

Appendix A Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI)



US Army Corps
of Engineers
Kansas City District

U.S. Army Corps of Engineers - Kansas City District

**NEPA Review
Environmental Assessment & Draft Finding of No Significant Impact**

**TUTTLE CREEK LAKE MASTER PLAN,
KANSAS RIVER BASIN
BIG BLUE RIVER**

Riley, Pottawatomie, and Marshall Counties, Kansas

August 2019



DEPARTMENT OF THE ARMY
KANSAS CITY DISTRICT, CORPS OF ENGINEERS
635 FEDERAL BUILDING
KANSAS CITY, MISSOURI 64106-2824

Draft Finding of No Significant Impact

TUTTLE CREEK LAKE MASTER PLAN KANSAS RIVER BASIN BIG BLUE RIVER August 2019

Summary

The U.S. Army Corps of Engineers, Kansas City District (Corps) proposes to revise the Tuttle Creek Lake Master Plan. This revision would replace the Design Memorandum No. 18C, Master Plan for Tuttle Creek Lake dated September 1984. The Master Plan is the strategic land-use management document that guides the comprehensive management and development of all project recreational, natural, and cultural resources throughout the life of the water resource project. The Master Plan guides the efficient and cost-effective management, development, and use of project lands. It is a vital tool for the responsible stewardship and sustainability of project resources for the benefit of present and future generations.

This revision brings the Master Plan in compliance with the current guidance for format and contents as outlined in Engineering Regulation/Engineer Pamphlet 1130-2-550, dated 30 January 2013.

Alternatives

Alternative 1 - No-Action Alternative: Under the No-Action Alternative the current Master Plan dated September 1984 would remain in place. Management of the project lands and waters would remain unchanged.

Alternative 2 - Acceptance of Revised Master Plan (Recommended Alternative): This alternative is to accept the management plan as written. Some of the proposed changes in this revision are minor terminology changes for land-use designations to be in compliance with Engineering Regulation/Engineer Pamphlet 1130-2-550 (DATED 30 January 2013). Proposed changes in facilities or management of lands are detailed in Chapter 5 of the main Master Plan document and Section 2.2 of the Environmental Assessment (EA):

Summary of Environmental Impacts

The Recommended Alternative will help to modernize aging facilities, provide additional amenities, and increase visitor safety. The Recommended Alternative is not likely to adversely impact any federally listed threatened or endangered species or their habitat. All projects that require additional National Environmental Protection Act (NEPA) evaluation for project impacts on threatened and endangered species have been identified in Section 2.2 of this EA. Clearing activities should be timed to best avoid threatened and endangered species and a survey of the project area should be completed by a qualified biologist prior to any clearing activities. Construction of new facilities would cause minor loss to wildlife habitat within the existing park footprint. There may be temporary localized impacts to water quality during construction of many of the identified measures. Best Management Practices (BMPs) will be utilized to minimize impacts on soils and water quality. There will likely be no adverse impact to cultural or historic resources if measures proposed by the State Historic Preservation Officer are followed.

Mitigation Measures

The Master Plan is programmatic in nature and references project needs only in a programmatic manner, however it is anticipated that through use of BMPs and site selection, impacts requiring mitigation can be avoided in those projects not identified by a "***" in the Actions Table. Site specific actions and infrastructure projects with "***" will require individual site-specific analysis to determine if any mitigation may be warranted.

Public Availability

Prior to a decision on whether to prepare an Environmental Impact Statement, the Corps is circulating a Notice of Availability of this EA and Draft Finding of No Significant Impact (FONSI), August 28, 2019, with a thirty-day comment period ending on September 27, 2019, to the public and resource agencies. The Notice of Availability is to inform these individuals that the EA and Draft FONSI are available on the Corps webpage or could request a hard copy of the EA and Draft FONSI in order to provide comment. Two public meetings will be held on September 5, 2019. The first is between 11:00am to 1:00pm at the Randolph VFW Hall, 202 E. Randolph St, Randolph, KS

66554. The second meeting will be held between 4:00pm and 6:00pm at the Manhattan Fire Department. The fire department is located at 2000 Denison Ave., Manhattan, KS 66502.

Conclusion

After evaluating the anticipated environmental, economic, and social effects of the proposed activity, it is my determination that approval of the proposed. Master Plan update does not constitute a major federal action that would significantly affect the quality of the human environment; therefore, preparation of an Environmental Impact Statement is not required.

Date: _____

William C. Hannan, Jr.
Colonel, Corps of Engineers
District Commander

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1.0 Introduction

The U.S. Army Corps of Engineers - Kansas City District (Corps), proposes to revise the Tuttle Creek Lake Master Plan. Revisions include changes to the land use category nomenclature and document content and format to meet current Master Plan Guidance (ER/EC 1130-2-550). The revision also includes an update of management objectives, management compartment boundary updates, and a list of current facility needs or projects proposed by lessees. This EA provides the necessary information to fully address the potential environmental impacts of the proposed project as required under the NEPA of 1969, as amended (42 U.S. Code [USC] 4321 et seq.); the President's Council of Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations [CFR] 1500 - 1508); and Corps ER 200-2-2 (33 CFR 230) (Corps, 2008).

1.1 Purpose and Need for Action

The purpose of this project is to revise the Master Plan to respond to current and projected future recreational needs and to meet the content and format of the most recent Master Plan regulation/guidance found in Engineering Regulation/Engineer Pamphlet 1130-2-550 (dated 30 January 2013).

The project is currently using a Master Plan dated from September 1984. The recreational trends and the population estimates detailed in that Master Plan are outdated and in need of revision.

1.2 Project Location

Tuttle Creek Lake dam is located 12.3 miles upstream of the confluence of the Big Blue and Kansas Rivers. It is approximately 6 miles north of Manhattan, Kansas. Tuttle Creek Lake is located primarily in Riley and Pottawatomie Counties with the far upper end of the lake extending into Marshall County, Kansas. Towns in the vicinity of the project include Manhattan, Riley, Leonardville, Randolph, Olsburg, Fostoria, Blue Rapids, and Frankfort. The area surrounding Tuttle Creek Lake is served by state highways and a county road system. The dam crosses the Big Blue River at river mile 12.3

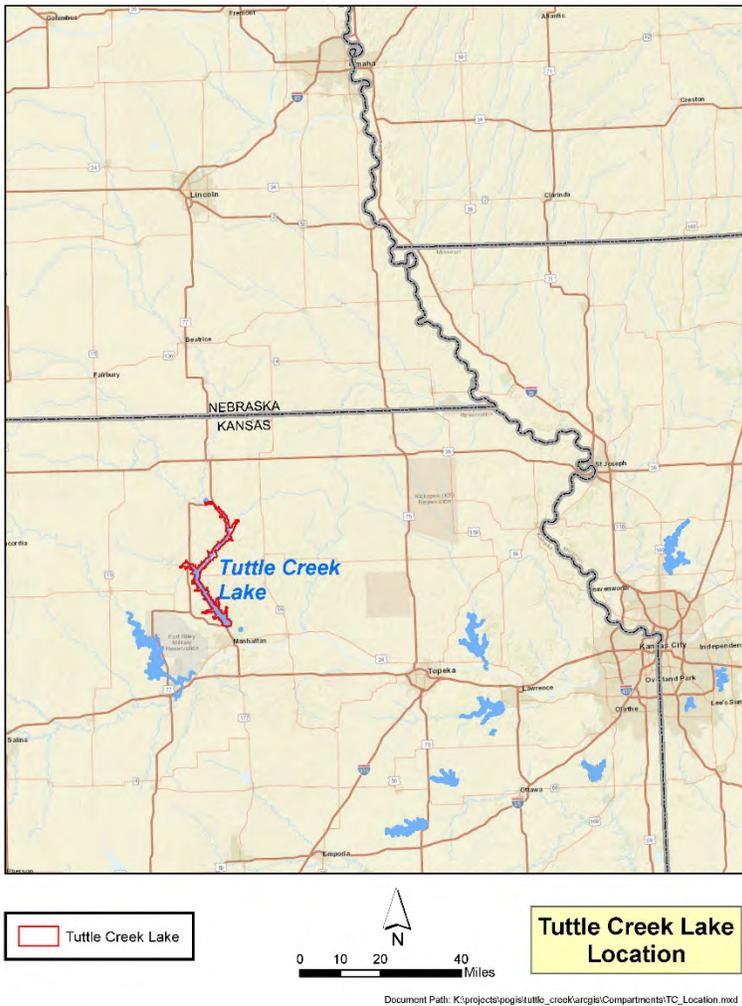


Figure 1. General Location Map

2.0 Recommended Plan and Alternatives

2.1 Alternative 1 - No-Action Alternative:

Under the No-Action Alternative the current Master Plan dated September 1984 would remain in place. Management of the project lands and waters would remain unchanged.

2.2 Alternative 2 – Accept Revised Master Plan (Recommended Alternative):

This alternative would accept the management plan as written. The proposed changes in this revision are minor terminology changes for land-use designations to be in compliance with Engineering Regulation/Engineer Pamphlet 1130-2-550 (DATED 30 January 2013). Proposed changes in facilities or management of lands are detailed in Chapter 5 of the Master Plan document and in the text below: Those projects that will require additional NEPA and Cultural Resource evaluation will be identified with “***”. All projects will need to have a review to determine if mitigation is warranted.

Actions	
Actions	Location(s)
Trails	
Canyon Trail	Unit 1-Proj Ops(Emergency Spillway)
Renovate Blue River Trail (new wayside panels, expansion of trail to elevated boardwalk exploring old channel wetlands, refurb and improve spur trail to wildlife viewing platform, Link to River Pond (unit 3) and/or Manhattan trail system)	Unit 2-Outlet Park
Expand Western Heritage Trail to link to City of Manhattan trail system	Unit 3-River Pond PUA
***Reestablish East Lakeshore trail system connecting Carnahan, Garrison, Randolph, and other use areas	Unit 14-Carnahan Creek, Unit 15-Dry Creek, Unit 16-Garrison, Unit 17-Warpole, Unit 18 - Randolph PUA
Integration of crown path/road into any proposed trail system (improve visitor control measures to protect operation structures as needed)	Unit 20-Blue Rapids Levee
***Expansion of existing trail system with additional trails and amenities.	Unit 21-Fancy Creek PUA
ORV Vehicle Trail Renovation (filling and grading trails and utilizing natural barriers to consolidate traffic to a single trail corridor)	Unit 23-ORV Area PUA
Trail System (installation of a stacked loop non-motorized trail system providing one hour to full day hikes, connection to park facilities, and interpretive messages)	Unit 29-Stockdale Park PUA
Trail System (installation of a stacked loop non-motorized trail system providing one hour to full day hikes, connection to park facilities, and interpretive messages)	Unit 34-Tuttle Creek Cove PUA
Trail System (Renovate existing trail to meet sustainable trail design requirements and achieve interpretive objectives including new wayside panels. Expand trail to include stacked loops further exploring gully, ridge tops, and hillside throughout the unit. Consider linking to City of Manhattan trail systems)	Unit 36-Observation Point PUA

Play Grounds	
Install additional Playgrounds and/or equipment	Unit 2-Outlet Park
***Install a wet playground/Splash pad and support amenities (parking, pathways, benches, shade canopies, lighting, etc.)	Unit 2-Outlet Park
Area of Mowed Turf (Multi-purpose use such as field sports, open play, and overflow parking)	Unit 2-Outlet Park
Installation of universally accessible playground, fall protection, delineation, walkways, and seating	Unit 29-Stockdale Park PUA
Picnic Sites/Shelters	
Improve existing and add additional single double table picnic sites (install delineation, pedestal grills, accessible pads and pathways)	Unit 2-Outlet Park
***Pheil Creek Shelter Area - Replace existing shelters with modern construction (Renovate associated use areas -parking, pathways, water & electrical, restrooms playgrounds), Construct enclosed multi-use pavilion and adjoining outdoor picnic area	Unit 2-Outlet Park
***Construct Enclosed multi-purpose group pavilion w/ climate controlled meeting space, kitchen, bathrooms and adjoining outdoor picnic area	Unit 3-River Pond PUA
Install multiple delineated picnic sites (hardened pads and walkways)	Unit 7-Spillway Cycle Area PUA
***Hardened and delineated family picnic sites, group shelter area, and information kiosk	Unit 23-ORV Area PUA
Renovate Picnic Shelter (renovate picnic shelter to include larger modern shelter with utilities, new tables, grill space, and landscape/shade plantings)	Unit 36-Observation Point PUA
Removal/Rehab	
Replace Pheil Creek Shelters (see picnic/sites above)	Unit 2-Outlet Park
Removal of old disused park facilities and restore area to native prairie	Unit 16-Garrison
Remove old showerhouse and remediate site.	Unit 18-Randolph PUA

Renovate and repurpose old water plant	Unit 18-Randolph PUA
Replacement of legacy shower house, renovation of dump station	Unit 21-Fancy Creek PUA
Demolish legacy roads and parking and restore to native habitat	Unit 21-Fancy Creek PUA
Trail Closure (permanently close the trail by installing robust physical barriers to prevent illegal off-roading)	Unit 22-Bridgeview Heights
Restoration of Legacy Facilities (Remove ramp, parking area, and access road and restore to native vegetation) Renovation/modification of existing facilities to establish land access point (No Ramp)	Unit 24-White Canyon
Renovate/modify existing facilities to maintain minimal roads and parking, and improve Baldwin Creek Road terminus with small parking lot	Unit 25-Baldwin Creek
Removal of legacy facilities (Remove ramp, hilltop roads and parking and restore area to native vegetation)	Unit 25-Baldwin Creek
Removal of Legacy Facilities (remove remaining roadways associated with YOC area and restore native vegetation)	Unit 29-Stockdale Park PUA
Eventual Removal and Remediation of Main Ramp (Removal of ramp and excess parking, and remediation of the area)	Unit 29-Stockdale Park PUA
Lakeland Remediation (Remove access road, parking, the ramp, and remediate)	Unit 31-South Mill Cove
Removal of Point Shelter and construct overflow parking and observation area for quiet reflection.	Unit 34-Tuttle Creek Cove PUA
Removal and Remediation of legacy roadbed	Unit 35-Thompson Divisions
Renovate overlook (Renovate overlook to include larger modern structure with integrated interpretive design features)	Unit 36-Observation Point PUA
Fishing Piers/Hunting Access	
Accessible Access Fishing Pier on Outlet Channel	Unit 2-Outlet Park
***Construct paths, piers, and/or docks within Marina Cove	Unit 10-Cedar Ridge PUA
Improve Youth and disabled hunter access to marshland	Unit 19 Wildlife Area

***Establish access roads, parking, walkways, picnic sites, fishing piers, mooring posts, etc. in the vicinity of the current, undesignated vessel staging area	Unit 29-Stockdale Park PUA
Renovate and expand courtesy dock	Unit 32-Yacht Club
Bank Stabilization	
Reestablish lost land and streambank stabilization	Unit 2-Outlet Park
Construct breakwater for Inlet	Unit 10-Cedar Ridge PUA
***Designated Stream Crossings (Install culverts and hardened stream crossings to concentrate off-road traffic and limit impacts of stream bed riding)	Unit 23-ORV Area PUA
Roads, Parking, etc.	
***Bypass (Bridge or otherwise) for uninterrupted access to East Outlet and River Pond	Unit 2-Outlet Park
Off-road vehicle Barriers (install a physical barrier (gate, rocks, tree row, etc.) to control unauthorized vehicle use	Unit 5-East Dyer Road
Better define and control land access (physical barriers, hardening or parking area, and information board/signs)	Unit 11-McIntyre Creek
***Land access Point (Improve roads, trails, and/or parking to provide managed lakeshore (natural beach) access consistent with environmental stewardship goals	Unit 16-Garrison
***Establish additional roads/trails, parking, barriers, and signage to improve and control public access	Unit 19-Wildlife Area
***Emergency Access Roads (Construction of gravel roads providing access to features and obstacles with the highest incidents of injury, and improvements to existing landing zones (delineation, signage, etc.))	Unit 23-ORV Area PUA
Installation of Robust physical barriers to prevent unauthorized shoreline trails	Unit 23-ORV Area PUA
Install physical barriers to control unauthorized vehicle traffic (shoreline riding)	Unit 28-Blue River Hills

