendix G of the report with emphasis on the dominant species

for each community type. However, any species from the master list may also be included, even if they are not on the list for that community type. (i.e. Myrsine and giant leather fern were found in several parts of the existing PD and may be planted in any of the community types where they will be hydrologically supported). Snags shall also be placed within the wetlands.

2. At least 60 percent of the planted trees shall be 3 gallon size and another 15 percent shall be 5 gallon size. A maximum of 25 percent of the planted trees shall be 1 gallon size. Direct transfer of small shrubs and trees from future mining areas may also be utilized to meet the tree size requirement.

32. RECLAMATION CONSTRUCTION STANDARDS: The permittee shall reclaim the remaining acres of wetlands, other surface waters and uplands in accordance with Maps 4-2-B-i and 4-5, Tables 2-1-A-ii, 3-1-B, the attached planting tables (Tables 4-3-A-i through 4-4-E), Rule 62C-16 and Conceptual Reclamation Plan MOS-ONA-CP.

33. TIME SCHEDULE FOR COMPLETION OF MITIGATION: Forested wetlands, forested other surface waters and created streams shall achieve, or shall be on a clear trajectory toward achieving, all applicable mitigation success criteria listed in Specific Condition 35 (excluding tree height requirements) within 12 years of final contouring of drainage areas reporting to these mitigation areas. Herbaceous wetlands and other surface waters shall achieve, or shall be on a clear trajectory toward achieving, all applicable mitigation success criteria listed in Specific Condition 35 within 7 years of contouring. The time period for attainment of the mitigation success criteria may be extended by the Department for specific wetlands when circumstances beyond the control of the operator, such as drought or flooding, occur.

    In the event that a mitigation site has not met the design objectives within the applicable time frame, and monitoring data do not demonstrate that the site is on a clear trajectory towards achieving all applicable mitigation success criteria listed in Specific Condition 35, the permittee shall prepare and submit a corrective action plan to the Department detailing additional construction, maintenance, and/or enhancement measures that will be implemented to achieve the design objectives within a two-year extended time period. Upon approval, the permittee shall be granted an additional two year period in which to perform the corrective actions and/or enhancement activities specified in the approved corrective action plan and to provide documentation that the site has achieved or is on a clear trajectory toward achieving the applicable mitigation success criteria listed in Specific Condition 35.

34. VEGETATION MAINTENANCE: A monitoring and maintenance program shall be implemented to promote the survivorship and growth of desirable species in all mitigation areas:

    a. This program shall include at least semi-annual inspections of uplands, wetlands and other surface waters for nuisance and exotic species. Nuisance and exotic vegetation shall be controlled by herbicide, fire, hydrological or mechanical means in order to limit cover

of nuisance species to less than ten (10) percent and to remove exotic species when present in each mitigation area. Manual or chemical treatment of nuisance and exotic species shall be implemented at least annually when cover of nuisance species in any area of one acre or more increases to more than ten (10) percent cover or if exotic species are present. Manual or chemical treatment shall also be implemented if cogon grass (*Imperata cylindrica*) coverage exceeds ten (10) percent on reclaimed sites or five (5) percent within 300 feet of any wetland, stream or other surface water.

b. Water levels may be controlled through outflow control structures and/or pumping as necessary to enhance the survivorship and growth of hydrologically sensitive taxa. The location, designs, and need for such structures shall be mutually agreed upon by the permittee and the Department. All water management structures shall be removed at least two years prior to release request.

c. Supplemental tree and shrub plantings in accordance with Specific Condition 29 shall occur when tree/shrub densities fall below those required to meet Specific Condition 35.

d. Supplemental herbaceous plantings in accordance with Specific Condition 29 shall occur if cover by a diversity of non-nuisance, non-exotic wetland species as listed in rule 62-340.450, F.A.C., falls below the level required to meet Specific Condition 35.

35. MITIGATION RELEASE CRITERIA: The on-site and off-site mitigation uplands, wetlands, streams and other surface waters shall be released when they have been constructed in accordance with the requirements of Specific Conditions 29 and the attached permit drawings, the following conditions have been met, and no intervention in the form of irrigation, dewatering, or replanting of desirable vegetation has occurred for a period of two consecutive years unless approved in writing by the Department. If the associated watershed has been reclaimed, individual wetlands or other surface waters may be released by the Department provided they have met the minimum establishment period for the wetland type and meet all applicable permit conditions. The permittee shall indicate in the Annual Status Report required by Specific Condition 13 the start date for the non-intervention period for each wetland/other surface water:

A. Water Quality

Water quality in created wetlands and other surface waters shall meet Class III standards (Chapter 62-302, F.A.C.)

B. Hydrology

1. Each created wetland shall have hydroperiods and depths of inundation sufficient to support wetland vegetation, that meet the hydroperiods, depth of inundations and seepage contributions predicted by the modeling required in Specific Condition 29a and that are within the range of conditions occurring in the reference wetlands of the

applicable community type as determined based on the monitoring data. Reference wetlands are discussed further in Paragraph B of Specific Condition 43.

2. Surface waters, other than wetlands and streams, shall flood at a frequency sufficient to produce an apparent ordinary high water line (OHWL) based on hydrologic indicators listed in Section 62-340.500, F.A.C., or hydrologic monitoring demonstrates flooding at frequency that meets the modeled mean annual flood elevation.

C. Vegetation

For All Wetlands and Other Surface Waters:

1. Total cover by non-nuisance, non-exotic FACW, and/or OBL species listed in rule 62-340.450, F.A.C., (desirable species) in the ground cover shall be at least 80%, unless another value is listed for a specific community type below. Desirable ground cover plant species shall be reproducing naturally, either by normal vegetative spread or through seedling establishment, growth and survival.

   Native upland species shall be considered desirable vegetation when evaluating non-wetland, non-stream other surface waters (FLUCFCS 321o, 411o, 425o, 427o, and 434o, as long as the area is determined to be jurisdictional based on other indicators in accordance with Rule 62-340, F.A.C.

2. Cumulative total cover by range grasses, such as Bahia grass (*Paspalum notatum*) and Bermuda grass (*Cynodon dactylon*), shall be less than 10%.

3. Non-vegetated open water and/or bare ground shall cumulatively be limited to less than 10% of the wetland area.

4. Cover by nuisance vegetation species, including cattail (*Typha* spp.), primrose willow (*Ludwigia peruviana*) and climbing hemp vine (*Mikania* spp.) shall be limited to less than 10% of the total wetland area.

5. Invasive exotic vegetation including, but not limited to Cogon grass (*Imperata cylindrica*), melaleuca (*Melaleuca quinquenervia*), Chinese tallow (*Sapium sebiferum*), Japanese climbing fern (*Lygodium japonicum*), Old world climbing fern (*Lygodium microphyllum*) and Brazilian pepper (*Schinus terebinthifolius*) shall not be considered an acceptable component of the vegetative community. Invasive exotic species shall mean those species listed on the Florida Exotic Pest Plant Council's most recent list of invasive exotic plant species (http://www.fleppc.org/).

For Herbaceous Marshes (FLUCFCS 641):

6. Cover within herbaceous marshes shall be dominated by native species typical of reference marshes and shall be distributed in similar zonation patterns. Species richness and dominance regimes shall be within the range of values documented within the reference marshes. At least 50% of the marshes shall be dominated by grass species such as maidencane (*Panicum hemitomon*).

For Wet Prairies (FLUCFCS 643):

7. Total cover by non-nuisance, non-exotic FAC, FACW, and/or OBL species listed in Rule 62-340.450, F.A.C., (desirable species) in the ground cover shall be at least 80%. Non-nuisance, non-exotic facultative species will be considered desirable only provided that their contributions to the vegetative community structure are within the range of values documented within the reference wetlands and the mitigation site is jurisdictional in accordance with Rule 62-340, F.A.C. In no case shall temporary dominance by transient facultative species such as dogfennel (*Eupatorium capillifolium*), sesbania (*Sesbania* spp.), wax myrtle (*Myrica cerifera*), shyleaf (*Aeschynomene americana*), or similar species be used to demonstrate achievement of vegetation community performance standards.

   Relative ground cover by native grasses and sedges from Table 4-3-F shall be at least 60% and at least 40 of the species on Table 4-3-F shall be present or shall be within the range of values documented within the reference wet prairies.

For Wet Savanna (FLUCFCS 646):

8. Relative ground cover by native grasses and sedges shall be at least 60% and at least 25 species shall be present typical of wet prairies or herbaceous seepage slopes. At least 10 of the species listed under hydric savanna or wet prairie on Table 2 of Appendix 4-1-B shall be present.

For Shrub Marshes (FLUCFCS 647):

9. Ground cover within shrub marshes shall be dominated by native species typical of reference herbaceous marshes. Shrub cover shall be dominated by button bush (*Cephalanthus occidentalis*). Cumulative cover by Carolina willow (*Salix caroliniana*) and wax myrtle (*Myrica cerifera*) shall be less than 25%.

For Hydric Palmetto Prairie/Rangeland (FLUCFCS 649):

10. The shrub layer shall contain at least 3 of the species listed on Table 4-3-J, including saw palmetto (*Serenoa repens*), and shall have an average of at least 200 shrubs and subshrubs per acre.

11. Ground cover shall be dominated by native species typical of reference hydric pine flatwoods, hydric palmetto prairies or wet prairies. At least 20% of the relative cover shall be derived from wiregrass (*Aristida stricta* var. *beyrichiana*) and other perennial pyrogenic bunchgrasses. Species richness and dominance regimes shall be within the range of values documented within the reference hydric palmetto prairie, wet flatwoods or wet prairie.

For All Forested Wetlands other than Hydric Flatwoods (FLUCFCS 625):

12. The canopy layer shall have an average of at least 400 live trees per acre that are on average at least 12 feet tall (the height requirement does not apply to Cabbage Palm (*Sabal palmetto*), which shall have at least one leaf that is three (3) feet long including the stalk). No area greater than an acre in size shall have less than 200 trees per acre.

13. The shrub layer shall have an average of at least 100 live shrubs per acre (unless a different number is specified by community type below), or shall meet or exceed the range of shrub densities in the reference wetlands. Early successional species such as *Salix caroliniana* (Carolina willow), *Baccharis* spp. (saltbush), *Myrica cerifera* (wax myrtle), and *Sambucus canadensis* (elderberry) shall be less than 15% or contributing in a density similar to reference wetlands.

14. The canopy and shrub strata shall each have species richness values and dominance regimes within the range of values documented in the reference wetlands of the target community type or as required by the community specific release criteria below. Canopy and shrub measurements shall be limited to those indigenous species that contribute to the canopy, subcanopy, and shrub strata of the mature forested wetlands in the Peace River basin. Up to 49% of the trees and shrubs in the upper transitional zone (defined as the uppermost one foot change in elevation within the wetland boundary) may consist of appropriate upland and facultative species as found in the reference wetlands as long as there are other indicators to confirm that the area is jurisdictional in accordance with Rule 62-340, F.A.C. Desirable canopy and shrub species shall be reproducing naturally, as evidenced by the presence of fruit and saplings that are greater than one foot tall.

15. Species richness and dominance regimes for herbaceous vegetation shall be within the range of values documented within the reference wetlands of the target community type or as required by the community specific criteria below. The relative age of the mitigation site when compared to mature systems shall be considered in the evaluation.

For Bay Swamps (FLUCFCS 611):

16. The canopy layer shall contain at least seven (7) of the tree species listed on Table 4-3-A-i and the combined contribution to canopy cover by sweet-bay (*Magnolia*

virginiana) swamp bay (*Persea palustris*), loblolly-bay (*Gordonia lasianthus*) and swamp tupelo (*Nyssa sylvatica* var. *biflora*) shall exceed 60%.

17. The shrub layer shall contain at least five (5) of the species listed on Table 4-3-A-i and shall have an average of at least 100 shrubs per acre and no one species shall comprise more than 40% relative cover.

18. The groundcover shall contain 10 or more native wetland (FACW or OBL) species typical of a bayswamp community or shall have at least five (5) of the groundcover species listed on Table 4-3-A-I, and no one species shall comprise more than 50% relative cover. Shade tolerant species such as those listed on Table 4-3-A-i shall comprise at least 50% relative cover.

For Gum Swamps (FLUCFCS 613):

19. The canopy layer shall contain at least five (5) of the tree species listed on Table 4-3-A-ii and at least 50% of the trees shall be swamp tupelo (*Nyssa sylvatica var. biflora*).

20. The shrub layer shall contain at least three (3) of the species listed on 4-3-A-ii and shall have an average of at least 75 shrubs per acre, with no one species contributing to more than 50% of the total shrub density.

21. Total cover by desirable species in the ground cover shall be at least 50%. The groundcover shall contain at least five (5) of the groundcover species listed on Table 4-3-A-ii, and no one species shall comprise more than 50% relative cover.

For Inland Ponds and Sloughs (FLUCFCS 616):

22. The canopy layer shall contain at least five (5) of the tree species listed on Table 4-3-A-ii and at least 50% of the trees shall be popash (*Fraxinus caroliniana*).

23. The shrub layer shall contain at least three (3) of the species listed on Table 4-3-A-ii and shall have an average of at least 50 shrubs per acre with no one species contributing to more than 50% of the total shrub density.

24. Total cover by desirable species in the ground cover shall be at least 50%. The groundcover shall contain at least five (5) of the groundcover species listed on Table 4-3-A-ii, and no one species shall comprise more than 50% relative cover.

For Mixed Wetland Hardwoods (FLUCFCS 617 or 615):

25. The canopy layer shall contain at least eight (8) of the tree species listed on Table 4-3-B. No one tree species shall constitute more than 30% of the total density or shall be within the range of values of the reference wetlands.

26. The shrub layer shall contain at least five (5) of the species listed on Table 4-3-B with no one species contributing to more than 50% of the total shrub density or is within the range of values of the reference wetlands.

27. The groundcover shall contain at least ten (10) species typical of forested wetlands and no one species shall comprise more than 30% relative cover. Shade tolerant species such as those listed on Table 4-3-B shall comprise at least 50% relative cover.

28. For the Prairie Dog mitigation required in Specific Condition 31, each of the eight (8) different community types (subtypes of FLUCFCS 617), shall be present in the acreages listed in Appendix 2-5-A-iii. Species richness and dominance of the canopy, shrub, and herbaceous strata in each community type shall match those of the planting tables in Appendix G of Appendix 2-5-A-iii.

For Wetland Coniferous Forest (FLUCFCS 620):

29. The canopy layer shall contain at least five (5) of the tree species listed on Table 4-3-C-i and at least 50% of the trees shall be slash pine (*Pinus elliottii*).

30. The shrub layer shall contain at least five (5) of the species listed on Table 4-3-C-i and shall have an average of at least 100 shrubs per acre with no one species contributing to more than 30% of the total shrub density.

31. The groundcover shall contain at least ten (10) species typical of forested wetlands and no one species shall comprise more than 30% relative cover. Shade tolerant species such as those listed on Table 4-3-C-i shall comprise at least 50% relative cover.

For Cypress Swamps (FLUCFCS 621):

32. The canopy layer shall contain at least five (5) of the tree species listed on Table 2 (FLUCFCS 621) of Appendix 4-1-B and at least 50% of the trees shall be cypress (*Taxodium* spp.).

33. The shrub layer shall contain at least five (5) of the shrub species listed on Table 2 (FLUCFCS 621) of Appendix 4-1-B and shall have an average of at least 50 shrubs per acre with no one species contributing to more than 30% of the total shrub density.

34. The groundcover shall contain at least five (5) of the herbaceous species listed on Table 2 (FLUCFCS 621) of Appendix 4-1-B and no one species shall comprise more than 30% relative cover.

For Cypress-Pine-Cabbage Palm Forest (FLUCFCS 624):

35. The canopy layer shall contain a predominant mix of cypress (*Taxodium* spp), cabbage palm (*Sabal palmetto*) and slash pine (*Pinus elliottii*).

36. The shrub layer shall contain at least three (3) of the shrub species on Table 2 (FLUCFCS 624) of Appendix 4-1-B and shall have an average of at least 100 shrubs per acre with no one species contributing to more than 30% of the total shrub density.

37. The groundcover shall contain at least ten (10) of the herbaceous species listed on Table 2 (FLUCFCS 624) of Appendix 4-1-B and no one species shall comprise more than 30% relative cover.

For Hydric Pine Flatwoods (FLUCFCS 625):

38. The canopy layer shall contain at least 100 long leaf pine (*Pinus palustris*) or slash pine (Pinus elliottii) per acre. Slash pine shall be an average of at least 12 feet tall and long leaf pine shall be beyond the grass stage. No area greater than an acre in size shall have less than 50 trees per acre.

39. The shrub layer shall contain at least three (3) of the species listed on Table 4-3-C-ii and shall have an average of at least 100 shrubs and sub-shrubs per acre.

40. Ground cover shall be dominated by native species typical of reference hydric pine flatwoods, hydric pine savannas or wet prairies. At least 10% of the relative cover shall be derived from wiregrass (*Aristida stricta* var. *beyrichiana*) and other perennial pyrogenic bunchgrasses. Species richness and dominance regimes shall be within the range of values documented within the reference hydric palmetto prairie, wet flatwoods or wet prairie.

For Wetland Mixed Hardwood-Coniferous Forest (FLUCFCS 630):

41. The canopy layer shall contain at least eight (8) of the tree species listed on Table 4-3-D. Neither pines nor hardwoods shall account for more than 66% of the crown canopy composition and no one tree species shall constitute more than 30% of the total trees.

42. The shrub layer shall contain at least five (5) of the species listed on Table 4-3-D and shall have an average of at least 100 shrubs per acre with no one species contributing to more than 30% of the total shrub density.

43. The groundcover shall contain at least ten (10) species typical of forested wetlands and no one species shall comprise more than 30% relative cover. Shade tolerant species such as those listed on Table 4-3-B shall comprise at least 50% relative cover.

For Wetland Scrub (FLUCFCS 631):

44. Nuisance species cover including Carolina willow (*Salix caroliniana*) shall be reduced to 20 percent total cover. Invasive exotic vegetation, including, but not

limited to Cogon grass (*Imperata cylindrica*), Chinese tallow (*Sapium sebiferum*), and Brazilian pepper (*Schinus terebinthifolius*), shall not be present.

For Pine Flatwoods (FLUCFCS 411/ 411o) and Palmetto Prairie (FLUCFCS 321/ 321o):

45. For pine flatwoods areas, the canopy layer shall contain at least 100 pine trees per acre, including at least 50% long leaf pine *(Pinus palustris*) per acre, unless the hydrological conditions do not support long leaf pine. Slash pine shall be an average of at least 12 feet tall and long leaf pine shall be beyond the grass stage. No area greater than an acre in size shall have less than 50 trees per acre.

46. The shrub layer shall contain at least seven (7) of the species listed on Table 4-4-A and saw palmetto (*Serenoa repens*) and gall berry (*Ilex glabra*) shall be the dominant species. There shall be an average of at least 300 shrubs and sub-shrubs per acre and no area greater than one acre in size shall have less than 100 shrubs per acre. Early successional species such as saltbush (*Baccharis* spp.) and wax myrtle (*Myrica cerifera*) do not count toward meeting this requirement.

47. Total groundcover by non-nuisance, non-exotic, native species typical of pine flatwoods or palmetto prairie communities shall be at least 80%. At least 20% of the relative cover shall be derived from wiregrass (*Aristida stricta* var. *beyrichiana*) and other perennial pyrogenic bunchgrasses. Fire-adapted, native herbaceous species shall be of an adequate density to carry a prescribed fire in the growing season over an average of at least 75% of the flatwoods community on an average of a 1 - 3 year cycle. Transects shall have an average of at least 45 of the species listed in Table 4-4-A or other native, non-canopy species appropriate to mesic flatwoods as identified in literature such as the Florida Plant Atlas (USF), Guide to the Vascular Plants of Florida (Wunderlin 2003), and/or Guide to the Natural Communities of Florida (Florida Natural Areas Inventory). Bare ground and leaf litter shall cumulatively constitute 20% or less cover. Cumulative total cover by non-native grasses, such as Bahia grass (*Paspalum notatum*), Bermuda grass (*Cynodon dactylon*), and smutgrass (*Sporobolus indica*) shall be less than 10%.

48. Invasive exotic vegetation including, but not limited to Cogon grass (*Imperata cylindrica*), Chinese tallow (*Sapium sebiferum*), Brazilian pepper (*Schinus terebinthifolius*), Japanese climbing fern (*Lygodium japonicum*), Old world climbing fern (*Lygodium microphyllum*) shall not be considered an acceptable component of the vegetative community. Invasive exotic species shall mean those species listed on the Florida Exotic Pest Plant Council's most recent list of invasive exotic plant species (http://www.fleppc.org/).

For Xeric Oak Forests (FLUCFCS 421)

49. The canopy layer shall contain at least 100 long leaf pine (*Pinus palustris*) or a mix of long leaf pine and sand pine (*Pinus clausa*) per acre. Long leaf pine shall be beyond

the grass stage and sand pine shall be at least 12 feet tall. No area greater than an acre in size shall have less than 50 trees per acre.

50. The subcanopy/shrub layer shall contain at least eight (8) of the species listed on Table 4-4-C and scrub/sandhill oaks (*Quercu*s spp) and saw palmetto (*Serenoa repens*) shall be the dominant species. At least three (3) scrub/sandhill oak species shall be present. There shall be an average of at least 200 shrubs per acre and no area greater than one acre in size shall have less than 150 shrubs per acre. Early successional species such as saltbush (*Baccharis* spp.) and wax myrtle (*Myrica cerifera*) do not count toward meeting this requirement.

51. Total groundcover by non-nuisance, non-exotic, native species typical of xeric oak/sandhill forests shall be at least 60%. At least 10% of the relative cover shall be derived from wiregrass (*Aristida stricta* var. *beyrichiana*) and other perennial pyrogenic bunchgrasses. Transects shall have an average of at least 20 of the species listed on Table 4-4-C or other native, non-canopy species appropriate to xeric oak or sandhill as identified in literature such as the Florida Plant Atlas (USF), Guide to the Vascular Plants of Florida (Wunderlin 2003), and Guide to the Natural Communities of Florida (Florida Natural Areas Inventory). Bare ground and leaf litter shall cumulatively constitute 40% or less cover. Cumulative total cover by non-native grasses, such as Bahia grass (*Paspalum notatum*), Bermuda grass (*Cynodon dactylon*), and smutgrass (*Sporobolus indica*) shall be less than 10%.

52. Invasive exotic vegetation including, but not limited to Cogon grass (*Imperata cylindrica*), Chinese tallow (*Sapium sebiferum*), Brazilian pepper (*Schinus terebinthifolius*), Japanese climbing fern (*Lygodium japonicum*), Old world climbing fern (*Lygodium microphyllum*) shall not be considered an acceptable component of the vegetative community. Invasive exotic species shall mean those species listed on the Florida Exotic Pest Plant Council's most recent list of invasive exotic plant species (http://www.fleppc.org/).

For Temperate Hardwood, Live Oak and Hardwood-Conifer Mixed Forests (FLUCFCS 425/425o, 427/427o, and 434/434o):

53. The canopy layer in temperate hardwood forests (FLUCFCS 425/425o) shall contain at least eight (8) of the tree species listed on Table 4-4-D and no one tree species shall constitute more than 30% of the total trees. At least 66% of the trees shall be hardwoods.

54. The canopy layer in live oak forests (FLUCFCS 427/427o) shall contain at least four (4) of the tree species listed on Tables 4-4-D and at least 66% of the trees shall be live oak (*Quercus virginiana*).

55. The canopy layer in hard-wood coniferous forests (FLUCFCS 434/434o) shall contain at least eight (8) of the tree species listed on Table 4-4-E and no one tree

species shall constitute more than 30% of the total trees. Neither pines nor hardwoods shall account for more than 66% of the total trees.

56. An average of at least 300 live trees per acre that are an average of at least 12 feet tall shall be present (the height requirement does not apply to Cabbage Palm (*Sabal palmetto*), which shall have at least one leaf that is three (3) feet long including the stalk), and no area greater than one acre in size shall have less than 100 trees per acre.

57. The shrub layer shall contain at least five (5) of the species listed on Tables 4-4-D and 4-4-E, with no one shrub species contributing more than 30% of the total shrubs, and shall have an average of at least 100 live shrubs per acre. Early successional species such as saltbush (*Baccharis* spp) and wax myrtle (*Myrica cerifera*) do not count toward meeting this requirement).

58. Total groundcover by non-nuisance, non-exotic, native species typical of native upland forest communities shall be at least 70%. Bare ground and leaf litter shall cumulatively constitute 20% or less cover. Cumulative total cover by non-native grasses, such as Bahia grass (*Paspalum notatum*), Bermuda grass (*Cynodon dactylon*), and smutgrass (*Sporobolus indica*) shall be less than 10%.

59. Invasive exotic vegetation including, but not limited to Cogon grass (*Imperata cylindrica*), Chinese tallow (*Sapium sebiferum*), Brazilian pepper (*Schinus terebinthifolius*), Japanese climbing fern (*Lygodium japonicum*), Old world climbing fern (*Lygodium microphyllum*) shall not be considered an acceptable component of the vegetative community. Invasive exotic species shall mean those species listed on the Florida Exotic Pest Plant Council's most recent list of invasive exotic plant species (http://www.fleppc.org/).

D. Streams

1. **Hydrology**: Each reclaimed stream shall have a bankfull discharge comparable to the values provided on Appendix 2-2-B-i and the final design plans required by Specific Condition 29. The frequency of bankfull events shall occur at a frequency comparable to the existing streams that were monitored for low flow and bankfull flow frequency. The velocity of water shall be adequate to preclude the establishment of excessive amounts of vegetation in the channel following canopy closure in the stream buffers. Water depths and flows shall be comparable to those in Appendix 2-2-B-i and the final design plans approved by the Department and at least within the range of the existing streams that were monitored for low flow and bankfull flow frequency

2. **Design Consistency**: For each restored stream segment, the as-built construction report required by Specific Condition 29r shall be utilized to document that the conditions of the restored stream segment are consistent with the stream design outlined in Appendix 2-2-B-i and the final design plans approved by the Department

per Specific Condition 29. Specifically, the as-built construction report shall demonstrate that morphological design parameters in Tables 15A-15E of Appendix 2-2-B-i and parameter values derived during the final design as approved by the Department were achieved during construction within acceptable tolerances (10 percent). The report shall also demonstrate the successful establishment of all habitat amendments, including number of bends/pools, number of large woody debris (LWD) snags, number of root wads, and percent palmetto lining the banks, as applicable for each restored stream reach.

3. **Stream Stability**: Morphological parameters shown in Tables 15A-15E of Appendix 2-2-B-i shall be consistent with final design values approved by the Department. Variation in morphological parameter values over time from those documented by the as-built survey shall not exceed the range of values (i.e., natural variability) represented by the survey data of reference streams shown in Tables 14A and 14B of Appendix 2-2-B-i, as based on drainage area and the reference design curve.

4. **In-Stream Vegetation**: Vegetation cover within the bankfull extent of the restored stream channels shall not exceed 50% of the channel bottom by year 10 of monitoring or following tree canopy closure.

5. **Buffer Vegetation**: The riparian buffer shall be established as described in Appendix 4-2-B-i to meet the land uses shown on Map 4-2-B-ii. Vegetation in the adjacent buffer area shall be trending toward meeting the success criteria listed for that community type in Specific Condition 35. Relative cover by nuisance and exotic species within the riparian buffers shall be less than 10%.

6. **Biota**: Representation and relative abundance of lotic versus lentic taxa, representation and relative abundance of functional feeding groups, species diversity, and species richness values shall be similar to those documented in existing streams to be mined/impacted, other reference streams, and/or literature data. Mosaic shall prepare and submit reference stream data and reference values that will be used for macroinvertebrate performance criteria for Department approval within 90 days of permit issuance. Determination of lotic versus lentic species and functional feeding guilds shall be assigned based on Merritt and Cummins, <u>An Introduction to the Aquatic Insects of North America</u>, or similar published literature. In instances when a genus or species is assigned as both lotic and lentic, each individual sampled of that genus/species shall be considered as one half of an individual for each designation.

7. **Sloughs and Strands**: Slough and strands (FLUCFCS 516) shall be jurisdictional in accordance with Rule 62-340, F.A.C based on visual inspection or hydrologic data. Documentation of restoration of the final mitigation slough/strand lengths listed on Table 4-5 shall be provided to the Department.

E. Wetlands and Other Surface Waters Jurisdiction

1. Mine wide, not less than 2,625.4 acres of created wetlands and other surface waters and 80,317 linear feet of created stream channels shall be determined to be jurisdictional pursuant to Chapter 62-340, F.A.C. This includes 1,274 acres of created forested wetlands, 1,327 acres of created herbaceous wetlands, and 24.4 acres of created other surface waters. The minimum acreage for each wetland or other surface water identified on Maps 4-2-B-ii, 4-8-B-i shall be achieved as indicated on Table 4-6. At least the minimum length of each stream segment identified on Map 4-3-B shall be achieved as indicated on Table 4-5. However, minor changes in the size, shape, or location of individual wetlands, streams and other surface waters may be acceptable subject to review and written approval from the Department. The acreage of wetlands and other surface waters shall be determined pursuant to Chapter 62-340, F.A.C., and the boundaries shall be mapped with GPS. Stream lengths shall be determined based on survey data or GPS mapping of the channel thalweg.

2. Off site, not less than 11.3 acres of wetlands shall be created at the Bowlegs Creek Project and 511.5 acres at the Payne Creek Project and not less than 5,507 linear feet of streams shall be created at the Bowlegs Creek Project and 14,755 linear feet at the Payne Creek Project.

36. MITIGATION RELEASE PROCEDURES: The required mitigation shall be released when Specific Condition 35 has been met. Mitigation wetlands and streams shall be released as follows:

    a. The permittee shall notify the Department whenever the permittee believes the mitigation is ready for release, but in no event earlier than two years after the mitigation is completed. This notice shall be sent to the Administrator, Mining and Mitigation Program, MiningAndMitigation@dep.state.fl.us or to the Department of Environmental Protection, 2600 Blair Stone Road, MS 3577, Tallahassee, FL 32399;

    b. Within one hundred twenty (120) days of receipt of this notice, the Department shall notify the Permittee that either the Department has determined:

        1. That the mitigation can be released; or

        2. That the mitigation cannot be released, identifying those elements of the mitigation that do not meet the release criteria.

37. LONG TERM MANAGEMENT RELEASE CRITERIA: The on-site and off-site mitigation uplands, wetlands, streams and other surface waters shall be released from the Long Term Management Plan (LTMP) required in Specific Conditions 5 and 6, when the Department has verified that the site specific mitigation is self-sustaining when compared to the Baseline Documentation Reports. The criteria used to demonstrate self-sustainability will be a minimum of two consecutive reports as described in Section 9 of the LTMP, verifying that

no significant deviations from baseline conditions have resulted based on the management activities utilized.

38. WASTE CLAY AND SAND TAILINGS DISPOSAL PLANS:

a. An Annual Narrative on Waste Clay Disposal for the mine shall be completed and submitted annually. The Narrative shall describe the clay disposal and waste clay sampling activities and provide the available sampling data from the previous and current years.

b. An updated Waste Clay Disposal Plan (Appendix 3-4-A) and Phosphatic Waste Clay Consolidation Model for the mine shall be completed and submitted every five (5) years or when there is a major change in the Waste Clay Disposal Plan. Changes in the Waste Clay Disposal Plan shall include, but are not limited to, changes in the production rate, addition of reserves and changes in the approved waste clay disposal areas. The updated Phosphatic Waste Clay Consolidation Model shall incorporate the clay disposal information and the Waste Clay sampling data acquired since the previous update. The permittee may request modification to the requirements of this specific condition.

c. An Annual Narrative on Sand Tailings Disposal for the mine shall be completed and submitted annually. The Narrative shall identify the overall facility sand tailings production and utilization based on known production and mining areas, and identify the Reclamation Parcels where tailings were disposed the previous year. The Narrative shall also include the proposed Reclamation Parcels for tailings disposal during the current year.

d. An updated Sand Tailings Disposal Plan for the mine shall be completed and submitted every five (5) years. A year by year production and void creation for the overall facility shall be provided, in order to evaluate potential stockpiles or deficits that will occur through the life cycle. The plan shall also provide yearly sand tailings disposal projections specific for each Reclamation Parcel. In the event that a sand tailings balance assessment identifies a potential sand tailings deficit that could affect an area exceeding 5% of the remaining sand tailings disposal acreage, then the assessment shall also identify the specific sand tailings areas where the approved land surface elevations shown on Map 4-5 may not be able to be established, and describe all wetlands, streams, or other surface waters identified on Maps 4-3-B and 4-8-B-i and Tables 4-5 and 4-6 that may be affected by a deficit in material. In the event that such areas are identified, the permittee shall, within 90 days, submit a plan to the Department detailing actions that will be taken to ensure that all required mitigation will be completed in a timely manner.

39. CLAY SETTLING AREAS: The clay settling areas shown on Map 3-4, Table 3-4-A and described in Appendix 3-4-A (Life of Mine Waste Disposal Plan Update, Fort Green – Ona Mine) are conceptually approved in accordance with the following:

a. The permittee shall request, in writing, and receive approval from the Department's Mining and Mitigation Section prior to commencing construction of any new clay settling area within the Ona Mine under this permit. The requested approval shall include information demonstrating whether or not additional waste clay disposal capacity is needed when considering the most recently updated Life of Mine Waste Clay Disposal Plan, and a comparison of updated clay production estimates with the remaining storage capacities for existing clay settling areas in the Ona Mine.

b. An update to the Hydrology Analysis shall be required prior to approval of changes to the footprint of the approved waste clay disposal area. Such changes shall include but not limited to the addition of a new clay settling area, the deletion of a clay settling area, and the expansion or reduction of a clay settling area. The permittee may request modification to the requirements of this specific condition.

c. The permittee shall provide detailed construction plans for any dam break diversion and containment systems to the Department's Mining and Mitigation Section for review and approval at least three months prior to initiating construction. Any proposed delays in the completion of reclamation or mitigation due to construction and operation of the containment systems shall be noted in the Annual Status Reports required by Specific Condition 13.

d. The outfalls for all reclaimed clay settling areas shall be designed to manage the mean annual, 25 year, and 100 year peak storm events while minimizing the potential for erosion and maintaining downstream pre-mining flow volumes. Interim and final outfall installations must be approved prior to commencement of construction. Interim and final outfall configurations shall take into account the effects of additional incremental clay consolidation and the ultimate consolidated clay elevation, respectively, based on consolidation modeling and yearly data collected for the clay monitoring program. Reclaimed clay settling areas and associated final outfall structures shall be designed and maintained within the Ona Mine to preclude non-modeled storage of rainfall runoff below the lowest outfall control elevation.

40. OPERATION AND MAINTENANCE: The surface water management system approved in this permit shall meet the following requirements:

a. All construction, operation and maintenance shall be as set forth in the plans, specifications, and performance criteria approved by this permit.

b. If revisions or modifications to the permitted project are required by other regulatory agencies, the Department shall be notified of the revisions so that a determination can be made whether a permit modification is required.

c. Within ninety days after removal of the berm and separation of the surface water management system of a reclamation parcel from lands that report to any surface water

discharges permitted under Chapter 62-620, F.A.C., the permittee shall submit one set of certified record drawings of the surface water management system as actually constructed and notify the Department that the facilities are ready for inspection and approval.

d. Within thirty days after sale or conveyance of the permitted surface water management system, the land on which the system is located, or portions thereof, the owner in whose name the permit was granted shall notify the Department of such change of ownership. Transfer of this permit or portions thereof, shall be in accordance with the provisions of Chapter 373, F.S., and Section 6.2 and 6.3, A.H. All terms and conditions of this permit shall be binding upon transfer.

e. The operational phase applies to those lands disturbed by mining operations, where reclamation has been complete, that no longer report to any surface water discharges permitted under Chapter 62-620, F.A.C., but have not been released in accordance with mitigation success criteria in Specific Condition 35, the reclamation requirements of Chapter 62C-16, F.A.C., and the Long Term Management Plan requirements of Specific Condition 37, as applicable.

f. Pursuant to rule 330.310(7)(a), F.A.C., The operation phase of mining activities subject to the land reclamation requirements of Chapter 378, F.5., shall terminate, without the need to apply for abandonment of the permit, after the mine, or its subunits as applicable:

   i. Has been successfully reclaimed in accordance with Chapter 378, F.5., other than lands disturbed by mining operations that are not subject to the requirements of Chapter 378, F.5.;

   ii. Has met all success requirements of the individual permit issued under Part IV of Chapter 373, F.S.; when the construction phase of the permit includes all phases of construction, abandonment, reclamation, and final success determination over reclaimed lands; and

   iii. Does not contain components that require long-term operation or maintenance, such as: stormwater management systems; achievement of mitigation success criteria; work in conservation easements requiring a permit under this chapter; state-owned submerged lands authorizations; dams; above-grade impoundments; works; water control structures; erosion and sedimentation controls; and dewatering pits.

g. For mitigation areas covered by the Conservation Easement(s) and Long Term Management Plan required by Specific Conditions 5 and 6, the operational phase shall remain in effect until the Department has determined that the site specific mitigation is self-sustaining when compared to the Baseline Documentation Reports as outlined in the Long Term Management Plan and Specific Condition 37.

41. 5-YEAR REVIEW: The Department shall review this permit at the end of the first five-year period and each subsequent five-year period thereafter, if applicable. The review shall begin 90 days before the end of the five-year period. The Department shall review the file and shall inspect the project site for compliance with the terms of the permit, including the General, Specific Conditions and Monitoring Requirements. This inspection will be in conjunction with yearly inspections conducted by Department staff.

    a. If the Department determines that the permittee is not in compliance with the terms of the permit, revocation or suspension of the permit may be initiated pursuant to rule 62-4.100, F.A.C.

    b. As an element of the five-year periodic review, the Department shall notify the permittee of any additional permit conditions to be added to the original permit based on rules adopted during the preceding five-year period.

42. ELECTRONIC REPORTING: Except as otherwise specifically provided in this permit, the required submittals, such as certifications, monitoring reports, notifications, etc., shall be submitted to the Department in a digital format (via electronic mail, CD or DVD, or through file transfer site), when practicable. The mailing address for the appropriate Department office is 2600 Blair Stone Road, MS 3577, Tallahassee, Florida 32399 and the electronic mail address is MiningAndMitigation@dep.state.fl.us. All submittals shall include the project name and indicated permit number when referring to this project.

43. MONITORING REQUIRED:

    A. General Monitoring Requirements:

        1. Annual status reports shall be submitted to the Department detailing the progress of the mitigation as specified in Specific Condition 13. Annual hydrology and water quality monitoring reports shall be submitted to the Department as specified in Specific Condition 14. Vegetation monitoring reports shall be submitted to the Department beginning one year after planting as specified in Specific Condition 14. Subsequent vegetation monitoring reports shall be submitted in years two, three, five, and biennially thereafter until release. Vegetation monitoring reports shall include on the cover page, just below the title, the certification of the following statement by the individual who supervised preparation of the report: "This report represents a true, accurate, and representative description of the site conditions present at the time of monitoring."

        2. All monitoring data (other than data collected for compliance purposes) shall be submitted as available, but by no later than March 1st of the following year as specified in Specific Condition 14. Please clearly include in the reports: **"This information is being provided in partial fulfillment of the monitoring requirements in Permit No. 0169281-015.**

3. Vegetation and hydrology monitoring plans detailing specific sampling techniques and proposed sampling locations shall be submitted for approval at least 60 days prior to sampling. Methods used shall be consistent in reference and created wetlands throughout permit duration. The methods should provide an accurate representation of site conditions.

4. No additional permits are required under Part IV of Chapter 373, F.S., for the installation of piezometers, monitoring wells, staff gauges or any other devices associated with conducting the monitoring required by this permit.

5. Annual hydrology reports shall include the daily rainfall amounts for the Ona Mine, with monthly totals.

6. Proposed minor changes to monitoring locations, parameters and frequencies shall be submitted to the Department in writing. If approved, such changes shall not be considered a formal modification of this permit and shall not require a fee.

B. Selection of Reference Wetlands

Several high-quality wetlands of each community type to be created shall be selected by the permittee and submitted to the Department for review and approval for those community types where reference wetlands are chosen to be used to determine compliance with Specific Condition 35. For the purposes of this section, "high quality" shall mean wetlands that achieve a score of at least 0.77 or receive an 8 for the Community Structure component through application of Chapter 62-345, F.A.C. Additional stage and hydroperiod data shall also be collected from representative wetlands. The permittee shall submit a proposed sampling plan including vegetation and hydrology sampling methods, locations and sampling frequencies to the Department for approval within one year of permit issuance.

C. Compliance Monitoring: Water Quality and Water Quantity

1. All monitoring reports shall include the following information: (1) permit number; (2) dates of sampling and analysis; (3) a statement describing the methods used in collection, handling, storage and analysis of the samples; (4) a map indicating the sampling locations; and (5) a statement by the individual responsible for implementation of the sampling program concerning the authenticity, precision, limits of detection and accuracy of the data. Monitoring reports shall also include the following information for each sample that is taken: (1) time of day samples taken; (2) water temperature (°C); (3) depth of water body; (4) depth of sample; (5) antecedent weather conditions; and (6) direction of flow. Water quality shall be monitored in accordance with Table MR-A.

2. Water quality data collected in accordance with Specific Condition 16 shall be submitted with the Annual Monitoring Reports as specified in Specific Condition 14.

All monitoring reports shall include field notes documenting the sampling procedures; cumulative analytical summary tables, including the applicable surface water and groundwater standards; groundwater elevation contour maps; sample location maps; surface water sampling logs; Groundwater Sampling Logs per DEP-SOP-001/01 FS2200 or a similar form; analytical laboratory reports; and conclusions and recommendations.

3. Water quality data collected during dragline/utility corridor construction and removal shall be submitted weekly.

4. Hydrology data shall be submitted with the Annual Monitoring Reports as specified in Specific Condition 14. Hydrology data shall be compared and presented in both a tabular and graphical format, with the on-site daily rainfall data. Any hydrological and/or biological indicators of wetland impacts noted during the monitoring program should be fully discussed in the annual report in regard to: (1) the overall hydrologic setting, (2) whether the noted impacts are negative or positive, and (3) whether the said impacts are of any significance.

5. Water levels in wetlands and other surface waters shall be monitored in accordance with Table MR-B.

D. Stream Monitoring

1. For stream projects, visual monitoring shall be conducted along the entire length of each reach to document observable stream conditions associated with sediment transport and stream stability, such as bank instability, instability/failure of instream structures, structure piping, headcuts, lateral bank migration and excessive sediment deposition or degradation of the channel. Digital photographs of observed and noted problems will be taken. GPS coordinates in Florida State Plane will be collected at noted problem areas. Visual monitoring of streams shall be conducted only by individuals that have the appropriate training and/or expertise to assess the stability of streams and the condition of in-stream structures.

2. A brief narrative of the results of the visual assessments shall be included in the Annual Monitoring Report. The narrative in the Annual Monitoring Report should include the results from the visual assessments conducted in that monitoring year. Any areas of concern shall be annotated on a plan view of the site with GPS coordinates provided in decimal degrees (Florida State Plane), with photographs, and with the written narrative describing the features and issues of concern. Once a feature of concern has been identified, that same feature shall be reassessed on all subsequent visual assessments. Photographs should be taken from the same location year-to-year to document the current condition of the concern. The Monitoring Report shall identify all recommended courses of action, which may include continued monitoring, repair or other remedial action to alleviate the concerns.

3. Reclaimed streams shall be surveyed annually to assess morphological stability. Three 100-meter reaches shall be surveyed for every 1,000 meters of reclaimed stream length. The selection of survey reaches shall be representative of overall reach conditions and include areas that may be predisposed to potential problems, such as particularly tight meanders, channel confluences, or changes in bed slopes. The upstream and downstream extents of the survey reaches shall be permanently monumented and referenced to the thalweg stations from the original design. Surveying shall be conducted for 10 years, with monitoring events occurring on years 1, 2, 3, 5, 7, and 10.

   Surveying shall include longitudinal thalweg, bank, water surface (if present), and bankfull indicator profiles and representative cross-sections. A total of six cross-sections shall be surveyed in each surveying reach: 3 in riffles and 3 in pools located in meander bends. Meander bend pool cross-section locations shall be selected to include a range of meander radius of curvatures. Cross-sections shall include thalweg, water surface (if present), bankfull, top of bank elevations and measurements of Bank Height Ratio (BHR) and Entrenchment Ratio (ER). Cross-sections shall be permanently monumented and referenced to the thalweg stations from the original design.

4. The as-built survey of the longitudinal thalweg profile, water surface, bankfull indicators, and top of banks, collected during the as-built survey of the constructed channel according to Specific Condition 29r shall be used as the baseline condition for comparing and assessing morphological monitoring data. Survey monitoring data shall be used to calculate all morphological parameters contained in Tables 15A-15E of Appendix 2-2-B-i. Morphological parameter values derived from morphological monitoring shall be compared to the parameter values calculated from the as-built survey data to determine if Release Criteria are met.

5. Hydrology Monitoring: Hydrology shall be monitored as specified in Table MR-B.

6. Macroinvertebrate Monitoring: To establish a standard method, the Department's Standard Operating Procedures for Stream Condition Index sampling and calculation shall be used to monitor establishment of a macroinvertebrate community in reclaimed streams. Macroinvertebrate sampling shall be conducted annually, providing flow conditions are sufficient, for at least three years prior to release. The three samples do not have to be in consecutive years to allow for sampling under suitable flow conditions. Sampling shall be conducted in one (1) 100-meter reach for every 1,000 feet of reclaimed stream length up to a total of three (3) sampling reaches per stream segment. The 100-meter reaches sampled shall be chosen from the same 100-meter reaches used for surveying under monitoring requirement D4. The individual SCI metrics shall be compared to reference data approved by the Department under Specific Condition 35D6. If the stream does not meet Release Criteria after three sampling events have been completed, additional annual sampling hall be conducted until the Release Criteria is met.

E. MITIGATION MONITORING

1. VEGETATION: All herbaceous vegetation monitoring shall occur during or immediately after the summer growing season. The reports should include statistical summaries of all monitoring required under this section, a description of the methods used to collect the data (include citations and strata definitions (trees, shrubs, groundcover), photographs taken from the same permanent stations, and maps of sampling locations. Means and one standard error of the mean for each variable measured shall be reported in each report. Percent cover shall be reported as both total and relative. Information shall be reported graphically against time in the final report submitted prior to the request for release. Reports shall be submitted in the following format:

   a. Data shall be reported separately for individual wetlands. For wetlands that include both herbaceous and forested areas, provide separate groundcover data tables for each wetland type.

   b. DEP mitigation data shall be reported separately from data collected from non-DEP mitigation areas.

   c. Shrub data shall be reported separately.

   d. Summary data tables including the following information shall be provided for each wetland and wetland type:

      Trees:
      - Density of each species (numbers per acre, not just numbers sampled)
      - Mean height of each species
      - Numbers recruited if they meet the specified tree definition

      Shrubs:
      - Density of each species (numbers per acre, not just numbers sampled)
      - Numbers recruited if they meet the specified shrub definition

      Ground cover (report both total and relative cover):
      - percent cover of each species
      - percent cover of desirable species (as defined in Specific Condition 35C1).
      - percent cover of nuisance species (as defined in Specific Condition 35C4).
      - percent cover of all wetland species
      - percent cover of upland species
      - percent cover of open water (total cover only)
      - percent cover of bare ground (total cover only)
      - qualitative description of vegetation zonation along the wetland ecotone

e. If any supplemental planting was done, provide a table that lists species and numbers planted.

f. Provide species data by both scientific and common name.

2. SOILS: For each created wetland, the initial monitoring report shall also include information on the final soil types within the wetland, including the range of muck or wetland topsoil depths and a description of the upper foot of soil, below any muck or wetland topsoil. Descriptions for soils below the muck or topsoil can include sand tailings or overburden. The texture of the overburden should be described (sandy-loam, sand, etc.). Actual measurements of muck depths shall be obtained from at least 5 locations in the wetland (FLUCFCS 611 and the Prairie Dog wetland only). If no muck or topsoil was applied, then this should be noted.

3. WATER QUALITY: Water Quality shall be monitored as specified in Table MR-A.

4. WATER QUANTITY: Water quantity shall be monitored in accordance with Table MR-B. Water quantity data shall be compared and presented in both a tabular and graphical format, with the on-site daily rainfall data being collected at the Ona Mine.

MR-A: Water Quality Monitoring (Page 1 of 2)

Locations	Parameters	Methods	Frequency/ Duration	Compliance Criteria
1. Existing Surface Water Stations: SW-1, SW-2, SW-3[(1)], SW-5, SW-5a, SW-7, and SW-8.	pH, Temperature, DO, Conductivity, Turbidity, Total Alkalinity, Hardness, TSS, TP, Ammonia, Ortho Phosphate, Total Nitrogen, TKN, Nitrate/Nitrite, Fluoride, Sulfate, Total Organic Carbon (TOC), Chloride, Chlorophyll-a, Aluminum, Selenium, Calcium, Magnesium, Arsenic, Cadmium, Chromium, Iron, Lead, Nickel, and Zinc	DEP Standard Operating Procedures (SOPs) or according to an approved QAPP.	**Quarterly** prior to and through construction phase.	62-302.530, F.A.C., Class III Standards and 62-330, F.A.C.
2. Existing Monitoring Wells: Ona-1, Ona-2, Ona-3, Ona-4, Ona-5, Ona-6, Ona-7, Ona-8, Ona-9, Ona-10, Ona-11, and Ona-12.	pH, temperature, Conductivity, Turbidity, TDS, Total Alkalinity, Hardness, TP, Ortho Phosphate, Total Nitrogen, TKN, Nitrate/Nitrite, Fluoride, Sulfate, Chloride, Aluminum, Selenium, Calcium, Magnesium, Arsenic, Cadmium, Chromium, Iron, Lead, Nickel, and Zinc.	DEP SOPs or according to an approved QAPP.	**Semi-Annually** prior to and through construction phase.	62-520.420, F.A.C., Class G-II Standards
3. Existing Surface Water Stations and Monitoring Wells: SW-1, SW-2, SW-3[(1)], SW-5, SW-5a, SW-7, and SW-8; and Ona-1, Ona-2, Ona-3, Ona-4, Ona-5, Ona-6, Ona-7, Ona-8, Ona-9, Ona-10, Ona-11, and Ona-12.	Gross Alpha and Radium 226/228. If gross alpha is greater than 15, then Uranium shall also be monitored.	DEP SOPs or according to an approved QAPP.	**Annually** prior to and through construction phase.	62-302.530, F.A.C., Class III Standards, 62-330, F.A.C and 62-520.420, F.A.C., Class G-II Standards

MR-A: Water Quality Monitoring (Page 2 of 2)

Locations	Parameters	Methods	Frequency/ Duration	Compliance Criteria
4. Stream Crossings: Field located 50 meters (m) upstream and 50 m downstream of each dragline/utility corridor crossing.	Turbidity	DEP SOPs or according to an approved QAPP.	**Daily** during construction and removal of each dragline/utility corridor crossing.	62-302.530, F.A.C., Class III Standards
5. Preserved Streams and Wetlands: Field located 50 m upstream and 50 m downstream of the point of severance and reconnection of each stream or wetland.	Turbidity	DEP SOPs or according to an approved QAPP.	**Daily** during severance or reconnection to preserved wetlands or streams.	62-302.530, F.A.C., Class III Standards
6. Reclaimed Streams and Wetlands: Field located in stream and mitigation wetlands at or near the connection to preserved wetlands/streams.	Turbidity, Temperature, DO, pH, and Conductivity.	DEP SOPs or according to an approved QAPP.	**Monthly** from May through October prior to reconnection to preserved wetlands.	62-302.530, F.A.C., Class III Standards
7. Reclaimed Streams and Wetlands: Field located in streams and mitigation wetlands at or near vegetation transects.	Turbidity, Temperature, DO, pH, and Conductivity.	DEP SOPs or according to an approved QAPP.	**Three** weekly samples prior to release request.	62-302.530, F.A.C., Class III Standards

Note: (1)Sampling and measurements/analyses from the Horse Creek Stewardship Program Station HCSW-1 may be provided in lieu of duplicative sampling at Ona Station SW-3.