Provide improvements to better define and control land access at the terminus of West 59th Street (Physical barriers, hardened parking area, and information board/signs)	Unit 31-South Mill Cove
Expand Parking and Storage (Expand parking and storage facilities, to incl. paved surfacing)	Unit 32-Yacht Club
Overflow parking (establish roadside overflow parking (lakeshore and point loops) complete with anchors for securing trailers)	Unit 34-Tuttle Creek Cove PUA
Delineate parking area at the entrance with robust physical barriers and maintaining acreage as walk-in only	Unit 35-Thompson Divisions
Buildings	
***Visitor Center and Admin Complex (Construct multi-purpose facility with new admin offices, visitor center, exhibits and outdoor interpretive space)	Unit 3-River Pond PUA
Renovate Existing Maintenance compound and repurpose old office	Unit 3-River Pond PUA
Large Showerhouse (to meet River Pond camping area demand)	Unit 3-River Pond PUA
North Area - Construct additional overnight lodging facilities	Unit 10-Cedar Ridge PUA
Provide additional, secured storage locations throughout unit	Unit 19-Wildlife Area
Construction of two-stall vault toilet	Unit 23-ORV Area PUA
Clubhouse (construct a multi-purpose clubhouse inclusive of water, electrical, and sewer hookups)	Unit 32-Yacht Club
Utilities	
***Install additional sewage lagoons	Unit 3-River Pond PUA
Install on-site sewage at approximately 30 additional campsites	Unit 3-River Pond PUA
Expand sewer hookups for campsite 30-50 (See above)	Unit 3-River Pond PUA
Expand electrical service throughout campground	Unit 3-River Pond PUA
Add electric, water, and sewer service to camping area (with dump station)	Unit 10-Cedar Ridge PUA

Addition of other waterborne sanitary facilities, and water utility campsites	Unit 21-Fancy Creek
Install water borne restroom inclusive of waste management system	Unit 32-Yacht Club
Picnic renovation (Connect water and electric and install a small playground to complement the existing shelter)	Unit 34-Tuttle Creek Cove PUA
Campsites	
Renovate Campsites 711-912 to accommodate modern campers (green space, living and camping pads, and utility hookups)	Unit 3-River Pond PUA
Renovate and add additional campsites to accommodate modern campers (green space, living and camping pads, and utility hookups) Add horse-friendly features into park	Unit 18 - Randolph PUA
***Install Park Host/Custodian campsite complete with full hookups	Unit 23-ORV Area PUA
***Renovate Group Camp (renovation of hilltop camping loop road, construction of new full hookup campsites, vault toilet, picnic shelter, and parking areas)	Unit 29-Stockdale Park PUA
***Construct a small number of modern campsites to accommodate limited overnight use	Unit 32-Yacht Club
Campsite Renovations (Renovate Loops 1 and 2 with water/electric hookups, elevated and delineated site and living pads, and shelter tops)	Unit 34-Tuttle Creek Cove PUA
Vegetation Management	
hay lease to control woody vegetation in grasslands	Unit 6-Bloomington Buffer South
Continue Prescribed burns	Unit 9-Marina Road (9a) and Washington Heights (9b)
Restore Native Prairie	Unit 16-Garrison
Marsh Renovations (improve control structures (to include electric utility), seasonal inundation, and vegetation)	Unit 19-Wildlife Area
***Marsh Expansion (construct additional and expand existing marshes)	Unit 19-Wildlife Area

Prairie Restoration (Implement aggressive cedar tree removal and management tools (incl. prescribed burning) to restore tallgrass prairie on hilltop acreage)	Unit 25-Baldwin Creek
Grassland Management (Implement efforts to maintain native tallgrass prairie stands thru use of prescribed burning, and additional agricultural leases for haying and grazing)	Unit 33-Tuttle Creek
Habitat Demonstration Area (Establish test plots to study and interpret the use of prescribed fire as a management tool for the tallgrass prairies)	Unit 36-Observation Point PUA
Boat Ramps	
Boat Ramp Renovation (expand and repave ramp, enlarge and reconfigure parking area, add security lighting)	Unit 10-Cedar Ridge PUA
Renovate boat Ramp parking lot to facilitate high water use patterns	Unit 18-Randolph PUA
***Construct additional boat ramps (incl. new ramp for eventual cut-off (ox-bow) of Timber Creek/Red Bud boat ramp	Unit 19-Wildlife Area
Renovation of Mill Cove Ramp (removal of pier and launch lanes widened, paving of entrance road and parking area)	Unit 29-Stockdale Park PUA
***Expand existing ramp to three lanes to accommodate large boats and additional traffic associated with eventual siltation and loss of upstream launch points	Unit 34-Tuttle Creek Cove PUA
Swim Beaches	
***Construct a designated swim beach	Unit 10-Cedar Ridge PUA
***Swim Beach Renovation (installation of submerged beach mat, universally accessible walkways, and outdoor shower) Renovation would also include replacement of existing playground and addition of visitor amenities such as picnic sites and shelter tops	Unit 34-Tuttle Creek Cove PUA
Other	

Expand Nihart Archery Range to include a walk-through 3-D archery course	Unit 3-River Pond PUA
Encourage volunteer projects (nesting boxes, brush piles, tree and shrub planting, etc.)	Unit 6-Bloomington Buffer South
***Range Renovation and expansion (renovate existing baffles, berms, and other structures to meet modern standards, expand range to include shotgun and archery lanes)	Unit 21-Fancy Creek PUA
***Install a technical riding course for off-road vehicles near Lakeview Camp Loop (Install off-road friendly design into existing campground)	Unit 21-Fancy Creek PUA

3.0 Affected Environment

The project area is all the project lands owned and leased by the Corps at the Tuttle Creek Lake project located in Riley, Potawatomie, and Marshall Counties, Kansas. Tuttle Creek Lake is comprised of 36 management compartments totaling approximately 23,457 acres. A detailed description of the affected environment can be found in the Tuttle Creek Lake Master Plan main document.

During the release of this draft document, a copy will be made available for each of the resource agencies to view and comment.

3.1 Geology/Soils

The land surrounding Tuttle Creek Lake is situated in the northern portion of the Flint Hills, an area characterized by flat-topped hills with long, steep slopes, limestone rock outcrops, and well-defined stream channels. Relief between the stream floodplains and the hilltops adjacent to the lake averages about 300 feet. Much of the land is too stony to cultivate.

The project is situated in the attenuated drift border, a region which was glaciated and is covered in places with glacial till and outwash. From about Green Randolph Rd./K-16 Bridge north, glacial drift forms a discontinuous mantle, attaining a maximum thickness of 300 feet. South of Randolph Bridge, alluvial deposits range from 10 to 50 feet deep. Bedrock consists of a sequence of cherty limestones and shales.

Upland soils are commonly very shallow, stony and gravelly. They are developed from limestone and limy shales and occupy slopes of 7% to 20% or more. The topsoils are silty clay loams three to five inches thick. The unweathered parent material is usually encountered at eight to 20 inches.

Lower slope and bottomland soils are moderately deep, dark, friable, silty clay loams five to 10 inches thick. They are derived from loess, limestone, and limy shales. The

subsoils are silty clay loams found to a depth of 38 inches. Under normal erosion conditions, exposed topsoil may be totally displaced.

Mineral resources within the project area include sand, gravel, crushed rock, gypsum and very limited oil deposits. Sand, gravel, and limestone are also extracted at several locations within the project's three county area. No known significant deposits of oil, gas or other important minerals are on project lands, and there have been no requests for oil or gas leasing at Tuttle Creek Lake.

3.2 Water Quality

The lack of sunlight penetration due to turbidity and suspended sediments in Tuttle Creek Lake limits plant/algae growth and other measures of productivity. Tuttle Creek Lake was listed on the Kansas 303(d) list of impaired waters for the impairment of accelerated eutrophication or an excess of nutrients available for plant and algae growth, as well as siltation and has a Total Maximum Daily Load for phosphorus and sedimentation load reduction since 2000. The Environmental Protection Agency and Kansas Department of Health and Environment are working with water quality partners and landowners to focus watershed conservation efforts on priority or target areas in the watershed to reduce nutrient and sediment runoff to meet water quality goals for the upper Big Blue River and Tuttle Creek Lake.

3.3 Fish & Wildlife

Much of the remaining fee land around the lake is managed as either low-density recreation or wildlife-management lands. Kansas Department of Wildlife, Parks and Tourism (KDWPT) has a Fish and Wildlife License to manage approximately 17,713 acres to benefit wildlife. Most of this land's cover type is savanna, forest/woodland, grassland, old field, and cropland cover types.

Appendix C of the Master Plan lists flora and fauna found in and around the Tuttle Creek Lake project lands. Species will vary in any particular area due to a number of factors such as cover type, topography, access to water, and available food sources. Lands licensed to KDWPT are managed primarily for game species such as white-tailed deer, turkey, and quail. However, other non-game species benefit as well from their management practices.

Fisheries habitat is managed jointly by the Corps and KDWPT. Seven fish attractors (feeders) are maintained by KDWPT in various areas of the lake.

3.4 Wetlands and other Waters of the U.S.

Much of the wetland systems classified at the project are associated with the lake and the tributaries feeding into the lake. Classification of the wetlands was derived from the USFWS Classification of Wetlands and Deepwater Habitats of the United States. There are approximately 491 acres of emergent wetlands, 12,367 acres lacustrine which

would include most of the lake area, 152.8 acres of palustrine wetlands, and 62.2 acres of riverine wetlands

3.5 Threatened or Endangered Species

A table of federally listed species and their state status believed to occupy Marshall, Pottawatomie and/or Riley County is found in Table 1.

Table 1 Federally listed Threatened and Endangered Species and their State Status Riley and/or Pottawatomie and/or Marshall Counties, Kansas		
Name	State Status	Federal Status
Northern Long-Eared Bat (<i>Myotis septentrionalis</i>)		Threatened
Least Tern (<i>Sterna antillarum</i>)	Endangered	Endangered
Piping Plover (<i>Charadrius melodus</i>)		Threatened
Topeka Shiner (<i>Notropis topeka</i>)	Threatened	Endangered
Species list obtained from U.S. Fish & Wildlife Service's Information for Planning and Consultation (IPaC) website.		

The Topeka shiners occur primarily in small prairie (or former prairie) streams in pools containing clear, clean water. Most Topeka shiner streams are perennial (flow year-round), but some are small enough to stop flowing during dry summer months. In these circumstances, water levels must be maintained by groundwater seepage for the fish to survive. Topeka shiner streams generally have clean gravel, rock, or sand bottoms. Interior least terns nest on sparsely-vegetated sandbars. The northern long-eared bats use caves and mines as winter hibernacula. During summer northern long-eared bats roost singly or in colonies underneath bark, or in crevices of both live and dead trees. It has also been found, rarely, roosting in structures like barns and sheds. A copy of this report will be sent to the U.S. Fish and Wildlife Service (USFWS) and other resource agencies.

3.6 Socioeconomics

The population of the State of Kansas is over 2.9 million people. According to the Kansas State Comprehensive Outdoor Recreation Plan, the population density in Kansas has steadily shifted from rural agricultural regions to urban areas. The overall

population of Kansas has only grown 2.1% from 2010 to 2015, which is lagging behind the National growth projection of about 4.1% during that same time period.

The 2014 U.S. census data reports the population for Riley and Pottawatomie counties is 98,000. This area is unique in that it is home to two large transient populations associated with Kansas State University and the Fort Riley military installation (each with a populace of 25,000). Manhattan, located just five miles south of the dam, is the largest city in a 30-mile radius, with a population of 56,000.

In general, when compared to the rest of the state, this population skews younger with a larger than average influx of young families and adults (18-25 years of age) over the past 15+ years. Growth of Latino populations continues to be moderately high.

Economic growth is very strong as compared with the rest of the state and the Midwest as indicated by high rates of employment and earnings. Not surprisingly both Pottawatomie and Riley counties are ranked second and third in the state for highest growth rates (6.0% and 5.7%, respectively).

The money spent by visitors to Corps lakes on trip expenses adds to the local and national economies by supporting jobs and generating income. Visitor spending represents a sizable component of the economy in many communities around Corps lakes. Tuttle Creek Lake Project contributed the below to the economy (USACE 2017):

321,602 visits per year (Fiscal Year (FY) 2016) resulted in:

- \$8,089,000 in visitor spending within 30 miles of the lake
- \$4,898,990 in sales within 30 miles of the lake
- 82 jobs within 30 miles of the lake
- \$1,919,350 in labor income within 30 miles of the lake
- \$2,589,972 in value added within 30 miles of the lake

With multiplier effect, visitor trip spending resulted in:

- \$7,235,121 in total sales
- 101 jobs
- \$2,516,338 in labor income
- \$3,757,688 in value added (wages & salaries, payroll benefits, profits, rents, and indirect business taxes)

Cumulative damages prevented from project implementation through FY17 totaled \$8,344,965,000.

3.7 Noise

Ambient noise levels around the lake depend on many factors. Levels are low during the slow recreation season and will increase in intensity during peak recreation times such as holiday weekends during the summer months. As you move away from these high-density recreation areas to the low-density recreation and wildlife management lands ambient noise decreases.

3.8 Health and Safety

Safeguarding health and safety is paramount for Tuttle Creek operations. Workplace injuries have occurred over the past 50+ year history of the project (no fatalities), but are comparable to agency and national averages. There have been no reportable staff injuries (nor fatalities) in the past year. Public injuries and fatalities have occurred at the project. Causal factors are primarily recreational pursuits (most commonly water-related), medical illnesses, and suicide. There was one reportable fatality in 2018, and no reportable injuries.

Part of insuring health and safety for all users is universal access. The vast majority of facilities were constructed prior to civil rights laws protecting persons with disabilities and do not meet current universal access standards. Barriers continue to be brought into compliance as new facilities are added or renovated (including those in outgranted areas).

3.9 Cultural Resources

Tuttle Creek Lake has approximately 33,847 acres of fee-owned lands, approximately 10,900 acres of which are typically inundated by the reservoir. All told, approximately 18% of the total acreage has been surveyed to identify archaeological sites, although a large portion of this survey was insufficient to effectively determine the absence of buried cultural resources sites (as it consisted of only visual surface inspection). The Native American tribes that have interest in projects in this area include: The Iowa Tribe of Kansas and Nebraska, The Sac and Fox Tribe of Missouri in Kansas and Nebraska, Prairie Band Potawatomi, Kickapoo Tribe in Kansas, Delaware Tribe of Indians, Kaw Nation, Otoe-Missouria Tribe of Indians, Osage Nation of Oklahoma, and Citizen Potawatomie Nation.

Previous surveys identified 220 discreet cultural resources sites on fee-owned lands, including archaeological sites, historic farmsteads, historic schoolhouses and bridges. There are two sites that have been listed on the National Register of Historic Places (NRHP) and eight other sites have been formally determined eligible for listing.

The 2001 Tuttle Creek Lake Historic Properties Management Plan (HPMP) states that four sites have been formally declared not-eligible for listing on the National Register of Historic Places. Additionally, the HPMP lists 40 sites above the multipurpose pool that are ineligible and 27 sites on easement lands where no further work was recommended by the reporting archeologist. The 2001 HPMP states that 70 sites are inundated, but a site simply being inundated is not sufficient to dismiss a site as having potential to be listed on the NRHP, so these findings will also be reviewed during any future HPMP update. That leaves 139 sites that have not been evaluated (either sufficiently or insufficiently) for listing on the NRHP.

4.0 Environmental Consequences (Impacts)

This Master Plan and EA identifies items that have been proposed by the management agencies and concessionaires that they would like to build over the next approximately 20 years. In many cases these items are just conceptual at this point and may never be built for a variety of reasons. Items that will need additional NEPA and cultural resource assessments are marked in the above table with “***”. The impacts from those projects are mentioned in the text, however they will not be environmentally and culturally cleared with this FONSI. The following table and text evaluates the impacts of the groups of actions proposed to be constructed in this Master Plan on the various resource categories.

U.S. Army Corps of Engineers - Kansas City District

Projects	Geology/Soils	Water Quality	Fish and Wildlife	Wetlands and other Waters of the US	T&E Species	Socioeconomics	Noise	Health and Safety	Cultural Resources
Trails	Localized compaction of soil in project footprint. Existing trail improvements would help alleviate existing erosion problems.	Improvement to water quality in ORV area by consolidating and hardening stream crossings.	Some permanent loss of habitat (incl. Tallgrass Prairie).	Some long-term disturbance to wetlands in the Blue River Trail and possibly East Lakeshore trail. Boardwalks will be utilized in all wetland areas.	Some selective clearing of smaller trees may affect bat species. Tree clearing would be limited to winter months to avoid impacting bat species.	Long-term net positive impact from bringing in more visitors	Some localized noise increases from visitors utilizing trails.	Increased safety from having upgraded trail surface. Could reduce vehicular traffic by providing an alternative means of transportation.	Potential localized impact to cultural resource
Playgrounds	Localized compaction of soil in the project footprint and immediately surrounding area, however, all but Stockdale would be in previously disturbed sites	Minimal impact to water quality. Wet play area would use municipal water source that would return to municipal waste water system	Minor impacts anticipated	No Impacts to wetlands or other Waters of the US	Some selective clearing of smaller trees may affect bat species. Tree clearing would be limited to winter months to avoid impacting bat species.	Helps meet localized demands for outdoor recreation.	Some localized impact to noise	Would meet current design standards for health and safety to include fall protection. Wet playground may have minor adverse impact from slippery surfaces.	Most areas are on previously disturbed sites. A phase I background survey would be completed at each site prior to construction.
Picnic Site/Shelters	Localized compaction of soil in the project footprint and immediately surrounding area	Minimal impact to water quality. All water utilized would be municipal water and return to licensed wastewater facility.	Minimal long-term adverse impact if selective tree clearing is needed	No wetland impacts anticipated	If tree clearing is needed there may be adverse impact to T&E bat species. Shelters could provide some roost habitat	Meet localized demand for outdoor recreation as well as provide low-cost meeting space.	Some localized impact to noise	Would meet current ADA requirements and Corps standards. This would provide for safer access to persons with disabilities.	Most areas are on previously disturbed sites. A phase I background survey would be completed at each site prior to construction.
Removal/Rehab	Long-term positive impact to geology/soils by removing hardened structures and allowing natural soil processes to resume	Long-term positive impact to water quality by retuning the areas to natural or more natural habitats. Reduction in runoff.	Long-term positive benefit to fish and wildlife from returning areas to natural habitats. Decrease in habitat fragmentation.	Net positive benefit to waters of the US by removing old boat ramps and allowing the natural streambank to recover	Some potential for increased habitat due to restoring some natural habitats including some forested areas.	Minimal impacts to Socioeconomic resources	Positive benefit to noise from the removal of recreation features and restoration to natural habitat.	Reduction of illegal off-road vehicle usage could lead to increased safety	Reduction in off-road access could lead to a benefit to cultural sites by reducing illegal collection from cultural sites.

Projects	Geology/Soils	Water Quality	Fish and Wildlife	Wetlands and other Waters of the US	T&E Species	Socioeconomics	Noise	Health and Safety	Cultural Resources
Fishing Piers/Hunting Access	Localized impact from construction related activities and feature footprints.	Minor short-term adverse construction related activities (potential runoff). Potential for water quality issues from users depositing things in the water	Short-term disturbance to fish and wildlife from construction activities. Increase in access to consumptive uses of fish and wildlife.	Disturbance to riparian and lake shore vegetation. Overall footprint would be minor.	Some selective clearing of smaller trees may affect bat species. Tree clearing would be limited to winter months to avoid impacting bat species.	Would allow for increased visitation and would meet ADA standards to allow persons with disabilities access where they may not have had it in the past.	Some localized impact to noise	Improved access to lake will increase safety from visitors walking uneven shoreline to gain access to water.	A phase I background survey would be completed at each site prior to construction.
Bank Stabilization	Positive long-term benefit to soils by stabilizing erosive soils.	Short-term adverse construction related impacts. Long-term positive benefit to water quality from decreased erosion.	Short-term adverse construction related impacts. Vegetation removed during construction would likely return to pre-construction condition following construction	Short-term adverse construction related impacts. Long-term positive benefit to river/lake water quality from decreased erosion. Negligible deduction in flood storage capacity	Some selective clearing of smaller trees may affect bat species. Tree clearing would be limited to winter months to avoid impacting bat species.	Breakwater would reduce the cost of Marina fixing wave related impacts to docks and other infrastructure.	Short-term noise related to construction. Following construction noise would return to ambient levels.	Increased safety from stabilized bank, hardened stream crossing, and reduction in waves entering marina area due to breakwater	Potential for incidental benefit to cultural resources due to bank stabilization. A phase I background survey would be completed at each site prior to construction.
Roads, Parking, etc.	Impacts to project footprint when parking lots are expanded or roads are constructed. Decrease in compaction of soil in surrounding areas by illegal off-road vehicle use from the installation of barriers.	Some minor construction related impacts. Control of Illegal off-road vehicle use will have a positive impact on water quality by limiting access to sensitive areas (Wetlands/Lake shore/Streams)	Impacts to project footprint when parking lots are expanded or roads are constructed. Control of Illegal off-road vehicle use will have a positive impact on fish and wildlife by limiting access to sensitive areas	Some minor construction related impacts. Control of Illegal off-road vehicle use will have a positive impact on water quality by limiting access to sensitive areas (Wetlands/Lake shore/Streams)	Some tree removal may affect bat species. Tree clearing would be limited to winter months to avoid impacting bat species. The limitation of access to other areas by illegal off-road vehicles would have a positive impact by limiting	Expansion of Parking lots would meet current outdoor recreation needs. Positive benefit to the US Government from restricting access to illegal/unmaintained roads by not having to fix bad road conditions or clean up dumping sites	Minor positive or adverse impact to noise from either the limiting of activity or expansion of facilities.	Positive benefit to safety from more up to standard parking lots. ORV area would have improved health and safety by allowing greater access by emergency vehicles to evacuate injured persons. Also from limiting access on poor quality roads,	A phase I background survey would be completed at each site prior to construction, to see if additional surveys are required. Positive benefits due to limiting access at many of the sites

U.S. Army Corps of Engineers - Kansas City District

Projects	Geology/Soils	Water Quality	Fish and Wildlife	Wetlands and other Waters of the US	T&E Species	Socioeconomics	Noise	Health and Safety	Cultural Resources
Buildings	Moderate long-term impact to soils from building footprints. Some would be built on previously disturbed sites	Minimal impact to water quality. All water utilized would be municipal water and return to licensed wastewater facility.	All facilities except the storage areas within the Unit 19 wildlife area will be built on previously disturbed sites, parking lots, or turf grass areas. No specific sites have been identified in Unit 19 as of this writing, every attempt would be made to reduce the	No impact to wetlands	No impact	Visitor Center/Admin Complex would provide regional interpretive information and community meeting space. Clubhouse would have the potential to increase membership to meet current visitor demands.	Short-term adverse impacts during construction and minimal long-term localized impact near facilities.	All facilities would meet ADA standards. Sanitation needs would be met by restroom and/or shower house facilities at River Pond PUA, ORV area PUA, and Yacht Club.	A phase I background survey would be completed at each site prior to construction, to see if additional surveys are required.
Utilities	Minor Construction related adverse impacts to soils. Sewage lagoons would have long-term adverse impact to soils within the footprints.	Minor construction related impacts from runoff (increased turbidity). Increased campsite sewer hookups would be a net reduction in source pollution from utilizing modern facilities.	Temporary disturbance to wildlife during construction. Some loss of habitat in footprint of sewage lagoons and water borne sanitary facilities. Wildlife would return to area once construction is complete.	No impact to wetlands	Some selective clearing of smaller trees may affect bat species. Tree clearing would be limited to winter months to avoid impacting bat species.	Would provide more attractive and convenient facilities to the public. Potential to increase occupancy rates with modern campsites.	Localized construction related noise. Following construction noise levels would return to ambient conditions	Would provide sanitation to safeguard public health. By increased amperage hookup there is less risk of electrical issues from large RVs	A phase I background survey would be completed at each site prior to construction, to see if additional surveys are required.
Campsites	Construction related impact to soil. Minor to moderate log-term impact to soil by increasing the footprint of existing sites or the addition of sites	Minor construction related impacts from runoff (increased turbidity). Increased campsite sewer hookups would be a net reduction in source pollution from utilizing modern facilities.	Temporary disturbance to wildlife during construction. Some permanent loss of habitat in footprint would occur from increased impervious surfaces (incl. Tallgrass Prairie).	No impacts	Some selective clearing of smaller trees may affect bat species. Tree clearing would be limited to winter months to avoid impacting bat species. This would result in a not likely to affect.	Would provide more attractive and convenient facilities to the public. Potential to increase occupancy rates with modern campsites.	In areas where new campsites are being constructed there will be a long-term impact to noise from the increased visitation	By modernizing campsites, it should make the sites easier to get RVs in and out of with less potential for damage.	A phase I background survey would be completed at each site prior to construction, to see if additional surveys are required.

Projects	Geology/Soils	Water Quality	Fish and Wildlife	Wetlands and other Waters of the US	T&E Species	Socioeconomics	Noise	Health and Safety	Cultural Resources
Vegetation Management	Improved soil stabilization and condition through the establishment of native vegetation.	Increase in water quality from native vegetation leading to less surface runoff/erosion. Marsh renovation and expansion will lead to better water quality from the filtering effect of wetlands.	Long-term positive effect by increasing habitat for native species.	Increase in wetland habitat and function	No affect	Increased habitat and habitat quality would likely attract more visitors for consumptive and non-consumptive uses	Minor impact to noise during restoration and construction activities. Noise levels would be reduced following restoration/construction activities cease	Temporary increase in safety risk during prescribed fire. Long-term safety benefit to surrounding area from reduced fuel loading	Most projects would have low potential for cultural resource impacts. Ground disturbing activities would need phase I background survey would be completed at each site prior to construction, to see if additional surveys are
Boat Ramps	Long-term minor to moderate impact to soils/geology from the increase construction of boat ramps and associated facilities.	Increased boat use increases the potential for boat leakage and spills of petroleum products	Short-term construction related disturbance to fish and wildlife species and Long-term minor loss of habitat from facility footprint. Increase for the chance of aquatic invasive species.	Direct long-term impact to riparian and shoreline areas from the construction or expansion of boat ramps	Some selective clearing of smaller trees may affect bat species. Tree clearing would be limited to winter months to avoid impacting bat species. https://portal.chra.army.mil/abc/	Would provide more attractive and convenient facilities to the public.	Localized construction related noise. Following construction noise levels would see a small increase over current ambient conditions due to increased visitation and boating use	The expansion of ramps and parking areas would lead to better ingress and egress reducing the chance for collisions. Increased access points for emergency vessel launching closer to an incident scene	A phase I background survey would be completed at each site prior to construction, to see if additional surveys are required.
Swim Beaches	Cedar Ridge swim beach would require large quantities of fill to bring the beach to the proper grade.	Construction related impacts related to increased turbidity. Following construction turbidity levels should return to normal. Increased chance for E-Coli outbreaks from visitor bodily excretions.	Disturbance to fish in the area of the swim beach during times when visitors are actively using the swim beach. Some minor loss to wildlife habitat from associated facilities.	Some loss of waters of the US from fill at Cedar Ridge. No wetland impacted.	Some selective clearing of smaller trees may affect bat species. Tree clearing would be limited to winter months to avoid impacting bat species.	Increased visitation from open water swimming opportunities.	Increase in noise levels during times when the beach has recreational activity	Provides designated area for swimming. Helps protect swimmers from boats and other craft. Increased chance of bacterial infections.	Ground disturbing activities would need phase I background survey would be completed at each site prior to construction, to see if additional surveys are needed.

Projects	Geology/Soils	Water Quality	Fish and Wildlife	Wetlands and other Waters of the US	T&E Species	Socioeconomics	Noise	Health and Safety	Cultural Resources
Other (Archery and Firearms Renovation and Expansion, Habitat Restoration Projects, and addition of a Technical Trail and Campground at Off-road Vehicle Area)	Compaction of soils in and near project area. Increased chance for erosion in technical riding course.	Increased chance for runoff from technical riding course potentially leading to decrease in water quality	Minor disturbance to wildlife from the increased visitor use.	No Impact	Some selective clearing of smaller trees may affect bat species. Tree clearing would be limited to winter months to avoid impacting bat species.	Possible increase in visitation from archery/shooting range renovation	Technical riding course and shooting range would lead to a moderate increase in noise above ambient levels	Shooting range would be installing renovating safety features. There would be an increased risk for accidents on the off-road technical course and walk-through archery range.	Ground disturbing activities would need phase I background survey would be completed at each site prior to construction, to see if additional surveys are needed

4.1 Geology/Soils

Alternative 1 - No-Action Alternative: In the No-Action Alternative, the geology/soils would remain the same.

Alternative 2 - Accept Revised Master Plan (Recommended Alternative): Most of the projects identified will have a short-term minor impacts to soil from the soil disturbance related to construction. A few projects such as new trails, roads, and the building of additional buildings would have localized long-term adverse impacts ranging from minor to moderate. The stabilization of the bank of the river, hardened stream crossings, and the breakwater will have a positive impact to soils by controlling erosion and sedimentation of the lake and streams.

4.2 Water Quality

Alternative 1 - No-Action Alternative: In the No-Action Alternative, the water quality would mostly remain the same. The few spots in the lake and river would continue to erode and increase turbidity. The lake would likely continue to meet all use criteria.

Alternative 2 - Accept Revised Master Plan (Recommended Alternative): This alternative may result in potentially minor, temporary, construction-related adverse impacts to water quality resulting in increased turbidity and suspended sediments from the construction/rehabilitation of the few projects in or near the water. BMPs would be used to minimize sediment or pollutants from entering the water. These impacts would subside following construction. No long-term impact to water quality would be anticipated from this alternative except the few places with eroding shorelines that will be armored would have a minor positive long-term benefit to water quality by decreasing the sediment entering the lake and river. The addition of additional sewage lagoons at River Pond PUA will likely have a net benefit on the ability to treat sewage to be able to be released.