Table MR-B: Water Quantity Monitoring (Page 1 of 1)

Locations	Parameters	Methods	Frequency/ Duration	Compliance/ Release Criteria
1. Rain Gauges: At least two rain gauges shall be installed at the Ona Mine. Locations shall be approved in writing by the Department.	Rainfall	Rain gauge	**Daily**	N/A
2. Existing Surface Water Gauging Stations: SW-1, SW-2, SW-3*[(1)], SW-5, SW-7, and SW-8.	Water level and flow hydrographs.	Continuous stage level recorders and DEP SOP FT 1800.	**Continuously** through construction phase. Flow measurements taken **monthly or as needed** to refine the existing flow rating curves.	Downstream flows shall not be reduced to the point where lack of flow exiting the mine property causes water quality violations in major tributary systems.
3. Wetland Hydrographs: In each created wetland.	Water levels, average water depth, and hydroperiod hydrographs	Staff gauges, piezometers, and visual inspection	Piezometers **weekly** for at least 2 years after contouring is complete for initial hydrological assessment, then **monthly** continuing until release.	Within the range of values documented in reference wetlands of the appropriate community type.
4. Stream Gauging: In downstream most portion of each created stream reach.	Water level and flow hydrographs, occurrence of bankfull events.	Continuous stage level recorders and DEP SOP FT 1800	Stage - **continuously** until release. Flow measurements - **as needed** to develop flow rating curves.	Bankfull stage and discharge volumes shall be similar to the values described in Appendix 2-2-B-i.

Note: [(1)]Sampling and measurements/analyses from the Horse Creek Stewardship Program Station HCSW-1 may be provided in lieu of duplicative sampling at Ona Station SW-3.

Table MR-C: Vegetation, Soil, and Stream Macroinvertebrate Monitoring (Page 1 of 2)

Monitoring Type	Locations	Parameters	Methods	Frequency/ Duration	Compliance/Release Criteria
1. Vegetation	Field located randomly selected replicate sites field located along several transects across each created mitigation wetland.	Species list and % cover, FLUCCS level III map, % bare ground and open water, nuisance spp. cover, upland spp. cover, wetland spp.cover, tree density, shrub density, tree height, tree dbh (starting year 5), and fruit and seedlings (starting year 7).	Modified line-intercept, belt-transects; point-frames, and/or elongated quadrats.	Years 1, 2, 3, and 5 following final planting, then every other year through the year prior to release request.	Specific to community type being restored. See Specific Condition 35.
2. Soils	In mitigation wetlands at or near vegetation transects described above.	Substrate description (hydric indicators/ depth to hydric indicators), litter accumulation, compaction, and soil moisture.	soil auger, shovel, penetro-meter, soil moisture meter	During vegetation sampling.	See Soils Section of Mitigation Monitoring Section.

Table MR-C: Vegetation, Soil, Stream Macroinvertebrate Monitoring (Page 2 of 2)

Monitoring Type	Locations	Parameters	Methods	Frequency/ Duration	Compliance Criteria
3. Stream Channel Integrity and Morphology	Entire channel profile and representative cross sections of each created stream reach for as-built condition; then 3 representative 100-m reaches for each 1,000 m of stream thereafter.	Bank and channel stability, map of channel, sinuosity, stream length, stream slope, bankfull indicators present, bankfull area, depth and width, max depth, width/depth ratio, entrenchment ratio, radius of curvature, large woody debris abundance, and vegetation cover in stream channel.	Visual inspection. Survey equipment, and GPS	Visual inspection of the channel after significant rain events for at least the first two years after contouring. Initial – Survey entire channel, survey profile and representative cross sections. Then representative reaches during years 2, 3, 5, 7 and 10 after completion of construction.	See Specific Conditions 35D2, D3 and 43D1-4
4. Macro-invertebrates	One 100m reach for each 1,000 feet of stream up to a total of 3 reaches per stream.	Number and identity of each taxa, diversity, richness, and functional feeding guilds (Merritt & Cummins).	Dipnet sampling, (DEP SCI SOP)	Annually for at least three years prior to release request. Sampling shall be conducted in late August or early September.	See Specific Conditions 35D6 and 43D6.

Department of the Army
Permit Number SAJ-2011-01869 (SP-JPF)

Attachment B-2

Specific Conditions of the modification of the water quality permit/certification (FDEP ERP No. 0169281-015) issued July 12, 2018, in accordance with General Condition number 5 on page 2 of this DA permit. 56 pages

Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road, MS 3577
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Noah Valenstein
Secretary

July 12, 2018

Mr. Russell Schweiss
Director of Land and Resource Strategies
Mosaic Fertilizer, LLC
13830 Circa Crossing Drive
Lithia, FL 33547
Russell.Schweiss@mosaicco.com

RE: Environmental Resource Permit Modification No. MMR_169281-018
Plant Site Removal, Peace River Offsite Mitigation, Payne Creek Revisions, and Other Minor Changes
Mosaic Fertilizer, LLC, Ona Mine, Hardee County

Dear Mr. Schweiss:

On February 14, 2018, the Department of Environmental Protection (Department), received an application from Mosaic Fertilizer, LLC (Mosaic), to modify Environmental Resource Permit (ERP) No. MMR_169281-015 for the Ona Mine. This ERP modification is to 1) Replace the mitigation provided by the Bay Systems Enhancement Project (ERP No. MMR_332067-001) with the Offsite Peace River Preservation Area; 2) Revise the on-site mitigation plan so that more of the reclaimed bay swamps are counted as mitigation; 3) Update the Payne Creek Restoration Plan to revise the post reclamation land use and incorporate a long term utility easement and temporary dragline walk path corridor; 4) Revise the mining and reclamation schedules and update the waste disposal plan due to Mosaic's decision not to construct a new beneficiation plant at the Ona mine and instead utilize existing facilities at the Four Corners and South Pasture mines; 5) Make minor edits to the Ona Conservation Easement Template; 6) Make minor edits to the Long Term Management Plan; 7) Update several conditions to match more recently issued permits; and 8) Add the hydrologic evaluation report and modeling files for the Prairie Dog wetland that were inadvertently not included as part of Appendix 2-5-A-iii in the original permit. There will be no additional impacts to wetlands or other surface waters.

A conservation easement will be placed on all 935.4 acres of the Offsite Peace River Preservation Area, but only a portion of the total functional gain assessed under Ch. 62-345, F.A.C is needed to replace that provided by the Bay Systems Enhancement Project. The

additional 41.9 units of functional gain may be used to offset impacts on other Mosaic projects in the Peace River Basin.

Based on the UMAM analysis done under Ch. 62-345, F.A.C, for all the on-site and off-site mitigation for the Ona Mine, the net functional gain is 88.6 units. Since during the permitting process, Mosaic chose to utilize the provisions of Section 10.2.1.2 of the Applicant's Handbook by proposing mitigation that implements all or part of a plan that provides regional ecological value and that provides greater long term ecological value than the area of wetland or other surface water to be adversely affected, the Department did not require Mosaic to implement practicable design modifications to further reduce or eliminate adverse impacts. **Therefore, all of the approved mitigation and the 88.6 units of functional gain must be maintained and cannot be used to offset impacts on other projects.**

Since the proposed modification is not expected to result in any adverse environmental impact or water quality degradation, the permit is hereby modified as requested, provided that the following permit language, figures, tables and appendices are modified, deleted or added as follows:

(a) Paragraphs three, four and five of the Project Description shall read: To offset unavoidable impacts that will occur from these authorized activities, the permittee shall: 1) create within the Ona Mine, approximately ~~2,625.4~~ 2,627.2 acres of wetlands and other surface waters consisting of ~~1,327.0~~ 1,325.7 acres of herbaceous wetlands, ~~1,274.0~~ 1,277.0 acres of forested wetlands, 24.4 acres of other surface waters and ~~80,317~~ 78,652 linear feet of stream channels; 2) enhance within the Ona Mine, approximately 57.4 acres of wetlands and other surface waters, 10,000 linear feet of stream channel, and 361.4 acres of uplands; 3) preserve within the Ona Mine through granting of a perpetual conservation easement, 1,718.5 acres of unmined wetlands and other surface waters, 1,551.0 acres of unmined upland and habitat, and 122,812 linear feet of stream channels; 4) create within the off-site Payne Creek Project, ~~511.5~~ 506.7 acres of wetlands, 385.2 acres of uplands and 14,754 linear feet of stream channel; 5) create, restore, enhance and preserve, within the off-site Bowlegs Creek project, 212.9 acres of wetlands and other surface waters, 370.7 acres of uplands and 6,309 feet of stream channel; and 6) ~~create, restore and enhance, within the offsite Bay Systems Enhancement Project (Permit No. 332067-001), 151.7 acres of wetlands and 36.8 acres of upland buffer~~ preserve within the off-site Peace River Preservation Area, 935.4 acres of wetlands and uplands. A perpetual conservation easement shall be placed on the ~~2,625.4~~ 2,627.2 acres of mitigation wetlands and other surface waters, ~~80,317~~ 78,652 linear feet of stream channel and 459.7 acres of uplands reclaimed within the Ona Mine, and will include a 25-foot upland buffer around each created mitigation wetland, stream or other surface water. A perpetual conservation easement shall also be placed on the ~~1,668.6~~ 2,672.9 acres of uplands, wetlands, streams and other surface waters in the off-site mitigation projects (583.4 acres at Bowlegs Creek, ~~896.7~~ 1,154.1 acres at Payne Creek and ~~188.5~~ 935.4 acres at the ~~Bay Systems Enhancement Project~~ Peace River Preservation Area).

The created herbaceous wetlands serving as mitigation will include: 1181.5 acres of freshwater marsh, 45.7 acres of wet prairie, ~~70.8~~ 69.5 acres of shrub swamp, and 29.0 acres of hydric palmetto prairie. The created forested wetlands serving as mitigation will include: ~~74.1~~ 114.0 acres of bay swamp, 5.1 acres of gum swamp, 95.4 acres of inland ponds and sloughs, ~~872.5~~ 840.3 acres of mixed wetland hardwood forest, 6.6 acres of wetland coniferous forest, ~~36.6~~ 33.9 acres of hydric pine flatwoods, and ~~183.7~~ 181.7 acres of hardwood-conifer mixed wetland forest. The created surface waters serving as mitigation will include 22.6 forested acres and 1.8 non-forested acres and ~~80,317~~ 78,652 linear feet of stream channels. ~~These acres include the approximately 14.3 acres of wetlands and other surface waters that will be restored in the temporary dragline/utility crossing areas.~~

In addition to the wetlands and other surface waters created on-site to meet mitigation requirements, approximately 390 acres of lakes, ~~27,580~~ 29,245 linear feet of stream channel and ~~1,662~~ 1642.2 acres of wetlands and other surface waters will also be created as part of the reclamation plan required under Chapter 62C-16, F.A.C. Approximately 14,116.1 acres of uplands will also be created as part of the reclamation plan.;

(b) Specific Condition No. 5 shall read: CONSERVATION EASEMENT AND LONG TERM MANAGEMENT: The permittee shall provide a phased perpetual conservation easement to the Department on approximately ~~8,442.1~~ 9,446.4 acres, including 6,773.5 acres within the Ona Mine and ~~1,668.6~~ 2,672.9 acres in the off-site Bowlegs Creek Project, Payne Creek Project and ~~Bay Systems Enhancement Project~~ the Peace River Preservation Area. A Long Term Management Plan (LTMP) (Appendix 4-4-C), covering all of these areas is incorporated as part of this permit. Onsite, the conservation easement area shall include approximately 3,704.6 acres of unmined lands within and adjacent to the 100-year floodplains of Brushy Creek, Horse Creek, the West Fork of Horse Creek and several wetlands, unnamed tributaries and supporting native upland habitats associated with Brushy Creek, Oak Creek and Hickory Creek [Phase A-1 and A-2 Lands, (Maps 4-8-B-iv and 4-8-C)]. The conservation easement shall also include approximately 3,068.9 acres of reclaimed land within the Ona Mine [Phase A-3 and A-4 Lands, (Map 4-8-C)]. The reclaimed lands include 2,609.2 acres of wetlands and other surface waters, 80,317 linear feet of streams and 459.7 acres of uplands including an approximate 25-foot upland buffer around each mitigation wetland, stream or other surface water shown on Map 4-8-B-i. Additionally, a conservation easement shall be placed on the following off site projects [Phase B Lands]: 583.4 acres of created, restored and enhanced lands in the Bowlegs Creek Project (Map C-4 of the LTMP), ~~896.7~~ 1,154.1 acres of created lands at the Payne Creek Project (Map Appendix D-2 in Appendix 4-1-C) and ~~188.5~~ 935.4 acres of ~~enhanced~~ preserved wetlands and uplands ~~buffers~~ at the offsite ~~Bay Systems Enhancement Project~~ Peace River Preservation Area (~~Permit No. 332067-001 and Maps C-1 and C-2~~ Map C-5 of the LTMP and Appendix 4-1-D (Peace River Preservation Area).

A Baseline Documentation Report (Ecological Baseline Report) shall be completed in accordance with Section 3 of the LTMP, for each of the above categories of lands

(excluding Phase A-4 lands) within the conservation easement prior to execution and recording of each segment of the easement. Baseline reports shall be submitted to the Department for review prior to execution of the easements and shall be recorded with the easement. The Baseline Documentation Report shall be modified for the Phase A-2 lands enhanced as required by Specific Condition 8 following release of all the enhancement areas from all mitigation requirements.

For Phase A-1 and A-2 lands and the off-site Peace River Preservation Area, the Instrument of Perpetual Conservation Easement and an accurate legal description as granted by the landowner shall be executed by the permittee in a format acceptable to the Department prior to the initiation of any disturbance or site preparation within the Ona Mine or at a later time approved in writing by the Department. Within 90 days of execution by the Department, the permittee shall have the document recorded in the public records of Hardee County.

Post-Reclamation Phase A-3 lands shall be addressed by modifying the easement following release of each of the individual reclamation units shown on Map CRP-10 that contain mitigation wetlands or other surface waters. Release of a reclamation unit (LRU) shall include release of all uplands, wetlands and other surface waters in that LRU from the reclamation requirements of Chapter 62C-16, F.A.C., and release of all mitigation wetlands and other surface waters from the requirements of Specific Condition 35. An accurate legal description and amendment to the Perpetual Conservation Easement shall be executed by the permittee in a format approved by the Department within one year from the date that the Department has released all lands within that LRU from all reclamation and mitigation requirements or at a later time approved in writing by the Department. Within 90 days of execution by the Department, the permittee shall have the document recorded in the public records of Hardee County.

For ~~each of~~ the off-site Bowlegs Creek and Payne Creek Projects in the Phase B lands, the Instrument of Perpetual Conservation Easement and an accurate legal description shall be executed by the permittee in a format approved by the Department within one year from the date that the Department has released all lands within that off-site area from all mitigation requirements or at a later time approved in writing by the Department. Within 90 days of execution by the Department, the permittee shall have the document recorded in the public records of the relevant county.

The Perpetual Conservation Easements, Exhibits, Amendments, LTMP and the Easement Documentation Reports shall be incorporated and made part of this permit document. The Department shall be copied on all correspondence with the United States Army Corps of Engineers (USACE) on all lands covered by an Instrument of Perpetual Conservation Easement, including annual monitoring reports documenting ecological conditions and reports required as part of an approved grazing management plan.;

(c) Specific Condition 6 shall read: LONG TERM MANAGEMENT PLAN: The long term management plan (LTMP) associated with the Conservation Easement (CE) required by

Specific Condition 5, shall go into effect at different times for each phase of the CE. For Phase A-1 lands and the off-site Peace River Preservation Area, the LTMP shall be effective following recording of the CE. For Phase A-2 lands, the LTMP shall go into effect following release of all mitigation areas from the requirements of Specific Condition 35 and approval of the revised Baseline Documentation Report required by Specific Condition 5. For Phase A-3 lands, the LTMP shall go into effect on the protected areas in each released LRU, as defined in Specific Condition 5, following modification of the CE to add these protected areas. For the Bowlegs Creek and Payne Creek Projects in the Phase B lands, the LTMP shall go into effect for each off-site area, once the project has been released from all mitigation requirements and the CE has been recorded.

(d) The first sentence of Specific Condition 8 shall read: ON-SITE ENHANCEMENT: Prior to the commencement of mining operations at the Ona Mine, or at a later time approved in writing by the Department, the following enhancement and restoration activities on approximately 435 acres of unmined uplands, wetlands and other surface waters shall be initiated.;

(e) The first sentence of Specific Condition 9 shall read: BOWLEGS CREEK OFF-SITE MITIGATION: Prior to the commencement of mining operations at the Ona Mine, or at a later time approved in writing by the Department, the creation, restoration, enhancement and preservation activities on 367.8 acres of uplands and 212.9 acres of wetlands and other surface waters shall be initiated as detailed in Appendix 4-1-B (Bowlegs Creek Offsite Mitigation Area Enhancement Plan, A Regional Benefit Project).;

(f) The first sentence of Specific Condition 10 shall read: PAYNE CREEK OFF-SITE MITIGATION: Prior to the commencement of mining operations at the Ona Mine, or at a later time approved in writing by the Department, creation of 306.3 acres of herbaceous marsh, (FLUCFCS 641), 111.8 acres of wet prairie (FLUCFCS 643), ~~51.8~~ 15.4 acres of bay swamp (FLUCFCS 611), ~~36.8~~ 73.2 acres of mixed hardwood swamp (FLUCFCS 617), 85 acres of xeric oak (FLUCFCS 421), 300.2 acres of upland hardwood forest (FLUCFCS 434) and 4.8 acres or 14,754 linear feet of stream (FLUCFCS 511) shall be initiated as described in Appendix 4-1-C (Payne Creek Restoration).;

(g) Specific Condition 11 is deleted: ~~BAY SWAMP OFF-SITE MITIGATION: Prior to the commencement of mining operations at the Ona Mine, enhancement and restoration of approximately 151.7 acres of bay swamps (FLUCFCS 611) and 36.8 acres of adjacent upland buffers shall be initiated as described in the offsite Bay Systems Enhancement Project (Permit No. 332067-001).~~ ;

(h) Specific Condition 12 shall read: TIMING OF ENHANCEMENT PROJECTS: The On-site and Off-Site Enhancement Projects required in Specific Conditions 8, 9, and 10 ~~and 11~~, shall be initiated within 90 days of receipt of all required permits and approvals, or at a later time approved in writing by the Department. The Department shall be notified once all approvals are obtained.;

(i) The first paragraph of Specific Condition 29 shall read: ON-SITE MITIGATION CONSTRUCTION STANDARDS: The permittee shall create as mitigation ~~2,584.8~~ 2,586.4 acres of wetlands (This number does not include the 16.3 created herbaceous wetland acres required under On-Site Enhancement in Specific Condition 8), 24.4 acres of other surface waters and ~~80,317~~ 78,652 linear feet of stream channels, as shown on Maps 4-2-B-ii, 4-3-B, 4-8-B-i and listed on Tables 4-5 and 4-6. The mitigation wetlands to be constructed include 1179.9 acres of freshwater marsh (FLUCFCS 641), 31.0 acres of wet prairie (FLUCFCS 643), ~~70.8~~ 69.5 acres of shrub swamp (FLUCFCS 647), 29.0 acres of hydric palmetto prairie (FLUCFCS 649), ~~74.1~~ 114 acres of bay swamp (FLUCFCS 611), 5.1 acres of gum swamp (FLUCFCS 613), 95.4 acres of inland ponds and sloughs (FLUCFCS 616), ~~872.5~~ 840.3 acres of mixed wetland hardwood forest (FLUCFCS 617), ~~36.6~~ 33.9 acres of hydric pine flatwoods (FLUCFCS 625), 6.6 acres of coniferous forest (FLUCFCS 620), and ~~183.7~~ 181.7 acres of hardwood-conifer mixed wetland forest (FLUCFCS 630). The other surface waters to be created include 1.8 acres palmetto prairie (FLUCFCS 321o), 0.2-acre of pine flatwoods (FLUCFCS 411o), 0.1-acre of temperate hardwood forest (FLUCFCS 425o), 12.3 acres of live oak forest (FLUCFCS 427o), and 10 acres of hardwood-conifer mixed forest (FLUCFCS 434o). ~~These numbers include restoration of the 15.3 acres wetlands and other surface waters in the temporary dragline/utility crossing areas shown on Maps 3-2, 3-5-A, 3-5-B and 3-5-C.~~ The wetland and other surface water mitigation and restoration shall be accomplished in accordance with the timetables in Specific Condition 22, Map 4-5, Appendix 2-2-A-iii (Post Reclamation Wetland Cross Sections), and in the following manner:;

(j) Replace Table 2-4-B, UMAM Functional Gain vs. Functional Loss Summary (07/24/2015) with Table 2-4-B (06/21/2018);

(k) Replace Table 2-4-F, UMAM Creation (07/07/2015) with Table 2-4-F (06/21/2018);

(l) Replace Table 2-4-G, Summary of Onsite Mitigation Categories by FLUCFCS Code (07/07/2015) with Table 2-4-G (06/21/2018);

(m) Replace Table 3-1-B, Mine Impact Summary (06/02/2015) with Table 3-1-B (01/08/2018);

(n) Replace Table 3-2, Mine Plan Summary (07/09/2014) with Table 3-2 (05/10/2018);

(o) Replace Table 3-4-B, Ona Estimated Tailings Schedule (08/27/2013) with Table 3-4-B (01/08/2018);

(p) Replace Table 4-1, Mine - Reclamation Schedule (07/09/2014) with Table 4-1 (02/09/2018);

(q) Replace Table 4-5, Summary of Reclaimed Streams (06/02/2015) with Table 4-5 (03/19/2018);

(r) Replace Table 4-6, Summary of Onsite Created Mitigation Wetlands by LRU (06/02/2015) with Table 4-6 (06/21/2018);

(s) Replace Map 3-1, Mine Plan and Access Corridors (07/09/2014) with Map 3-1 (01/08/2018);

(t) Replace Map 3-2, Mined, Disturbed Areas (07/09/2014) with Map 3-2 (01/08/2018);

(u) Replace Map 3-4, Waste Disposal (07/09/2014) with Map 3-4 (01/08/2018);

(v) Replace Map 3-6 Buffers (07/09/2014) with Map 3-6 (01/08/2018);

(w) Replace Map 4-1 Reclamation Schedule (07/09/2014) with Map 4-1 (06/21/2018);

(x) Replace Map 4-4 Post Reclamation Soils (07/09/2014) with Map 4-4 (01/08/2018);

(y) Replace Map 4-8-B-i, FDEP Mitigation Wetlands and Streams, and tiled Map 4-8-B-i, sheets 5, 8, 9, 11, 18, 19, 26, and 32 (06/02/2015) with Map 4-8-B-i, and tiled Map 4-b-B-i, sheets 5, 8, 9, 11, 18, 19, 26, and 32 (05/30/2018);

(z) Replace Map 4-8-B-iii, UMAM Scores With Project (06/02/2015) with Map 4-8-B-iii (03/19/2018);

(aa) Replace Map 4-8-B-iv, Mitigation Categories, and tiled Map 4-8-B-iv, sheets 1, 5, 10, 18 and 20 (06/02/2015) with Map 4-8-B-iv (03/19/2018) and tiled Map 4-8-B-iv, sheets 1, 5, 10, 18 and 20 (07/05/2018);

(bb) Replace Map 4-8-C, Proposed Conservation Easements (07/09/2014) with Map 4-8-C (05/30/2018);

(cc) Add Appendix 4-1-D, Technical Memorandum: Ona Mine Offsite Peace River North and South Preservation Areas, Polk County, Florida, January 22, 2018;

(dd) Replace Appendix 3-4-A, Life of Mine Waste Disposal Plan Update, Fort Green-Ona Mine (August 1, 2013) with Life of Mine Waste Disposal Plan, South Pasture Expansion Mine (March 7, 2016) and Life of Mine Waste Disposal Plan, Four Corners Extension Mine (March 7, 2016);

(ee) Replace Appendix 4-1-C, Payne Creek Restoration (July 2015) with Payne Creek Restoration (June 2018);

(ff) Replace Appendix 4-4-A, Ona Conservation Easement Template (7/28/2015) with Appendix 4-4-A, Ona Conservation Easement Template (received 02/16/2018);

(gg) Replace Appendix 4-4-C, Long Term Management Plan (July 2015) with Appendix 4-4-C (February 2018);

(hh) Add Appendix 2-5-A-III, Hydrologic Evaluation of Wetland Mitigation Designs for the Prairie Dog Wetlands, Ona Mine, Hardee County Florida (April 2015).

This letter of approval does not alter the General Conditions or the remaining Specific Conditions of the permit (No. MMR_169281-015). This modification does not alter the expiration date of the permit, which is August 31, 2075.

By copy of this letter, the Department is notifying all necessary parties of the modification. This letter and any accompanying drawings or tables must be attached to the original permit (No. MMR_169281-015).

RIGHTS OF AFFECTED PARTIES

This action is final and effective on the date filed with the Clerk of the Department unless a petition for an administrative hearing is timely filed under sections 120.569 and 120.57, Florida Statutes, before the deadline for filing a petition. On the filing of a timely and sufficient petition, this action will not be final and effective until further order of the Department. Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice.

Petition for Administrative Hearing

A person whose substantial interests are affected by the Department's action may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57, Florida Statutes. Pursuant to rule 28-106.201, Florida Administrative Code, a petition for an administrative hearing must contain the following information:

(a) the name and address of each agency affected and each agency's file or identification number, if known;

(b) the name, address, and telephone number of the petitioner; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests are or will be affected by the agency determination;

(c) a statement of when and how the petitioner received notice of the agency decision;

(d) a statement of all disputed issues of material fact. If there are none, the petition must so indicate;

(e) a concise statement of the ultimate facts alleged, including the specific facts that the petitioner contends warrant reversal or modification of the agency's proposed action;

(f) a statement of the specific rules or statutes that the petitioner contends require reversal or modification of the agency's proposed action, including an explanation of how the alleged facts relate to the specific rules or statutes; and

(g) a statement of the relief sought by the petitioner, stating precisely the action that the petitioner wishes the agency to take with respect to the agency's proposed action.

The petition must be filed (received by the Clerk) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000 or at Agency_Clerk@dep.state.fl.us. Also, a copy of the petition shall be mailed to the applicant at the address indicated above at the time of filing.

Time Period for Filing a Petition

In accordance with rule 62-110.106(3), Florida Administrative Code., petitions for an administrative hearing by the applicant must be filed within 21 days of receipt of this written notice. Petitions filed by any persons other than the applicant, and other than those entitled to written notice under subsection 120.60(3), Florida Statutes, must be filed within 21 days of publication of the notice or within 21 days of receipt of the written notice, whichever occurs first. Under subsection 120.60(3), Florida Statutes, however, any person who has asked the Department for notice of agency action may file a petition within 21 days of receipt of such notice, regardless of the date of publication. The failure to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57, Florida Statutes, or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will be only at the discretion of the presiding officer upon the filing of a motion in compliance with rule 28-106.205, F.A.C. Florida Administrative Code.

Extension of Time

Under rule 62-110.106(4), Florida Administrative Code, a person whose substantial interests are affected by the Department's action may also request an extension of time to file a petition for an administrative hearing. The Department may, for good cause shown, grant the request for an extension of time. Requests for extension of time must be filed with the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000 or at Agency_Clerk@dep.state.fl.us before the applicable deadline for filing a petition for an administrative hearing. A timely request for extension of time shall toll the running of the time period for filing a petition until the request is acted upon.

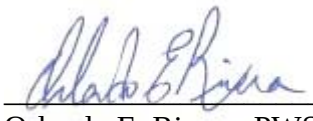
Mediation

Mediation is not available in this proceeding.

The files associated with this order are available upon request. Please address your request to MiningAndMitigation@dep.state.fl.us and include the file number in your request.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION



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CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this **ENVIRONMENTAL RESOURCE PERMIT MODIFICATION, File #MMR_169281-018,** and all copies, were mailed or e-mailed before the close of business on July 12, 2018, to the listed persons.

FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to Section 120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

_____ 7/12/2018_____

Clerk Date

Mosaic Fertilizer, LLC
Ona Mine
FDEP ERP Permit Modification

Table 2-4-B			
UMAM Functional Gain vs. Functional Loss Summary			
	Acres	**Functional Loss**	**Functional Gain**
Impact			
Peace River Basin Total	4084.7	-2697.3	
Myakka River Basin Total	43.6	-28.6	
Impacts Total	*4128.3*	*-2725.9*	
Mitigation[1]			
Off-site Mitigation			
Bowlegs			
Wetland Creation	11.3		9.0
Upland Creation/Restoration	277.7		124.8
Wetland Preservation	87.0		3.7
Upland Preservation	0.7		0.0
Upland Enhancement	89.4		31.3
Wetland Enhancement	114.6		30.7
None (Powerline Easement)	2.9		0.0
Bowlegs Total	*583.4*		*199.4*
Payne Creek[2]			
Wetland Creation	511.4		241.8
Upland Creation/Restoration	385.3		106.7
Payne Creek Total	*896.7*		*348.5*
Peace River Preservation Area[4]			
Wetland Preservation	931.6		46.6
Upland Preservation			
Roads/Trails	3.8		0.0
Peace River Preservation Area Total	*935.4*		*46.6*
On-site Mitigation Peace River Basin			
Wetland Creation	2560.9		1433.6
Upland Preservation	1551.0		416.4
Wetland Preservation	1718.5		230.2
Upland Enhancement	361.4		90.9
Wetland Enhancement	57.4		10.6
Peace River Basin Total	*6249.2*		*2181.7*
On-site Mitigation Myakka River Basin			
Wetland Creation	66.3		38.3
Reclamation[3]			
Reclamation Only Peace River Basin	1641.9		
Reclamation Only Myakka River Basin	18.2		
Reclamation Only Total	*1660.1*		
Net Functional Gain[5]		**88.6**	

[1]Where applicable, the mitigation categories for wetland creation, preservation, and enhancement include other surface waters.

[2]Net Functional Gain derived from the difference between that which is proposed for the Ona ERP and that which was originally required under 62C-16, F.A.C.

[3]Although these wetlands will be reclaimed in accordance with 62C-16, F.A.C, the Functional Gain is not provided as mitigation for this project and the lift may be available for future use.

[4] The Conservation Easement will be executed for the entire 935.4 acres, however, only 46.6 units of the entire 88.5 units will be utilized to replace the previously approved Bay Swamp Enhancement project.

[5] In order to maintain Mosaic's utilization of Section 10.2.1.2 in the Applicant Handbook, the Net Function Gain for the Ona ERP must remain at 88.6 or higher.

Table 2-4-F Creation

Type (Wetland, Upland or OSW)	UMAM Assessment Area ID*	Land Use Code	Location Landscape Score		Water Environment Score		Community Structure Score		UMAM Score		Delta	Risk	Preservation Adjustment Factor	Ac.	Functional Gain
			Without Project	With Project	Without Project	With Project	Without Project	With Project	Without Project	With Project					
Wetland	11-1	611	0	6	0	7	0	7	0	0.67	0.67	2.25	N/A	11.6	3.44
Wetland	14-2	611	0	6	0	7	0	7	0	0.67	0.67	2.25	N/A	13.8	4.10
Wetland	14-3	611	0	6	0	7	0	7	0	0.67	0.67	2.25	N/A	15.0	4.45
Wetland	16E-1	630	0	7	0	8	0	8	0	0.77	0.77	1.50	N/A	26.7	13.66
Wetland	16E-2	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	11.1	7.11
Wetland	16E-3	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	2.0	1.20
Wetland	16E-4	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	10.2	6.27
Wetland	16E-5	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	26.0	15.93
Wetland	16E-6	625	0	7	0	8	0	8	0	0.77	0.77	1.75	N/A	33.9	14.85
Wetland	19-1	630	0	7	0	8	0	8	0	0.77	0.77	1.50	N/A	11.0	5.62
Wetland	19-10	617	0	7	0	8	0	8	0	0.77	0.77	1.50	N/A	17.8	9.07
Wetland	20E-1	617	0	7	0	8	0	8	0	0.77	0.77	1.50	N/A	47.4	24.23
Wetland	21-1	616	0	8	0	8	0	9	0	0.83	0.83	1.50	N/A	15.3	8.49
Wetland	21-10	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	10.8	6.90
Wetland	21-11	641	0	8	0	8	0	9	0	0.83	0.83	1.25	N/A	6.4	4.28
Wetland	21-12	643	0	8	0	8	0	8	0	0.80	0.80	1.50	N/A	0.3	0.16
Wetland	21-13	643	0	8	0	8	0	8	0	0.80	0.80	1.50	N/A	13.4	7.16
Wetland	21-14	617	0	8	0	8	0	8	0	0.80	0.80	1.50	N/A	4.3	2.30
Wetland	21-15	617	0	8	0	8	0	9	0	0.83	0.83	1.50	N/A	124.9	69.41
Wetland	21-16	630	0	8	0	8	0	8	0	0.80	0.80	1.50	N/A	3.9	2.10
Wetland	21-17	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	0.4	0.28
Wetland	21-2	617	0	8	0	8	0	8	0	0.80	0.80	1.50	N/A	4.4	2.37
Wetland	21-3	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	1.5	0.93
Wetland	21-4	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	1.7	1.10
Wetland	21-5	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	8.0	5.13

Table 2-4-F Creation

Type (Wetland, Upland or OSW)	UMAM Assessment Area ID*	Land Use Code	Location Landscape Score		Water Environment Score		Community Structure Score		UMAM Score		Delta	Risk	Preservation Adjustment Factor	Ac.	Functional Gain
			Without Project	With Project	Without Project	With Project	Without Project	With Project	Without Project	With Project					
Wetland	21-6	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	11.6	7.45
Wetland	21-8	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	4.4	2.79
Wetland	21-9	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	11.3	7.21
Wetland	22-3	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	25.2	16.10
Wetland	23W-1	613	0	9	0	8	0	8	0	0.83	0.83	1.50	N/A	5.1	2.81
Wetland	23W-10	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	4.2	2.68
Wetland	23W-11	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	7.2	4.63
Wetland	23W-12	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	2.2	1.43
Wetland	23W-13	641	0	9	0	8	0	8	0	0.83	0.83	1.25	N/A	4.1	2.70
Wetland	23W-15	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	21.8	13.40
Wetland	23W-16	641	0	9	0	8	0	8	0	0.83	0.83	1.25	N/A	7.8	5.17
Wetland	23W-17	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	24.4	14.97
Wetland	23W-18	617	0	9	0	8	0	8	0	0.83	0.83	1.50	N/A	0.1	0.06
Wetland	23W-2	617	0	9	0	8	0	8	0	0.83	0.83	1.50	N/A	2.8	1.57
Wetland	23W-20	617	0	8	0	8	0	8	0	0.80	0.80	1.50	N/A	21.8	11.61
Wetland	24-1	611	0	8	0	8	0	8	0	0.80	0.80	2.00	N/A	41.8	16.72
Wetland	24-10	641	0	9	0	8	0	8	0	0.83	0.83	1.25	N/A	3.7	2.47
Wetland	24-11	641	0	9	0	8	0	8	0	0.83	0.83	1.25	N/A	1.9	1.29
Wetland	24-12	617	0	9	0	8	0	8	0	0.83	0.83	1.50	N/A	118.2	65.65
Wetland	24-13	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	24.9	15.28
Wetland	24-2	616	0	9	0	8	0	8	0	0.83	0.83	1.50	N/A	28.9	16.06
Wetland	24-3	617	0	8	0	8	0	8	0	0.80	0.80	1.50	N/A	9.6	5.11
Wetland	24-4	630	0	9	0	8	0	8	0	0.83	0.83	1.50	N/A	125.9	69.97
Wetland	24-7	641	0	9	0	8	0	8	0	0.83	0.83	1.25	N/A	6.9	4.57
Wetland	24-8	641	0	9	0	8	0	8	0	0.83	0.83	1.25	N/A	4.1	2.75

Table 2-4-F Creation

Type (Wetland, Upland or OSW)	UMAM Assessment Area ID*	Land Use Code	Location Landscape Score		Water Environment Score		Community Structure Score		UMAM Score		Delta	Risk	Preservation Adjustment Factor	Ac.	Functional Gain
			Without Project	With Project	Without Project	With Project	Without Project	With Project	Without Project	With Project					
Wetland	24-9	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	3.4	2.06
Wetland	25-9	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	5.7	3.63
Wetland	26E-1	630	0	6	0	8	0	8	0	0.73	0.73	1.50	N/A	0.8	0.41
Wetland	26E-10	643	0	6	0	8	0	8	0	0.73	0.73	1.50	N/A	0.4	0.18
Wetland	26E-2	630	0	6	0	8	0	8	0	0.73	0.73	1.50	N/A	2.2	1.05
Wetland	26E-3	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	18.8	11.54
Wetland	26E-5	641	0	6	0	8	0	8	0	0.73	0.73	1.25	N/A	0.5	0.32
Wetland	26E-6	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	2.3	1.38
Wetland	26E-7	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	4.5	2.79
Wetland	26E-8	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	8.0	4.89
Wetland	26E-9	641	0	6	0	8	0	8	0	0.73	0.73	1.25	N/A	13.0	7.64
Wetland	27E-1	611	0	7	0	8	0	8	0	0.77	0.77	2.00	N/A	10.1	3.85
Wetland	27E-10	641	0	6	0	8	0	8	0	0.73	0.73	1.25	N/A	42.6	24.98
Wetland	27E-2	611	0	7	0	8	0	8	0	0.77	0.77	2.00	N/A	22.2	8.52
Wetland	27E-3	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	51.8	31.80
Wetland	27E-5	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	91.2	55.93
Wetland	27E-7	643	0	7	0	8	0	8	0	0.77	0.77	1.50	N/A	6.5	3.33
Wetland	27E-8	643	0	7	0	8	0	8	0	0.77	0.77	1.50	N/A	8.4	4.31
Wetland	27E-9	617	0	8	0	8	0	8	0	0.80	0.80	1.50	N/A	19.6	10.43
Wetland	28E-11	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	1.5	0.96
Wetland	28E-13	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	9.1	5.84
Wetland	28E-16	630	0	8	0	8	0	8	0	0.80	0.80	1.50	N/A	5.4	2.87
Wetland	28E-2	617	0	8	0	8	0	8	0	0.80	0.80	1.50	N/A	4.7	2.53
Wetland	28E-3	630	0	8	0	8	0	8	0	0.80	0.80	1.50	N/A	2.6	1.41
Wetland	28E-8	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	0.2	0.14

Table 2-4-F Creation

Type (Wetland, Upland or OSW)	UMAM Assessment Area ID*	Land Use Code	Location Landscape Score		Water Environment Score		Community Structure Score		UMAM Score		Delta	Risk	Preservation Adjustment Factor	Ac.	Functional Gain
			Without Project	With Project	Without Project	With Project	Without Project	With Project	Without Project	With Project					
Wetland	28E-9	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	0.6	0.41
Wetland	29E-1	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	3.3	2.03
Wetland	29E-4	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	9.6	5.89
Wetland	30E-1	616	0	7	0	8	0	8	0	0.77	0.77	1.50	N/A	2.8	1.45
Wetland	30E-10	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	1.2	0.72
Wetland	30E-11	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	4.1	2.51
Wetland	30E-12	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	1.4	0.84
Wetland	30E-13	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	5.1	3.15
Wetland	30E-14	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	4.9	3.04
Wetland	30E-15	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	4.9	3.03
Wetland	30E-16	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	3.1	1.93
Wetland	30E-17	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	18.8	11.55
Wetland	30E-2	616	0	7	0	8	0	8	0	0.77	0.77	1.50	N/A	1.0	0.51
Wetland	30E-20	617	0	7	0	8	0	8	0	0.77	0.77	1.50	N/A	42.4	21.70
Wetland	30E-21	616	0	7	0	8	0	8	0	0.77	0.77	1.50	N/A	0.5	0.27
Wetland	30E-22	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	4.8	2.95
Wetland	30E-23	616	0	7	0	8	0	8	0	0.77	0.77	1.50	N/A	1.3	0.65
Wetland	30E-24	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	0.4	0.25
Wetland	30E-25	630	0	7	0	8	0	8	0	0.77	0.77	1.50	N/A	1.4	0.73
Wetland	30E-26	630	0	7	0	8	0	8	0	0.77	0.77	1.50	N/A	1.6	0.83
Wetland	30E-27	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	0.2	0.15
Wetland	30E-28	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	0.4	0.26
Wetland	30E-3	616	0	7	0	8	0	8	0	0.77	0.77	1.50	N/A	1.7	0.87
Wetland	30E-4	616	0	7	0	8	0	8	0	0.77	0.77	1.50	N/A	1.8	0.94
Wetland	30E-5	616	0	7	0	8	0	8	0	0.77	0.77	1.50	N/A	6.8	3.45

Table 2-4-F Creation

Type (Wetland, Upland or OSW)	UMAM Assessment Area ID*	Land Use Code	Location Landscape Score		Water Environment Score		Community Structure Score		UMAM Score		Delta	Risk	Preservation Adjustment Factor	Ac.	Functional Gain
			Without Project	With Project	Without Project	With Project	Without Project	With Project	Without Project	With Project					
Wetland	30E-6	617	0	6	0	8	0	8	0	0.73	0.73	1.50	N/A	10.0	4.89
Wetland	30E-8	641	0	6	0	8	0	8	0	0.73	0.73	1.25	N/A	5.0	2.96
Wetland	30E-9	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	3.8	2.34
Wetland	30W-5	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	38.1	23.36
Wetland	30W-6	647	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	4.7	2.88
Wetland	30W-9	617	0	7	0	8	0	8	0	0.77	0.77	1.50	N/A	23.5	12.03
Wetland	31E-1	616	0	8	0	8	0	8	0	0.80	0.80	1.50	N/A	1.9	1.03
Wetland	31E-10	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	0.7	0.42
Wetland	31E-11	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	1.7	1.02
Wetland	31E-12	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	0.7	0.41
Wetland	31E-13	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	1.7	1.03
Wetland	31E-14	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	0.6	0.36
Wetland	31E-16	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	1.5	0.91
Wetland	31E-17	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	7.2	4.42
Wetland	31E-18	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	1.4	0.87
Wetland	31E-19	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	2.3	1.48
Wetland	31E-2	616	0	7	0	8	0	8	0	0.77	0.77	1.50	N/A	33.4	17.07
Wetland	31E-20	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	3.0	1.91
Wetland	31E-21	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	10.2	6.55
Wetland	31E-22	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	0.9	0.56
Wetland	31E-23	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	0.8	0.53
Wetland	31E-24	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	1.1	0.69
Wetland	31E-26	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	1.4	0.92
Wetland	31E-27	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	1.5	0.93
Wetland	31E-29	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	16.4	10.51

Table 2-4-F Creation

Type (Wetland, Upland or OSW)	UMAM Assessment Area ID*	Land Use Code	Location Landscape Score		Water Environment Score		Community Structure Score		UMAM Score		Delta	Risk	Preservation Adjustment Factor	Ac.	Functional Gain
			Without Project	With Project	Without Project	With Project	Without Project	With Project	Without Project	With Project					
Wetland	31E-30	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	14.1	9.06
Wetland	31E-32	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	4.6	2.80
Wetland	31E-33	641	0	5	0	8	0	8	0	0.70	0.70	1.25	N/A	8.7	4.89
Wetland	31E-34	641	0	5	0	8	0	8	0	0.70	0.70	1.25	N/A	10.5	5.85
Wetland	31E-37	643	0	8	0	7	0	7	0	0.73	0.73	1.50	N/A	1.0	0.48
Wetland	31E-39	647	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	2.0	1.21
Wetland	31E-4	617	0	5	0	8	0	8	0	0.70	0.70	1.50	N/A	3.1	1.46
Wetland	31E-40	647	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	2.6	1.69
Wetland	31E-41	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	3.1	1.97
Wetland	31E-42	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	1.7	1.03
Wetland	31E-43	617	0	8	0	8	0	8	0	0.80	0.80	1.50	N/A	106.9	57.00
Wetland	31E-44	620	0	8	0	8	0	8	0	0.80	0.80	1.50	N/A	6.6	3.50
Wetland	31E-47	617	0	8	0	8	0	8	0	0.80	0.80	1.50	N/A	3.1	1.65
Wetland	31E-5	617	0	5	0	8	0	8	0	0.70	0.70	1.50	N/A	4.8	2.22
Wetland	31E-7	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	0.3	0.19
Wetland	31E-8	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	5.1	3.16
Wetland	31E-9	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	10.7	6.59
Wetland	32-10	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	23.9	15.30
Wetland	32-17	617	0	7	0	8	0	8	0	0.77	0.77	1.50	N/A	56.3	28.80
Wetland	32-18	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	41.6	25.49
Wetland	32-20	647	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	1.7	1.05
Wetland	32-3	617	0	7	0	8	0	8	0	0.77	0.77	1.50	N/A	3.6	1.82
Wetland	32-4	617	0	7	0	8	0	8	0	0.77	0.77	1.50	N/A	8.0	4.09
Wetland	32-5	617	0	7	0	8	0	8	0	0.77	0.77	1.50	N/A	9.4	4.82
Wetland	32-6	641	0	6	0	8	0	8	0	0.73	0.73	1.25	N/A	6.9	4.03

Table 2-4-F Creation

Type (Wetland, Upland or OSW)	UMAM Assessment Area ID*	Land Use Code	Location Landscape Score		Water Environment Score		Community Structure Score		UMAM Score		Delta	Risk	Preservation Adjustment Factor	Ac.	Functional Gain
			Without Project	With Project	Without Project	With Project	Without Project	With Project	Without Project	With Project					
Wetland	32-7	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	27.0	16.59
Wetland	32-8	641	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	20.8	13.28
Wetland	33-3	641	0	6	0	8	0	8	0	0.73	0.73	1.25	N/A	7.9	4.61
Wetland	33-5	617	0	6	0	8	0	8	0	0.73	0.73	1.50	N/A	24.5	11.97
Wetland	33-6	641	0	6	0	8	0	8	0	0.73	0.73	1.25	N/A	2.3	1.36
Wetland	4E-10	641	0	5	0	6	0	7	0	0.60	0.60	1.25	N/A	1.0	0.48
Wetland	4E-4	641	0	6	0	8	0	8	0	0.73	0.73	1.25	N/A	128.1	75.18
Wetland	4E-5	617	0	6	0	8	0	8	0	0.73	0.73	1.50	N/A	73.6	36.00
Wetland	4E-6	617	0	6	0	8	0	8	0	0.73	0.73	1.50	N/A	7.4	3.63
Wetland	4E-7	617	0	5	0	6	0	7	0	0.60	0.60	1.50	N/A	0.5	0.20
Wetland	4E-8	641	0	6	0	7	0	8	0	0.70	0.70	1.25	N/A	26.9	15.05
Wetland	4E-9	617	0	5	0	6	0	7	0	0.60	0.60	1.50	N/A	2.4	0.96
Wetland	5-1	649	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	29.0	17.80
Wetland	5-10	617	0	7	0	8	0	8	0	0.77	0.77	1.50	N/A	85.1	43.49
Wetland	5-11	641	0	6	0	8	0	8	0	0.73	0.73	1.25	N/A	98.1	57.56
Wetland	5-12	647	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	50.8	31.19
Wetland	5-13	647	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	7.6	4.68
Wetland	5-14	641	0	6	0	8	0	8	0	0.73	0.73	1.25	N/A	3.0	1.74
Wetland	5-16	641	0	5	0	7	0	8	0	0.67	0.67	1.25	N/A	4.8	2.54
Wetland	5-17	641	0	5	0	7	0	8	0	0.67	0.67	1.25	N/A	2.4	1.27
Wetland	5-18	643	0	5	0	7	0	7	0	0.63	0.63	1.50	N/A	1.0	0.41
Wetland	5-20	641	0	6	0	8	0	8	0	0.73	0.73	1.25	N/A	11.1	6.52
Wetland	5-5	641	0	6	0	7	0	8	0	0.70	0.70	1.25	N/A	16.0	8.95
Wetland	5-6	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	36.9	22.62
Wetland	5-7	641	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	3.2	1.96

Table 2-4-F Creation

Type (Wetland, Upland or OSW)	UMAM Assessment Area ID*	Land Use Code	Location Landscape Score		Water Environment Score		Community Structure Score		UMAM Score		Delta	Risk	Preservation Adjustment Factor	Ac.	Functional Gain
			Without Project	With Project	Without Project	With Project	Without Project	With Project	Without Project	With Project					
OSW	OSW-R-321-10-ce	321	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	0.3	0.16
OSW	OSW-R-321-9	321	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	1.6	1.00
OSW	OSW-R-411-9	411	0	8	0	8	0	8	0	0.80	0.80	1.25	N/A	0.2	0.14
OSW	OSW-R-425-9	425	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	0.1	0.09
OSW	OSW-R-427-11	427	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	0.3	0.19
OSW	OSW-R-427-6	427	0	9	0	8	0	8	0	0.83	0.83	1.25	N/A	11.1	7.41
OSW	OSW-R-427-8	427	0	8	0	7	0	8	0	0.77	0.77	1.25	N/A	0.5	0.31
OSW	OSW-R-427-9	427	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	0.4	0.24
OSW	OSW-R-434-11a-ce	434	0	5	0	6	0	8	0	0.63	0.63	1.25	N/A	0.5	0.23
OSW	OSW-R-434-11c	434	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	0.6	0.40
OSW	OSW-R-434-6	434	0	9	0	8	0	8	0	0.83	0.83	1.25	N/A	8.1	5.41
OSW	OSW-R-434-8	434	0	7	0	8	0	8	0	0.77	0.77	1.25	N/A	0.8	0.48
OSW	OSW-R-434-9-ce	434	0	5	0	7	0	7	0	0.63	0.63	1.25	N/A	0.0	0.01
Wetland	R1	643	0	7	0	7	0	7	0	0.70	0.70	1.50	N/A	0.5	0.24
Wetland	R10	643	0	7	0	7	0	7	0	0.70	0.70	1.50	N/A	0.5	0.24
Wetland	R11	643	0	7	0	7	0	7	0	0.70	0.70	1.50	N/A	1.0	0.47
Wetland	R12	643	0	7	0	7	0	7	0	0.70	0.70	1.50	N/A	1.5	0.69
Wetland	R13	643	0	7	0	7	0	7	0	0.70	0.70	1.50	N/A	1.0	0.48
Wetland	R14	643	0	8	0	7	0	7	0	0.73	0.73	1.50	N/A	1.9	0.93
Wetland	R15	641	0	7	0	7	0	7	0	0.70	0.70	1.50	N/A	1.6	0.73
Wetland	R2	643	0	7	0	7	0	7	0	0.70	0.70	1.50	N/A	0.5	0.23
Wetland	R3	643	0	7	0	7	0	7	0	0.70	0.70	1.50	N/A	1.0	0.47
Wetland	R4	643	0	9	0	7	0	7	0	0.77	0.77	1.50	N/A	0.7	0.35
Wetland	R5	643	0	9	0	7	0	7	0	0.77	0.77	1.50	N/A	0.9	0.46
Wetland	R6	643	0	9	0	7	0	7	0	0.77	0.77	1.50	N/A	0.7	0.36

Table 2-4-F Creation

Type (Wetland, Upland or OSW)	UMAM Assessment Area ID*	Land Use Code	Location Landscape Score		Water Environment Score		Community Structure Score		UMAM Score		Delta	Risk	Preservation Adjustment Factor	Ac.	Functional Gain
			Without Project	With Project	Without Project	With Project	Without Project	With Project	Without Project	With Project					
Wetland	R7	643	0	8	0	7	0	7	0	0.73	0.73	1.50	N/A	2.0	0.98
Wetland	R8	643	0	7	0	7	0	7	0	0.70	0.70	1.50	N/A	2.0	0.92
Wetland	R9	643	0	7	0	7	0	7	0	0.70	0.70	1.50	N/A	0.5	0.24

* Includes 16.3 acres of herbaceous wetlands created within the preservation/enhancement area.