4.3 Fish and Wildlife

Alternative 1 - No-Action Alternative: Under the No-Action Alternative, no impacts to fish and wildlife would be expected. KDWPT would continue to manage fish and wildlife resources on the over 17,713 acres that are licensed to them as well as management of the fisheries in the lake. This is a long-term positive impact to fish and wildlife.

Alternative 2 - Accept Revised Master Plan (Recommended Alternative): KDWPT would continue to manage fish and wildlife resources on the over 17,713 acres that are licensed to them as well as management of the fisheries in the lake. There may be minor short-term and long-term impacts to fish and wildlife for any of the proposed construction activities. There may be some clearing of vegetation for buildings, parking areas, hardened campsites, and roads/trails. This would create a minor to moderate long-term loss of wildlife habitat. Loss of high-quality habitat and/or wetlands will require mitigation for lost value. Many of the activities proposed in the master plan are within

the high-density recreation areas already disturbed and/or fragmented from parking and other recreational features. The removal of legacy facilities in areas around the lake to native grasses would be a long-term beneficial impact to wildlife, particularly for grassland species.

4.4 Wetlands and other Waters of the U.S.

Alternative 1 - No-Action Alternative: The No-Action Alternative would likely result in placement of small amounts of fill (rip rap) in Waters of the U.S. as new areas of bank erosion arise. Each of these actions would need to undergo a Section 404/Section 10 analyses to determine if they meet permit criteria. It is likely that any such action would meet the requirements of a nationwide permit. It is anticipated that no wetlands would be impacted by this alternative.

Alternative 2 - Accept Revised Master Plan (Recommended Alternative): The addition of the breakwater near the marina would either constitute pilings or riprap below the ordinary high water mark. The chosen fill would determine the nature of the Section 404/Section 10 analysis. Either would result in a minimal loss in lake storage capacity. The rehabilitation and possible expansion of the marsh will have a long-term positive benefit to wetlands. The expansion of boat ramps as well as mooring posts have the potential to cause some minor both direct and indirect adverse impacts to shoreline vegetation. Due to the conceptual nature of the projects, it is unknown whether the addition of new/expanded trails and roads, or swim beach would have any wetland impacts. If these projects proceed from being conceptual to being a shovel-ready project, a Section 404 analysis would need to be undertaken to make sure the project(s) meets any applicable regulations. Any wetland disturbance/loss would be mitigated to replace the lost wetland habitat value.

4.5 Threatened or Endangered Species

Alternative 1 - No-Action Alternative: The No-Action Alternative would not likely affect any federally listed threatened or endangered species.

Alternative 2 - Accept Revised Master Plan (Recommended Alternative): Any land clearing associated with expansion would need to be surveyed by a qualified biologist for endangered species and appropriate consultation would be done with U.S. Fish and Wildlife Service (USFWS). Clearing activities would take place in the winter, outside the time when northern long-eared bats may use trees as hibernacula to minimize effects on the bats. The biologist would determine the likelihood of affecting any threatened or endangered species or their designated critical habitat on a project by project basis. Only those projects NOT identified by the “***” will be covered by this FONSI as they have minimal to no effect on threatened and endangered species. Projects identified by the “***” will require additional NEPA analysis that includes a separate assessment for the likelihood of effect on threatened and endangered species. During the release of this draft document, a copy will be made available for each of the resource agencies to view and comment.

4.6 Socioeconomics

Alternative 1 - No-Action Alternative: Under the No-Action alternative the economic effects would remain largely unchanged. The amount of visitors would be at least partially driven by the economy. During times of good economic growth visitation should rise as people have more disposable income. During times of recession, visitation should drop as people cut back on vacation and luxury goods such as boats and RVs. This alternative would not have an adverse effect on any minority or low income populations.

Alternative 2 - Accept Revised Master Plan (Recommended Alternative): This alternative would have a net economic benefit over the No-Action Alternative. As facilities are upgraded, such as creating more spacious camping pads and the larger 50 amp electrical service, campgrounds will be able to attract larger RVs and there should be an increase in visitation. Other items such as the increase in the number of picnic shelters, if built, should also bring more visitors. This would bring an increase in the local economy. This alternative would not have an adverse effect on any minority or low income populations.

4.7 Noise

Alternative 1 - No-Action Alternative: The No-Action Alternative would not result in any additional impact to noise. Noise would continue at current levels with noise levels being the loudest during busy recreation times and then remaining relatively quiet during times of low to no recreation.

Alternative 2 - Accept Revised Master Plan (Recommended Alternative): There may be brief localized impacts to noise associated with any of the proposed construction within the plan. However, once construction was complete it is anticipated that noise would return to preconstruction levels. An increase of visitors would be expected as amenities are increased which would result in periodic minor long-term increase in noise levels. Any increase in noise level would likely be contained within the high-density recreation areas.

4.8 Health and Safety

Alternative 1 - No-Action Alternative: The No-Action Alternative would result in aging infrastructure such as water treatment plants, shower houses, etc. not being replaced. This could pose a health risk from treatment plants not keeping up with state standards. Trails not stabilized from erosion could pose health risks and cause a tripping and/or falling hazard.

Alternative 2 - Accept Revised Master Plan (Recommended Alternative): The Recommended Plan may cause short-term adverse impacts to health and safety from construction-related activities. However, improvements to infrastructure and an increase

in ADA access to facilities should result in a long-term beneficial impact to health and safety.

4.9 Cultural Resources

Alternative 1 - No-Action Alternative: Under the No-Action Alternative there would likely be no impact to cultural resources.

Alternative 2 - Accept Revised Master Plan (Recommended Alternative): For any project that may involve ground clearance, plans showing potential area of effect would be developed. A qualified archaeologist would review the plans and site area to determine if they would impact cultural resources. There would also be coordination with the State Historic Preservation Officer as well as any applicable Tribal Historic Preservation Officer(s). Only those projects NOT identified by the “***” will be covered by this FONSI as they have likelihood of minimal to no effect on cultural resources. All actions that involve ground disturbance will still need a cultural assessment done by a qualified archaeologist. Projects identified by the “***” will require additional NEPA analysis that includes a separate assessment for the likelihood of effect on cultural resources.

5.0 Cumulative Impacts

The Council on Environmental Quality’s regulations define cumulative impacts as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (CEQ, 1997).

The cumulative impacts addressed in this document consist of the impacts of multiple actions that each affects the human environment including those adjacent to Tuttle Creek Lake.

Tuttle Creek Lake and its surrounding area has been altered by past actions such as impounding the lake, bank stabilization, marina, recreational area development, land clearing, residential development, urbanization, farming, road crossings, and other human uses. These activities have substantially altered the terrestrial and aquatic ecosystem within the Big Blue River watershed. In 1962, the Corps of Engineers finished constructing the Tuttle Creek Dam which impounded the Big Blue River. This flooded approximately 11,000 acres, turning these acres that were once upland and riverine into lake habitat.

At the time of construction, recreational areas were developed to accommodate the desire for camping and boating. In addition, a marina area was developed by concessionaires. Most of the projects identified in this Master Plan are in lands designated as High-Density Recreation Parks. This minimizes vegetative clearing and fragmentation of habitat.

The City of Manhattan is located five miles south of the dam and is the largest city in a 30-mile radius of the lake with a population of 56,000. Annual population growth rate has consistently increased for the past 50+ years with an average of 1.7% (US Census Bureau). Likewise, Pottawatomie and Riley counties are ranked second and third in the state for highest growth rates (6.0% and 5.7% respectively). Growth is further evidenced by consistent increases in employment rates, earnings, tax revenue, and construction permits.

Based on historic growth and continued commercial, industrial, and academic investments into the community; the Manhattan area is projected to double in size by 2030. However, development continues to be bound by flood plains to the east and south, and Fort Riley to the west. As a result, much of this growth will continue to expand northward, increasing urban interfaces with Tuttle Creek lands and waters.

Reservoirs (to include Tuttle Creek) serve as the source of municipal and industrial water for more than two-thirds of the state's population. Surface water management (reservoirs and rivers) in the region is becoming increasingly complex, as more limitations and demands are placed on river-reservoir systems. Challenges to managing reservoir supplies include storage loss from sedimentation, increasing pool levels to regain storage, and environmental impacts from altered flow patterns. (Kansas Water Plan, 2014)

Although this Master Plan is not intended to address the specifics of water management, potential impacts to project lands and waters, and associated resources (such as those associated with increased pool draw-downs) must be considered.

The Corps, which administers Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act, has issued and will continue to evaluate permits authorizing the placement of fill material in the Waters of the United States and/or work on, in, over or under a regulated area. Depending on the number and type of projects constructed/enacted in this Master Plan there is a potential for short-term adverse impacts from construction activities, and adverse to beneficial long-term impacts to wetlands and water related resources. No new major actions are anticipated on Tuttle Creek Lake or its tributaries in the foreseeable future.

The cumulative impact of the proposed action (when added to other present and future actions) does not result in a significant impact to the natural or human environment.

6.0 Conclusion

The Recommended Plan, if fully built out, may affect, but is not likely to adversely affect federally-listed threatened or endangered species or their designated critical habitat. Much of the impacts would be based upon construction/action footprints of projects/measures listed in the alternatives that are NOT marked with "***". Those projects WITH "***" will have a more detailed analysis in a separate NEPA document

should they ever come to fruition. The avoidance of impacts to trees, particularly those with exfoliating bark, as well as native prairies during construction of the identified projects/measures would avoid impacts to the current threatened and endangered species. The requirement to use BMPs would help avoid or minimize adverse impacts to resources. Water quality, fish and wildlife, and noise levels would be temporarily disturbed by the proposed construction activity. The improvement to the wetlands should have a long-term benefit to water quality and fish and wildlife. However, increased impervious surface may lead to an increase in runoff which could result in a long-term adverse impact on water quality. The quantity of runoff would depend on the amount of “green features” incorporated into the projects. The proposed action would not have adverse impacts to site(s) listed on or eligible for inclusion on the National Register of Historic Places. The project would have a minor long-term benefit to health and safety. Of the two alternatives considered, the Recommended Plan is consistent with current regulations and the protection of the human environment.

7.0 Coordination and Comments

This draft EA and FONSI will be e-mailed to individuals, agencies, and businesses contained on the Corps Regulatory public notice list. They are also available on the Corps webpage at: <http://www.nwk.usace.army.mil/Media/PublicNotices.aspx>. Hard copies are available upon request.

8.0 Agency Compliance with Other Environmental Laws

Compliance with other environmental laws is listed below.

Federal Policy Compliance

Archeological Resources Protection Act, 16 U.S.C. 470, et seq.	Full Compliance
Clean Air Act, as amended, 42 U.S. C. 7401-7671g, et seq.	Full Compliance
Clean Water Act (Federal Water Pollution Control Act), 33 U.S.C. 1251, et seq.	Full Compliance
Coastal Zone Management Act, 16 U.S.C. 1451, et seq.	Not Applicable
Endangered Species Act, 16 U.S.C. 1531, et seq.	Partial Compliance
Estuary Protection Act, 16 U.S.C. 1221, et seq.	Not Applicable
Federal Water Project Recreation Act, 16 U.S.C. 4601-12, et seq.	Full Compliance
Fish and Wildlife Coordination Act, 16 U.S.C. 661, et seq.	Full Compliance
Land and Water Conservation Fund Act, 16 U.S.C. 4601-4, et seq.	Not Applicable
Marine Protection Research and Sanctuary Act, 33 U.S.C. 1401, et seq.	Not Applicable
National Environmental Policy Act, 42 U.S.C. 4321, et seq.	Full Compliance
National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470a, et seq.	Full Compliance
Rivers and Harbors Act, 33 U.S.C. 403, et seq.	Full Compliance
Watershed Protection and Flood Prevention Act, 16 U.S.C. 1001, et seq.	Full Compliance
Wild and Scenic River Act, 16 U.S.C. 1271, et seq.	Not Applicable
Farmland Protection Policy Act, 7 U.S.C. 4201, et seq.	Full Compliance
Protection & Enhancement of the Cultural Environment (Executive Order 11593)	Full Compliance
Floodplain Management (Executive Order 11988)	Full Compliance
Protection of Wetlands (Executive Order 11990)	Full Compliance
Environmental Justice (Executive Order 12898)	Full Compliance

NOTES:

- a. Full compliance. Having met all requirements of the statute for the current stage of planning
- b. Partial compliance. Not having met some of the requirements that normally are met in the current stage of planning.
- c. Noncompliance. Violation of a requirement of the statute.
- d. Not applicable. No requirements for the statute required; compliance for the current stage of planning.

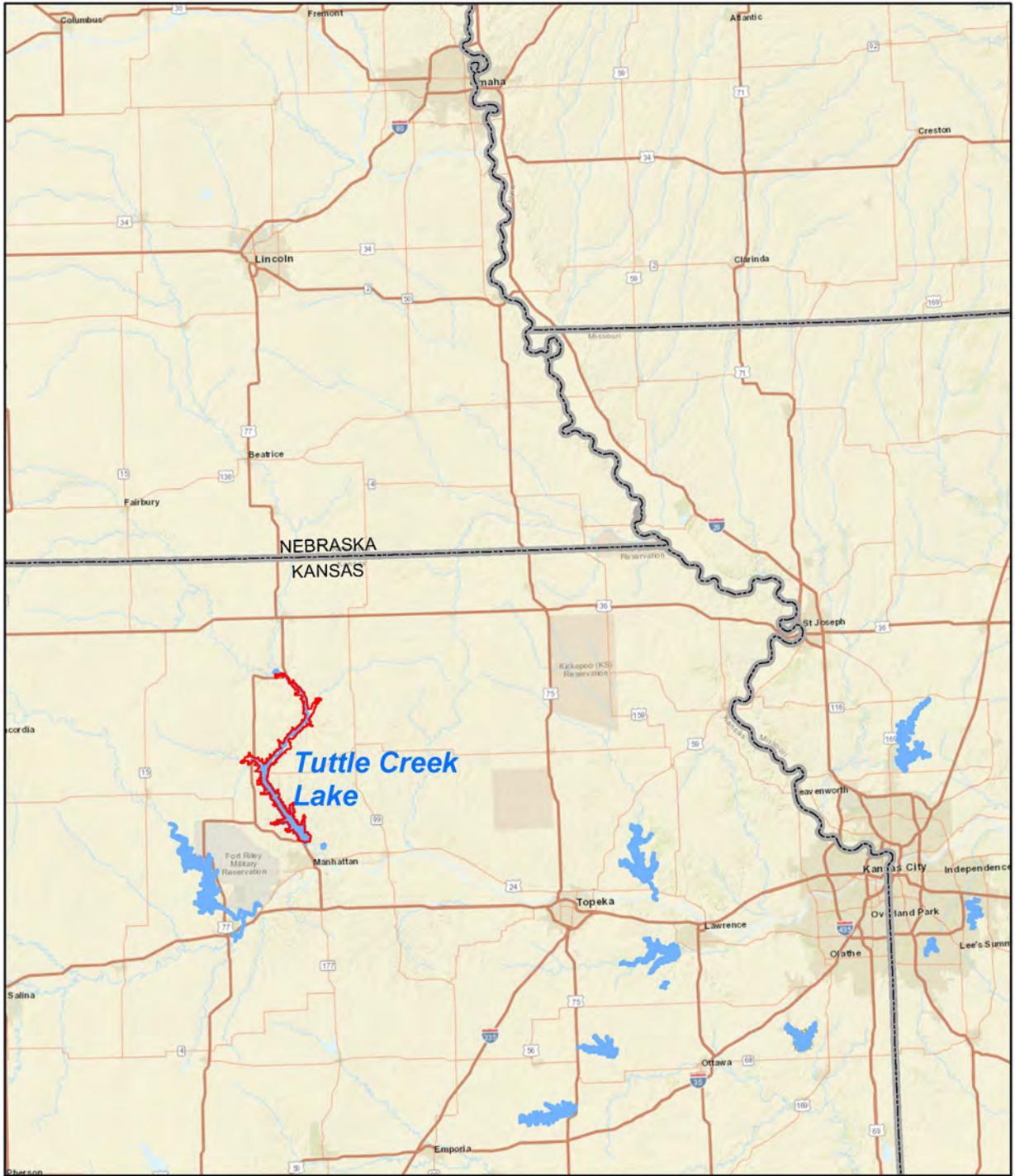
9.0 References

- CEQ. 1992. Regulations for Implementing the Procedural Provisions of NEPA, 40 CFR Parts 1500-1508, in accordance with 40 CFR 1507.3.
- CEQ. 1997. January, 1997. Considering Cumulative Effects Under the National Environmental Policy Act. Executive Office of the President, Washington, D.C. pp ix-x, 28-29 and 49-57.
- FCA. 1941. Flood Control Act of 1941, 33 U.S.C. 701n, as amended (commonly referred to as Public Law 84-99, Flood Control and Coastal Emergencies Act).
- KWO. 2014. Kansas Water Plan. <https://kwo.ks.gov/water-vision-water-plan/water-plan> accessed 15 Oct 2018.
- USACE. 2008. Procedures for Implementing the National Environmental Policy Act. Engineer Regulations (ER) 200-2-2. 33 CFR 230.

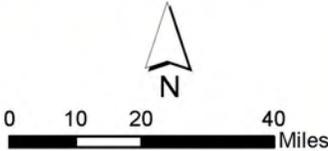
10.0 List of Preparers

This draft EA and draft FONSI were prepared by Mr. Curtis Hoagland, Environmental Resources Specialist; Melissa Bean, Park Manager; Julie Radcliffe, Natural Resource Management Specialist, with cultural resource assistance provided by Ms. Gina Powell, Archeologist. The address of the preparers is: U.S. Army Corps of Engineers, Kansas City, District; PMP-R, Room 529, 601 E. 12th Street, Kansas City, Missouri 64106.

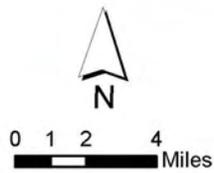
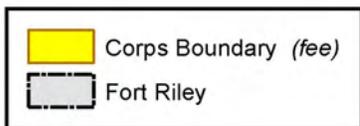
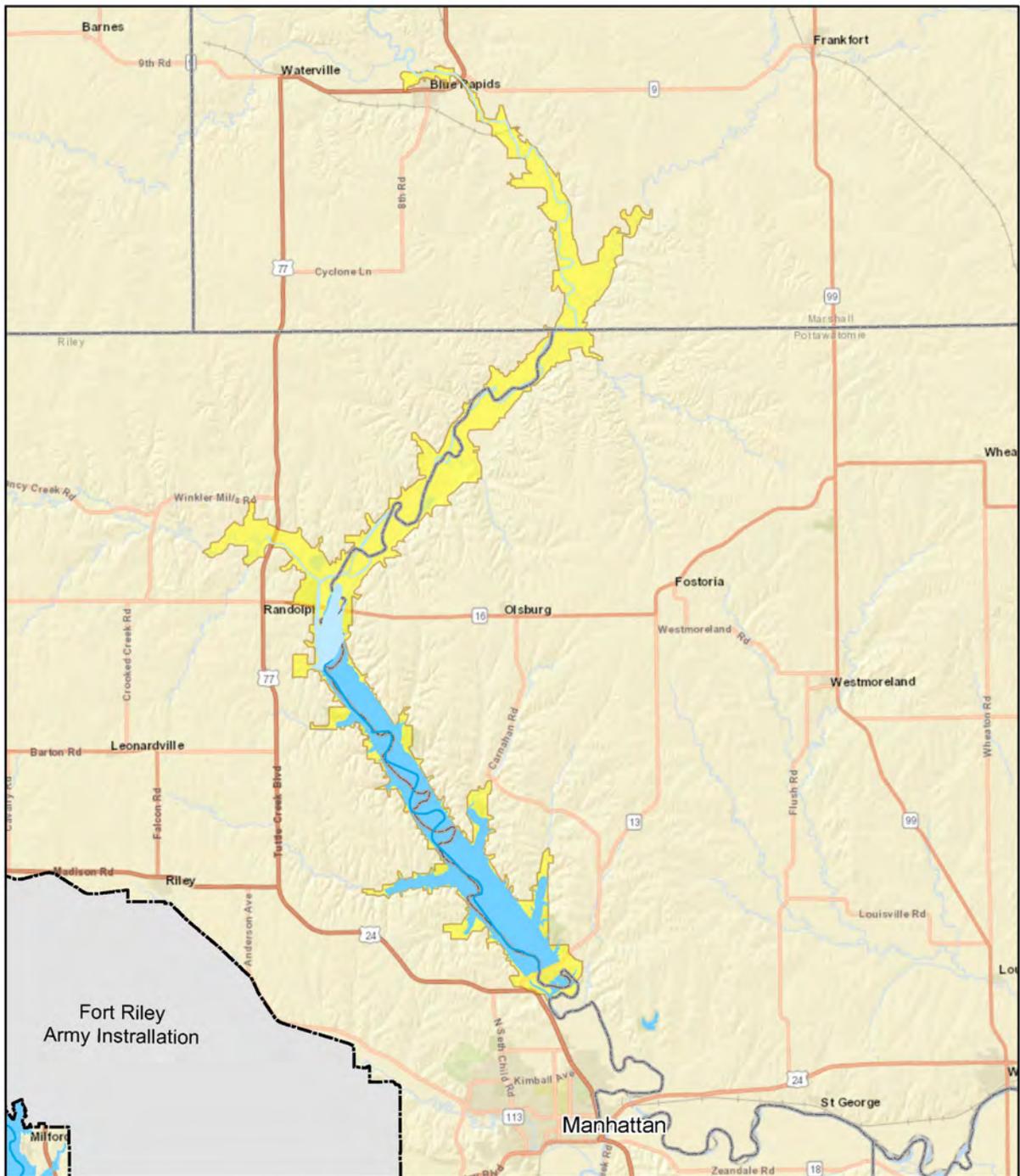
Appendix B Maps