Total: 1471.93

TABLE 2-4-G Summary of Onsite Mitigation Categories by FLUCFCS Code

FLUCFCS Code	Mitigation Category							
	Creation*	OSW Enhancement	OSW Preservation	Upland Enhancement	Upland Preservation	Wetland Enhancement	Wetland Preservation	Total
(180) Recreational	-	-	-	-	0.4	-	-	0.4
(211) Improved pastures	-	-	-	-	6.7	-	-	6.7
(213) Woodland pastures	-	-	-	-	0.3	-	-	0.3
(221) Citrus groves	-	-	-	-	0.1	-	-	0.1
(321) Palmetto prairies	-	-	-	132.3	402.5	-	-	534.8
(329) Other Shrub and Brushland	-	-	-	0.0	5.1	-	-	5.1
(330) Mixed rangeland	-	-	-	-	5.3	-	-	5.3
(411) Pine flatwoods	-	-	-	83.7	309.1	-	-	392.8
(425) Temperate hardwoods forests	-	-	-	27.8	113.4	-	-	141.2
(427) Live oak forests	-	-	-	106.3	403.9	-	-	510.2
(432) Sand Live Oak	-	-	-	-	18.5	-	-	18.5
(434) Hardwood-conifer mixed	-	-	-	11.4	285.2	-	-	296.6
(743) Spoil areas	-	-	-	-	0.3	-	-	0.3
(814) Roads	-	-	-	-	0.3	-	-	0.3
(180o) Recreational	-	-	1.3	-	-	-	-	1.3
(211o) Improved pastures	-	-	0.6	-	-	-	-	0.6
(321o) Palmetto prairies	1.8	2.8	0.4	-	-	-	-	5.1
(329o) Other shrub and brush land	-	-	0.0	-	-	-	-	0.0
(330o) Mixed rangeland	-	-	0.1	-	-	-	-	0.1
(410o) Upland coniferous forests	-	-	-	-	-	-	-	0.0
(411o) Pine flatwoods	0.2	0.7	11.7	-	-	-	-	12.6
(425o) Temperate hardwoods forests	0.1	8.1	81.8	-	-	-	-	90.1
(427o) Live oak forests	12.3	4.7	60.3	-	-	-	-	77.4
(434o) Hardwood-conifer mixed	10.0	31.4	71.7	-	-	-	-	113.1
(814o) Roads	-	-	0.1	-	-	-	-	0.1
(513) Ditched Wetlands	-	-	-	-	-	-	0.2	0.2
(514) Upland cut ditches	-	-	-	-	-	-	0.7	0.7
(534UP) Reservoirs - 10 ac. (cattle ponds)	-	-	-	-	-	-	0.4	0.4
(534WT) Reservoirs - 10 ac. (cattle ponds)	-	-	-	-	-	-	0.3	0.3
(611) Bay swamps	114.0	-	-	-	-	-	131.9	245.9
(613) Gum swamps	5.1	-	-	-	-	-	-	5.1
(616) Inland Ponds and Sloughs	95.4	-	-	-	-	-	70.4	165.8
(617) Mixed wetland hardwoods	840.3	-	-	-	-	-	369.8	1210.1
(617HH) Mixed wetland hardwoods	-	-	-	-	-	-	251.6	251.6
(617MH) Mixed wetland hardwoods	-	-	-	-	-	1.2	118.1	119.3
(617PA) Mixed wetland hardwoods	-	-	-	-	-	0.1	16.2	16.3
(620) Wetland coniferous	6.6	-	-	-	-	-	0.4	7.0
(625) Hydric Pine Flatwoods	33.9	-	-	-	-	-	31.9	65.8
(630) Wetland mixed hardwood-coniferous	181.7	-	-	-	-	1.2	131.0	313.9
(641) Freshwater marshes	1181.5	-	-	-	-	1.2	196.2	1378.9
(643) Wet prairies	45.7	-	-	-	-	5.4	7.5	58.5
(647) Shrub Marshes	69.5	-	-	-	-	-	16.1	85.6
(647BB) Shrub Marshes	-	-	-	-	-	0.6	67.6	68.1
(647BB,SW) Shrub Marshes	-	-	-	-	-	-	8.4	8.4
(647PW) Shrub Marshes	-	-	-	-	-	-	8.4	8.4
(647SW) Shrub Marshes	-	-	-	-	-	-	48.8	48.8
(647WM) Shrub Marshes	-	-	-	-	-	-	2.9	2.9
(648PA) Improved & Unimproved Pasture	-	-	-	-	-	-	1.4	1.4
(649) Palmetto Prairie (Hydric Rangeland)	29.0	-	-	-	-	-	10.4	39.4
Total	**2627.2**	**47.8**	**227.9**	**361.4**	**1551.0**	**9.6**	**1490.6**	**6315.5**

* Includes 16.3 acres of herbaceous wetlands created within the preservation/enhancement area.

Table 3-1-B	Mine Impact Summary		
	Total Site - Acres	FDEP Jurisdictional* - Acres	FDEP JD Stream** - Feet
Total Mine Area	**22,483**	**5,998**	**228,853**
Mined Area	17,048	3,974	93,840
Disturbed (Not Mined)	1,728	245	12,201
Mined or Disturbed Area	18,776	4,219	106,041
Reclaimed	18,776	4,659	107,897
Avoided Area (Preserved, But Not Enhanced)	3,272	1,718	112,812
Avoided Area Enhancements (Creation/Restoration)	435	74	10,000
Avoided Area Total (With Enhancements)	3,707	1,792	122,812
Total - Post Reclamation	22,483	6,452	232,889
Pre to Post Change	NA	454	4,036
% Increase	NA	8%	1.8%
Mine Life - Years	~23 Years		

Note: Acres and Feet have been rounded to nearest whole number for display.

* FDEP Jurisdictional Areas include OSWs, Open Water (500), and Wetlands (600)

** Includes Sloughs/Strands. Mined, Disturbed, and Reclaimed totals exclude those areas disturbed by mine corridor stream crossings.
Total Mine area includes linear feet within mine corridor stream crossings

Table 3-2 Mine Plan Summary		
AREAS		
Total Mine Area	22,483	Acres
Area to be Mined	17,048	Acres
Area to be Disturbed (Not Mined)	1,728	Acres
Total area Mined or disturbed	18,776	Acres
Area not to be Disturbed	3,707	Acres
Average Matrix Thickness	30	Feet
Average Overburden Thickness	26	Feet
Mine Life (approx.)	**24**	**Years**
MINING & PRODUCTION RATES		
	Total	**Average year**
Mining - Acres / Rate	17,048	710
Product (Million short tons)	178	7
Tailing (Million short tons)	617	26
Clay (Million short tons)	277	12
Overburden Volume (Millions Cu. Yds.)	715	30

Source: Mosaic 2018

Table 3-4-B		Ona Estimated Tailings Schedule (in million of cubic yards) (Ona East and West Boundaries Only)				
Mine Year	Annual Space Available for Tailings	Cumulative Space Available for Tailings	Annual Plant Tailings Volume Produced	Cumulative Tailing Volume Produced**	Annual Excess Tailings Available**	Cumulative Excess Tailings
1	1.0	1.0	0.5	0.5	(0.5)	(0.5)
2	4.4	5.4	11.5	12.0	7.1	6.6
3	3.9	9.3	13.2	25.2	9.3	15.9
4	9.5	18.8	16.7	42.0	7.2	23.2
5	15.8	34.6	27.5	69.4	11.7	34.8
6	10.9	45.5	28.2	97.6	17.3	52.2
7	8.1	53.6	28.6	126.3	20.5	72.7
8	9.0	62.6	27.7	154.0	18.7	91.4
9	29.4	92.1	28.7	183	(0.8)	90.6
10	33.8	125.9	31.5	214	(2.3)	88.3
11	29.2	155	31.2	245	2.0	90.3
12	35.1	190	30.8	276	(4.3)	86.0
13	35.5	226	30.8	307	(4.7)	81.3
14	31.3	257	30.0	337	(1.3)	80.0
15	22.8	280	16.4	353	(6.4)	73.6
16	23.6	303	11.5	365	(12.1)	61.5
17	24.9	328	12.0	377	(12.9)	48.6
18	20.5	349	12.7	390	(7.8)	40.8
19	15.1	364	11.4	401	(3.7)	37.1
20	12.3	376	11.8	413	(0.5)	36.6
21	15.5	392	12.6	425	(2.9)	33.7
22	13.4	405	13.6	439	0.1	33.8
23	10.0	415	10.2	449	0.2	34.0
24	11.5	427	8.7	458	(2.8)	31.2

Assumptions:

1. Sand Tailings conversion factor of 1.35 tons/cubic yard.

** Tailings will be (1) utilized immediately for reclamation by Mosaic where void space is available, or
(2) stockpiled for future use

Table 4-1	Mine - Reclamation Schedule				
Mine Year	Mined and Disturbed (Acres)	Cumulative Mined and Disturbed (Acres)	Reclaimed (Acres)	Cumulative Reclaimed (Acres)	Disturbed and Unreclaimed (Acres)
1	11	11			
2	240	251			
3	319	570			
4	619	1,189			
5	903	2,092			
6	879	2,971	15	15	2,956
7	1024	3,995	64	79	3,916
8	1125	5,120	33	112	5,008
9	1312	6,432	29	141	6,291
10	1127	7,559	24	165	7,394
11	1147	8,706	25	190	8,516
12	1094	9,800	716	906	8,894
13	1172	10,972	964	1,870	9,102
14	1320	12,292	933	2,803	9,489
15	1078	13,370	978	3,781	9,589
16	977	14,347	857	4,638	9,709
17	775	15,122	801	5,439	9,683
18	752	15,874	954	6,393	9,481
19	618	16,492	934	7,327	9,165
20	657	17,149	808	8,135	9,014
21	636	17,785	2,138	10,273	7,512
22	500	18,285	629	10,902	7,383
23	268	18,553	534	11,436	7,117
24	223	18,776	387	11,823	6,953
25		18,776	363	12,186	6,590
26		18,776	552	12,738	6,038
27		18,776	603	13,341	5,435
28		18,776	4,190	17,531	1,245
29		18,776	1,245	18,776	-
Undisturbed	3,707		3,707		
Total:	**22,483**		**22,483**		

Table 4-5 Summary of Reclaimed Streams			
ID	Length	Type	Located in Mitigation Area (Y/N)
BA-MA	3,133	Reclaimed Stream	Y
BA-T3	3,628	Reclaimed Stream	Y
BA-T4	275	Reclaimed Stream	N
BA-T5	1,705	Reclaimed Stream	Y
BA-T6A	742	Reclaimed Stream	Y
BU-M1	6,695	Reclaimed Stream	Y
BU-T10	1,724	Reclaimed Stream	Y
BU-T12	1,268	Reclaimed Stream	N
BU-T13	615	Reclaimed Stream	N
BU-T2	1,059	Reclaimed Slough/Strand	N
BU-T3A	3,554	Reclaimed Stream	Y
BU-T3B	1,024	Reclaimed Stream	Y
BU-T5	1,710	Reclaimed Stream	Y
BU-T6	813	Reclaimed Slough/Strand	N
BU-T7	2,550	Reclaimed Stream	N
BU-T8D	632	Reclaimed Stream	N
BU-T9A	403	Reclaimed Stream	N
BU-T9C	1,006	Reclaimed Stream	N
BU-T9D	1,726	Reclaimed Stream	N
H-M1	6,486	Reclaimed Stream	Y
HO-T10	229	Reclaimed Stream	N
HO-T12A	1,665	Reclaimed Stream	N
HO-T13	501	Reclaimed Stream	N
HO-T1A	1,630	Reclaimed Slough/Strand	N
HO-T2	1,976	Reclaimed Slough/Strand	N
HO-T3	475	Reclaimed Slough/Strand	N
HO-T4A	473	Reclaimed Slough/Strand	N
HO-T6	329	Reclaimed Stream	N
HO-T7A	1,079	Reclaimed Stream	N
HO-T8A	2,017	Reclaimed Stream	N
HO-T9	1,750	Reclaimed Stream	N
H-T2A	1,102	Reclaimed Slough/Strand	Y
H-T2B	892	Reclaimed Stream	Y
H-T2C	637	Reclaimed Stream	Y
H-T3	580	Reclaimed Slough/Strand	Y
H-T4A	1,641	Reclaimed Slough/Strand	Y
H-T5	411	Reclaimed Stream	Y
H-T5A	1,538	Reclaimed Stream	N
H-T5B	341	Reclaimed Stream	N
O-MA	3,421	Reclaimed Stream	Y
O-MB	705	Reclaimed Slough/Strand	Y
O-MC	629	Reclaimed Slough/Strand	Y
O-T1A	1,416	Reclaimed Stream	N
O-T3C	1,210	Reclaimed Stream	Y
O-T3D	1,414	Reclaimed Stream	Y
O-T3E	742	Reclaimed Stream	Y
O-T3F	1,379	Reclaimed Stream	Y

Table 4-5 Summary of Reclaimed Streams			
ID	Length	Type	Located in Mitigation Area (Y/N)
O-T3G	1,291	Reclaimed Stream	Y
O-T3H	491	Reclaimed Slough/Strand	Y
O-T4A	995	Reclaimed Stream	Y
O-T4B	1,322	Reclaimed Stream	Y
O-T4C	1,134	Reclaimed Slough/Strand	Y
O-T6A	13,171	Reclaimed Stream	Y
O-T6B	2,241	Reclaimed Stream	Y
O-T8A	902	Reclaimed Stream	Y
O-T8B	433	Reclaimed Stream	Y
O-T8C	716	Reclaimed Stream	Y
O-T8F1	3,409	Reclaimed Stream	Y
O-T8F2	1,435	Reclaimed Stream	Y
O-T8G	822	Reclaimed Slough/Strand	Y
WF-T1A	436	Reclaimed Stream	N
WF-T2	956	Reclaimed Stream	N
WF-T3A	1,220	Reclaimed Slough/Strand	Y
WF-T3B	2,601	Reclaimed Stream	Y
WF-T3C	1,304	Reclaimed Stream	Y
WF-T4A	1,098	Reclaimed Stream	N
WF-T5	990	Reclaimed Stream	N

14,751	Reclaimed Slough/Strand TOTAL
93,146	Reclaimed Stream TOTAL
107,897	Overall TOTAL
8,325	*Reclaimed Slough/Strand within Mitigation Area*
70,327	*Reclaimed Stream within Mitigation Area*
78,652	*Total within Mitigation Area*

TABLE 4-6 Summary of Onsite Created* Mitigation Wetlands by LRU			
LRU	Wetland ID	Land Use (FLUCFCS)	Acres
BC-10	31E-1	616	1.9
	31E-10	641	0.7
	31E-11	641	1.7
	31E-12	641	0.7
	31E-13	641	1.7
	31E-14	641	0.6
	31E-16	641	1.5
	31E-17	641	7.2
	31E-18	641	1.4
	31E-19	641	2.3
	31E-2	616	33.4
	31E-20	641	3.0
	31E-21	641	10.2
	31E-22	641	0.9
	31E-23	641	0.8
	31E-24	641	1.1
	31E-26	641	1.4
	31E-27	641	1.5
	31E-29	641	16.4
	31E-30	641	14.1
	31E-32	641	4.6
	31E-33	641	8.7
	31E-34	641	10.5
	31E-37	643	1.0
	31E-39	647	2.0
	31E-4	617	3.1
	31E-40	647	2.6
	31E-41	641	3.1
	31E-42	641	1.7
	31E-43	617	106.9
	31E-44	620	6.6
	31E-47	617	3.1
	31E-5	617	4.8
	31E-7	641	0.3
	31E-8	641	5.1
	31E-9	641	10.7
	32-10	641	23.9
	32-17	617	56.3
	32-20	647	1.7
	32-7	641	27.0
	32-8	641	20.8
BC-10 Total			**406.9**

LRU	Wetland ID	Land Use (FLUCFCS)	Acres
BC-11	5-5	641	16.0
BC-11 Total			**16.0**
BC-1	11-1	611	11.1
	14-2	611	13.8
	14-3	611	15.0
BC-1 Total			**39.9**
BC-2	23W-1	613	5.1
	23W-10	641	4.2
	23W-11	641	7.2
	23W-12	641	2.2
	23W-15	641	21.8
	23W-17	641	24.4
	23W-2	617	2.5
	23W-20	617	21.8
	24-12	617	1.4
BC-2 Total			**90.7**
BC-4	23W-13	641	4.1
	23W-16	641	7.8
	23W-18	617	0.1
	23W-2	617	0.3
	24-1	611	4.5
	24-10	641	3.7
	24-11	641	1.9
	24-12	617	110.4
	24-2	616	28.9
	24-4	630	125.9
	24-7	641	6.9
	24-8	641	4.1
	25-9	641	5.7
	OSW-R-427-6	427o	11.1
	OSW-R-434-6	434o	8.1
BC-4 Total			**323.5**
BC-5	24-1	611	37.3
	24-12	617	6.3
	24-13	641	22.3
	24-3	617	9.6
	24-4	630	0.0
	24-9	641	3.3
	OSW-R-321-10-ce	321o	0.3
BC-5 Total			**79.1**
BC-6	24-13	641	1.9
BC-6 Total			**1.9**
BC-7	24-13	641	0.7
	24-9	641	0.0
BC-7 Total			**0.7**

LRU	Wetland ID	Land Use (FLUCFCS)	Acres
BC-9	29E-1	641	3.3
	30E-1	616	2.8
	30E-10	641	1.2
	30E-11	641	4.1
	30E-12	641	1.4
	30E-13	641	5.1
	30E-14	641	4.9
	30E-15	641	4.9
	30E-16	641	3.1
	30E-17	641	18.8
	30E-2	616	1.0
	30E-20	617	42.4
	30E-21	616	0.5
	30E-22	641	4.8
	30E-23	616	1.3
	30E-24	641	0.4
	30E-25	630	1.4
	30E-26	630	1.6
	30E-27	641	0.2
	30E-28	641	0.4
	30E-3	616	1.7
	30E-4	616	1.8
	30E-5	616	6.8
	30E-6	617	10.0
	30E-8	641	5.0
	30E-9	641	3.8
	OSW-R-434-8	434o	0.3
BC-9 Total			**133.4**
HI-1	26E-1	630	0.8
	26E-10	643	0.4
	26E-2	630	2.2
	26E-3	641	18.8
	26E-5	641	0.5
	26E-6	641	2.3
	26E-7	641	4.5
	26E-8	641	8.0
	26E-9	641	13.0
	27E-1	611	10.1
	27E-10	641	42.6
	27E-2	611	22.2
	27E-3	641	51.8
	27E-7	643	6.5
	27E-8	643	8.4
	27E-9	617	19.5
	OSW-R-427-11	427o	0.3
	OSW-R-434-11a-ce	434o	0.5
	OSW-R-434-11c	434o	0.6
HI-1 Total			**213.1**

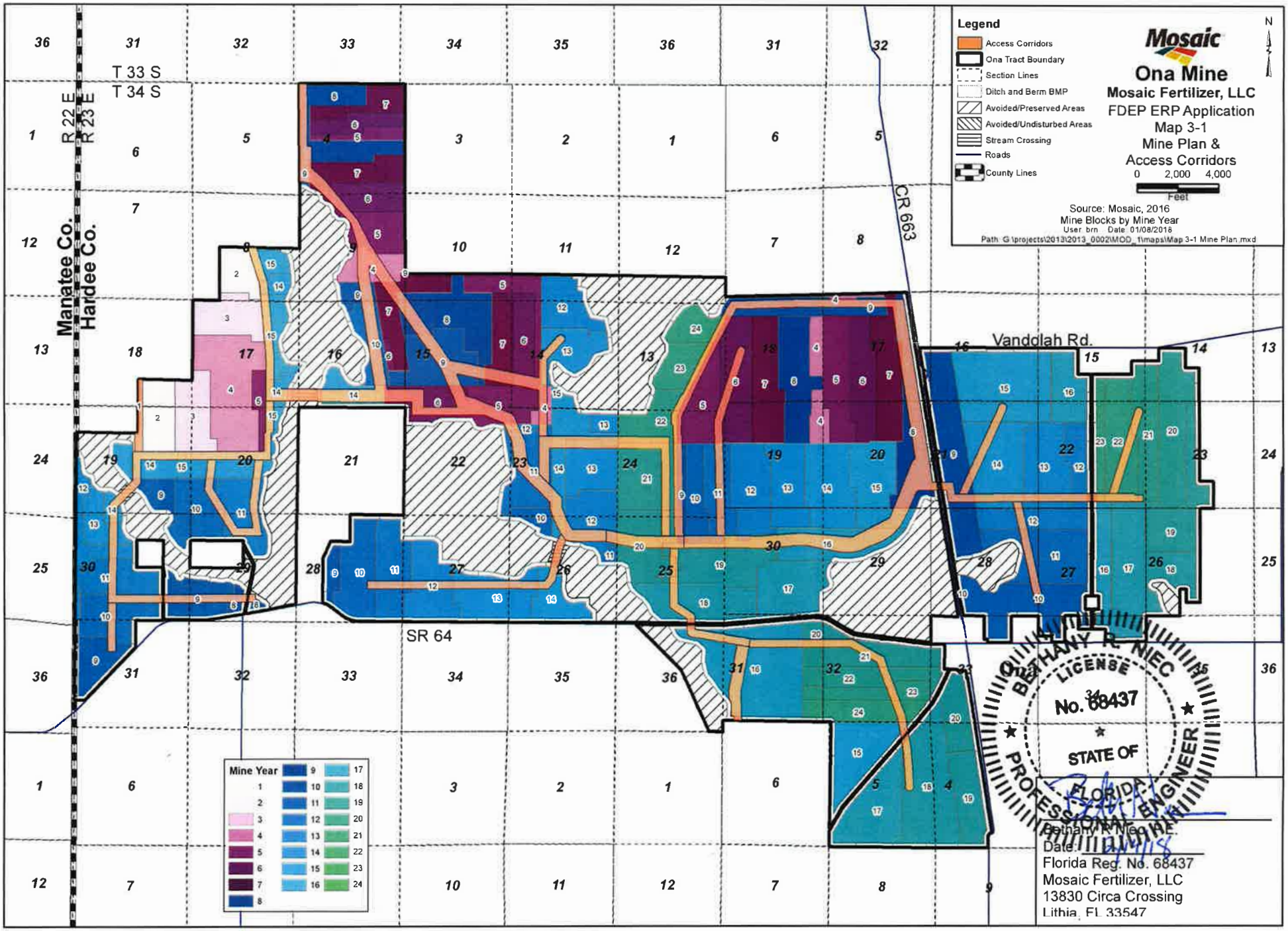
LRU	Wetland ID	Land Use (FLUCFCS)	Acres
HI-3	27E-5	641	91.2
HI-3 Total			**91.2**
MY-1	30W-5	641	38.1
	30W-6	647	4.7
	30W-9	617	23.5
MY-1 Total			**66.3**
OK-1	32-18	641	41.6
	32-3	617	3.6
	32-4	617	8.0
	32-5	617	9.4
	32-6	641	6.9
	OSW-R-434-8	434o	0.2
OK-1 Total			**69.6**
OK-2	33-3	641	7.9
	33-5	617	24.5
	33-6	641	2.3
	4E-10	641	1.0
	4E-4	641	128.1
	4E-5	617	73.6
	4E-6	617	7.4
	4E-7	617	0.5
	4E-8	641	26.9
	4E-9	617	2.4
	5-1	649	29.0
	5-10	617	85.1
	5-11	641	98.1
	5-12	647	50.8
	5-13	647	7.6
	5-14	641	3.0
	5-16	641	4.8
	5-17	641	2.4
	5-18	643	1.0
	5-20	641	11.1
	5-6	641	36.9
	5-7	641	3.2
	OSW-R-427-8	427o	0.5
OK-2 Total			**608.1**
OK-4	16E-1	630	26.7
	16E-3	641	2.0
	16E-4	641	10.2
	16E-5	641	26.0
	16E-6	625	33.9
OK-4 Total			**98.8**
OK-5	16E-2	641	11.1
	21-10	641	10.8
	21-11	641	6.4
	21-15	617	124.9
	21-17	641	0.4
	21-1	616	15.3
	21-2	617	4.4
	22-3	641	25.2
	OSW-R-411-9	411o	0.2
	OSW-R-434-9-ce	434o	0.0
OK-5 Total			**198.8**

LRU	Wetland ID	Land Use (FLUCFCS)	Acres
OK-6	21-16	630	3.9
	21-4	641	1.7
	21-5	641	8.0
	21-8	641	4.4
	21-9	641	11.3
	28E-3	630	2.6
	OSW-R-321-9	321o	0.7
OK-6 Total			**32.6**
OK-7	21-12	643	0.3
	21-13	643	13.4
	21-14	617	4.3
	21-3	641	1.5
	21-6	641	11.6
	28E-11	641	1.5
	28E-13	641	9.1
	28E-16	630	5.4
	28E-2	617	4.7
	28E-8	641	0.2
	28E-9	641	0.6
	OSW-R-321-9	321o	0.9
	OSW-R-425-9	425o	0.1
	OSW-R-427-9	427o	0.4
OK-7 Total			**54.2**
PS-1	OSW-R-434-8	434o	0.3
PS-1 Total			**0.3**
PS-2	20E-1	617	47.4
PS-2 Total			**47.4**
WF-2	19-1	630	11.0
	19-10	617	17.8
	29E-4	641	9.6
WF-2 Total			**38.3**
Grand Total			**2610.9**

* Does not include creation wetlands within the Preservation/Enhancement Boundary.

Creation Wetlands in the	R1	643	0.5
Preservation/Enhancement	R2	643	0.5
Boundary	R3	643	1.0
	R4	643	0.7
	R5	643	0.9
	R6	643	0.7
	R7	643	2.0
	R8	643	2.0
	R9	643	0.5
	R10	643	0.5
	R11	643	1.0
	R12	643	1.5
	R13	643	1.0
	R14	643	1.9
	R15	641	1.6
Total			**16.3**

Permit No. MMR_169281-018



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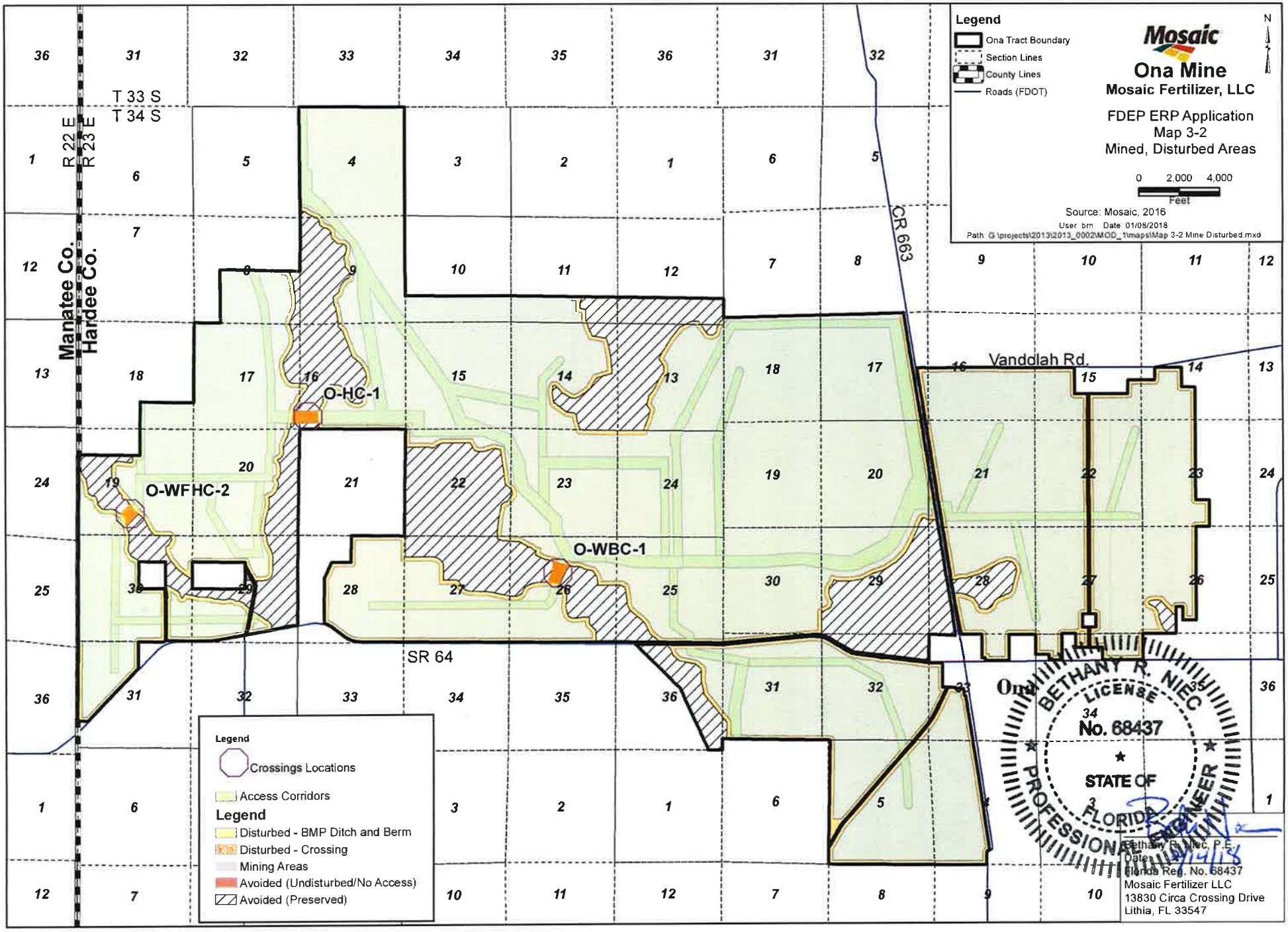

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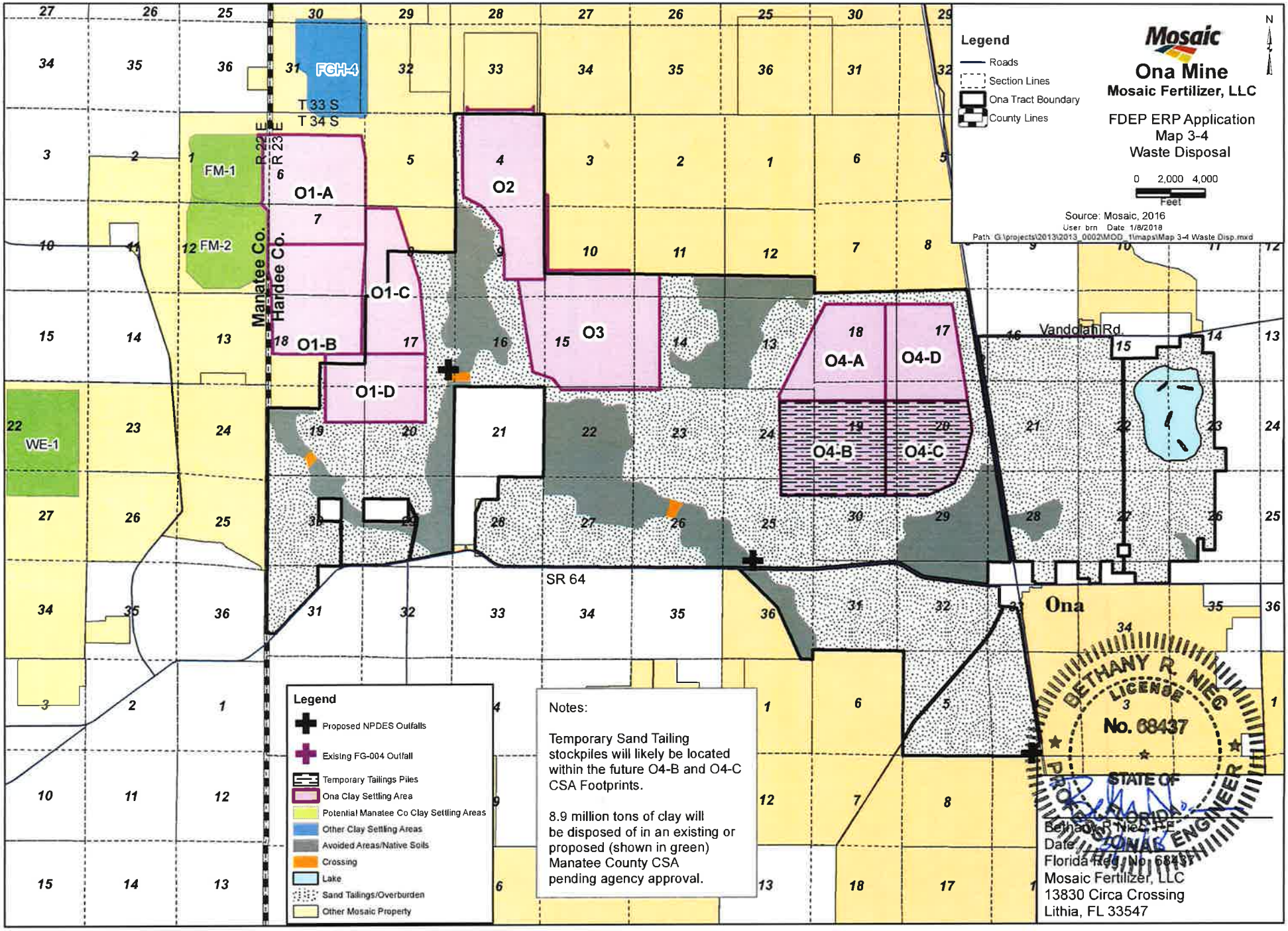

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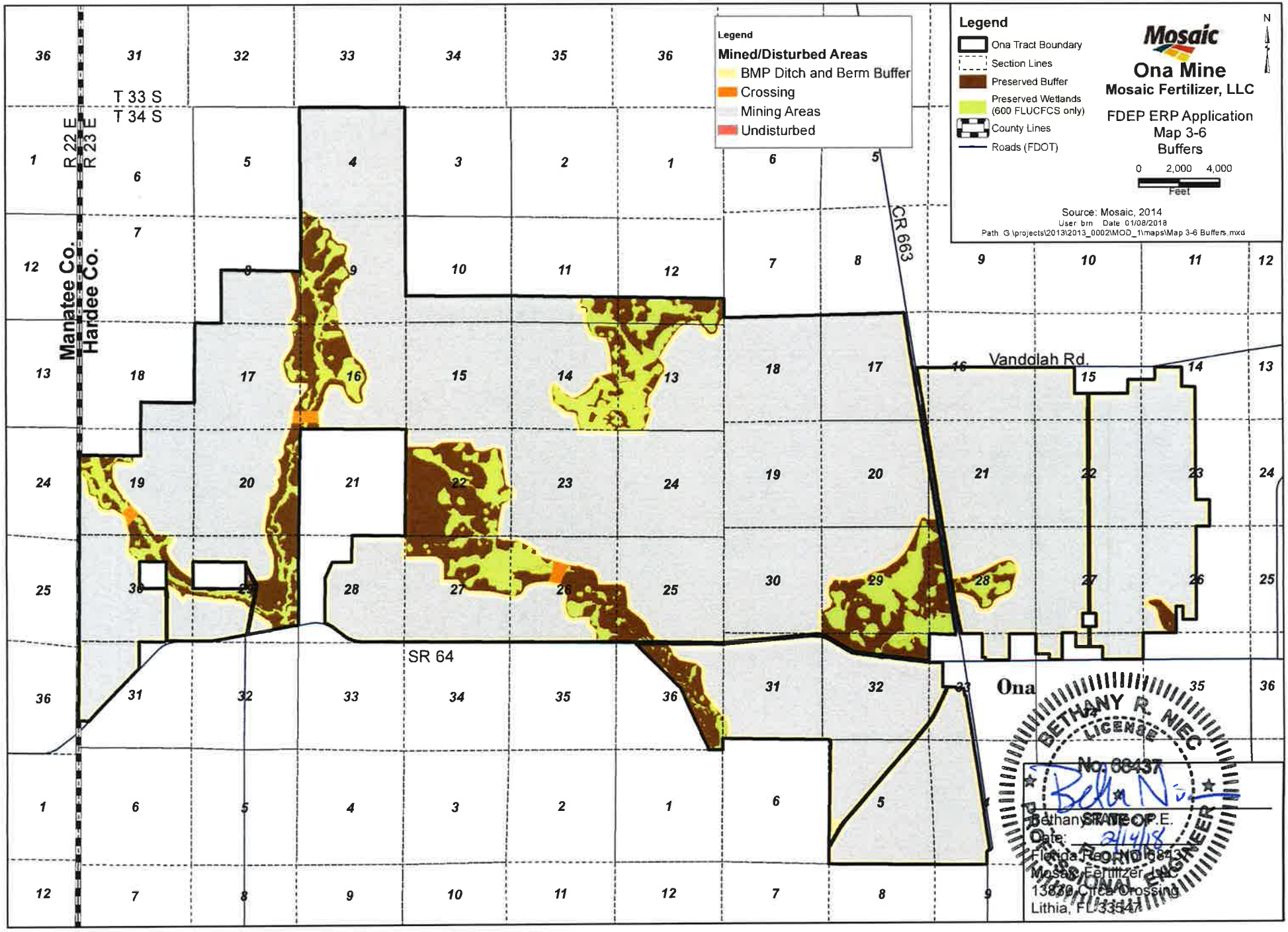

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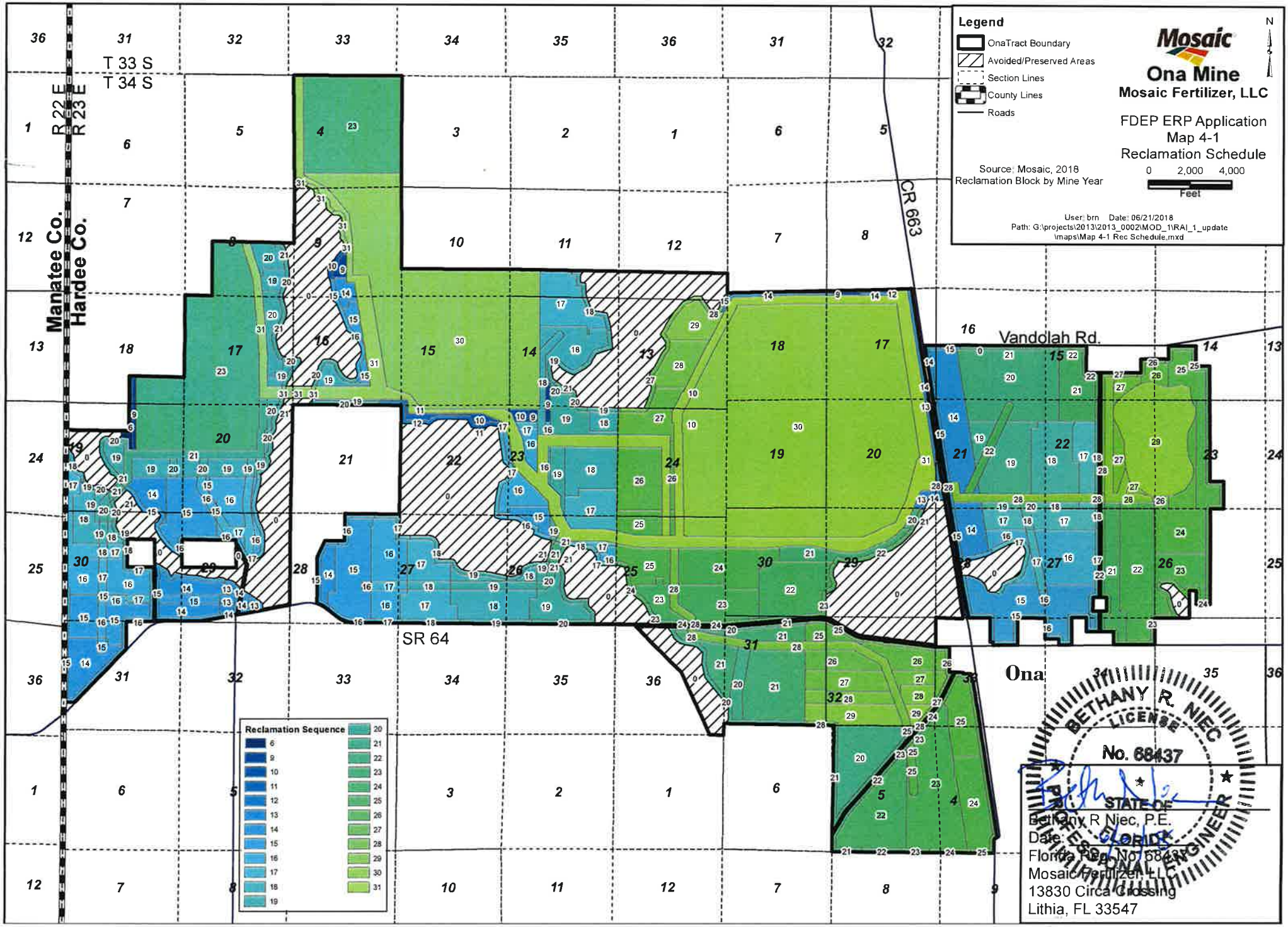

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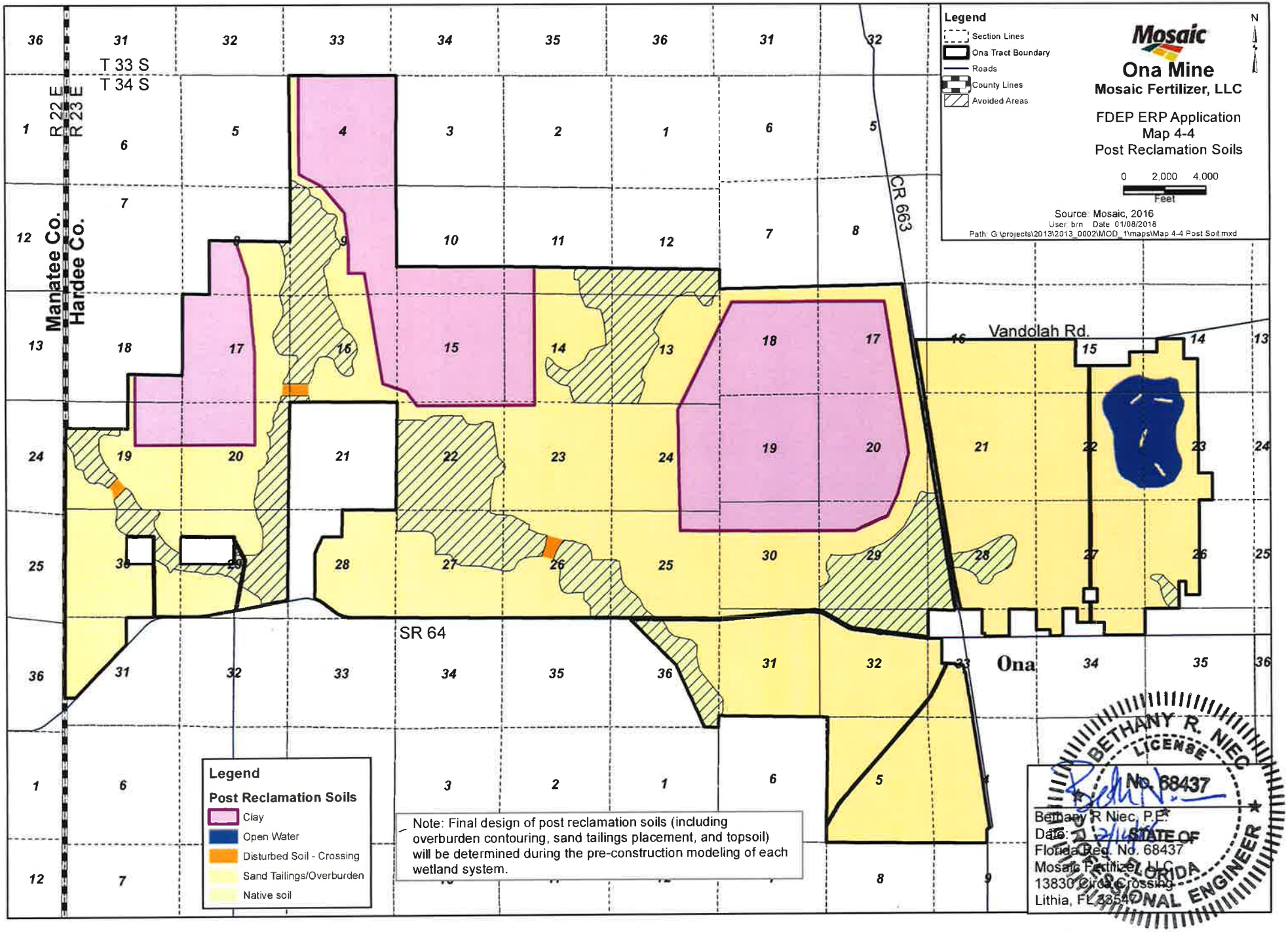

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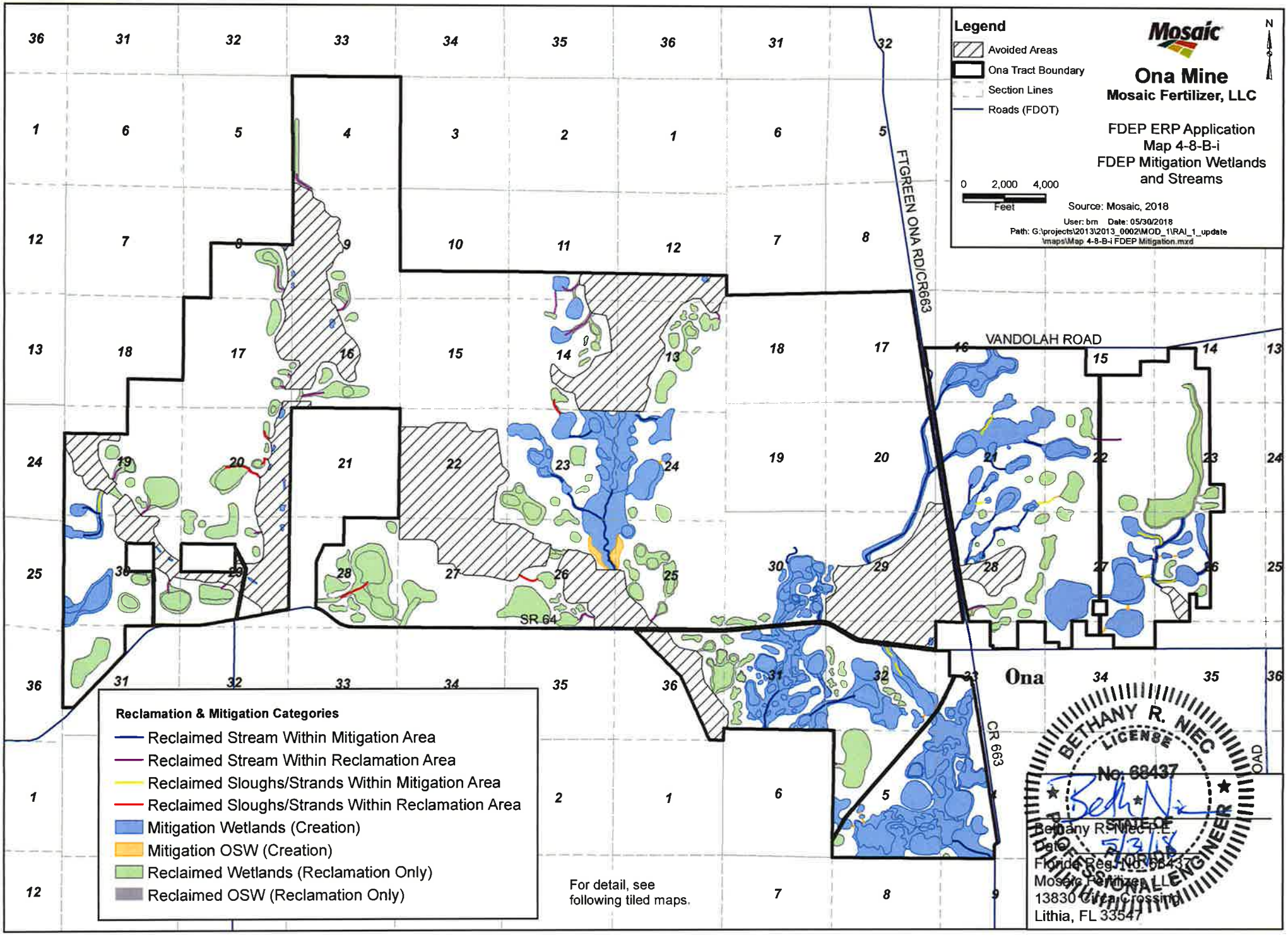
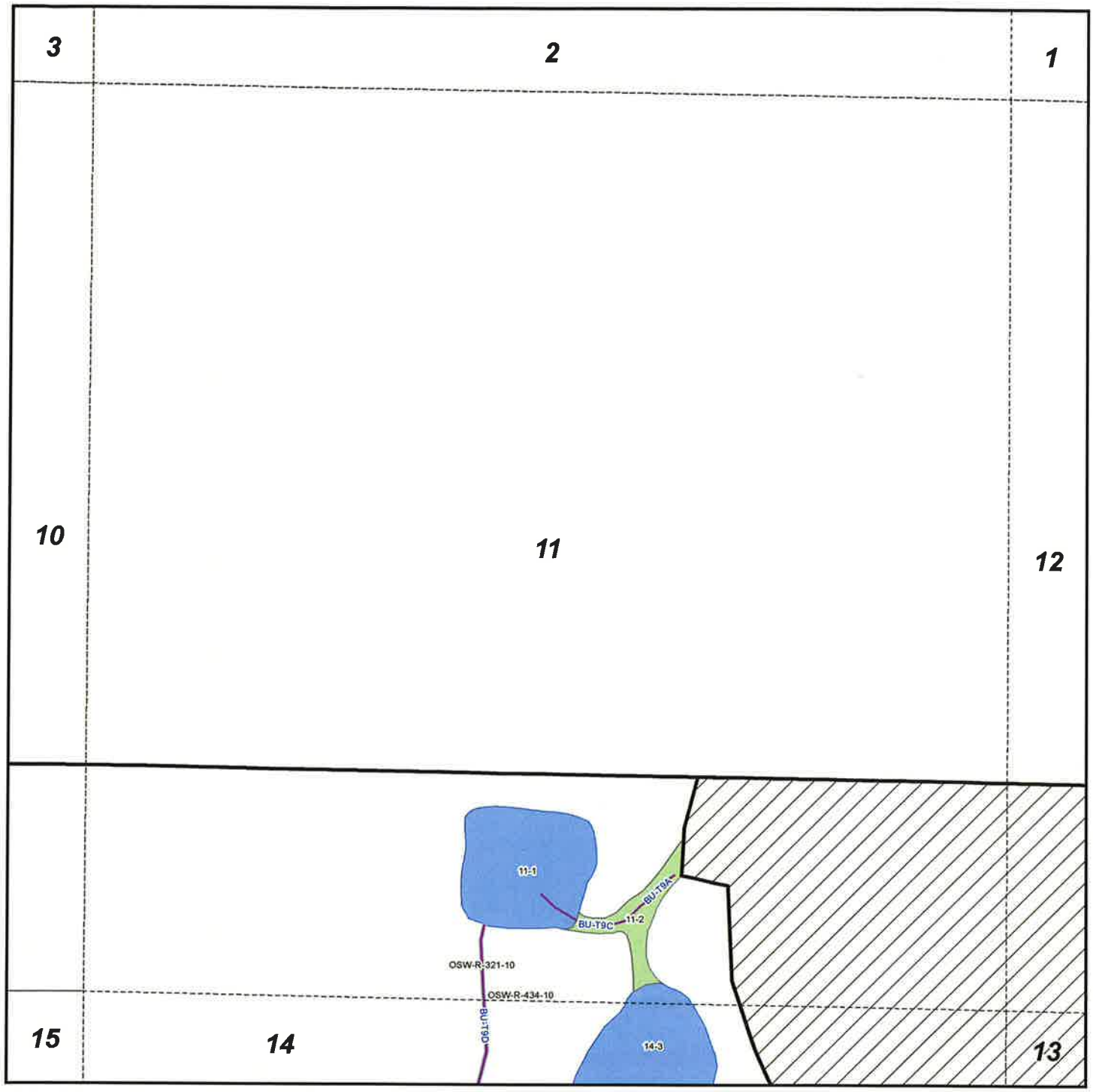
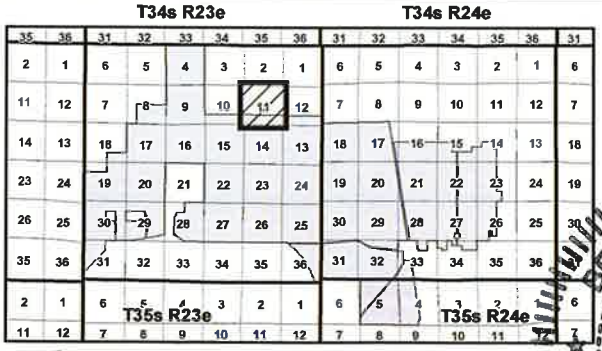




Legend

- County Lines
- Ona Tract Boundary
- Section Lines
- Avoided Areas
- Mitigation Wetlands (Creation)
- Mitigation OSW (Creation)
- Reclaimed Wetlands (Reclamation Only)
- Reclaimed OSW (Reclamation Only)
- Reclaimed Stream Within Mitigation Area
- Reclaimed Stream Within Reclamation Area
- Reclaimed Sloughs/Strands Within Mitigation Area
- Reclaimed Sloughs/Strands Within Reclamation Area



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Sheet 05 of 46

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Mosaic

Ona Mine

Mosaic Fertilizer, LLC

FDEP ERP Application

Map 4-8-B-i FDEP Mitigation

BETHANY R. NIEC LICENSE No. 68437 STATE OF FLORIDA PROFESSIONAL ENGINEER

Bethany R Niec, P.E.
Date: 5/31/18
Florida Reg. No. 68437
Mosaic Fertilizer, LLC
13830 Circa Crossing
Lithia, FL 33547

Permit No. MMR_169281-018

Legend

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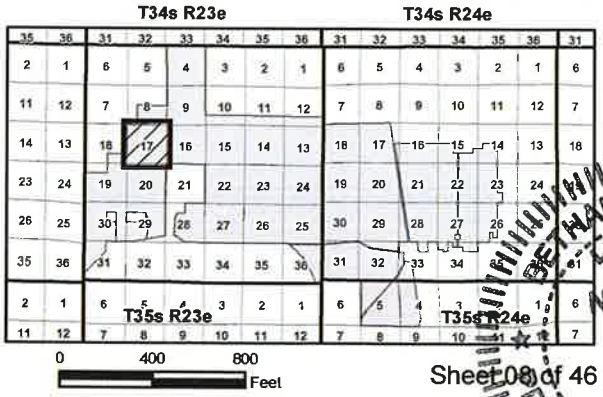

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Sheet 08 of 46

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Mosaic

Ona Mine

Mosaic Fertilizer, LLC

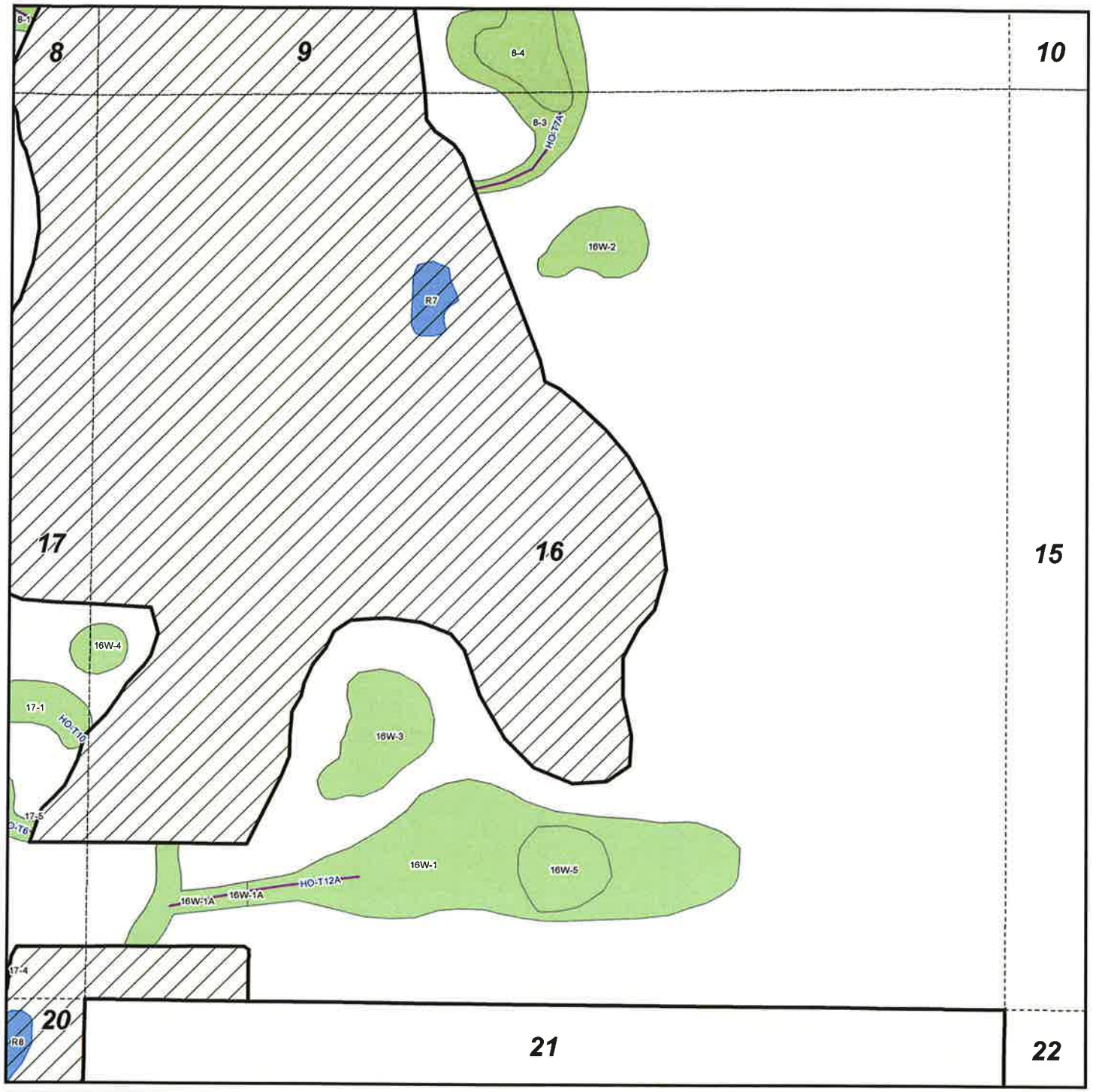
FDEP ERP Application

Map 4-8-B-i FDEP Mitigation

BETHANY R. NICO LICENSE No. 68437 STATE OF FLORIDA PROFESSIONAL ENGINEER

Bethany R. Nico, P.E.
Date: 5/30/18
Florida Reg. No. 68437
Mosaic Fertilizer, LLC
13830 Circa Crossing
Lithia, FL 33547

Permit No. MMR_169281-018



Legend

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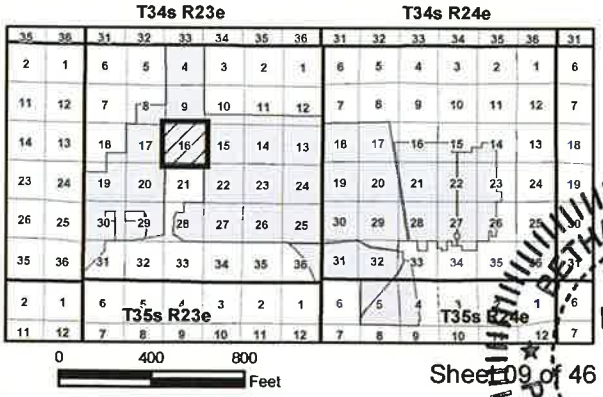

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Sheet 109 of 46

Mosaic

Ona Mine

Mosaic Fertilizer, LLC

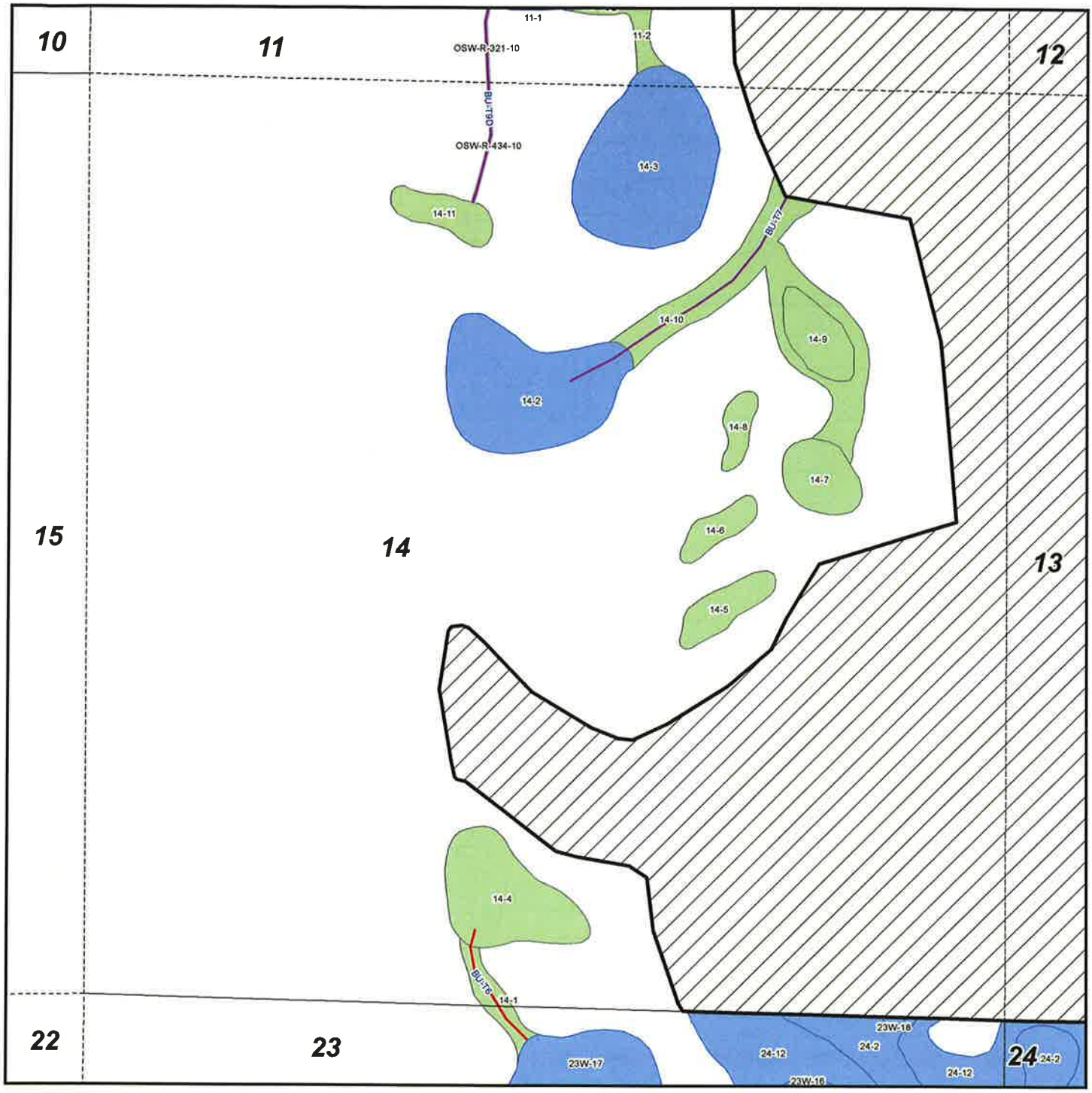
FDEP ERP Application

Map 4-8-B-i FDEP Mitigation

BETHANY R. NIEC LICENSE No. 68437 STATE OF FLORIDA PROFESSIONAL ENGINEER

Bethany R Niec, P.E.
Date: 5/31/18
Florida Reg. No. 68437
Mosaic Fertilizer, LLC
13830 Circa Crossing
Lithia, FL 33547

Permit No. MMR_169281-018



Legend

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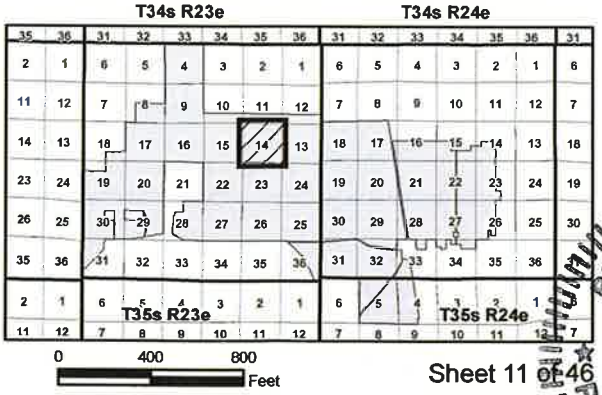
- Reclaimed Stream Within Reclamation Area
- Reclaimed Sloughs/Strands Within Mitigation Area
- Reclaimed Sloughs/Strands Within Reclamation Area



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Sheet 11 of 46

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Mosaic

Ona Mine

Mosaic Fertilizer, LLC

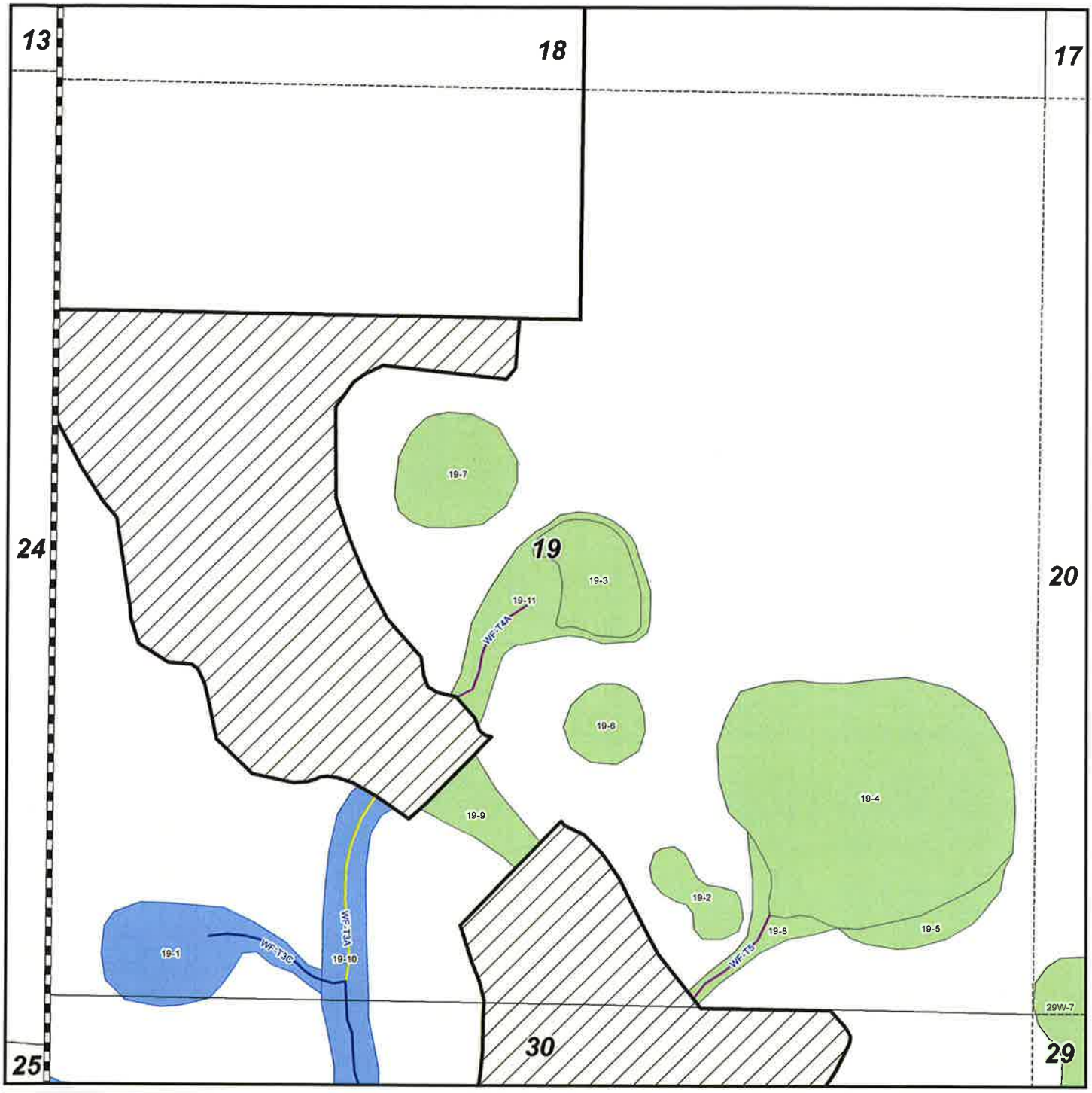
FDEP ERP Application

Map 4-8-B-i FDEP Mitigation

BETHANY R. NIEC LICENSE No. 68437 STATE OF FLORIDA PROFESSIONAL ENGINEER

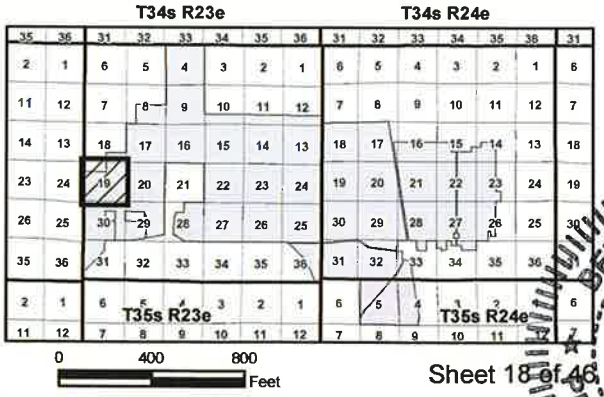
Bethany R Niec, P.E.
Date: 5/31/18
Florida Reg. No. 68437
Mosaic Fertilizer, LLC
49830 Circle Crossing
Lithia, FL 33547

Permit No. MMR_169281-018



Legend

- County Lines
- Ona Tract Boundary
- Section Lines
- Avoided Areas
- Mitigation Wetlands (Creation)
- Mitigation OSW (Creation)
- Reclaimed Wetlands (Reclamation Only)
- Reclaimed OSW (Reclamation Only)
- Reclaimed Stream Within Mitigation Area
- Reclaimed Stream Within Reclamation Area
- Reclaimed Sloughs/Strands Within Mitigation Area
- Reclaimed Sloughs/Strands Within Reclamation Area



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Sheet 18 of 46

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Mosaic

Ona Mine

Mosaic Fertilizer, LLC

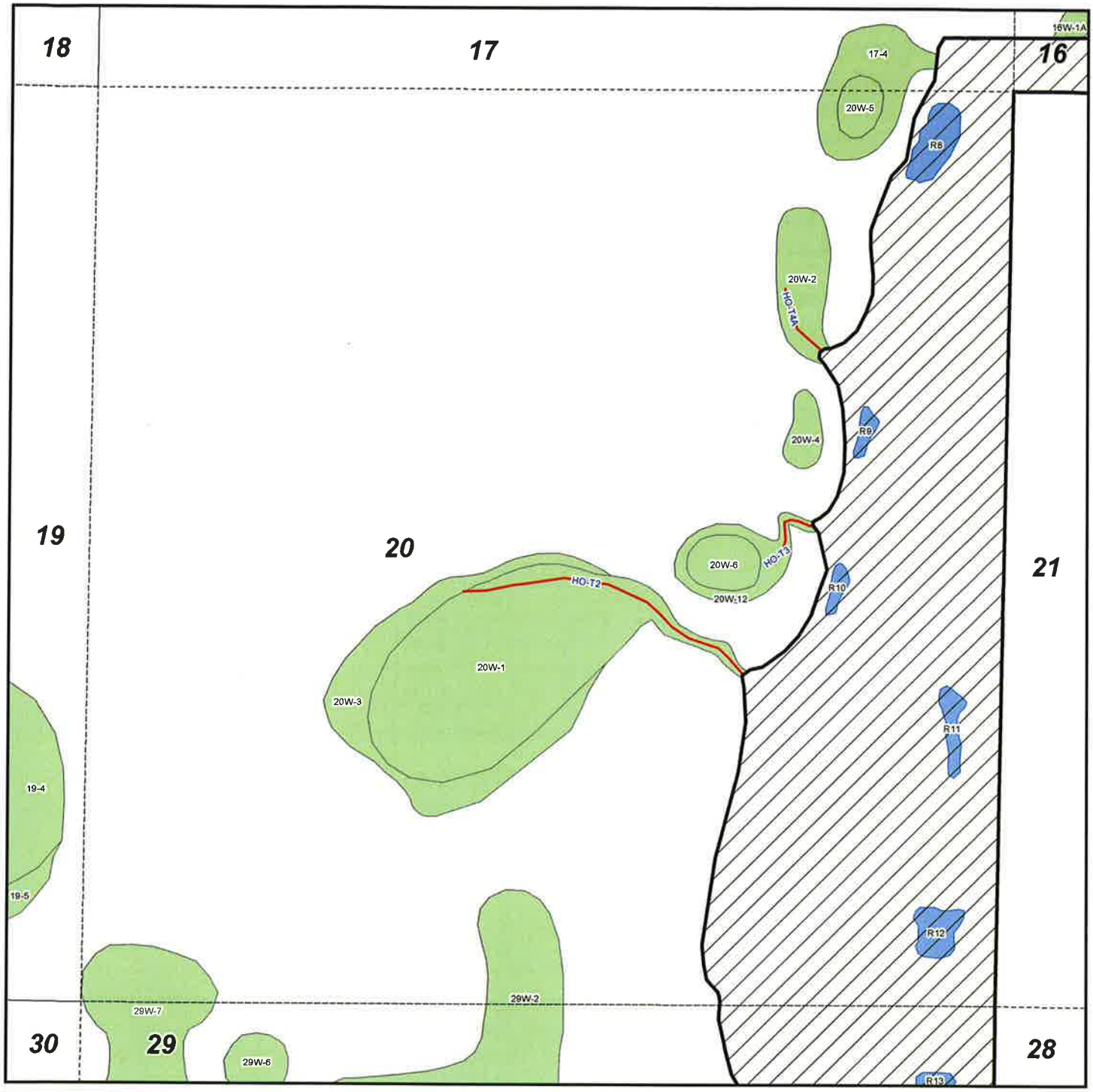
FDEP ERP Application

Map 4-8-B-i FDEP Mitigation

BETHANY R NIECE LICENSED PROFESSIONAL ENGINEER No. 68437 STATE OF FLORIDA

Bethany R Niece, P.E.
Date: 5/30/18
Florida Reg. No. 68437
Mosaic Fertilizer, LLC
13300 Orca Crossing
Lithia, FL 33547

Permit No. MMR_169281-018



Legend

- County Lines
- Ona Tract Boundary
- Section Lines
- Avoided Areas
- Mitigation Wetlands (Creation)
- Mitigation OSW (Creation)
- Reclaimed Wetlands (Reclamation Only)
- Reclaimed OSW (Reclamation Only)
- Reclaimed Stream Within Mitigation Area
- Reclaimed Stream Within Reclamation Area
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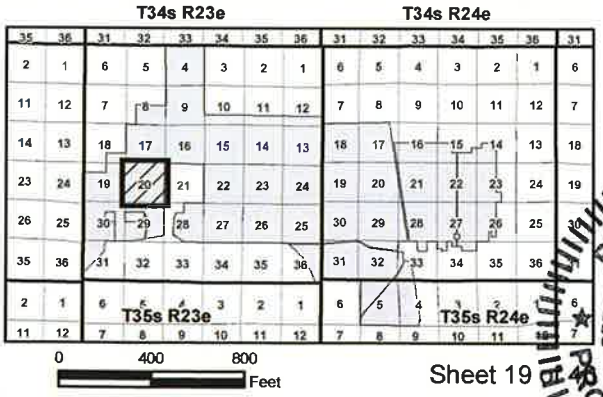

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Mosaic

Ona Mine

Mosaic Fertilizer, LLC

IMPH ERP Application

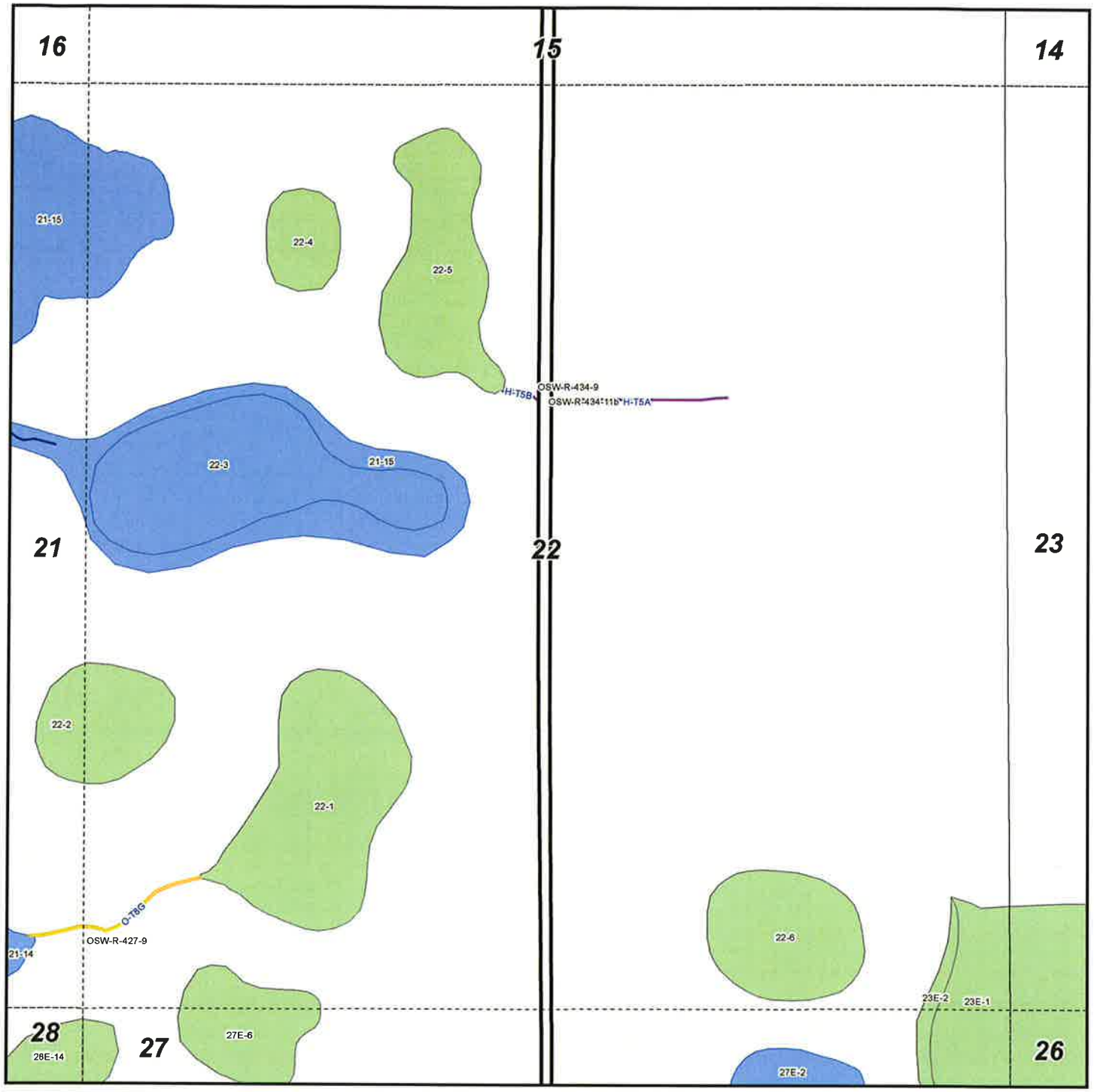
Map 4-8-B-i FDEP Mitigation

BETHANY R NIEC LICENSE No. 68437 STATE OF FLORIDA PROFESSIONAL ENGINEER

Bethany R Niec, PE
Florida Reg. No. 68437
Mosaic Fertilizer, LLC
13830 Circa Crossing
Lithia, FL 33547

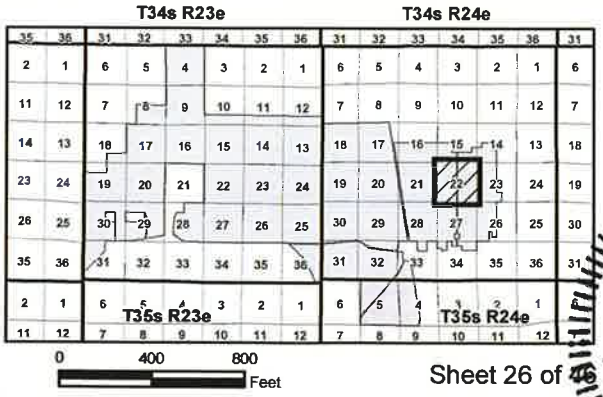
5/31/18

Permit No. MMR_169281-018



Legend

- County Lines
- Ona Tract Boundary
- Section Lines
- Avoided Areas
- Mitigation Wetlands (Creation)
- Mitigation OSW (Creation)
- Reclaimed Wetlands (Reclamation Only)
- Reclaimed OSW (Reclamation Only)
- Reclaimed Stream Within Mitigation Area
- Reclaimed Stream Within Reclamation Area
- Reclaimed Sloughs/Strands Within Mitigation Area
- Reclaimed Sloughs/Strands Within Reclamation Area



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Sheet 26 of 46

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Mosaic

Ona Mine

Mosaic Fertilizer, LLC

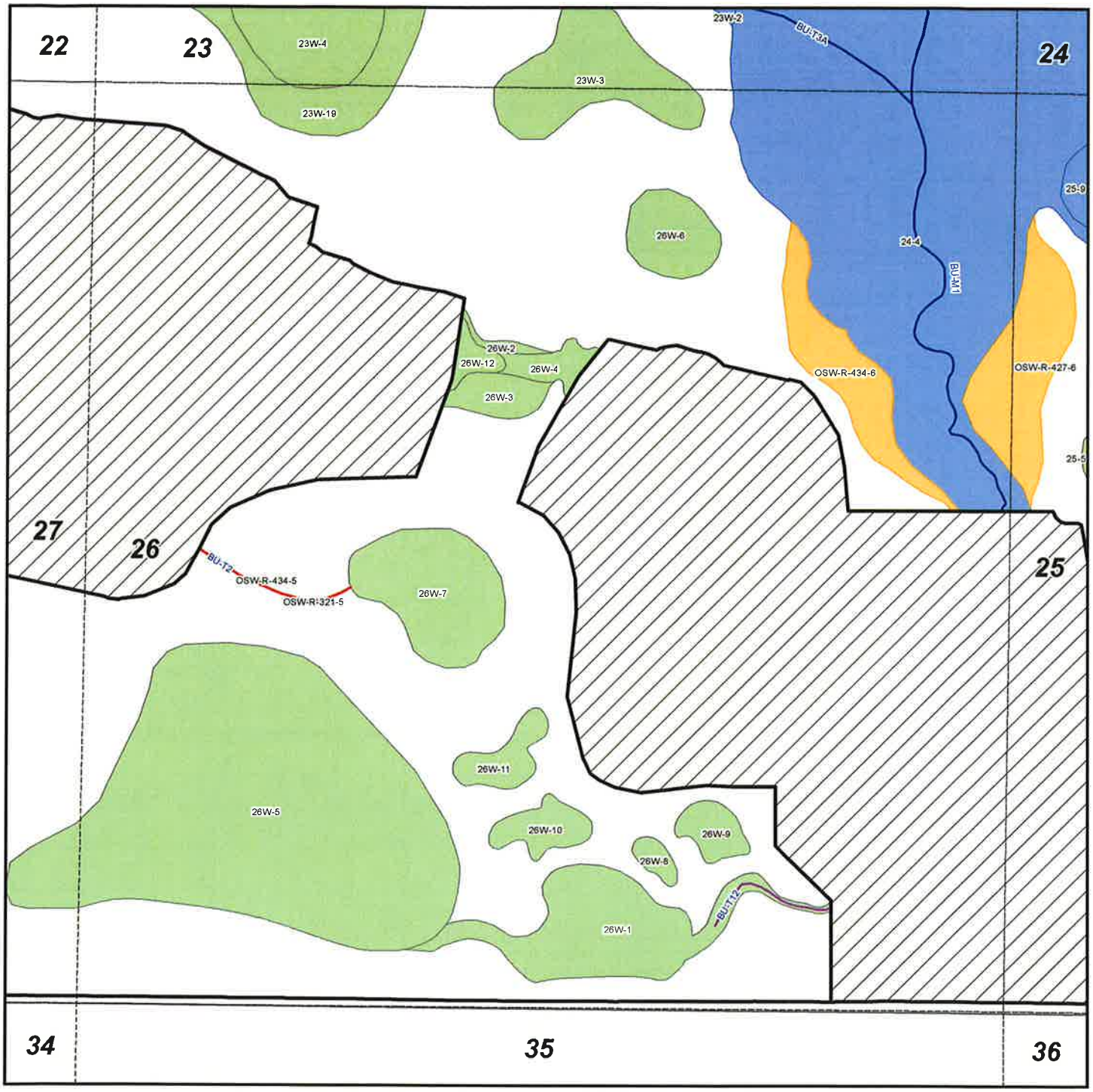
FDEP ERP Application

Map 4-8-B-i FDEP Mitigation

BETHANY R NIEC
LICENSED
No. 68437
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Bethany R Niec, P.E.
Date: 05/31/18
Florida Reg. No. 68437
Mosaic Fertilizer, LLC
13830 Circa Crossing
Lithia, FL 33547

Permit No. MMR_169281-018



Legend

- County Lines
- Ona Tract Boundary
- Section Lines
- Avoided Areas
- Mitigation Wetlands (Creation)
- Mitigation OSW (Creation)
- Reclaimed Wetlands (Reclamation Only)
- Reclaimed OSW (Reclamation Only)
- Reclaimed Stream Within Mitigation Area
- Reclaimed Stream Within Reclamation Area
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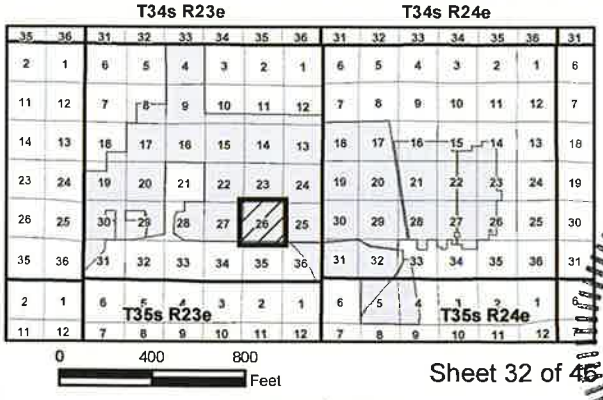
- Reclaimed Sloughs/Strands Within Reclamation Area



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Sheet 32 of 45

Mosaic

Ona Mine

Mosaic Fertilizer, LLC

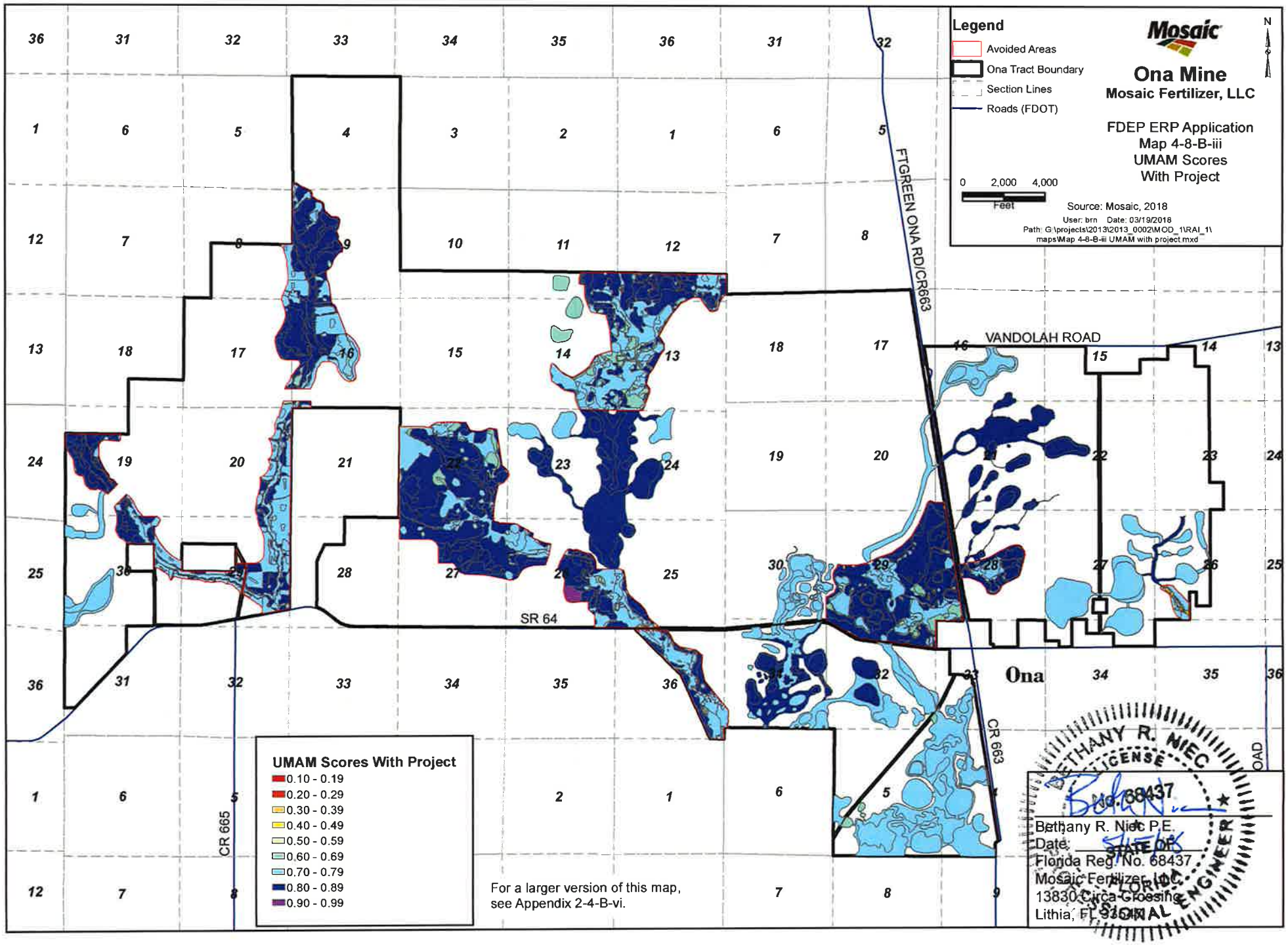
FDEP ERP Application

Map 4-8-B-i FDEP Mitigation

BETHANY R NIEC STATE OF FLORIDA PROFESSIONAL ENGINEER No. 68437

Bethany R Niec, P.E.
Date: 5/31/18
Florida Reg. No. 68437
Mosaic Fertilizer, LLC
13830 Circa Crossing
Lithia, FL 33547

Permit No. MMR_169281-018



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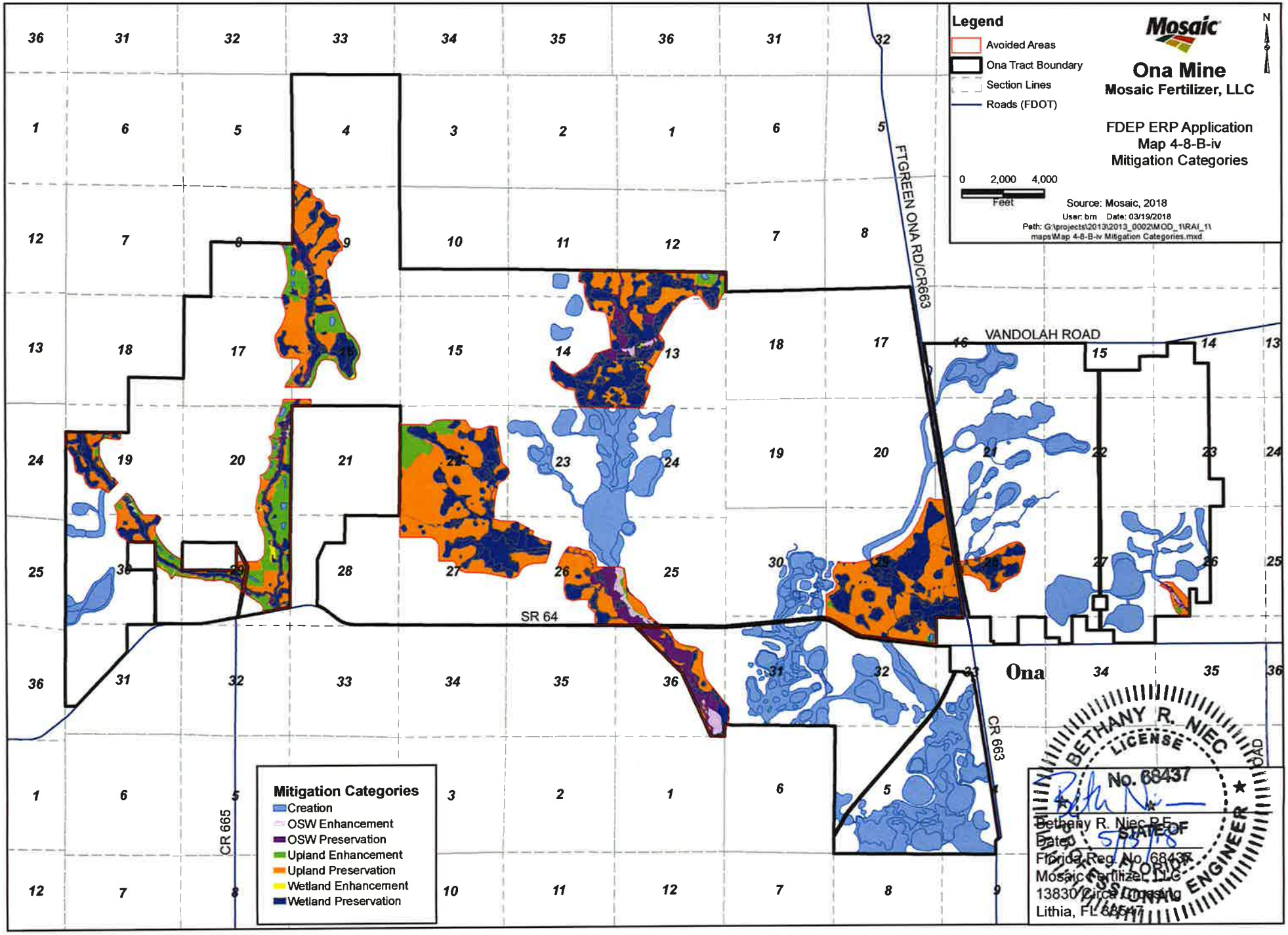
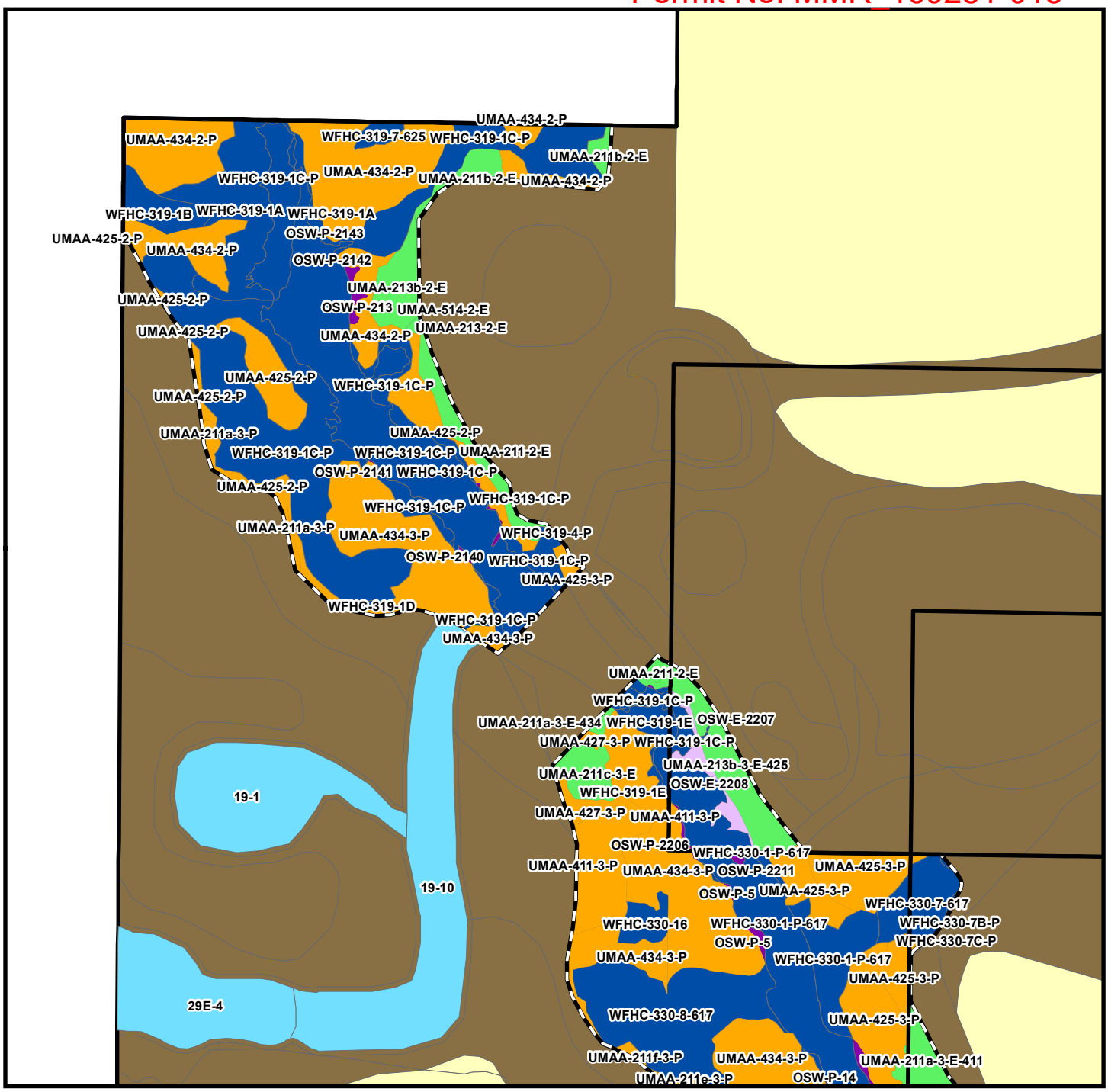
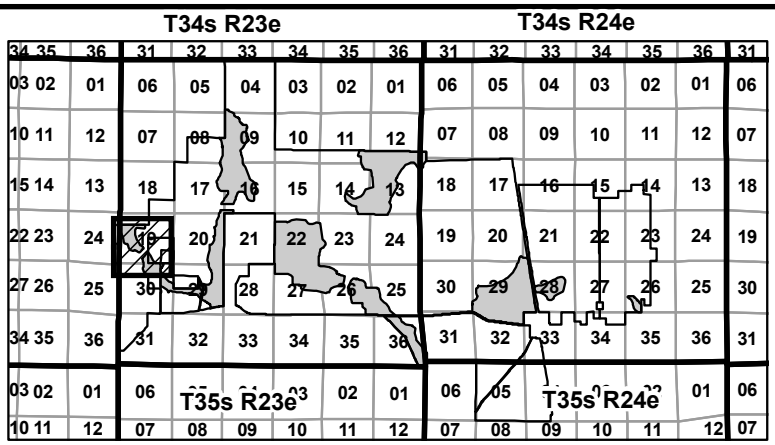


Permit No. MMR_169281-018



- Ona Mine
- Native
- Non-Native
- Creation
- No Mine
- OSW Enhancement
- OSW Preservation
- Upland Enhancement
- Upland Preservation
- Wetland Enhancement
- Wetland Preservation