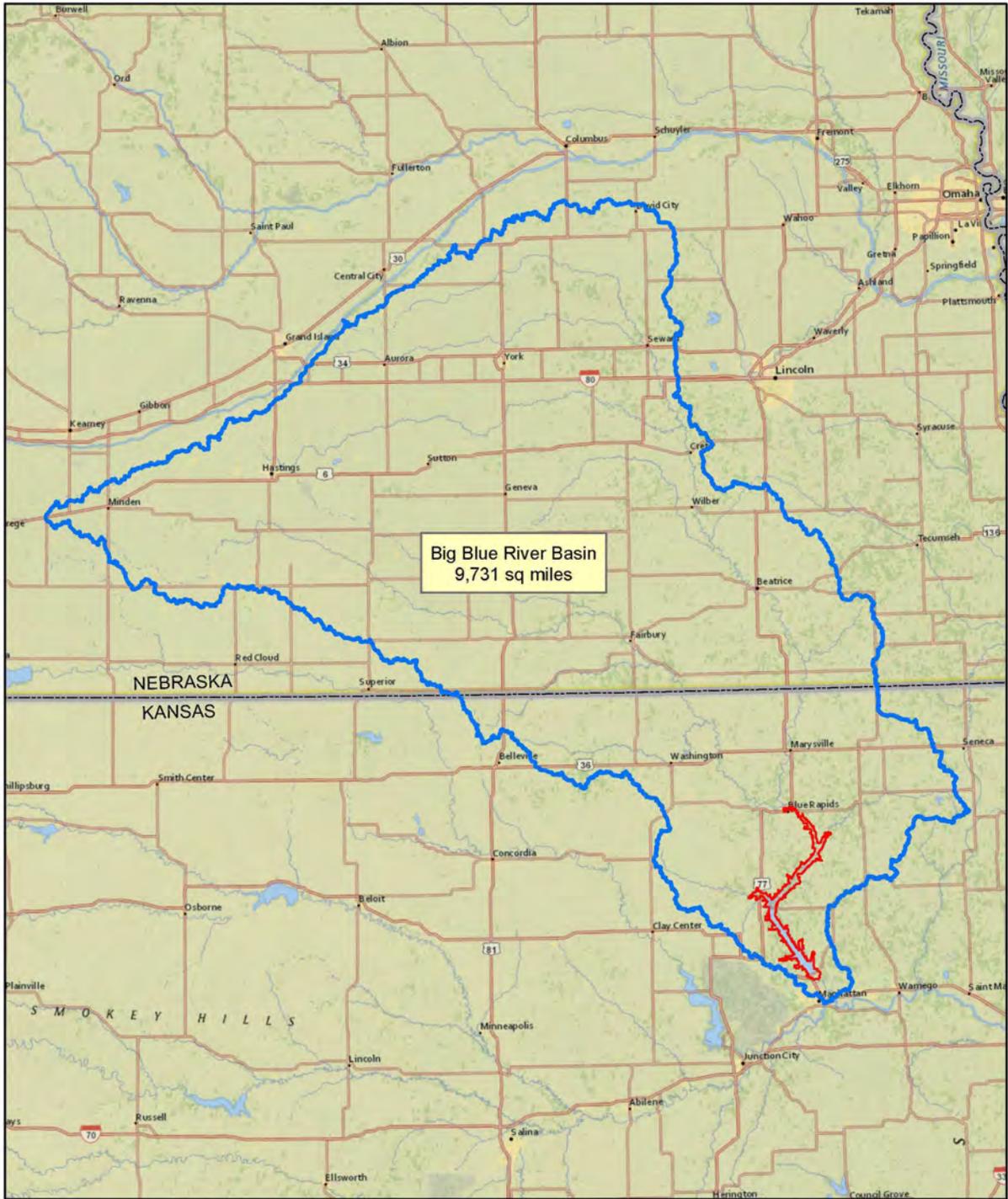
 Tuttle Creek Lake



**Tuttle Creek Lake
Location**



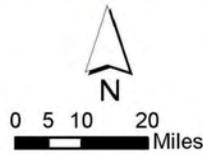
**Tuttle Creek Lake
Vicinity**



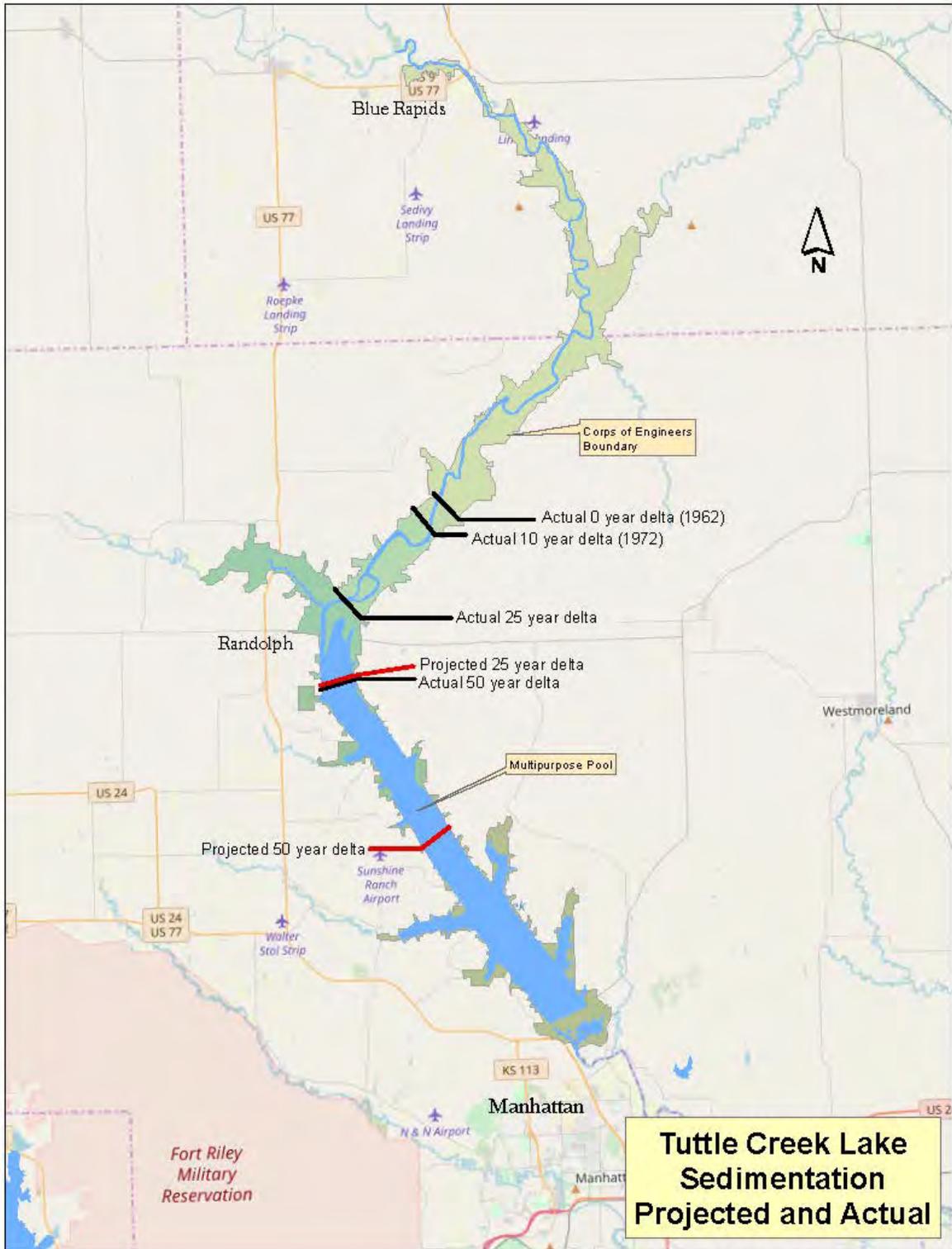
Big Blue River Basin
9,731 sq miles

NEBRASKA
KANSAS

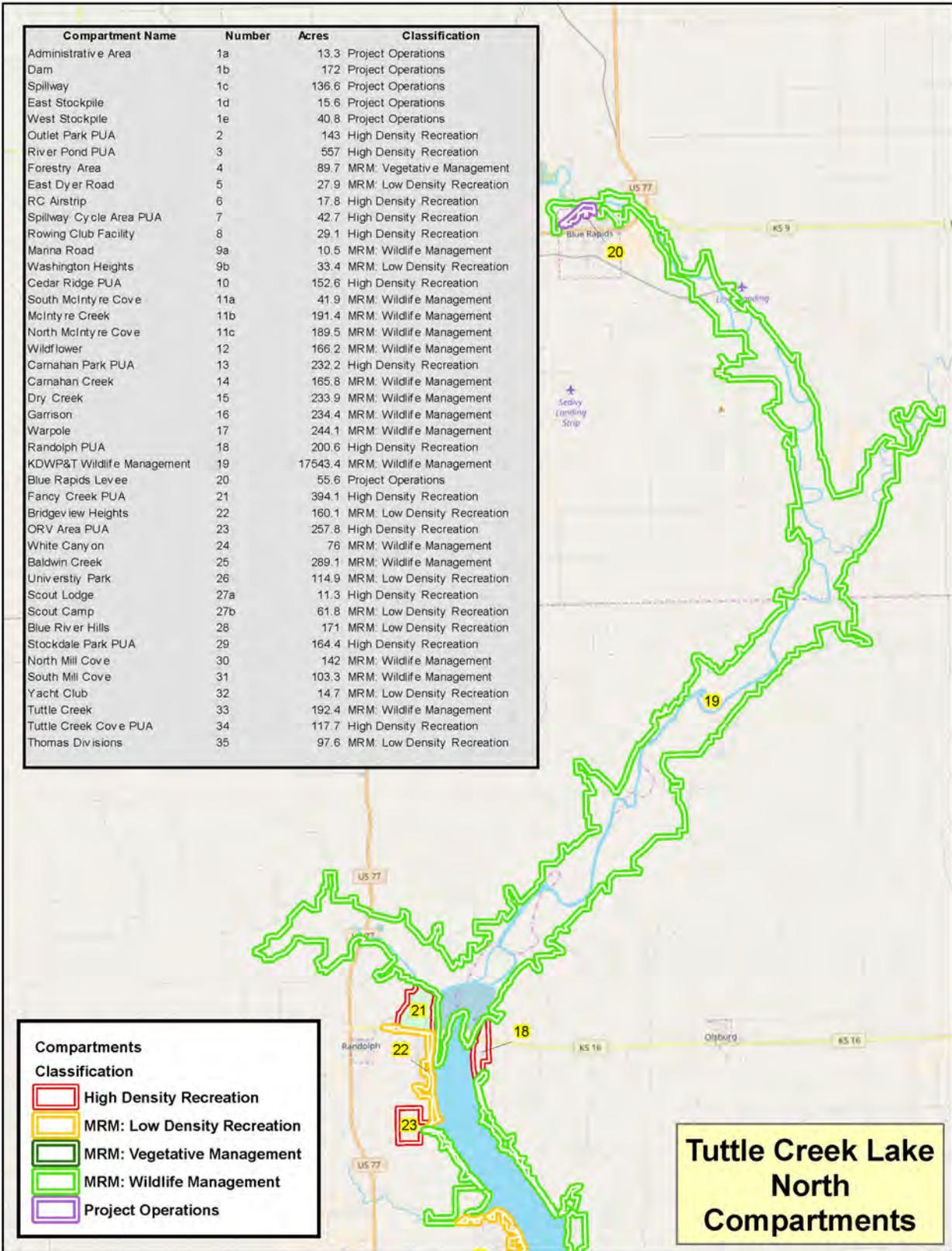
	Tuttle Creek Watershed
	Tuttle Creek Lake Boundary