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1 in = 800 feet

Sheet 1 of 20

Mosaic

ONA MINE

Mosaic Fertilizer, LLC

FDEP ERP Application

MAP 4-8-B-iv

MITIGATION CATEGORIES

Revision Date: 07/05/2018

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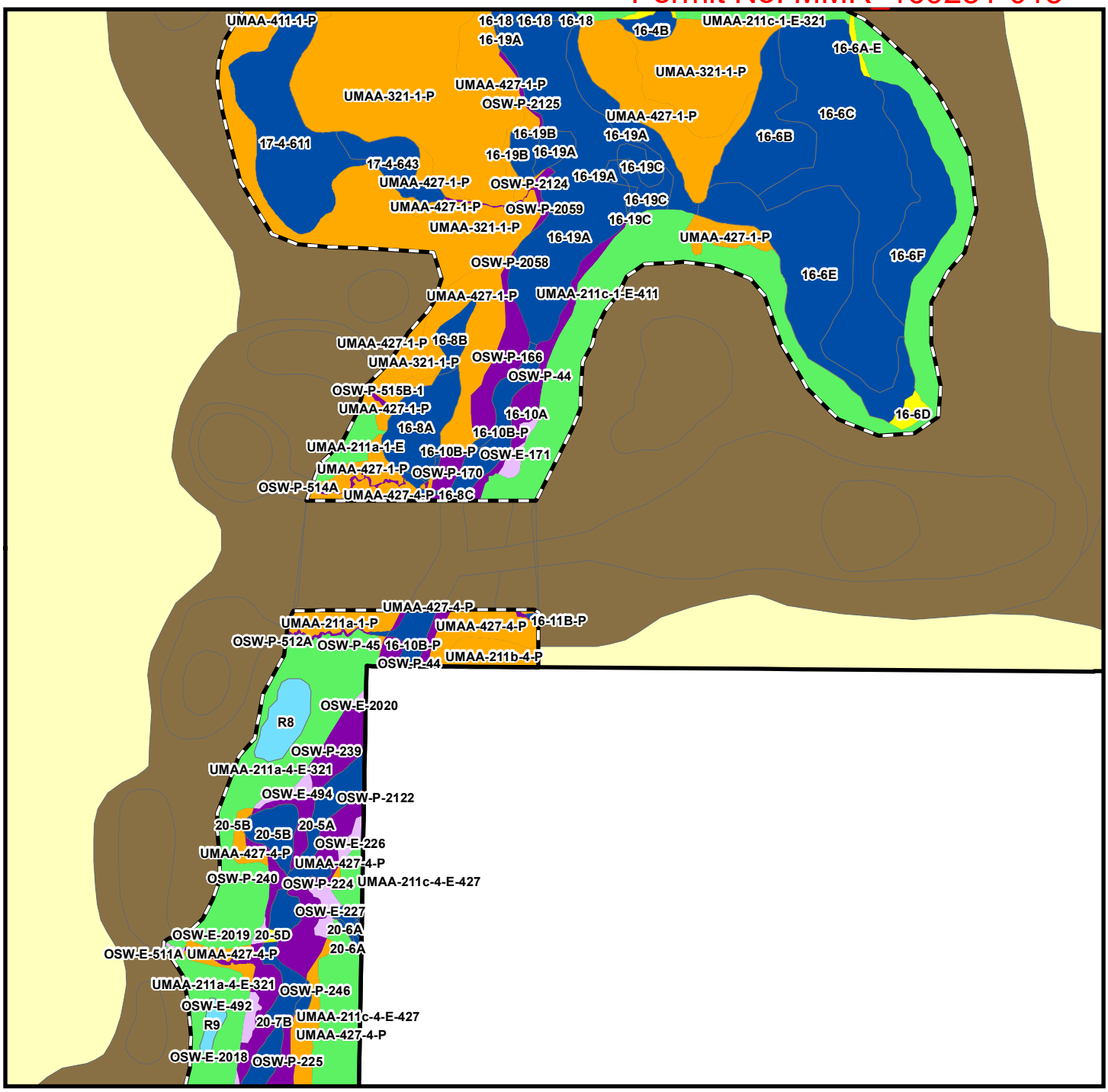
Permit No. MMR_169281-018



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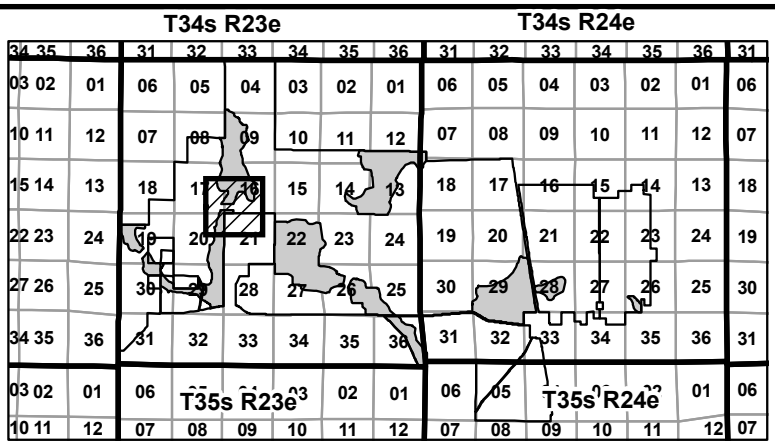
OSW Enhancement
OSW Preservation
Upland Enhancement
Upland Preservation
Wetland Enhancement
Wetland Preservation



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Sheet 5 of 20

Mosaic

ONA MINE
Mosaic Fertilizer, LLC
FDEP ERP Application
MAP 4-8-B-iv
MITIGATION CATEGORIES

Revision Date: 07/05/2018

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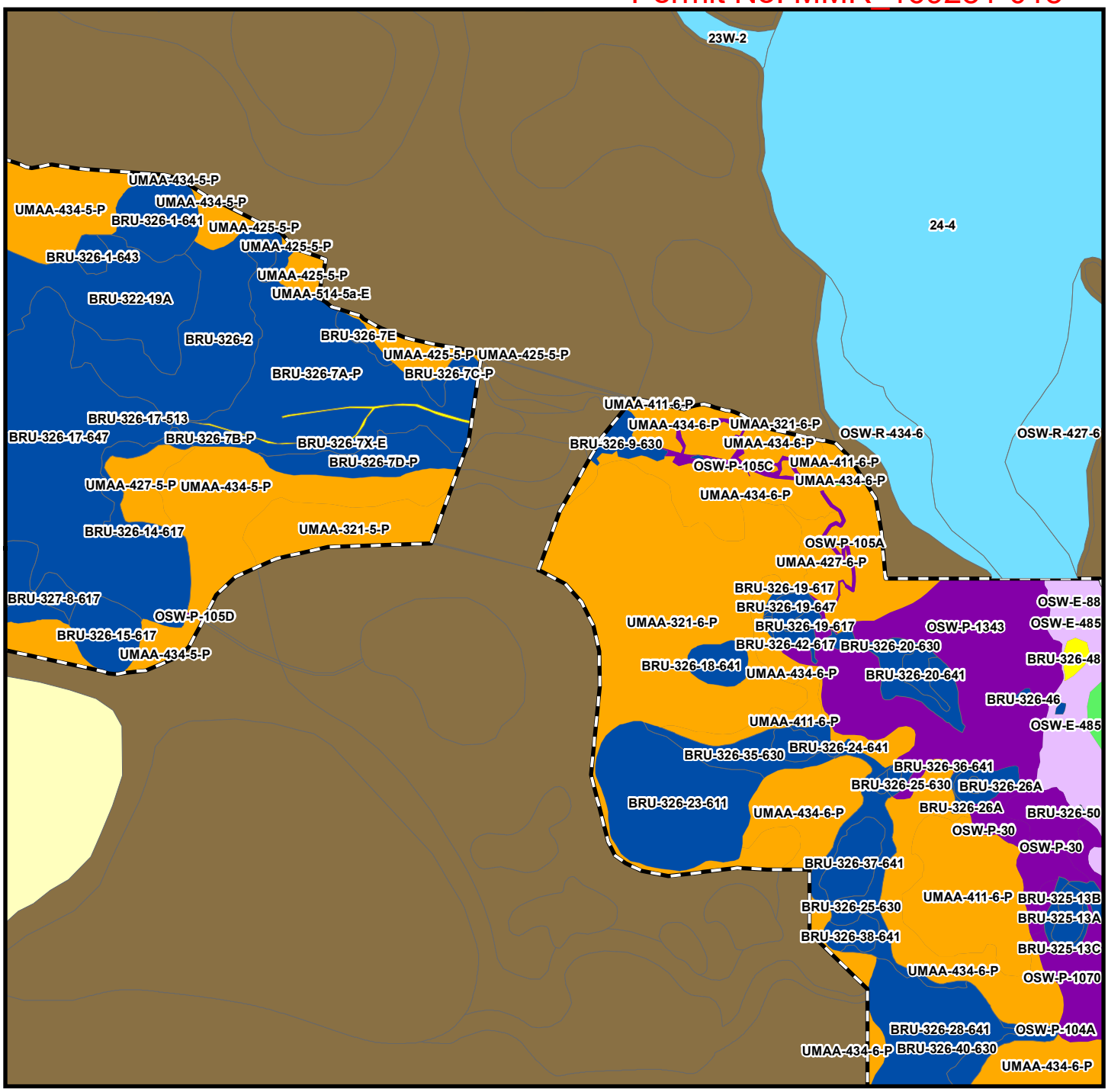
Permit No. MMR_169281-018



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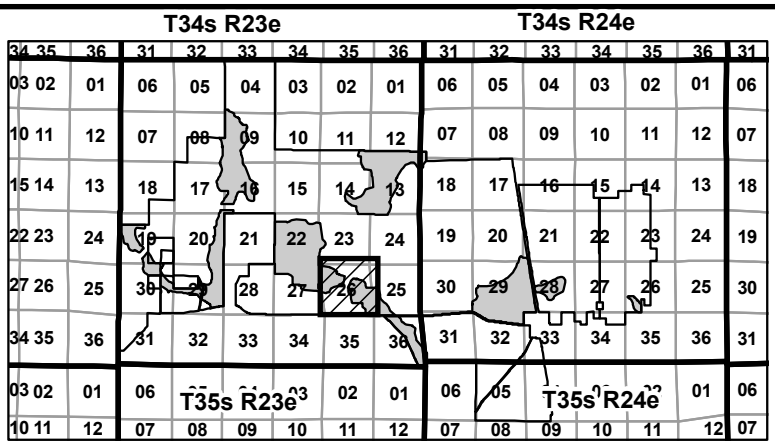
Native
Non-Native
Creation
No Mine
OSW Enhancement
OSW Preservation
Upland Enhancement
Upland Preservation
Wetland Enhancement
Wetland Preservation



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1 in = 800 feet

Sheet 10 of 20

Mosaic

ONA MINE
Mosaic Fertilizer, LLC
FDEP ERP Application
MAP 4-8-B-iv
MITIGATION CATEGORIES

Revision Date: 07/05/2018

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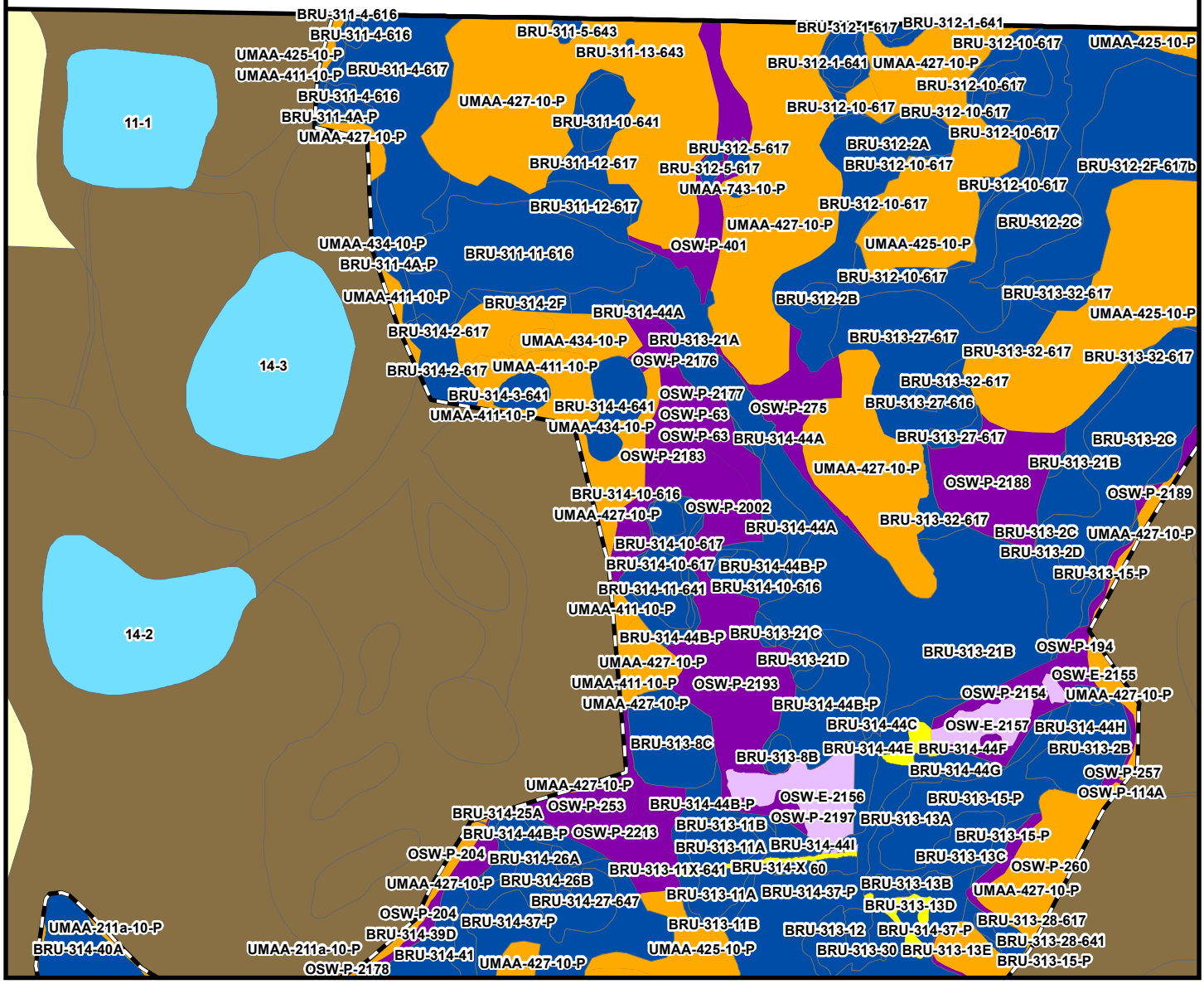
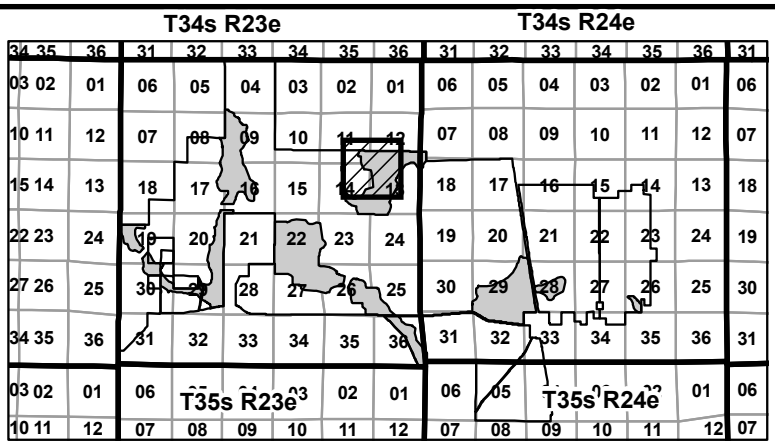


Ona Mine
Native
Non-Native
Creation
No Mine
OSW Enhancement
OSW Preservation
Upland Enhancement
Upland Preservation
Wetland Enhancement
Wetland Preservation



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1 in = 800 feet

Sheet 18 of 20

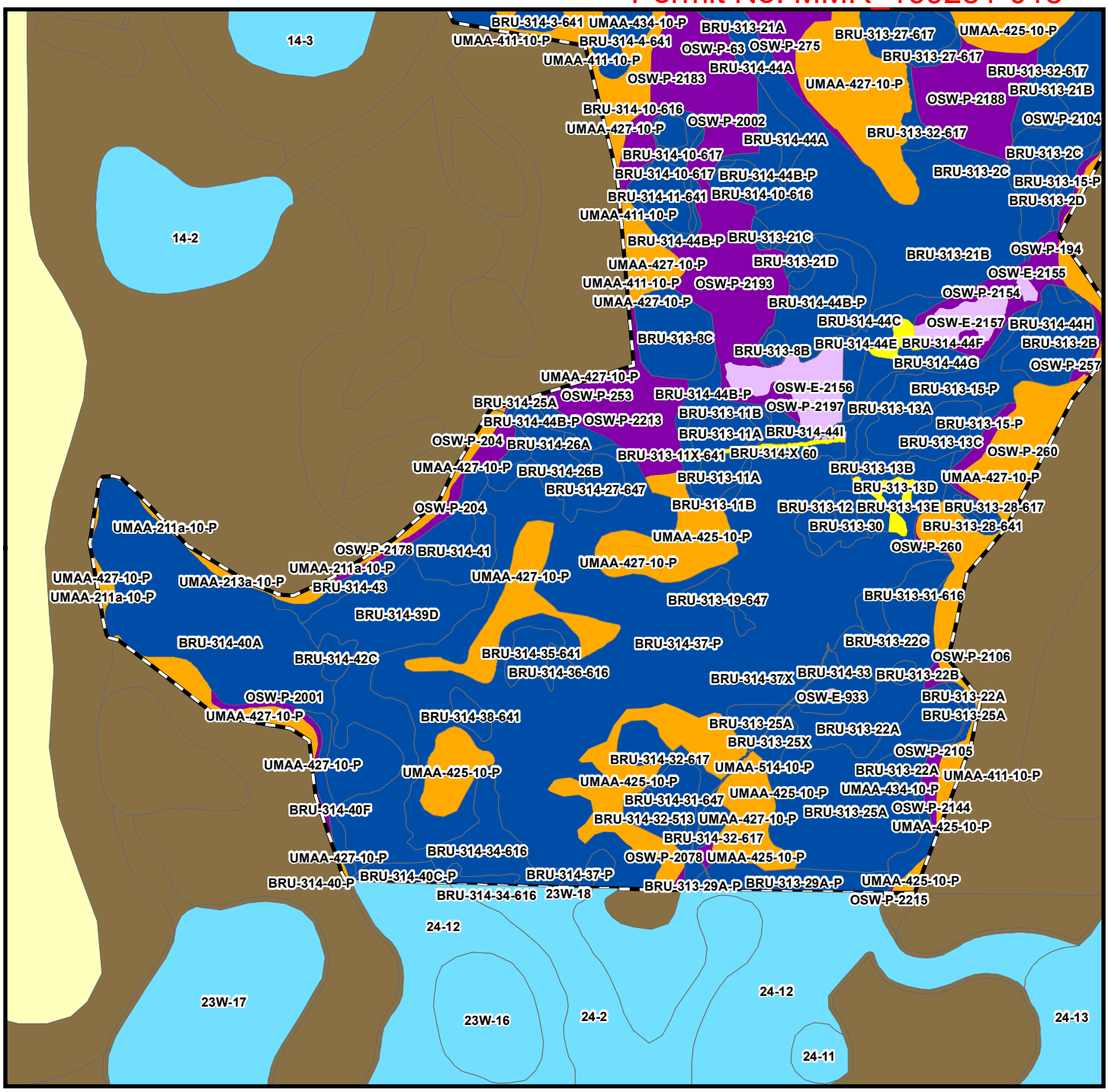
Mosaic

ONA MINE
Mosaic Fertilizer, LLC
FDEP ERP Application
MAP 4-8-B-iv
MITIGATION CATEGORIES

Revision Date: 07/05/2018

P:\0003MOS\017-Ona UMAM Assistance\GIS\PRESERVATION ENHANCEMENT 9600

Permit No. MMR_169281-018



- Ona Mine
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- Upland Preservation
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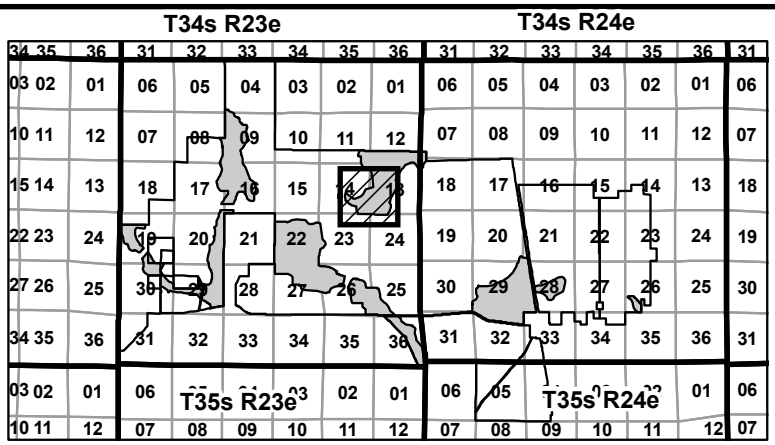

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1 in = 800 feet

Sheet 20 of 20

Mosaic

ONA MINE

Mosaic Fertilizer, LLC

FDEP ERP Application

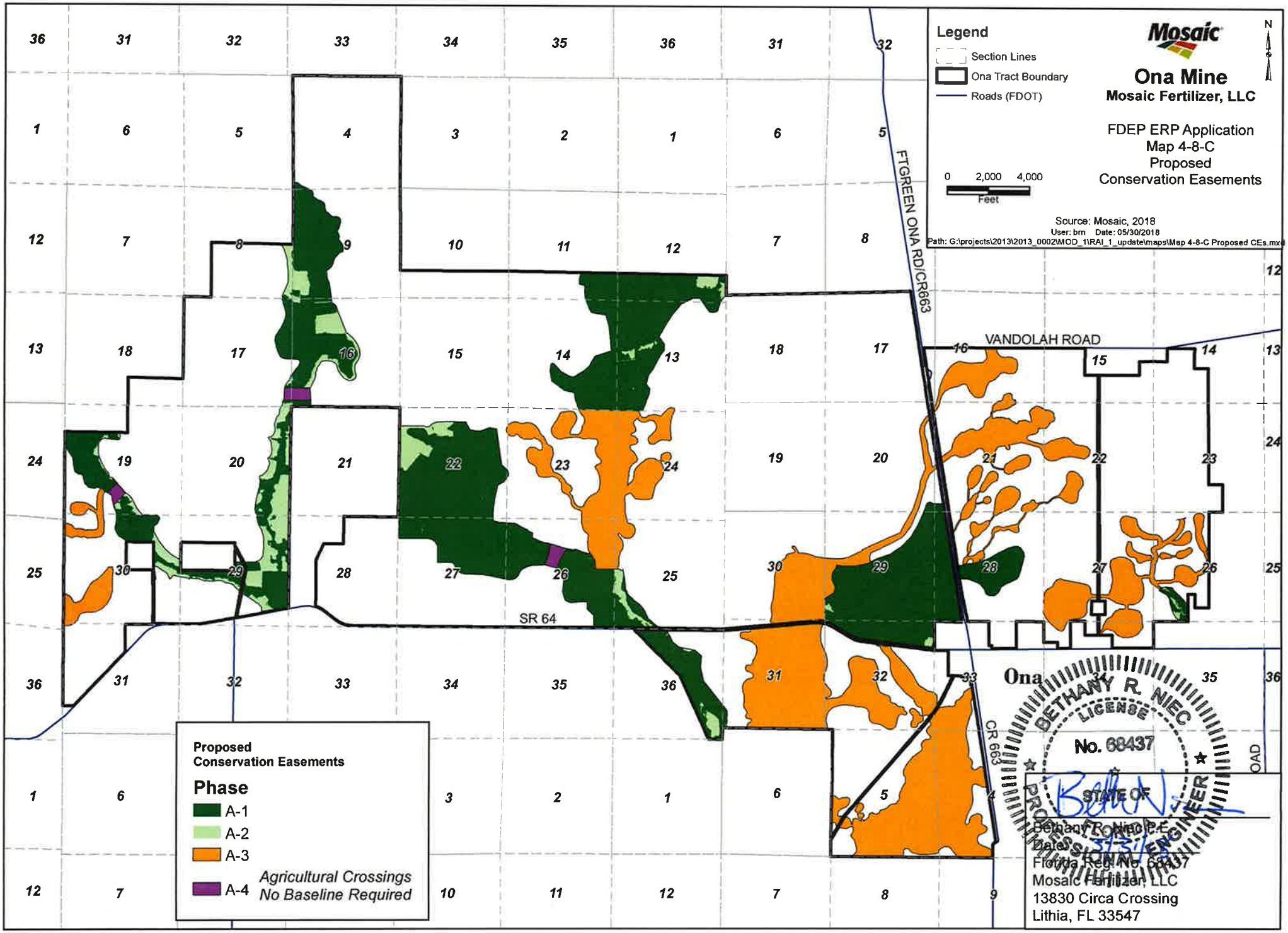
MAP 4-8-B-iv

MITIGATION CATEGORIES

Revision Date: 07/05/2018

P:\0003MOS\017-Ona UMAM Assistance\GIS\PRESERVATION ENHANCEMENT 9600

Permit No. MMR_169281-018



Department of the Army
Permit Number SAJ-2011-01869 (SP-JPF)

Attachment C

AS-BUILT CERTIFICATION FORM:
2 pages

Attachment C

AS-BUILT CERTIFICATION BY PROFESSIONAL ENGINEER

Submit this form and one set of as-built engineering drawings to the U.S. Army Corps of Engineers, Enforcement Section, address of Enforcement PM, City, State, zipcode. If you have questions regarding this requirement, please contact the Enforcement Branch at 904-232-3131.

1. Department of the Army Permit Number: SAJ- - (-)

2. Permittee Information:

Name: _____

Address: _____

_____

3. Project Site Identification (physical location/address):

_____

_____

_____

4. As-Built Certification: I hereby certify that the authorized work, including any mitigation required by Special Conditions to the permit, has been accomplished in accordance with the Department of the Army permit with any deviations noted below. This determination is based upon on-site observation, scheduled, and conducted by me or by a project representative under my direct supervision. I have enclosed one set of as-built engineering drawings.

Signature of Engineer	Name (*Please type*)
(FL, PR, or VI) Reg. Number	Company Name

City	State	ZIP

(Affix Seal)

Date	Telephone Number

Identify any deviations from the approved permit drawings and/or special conditions (attach additional pages if necessary):

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Department of the Army
Permit Number SAJ-2011-01869 (SP-JPF)

Attachment D

NOTICE OF PERMIT FORM:
6 pages

Attachment D

Prepared by:
Permittee: _____
Address: _____
_____
Phone:_____

NOTICE OF DEPARTMENT OF THE ARMY PERMIT

TAKE NOTICE the U.S. Army Corps of Engineers (Corps) has issued Department of the Army Permit SAJ- - to (Permittee) on , 200 , authorizing impacts to waters of the United States (including wetlands) in accordance with Section 404 of the Clean Water Act on a parcel of land known as Folio/Parcel ID: _____ encompassing _____ acres located within a portion of Section _____, Township _____ south, Range _____ east, _____, _____ County, Florida.

Within 30 days of any transfer of interest or control of that portion of the premises containing the area authorized to be filled (or any portion thereof), the Permittee must notify the Corps in writing of the property transfer by submitting the completed permit transfer page of the permit. Notification of the transfer does not by itself constitute a permit transfer. Therefore, purchasers of that portion of the premises containing the area authorized to be filled (or any portion thereof) are notified that it is unlawful for any person to construct, alter, operate, maintain, remove or abandon any works, including dredging or filling, without first having obtained a permit from the Corps in the purchaser's name.

The subject Permit concerns only that portion of the property determined to fall within the jurisdiction of the Corps and this notice is applicable only to those portions of the subject property containing areas authorized to be filled and wetland mitigation/conservation areas subject to the Permit.

Conditions of the Permit: The Permit is subject to General Conditions and Special Conditions which may affect the use of the subject property. Accordingly, interested parties should closely examine the entire Permit, all associated applications, and any subsequent modifications.

To obtain a copy of the permit in its entirety submit a written request to:
U.S. Army Corps of Engineers
Regulatory Division
Post Office Box 4970
Jacksonville, Florida 32232-0019

Questions regarding compliance with these conditions should be directed to:
U.S. Army Corps of Engineers
Regulatory Division - Mining Team
10117 Princess Palm Drive, Suite 120
Tampa, FL 33610

Conflict Between Notice and Permit
This Notice of Permit is not a complete summary of the Permit. Provisions in this Notice of Permit shall not be used in interpreting the Permit provisions. In the event of conflict between this Notice of Permit and the Permit, the Permit shall control.

This Notice is Not an Encumbrance
This Notice is for informational purposes only. It is not intended to be a lien, encumbrance, or cloud on the title of the premises.

Release
This Notice may not be released or removed from the public records without the prior written consent of the Corps.

This Notice of Permit is executed on this _____ day of _____, 20____. This document is being submitted for recordation in the Public Records of _____ County, Florida as part of the requirement imposed by Department of the Army Permit No SAJ- - issued by the Corps.

Permittee:
_____
Address:
_____
_____
____
Phone:_____
___

STATE OF FLORIDA
COUNTY OF _____

The foregoing instrument was acknowledged before me this _____day of _____, 20____, by _____, who is personally known to me or has produced _____ as identification.

_____
Notary Public
(seal)

_____
Print

My Commission Expires_____

Department of the Army
Permit Number SAJ-2011-01869 (SP-JPF)

Attachment E

ESA Information

Department of the Army
Permit Number SAJ-2011-01869 (SP-JPF)

Attachment E-1

INCIDENTAL TAKE PERMIT/HABITAT CONSERVATION PLAN AMENDMENT: 4 pages

NATIVE THREATENED SP. HABITAT CONSERVATION PLAN
THREATENED WILDLIFE; MIGRATORY BIRDS

Permit Number: TE236128-2

Effective: 05/22/2018 Expires: 05/31/2053

Issuing Office:

Department of the Interior
U.S. FISH & WILDLIFE SERVICE
Ecological Services Permit Office
1875 Century Boulevard
Atlanta, GA 30345
permitsR4ES@fws.gov

Field Supervisor, North Florida Ecological Services Office, Jacksonville, Florida

Permittee:

MOSAIC FERTILIZER LLC
13830 CIRCA CROSSING DRIVE
LITHIA, FL 33547
U.S.A.

Name and Title of Principal Officer:
RUSSELL SCHWEISS - DIRECTOR, LAND AND RESOURCE STRATEGIES

Authority: Statutes and Regulations: 16 USC 1533(d), 16 USC 703-712; 50 CFR 17.32, 50 CFR 21.23, 50 CFR 21.27, 50 CFR 13.

Location where authorized activity may be conducted:
Parcel #45400059, sections 13, 22-27, and 34, Township 34 South, Range 22 East, Manatee County, Florida, and an additional 900 acres located in sections 17, 18, 19, 20, 29, and 30 of Township 34 South, Range 23 East, in western Hardee County, Florida. The amended total areas is now 5,245 acres.

Reporting requirements:
Reports will be provided to the U.S. Fish and Wildlife Service offices appearing in Condition M of this Permit.

Authorizations and Conditions:

A. General conditions set out in Subpart B of 50 CFR 13, and specific conditions contained in Federal regulations cited above, are hereby made a part of this permit. All activities authorized herein must be carried out in accord with and for the purposes described in the application submitted. Continued validity, or renewal of this permit is subject to complete and timely compliance with all applicable conditions, including the filing of all required information and reports.

B. The validity of this permit is also conditioned upon strict observance of all applicable foreign, state, local tribal, or other federal law.

C. Valid for use by Permittee named above. Also valid for use by Permittee's authorized agents.

D. Acceptance of this Permit serves as evidence that the Permittee and its authorized agents understand and agree to abide by the terms of this Permit and all sections of Title 50 Code of Federal Regulations, Parts 13 and 17, pertinent to issued permits. Section 11 of the Endangered Species Act of 1973, as amended, provides for civil and criminal penalties for failure to comply with Permit conditions.

THIS PERMIT CONSISTS OF CONDITIONS A - M (4 PAGES TOTAL).

E. The parcel identified in Block 10 above encompasses 5,245 acres where the Permittee proposes clearing activities associated with phosphate mining (Project). Status surveys and biological analysis indicate that 75 acres of the Project area provides suitable habitat for the threatened Florida scrub-jay (*Aphelocoma coerulescens*) and all 5,245 acres of the Project area provides suitable habitat for the threatened Eastern indigo snake (*Drymarchon couperi*). The entire 5,245 acres of habitat including the 75 acres of scrub-jay habitat would be eliminated due to Project construction. The *Aphelocoma coerulescens* and *Drymarchon couperi* on the Project site comprise the "covered species."

The Permittee, and any authorized agents, are authorized to take the covered species within the Project area incidental to earth moving, grading, and other land alteration and construction activities necessary for mining activities as described in the Permittee's Habitat Conservation Plan (HCP), and as conditioned herein. This permit does not authorize take of any covered species resulting from unlawful activities.

F. The Permittee, with reasonable notice, shall permit the contact office of the U.S. Fish and Wildlife Service personnel identified in Condition M, below, or other properly permitted and qualified persons designated by the U.S. Fish and Wildlife Service, to enter the Project area boundaries at reasonable hours and times for the general purposes specified in Title 50 Code of Federal Regulations § 13.21(e)(2).

G. The Permittee shall implement the following measures to ensure that take of the covered species is minimized and mitigated:

1. Prior to undertaking any ground-disturbing activities or removal or alteration of vegetation that could result in taking of covered species within the 5,245 acres of occupied habitat, the Permittee will establish a conservation easement capturing 150 acres of scrub-jay habitat within the Mosaic Wellfield and capturing 125 acres of suitable EIS habitat immediately adjacent to the Ona Mine project site.

2. The Permittee shall initiate clearing or construction activities outside of the nesting season of *Aphelocoma coerulescens* (March 1 - June 30) if an active *Aphelocoma coerulescens* nest is located within the Project site.

3. The Permittee shall follow the guidance in the *Standard Protection Measures for the Eastern Indigo Snake* (FWS 2004).

4. All other measures outlined in the Habitat Conservation Plan (HCP) will be implemented.

5. Within ten (10) days of satisfying Condition G.1, the Permittee shall submit written confirmation to the contact office of the U.S. Fish and Wildlife Service identified in Condition M, below, that Condition G.1 has been successfully performed.

H. The Permittee and the U.S. Fish and Wildlife Service agree that modification and amendments to the Permittee's HCP and this Permit may occur through its effective term. The following procedures shall govern the modification and amendment process:

1. This Permit is based upon the Permittee's expected compliance with the provisions and commitments established in the submitted HCP and the terms and conditions identified herein. Where a conflict occurs between the HCP and this Permit, the Permit shall control.

2. Either the Permittee or the U.S. Fish and Wildlife Service may propose modifications and/or amendments to the HCP or this Permit by providing written notice. Such notice shall include a statement of the reason for the proposed modification and an analysis of the environmental effects of such modification or amendment, including effects on operations under the HCP and on the covered species. This analysis shall be conducted jointly by the Permittee and the contact office of the U.S. Fish and Wildlife Service. The U.S. Fish and Wildlife Service or the Permittee will use best efforts to respond to a proposed modification or amendment within sixty (60) days of receipt of such notice. Provided any such proposed modification or amendment would not result in any of the conditions identified in Condition H.3, below, and absent any objection from the U.S. Fish and Wildlife Service or the Permittee, the proposed modification and/or amendment will be determined as minor and shall become effective upon written approval by the U.S. Fish and Wildlife Service or the Permittee. If, for any reason, a receiving party objects to a proposed amendment or modification, it must be processed in accordance with Condition H.3, below.

3. The U.S. Fish and Wildlife Service will not propose or approve modifications or amendments to the HCP or this Permit if the U.S. Fish and Wildlife Service determines that such modifications would result in operations under the HCP and Permit that are significantly different from those analyzed in connection with the original HCP, that would adversely affect the environment in new or significantly different ways from those analyzed in connection with the original HCP, or that would result in additional take of the covered species not analyzed in connection with the original HCP.

4. Any amendment or modification shall conform with all applicable legal requirements, including but not limited to the Endangered Species Act, the National Environmental Policy Act, and the U.S. Fish and Wildlife Service's permit regulations at 50 C.F.R. §13 and §17.

I. This permit also constitutes a Special Purpose Permit under C.F.R. §21.27 for the take of *Aphelocoma coerulescens* in the amount and/or number and subject to the terms and conditions specified herein. Any such take of *Aphelocoma coerulescens* will not be in violation of the Migratory Bird Treaty Act of 1918 as amended (16 U.S.C. §§ 703.12).

J. The written confirmation required by Condition G.4, above shall include the following certification from a responsible official who supervised or directed the preparation of the report:

> Under penalty of law, I certify that, to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of this written confirmation, the information submitted is true, accurate, and complete.

K. The Permittee and the U.S. Fish and Wildlife Service acknowledge that even with the above detailed provisions for mitigating and/or minimizing impacts to the covered species, changes in circumstances could arise which were not fully anticipated by this permit and which may result in substantial and adverse change in the status of the covered species. The U.S. Fish and Wildlife Service's policy regarding changed and unforeseen circumstances is contained in the final No Surprises rule published on February 23, 1998, (63 Fed. Reg. 8859) and codified at 50 C.F.R. Part `17.

Unforeseen and/or changed circumstances may become apparent either to the Permittee, authorized agents, or to personnel of the U.S. Fish and Wildlife Service. For purposes of implementation of this condition,

K. (Continued)

unforeseen circumstances are defined as changes in circumstances affecting a species or geographic area covered by the HCP that could not reasonably have been anticipated by the HCP developers and the U.S. Fish and Wildlife Service at the time of the HCP's negotiation and development, and that result in a substantial and adverse change in the status of the covered species. Changed circumstances are defined as changes in circumstances affecting a species or geographic area covered by the HCP that can reasonably be anticipated by HCP developers and the U.S. Fish and Wildlife Service, and that can be planned for. Should either unforeseen or changed circumstances arise, the Permittee and the contact office of the U.S. Fish and Wildlife Service identified in Condition M, below, shall meet within twenty (20) working days following notice by either party. The U.S. Fish and Wildlife Service and Permittee shall together agree upon appropriate and reasonable measures for addressing such circumstances, within the rule of applicable law, and the Permittee shall implement appropriate and reasonable measures within an additional thirty (30) working days, unless a longer period of time is agreed to by the U.S. Fish and Wildlife Service.

L. Upon locating a dead, injured, or sick *Aphelocoma coerulescens, Drymarchon couperi,* or any other threatened or endangered species, initial notification must be made immediately to the U.S. Fish and Wildlife Service Law Enforcement Office, 20501 Independence Boulevard, Groveland, Florida 34736 (353/429-1037). Notification should also be made, by the next work day, to the contact office of the U.S. Fish and Wildlife Service noted in Condition M. Care should be taken in handling sick, injured, or dead specimens to ensure effective treatment or to preserve biological materials for later analysis. In conjunction with the care of sick or injured threatened or endangered species or preservation of biological materials from a dead animal, the finder should take responsible steps to ensure that the site is not unnecessarily disturbed.

M. For purposes of receiving reports, and monitoring compliance and administration of the terms and conditions of this permit, the contact office of the U.S. Fish and Wildlife Service is:

U.S. Fish and Wildlife Service
7915 Baymeadows Way, Suite 200
Jacksonville, Florida 32256-7517
Telephone: 904/731-3336

END

Department of the Army
Permit Number SAJ-2011-01869 (SP-JPF)

Attachment E-2

BIOLOGICAL OPINION:
81 pages

United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecological Services Office
1339 20th Street
Vero Beach, Florida 32960

November 6, 2018

Andrew D. Kelly, Colonel
District Commander
U.S. Army Corps of Engineers
Jacksonville District Corps of Engineers
10117 Princess Palm Avenue, Suite 120
Tampa, Florida 33610

Service Consultation Code:	04EF2000-2017-F-0988
Corps Permit Application Number:	SAJ-2011-01869 (IP-JPF)
Date Received:	September 25, 2017
Formal Consultation Initiation Date:	July 12, 2018
Project:	Ona Phosphate Mine
County:	Hardee

Dear Colonel Kelly:

This document transmits the U.S. Fish and Wildlife Service's (Service) Biological Opinion (BO) for the proposed Mosaic Fertilizer, LLC (Applicant) Ona Mine (Project) in Hardee County, Florida, and its effects on the threatened Audubon's crested caracara (*Polyborus plancus audubonii*)(caracara), threatened eastern indigo snake (*Drymarchon corais couperi*) (indigo snake), and threatened wood stork (*Mycteria americana*). This BO is submitted in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C. 1531 et seq.). This BO also includes and summarizes our concurrence for the U.S. Army Corps of Engineers' (Corps) determinations for the endangered Florida panther (*Puma concolor coryii*) (panther), endangered Florida grasshopper sparrow (*Ammodramus savannarum floridanus*) (FGS), and threatened Florida scrub-jay (*Aphelocoma coerulescens*) (scrub-jay). A complete administrative record of this consultation is on file in the Service's South Florida Ecological Services Office (SFESO), Vero Beach, Florida.

This BO is based on information provided in the September 2017 Biological Assessment (BA) prepared by Environmental Consulting & Technology, Inc. (ECT), as well as letters, maps, meetings, site visit, telephone conversations, email correspondence, and other sources of information. The Corps provided effect determinations of "may affect" for the caracara, indigo snake, and wood stork; they also provided "may affect, not likely to adversely affect" determinations for the panther, FGS, and scrub-jay. The Service concurs with the Corps' effect determinations.

Consultation History

On June 9, 2011, the Service met with the applicant met to discuss this Project and the result of wildlife surveys conducted on the Project site.

On June 5, 2012, the Service received a Public Notice from the Corps dated June 1, 2012 for this Project.

On June 29, 2012, the Service received a Public Notice from the Corps dated June 28, 2012 amending the earlier June 1, 2012, Public Notice.

On August 6, 2012, the Service received a Coordination Letter dated June 1, 2012.

On October 7, 2015, the Service received a revised Coordination Letter dated September 29, 2015 amending an earlier version dated June 1, 2012 sent for this Project.

On April 7, 2017, the Service and the Applicant met via conference call to discuss revisions to the Project. Specifically, the parties discussed proposed changes in size of the Project area and the time period to complete the review of the Project. Representatives from the Service's Vero Beach and Jacksonville offices participated in the conference call. The Applicant also requested an amendment to the 2012 Wingate East Incidental Take Permit (Permit No. TE236128-1) to cover 900 acres of uplands within the Ona mine known as the "Fort Green Uplands." For the Fort Green Uplands, the Service's Jacksonville office conducted an internal section 7 consultation that considered the impacts of mining activities in the Fort Green Uplands areas.

On September 20, 2017, the Service received a copy of the revised Biological Assessment of the Ona Mine.

On September 25, 2017, the Service received a coordination letter from Corps. By the same letter, the Corps provides effect determinations for the caracara, indigo snakes, and wood stork. On July 12, 2018, the Service received comments and updates for the draft Biological Assessment for this Project. On the same date, the Service determined that it had received all the information necessary to initiate formal consultation on the caracara, indigo snake, and wood stork for this Project as required in the regulations governing interagency consultations (50 CFR § 402.14).

BIOLOGICAL OPINION

This Biological Opinion provides the Service's opinion as to whether the proposed Project is likely to jeopardize the continued existence of the caracara, indigo snake, and wood stork. There is no designated critical habitat for any of these species; therefore, this BO will not address destruction or adverse modification of critical habitat.

ANALYTICAL FRAMEWORK FOR THE JEOPARDY DETERMINATION

Jeopardy determination

Section 7(a)(2) of the Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. "Jeopardize the continued existence of" means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR § 402.02).

The jeopardy analysis in this Biological Opinion relies on four components: (1) the Status of the Species, which describes the range-wide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the Environmental Baseline, which analyzes the condition of the species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the Effects of the Action, which determine the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the species; and (4) the Cumulative Effects, which evaluate the effects of future, non-federal activities in the action area on the species.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the current status of the species, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the species in the wild.

DESCRIPTION OF PROPOSED ACTION

The applicant requests a 30-year implementation window to disturb (associated with mining phosphate ore) approximately 18,776 acres (ac) of a 21,583-ac Project parcel in Hardee County, Florida. The Applicant proposes to extract the phosphate ore reserves on the proposed Project site for approximately 24 years and approximately six additional years to complete the reclamation and mitigation construction. The applicant proposes to process the mined ore at two currently operating facilities, the South Pasture and the Four Corners beneficiation plants. This Project extends the operational life of the South Pasture plant by 21 years and of the Four Corners plant by 14 years. Upon completion of mining operations, all lands disturbed by mining will be reclaimed, with some areas being established as wetland mitigation.

The 21,583-ac Project site includes 4,885 ac of jurisdictional wetlands. Most of the site consists of land that has been converted to agricultural uses and remnants of native habitat (Figure 1). Lands converted to agricultural, urban, or transportation uses total 8,516 ac, or 39 percent; native rangeland remains on 2,832 ac, or 13 percent; upland forests on 6,337 ac, or 29 percent; herbaceous wetlands occur on 2,694 ac, or 13 percent; and forested wetlands are present on 1,186 ac, or 5 percent. The historic and physical land use is primarily agricultural, with most of the property used for cattle

grazing (Figure 2). A total of 221,622 linear feet (lf) of stream channels and sloughs subject to Corps' jurisdiction are present on the Project site. Of this total, approximately 43,753 lf have been disturbed by historical activities (i.e., ditching or other artificial channelization), with the remaining 177,870 lf exhibiting natural channel attributes.

The Project area is located in Sections 4, 8 through 12, 19, 22 through 31, and 36, Township 34 South, Range 23 East; Sections 14 through 23, and 26 through 33, Township 34 South, Range 24 East; and Sections 4 and 5, Township 35South, Range 24 East, in Hardee County, Florida (Figure 1).

The applicant proposes a total of approximately 3,426.1 ac of impact to Corps-jurisdictional wetlands, including 1,357.9 ac of forested wetland impacts and 2,068.3 ac of herbaceous wetland/surface water impacts. The applicant also proposes to impact approximately 100,766.8 lf of jurisdictional streams. Additional impacts include the construction of a consolidated dragline and infrastructure corridor crossings of an un-named tributary to Brushy Creek, Horse Creek, and West Fork Horse Creek. Construction of these crossings would result in a total up to 14 ac of temporary wetland impacts and 1,794 lf of impacts to streams. Impacts will take place in a sequential manner through the life of this Project (Figure 3). All areas proposed for mining will be reclaimed to their pre-mining conditions (Figure 4).

To mitigate for unavoidable wetland and stream impacts, the applicant proposes on-site and off-site mitigation:

• Preservation of 5,755.4 ac including onsite preservation of 1,483.8 ac of wetlands, 120,855.65 lf of streams, and 2,192.9 ac of adjacent native habitat upland buffers, and, Offsite Horse Creek-Payne Creek Preservation Sites, Offsite Payne Creek Connector Preservation Site, Offsite Peace River North Preservation Site, Offsite Peace River South Preservation Site, Offsite West Fork Horse Creek Preservation Site prior to mining;

• Reclamation of all mined areas including 5,004.7 ac of re-establishment wetlands and associated upland buffer; and

• Immediate commencement of Enhancement or Restoration of 4,781.78 ac occurring in several offsite mitigation projects referred to as the Offsite Payne Creek Restoration Site, Offsite Bowlegs Creek Restoration Site, Offsite West Fork Horse Creek Restoration Site and Offsite South Pasture Extension Restoration Site. The applicant also proposes to grant permanent conservation easements on the mitigation lands identified in the above descriptions, both prior to commencing mining operations and completion of mitigation, in order to provide permanent protection. The conservation easements will be granted to the Florida Department of Environmental Protection (FDEP), with provisions allowing the Corps to enforce the easements (Figure 5).

Action area

The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. The Project encompasses approximately 21,583 ac, which constitutes the overall action area. However, the action area extends off-site for certain species evaluated in this BO. Specific action areas are discussed in the "Environmental Baseline" section, below.

SPECIES NOT LIKELY TO BE ADVERSELY AFFECTED BY THE PROPOSED ACTION

Other species in the action area

Florida panther

The Corps determined this Project "may affect, but is not likely to adversely affect" the panther. The panther is federally listed as endangered. It favors native upland forests, especially hardwood hammocks and pine flatwoods, over wetlands and disturbed habitats (Service 1999). However, panthers sometimes use wetlands and disturbed habitats as part of their territory. Historically occurring throughout the southeastern United States, today the panther is restricted to less than 5 percent of its historic range in one breeding population of 100 to 120 animals located in south Florida. Although the primary breeding segment of the panther population occurs only in south Florida, in 2017 it was confirmed that a female panther had mated and produced two litters of kittens north of the Caloosahatchee River. Since February 1972, occasional male transient panthers have been confirmed through field signs (*e.g.*, tracks, urine markers, scats), camera-trap photographs, seven highway mortalities, four radio-collared animals, two captured animals (one of which was radio collared), and one skeleton north of the Caloosahatchee River.

No confirmed panther sightings have been reported on the site, and no tracks have been observed during multiple general wildlife surveys conducted on the site during the past 13 years. There have been unconfirmed sightings in the region. In 1998, radio telemetry data showed a transient male in the region, but not onsite. In early 2004, a single unconfirmed sighting of a large cat was reported to the Service. However, no scat or panther tracks were documented, and this sighting was never confirmed.

The Project is not in the Panther Focus Area (including the Primary Zone, Secondary Zone, Dispersal Zone, or the primary dispersal/expansion area), according to the Panther Effect Determination Key (Service 19 February 2007) and will not result in a loss of occupied panther habitat. There are no anticipated direct, indirect, or cumulative impacts to the panther. Conservation measures for the entire Project include avoidance and minimization, enhancement, implementation of a Wildlife Habitat Management Plan (WHMP), and reclamation, all of which are likely to benefit panthers, which may occasionally wander through this area now or in the future. Accordingly, the Service concurs with the Corps' determination for the panther.

Florida grasshopper sparrow

The Corps determined this Project "may affect, but is not likely to adversely affect" the FGS. The Service lists the FGS as endangered. This species' demography is strongly influenced by structural habitat characteristics, including time since fire (Aldredge 2009), bare ground (Delany et al. 1985, Delany and Linda 1994, Delany 1996, Tucker and Bowman 2006), and low growing shrubs (Delany and Linda 1994, Delany et al. 2002, Tucker and Bowman 2006, Delany et al. 2007). In addition, the FGS prefers a moderate amount of cover (25%) of low growing (<30cm) native bunch grasses, including bluestem (*Andropogon spp.*) and wiregrass (*Aristida stricta* var. *beyrichiana*) (Delany and Linda 1994, Delany 1996, Delany et al. 2002). The FGS prefers treeless habitat (<1 tree/ha) (Shriver and Vickery 1999, Perkins et al. 2003) that is greater than 100 meters (m) from the forest edge (Delany and Linda 1994, Delany et al. 1995). Male territories almost never contain trees (Delany et al. 1995). FGSs will forage exclusively on the ground (Vickery 1996), with a diet consisting of invertebrates and seeds (Howell 1932). Females will also conceal nests in the sand, at the base of grass clumps or shrubs (Delany and Linda 1998a, Pranty and Tucker 2006). The greatest cause of nest failure is depredation by snakes, skunks, hogs, and armadillos (Vickery 1996). Avian predators are the primary source of adult mortality (Dean 2001, Vickery 1996, Pranty and Tucker 2006).

While the Project limits overlap a small portion of historic dry prairie, the site today contains poor to marginal FGS habitat. Field surveys for the FGS were conducted in accordance with the Service's guidelines for this species and were coordinated with the Service prior to being conducted. No FGSs were located during the surveys and the closest historically documented FGS is more than 15 miles (mi) from the Project site. In addition, the likelihood of dispersing FGSs occurring within the Project is minimal given the distance between the Project location and the known occupied habitat within public lands. Moreover, the likelihood of dispersing FGSs is low because of the lack of surplus individuals in the known declining populations. Accordingly, the Service concurs with the Corps' determination for the FGS.

Florida scrub-jay

The Corps determined this Project "may affect, but is not likely to adversely affect" the scrub-jay. The scrub-jay is listed as threatened by the Service. The scrub-jay has specific habitat needs. It is endemic to peninsular Florida's ancient dune ecosystems or scrubs, which occur on well-drained to excessively well-drained sandy soils (Laessle 1968; Myers 1990). Optimal habitat for scrub-jays on the Lake Wales Ridge includes scrub oaks that are 3 to 10 feet (ft) high, interspersed with 10 to 50 percent unvegetated, sandy openings, and a sand pine (*Pinus clausa*) canopy of less than 20 percent (Woolfenden and Fitzpatrick 1991).

The Project site contains about 700 acres of sand live oak habitat, which comprises about three percent of the total Project area, and theoretically, habitat for the scrub-jay. However, the scrub habitat is fragmented in its current state, and consists of 15 separate areas, most of which are distributed across the western one-third of the site. Much of the scrub habitat is of poor quality due to overgrown conditions. Scrub-jay surveys were conducted in accordance with the

Service's guidelines for this species. No Florida scrub jays were located during the surveys. Accordingly, the Service concurs with the Corps' determination for the scrub-jay.

STATUS OF THE SPECIES/CRITICAL HABITAT

Audubon's crested caracara, Eastern indigo snake, and Wood stork

Please see enclosures for the status of species for the Audubon's crested caracara, eastern indigo snake, and wood stork.

ENVIRONMENTAL BASELINE

The environmental baseline is an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species, its habitat, and ecosystem, within the action area. It includes the impact of state or private actions, which occur simultaneously with the consultation in progress.

Audubon's crested caracara

Action Area

The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 8402.02). In determining the action area for the caracara, the environmental consultant evaluated the extent that caracaras may be affected by the loss of habitat and disturbance caused by the Project. The action area for the caracara includes the entire 21,583-ac Project site and any part of a nesting territory that extends off-site. The nesting territory of caracaras in Florida averages approximately 3,000 ac, with a radius of about 6,500 ft (1,970 m)from the nest tree (Morrison 2001). The action area was calculated to account for any caracara nest tree potentially located within at least 6,500 ft from the Project site in order to consider the Project effects to be insignificant or discountable and used this radius to delineate a 6,500 ft buffer surrounding the Project boundary. Therefore, the action area for caracaras in this BO is a 53,704-ac polygon that includes a 6,500-ft buffer around the entire Project site (Figure 6).

Status of the Species Within the Action Area

Caracaras have been observed on the Project site during the listed species surveys (2012-2013). Two separate breeding territories have been documented since 2012. Territory No. 1 is a previously known territory in the south central portion of the property, located in Section 27, Township 34 south, Range 23 east. This pair bred here in 2010 and 2011 in a live oak tree. In 2012, the birds changed the nest location to another live oak tree approximately 250 yards northwest of the 2011 nest tree. Two young birds were observed on the nest in the 2012, but only one fledgling was later observed traveling with the parents in later observations.

In 2013, the pair nested on the same tree. Three chicks were observed in the nest. Later observations suggest that two of the chicks fledged in April 2013.

In March 2014, the adults were observed feeding one fledgling within the same territory. While the nest was not observed with the young on it, it is presumed to be in the same tree as in the year 2013.

The territory No. 2 is located near the southeast corner of the property, located in Section 4, Township 35 south, Range 24 east. Two adults were frequently observed in an area of approximately 20 acres during the 2012 surveys, but no nest was located onsite. One fledgling was later observed begging for food in the same area. In the year 2000, a caracara nest was documented within the northeast region of Section 8, Township 35 south, Range 24 east, just south of the Project site. The available data suggests that this may be the same pair that moved north onto the Project area.

In 2013, the Territory No. 2 nest was located in a cabbage palm on the edge of an improved pasture in Section 4, Township 35 south, Range 24 east. One chick fledged the nest.

In 2014, a fully formed nest was observed in the same cabbage palm as in 2013. On March 26, 2014, the adults were observed attending a single fledgling.

The consultant for the Applicant conducted surveys for caracara, from January to March 2018 at the Project parcel. Two new nests at separate locations from the previously known nest locations were confirmed as active during the surveys. The new Nest #1 is located in the northern portion of the property, east of Brushy Creek, in Survey Block 8, west of County Road (CR) 663. The new Nest #2 is located outside the Project boundary in the southern half of Survey Block 14, where an active nest was observed in a cabbage palm. This nest is located approximately one-quarter mi south of State Road (SR) 64 in the center of a large cattle pasture (Figure 7).

Nest #2 is located outside of Project property but the home range (based on an approximate 2 kilometer radius around the nest) covers the southern half of Block 14, as well as the southern portion of Block 13. Previous nest sites from 2010, 2012, 2013, and 2014 were visited during surveys but no nests nor bird activity were observed in those areas. It is assumed that the two pairs have moved to the new locations.

Eastern indigo snake

Action Area

The Service applies the mean home range size of adult snakes (520 hectares [ha] or 1,285 ac) when establishing the action area for indigo snakes. Direct and indirect impacts would be considered on the 21,583-ac Project site. Cumulative impacts to the indigo snake would be considered in an 8,440-foot buffer, to account for indigo snakes that have a home range that overlaps and extends beyond the Project boundary. Thus, the cumulative assessment consists of suitable habitat within the buffer area, which measures 63,243 ac (Figure 8).

Status of the Species Within the Action Area

The indigo snake has been observed during the listed species surveys and are anticipated to occur within all native and semi-natural habitats on the property. Six snakes were recorded in the Project parcel during surveys conducted in the spring and summer between 1998 and 2012. In the year 1998, three snakes were observed on improved pastures, forested wetland, and pine flatwood respectively. In the years between 2009 and 2012 three sightings were documented in forested wetlands, pine flatwoods, and improved pastures respectively. The habitat where the three snakes were observed between 2009 and 2012 will be preserved.

The 21,583-ac Project is adjoined and bifurcated by SR 64 and by CR 663 respectively. Using a combination of radio-telemetry and population models, Breininger et al. (2004) investigated the effects of habitat fragmentation on the viability of indigo snake populations in east-central Florida. In this study, males had an average home range of 296.5 acres and females 101 acres. Hyslop (2007) found that snakes living along primary roads soon died, and edge/area effects were more important than area alone in determining population survival. Breininger et al. (2004) estimated the annual survivorship of adult indigo snakes and found that it decreased from 0.88 to 0.67 in females and from 0.80 to 0.53 in males if a primary road intersected a hypothetical 120-ha home range grid. For these reasons, the current population size on the Project site is likely lower than what would be expected on intact habitat on public lands.

It is difficult to determine the number of indigo snakes present on the Project site (adults, juveniles, hatchlings, and nests), as no reliable estimate of the population density in the action area exists. A 26-year study conducted by Layne and Steiner (1996) at Archbold Biological Station (ABS) estimated a population density of 2.6 adult indigo snakes per 247 acres. They also estimated a lower density based on five adult snakes, three males and two females that occupied 775.9 ac at 1.6 indigo snakes per 100 ha. The best estimate at the Kennedy Space Center (Breininger et al. 2004) was 5.0 adults and subadults per 247 ac. No statistical confidence limits around these means were published. Both of these sites are considered near-optimal habitat for the species with an abundance of gopher tortoise burrows, foraging habitat, and controlled access to limit road mortality.

Conservatively assuming that indigo snake densities in native habitats on the Project site are similar to ABS (1.6 to 2.6 adult indigo snakes per 247 acres), then the 9,957 ac of native habitat may theoretically support up to 65 to 105 adult indigo snakes on the Project site. Considering similar habitats and relative densities in the surrounding landscape, the 13,865 ac of native habitat within the action area (including the Project and the wider area considered for purposes of cumulative effects) may support 90 to 146 adult indigo snakes.

Wood stork

Action Area

The Service's *South Florida Programmatic Concurrence Letter and Effect Determination Key to Corps* (Service 2010) (Wood Stork Key) focuses on a 18.6-mi radius core foraging area (CFA) around known wood stork colonies that have been active in the last ten years (Figure 9).

Based on Service's records, the closest known wood stork nesting colony is 16.3 mi from the Project site. This colony is identified as No. 616016, located at Latitude 27.497984, and Longitude -81.617. The CFA of this colony includes 3,468 ac (16 percent) of the 21,583-ac Project site. No other 18.6-mi CFA of a wood stork colony overlaps with the Project site. The action area for wood storks consists of all wetlands, jurisdictional or not, included in the 3,468 ac that overlaps with the CFA of colony No 616016.

Status of the Species Within the Action Area

Wood storks have been observed foraging in wetlands throughout the Project site. It is difficult to assert whether these wood storks are associated with Colony No. 616016. As wood storks are more likely to forage within the CFA during the nesting season, their presence within the action area is likely to be linked to the nesting activity recorded at Colony No. 616016. Data for Colony no. 616016 is as follows:

Year	Active Nests
1990	0
2000	Not Available
2001	0
2002	60 – 75
2003	70
2004	150
2005	160

Colony no. 616016 was active according to the most recent (2017) Service data.

Nesting was not observed during wildlife surveys of the Project site. A search of Florida Fish and Wildlife Conservation Commission (FWC) records indicate that no known colonies have nested on-site in the last 30+ years, which is as far back as the FWC records are available. Surveys have also been conducted on the adjoining South Pasture Mine Extension property to the north and on the Pioneer property to the south. No nesting of wood storks was observed on those properties.

Factors affecting the species environment within the action area

Caracara

Land uses in the caracara action area have remained relatively consistent over the past several decades as the Applicant and Lessees', have operated the land in preparation for future mining use and managed the surface for agricultural operations. Most of the caracara action area has been, is, and will continue in stewardship by reverting to most of the same families (previous owners) upon completion of mining, reclamation, and mitigation. Mining in the vicinity of the caracara action areas began after 1990 and has continued uninterrupted since then.

The farming, ranching, and mining uses have created an environment suitable for sustenance of caracaras as evidenced by the nesting and breeding success of the two pairs described above on-site. Disturbances associated with farming and ranching, such as the use of mechanized equipment and the conversion of native habitat to pastures, has not been found to cause injury or mortality to caracaras. The resulting mixture of pastures interspersed between native habitat, including cabbage palm, live oak hammocks, native rangeland, hardwood hammocks, and herbaceous wetlands, provide potentially high-quality foraging habitat for caracaras (Morrison et al. 2006).

Vehicle traffic within the action area is currently light to moderate. SR 64 is the major vehicular route that adjoins and bisects the action area on the south. SR 64 is within Territory No. 2 used by caracara identified within the action area. SR 64 passes through the Ona Rural Center near the center of the Project site. Florida Department of Transportation (FDOT) traffic data show that Annual Average Daily Traffic (AADT) counts for SR 64 averaged 2,600 vehicles per day both east and west of the action area in 2014. The Project site also is bisected by CR 663 in a north-south direction. CR 663 is within Territory No. 1. FDOT traffic counts on CR 663 south of SR 64 found an AADT of 750 vehicles per day in 2014.

Additionally, roads will be constructed internally for mine operations. The Applicant has no documented mortality from roadkill of caracaras on internal mine roads.

The risk of injury or mortality from vehicular traffic is difficult to quantify in the action area. However, the presence of the Ona Rural Center at the intersection of SR 64 and CR 663 mitigates the risk to some extent because traffic on SR 64 must slow to a 45miles per hour (mph) limit on both sides of the intersection and traffic on CR 663 must stop before crossing SR 64.

Eastern indigo snake

As much as 39 percent of the Project site has been converted to improved pasture or agricultural cropland. Both forested and herbaceous wetlands communities are present on about 18 percent of the Ona Mine, but most systems have been impacted to some degree and are of moderate quality. Pasturelands within the action area are regularly used for cattle grazing. It is not likely the pasture areas provide much cover or prey for indigo snakes on the Project site.

The Project site abuts the Wauchula Airport, Ona Town Center, a power plant site, a multi-modal infrastructure corridor (Figure 1), rural residential uses, and a wood treatment plant, as well as similar agricultural uses. The surrounding land uses, as well as on-site habitat degradation due to the conversion to pastureland, have reduced the availability of both refugia and prey for the indigo snake.

The effect of road mortality and intentional killing of indigo snakes in the action area cannot be estimated accurately, but it is assumed to be potentially significant (Enge and Wood 2002, Breininger et al. 2004). Furthermore, paired drift fence/funnel trap surveys showed indigo snakes were proportionately trapped three times more frequently in intact habitats on public lands than on a rural site, suggesting that road mortality had reduced the indigo snake population at the rural site (Enge and Wood 2002). Deliberate killing of snakes on roads is known to be a common activity throughout the world (Andrews and Gibbons. 2006).

The 21,583-ac Project site is bifurcated and adjoined by SR 64 and bisected by CR 663 (Figure 1). Using a combination of radio telemetry and population models, Breininger et al. (2004) investigated the effects of habitat fragmentation on the viability of indigo snake populations in east central Florida. In this study, males had an average home range of 296.5 ac and females and average of 101 ac. Snakes living along primary roads soon died, and edge/area effects were more important than area alone in determining population survival (Hyslop 2007). Breininger et al. (2004) estimated the adult annual survivorship of indigo snakes decreased from 0.88 to 0.67 in females and from 0.80 to 0.53 in males if a primary road intersected a 296.5-ac home range grid. If the average size of the home ranges of male indigo snakes at the Project site approaches that of those in Georgia (1,285 ac; Hyslop 2007), then almost 20 percent of the adult male ranges may be intersected by CR 663. Layne and Steiner (1996), Enge and Wood (2002), Hyslop (2007), and Hyslop et al. (2009) also found roads to be an important source of mortality in indigo snakes. Moler (1992) suggested at least 2,471 ac of contiguous habitat is required to sustain indigo snakes.

Wood Stork

The loss of wetlands due to agricultural, commercial and residential development has resulted in the decline of the wood stork in the action area as well as throughout its range. A significant proportion of wood stork habitat in the action area has been converted to pastureland.

The alteration and control of wetland hydrology for flood control and water supply due to the construction of canals, levees, and water control structures within the action area has also adversely affected the wood stork. Water level manipulation may decrease forage fish production if the water level and length of inundation of wetlands do not match the breeding requirements of forage fish. Maintaining excessively high water levels in wetlands may prevent wood storks from foraging because the water is too deep to effectively catch prey. Artificially high water levels may retard the establishment of trees used for nesting because many wetland tree species require periodic droughts to establish seedlings. Conversely, maintaining wetlands at low water levels may selectively reduce the abundance of the larger forage fish available to wood storks. Maintaining wetlands at low water levels can also increase the likelihood of

predation of wood stork nests by allowing raccoons or other predators easier access to the nesting colony.

The presence of invasive and exotic invasive plant species has limited the ability of wood storks to forage in some wetlands in the action area. Exotic plant species forms dense stands in wetlands that can prevent wood storks from entering the wetland to forage. Similarly, the influx of nutrient laden water (*e.g.,* runoff from agricultural lands, paved roadway) into wetlands promotes the growth of cattail (*Typha spp.*) into dense monocultures that may also limit access to wood stork foraging.

Climate change

Our analyses under the Act include consideration of observed or likely environmental effects related to ongoing and projected changes in climate. As defined by the Intergovernmental Panel on Climate Change (IPCC), "climate" refers to average weather, typically measured in terms of the mean and variability of temperature, precipitation, or other relevant properties over time. Therefore, "climate change" refers to a change in such a measure that persists for an extended period, typically decades or longer, due to natural conditions (e.g., solar cycles) or human-caused changes in the composition of the atmosphere or in land use (IPCC 2013, p. 1450). Detailed explanations of global climate change and examples of various observed and projected changes and associated effects and risks at the global level are provided in reports issued by the IPCC (2014 and citations therein). Information for the United States at national and regional levels is summarized in the National Climate Assessment (Melillo et al. 2014 entire and citations therein; see Melillo et al. 2014, pp.28-45 for an overview). Because observed and projected changes in climate at regional and local levels vary from global average conditions, rather than using global scale projections, we use "downscaled" projections when they are available and have been developed through appropriate scientific procedures, because such projections provide higher resolution information that is more relevant to spatial scales used for analyses of a given species and the conditions influencing it (See Melillo et al. 2014, Appendix 3, pp. 760-763 for a discussion of climate modeling, including downscaling). In our analysis, we use our expert judgment to weigh the best scientific and commercial data available in our consideration of relevant aspects of climate change and related effects.

Climate change may result in sea level rise, altered weather patterns, and an increase in the intensity or frequency of tropical storms and hurricanes in Florida. The Atlantic Multi-decadal Oscillation (AMO) influences rain patterns in Florida. We are currently in an AMO wet phase that is predicted to persist through 2020 (Miller 2010). The increased rainfall associated with both of these factors could reduce our ability to effectively use prescribed burning to manage habitat in optimal conditions for the caracara, indigo snake, and wood stork and their prey.

EFFECTS OF THE ACTION

This section includes an analysis of the direct and indirect effects of the proposed action on the species and/or critical habitat and its interrelated and interdependent activities. No critical

habitat has been designated for the federally listed species covered in this BO; therefore, no impacts to critical habitat will occur.

Audubon's crested caracara

Factors to be considered

Potential effects to caracara due to the proposed action include a number of direct and indirect effects on the caracara and its habitat. Potential direct effects to the caracara or its habitat include: (1) direct mortality from vehicular traffic; (2) harassment by the proposed action; and (3) missed foraging and breeding opportunities. Indirect effects include primarily post-construction maintenance of the site.

Analyses for effects of the action

The total area affected is approximately 21,583 ac of which approximately 8,800 ac are improved pastures. The potential direct and indirect effects of the action on caracara within the action area are discussed below.

Direct effects

Direct effects are those effects that result from the proposed action (including the effects of interrelated and independent actions) that affect the species or its habitat. The direct effects from the Project include potential direct injury or mortality and loss or degradation of available caracara habitat for foraging and breeding.

In Florida, mean annual survival of adult male (0.876) and female (0.906) caracaras is much higher than juveniles (0.694). The probability of a fledging surviving to reproductive age (three years) is only 0.334 (Morrison 2003). Juveniles are less wary of vehicular traffic than adults are, and consequently are more likely than adults to be killed or injured when feeding on road kills (Morrison 2003). The number of juvenile (i.e., fledglings or older) or adult caracaras that may be injured or killed by vehicular traffic in the action area cannot be quantified. The slow speeds of travel on mining roads (maximum 35 mph) within the Project area probably do not pose a serious risk to caracaras. The Applicant has no documented mortality from roadkill of caracara on internal mine roads.

Direct effects also include the temporary loss of foraging habitat, which would occur slowly across annual mining blocks. Much of the territories of both nests would be used temporarily for phosphate mining, including the nest trees. Following mining, the reclamation plan includes the re-establishment of improved pasture, which would be suitable habitat for caracaras.

Both territories extend offsite onto property mostly owned by Mosaic. Territory 1 extends off the Ona Site into Mosaic's South Pasture Extension area. Territory 2 is located on Mosaic's Pioneer Tract. The Pioneer and West Pioneer Tracts contain similar percentages of suitable improved pasture, native grasslands, and shallow wet prairie suitable habitat. Mosaic will

continue to manage this adjoining habitat in the same manner that is currently used. In turn, this may provide opportunities for both breeding pairs of caracaras to migrate away from active mining areas on the Ona Mine, should these birds remain active through the time their breeding territories on the Project site are projected to be mined.

The extent of anticipated incidental take cannot be precisely quantified because substantial acreages of suitable improved pasture, native grasslands, and herbaceous wetland habitat will remain in the action area and because caracaras have been known to relocate over 3.5 mi as mining disturbances advanced on the South Pasture Mine to the north.

In the event of incidental nest tree take, the two nesting pairs would be forced to move to different locations and attempt to establish new territories in areas that may already be occupied by other territorial caracaras. Moving to new areas may result in intraspecific aggression among resident caracaras, which could result in injury. A lower reproductive success may result, especially if adult caracaras are forced to spend more time foraging and engaged in aggressive interactions with neighboring birds. It is also possible that breeding pairs would relocate to on-site avoided areas where cabbage palms are available or onto the Pioneer and West Pioneer properties. However, it is assumed that the reproductive potential for multiple nesting seasons would be compromised to some extent for the resident caracaras in the action area.

The reclamation plan will be initiated prior to mining being completed. This will offset impacts of mining by allowing for the potential recruitment of displaced breeding caracaras or new breeding caracaras or sub-adults to utilize reclaimed habitat while other portions of the site are converted to mining uses.

The maximum acreage projected to be needed for the mining operations is 56 percent of the Project area, leaving nearly 10,000 acres for utilization by wildlife. Upon completion of reclamation, improved pasture and wet prairie wetland habitat re-established on reclaimed land will replace approximately 93 percent of the existing on-site pasture and wet prairie caracara habitat disturbed by mining.

Based on the mine plan and schedule, the improved pasture caracara habitat would be converted to active mining operations as follows:

Mine Year	Disturbed Acres of Habitat	Reclaimed Acres of Habitat	Difference
1-5	1,611	0	1,611
6-10	1,946	53	3,504
11-15	1,890	97	5,297
16-20	1,056	349	6,004
21-25	771	1,591	5,184
26-30	0	4,059	1,125
31	0	516	609
Total	7,274	6,665	609

Assuming a caracara territory size of 3,000 acres, the proposed mine could theoretically reduce suitable habitat by up to one nesting caracara territory by year 10, two nesting caracara territories by the year 20, and back down to 0.2 caracara territory by the year 31.

The average brood size for caracaras is 2.2 (Morrison 1999). By multiplying the number of theoretical caracara territories affected during each five-year increment of the mine, the theoretical worst-case potential reduction in reproduction would be:

Worst Case Reduction in Productivity		
Mine Years	**Net Change in Habitat (acres)/per Territory x 2.2 Brood Site =**	**Number of Chicks Fledged**
1-5	611/0.54 territory =	1.18
6-10	3,504/1.17 territory =	2.57
11-15	5,297/1.77 territory =	3.88
16-20	6,004/2.00 territory =	4.40
21-25	5,184/1.73 territory =	3.80
26-30	1,125/0.38 territory =	0.83
31-35	609/020 territory =	0.45
Total		17.11

Based on these worst-case assumptions, up to 18 less fledged caracaras could result during the period of mining from the temporary reduction in habitat associated with the Project, or up to seven less caracaras reaching reproductive age. While the temporary conversion of the caracara territories to phosphate mining may cause the birds to abandon their territories, it is uncertain when the caracaras will abandon their territories.

Actual changes in the regional caracara population possibly would be less than these worst-case projections. Currently, as discussed above, two breeding pairs utilize the action area. However, the action area contains approximately 17,226 ac of suitable habitat. Thus, caracaras are utilizing the available habitat at only 35 percent of the theoretical maximum density based on the scientific literature estimate of an average territory size of 3,000 acres. If the current rate of habitat utilization remains constant going forward, then the maximum theoretical reduction in young produced would be less than the 18 chicks projected above.

Indirect effects

Indirect effects are those that are caused by or result from the proposed action, are later in time, and are reasonably certain to occur. The potential indirect effects include: post construction maintenance of the roads, berms, pump stations, mine pits and ditches (including vegetation management methods such as mowing, herbicide application, and physical removal).

Routine post-construction maintenance may result in temporary disturbance to caracaras. Vehicular activity associated with operation and maintenance may put some juvenile caracaras at risk if they forage along SR 64 and/or CR 663. It is anticipated that caracaras may be disturbed each year within the Project and in the action area by vehicles and equipment.

Reclamation will result in re-establishment of approximately 92 percent of the existing caracara habitat and will include planting cabbage palms in caracara habitat to support nesting. Cattle ranching will continue during mining and following reclamation, thereby providing food for caracaras. Given the size of the Project site and the anticipated abundance of prey items that could become established in the reclamation areas, drainage ditches, created littoral shelves of reclaimed lakes and adjoining re-established and avoided wetland and upland areas, it is anticipated that caracaras will occupy the post-reclamation habitat.

Interrelated and interdependent actions

An interrelated activity is an activity that is part of the proposed action and depends on the proposed action for its justification. An interdependent activity is an activity that has no independent utility apart from the action under consultation. No interrelated or interdependent actions are expected to result from the Project.

Species response to the proposed action

Implementation of the proposed action may adversely affect caracara. The adverse effects range from direct destruction of eggs, mortality of nestlings or recent fledglings to displacement of adults and possible resultant mortality due to intraspecific aggression. Disturbance resulting from the proposed action may disrupt normal behavior, causing birds to temporarily leave the area and/or suffer reduced nesting, breeding, and foraging opportunities.

The long-term aspects of the proposed action tied to reclamation, as well as the habitat avoidance, creation and preservation, are specifically intended to enhance the continued existence of this species by improving habitat conditions. Long-term negative impacts are expected to be minor.

Eastern indigo snake

Factors to be considered

Factors considered include the distribution of the areas where disturbance will occur relative to the potential habitat value of that area to indigo snakes. Types of disturbance include the timing of Project activities relative to sensitive periods in the snake's life cycle, the duration of potential effects on indigo snakes and their habitat, and the construction, operation and maintenance of the Project. Besides potentially lost cover, habitat, and associated prey, disturbance may occur in the form of pedestrian, equipment, and vehicular traffic, as well as vibration from on-site activities. Construction noise and vibration could disturb snakes where it exceeds ambient conditions. Visual disturbance from personnel during construction could also affect snakes; however, this

potential disturbance may lessen when these altered areas are reclaimed and post-construction vegetation conditions provide more or better cover. The timing and duration of clearing and reclamation activities will vary with the activities proposed at specific locations. Although construction personnel will be advised to avoid indigo snakes, the operation of equipment in brushy, grassy, or otherwise vegetated areas may disturb snakes that are not readily visible.

Construction and maintenance activities are most likely to occur during daylight hours, the same time that indigo snakes are active. Construction likely will occur year-round in at least some areas of the site. Indigo snake nesting season occurs between April and July, and potential loss of nest sites is anticipated.

Analysis for effects of the action

The indigo snake is difficult to detect and quantify for the following reasons: (1) it has a wide-ranging distribution; (2) it has a patchy distribution within suitable habitat; (3) it has limited detectability due to use of burrows or holes for shelter; (4) there is likely unoccupied suitable habitat; (5) juveniles have limited detectability due to their affinity for thick vegetation; and (6) it may use cryptic sheltering areas that may be temporarily established during construction (*e.g.*, brush piles, equipment stockpiles, and dirt mounds). This makes the quantifiable determination of effects of the action difficult.

Direct effects

The direct effects of the Project to indigo snakes include disturbance prior to and during construction; injury and mortality; and habitat conversion, reclamation, and conservation, as described below.

Disturbance Prior to and During Construction
As a standard practice to minimize incidental take, the Applicant will follow the guidance in the *Standard Protection Measures for the Eastern Indigo Snake* (Service 2013). Mosaic will complete pre-clearing surveys for each mining unit or sub-parcel to document gopher tortoise abundance and presence of indigo snakes. If an indigo snake is found, it will be allowed to move out of harm's way and not handled or relocated along with other commensal species found in tortoise burrows. Mosaic will directionally clear the land prior to mining in a manner that encourages indigo snakes and other wildlife to move into adjoining unmined habitat. Also, small gaps will be left in silt fences to allow snakes the ability to vacate areas being cleared.

Injury and mortality: The proposed action includes vegetation removal, debris piling and burning, mining, reclamation, and truck traffic within the mine and to and from SR 64 and CR 663. Indigo snake individuals present at the time of the above noted actions could be adversely affected by the Project activities. Snakes in the portion of the mine under construction or on the SR 64 and CR 663 access route are presumed to be most at risk for injury or mortality.

Habitat conversion and reclamation/conservation:
The mine will represent a temporary change to the landscape for indigo snakes. Upon

completion, severely altered and/or fragmented habitats will be restored to contiguous native habitat types. This species should recolonize the site as reclamation is completed and gopher tortoises are restocked to the reclaimed upland habitats. The temporal lag in habitats actively being cleared and not yet reclaimed may negatively affect indigo snake breeding, feeding, and sheltering in areas lacking vegetative cover, prey, and structure. Most disturbed areas will be reclaimed within two years after completion of mining operations.

Indirect effects

Indirect effects are those that are caused by or result from the proposed action, are later in time, and are reasonably certain to occur. The indirect impacts include: post-construction maintenance of the roads, berms, pump stations, mine pits and ditches (including vegetation management methods such as mowing, herbicide application, and physical removal). Routine post construction maintenance (an associated vehicles and equipment) may also result in temporary disturbance to indigo snakes.

Interrelated and Interdependent Actions

There are no known interrelated or interdependent actions for this Project.

Species response to the proposed action

Implementation of the proposed action may adversely affect the indigo snake. The adverse effects range from direct mortality to displacement of adults. Disturbance resulting from the proposed action may also disrupt normal behavior, causing snakes to temporarily leave the area.

Many aspects of the proposed action, such as avoidance and minimization efforts, reclamation, and enhancement and preservation, are specifically intended to enhance the continued existence of this species by improving habitat conditions on site. Long-term negative impacts are expected to be minor.

Wood stork

Factors to be considered

Potential effects to wood storks due to the proposed action include a number of direct and indirect effects on the wood stork and its habitat. Direct effects include: (1) harassment by the proposed action; and (2) missed foraging opportunities. Indirect effects include long-term changes in prey availability and future disturbance.

Analyses for effects of the action

Mining for phosphate in the Project site will disturb wood stork habitat in the form of changes in hydroperiod and biomass production. A total of 804.4 ac of wetlands are proposed for mining within the CFA of colony No 616016. Beyond the CFA of this colony within the Project area, a

total of 2,492 ac of wetlands are proposed for mining, while 1,493 ac of wetlands will be avoided.

Direct effects

Direct impacts that are primarily habitat-based may include: (1) the temporary loss of available habitat for foraging, feeding, breeding, and dispersing wood storks; (2) changes in wetland hydroperiods; and (3) harassment by construction activities. No wood storks are known to have nested within the Project area in the recent past. All of the wading bird censuses conducted to date have demonstrated that some wetlands on the Project are utilized as foraging sites by resident and/or transient, over-wintering wood storks.

Temporary loss of habitat: The Project will result in the temporary loss of about 3426.1 ac of wetlands and surface waters on-site and 100,766.8 lf of wetlands and waters of the United States.

Harassment by construction: The timing of construction for this Project relative to sensitive periods of the wood stork's lifecycle is unknown and land clearing associated with the Project implementation will occur in phases. However, we anticipate that construction and reclamation activities will occur during the wood stork nesting season, which potentially could harass storks during a sensitive time in their lifecycle. There are no known active roosting or nesting colony sites within the Project development boundaries and only a small portion of wetlands considered suitable for foraging (804.4 ac) for the Project is within the CFAs of wood stork colony No 616016. Therefore, we believe wood stork usage of the Project site is limited and that Project construction will not result in direct wood stork take in the form of harassment.

Changes in hydroperiods/loss of foraging opportunities: Wood stork nesting success generally relies on wetlands with a mosaic of hydroperiods within the CFA of a nesting colony. Wood storks nest during the dry season, and rely on the drying wetlands to concentrate prey items in the ever-narrowing wetlands (Kahl 1964). Because of the continual change in water levels during the nesting period, any one site may only be suitable for wood stork foraging for a narrow window of time when wetlands have sufficiently dried to begin concentrating prey, making water depths suitable for storks to access the prey. Once the wetland has dried to where the water levels are near the ground surface, the area is no longer suitable for stork foraging, and will not be suitable until water levels rise and the area is again repopulated with fish. Consequently, there is a general progression in the suitability of wetlands for foraging based on their hydroperiods, with the short hydroperiod wetlands used early in the season, the mid-range hydroperiod sites being used during the middle of the nesting season, and the longest hydroperiod areas being used later in the season (Kahl 1964; Gawlik 2002).

The Applicant obtained data for the wood stork foraging analysis from various sources. The hydroperiod class assigned to each wetland Florida Land Use, Cover And Forms Classification System (FLUCFCS) code represents the best scientific judgment of the average length of inundation in a normal rainfall year for these habitat types on this site and in this region.

The wetland hydro-periods for existing and reclaimed wetlands were estimated using a wetland hydroperiod water balance developed by Environmental Consulting & Technology, Inc. (ECT). The model has been proven to accurately simulate hydroperiod depths and durations in existing wetlands when verified against actual field monitoring data for selected wetlands on the Project site in Hardee County, Florida. These results demonstrate the Wetland HP model is an effective tool for estimating the hydroperiods in existing and/or post-reclamation wetlands. The modeling effort is described in the report titled "Wetland Hydroperiods in the Post-Reclamation Landscape at the Ona Mine Hardee County" (ECT 2014).

To conform to the Service's Wood Stork Methodology, which can be found online at http://www.fws.gov/verobeach/ListedSpeciesBirds.html, all wetland habitat types (by FLUCFCS code) were assigned to a single average hydroperiod class, which artificially constrains the natural variation in these systems. For example, we assigned Natural Streams (FLUCFCS 5110) an average hydroperiod class of 6 (300 – 330 days), but some headwater streams on this site may only flow 60- 120 days per year (Class 2). In fact, with a few exceptions (FLUCFCS 6250, 6260, 6270), we expect that the range of variation for most wetland habitat types in both natural and reclaimed systems will span at least one hydroperiod class on either side of the predicted average. For permanent water lakes (FLUCFCS 5300) and cattle ponds (FLUCFCS 5340), we assume the available prey biomass is not vulnerable to wood stork predation because these lotic environments are too deep for foraging, except along the edges, which are ignored for computational purposes. Finally, we assigned all wetland habitat types a Foraging Suitability value of 100%, as melaleuca is rare in Hardee County.

Wetlands within the CFA of colony No 616016 were evaluated to calculate their significance on the annual cycle of this colony. A wood stork foraging prey analysis of the proposed Project provides a biomass foraging loss to wood storks of 2,486.8 kg of prey biomass. The prey base loss is based on 116.4 ac of short hydroperiod wetlands, and 688 ac of long hydroperiod wetlands (Table 1). The Applicant considered the wood stork suitable fish density (grams per m2 per hydroperiod class) to be as described in the earlier section relating to fish densities in each wetland class. As noted in the Service's South Florida Programmatic Concurrence for Wood Stork (2010), the wood stork consumption percentage is 32.5 percent (*i.e.*, 32.5 percent of the biomass will actually be consumed by wood storks).

The prey base loss will be mitigated by type-for-type reclamation of mined land at a ratio greater that 1:1. The wood stork foraging analysis indicates that a total of 1,250.7 kg of prey biomass, based on 429.8 ac of short hydroperiod wetlands and 820.8 ac of long hydroperiod wetlands will be available to the wood stork through the implementation of the reclamation plan proposed by the applicant. The reclamation will result in increased prey biomass for both short hydroperiod wetlands (746.3 kg) and long hydroperiod wetlands (3,163.4 kg), and it ensures the same or better opportunities for wading birds post reclamation (Table 2).

Indirect effects

Indirect effects are those that are caused by or result from the proposed action, are later in time, and are reasonably certain to occur. The indirect effects this Project may have on the wood stork

within the Project are discussed below. They include: (1) increases in disturbance frequency, intensity, or severity to wood storks in the Project vicinity due to human activities; (2) changes in the wood stork prey base; and (3) changes in value of wood stork habitat adjacent to the Project due to Project related hydrological alterations.

Increased disturbance in the future: Post-construction maintenance of the roads, berms, pump stations, mine pits and ditches (including vegetation management methods such as mowing, herbicide application, and physical removal). Routine post-construction maintenance (an associated vehicles and equipment) may also result in temporary disturbance to storks that continue to use the area.

Changes in wood stork prey base: The proposed action will result in the temporary loss of 804.4 ac of wetlands, which are considered suitable for foraging by wood storks. In our assessment of adverse effects to the resident prey base available to foraging wood storks, we calculated a temporary loss of 2,486.8 kg of fish biomass within the CFA (Table 1). We do not believe additional indirect effects to the prey base will occur. Increases in the availability of potential foraging habitat and prey resulting from the proposed restoration and enhancement measures are expected to exceed the estimated loss of 2,486.85 kg of prey biomass within the CFA. The restoration, enhancement and wetland creation activities will result in a net increase in wood stork suitable foraging biomass of 3909.7 of prey biomass (Table 2). The total increase results from an increase in both short hydro period (Class 1 through 3) wetlands (746.3 kg increase) and long hydro period (Class 4 through 7) wetlands (3163.4 kg increase).

Hydrologic changes in Adjacent Woodstork Habitat: Regulations adopted and implemented by Southwest Florida Water Management District (SWFWMD) would ensure groundwater levels beneath onsite avoided and offsite adjacent wood stork foraging habitat would be maintained at levels equivalent to current conditions. Mosaic's Integrated Water Use Permit requires Mosaic to develop and implement an Environmental Management Plan (EMP), which includes pre-construction monitoring of ambient conditions as well as hydro geologic modeling of surficial aquifer characteristics along the perimeter of the proposed mining disturbance. Section 1.5.3 in the 404 Permit application describes how the Applicant would implement the EMP on the Project site.

FDEP Rule 62C-16.0051, Florida Administrative Code, requires the Applicant to design the post-reclamation landscape to drain in patterns that do not cause offsite surface water flood patterns to increase in duration or intensity. To provide reasonable assurance that the proposed reclamation plan will meet these criteria, two analyses have been prepared and are enclosed in the 404 Permit application. Collectively, these analyses demonstrate surface water flow patterns will not differ materially from current conditions.

There are no known interrelated or interdependent actions for this Project.

Species response to the proposed action

Implementation of the proposed action may adversely affect the wood stork. The adverse effects range from direct mortality to displacement of adults. Disturbance resulting from the proposed action may also disrupt normal behavior, causing birds to temporarily leave the area.

Many aspects of the proposed action, such as avoidance and minimization efforts, reclamation, and enhancement and preservation of wetlands, are specifically intended to enhance the continued existence of this species by improving habitat conditions on site. Long-term negative impacts are expected to be minor.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the action area considered in this BO. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Audubon's crested caracara

The Applicant owns 47,470 of the 53,704-ac action area. Mining on these lands would not constitute a cumulative effect under the ESA because Mosaic has completed, or will complete, Section 7 consultations and has conducted, or will conduct, its mining operations in accordance with the conditions of the BOs issued by the Service.

On the remaining 13,168 ac of land owned by third parties, land use/land cover data available from SWFWMD mapped 4,290 ac of improved pasture and 783 ac of herbaceous wetlands. Conversion of these lands into industrial, commercial, residential, or other agricultural uses (e.g., citrus or row-crops) that would support fewer caracara territories would comprise the most likely cumulative effects on the species. If all of the pasture and herbaceous wetlands are converted to other uses that are less supportive, a total of up to 1.7 potential territories would be supplanted, assuming a theoretical territory size of 3,000 ac. This level of worst-case cumulative effects is unlikely because the offsite habitat is already fragmented into industrial, commercial, residential, and citrus and vegetable production uses not considered to be compatible with caracara habitat. Therefore, the levels of cumulative effects are unlikely to appreciably affect the caracara population in the action area.

Eastern indigo snake

The primary threat to the indigo snake is habitat loss and fragmentation, caused by development (Lawler 1977; Moler 1985). Besides loss of habitat, residential developments also increase risk of harm to indigo snakes in the interface between urban and native habitats because they increase the likelihood of snakes being killed by property owners and domestic pets. Increased traffic associated with development may also lead to increased indigo snake mortality. Areas mined within the action area will be reclaimed to suitable indigo snake habitat. The mosaic of habitat

reclaimed and the preserve areas should resemble the habitat conditions available to indigo snake before mining. Indigo snakes are likely to re-colonize reclaimed habitat from the surrounding landscape within the action area, as indigo snakes have been documented from a number of other reclaimed phosphate-mined sites (Durbin et al. 2008).

In the action area, the Applicant is currently mining the Hardee Phosphate Complex and Mosaic Fertilizer owns most or all of the lands to the west of CR 663; these lands either have been or will be covered under a separate Federal permit action subject to Section 7 consultation. These areas also will be reclaimed to contain suitable indigo snake habitat. Most of the remaining surrounding landscape in the action area consists of cattle ranches, agricultural land, and public utilities. Habitat loss to residential and industrial development is unlikely to occur in this part of Hardee County as most areas surrounding the Project parcel are not currently subject to habitat conversion. The likelihood of land conversion of reclaimed habitat to residential development is possible, but deemed unlikely in the near future. We anticipate the action area will support indigo snakes in the future with little to no cumulative effects.

Wood stork

The land use/land cover maps published by SWFWMD and South Florida Water Management District (SFWMD) for 1999 and 2008 were compared to determine the degree of development and conversion of habitat in the action area, as well as throughout the CFA of Colony No. 616016. During that decade, 14,170 ac were converted to urban lands, mostly in Highlands County to the east of the colony. Areas disturbed by mining decreased by 3,940 ac. Acreages of land mapped as agricultural uses decreased by 1,282 ac overall; citrus acreage decreased by 18,854 ac; pasture acreage did not change materially; row crops, dairies, and nurseries increased by 4,702 ac; and open (fallow) land increased by 14,992 ac. Roads and utilities increased by approximately 1,000 ac. Native habitat decreased by 10,848 ac.

In the future, additional conversion of native habitat and wetlands into agricultural lands is likely to occur at a lesser rate than historically. An inventory of over 34,000 ac of open land is available. Conversion of this fallow land to agricultural or residential uses is more probable than is conversion of native habitat or wetlands. More importantly, water use permit allotments to be authorized by SWFWMD have effectively been capped in the future by SWFWMD's water use caution area and minimum flows and levels rules. Based solely on water use allotments, the acreage of irrigated farmland is likely to decrease and be replaced by pasture or urban development.

The Consultant for the Applicant contacted planners in Polk, Highlands, DeSoto, and Hardee Counties to ascertain the current status of pending urban development activity. Based on these conversations, likely urban development in the reasonably foreseeable future is limited to Highlands and Polk Counties to the east of wood stork colony No. 616016 along the U.S. 27 corridor. Some smaller acreage of development may occur along the U.S. 17 corridor between Zolfo Springs and Bowling Green in Hardee County. Elsewhere, the infrastructure necessary to support urban development is not present (e.g., roads, potable water supplies, wastewater facilities, etc.).

Florida regulates isolated wetlands (79 FR 37096). Therefore, permanent losses of wetlands not regulated by the Corps will be minimal within the action area because SWFWMD and/or FDEP regulate and require permits and compensatory mitigation for all isolated wetlands greater than 0.5-acre in size.

CONCLUSION

Audubon's crested caracara

After reviewing the current status of the caracara, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the implementation of the Project as proposed is not likely to jeopardize the continued existence of the species.

We anticipate limited or no mortality of caracaras resulting from increased vehicular traffic, given that no increase in traffic above the environmental baseline is proposed for the Project, and nest abandonment due to the mining activities would be temporary. All mined lands will be reclaimed to the pre-mining habitat type. Reclamation activities will be directed towards enhancing the diversity of plant and animal assemblages within the action area. Where these goals are achieved, the caracara may directly benefit from reclaimed and restored habitats similar or better than those areas before mining. The action will not substantially reduce the numbers, distribution, or reproduction of the caracara. The applicant will provide funds for the caracara monitoring and surveying by the Service within the action area, as described below.

Eastern indigo snake

After reviewing the current status of the indigo snake, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion the implementation of the Project as proposed is not likely to jeopardize the continued existence of the species.

We anticipate limited mortality of indigo snakes and nests from mining activities. We also anticipate limited mortality of indigo snakes from increased vehicular traffic. Indigo snakes have some ability to move away from situations that may result in direct injury and mortality and can access adjacent habitat or underground refugia, if escape opportunities are available.

All mined lands will be reclaimed to the pre-mining habitat type. Reclamation activities will be directed towards enhancing the diversity of plant and animal assemblages within the action area. Where these goals are achieved, indigo snakes may directly benefit from reclaimed and restored habitats similar or better than those areas before mining. The action will not substantially reduce the numbers, distribution, or reproduction of the indigo snake.

Wood stork

After reviewing the current status of the wood stork, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the implementation of the Project as proposed is not likely to jeopardize the continued existence of the species.

We anticipate limited mortality of wood stork from increased vehicular traffic. All mined wetlands will be reclaimed to the pre-mining habitat type. Reclamation activities will be directed towards enhancing the diversity of plant and animal assemblages within the action area. Where these goals are achieved, wood storks may directly benefit from reclaimed and restored habitats similar or better than those areas before mining. The action will not substantially reduce the numbers, distribution, or reproduction of the wood stork.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are nondiscretionary and must be undertaken by the Corps so they become binding conditions of any grant or permit issued to the Applicant, as appropriate, for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (1) fails to assume and implement the terms and conditions or (2) fails to require the Applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protection coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Corps or the Applicant, must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR § 402.14(i)(3)].

AMOUNT OR EXTENT OF TAKE ANTICIPATED

Audubon's crested caracara

The Service expects the proposed action could cause incidental take of the caracara. Take is expected in the form of harm and harassment, including potential loss of reproductive productivity. The incidental take is expected due to mining activities and increased vehicular traffic within the action area.

We anticipate that 7,274 ac of caracara habitat will be temporarily impacted by mining through the life of this Project. The 7,274 ac of impacts correspond to 303.1 ac of caracara habitat affected annually.

Incidental take in the form of harm and harassment may occur, including potential loss of reproductive productivity and potential injury or mortality of juvenile and adult caracaras. Incidental take may occur as a result of habitat modification within the territories of known and potential nest locations, and potential caracara vehicle collisions on SR 64 and CR 663 associated with construction and operation of the Project. As noted above, this would include any caracara pairs nesting on the Project or in the overall caracara action area if greater than 50 percent of a 3,000-ac nesting territory is affected by the Project.

The extent of incidental take caused by the Project is difficult to quantify because 1) nest locations and productivity may change from year to year, 2) the number of nesting pairs and individuals in the action area cannot be reliably estimated, 3) finding an injured or dead caracara is difficult, and 4) assigning the cause of a caracara-vehicle collision to the Project also will be difficult.

Based on the observations to date, two caracara pairs currently nest on or in buffer zone of the Project site. As a result, up to four adults could be incidentally taken by the Project in the form of harassment. If this harassment of adult caracaras occurs during the nesting season, then this could result in a loss or reduction of reproductive success for that breeding season.

The proposed actions will also increase vehicular traffic within the action area and we anticipate that adult and juvenile caracaras will forage on roads; therefore, the Service anticipates the harm (injury or death) of one caracara from vehicular collision.

Eastern indigo snake

The indigo snake is difficult to detect and quantify for the following reasons: (1) it has a wide-ranging distribution; (2) it has a patchy distribution within suitable habitat; (3) it has limited detectability due to use of burrows or holes for shelter; (4) there is likely unoccupied suitable habitat; (5) juveniles have limited detectability due to their affinity for thick vegetation; and (6) it may use cryptic sheltering areas that may be temporarily established during construction (*e.g.*, brush piles, equipment stockpiles, and dirt mounds). The lack of practical methods of survey, in conjunction with wide-ranging activity and use of a variety of habitat types, makes it difficult to determine the exact number of indigo snakes that will be impacted by the proposed

action. We have, nevertheless, used the best available science in an attempt to quantify the number of indigo snakes potentially present on the site.

Within the Project area, the best estimate of the total population of indigo snakes is from 65 to 105 individuals (area of potential direct and indirect take), and from 90 to 146 individuals in the action area (including the Project and buffer zone of cumulative impacts), which may have a portion of their home range that overlaps the Project. Accordingly, no more than six indigo snakes can be taken over a rolling 5-year period to account for the predicted 90-146 individuals with home ranges in the Action Area. The Applicant will report any detected dead or injured indigo snake to the Service and FWC within one business day of occurrence. Assuming an adult sex ratio of 2 males to 1 female (Stevenson et al. 2009), and that females nest each year, then about 45 to 173 clutches may be deposited on the Project site each year. Accordingly, no more than four indigo snakes clutches can be taken over a rolling 5-year period.

The Applicant anticipates incidental take may occur throughout the entire Project area (21,583 ac) in the form of injury or death during Project construction activities and reclamation. Some incidental take related to the Project also may occur in the action area, particularly from truck traffic on SR 64 and CR 663, but this take is not anticipated to exceed baseline conditions. However, any snakes taken on SR 64 and CR 663 due to Project-related traffic are to be counted in the six indigo snakes that can be taken over a rolling 5-year period.

Harassment is predicted for all indigo snakes inhabiting the Project immediately prior to and during construction, and likely will occur on multiple occasions to some individuals, as described above. Harassment to individuals will occur during pre-clearing surveys when tortoise burrows and other potential refugia are being excavated, during directional land clearing in preparation for mining, and during other construction activities. Harassment will be biased toward adult males because of the biased sex ratio reported above (two males: one female) and the larger home range of adult males, which increases their likelihood of occurrence on the Project. The only direct measure of harassment of indigo snakes will be the annual counts of indigo snakes recorded on the site and reported during annual monitoring events.

Wood stork

The Service expects the proposed action could cause incidental take of a work stork. The incidental take is expected due to increased vehicular traffic within the action area; therefore, the Service anticipates the harm (injured or killed) of one wood stork from vehicular collision over the course of the mining activities. This Project may also affect the wood stork foraging habitat by disrupting the prey base available to this species. However, the loss/reduction of foraging value to the wood storks associated with these systems will be temporary, as the prey base will be restored and increased by the process of wetland creation and reclamation. Therefore, we do not anticipate any appreciable take in the form of lost nest productivity.

The Service will not refer the incidental take of any migratory bird for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. 703-712), provided such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

EFFECT OF THE TAKE

In the accompanying BO, the Service determined that this level of anticipated take is not likely to result in jeopardy to these species, destruction, or adverse modification of critical habitat.

REASONABLE AND PRUDENT MEASURES

When providing an incidental take statement, the Service is required to give reasonable and prudent measures it considers necessary or appropriate to minimize the take along with terms and conditions that must be complied with, to implement the reasonable and prudent measures. The Service believes the following reasonable and prudent measure(s) are necessary and appropriate to minimize effects of the Project on the caracara, indigo snake and wood stork: (1) to minimize disturbance and injury that may result from vehicular traffic and other mining activities; (2) to reduce habitat fragmentation after land reclamation; (3) to fund surveys and monitoring of caracaras; and (4) to report the progress of the action and its impact on the species to the Service as specified in the Incidental Take Statement (50 CFR § 402.14(i)(3)).

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Act, the Corps must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline the required reporting and monitoring requirements. These terms and conditions are non-discretionary:

1. To minimize disturbance and injury to the caracara, indigo snake, and wood stork from vehicular traffic, a speed limit of no more than 35 mph will be posted for all vehicular traffic on the mine site. The Applicant will enforce the speed limit. The Applicant will also implement an educational program for the on-site personnel. All contractors, lessees, and mine employees will be briefed of the possible presence of and to avoid the caracara, indigo snake, and wood stork. If any of these species are encountered, it will be avoided and allowed to leave the area on its own. The Applicant will also implement the Service's *Standard Protection Measures for the Eastern Indigo Snake* (Service 2013), to help minimize disturbance and injury to the indigo snake.

2. To reduce habitat fragmentation the Applicant will plan and implement a reclamation plan that focuses on creating an interconnected mosaic of habitats that enable movement of fish and wildlife resources across the landscape. The reclamation plan will be reviewed and approved by the appropriate State and Federal permitting and wildlife agencies prior to implementation.

3. To fund a research project to help understand the effect on mining activities on territorial caracaras, the Applicant shall donate $150,000 to the Wildlife Foundation of Florida (WFF) to finance surveys, monitoring, and other associated activities. The proposed $150,000 will

be deposited in the WFF over 3 years at $50,000 each year. The Year One payment will be paid within 60 days of issuance of the Corps permit for the Project, barring challenges to the permit. Should the Corps permit be challenged, the Year One payment will be made within 60 days of issuance of the final Corps permit after resolution of such challenges. The Year Two payment will be paid no more than 12 months from the anniversary date of the Year One payment. The Year Three payment will be paid no more than 24 months from the date of the Year One payment. The Applicant will promptly provide payment receipts from WFF to the Service the Corps for each payment made.