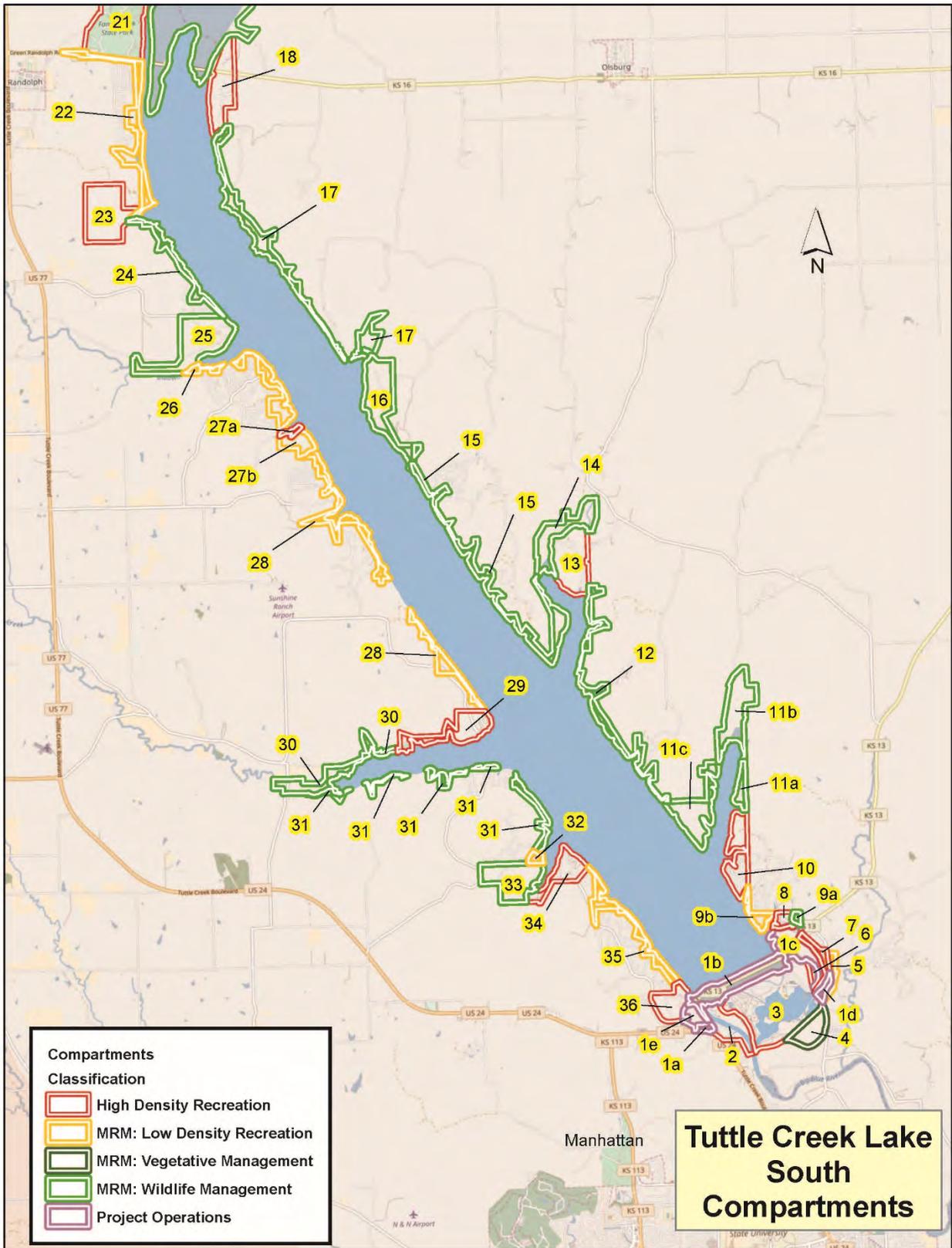


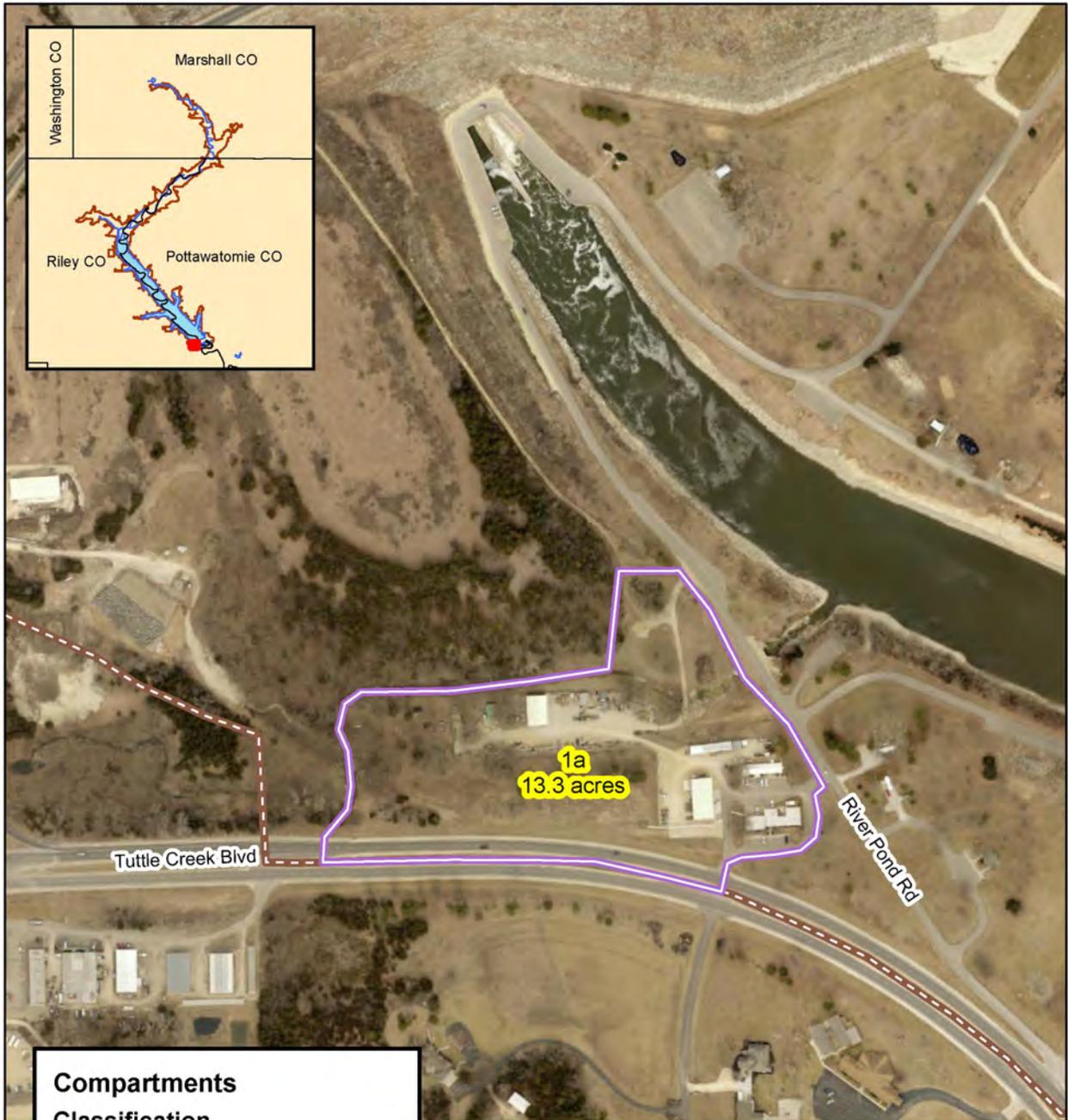
**Tuttle Creek Lake
Watershed**



**Tuttle Creek Lake
Sedimentation
Projected and Actual**

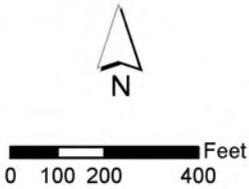






Compartments Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary

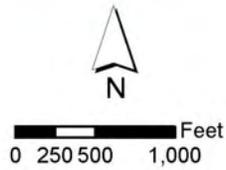


**Tuttle Creek Lake
Compartment 1a
Administrative Area**



Compartments Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary

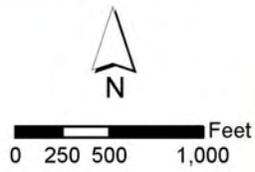


**Tuttle Creek Lake
Compartment 1b
Dam**

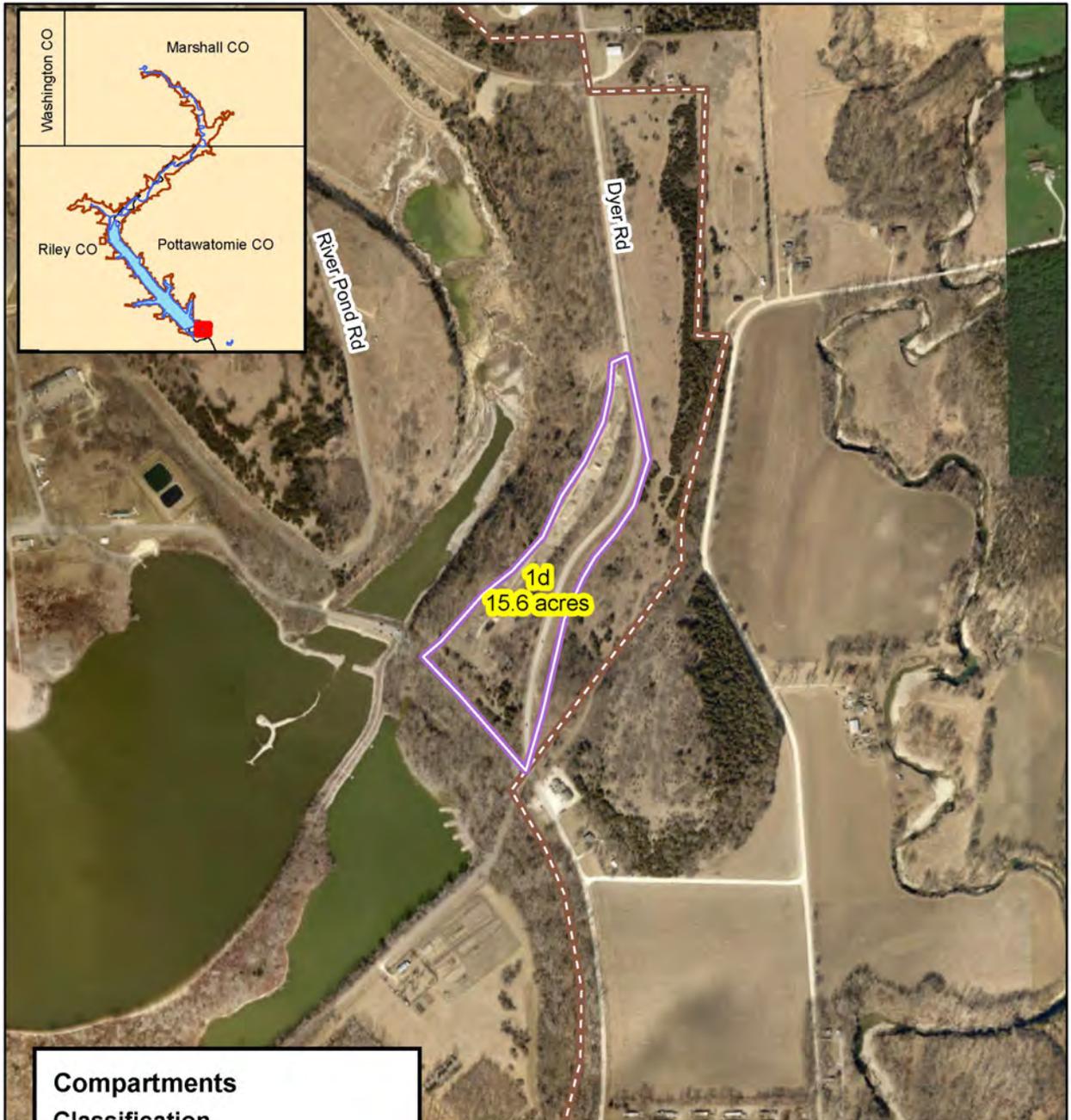


Compartments Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary

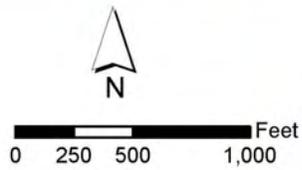


**Tuttle Creek Lake
Compartment 1c
Spillway**

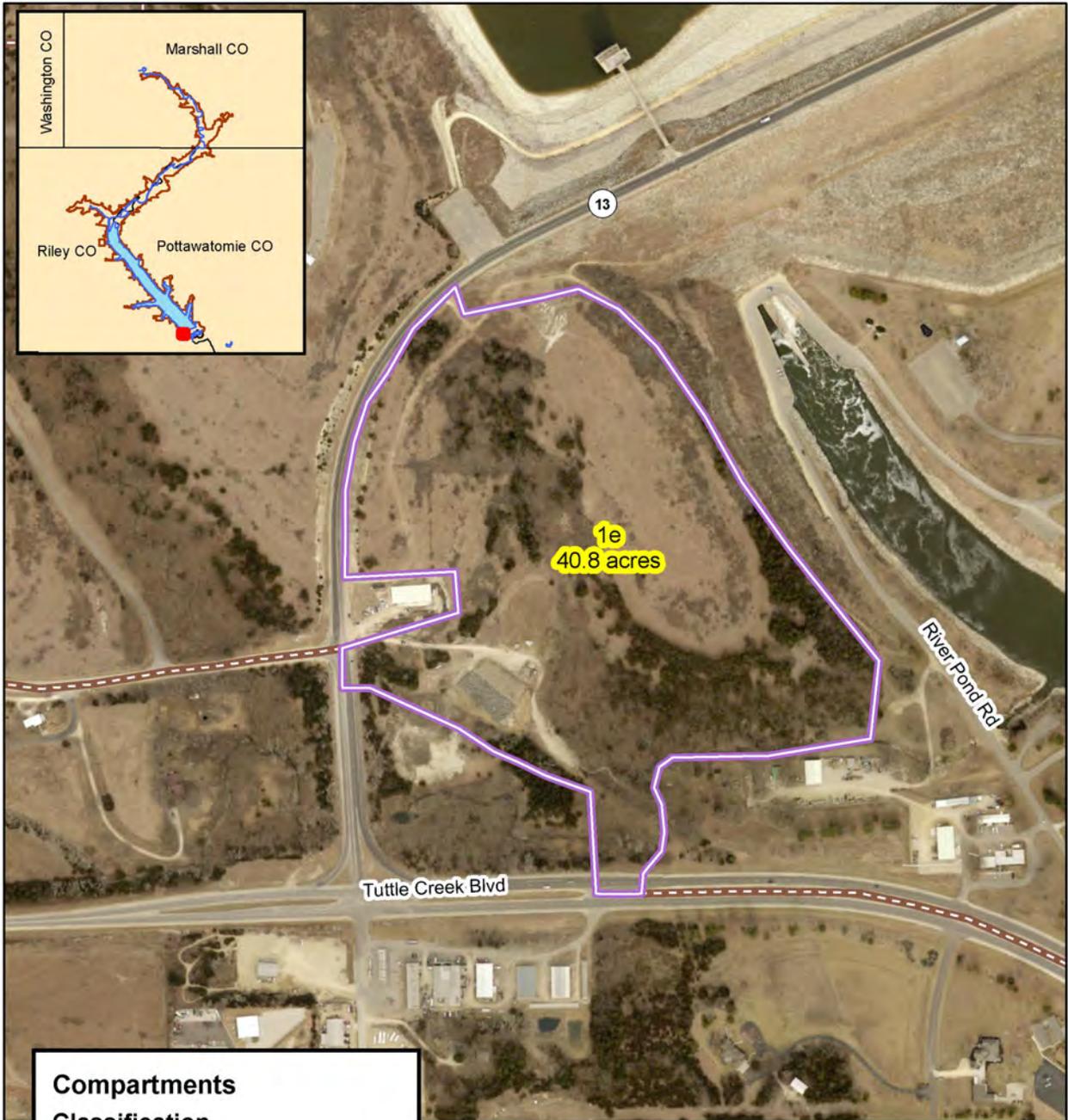


Compartments Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary

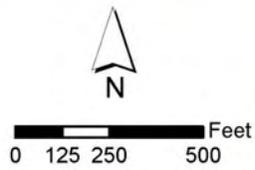


**Tuttle Creek Lake
Compartment 1d
East Stockpile**



Compartments Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary

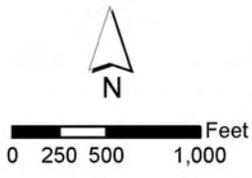


**Tuttle Creek Lake
Compartment 1e
West Stockpile**

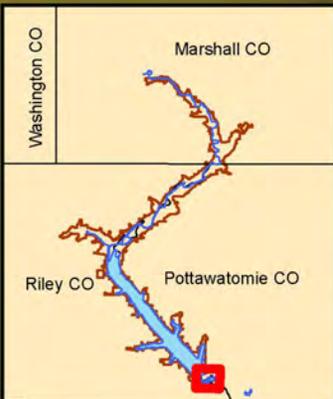


Compartments Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary



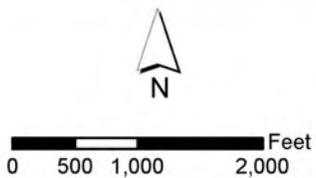
**Tuttle Creek Lake
Compartment 2
Outlet Park PUA**