4. The Corps will provide a copy of the final permit to the Service upon issuance. The Corps will require the Applicant to abide by the permit conditions regarding conservation measures to minimize incidental take of the caracara, indigo snake, and wood stork; a report shall be provided to the Service on implementation and compliance with the conservation measures within 1 year of the issuance date of the permit;

MONITORING AND REPORTING REQUIREMENTS

Pursuant to 50 CFR § 402.14(i)(3), the Applicant must provide adequate monitoring and reporting to determine if the amount or extent of take is approached or exceeded.

DISPOSITION OF DEAD OR INJURED SPECIMENS

Upon locating a dead, injured, or sick threatened or endangered species, initial notification must be made to the nearest Service Law Enforcement Office; Fish and Wildlife Service; 9549 Koger Boulevard, Suite 111; St. Petersburg, Florida 33702; 727-570-5398. Secondary notification should be made to the FWC; Southwest Region; 3900 Drane Field Road; Lakeland, Florida; 33811-1299; 1-800-282-8002. Care should be taken in handling sick or injured specimens to ensure effective treatment and care, or, in the handling of dead specimens, to preserve biological material in the best possible state for later analysis as to the cause of death. In conjunction with the care of sick or injured caracaras or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service recommends the Applicant discuss and coordinate the implementation of its restoration plans with the plans from adjacent mining companies. In the next 20 years, several mining companies will be actively mining and restoring their land. A coordinated effort is more likely to result in significant, interconnected wildlife habitat that accommodates the home range and mobility needs of wildlife.

REINITIATION NOTICE

This concludes formal consultation on the Project. As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the action is subsequently modified in a manner that causes an effect to a listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Thank you for your cooperation in the effort to protect fish and wildlife resources. If you have any questions regarding this Project, please contact Al Begazo at 772-469-4234.

Sincerely yours,

Roxanna Hinzman
Field Supervisor
South Florida Ecological Services Office

cc: electronic only
Corps, Tampa, Florida (John Fellows)
FWC, Tallahassee, Florida (FWC-CPS)
Service, Jacksonville, Florida (Billy Brooks)
Service, Atlanta Georgia, Florida (Jerry Ziewitz)
Service, Vero Beach, Florida (Steve Schubert)
Service, Vero Beach, Florida (John Tupy)

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Table 1. Evaluation of wood stork prey loss within the action area.

Wood Stork Prey Evaluation for the Ona Mine - Impacts within the Core Foraging Area (Short Hydroperiod)

FLUCFCS Code	Description	Acres	Sq. Meters	Hydroperiod Class*	Estimated Available Prey Biomass (g/m^2)	Foraging Suitability Value[1]	Competition Factor	Net Prey Biomass (Kg)**
617	Mixed Wetland Hardwoods	91.04	368443.67	3	1.32	1	0.325	158.06
643	Wet Prairies	25.35	102592.89	3	1.32	1	0.325	44.01
TOTALS		**116.40**						**202.07**

Wood Stork Prey Evaluation for the Ona - Impacts within the Core Foraging Area (Long Hydroperiod)

FLUCFCS Code	Description	Acres	Sq. Meters	Hydroperiod Class*	Estimated Available Prey Biomass (g/m^2)	Foraging Suitability Value[1]	Competition Factor	Net Prey Biomass (Kg)**
513	Ditched Wetlands	8.74	35370.48	7	3.63	1	0.325	41.73
514	Upland Cut Ditches	2.09	8459.33	7	3.63	1	0.325	9.98
611	Bay Swamps	17.74	71804.86	5	2.93	1	0.325	68.38
641	Freshwater Marshes***	481.60	1948954.47	5	2.93	1	0.325	1855.89
647	Shrubby Wetlands	177.87	719830.23	3	1.32	1	0.325	308.81
TOTALS		**688.04**						**2284.78**

*Long or Short hydroperiod determination based on modeling - hydroperiod class assignment consistent with 2012 FWS WOST Foraging Habitat Methodology and Mosaic 2014 Hydrologic Modeling Report

**Prey biomass includes fish and crayfish in accordance with 2012 FWS WOST Foraging Habitat Methodology Acreages and kg were not considered for areas that did not meet depth requirements for suitable forging habitat including lakes and "dry" wetlands, therefore were not included in the above table

[1] - Assume no nuisance exotic species cover

***Includes 0.06 acres of 513 converted to 641 in the Post-Reclamation condition

Table 2. Evaluation of wood stork prey post reclamation.

Wood Stork Prey Evaluation for the Ona Mine - Post Reclamation Creation within Core Foraging Area (Short Hydroperiod)

FLUCFCS Code	Description	Acres	Sq. Meters	Hydroperiod Class*	Estimated Available Prey Biomass (g/m^2)	Foraging Suitability Value[1]	Competition Factor	Net Prey Biomass (Kg)**
617	Mixed Wetland Hardwoods	338.40	1369472.27	3	1.32	1	0.325	587.50
643	Wet Prairies	91.48	370186.93	3	1.32	1	0.325	158.81
TOTALS		**429.88**						**746.31**

Wood Stork Prey Evaluation for Ona Mine - Post Reclamation Creation within Core Foraging Area (Long Hydroperiod)

FLUCFCS Code	Description	Acres	Sq. Meters	Hydroperiod Class*	Estimated Available Prey Biomass (g/m^2)	Foraging Suitability Value[1]	Competition Factor	Net Prey Biomass (Kg)**
611	Bay Swamps	32.27	130576.49	5	2.93	1	0.325	124.34
616	Inland Ponds and Sloughs	15.28	61820.93	5	2.93	1	0.325	58.87
641	Freshwater Marshes***	773.34	3129591.41	5	2.93	1	0.325	2980.15
TOTALS		**820.88**						**3163.36**

*Long or Short hydroperiod determination based on modeling - hydroperiod class assignment consistent with 2012 FWS WOST Foraging Habitat Methodology and Mosaic 2014 Hydrologic Modeling Report

**Prey biomass includes fish and crayfish in accordance with 2012 FWS WOST Foraging Habitat Methodology. Acreages and kg were not considered for areas that did not meet depth requirements for suitable forging habitat including lakes and "dry" wetlands, therefore were not included in the above table

[1] - Assume no nuisance exotic species cover

***Includes 1.56 acres of wetlands created in no mine area.

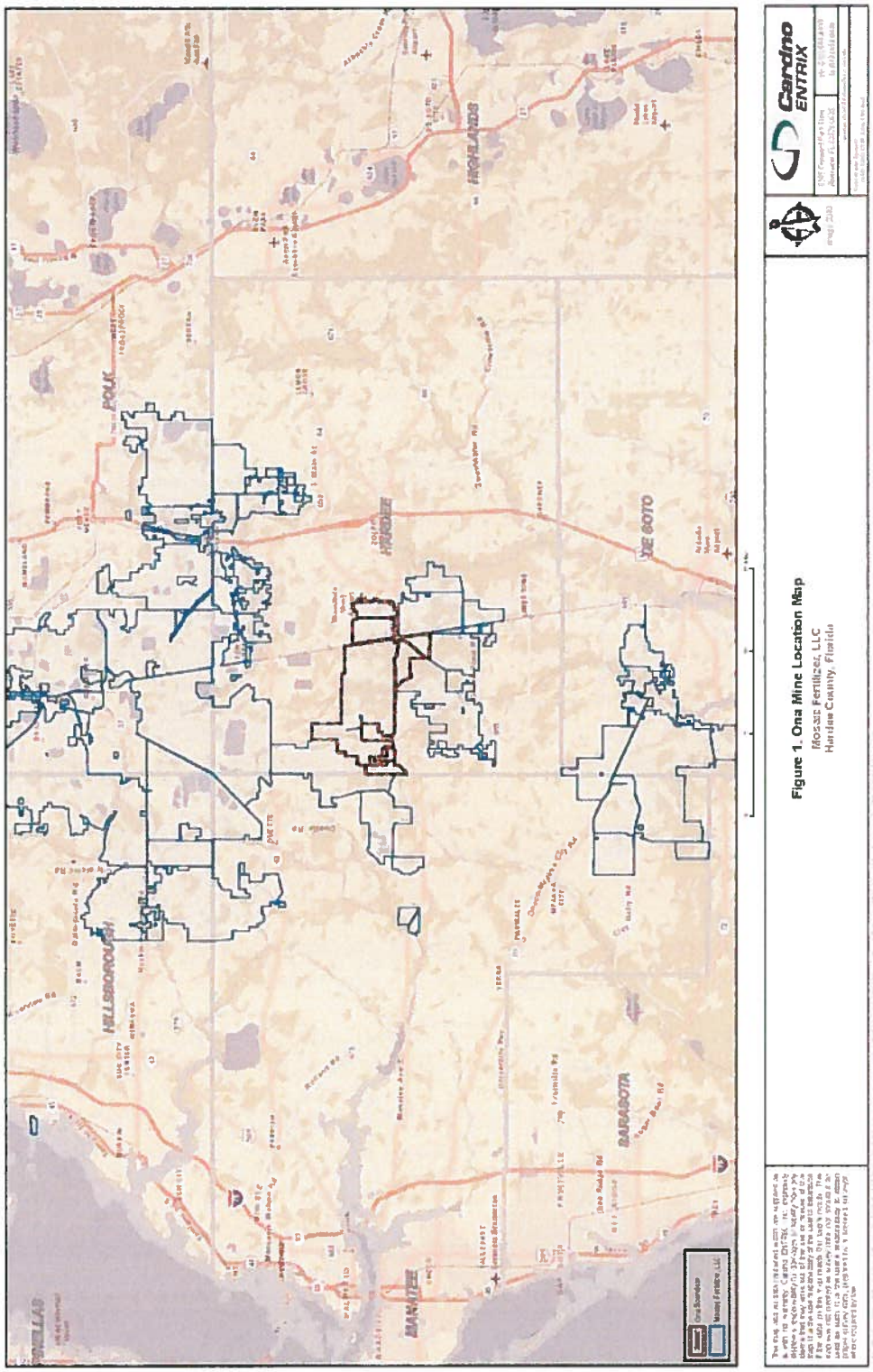

Figure 1. Map of the Project site.

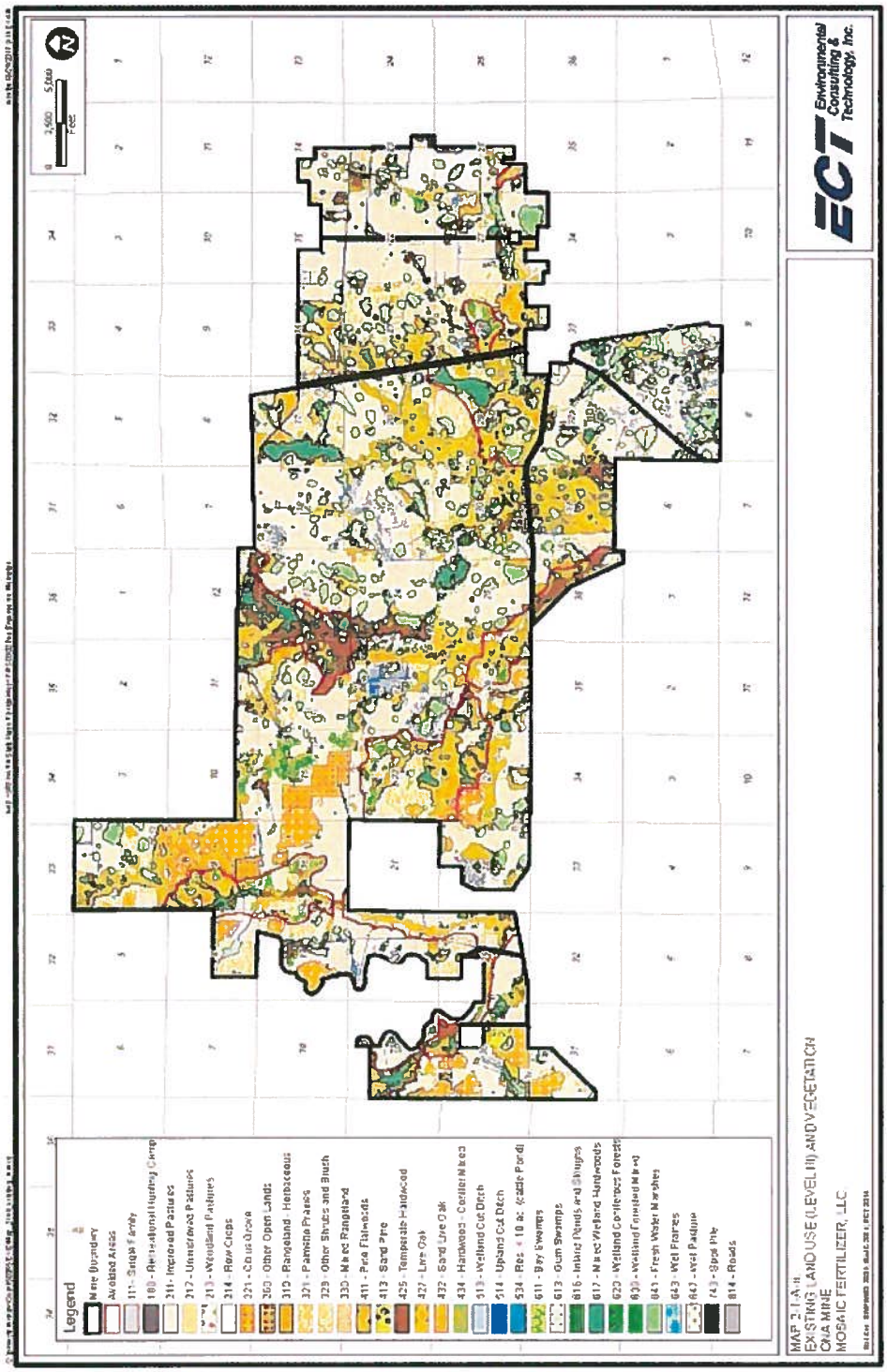

Figure 2. Land use or existing conditions on site

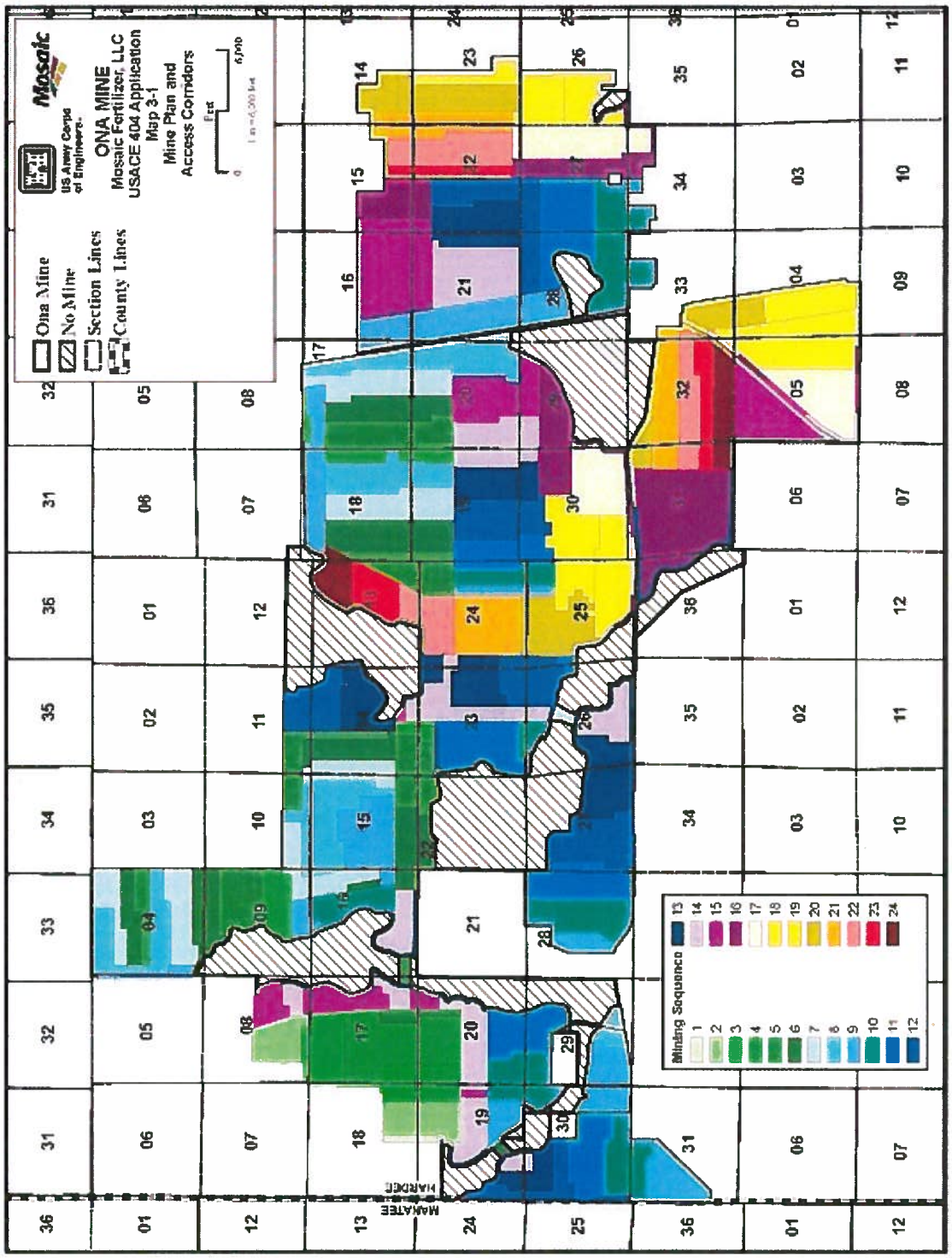

Figure 3. Mine plan showing the parcels slated for mining.

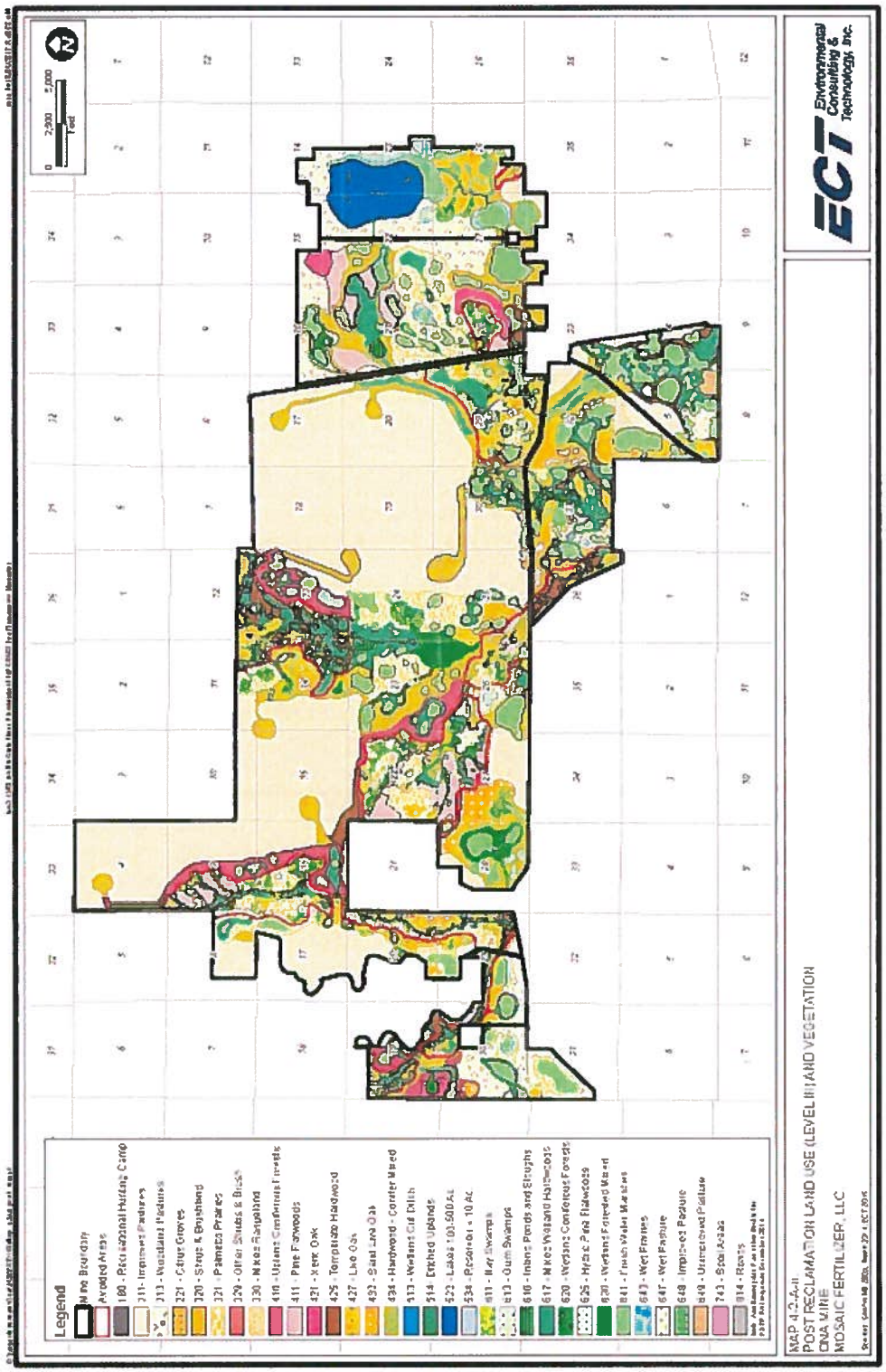

Figure 4. Map showing the proposed post-reclamation land uses.

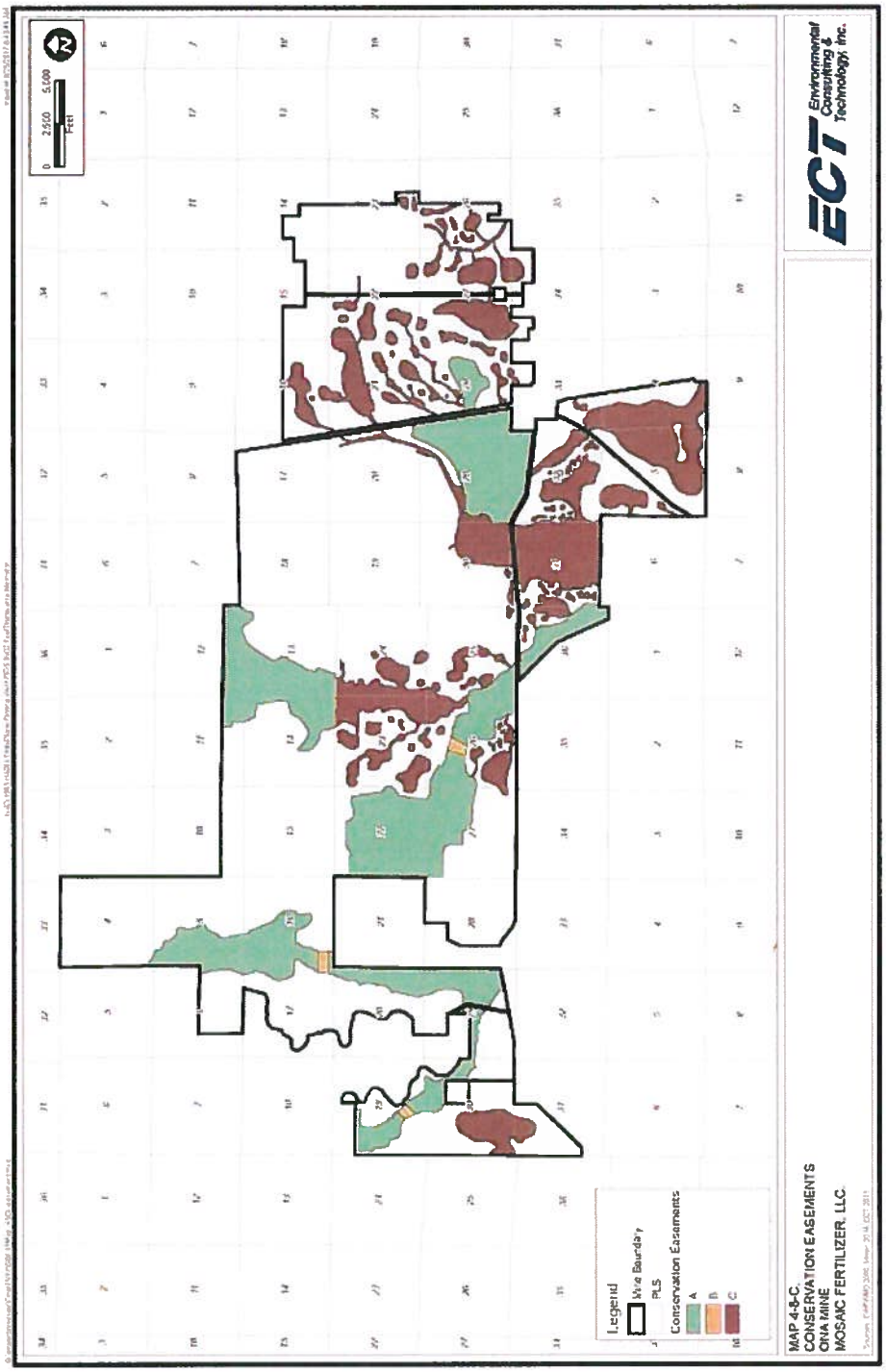

Figure 5. Project parcel showing the proposed conservation easements.

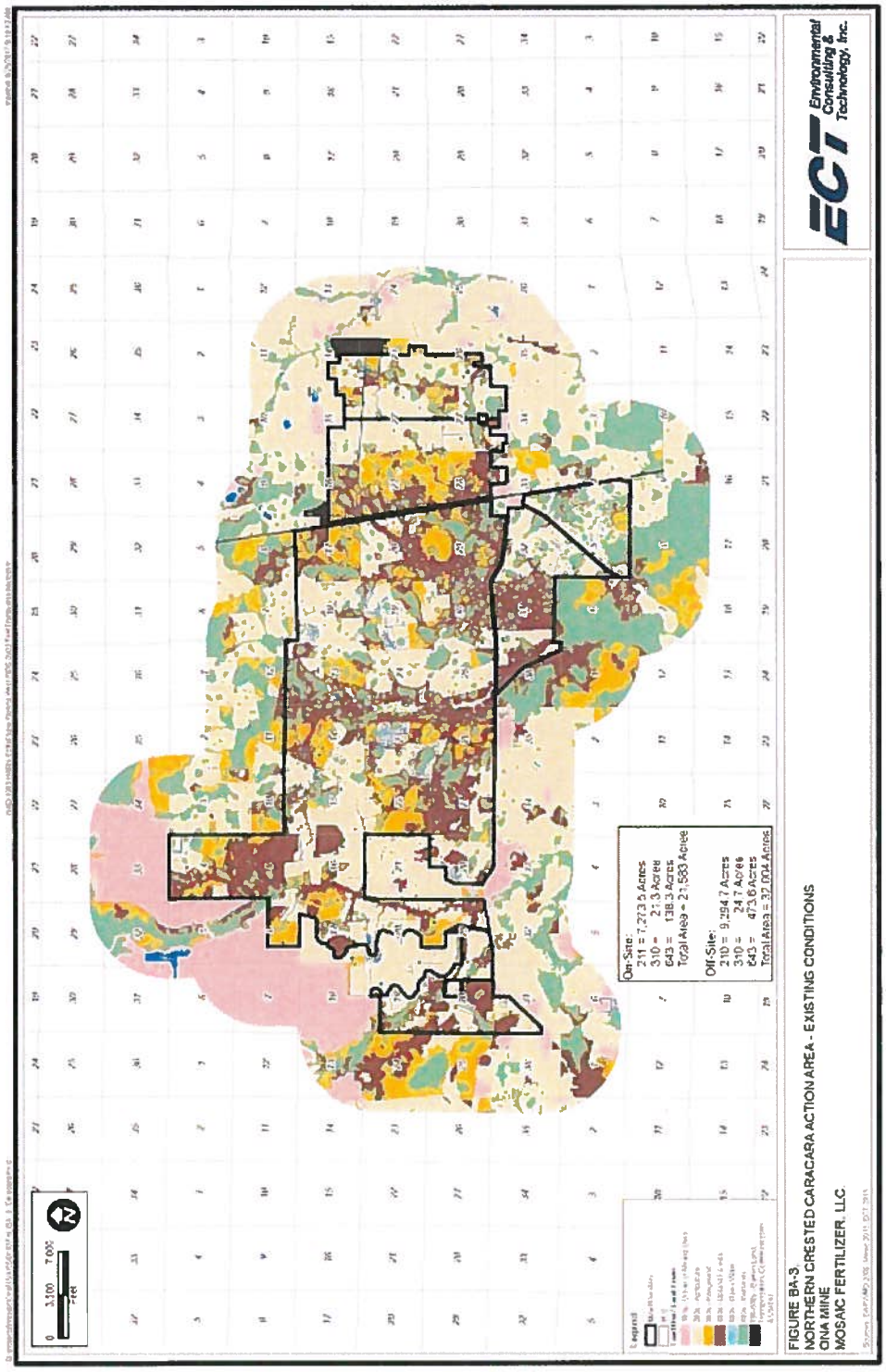

Figure 6. Map showing the estimated action area for the caracara

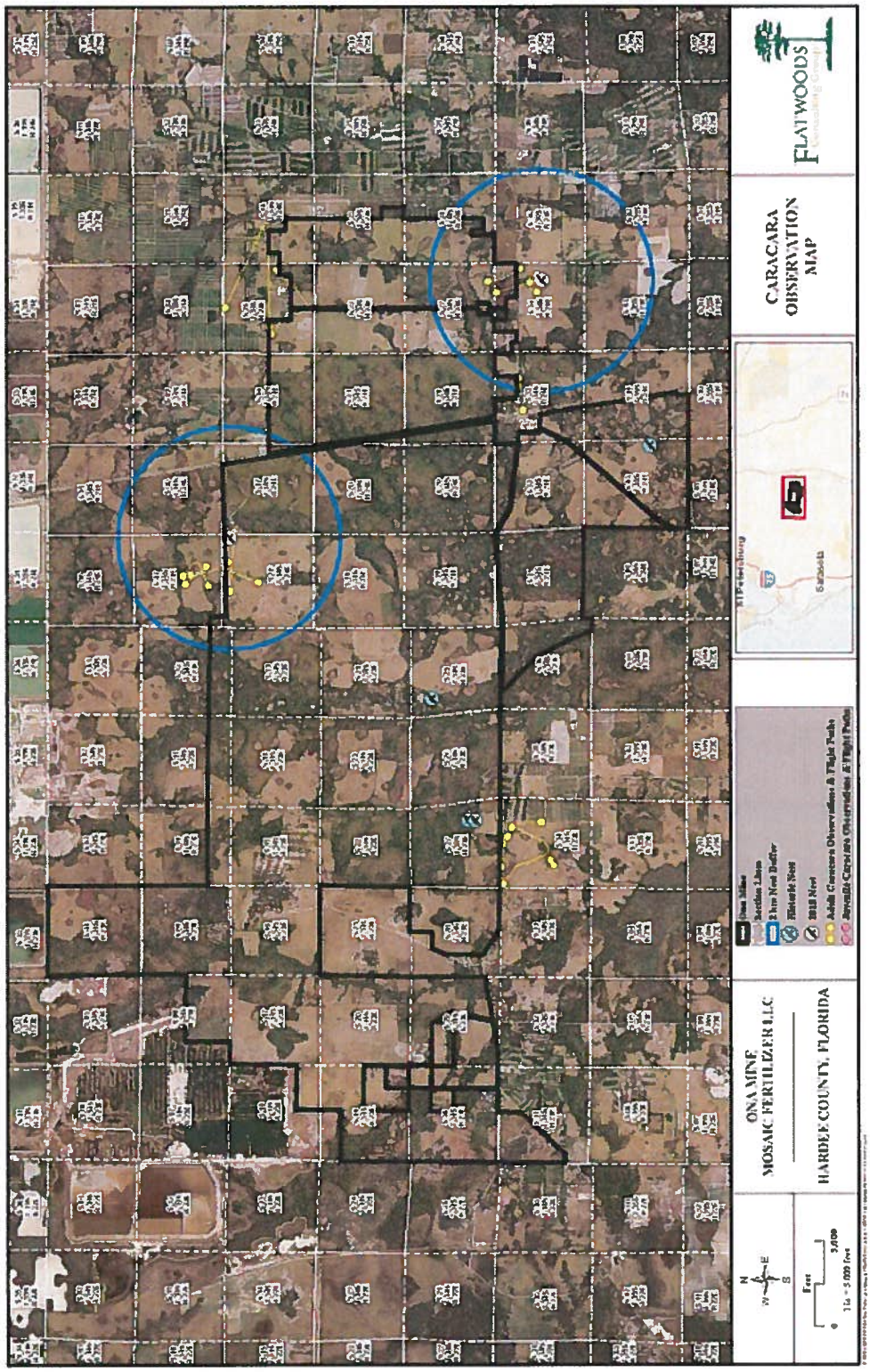

Figure 7. Map showing the location of the two caracara nests within the action area.

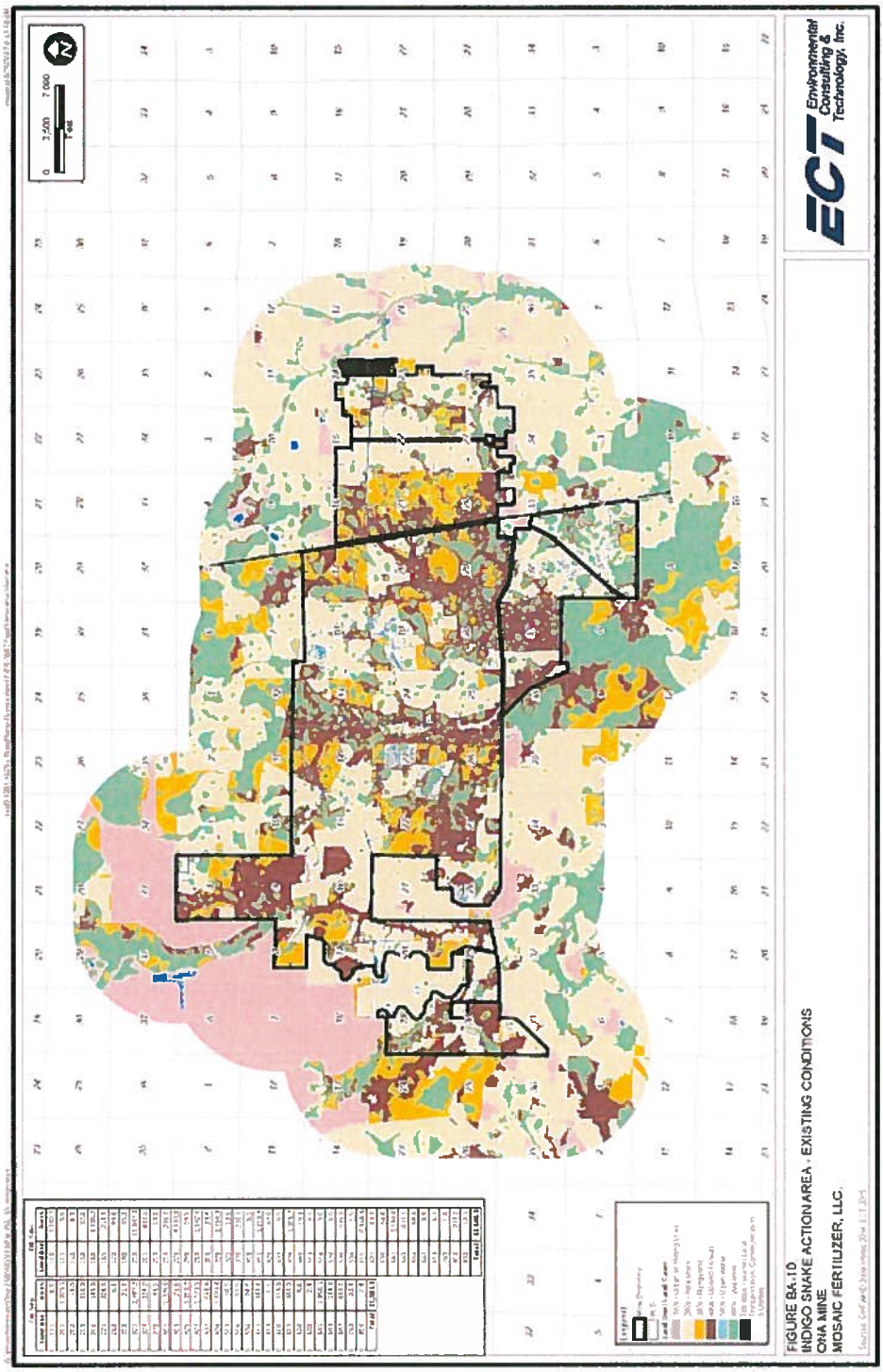

Figure 8. Project site showing the action area for the indigo snake.

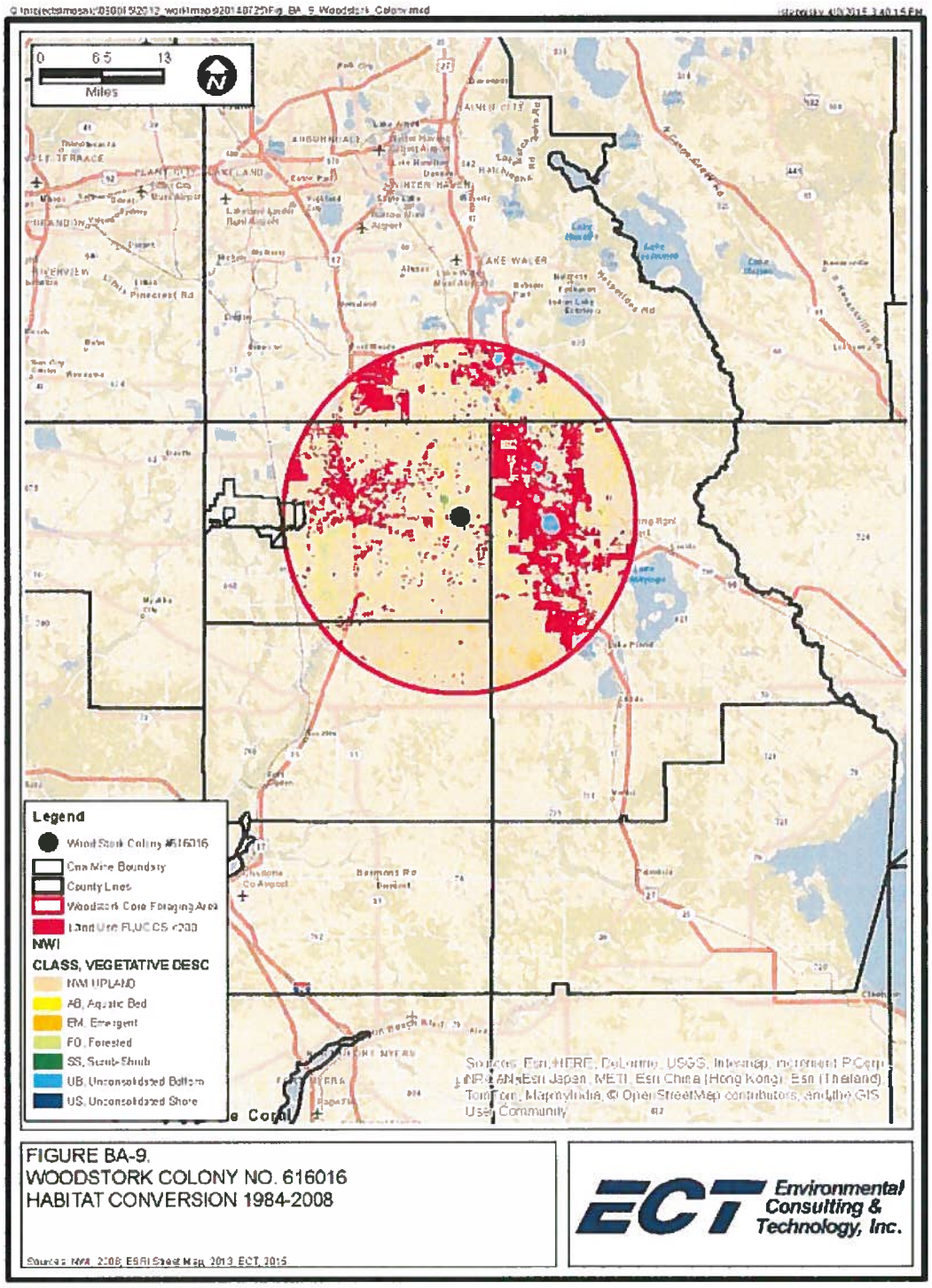

Figure 9. Wood stork colonies and buffers within the vicinity of the Ona.

STATUS OF THE SPECIES - Wood Stork *(Myceteria americana)*

Species/critical habitat description

The United States breeding population of the wood stork was first listed under the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884;16 U.S.C. 1531 et seq.) as endangered on February 28, 1984. On July 30, 2014, the wood stork was downlisted to threatened. Critical habitat has not been designated for the wood stork.

Species description

The wood stork is a large, long-legged wading bird, with a head to tail length of 33 to 45 inches and a wingspan of 59 to 65 inches (Coulter et al. 1999). Wood storks fly with their neck and legs extended. The plumage is white, except for iridescent black primary and secondary wing feathers and a short black tail. On adults, the rough scaly skin of the head and neck is un-feathered and blackish in color, the legs are dark, and the feet are dull pink. The bill color is also blackish. Immature wood storks, up to the age of about 3 years, have yellowish or straw-colored bills and varying amounts of dusky feathering on the head and neck (Coulter et al. 1999). During courtship and the early nesting season, adults may develop buff or pinkish coloration on the wing linings, fluffy, plume-like under tail coverts, and their toes are bright pink.

Life history

Diet and Foraging: Wood storks feed almost entirely of fish (Depkin et al. 1992), and usually specimens from 1 to 10 in (2.54 to 25.4 cm) in total length are captured and consumed (Kahl 1964; Ogden et al. 1976; Coulter 1987) . Occasionally, crustaceans, amphibians, reptiles, mammals, birds, and arthropods are eaten (Depkin et al. 1992; Bryan and Gariboldi 1998).

Wood storks generally use a specialized feeding behavior called tactilocation, or grope feeding, but also forage visually under some conditions (Kushlan 1979). Storks typically wade through the water with their beak immersed and open about 2.5 to 3.5 inches. When the wood stork encounters prey within its bill, the mandibles snap shut, the head is raised, and the food swallowed (Kahl 1964). Occasionally, wood storks stir the water with their feet in an attempt to startle hiding prey (Rand 1956; Kahl 1964; Kushlan 1979). This foraging method allows them to forage effectively in turbid waters, at night, and under other conditions when other wading birds that employ visual foraging may not be able to forage successfully.

Gawlik (2002) characterized wood storks as "searchers" that employ a foraging strategy of seeking out areas of high density prey and optimal (shallow) water depths, and abandoning foraging sites when prey density begins to decrease below a particular efficiency threshold, but while prey was still sufficiently available that other wading bird species were still foraging in

large numbers (Gawlik 2002). Wood stork choice of foraging sites was significantly related to both prey density and water depth (Gawlik 2002). Because of this strategy, wood stork foraging opportunities are more constrained than many of the other wading bird species (Gawlik 2002).

During the nesting period, storks are dependent on consistent foraging opportunities in wetlands within about 18.6 miles of the nest site with the greatest energy demands occurring during the middle of the nestling period, when nestlings are 23 to 45 days old (Kahl 1964). The average wood stork family requires 443 pounds of fish, crustaceans, and other prey during the breeding season with 50 percent of the nestlings' food requirement occurring during the middle third of the nestling period (Kahl 1964). It is estimated about 110 pounds are needed to meet the foraging needs of the adults and nestling in the first third of the nesting cycle. Receding water levels are necessary in south Florida to concentrate suitable densities of forage fish (Kahl 1964; Kushlan et al. 1975).

Breeding and reproduction: The wood stork is the only stork that breeds in the United States and is found primarily in the southeast region. Storks begin breeding at 3 to 4-years of age, but the average first age of breeding is unknown. Wood storks historical nesting trends began laying eggs in early October in south Florida and into late June in north Florida (Rodgers 1990). However more recently in south Florida, wood storks have begun laying eggs in late January early February (pers. comm. Mark Cook). The wood storks in the northern distribution range (Georgia, South Carolina, North Carolina) begin pair formation in early March/April. A single clutch of two to five eggs (average three) are laid per breeding season, but a second clutch may be laid if a nest failure occurs early in the breeding season (Coulter et al. 1999). There is variation among years in the clutch sizes, and clutch size does not appear to be related to longitude, nest data, nesting density, or nesting numbers, and may be related to habitat conditions at the time of egg-laying. Egg-laying is staggered and incubation, which lasts about 30 days, begins after the first egg is laid. Therefore, the eggs hatch at different times and the nestlings vary in size (Coulter et al. 1999).

Wood storks produce an average of 1.29 fledglings per nest and 0.42 fledgling per egg. Throughout the brooding period, the probability of survival from egg-laying to fledgling decreases as days increases (Rodgers and Schwikert 1997) (Table 1). The greatest losses occur from egg-laying to hatching with a 30 percent loss of the nest productivity. From hatching to nestlings of 2 weeks of age, nest productivity loss is an additional 8 percent. Corresponding losses for the remainder of the nesting cycles are on the average of 6 percent per 2-week increase in age of the nestling (Rodgers and Schwikert 1997). The young fledge in about 8 weeks, but will stay at the nest for 3 to 4 additional weeks to be fed.

Adults feed the young by regurgitating whole fish into the bottom of the nest about 3 to 10 times per day. Feedings are more frequent when the birds are young (Coulter et al. 1999) and less frequent when wood storks must fly great distances to locate food (Bryan et al. 1995). The total

nesting period, from courtship and nest-building through independence of young, lasts about 100 to 120 days (Coulter et al. 1999). Within a colony, nest initiation may be asynchronous and, consequently, a colony may contain active breeding wood storks for a period significantly longer than the 120 days required for a pair to raise young to independence. Adults and independent young may continue to forage around the colony site for a relatively short period following the completion of breeding.

Movements: Following the completion of the nesting season, both adult and fledgling wood storks generally begin to disperse away from the nesting colony. Fledglings have relatively high mortality rates within the first 6 months following fledging, most likely due to their lack of experience, including the selection of poor foraging locations (Hylton et al. 2006). Post-fledging survival also appears to be variable among years, probably reflecting the environmental variability that affects storks and their ability to forage effectively (Hylton et al. 2006). In southern Florida, both adult and juvenile storks consistently disperse northward following fledging in what has been described as a mass exodus (Kahl 1964). Storks in central Florida also appear to move northward following the completion of breeding, but generally do not move as far (Coulter et al. 1999). Many of the juvenile storks from southern Florida move beyond Florida into Georgia, Alabama, Mississippi, and South Carolina (Coulter et al. 1999; Borkhataria et al. 2004, Borkhataria et al. 2006). Some flocks of juvenile storks have also been reported to move well beyond the breeding range of storks in the months following fledging (Kahl 1964). This post-breeding northward movement appears consistent across years.

Adult and juvenile storks return southward in the late fall and early winter months. In a study employing satellite telemetry, Borkhataria et al. (2006) reported that nearly all storks that had been tagged in the southeastern United States moved into Florida near the beginning of the dry season, including all sub-adult storks that fledged from Florida and Georgia colonies. Adult storks that breed in Georgia remained in Florida until March, and then moved back to northern breeding colonies (Borkhataria et al. 2006). Overall, about 75 percent of all locations of radio-tagged wood storks occurred within Florida (Borkhataria et al. 2006). Preliminary analyses of the range-wide occurrence of wood storks in December, recorded during the annual Christmas bird surveys, suggest the majority of the southeastern United States wood stork population occurs in central and southern Florida. Relative abundance of storks in this region was 10 to 100 times higher than in northern Florida and Georgia (Service 2007). Because of these general population-level movement patterns during the earlier period of the stork breeding season in southern Florida, the wetlands upon which nesting storks depend are also being heavily used by a large portion of the southeastern United States wood stork population, including storks that breed in Georgia and the Carolinas, and sub-adult storks from throughout the stork's range. In addition, these same wetlands support a variety of other wading bird species (Gawlik 2002).

Habitat

Wood storks forage in a wide variety of wetland types. Wetland habitat types used include freshwater marshes, ponds, hardwood and cypress swamps, narrow tidal creeks or shallow tidal pools, and artificial wetlands such as stock ponds, shallow and seasonally flooded roadside or agricultural ditches, and managed impoundments (Coulter and Bryan 1993; Coulter et al. 1999). Optimal foraging habitat consists of shallow-water wetlands (2 to 16 in [5 to 40 cm] in depth) that are sparsely vegetated (Ogden et al. 1978; Browder 1984; Coulter 1987; Coulter and Bryan 1993).

Hydrological patterns of wetland habitats in south Florida affect their suitability for wood stork foraging. The annual hydrological pattern of wetland systems consists of water levels rising and peaking during the wet season (June to November) when the majority of the yearly total precipitation occurs, and gradually receding during the dry season (December to May). Shallow water levels within wetlands concentrate prey items (*i.e.*, fish) as they dry out and this is of particular importance during the wood stork nesting season (Kahl 1964). Therefore, a wetland site in south Florida may only provide suitable foraging conditions during part of the year when the water level has receded sufficiently to allow access and concentrate prey items. Consequently, during the nesting season there is a general progression in the suitability of wetlands for foraging based on their hydroperiods, with short hydroperiod wetlands used early in the season, mid-range hydroperiod wetlands used during the middle of the nesting season, and long hydroperiod wetlands used during the later part of the nesting season (Kahl 1964; Gawlik 2002). Generally, storks use wet prairie ponds early in the dry season then shift to slough ponds later in the dry season, thus following water levels as they recede into the ground (Browder 1984).

Several other factors affect the suitability of foraging habitats for wood storks. Suitable foraging habitats must provide a sufficient density and biomass of forage fish or other prey species, and have vegetation characteristics that allow storks to locate and capture prey. Wetlands that contain deep water may not be accessible to wood storks for foraging. Conversely, wetlands with too little water may not provide adequate habitat for fish or other prey species. Longer hydroperiod wetlands are generally observed to support more fish and larger fish than shorter hydroperiod wetlands (Loftus and Ecklund 1994; Jordan et al. 1997 and 1998; Turner et al. 1999; Trexler et al. 2002). In addition, nutrient enrichment (primarily phosphorus) within the oligotrophic Everglades wetlands generally results in increased density and biomass of fish in potential stork foraging sites (Rehage and Trexler 2006). Distances from dry-season refugia, such as canals, alligator holes, and similar long hydroperiod sites, may also affect fish density and biomass in southern Florida. However, across the highly modified landscape of southern Florida, fish availability varies with respect to hydrologic gradients and nutrient availability gradients and it becomes very difficult to predict fish density. The foraging habitat for most wood stork colonies within southern Florida includes a wide variety of hydroperiod classes, nutrient conditions, and spatial variability.

Dense submerged and emergent vegetation may reduce foraging suitability by preventing storks from moving through the habitat and interfering with prey detection (Coulter and Bryan 1993).

Wood storks tend to select foraging areas that have an open canopy, but occasionally use sites with 50 to 100 percent canopy closure (Coulter and Bryan 1993; O'Hare and Dalrymple 1997; Coulter et al. 1999). Densely forested wetlands may preclude storks from foraging (Coulter and Bryan 1993). However, the presence of minor to moderate amounts of submerged and emergent vegetation does not seem to detrimentally affect stork foraging and may be important to maintaining fish populations.

Wood stork nesting habitat consists of a variety of wooded habitat types. These include mangroves as low as 3 feet in height, cypress as tall as 100 feet , and various other live and dead shrubs or trees located in standing water (swamps) or on islands surrounded by relatively broad expanses of open water (Palmer 1962; Rodgers et al. 1987; Ogden 1991; Coulter et al. 1999). Wood storks generally occupy the large-diameter trees at a colony site because storks nest often in conjunction with other wading bird species (Rodgers et al. 1996). The same colony site will be used for many years as long as the colony is undisturbed and sufficient feeding habitat remains in surrounding wetlands. However, not all storks nesting in a colony will return to the same site in subsequent years (Kushlan and Frohring 1986). Natural wetland nesting sites may be abandoned if surface water is removed from beneath the trees during the nesting season (Rodgers et al. 1996). In response to this type of change to nest site hydrology, wood storks may abandon a site and establish a breeding colony in managed or impounded wetlands (Ogden 1991). Wood storks that abandon a colony early in the nesting season due to unsuitable hydrological conditions may re-nest in other nearby areas (Borkhataria et al. 2004; Crozier and Cook 2004).

Between breeding seasons or while foraging, wood storks roost in trees over dry ground, on levees, or large patches of open ground. Wood storks may also roost within wetlands while foraging far from nest sites and outside of the breeding season (Gawlik 2002). While the majority of stork nesting occurs within traditional stork rookeries, a handful of new stork nesting colonies are discovered each year (Meyer and Frederick 2004; Brooks and Dean 2008). These new colony locations may represent temporary shifts of historic colonies due to changes in local conditions, or they may represent formation of new colonies in areas where conditions have improved.

Distribution

The wood stork occurs from northern Argentina, eastern Peru and western Ecuador, north to Central America, Mexico, Cuba, Hispaniola, and the southeastern United States (American Ornithologists Union 1983). Only the population segment that breeds in the southeastern United States is listed as threatened. In the United States, wood storks were historically known to nest in all coastal states from Texas to South Carolina (Wayne 1910; Bent 1926; Howell 1932; Oberholser 1938; Dusi and Dusi 1968; Cone and Hall 1970; Oberholser and Kincaid 1974). Storks are found year-round throughout breeding range, except in South Carolina, North Carolina, and Georgia. Most individuals retreat to Florida and South Georgia during midwinter

after breeding season dispersal. Currently, wood stork nesting occurs in Florida, Georgia, South Carolina, and North Carolina. Breeding colonies of wood storks exist in all southern Florida counties, except for Okeechobee County. Additional expansion of the breeding range of wood storks in the southeastern United States has continued, both to the north and to the west along the Gulf Coast (Service 2007).

Population Dynamics

The United States breeding population of wood storks declined from an estimated 20,000 pairs in the 1930s to about 10,000 pairs by 1960 (49 FR 7332). Since the 1960s, the wood stork population has declined in southern Florida and increased in northern Florida, Georgia, and South Carolina (Ogden et al. 1987). The number of nesting pairs in the Everglades and Big Cypress ecosystems (southern Florida) declined from 8,500 pairs in 1961 to 969 pairs in 1995. During the same period, nesting pairs in Georgia increased from 4 to 1,501 and nesting pairs in South Carolina increased from 11 to 829 (Service 1997).

Since listing, annual nest counts have increased significantly in south Florida from 1,245 pairs in 1984 to 2,799 pairs in 2014. Annual nest counts in the vicinity of 2,712 pairs in north and central Florida have not significantly changed during this same time period. From 1991 to 2014 statewide surveys in Florida suggest that the nesting population is increasing and, while colonies are declining in size, the overall number of colonies is also increasing (Frederick and Meyer 2008). Florida's nest counts have also shown an increase from 5,647 to 7,216 pairs since listing. Historically, colonies in the south were associated with extensive wetland systems and predictable patterns of prey availability. Ogden et al. (1987) suggested the population shift was the result of deteriorating feeding conditions in south Florida and better nesting success rates in central-north Florida that compound population growth in that area. Further evidence of a general northern breeding range expansion occurred in 2005 when storks were first documented nesting successfully in North Carolina., and Storks have continued to nest in North Carolina and have increased their nesting pairs to 284 in 2014, from 32 in 2005.

Nest initiation date, colony size, nest abandonment, and fledging success of a wood stork colony varies from year-to-year based on availability of suitable wetland foraging areas, which can be affected by local rainfall patterns, regional weather patterns, and anthropogenic hydrologic management (Service 1997). A colony site may be vacant in years of drought or unfavorable conditions due to inadequate foraging conditions in the surrounding area (Kahl 1964). Storks may abandon traditional colony nesting sites completely when hydrological changes occur such as removing surface water from beneath the colony trees (Service 1997; Coulter et al. 1999). Nesting failures and colony abandonment may also occur if unseasonable rainfall causes water levels to rise when they are normally receding, thus dispersing rather than concentrating fish prey (Kahl 1964; Service 1997; Coulter et al. 1999).

Threats

The primary cause of the wood stork population decline in the United States is loss of wetland habitats or loss of wetland function resulting in reduced prey availability. Dahl (1990) estimates about 38 million acres, or 45.6 percent, of wood stork historic wetlands were lost between the 1780s and the 1980s. However, it is important to note wetlands and wetland losses are not evenly distributed in the landscape. Hefner et al. (1994) estimated 55 percent of the 2.3 million acres of the wetlands lost in the southeastern United States between the mid-1970s and mid-1980s were located in the Gulf-Atlantic Coastal Plain. These wetlands were strongly preferred by wood storks as nesting habitat. Since the 1970s, wood storks have been observed shifting their nest sites to artificial impoundments or islands created by dredging activities (Ogden 1991). The percentage of nests in artificial habitats in central and north Florida has increased from about 10 percent of all nesting pairs in 1959 to 1960 to 60 to 82 percent between 1976 and 1986 (Ogden 1991). Nest trees in these artificially impounded sites often include exotic species such as Brazilian pepper or Australian pine (*Casuarina equisetifolia*). Ogden (1996) has suggested

the use of these artificial wetlands indicates wood storks are not finding suitable conditions within natural nesting habitat or they are finding better conditions at the artificial wetlands. The long-term effect of these nesting areas on wood stork populations is unclear.

On the other hand, Ogden and Nesbitt (1979) indicate a reduction in nesting sites is not the cause in the population decline, because the number of nesting sites used from year to year is relatively stable. They suggest loss of an adequate food base is a cause of wood stork declines. Changes in remaining wetland systems in Florida, including drainage and impoundment, may be a larger problem for wood storks than loss of foraging habitat (Ogden and Nesbitt 1979). Almost any shallow wetland depression where fish become concentrated, through either local reproduction or receding water levels, may be used as feeding habitat by the wood stork during some portion of the year, but only a small portion of the available wetlands support foraging conditions (high prey density and favorable vegetation structure) that storks need to maintain growing nestlings. Browder et al. (1976) and Browder (1978) documented the distribution and the total acreage of wetland types (cypress domes and strands, wet prairies, scrub cypress, freshwater marshes and sloughs, and saw grass marshes) occurring south of Lake Okeechobee, Florida, for the period 1900 through 1973 and found these habitat types have been reduced by 35 percent since 1900.

The alteration of wetlands and the manipulation of wetland hydroperiods have also reduced the amount of foraging habitat available to wood storks. The decrease in wood storks nesting on Cape Sable was related to the construction of the drainage canals during the 1920s (Kushlan and Frohring 1986). Water level manipulation can aid raccoon predation of wood stork nests when water is kept too low (alligators deter raccoon predation when water levels are high). Artificially high water levels may retard nest tree regeneration since many wetland tree species require periodic droughts to establish seedlings. Water level manipulation may decrease food productivity if the water levels and length of inundation do not match the breeding requirements of forage fish. Dry-downs of wetlands may selectively reduce the abundance of the larger forage fish species that wood storks tend to use, while still supporting smaller prey fish.

Non-native invasive species

The Burmese python represents a potential threat to the wood stork. Burmese pythons are native to Southeast Asia but have been introduced to south Florida. The species is now established and and expanding its range in the greater Everglades ecosystem. More than 1,400 of Burmese pythons have been removed from ENP since 2000 and their population is now estimated to be in the thousands .

The Burmese python has a variety of life history traits that may allow it to out compete other predators. These includes diverse habitat use, broad dietary preferences, long lifespan (15 to 25 years), high reproductive output, and ability to move long distances, and larger body size as hatchlings. Moreever, Burmese pythons are generalist predators that consume a wide variety of mammal and bird species, as well as other reptiles, amphibians, and fish (Dove et al. 2011; Snow

et al. 2007). Pythons in Florida have been documented to consume 14 species of mammals, 5species of birds, and 1 species of reptile have been found in the stomachs of pythons collected and examined in Florida (Snow et al. 2007). Although the wood stork has not been documented to have been predated upon by pythons, other bird species have been found in the digestive tracts of Burmese pythons, including pied-billed grebe (*Podilymbus podiceps*), limpkin (*Aramus guarauna*), white ibis (*Eudocimus albus*), American coot (*Fulica americana*), house wren (*Troglodytes aedon),* domestic goose (*Anser* spp.*)*, and a juvenile wood stork. Juveniles of these giant constrictors are known to climb trees and bushes to remove prey from bird nests and capture perching or sleeping birds. However, the risk of python predation on wood storks and its overall effect on the species is unknown at this time.

Chemical contamination

The role of chemical contamination in the decline of the wood stork is unclear. Pesticide levels high enough to cause eggshell thinning have been reported in wood storks, but decreased productivity has not yet been linked to chemical contamination (Ohlendorf et al. 1978; Fleming et al. 1984). Burger et al. (1993) studied heavy metal and selenium levels in wood storks from Florida and Costa Rica. Adult birds generally exhibited higher levels of contaminants than young birds. Burger et al. (1993) attribute this to bioaccumulation in the adults who may be picking up contaminants at the colony nesting site and while foraging at other locations during the non-breeding season. There were higher levels of mercury in young birds from Florida than young birds or adult birds from Costa Rica. Young birds from Florida also exhibited higher levels of cadmium and lead than young birds from Costa Rica. Though Burger et al. (1993) recommended the lead levels in Florida be monitored; they drew no conclusions about the potential health effects of contaminants to wood storks.

Ongoing conservation efforts (recovery)

Measuring the biological aspect of the recovery of the wood stork is outlined in the Service's recovery plan (1997). The plan's recovery criteria state that reclassification, from endangered to threatened, could be considered when there are 6,000 nesting pairs and annual regional production is greater than 1.5 chicks per nest/year (both calculated over a 3-year average). Delisting could be considered when there are 10,000 nesting pairs calculated over a 5-year period beginning at the time of reclassification and annual regional production is greater than 1.5 chicks per nest/year (calculated over a 5-year average). As a subset of the 10,000 nesting pairs, a minimum of 2,500 nesting pairs must occur in the Everglades and Big Cypress systems in south Florida. In 2001, the Service reinitiated another 5-year synoptic aerial survey effort for wood stork colonies throughout the southeast range of the species (Service 2003), and surveys have been conducted annually since then. Three-year averages calculated from nesting data from 2001 through 2006 indicate that the total nesting population has been consistently above the 6,000 reclassification threshold for nesting pairs, and the averages have ranged from about

7,400 to over 8,700 nesting pairs during this time period. Currently the three-year average calculated from nesting data from 2011 through 2013 shows the total nesting population is 9,692 nesting pairs.

Wood stork nesting in the southeastern United States

The wood stork population is increasing and expanding its overall and breeding range in the southeastern United States (Brooks and Dean 2008). The wood stork population has exceeded 10,000 nesting pairs in multiple years following the 2006 breeding season, but storks still have not met recovery goals (Table 2). The previous period that the nesting population surpassed 10,000 pairs was in the early 1960s. Wood stork nesting continues to be recorded in North Carolina after it was first documented there in 2005. This suggests the northward expansion of wood stork nesting may be continuing. The number of colonies also continues to rise with over 100 nesting colonies reported in 2014 throughout the southeastern United States, which is the highest to date in any 1 year (Brooks and Dean 2008).

**Incomplete data set from Florida as all colonies are not surveyed every year.

Wood stork nesting in the Everglades and Big Cypress Systems

The number of nesting pairs in south Florida's Everglades and Big Cypress ecosystems declined from 8,500 pairs in 1961 to fewer than 500 pairs from 1987 through 1995 (Service 2007). The *South Florida Multi Species Recovery Plan* (Service 1999) defines the Everglades and Big Cypress ecosystems as the area south of Lake Okeechobee from Lee County on the west coast to Palm Beach County on the east coast. Total nesting pairs for colonies in this region have varied from year to year. In a review of nesting data for the Everglades and Big Cypress basin region, wood stork nesting success has shown a significant increase from 2005 with 634 pairs to 2,799 in 2014 (Table 3). The highest peak of nesting occurred in 2009 with over 6,000 nesting pairs. These observed fluctuations in nesting between years and nesting sites have been attributed primarily to variable hydrologic conditions during the nesting season (Note: *Hydrologic condition can be located in the South Florida Wading Bird reports for each breeding season from 1996-2014*). Frequent heavy rains during nesting can cause water levels to rise rapidly. The abrupt increase in water levels during nesting may cause nest abandonment, re-nesting, late nest initiation, and poor fledging success. Abandonment and poor fledging success has been reported to affect most wading bird colonies in southern Florida *(Note: information was reported in the South Florida wading bird reports from 1996-2014)*. Optimal foraging conditions in 2006 resulted in high nesting success, but the 2-year drought that followed in 2007 and 2008 resulted in no nesting success in south Florida. The 2007 to 2008 drought was followed by a year with below average rainfall with no reversals, resulting in the kind of hydrology that likely accounted for nesting success in wood storks (Note*: information was reported in the South Florida wading bird reports in 2006,2007, and 2008).*

Since 1996, the annual South Florida Wading Bird Report includes a summarization of nesting patterns for wood storks in the Everglades using a set of parameters to measure the storks' responses to the CERP. These annual summaries are useful for characterizing pre-CERP nesting patterns. The key parameters are number of nesting pairs, location of nesting colonies, timing of stork nesting, and the occurrence and frequency of wood stork "super colonies". The Service has set different recovery goals for wood storks in south Florida than those set for CERP. The Service goals consider a running average of 2,500 nesting pairs per year and a nest production that averages at least 1.5 young per active nest.

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Table 1. Wood stork survival per nesting chronology phases.

Age	**Percent Survival**
Egg-laying to Day 14	80
Egg-laying to Day 28 (hatchling)	70
Egg-laying to Day 42	62
Egg-laying to Day 56	56
Egg-laying to Day79	50
Egg-laying to fledgling	42

Table 2. Wood stork nesting data in southeastern United States.

YEAR	TOTAL		FLORIDA		GEORGIA		SOUTH CAROLINA		NORTH CAROLINA	
	Nesting pairs	Colonies	Nesting pairs	Colonies	Nesting pairs	Colonies	Nesting pairs	Colonies	Nesting pairs	Colonies
1981	4,442	22	4,156	19	275	2	11	1		
1982	3,575	22	3,420	18	135	2	20	1		
1983	5,983	25	5,600	22	363	2	20	1		
1984	6,245	29	5,647	25	576	3	22	1		
1985	5,193	23	4,562	17	557	5	74	1		
1986	5,835	36	5,067	29	648	4	120	3		
1987			**		506	5	194	3		
1988			**		311	4	179	3		
1989			**		543	6	376	3		
1990			**		709	10	536	6		
1991	4,073	37	2,440	25	969	9	664	3		
1992			**		1,091	9	475	3		
1993	6,729	43	4,262	29	1,661	11	806	3		
1994	5,768	47	3,588	26	1,468	14	712	7		
1995	7,853	54	5,523	31	1,501	17	829	6		
1996			**		1,480	18	953	7		
1997	5,166	59	2,870	36	1,379	15	917	8		
1998			**		1,665	15	1,093	10		

1999	9,978	71	8,319	50	1,139	13	520	8		
2000			**		566	7	1,236	11		
2001	5,582	44	3,246	23	1,162	12	1,174	9		
2002	7,855	70	5,463	48	1,256	14	1,136	10		
2003	8,813	78	5,804	49	1,653	18	1,356	11		
2004	8,379	93	4,726	63	1,596	17	2,057	13		
2005	5,560	74	2,304	40	1,817	19	1,407	13	32	1
2006	11,279	82	7,216	48	1,928	21	2,010	13	125	1
2007	4,406	55	1,553	25	1,054	15	1,607	14	192	1
2008	6,118	73	1,838	31	2,292	25	1,839	16	149	1
2009	12,720	86	9,428	54	1,676	19	1,482	12	134	1
2010	8,149	94	3,828	51	2,708	28	1,393	14	220	1
2011	9,579	88	5,292	45	2,160	19	2,031	23	96	1
2012	8,452	77	4,539	39	1,905	17	1,827	19	181	2
2013	11,046	100	6,948	57	1,873	19	2,020	21	205	3
2014	11,238	110	5,511	62	2,942	22	2,501	23	284	3

**Incomplete data set from Florida as all colonies are not surveyed every year.

Table 3. Total number of wood stork nesting pairs within the Everglades and Big Cypress Basins, 1996 to 2014. Note: *Data was retrieved from the South Florida Wading Bird Reports from 1996-2014.*

Year	Nesting pairs	3-Year Running Average
1996	600	-
1997	445	-
1998	475	507
1999	4,549	1,823
2000	3,996	3,007
2001	2,681	3,742
2002	2,880	3,186
2003	2,386	2,649
2004	1,015	2,094
2005	634	1,345
2006	2,710	1,453
2007	770	1,371
2008	704	1,395
2009	6,452	2,642
2010	1,220	2,792
2011	2,131	3,268
2012	1,234	1,528
2013	3,059	2,141
2014	2,799	2,364
Average	**2,108**	**2,195**

STATUS OF THE SPECIES – Eastern indigo snake (*Drymarchon corais couperi*)

Legal Status – *threatened*

The U.S. Fish and Wildlife Service (Service) listed the eastern subspecies of indigo snake (*Drymarchon corais couperi*) as threatened under the Endangered Species Act of 1973, as amended (87 Stat. 884; 16 U.S.C. 1531 et seq.) in the Federal Register on January 31, 1978. The State of Florida recognizes the eastern indigo snake as Federally-designated Threatened. There is no designated critical habitat.

Species Description

Appearance/Morphology

The eastern indigo snake is the largest native snake species in North America with a maximum recorded length of 8.5 feet (ft) in length (Moler 1992) and an unofficial record as having reached 10 ft long in the past (Holbrook 1842). Its color is uniformly lustrous-black, dorsally and ventrally, except for a red or cream-colored suffusion of the chin, throat, and sometimes cheeks. The head is small in proportion to the size of the body, slightly ovular, narrow, and flattened with an elongated snout. The eyes are large relative to the size of the head with black pupil and iris. The vertical plates, frontal plates, and superior orbital are broad with the former being pentagonal in shape. Its scales are large, hexagonal, and smooth in 17 scale rows at mid-body (the central 3 to 5 scale rows are lightly keeled in adult males). Its anal plate is undivided (Holbrook 1842). In the Florida Keys, adult indigo snakes seem to have less red on their faces or throats compared to mainland specimens (Lazell 1989).

Taxonomy

Holbrook (1842) first described all indigo snakes of North America as a monotypic taxon within the Linnaean genus *Coluber* (racers and whipsnakes), *Coluber couperi*. In 1843, Leopoldo Fitzinger moved indigo snakes from genus *Coluber* into their own genus, *Drymarchon*. Over time twelve subspecies of *Drymarchon corais* came to be recognized and at the time of listing the eastern indigo snake was considered one among these twelve subspecies (*Drymarchon corais couperi* [43 FR 4026 4029]). In 1991, Collins elevated this lineage to specific status based on allopatry and diagnosibility. Subsequent taxonomic work based on morphology has supported the designation of *Drymarchon couperi* as a distinct species within the genus (Wuster et al. 2001). Currently, the eastern indigo snake (*Drymarchon couperi*) is accepted by the scientific community as one of three separate species in genus *Drymarchon* (Crother 2000).

At the time of listing, other threats to the eastern indigo snake included commercial collection for the pet trade and mortality during the gassing of gopher tortoise burrows by individuals attempting to drive rattlesnakes out for collection (43 FR 4026 4029). Since their listing additional potential threats to the species have expanded to include disease, road mortality, kills of indigo snakes by land owners and pets, and all-terrain vehicle use in gopher tortoise habitat (Service 2008).

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STATUS OF THE SPECIES— Audubon's crested caracara (*Polyborus plancus audubonii* = *Caracara cheriway*; *aka* Northern crested caracara)

Legal Status- Federal Status*: threatened,* State: *threatened*

The U.S. Fish and Wildlife Service (Service) listed the Audubon's crested caracara (caracara) as threatened under the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C. 1531 *et seq.*) on July 6, 1987, (52 FR 25229). Critical habitat has not been designated for the caracara.

State of Florida Status: Listed as threatened by the state in accordance with the Service's Federal notice.

Species Description

Appearance/Morphology

The caracara is a large falcon with a head crest, naked face, heavy bill, elongated neck, long legs, and a bright yellow-orange face and legs (Service 1999; Morrison and Dwyer, 2012). The total length of an individual ranges from about 19.7 inches (in) (50.04 centimeters [cm]) to 25.2 in (64.01 cm) with a maximum wingspan of 47.2 in (119.9 cm). Adult caracaras have dark brownish-black feathers on their crown, wings, back, lower abdomen and tail (Service 1999). The base of the head, throat, upper abdomen and underside of the tail coverts is usually white, although some individuals contain yellow to tan feathers. The breast and upper back are whitish with heavy black barred feathers and the tail feathers are white with thin, dark crossbars and an extensive, dark terminal band (Service 1999). A caracara's feet are also a noteworthy identification trait. The feet have talons that are flatter than those of other raptor species. This adaptation aids in foraging because it allows the caracara to walk or run on the ground more easily (Service 1999).

Taxonomy

Caracaras were originally described by John James Audubon (1834) and assigned the scientific name *Polyborus vulgaris*. John Cassin changed the name to *P. audubonii* in 1865, although it

had several other names at that time (Service 1999). Dove and Banks (1999) provided a historical review of the taxonomy of the caracara prior to listing. The authors noted that Ridgway (1876) treated the caracara as three species in the genus *Polyborus*: *P. tharus* (designated by Molina in 1782) occurring in southern South America; *P. cheriway* (designated by Jacquin in 1784) occurring from northern South America to southern North America; and *P. lutosus* (designated by Ridgeway in 1876) occurring on Guadalupe Island, Mexico. This nomenclature remained unchanged until 1949, with the exception of replacing *P. tharus* with *P. plancus*, as previously designated by Miller in 1777 (Brabourne and Chubb 1912; Swann 1925). Hellmayr and Conover (1949) grouped both *P. cheriway* and *P. tharus* into one species: *P. plancus*. At the time of listing in 1987, the caracara was considered a sub-species of *P. plancus, P. plancus audubonii.* Banks and Dove (1992) placed *P. plancus* in the genus *Caracara* in 1992. Finally, Dove and Banks (1999) evaluated plumage characters and body dimensions of *C. plancus* from the northern populations with those from Bolivia and southern Brazil south to Tierra del Fuego, and concluded that *C. plancus* consists of three distinct species and sub-specific names were not warranted. The unique subspecies are: *C. lutosus* (the insular Guadalupe caracara, *C. cheriway* (the Northern crested caracara, referred to in this document as Audubon's crested caracara [caracara]), and *C. plancus* (the Southern caracara) (Dove and Banks 1992).

Life history

Caracaras are diurnal and non-migratory. Adult caracaras establish territories, which average approximately 3,000 acres (ac) [1,200 hectares (ha)], where they are typically found year round (Morrison and Humphrey 2001). This average territory size equates roughly to a territory within a radius of 1.2 miles from the nest site (Morrison 2001). Territory size ranges from about 1,000 acres to about 5,000 acres, likely dependent upon the quality of the habitat.

Breeding pairs of caracaras are monogamous, highly territorial, and exhibit fidelity to both their mate and the site (Morrison 1999). First breeding occurs at 3 years of age (Nemeth and Morrison 2002). The initiation of breeding is marked by several behavioral changes, including the pair perching together near the nesting site, preening and allopreening, and sharing food.

Caracaras are one of the first of Florida's raptors to begin nesting. Although breeding activity can occur from September through June, the primary breeding season is considered to be November through April. Nest initiation and egg-laying peak from December through February. Caracaras construct new nests each nesting season, often in the same tree as the previous year. Both males and females participate in nest building. Nests are well concealed and most often found in the tops of cabbage palms (Morrison and Humphrey 2001), although nests have been found in live oaks (*Quercus virginiana*), cypress (*Taxodium distichum*) (first record, Morrison et al. 1997), Australian pine (*Casuarina* spp.), saw palmetto (*Serenoa repens*), and black gum (*Nyssa sylvatica*). Caracaras usually construct their nests 4 to 18 meters above the ground, and the nest structure primarily consists of stems from herbaceous and woody shrubs, vines, grasses or other plant materials woven together and trampled to form a depression (Bent 1938; Sprunt 1954; Humphrey and Morrison 1997; Smith and Scholer 2013). Caracaras vigorously defend their nesting territory during the breeding season (Morrison 2001). The clutch size is usually two eggs, although at times three eggs are laid. Incubation lasts for about 31 to 33 days (Morrison 1999) and is performed by both sexes. Ordinarily, only one brood is raised per season, but about 10 percent of breeding pairs may raise a second brood. Young fledge at about 7 to 8 weeks of age, and post-fledgling dependency on parental birds lasts approximately 8 weeks.

Foraging typically occurs throughout the territory during both nesting and non-nesting seasons (Morrison 2001). Caracaras are highly opportunistic in their feeding habits. They will capture live prey and eat carrion. The diverse diet consists of insects and other invertebrates, fish, snakes, turtles, birds, and mammals (Layne 1996; Morrison 2001). Recent information from Morrison (2005) indicates wetland-dependent prey species and mammals (primarily in the form of carrion) comprise about 64 percent and 31 percent of the total diet, respectively. Caracaras search for prey while flying, from perches, and when walking or running along the ground (Service 1999). Foraging behavior also includes regularly patrolling sections of roads for animals killed by collisions with motor vehicles (Palmer 1988); caracaras are known to occasionally chase the larger black vulture (*Coragyps atratus*) and turkey vulture (*Cathartes aura*) away from a carcass (Howell 1932). Scavenging at land-fills has also been observed (Morrison 2001). Tractors plowing fields or mowing pastures and road right-of-ways are often closely followed by individuals who feed opportunistically on the prey that may be flushed or exposed. Agricultural

drainage ditches, cattle ponds, roadside ditches, the margins of wetlands and other shallow water features, and recently burned lands also provide good foraging areas for the caracara (Morrison 2001).

Caracaras are strong fliers and highly mobile birds that are capable of moving long distances, including juveniles. Morrison (2005) noted that sub-adult caracaras are nomadic. Individuals may traverse a large portion of the species' range in Florida from the time it leaves its natal territory to the time it establishes a territory. Adults will also occasionally leave their territory and travel great distances, usually outside of the breeding season. The caracara's vagility and nomadic behavior during its sub-adult years may be the reason that caracaras are occasionally recorded far outside their breeding range. Caracaras have been observed in the Florida Keys and into the panhandle of Florida (Bay County) as well as in other states and as far north as Nova Scotia, although some of these individuals may have escaped from captivity (Layne 1996). Currently, there is no evidence to suggest breeding and genetic exchange occurs between the Florida population and other populations of the Northern caracara.

Observations and radio-telemetry monitoring have documented aggregations of caracaras within several "gathering areas" in south-central Florida. Large groups of caracaras (up to 50) have been observed along the Kissimmee River north of State Route (SR) 98; south of Old Eagle Island Road in northern Okeechobee County; south of SR 70 and west of Fort Pierce in St. Lucie County; and south of SR 70 on the Buck Island Ranch in Highlands County. These gathering areas are regularly, but not continually, used by sub-adult and non-breeding caracaras and generally consist of large expanses of improved pasture. Morrison (2001) suggests that gathering areas may be important to caracaras before first breeding during the first 3 years after leaving their natal territory. However, the habitat values of these areas to caracaras have not yet been evaluated.

Habitat

The caracara prefers habitats that contain largely short-stature vegetation with a low density of trees that can be used for nesting. Historically, caracaras inhabited native dry or wet prairies containing scattered cabbage palms, their preferred nesting tree. Scattered saw palmetto, low-

growing oaks (*Quercus minima, Q. pumila*), and cypress also occur within these native communities. Over the last century, many of the native prairie vegetation communities in central and south Florida have been converted for cattle ranching, and have been replaced by improved and unimproved pasture dominated by non-native, sod-forming grasses. Caracaras occur within these pastures, presumably because the vegetation structure of this habitat type is similar to that of native prairies. In addition, the scattered cabbage palms that are often present within improved pastures provide nesting sites for caracaras. Morrison and Humphrey (2001) hypothesize that habitats with short-stature vegetation may be preferred by the caracara, due to its tendency to walk on the ground while foraging. The height and relatively simple structure of the vegetation may directly facilitate foraging by caracaras because it easier to walk through and provides less cover for predators. Consequently, caracaras likely benefit from management actions, such as regular mowing, burning, and high-density grazing in agricultural lands and prescribed burning in native habitat types that maintain vegetation in a low stature and structurally simple condition (Morrison and Humphrey 2001).

Maintaining habitat heterogeneity, including specific land cover types as well as small (less than 2.47 ac [0.99 ha]) freshwater wetlands, is important in maintaining suitable habitat for the caracara in Florida (Morrison et al. 2006). The proportion of six vegetation and land cover types (*i.e.*, cabbage palm-live oak hammock, grassland, improved pasture, unimproved pasture, hardwood hammocks and forest, and cypress/pine/cabbage palm) and two types of aquatic habitats (*i.e.*, lentic and lotic) were determined to be the most important criteria for predicting habitat suitability for caracara. Most known nest locations (72.9 percent) in the study were present on improved pasture although that habitat type only comprised 12.5 percent of the entire study area. Caracara appear to be using pastures, ditches, and impounded wetlands that have replaced the historic land cover as shown by the high occurrence of improved and unimproved pastures and wetlands in caracara home ranges (Morrison et al. 2006).

Distribution

The caracara is a resident, non-migratory species that occurs in Florida as well as the southwestern United States and Central America. Florida's population of caracara is found in the prairie area of the south-central region of the State, from Polk and Osceola Counties

southward to Collier and Broward Counties. The caracara is most abundant in a five-county area that includes Glades, DeSoto, Highlands, Okeechobee, and Osceola Counties (Service 1999).

Morrison and Humphrey (2001) characterized caracara distribution, reproductive activity, and land use patterns within a 5,180,000-ac (2,096,000 ha) area in south-central Florida. Comparisons of caracara territories to randomly selected areas of available habitat within the study area indicated that caracara territories contained higher proportions of improved pasture and lower proportions of forest, woodland, oak scrub, and marsh. Territory size was inversely related to the amount of improved pasture within the territory. In addition, breeding-area occupancy rate, breeding rate, and nesting success were consistently higher on private ranch lands during the study.

Population Dynamics

Monitoring the caracara population, determining territory occupancy, and nesting effort and success, is very difficult because most caracara breeding territories occur on private lands in Florida that are not accessible to researchers (Humphrey and Morrison 1997). Consequently, estimates of the caracara population have been based on counts of caracaras along roadsides (Heinzman 1970; Layne 1995). These roadside counts have the potential to be strongly affected by the presence of non-territorial juvenile and sub-adult birds during the period when they are nomadic. Furthermore, the abundance of non-breeding adults further complicates estimating breeding pairs from roadside counts. Because the occurrence and density of caracaras is not evenly distributed (due to congregations and nomadic individuals) within the region they occupy, roadside surveys are probably unreliable for estimating the overall population.

Morrison and Humphrey (2001) noted the caracara is perceived to be in long-term decline, although adequate data is not available on historic patterns of abundance, or habitat used to accurately assess the status of the species. Heinzman's (1970) 4-year road survey from 1967 to 1970 suggested fewer than 100 individual caracaras at 58 localities remained in Florida. Stevenson (1976) concurred with this estimate in 1974. Layne (1996) monitored caracara distribution and population status in Florida from 1972 to 1991. Observations made by Layne (1996) estimated the adult portion of the population was stable with a minimum of about 300

birds in 150 territories. The immature portion of the population was estimated to be about 100 to 200 individuals, increasing the total statewide population estimate to 400 to 500 birds. However; these population estimates were likely biased because they were based on roadside counts of birds, and roadsides were surveyed more intensively than areas away from roads. Given the challenges associated with accessing all the potential habitat within the caracara's range, conducting a reliable range-wide survey of the population and obtaining an accurate estimate of the caracara's current population size remains difficult.

However, evidence from behavior suggests habitat is limited for the caracara and the species is at or near carrying capacity within the existing habitat (Morrison et al. 2007). Monitoring of caracara breeding areas since the 1990s found that breeding territories tend to remain occupied and that breeding is attempted every year. The fact that territories are not seen regularly coming and going is consistent with the assertion that all possible breeding sites are occupied (Morrison et al. 2007). In addition, Dwyer et al. (2012) tracked individual nonbreeding caracaras in adult plumage for over three years and found these birds never established breeding territories. This information indicates that the tracked caracaras were unable to find suitable breeding sites, again supporting the concept that no suitable breeding habitat is available to the breeding age birds and the existing breeding habitat is at carrying capacity. Furthermore, Dwyer *et al.* 2010 noted that nonbreeding adults (floaters) made up approximately 40 percent of the nonbreeding population.

Critical Habitat

Critical habitat has not been designated for the caracara.

Threats

Present or Threatened Destruction, Modification or Curtailment of its Habitat or Range

The caracara's perceived decline, as described in historic literature, is attributed primarily to habitat loss (Layne 1996). Large areas of native prairie and pasture lands in south-central Florida have been converted to citrus operations, tree farms, other forms of agriculture, and commercial and residential development, and habitat loss has accelerated in the past few decades (Morrison and Humphrey 2001). The perceived population decline and the geographic isolation

of the Florida population resulted in the listing of the caracara as threatened in 1987. However, historical conversion of forested habitats to pasture has not been adequately documented as partially offsetting losses of caracara habitat, so a full accounting of historic habitat changes is lacking. The current threat of habitat loss persists as changes in land use and development of caracara habitat continue, and pastures are converted to residential and commercial development.

The lack of habitat management in some areas has also resulted in degradation or loss of caracara habitat. For example, encroachment of woody shrubs and trees into open dry prairies, pastures and similar habitats have resulted in reduction in habitat suitability. In addition, the large-scale removal of cabbage palms from pastures to sell for commercial and residential landscaping may also reduce the availability of potential nesting sites.

As discussed above, the caracara prefers open habitats with low-stature vegetation for foraging (Morrison and Humphrey 2001). Accordingly, cattle ranching and the creation of extensive pastures appear to be compatible with caracara survival. The number of caracara territories occurring in improved or unimproved pasture can be expected to increase if sufficiently large overgrown pastures are reclaimed and/or new pastures or restored native prairies are created from lands subject to other agricultural land uses. The conversion of pasture to citrus, sugarcane, and residential/commercial development is cause for concern (Morrison 2001). Recognizing the habitat value of cattle ranches and enlisting landowner cooperation in the conservation and management of these lands are essential elements in recovery of the caracara.

Disease or Predation

Currently, disease or Predation does not appear to threaten the continued existence of the caracara.

Other Natural or Manmade Factors Affecting its Continued Existence

Collision with vehicles along roadways may also be a significant form of mortality and contribute to further population level declines. Florida's burgeoning human population has increased the number of motor vehicles and the need for roads. The increase in traffic as well as the caracara's predisposition for feeding on road-killed animals has probably increased the

number of caracaras killed or injured as a result of vehicle strikes. Morrison (2003) identifies highway mortalities as a major cause of juvenile mortalities with young birds especially vulnerable within the first six months after fledging.

In addition, direct human persecution continues in parts of the caracara's range (Morrison and Dwyer 2012). Caracara are killed by some ranchers because of the belief that caracara kill and eat newborn livestock. Furthermore, spent lead ammunition from hunting and shooting may have the potential to affect any individuals that feed upon the carrion (Golden *et al.* 2016).

Finally, the Florida population of caracaras is isolated and habitat-specific. Therefore, it may be susceptible to environmental catastrophes and potentially reduced reproductive rates because of demographic accidents such as skewed sex ratios or disproportionate age-related mortality. Low numbers may also reduce the genetic viability in the population through loss of heterozygosity, thereby increasing vulnerability to environmental stresses. The location of many of the occupied territories on private land, and the inaccessibility of these territories to surveyors, makes it difficult to census the caracara and detect changes in its population size and distribution. This difficulty increases the possibility of not detecting a population decline that could result in extinction.

Climate Change and Sea Level Rise

Our analyses under the Act include consideration of observed or likely environmental effects related to ongoing and projected changes in climate. As defined by the Intergovernmental Panel on Climate Change (IPCC), "climate" refers to average weather, typically measured in terms of the mean and variability of temperature, precipitation, or other relevant properties over time; thus "climate change" refers to a change in such a measure which persists for an extended period, typically decades or longer, due to natural conditions (e.g., solar cycles) or human-caused changes in the composition of the atmosphere or in land use (IPCC 2013, p. 1450). Detailed explanations of global climate change and examples of various observed and projected changes and associated effects and risks at the global level are provided in reports issued by the IPCC (2014 and citations therein). Information for the United States at national and regional levels is summarized in the National Climate Assessment (Melillo et al. 2014 entire and citations therein;

see Melillo et al. 2014, pp. 28-45 for an overview). Because observed and projected changes in climate at regional and local levels vary from global average conditions, rather than using global scale projections, we use "downscaled" projections when they are available and have been developed through appropriate scientific procedures, because such projections provide higher resolution information that is more relevant to spatial scales used for analyses of a given species and the conditions influencing it. (See Melillo et al. 2014, Appendix 3, pp. 760-763 for a discussion of climate modeling, including downscaling). In our analysis, we use our expert judgment to weigh the best scientific and commercial data available in our consideration of relevant aspects of climate change and related effects.

Climate change may result in inundation of habitat from sea level rise, and altered weather patterns in south Florida. For example, an increase or decrease in precipitation could affect water levels in wetlands and canals, and this, in turn, could affect prey densities and ultimately affect productivity and survivorship of the caracara. Increased precipitation could increase the availability of prey species, whereas increased periods of drought could reduce prey availability to caracara. The intensity or frequency of thunderstorms or hurricanes is also predicted to increase with climate change. Winds associated with these events could adversely affect the caracara by decreasing nesting trees and therefore nesting opportunities. It is difficult to estimate, with any degree of precision, which species will be affected by climate change or exactly how they will be affected. The Service will use Strategic Habitat Conservation planning, an adaptive science-driven process that begins with explicit trust resource population objectives, as the framework for adjusting our management strategies in response to climate change (Service 2006).

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Department of the Army
Permit Number SAJ-2011-01869 (SP-JPF)

Attachment E-3

EASTERN INDIGO SNAKE CONDITIONS (August 12, 2013 version): 6 pages

Attachment E-3

STANDARD PROTECTION MEASURES FOR THE EASTERN INDIGO SNAKE
U.S. Fish and Wildlife Service
August 12, 2013

The eastern indigo snake protection/education plan (Plan) below has been developed by the U.S. Fish and Wildlife Service (USFWS) in Florida for use by applicants and their construction personnel. At least **30 days prior** to any clearing/land alteration activities, the applicant shall notify the appropriate USFWS Field Office via e-mail that the Plan will be implemented as described below (North Florida Field Office: jaxregs@fws.gov; South Florida Field Office: verobeach@fws.gov; Panama City Field Office: panamacity@fws.gov). As long as the signatory of the e-mail certifies compliance with the below Plan (including use of the attached poster and brochure), no further written confirmation or "approval" from the USFWS is needed and the applicant may move forward with the project.

If the applicant decides to use an eastern indigo snake protection/education plan other than the approved Plan below, written confirmation or "approval" from the USFWS that the plan is adequate must be obtained. At least 30 days prior to any clearing/land alteration activities, the applicant shall submit their unique plan for review and approval. The USFWS will respond via e-mail, typically within 30 days of receiving the plan, either concurring that the plan is adequate or requesting additional information. A concurrence e-mail from the appropriate USFWS Field Office will fulfill approval requirements.

The Plan materials should consist of: 1) a combination of posters and pamphlets (see **Poster Information** section below); and 2) verbal educational instructions to construction personnel by supervisory or management personnel before any clearing/land alteration activities are initiated (see **Pre-Construction Activities** and **During Construction Activities** sections below).

POSTER INFORMATION

Posters with the following information shall be placed at strategic locations on the construction site and along any proposed access roads (a final poster for Plan compliance, to be printed on 11" x 17" or larger paper and laminated, is attached):

DESCRIPTION: The eastern indigo snake is one of the largest non-venomous snakes in North America, with individuals often reaching up to 8 feet in length. They derive their name from the glossy, blue-black color of their scales above and uniformly slate blue below. Frequently, they have orange to coral reddish coloration in the throat area, yet some specimens have been reported to only have cream coloration on the throat. These snakes are not typically aggressive and will attempt to crawl away when disturbed. Though indigo snakes rarely bite, they should NOT be handled.

SIMILAR SNAKES: The black racer is the only other solid black snake resembling the eastern indigo snake. However, black racers have a white or cream chin, thinner bodies, and WILL BITE if handled.

LIFE HISTORY: The eastern indigo snake occurs in a wide variety of terrestrial habitat types throughout Florida. Although they have a preference for uplands, they also utilize some wetlands

and agricultural areas. Eastern indigo snakes will often seek shelter inside gopher tortoise burrows and other below- and above-ground refugia, such as other animal burrows, stumps, roots, and debris piles. Females may lay from 4 - 12 white eggs as early as April through June, with young hatching in late July through October.

PROTECTION UNDER FEDERAL AND STATE LAW: The eastern indigo snake is classified as a Threatened species by both the USFWS and the Florida Fish and Wildlife Conservation Commission. "Taking" of eastern indigo snakes is prohibited by the Endangered Species Act without a permit. "Take" is defined by the USFWS as an attempt to kill, harm, harass, pursue, hunt, shoot, wound, trap, capture, collect, or engage in any such conduct. Penalties include a maximum fine of $25,000 for civil violations and up to $50,000 and/or imprisonment for criminal offenses, if convicted.

Only individuals currently authorized through an issued Incidental Take Statement in association with a USFWS Biological Opinion, or by a Section 10(a)(1)(A) permit issued by the USFWS, to handle an eastern indigo snake are allowed to do so.

IF YOU SEE A <u>LIVE</u> EASTERN INDIGO SNAKE ON THE SITE:

- Cease clearing activities and allow the live eastern indigo snake sufficient time to move away from the site without interference;
- Personnel must NOT attempt to touch or handle snake due to protected status.
- Take photographs of the snake, if possible, for identification and documentation purposes.
- Immediately notify supervisor or the applicant's designated agent, **and** the appropriate USFWS office, with the location information and condition of the snake.
- If the snake is located in a vicinity where continuation of the clearing or construction activities will cause harm to the snake, the activities must halt until such time that a representative of the USFWS returns the call (within one day) with further guidance as to when activities may resume.

IF YOU SEE A <u>DEAD</u> EASTERN INDIGO SNAKE ON THE SITE:

- Cease clearing activities and immediately notify supervisor or the applicant's designated agent, **and** the appropriate USFWS office, with the location information and condition of the snake.
- Take photographs of the snake, if possible, for identification and documentation purposes.
- Thoroughly soak the dead snake in water and then freeze the specimen. The appropriate wildlife agency will retrieve the dead snake.

Telephone numbers of USFWS Florida Field Offices to be contacted if a live or dead eastern indigo snake is encountered:

North Florida Field Office – (904) 731-3336
Panama City Field Office – (850) 769-0552
South Florida Field Office – (772) 562-3909

PRE-CONSTRUCTION ACTIVITIES

1. The applicant or designated agent will post educational posters in the construction office and throughout the construction site, including any access roads. The posters must be clearly visible to all construction staff. A sample poster is attached.

2. Prior to the onset of construction activities, the applicant/designated agent will conduct a meeting with all construction staff (annually for multi-year projects) to discuss identification of the snake, its protected status, what to do if a snake is observed within the project area, and applicable penalties that may be imposed if state and/or federal regulations are violated. An educational brochure including color photographs of the snake will be given to each staff member in attendance and additional copies will be provided to the construction superintendent to make available in the onsite construction office (a final brochure for Plan compliance, to be printed double-sided on 8.5" x 11" paper and then properly folded, is attached). Photos of eastern indigo snakes may be accessed on USFWS and/or FWC websites.

3. Construction staff will be informed that in the event that an eastern indigo snake (live or dead) is observed on the project site during construction activities, all such activities are to cease until the established procedures are implemented according to the Plan, which includes notification of the appropriate USFWS Field Office. The contact information for the USFWS is provided on the referenced posters and brochures.

DURING CONSTRUCTION ACTIVITIES

1. During initial site clearing activities, an onsite observer may be utilized to determine whether habitat conditions suggest a reasonable probability of an eastern indigo snake sighting (example: discovery of snake sheds, tracks, lots of refugia and cavities present in the area of clearing activities, and presence of gopher tortoises and burrows).

2. If an eastern indigo snake is discovered during gopher tortoise relocation activities (i.e. burrow excavation), the USFWS shall be contacted within one business day to obtain further guidance which may result in further project consultation.

3. Periodically during construction activities, the applicant's designated agent should visit the project area to observe the condition of the posters and Plan materials, and replace them as needed. Construction personnel should be reminded of the instructions (above) as to what is expected if any eastern indigo snakes are seen.

POST CONSTRUCTION ACTIVITIES

Whether or not eastern indigo snakes are observed during construction activities, a monitoring report should be submitted to the appropriate USFWS Field Office within 60 days of project completion. The report can be sent electronically to the appropriate USFWS e-mail address listed on page one of this Plan.

ATTENTION:

THREATENED EASTERN INDIGO SNAKES MAY BE PRESENT ON THIS SITE!!!

IF YOU SEE A LIVE EASTERN INDIGO SNAKE ON THE SITE:

- Cease clearing activities and allow the eastern indigo snake sufficient time to move away from the site without interference.
- Personnel must NOT attempt to touch or handle snake due to protected status.
- Take photographs of the snake, if possible, for identification and documentation purposes.
- Immediately notify supervisor or the applicant's designated agent, **and** the appropriate U.S. Fish and Wildlife Service (USFWS) office, with the location information and condition of the snake.
- If the snake is located in a vicinity where continuation of the clearing or construction activities will cause harm to the snake, the activities must halt until such time that a representative of the USFWS returns the call (within one day) with further guidance as to when activities may resume.

IF YOU SEE A DEAD EASTERN INDIGO SNAKE ON THE SITE:

- Cease clearing activities and immediately notify supervisor or the applicant's designated agent, **and** the appropriate USFWS office, with the location information and condition of the snake.
- Take photographs of the snake, if possible, for identification and documentation purposes.
- Thoroughly soak the dead snake in water and then freeze the specimen. The appropriate wildlife agency will retrieve the dead snake.

USFWS Florida Field Offices to be contacted if a live or dead eastern indigo snake is encountered:

North Florida Field Office – (904) 731-3336
Panama City Field Office – (850) 769-0552
South Florida Field Office – (772) 562-3909

Killing, harming, or harassing indigo snakes is strictly prohibited and punishable under State and Federal Law.

DESCRIPTION: The eastern indigo snake is one of the largest non-venomous snakes in North America, with individuals often reaching up to 8 feet in length. They derive their name from the glossy, blue-black color of their scales above and uniformly slate blue below. Frequently, they have orange to coral reddish coloration in the throat area, yet some specimens have been reported to only have cream coloration on the throat. These snakes are not typically aggressive and will attempt to crawl away when disturbed. Though indigo snakes rarely bite, they should NOT be handled.

SIMILAR SNAKES: The black racer is the only other solid black snake resembling the eastern indigo snake. However, black racers have a white or cream chin, thinner bodies, and WILL BITE if handled.

LIFE HISTORY: The eastern indigo snake occurs in a wide variety of terrestrial habitat types throughout Florida. Although they have a preference for uplands, they also utilize some wetlands and agricultural areas. Eastern indigo snakes will often seek shelter inside gopher tortoise burrows and other below- and above-ground refugia, such as other animal burrows, stumps, roots, and debris piles. Females may lay from 4 - 12 white eggs as early as April through June, with young hatching in late July through October.

PROTECTION: The eastern indigo snake is classified as a Threatened species by both the USFWS and the Florida Fish and Wildlife Conservation Commission. "Taking" of eastern indigo snakes is prohibited by the Endangered Species Act without a permit. "Take" is defined by the USFWS as an attempt to kill, harm, harass, pursue, hunt, shoot, wound, trap, capture, collect, or engage in any such conduct. Penalties include a maximum fine of $25,000 for civil violations and up to $50,000 and/or imprisonment for criminal offenses, if convicted.

Only individuals currently authorized through an issued Incidental Take Statement in association with a USFWS Biological Opinion, or by a Section 10(a)(1)(A) permit issued by the USFWS, to handle an eastern indigo snake are allowed to do so.

August 12, 2013

IF YOU SEE A <u>LIVE</u> EASTERN INDIGO SNAKE ON THE SITE:

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- Take photographs of the snake, if possible, for identification and documentation purposes.
- Immediately notify supervisor or the applicant's designated agent, **and** the appropriate U.S. Fish and Wildlife Service (USFWS) office, with the location information and condition of the snake.
- If the snake is located in a vicinity where continuation of the clearing or construction activities will cause harm to the snake, the activities must halt until such time that a representative of the USFWS returns the call (within one day) with further guidance as to when activities may resume.

IF YOU SEE A <u>DEAD</u> EASTERN INDIGO SNAKE ON THE SITE:

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SIMILAR SNAKES: The black racer is the only other solid black snake resembling the eastern indigo snake. However, black racers have a white or cream chin, thinner bodies, and WILL BITE if handled.

LIFE HISTORY: The eastern indigo snake occurs in a wide variety of terrestrial habitat types throughout Florida. Although they have a preference for uplands, they also utilize some wetlands and agricultural areas. Eastern indigo snakes will often seek shelter inside gopher tortoise burrows and other below- and above-ground refugia, such as other animal burrows, stumps, roots, and debris piles. Females may lay from 4 - 12 white eggs as early as April through June, with young hatching in late July through October.

Killing, harming, or harassing indigo snakes is strictly prohibited and punishable under State and Federal Law.

Only individuals currently authorized through an issued Incidental Take Statement in association with a USFWS Biological Opinion, or by a Section 10(a)(1)(A) permit issued by the USFWS, to handle an eastern indigo snake are allowed to do so.

LEGAL STATUS: The eastern indigo snake is classified as a Threatened species by both the USFWS and the Florida Fish and Wildlife Conservation Commission. "Taking" of eastern indigo snakes is prohibited by the Endangered Species Act without a permit. "Take" is defined by the USFWS as an attempt to kill, harm, harass, pursue, hunt, shoot, wound, trap, capture, collect, or engage in any such conduct. Penalties include a maximum fine of $25,000 for civil violations and up to $50,000 and/or imprisonment for criminal offenses, if convicted.

August 12, 2013

ATTENTION:

THREATENED EASTERN INDIGO SNAKES MAY BE PRESENT ON THIS SITE!!!

Please read the following information provided by the U.S. Fish and Wildlife Service to become familiar with standard protection measures for the eastern indigo snake.