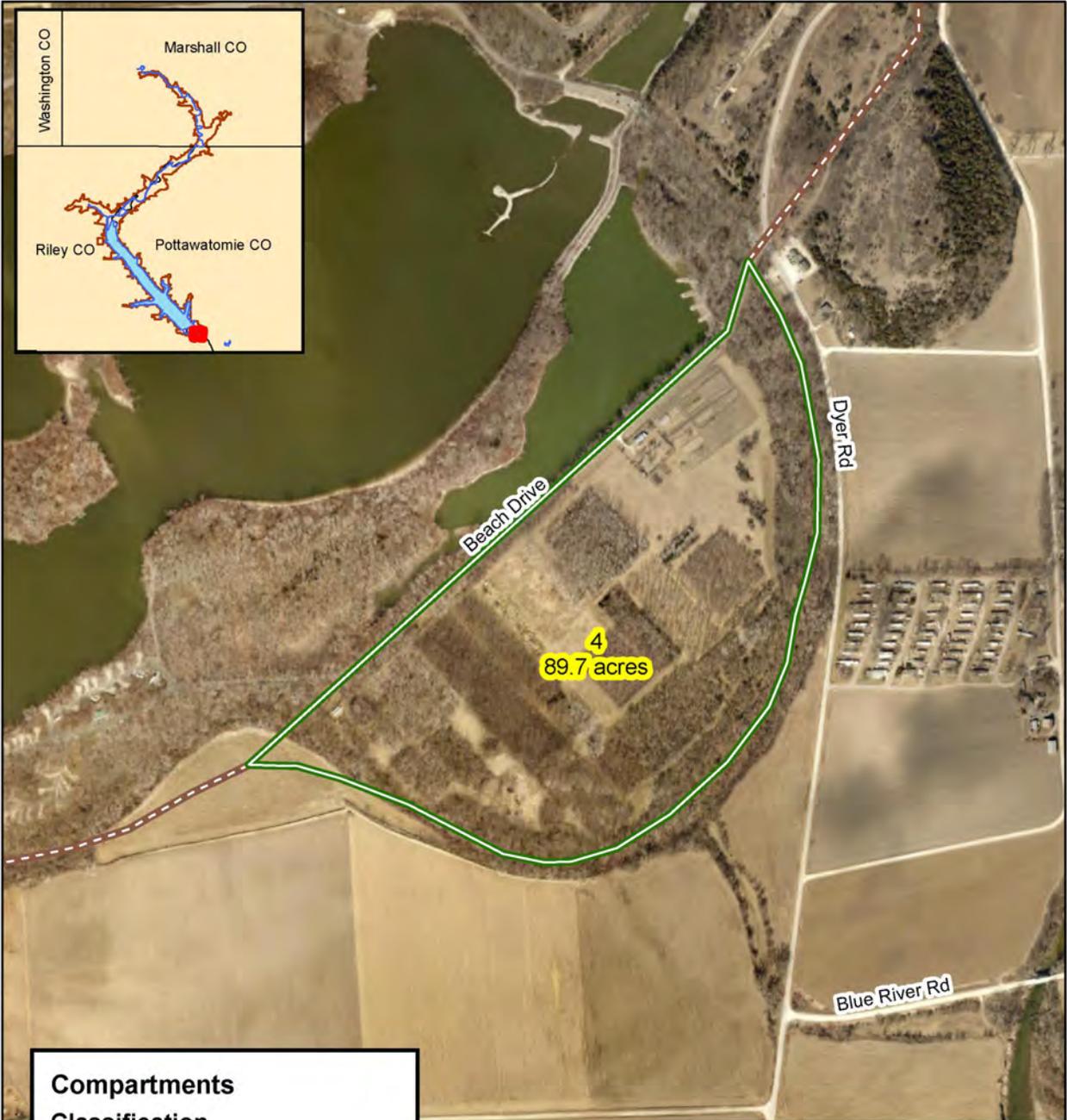
Compartments

Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary
- [Boat Ramp

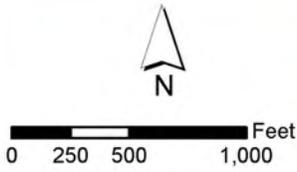


**Tuttle Creek Lake
Compartment 3
River Pond PUA**

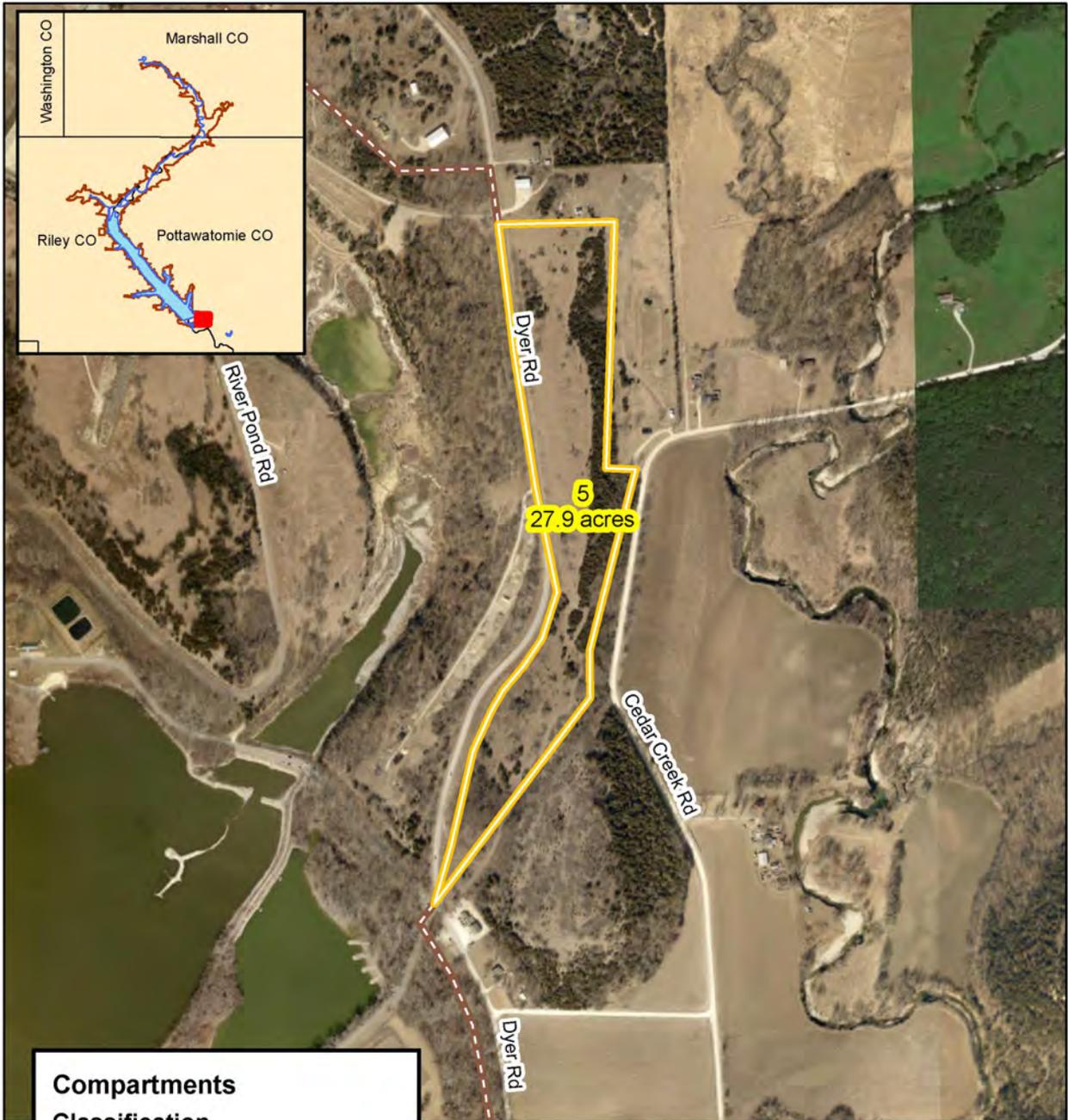


Compartments Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary

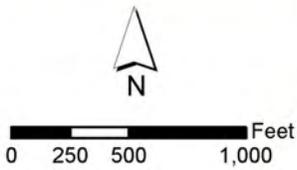


**Tuttle Creek Lake
Compartment 4
Forestry Area**

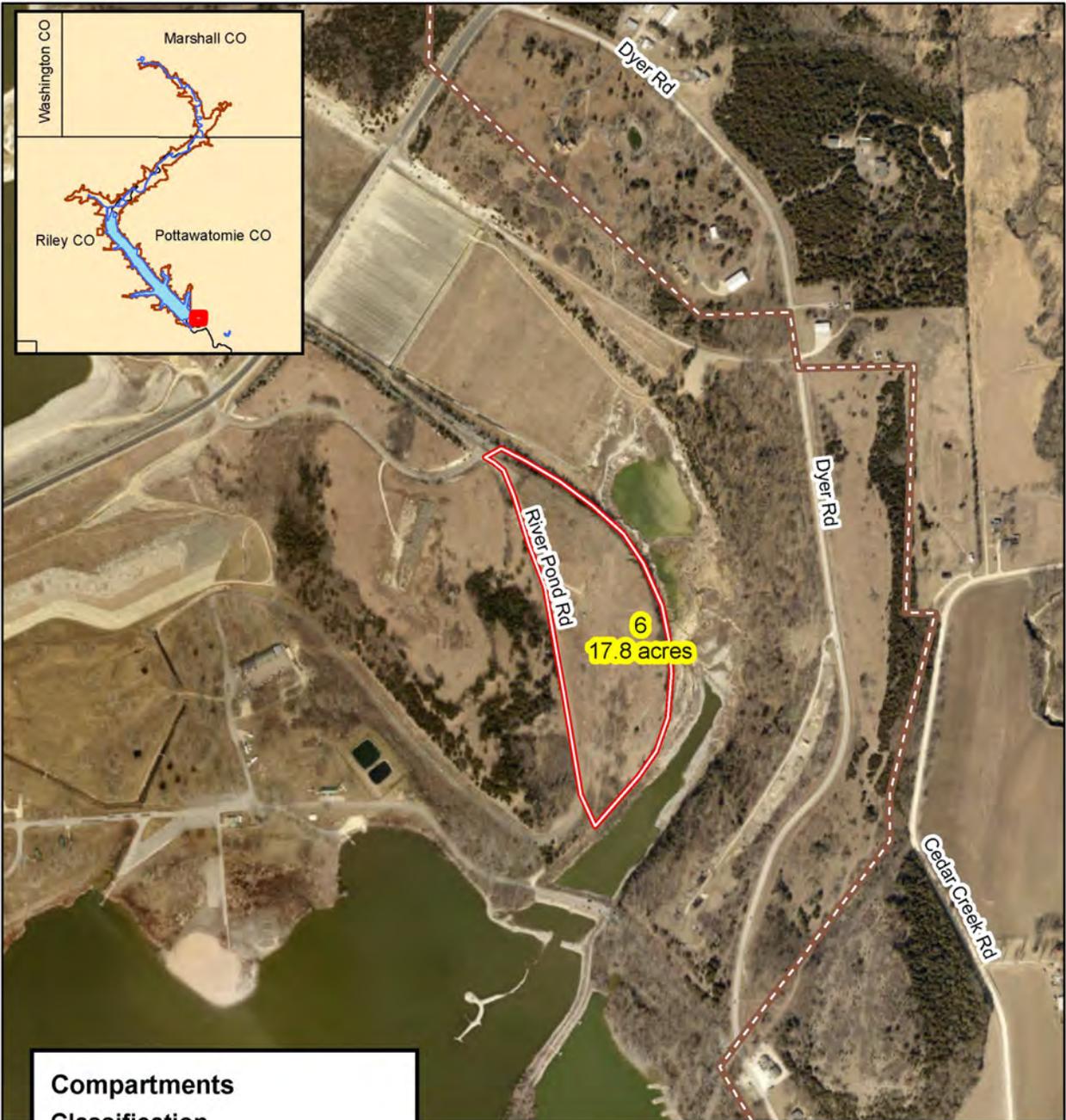


Compartments Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary

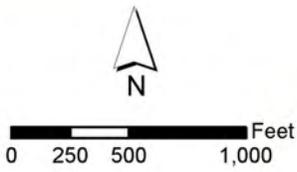


**Tuttle Creek Lake
Compartment 5
East Dyer Rd**

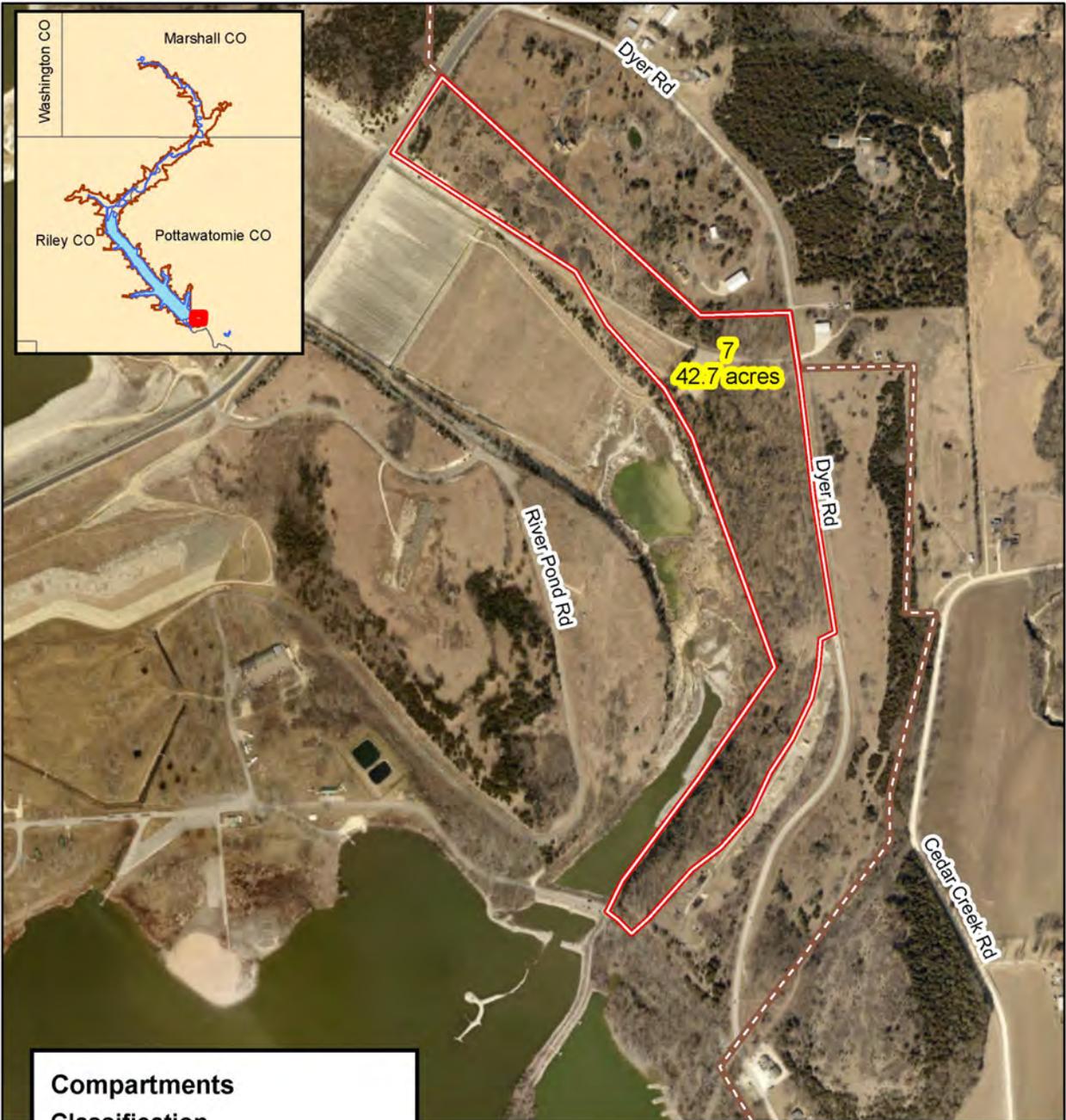


Compartments Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary

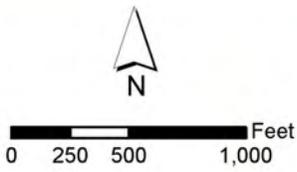


**Tuttle Creek Lake
Compartment 6
RC Airstrip**



Compartments Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary

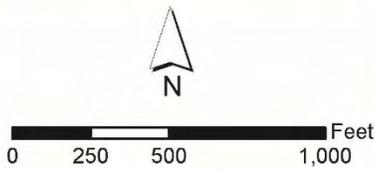


**Tuttle Creek Lake
Compartment 7
Spillway Cycle Area
PUA**

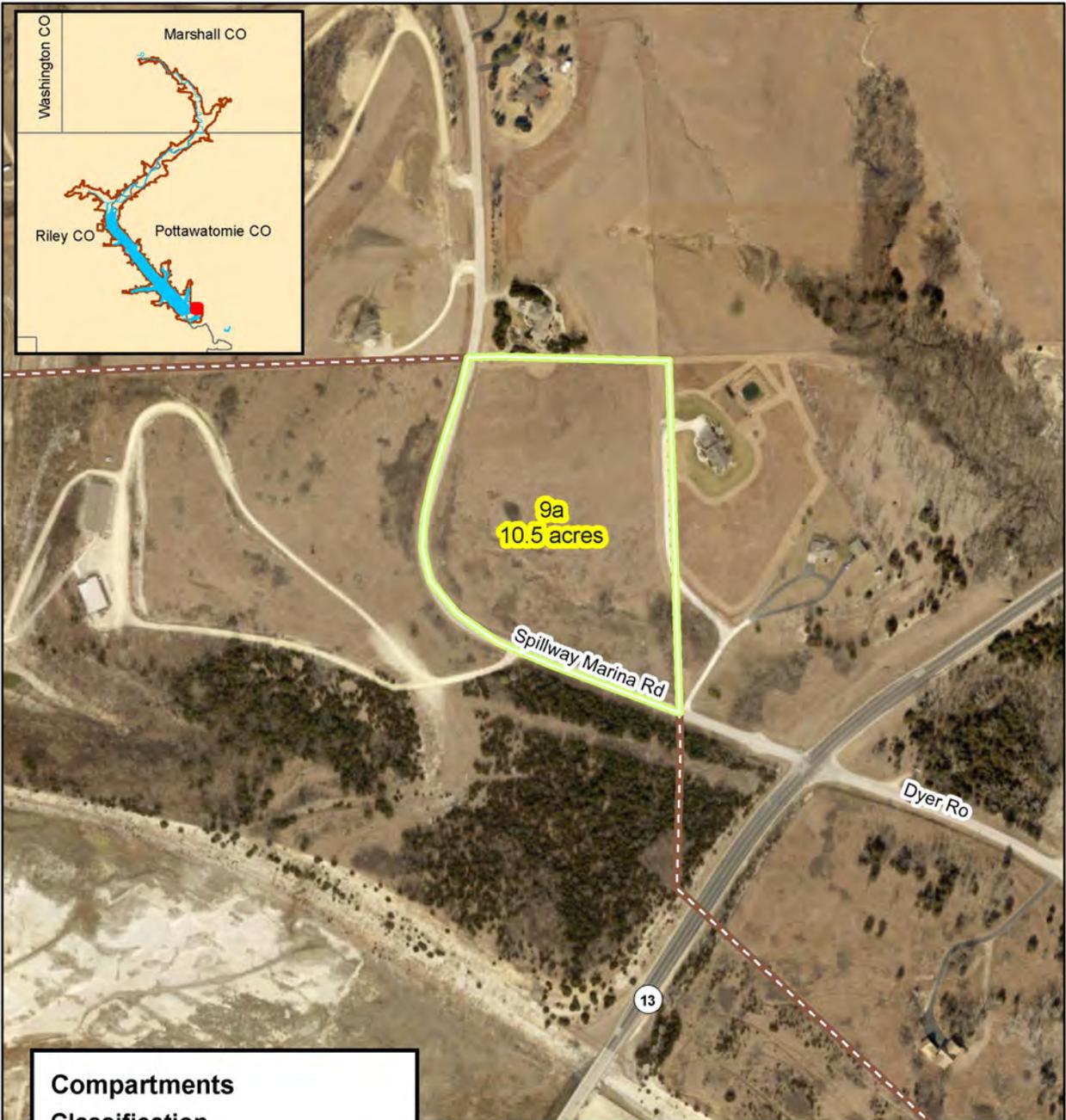


Compartments Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary

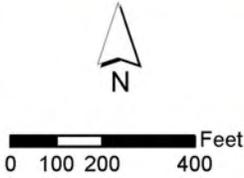


**Tuttle Creek Lake
Compartment 8
Rowing Facility**



Compartments Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary

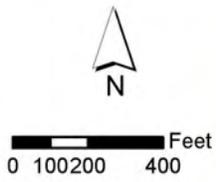


**Tuttle Creek Lake
Compartment 9a
Marina Road**



Compartments Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary

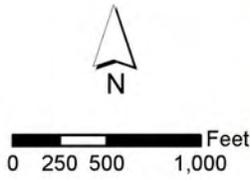


**Tuttle Creek Lake
Compartment 9b
Washington Heights**

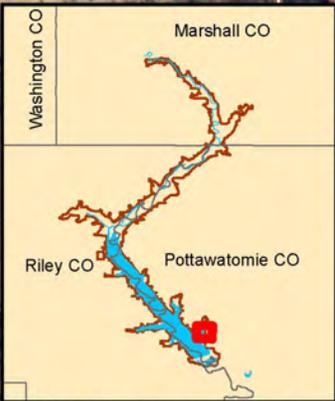
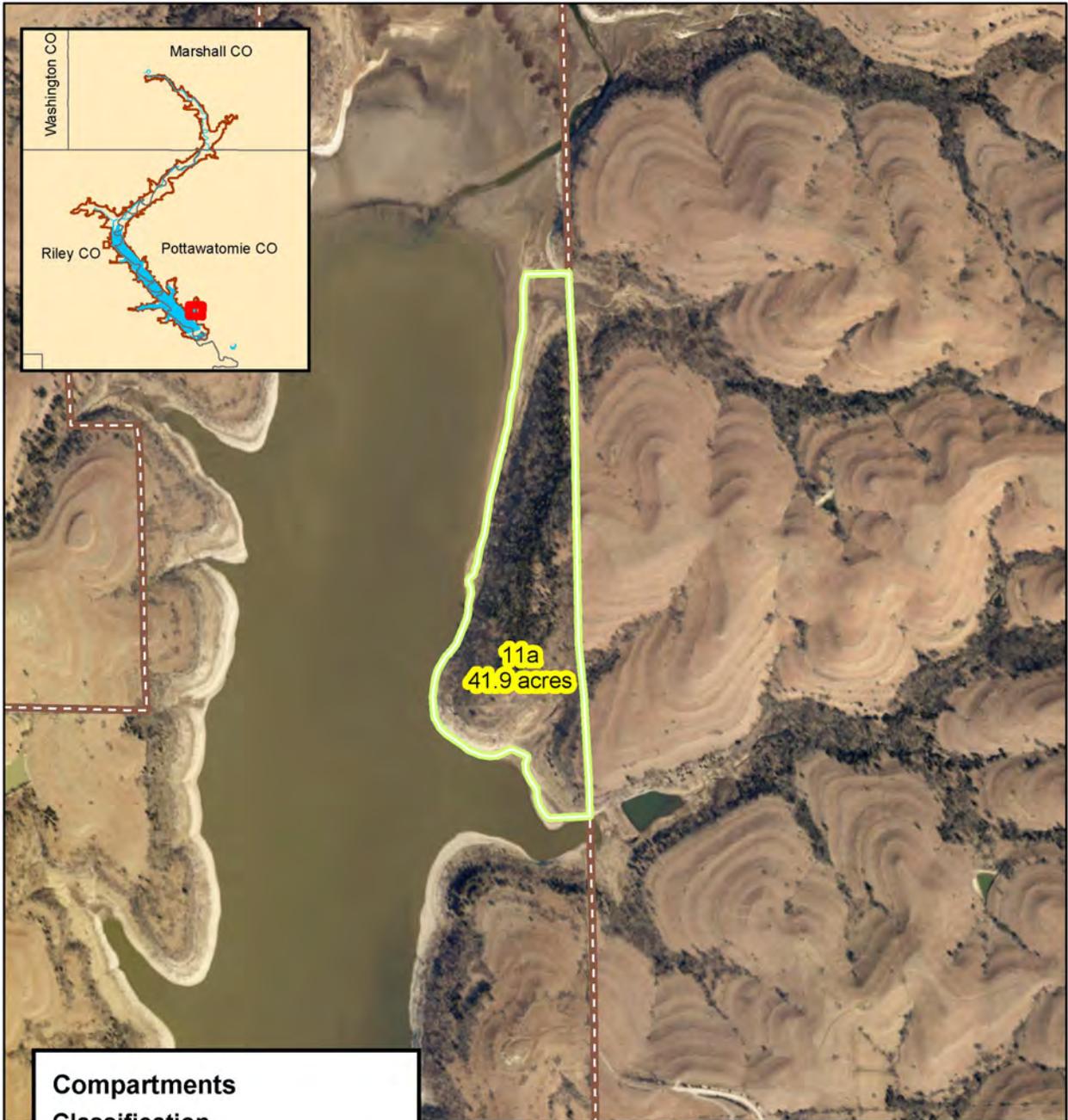


Compartments Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary
- g Marina
- [Boat Ramp

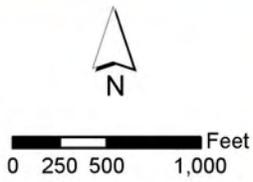


**Tuttle Creek Lake
Compartment 10
Cedar Ridge PUA**

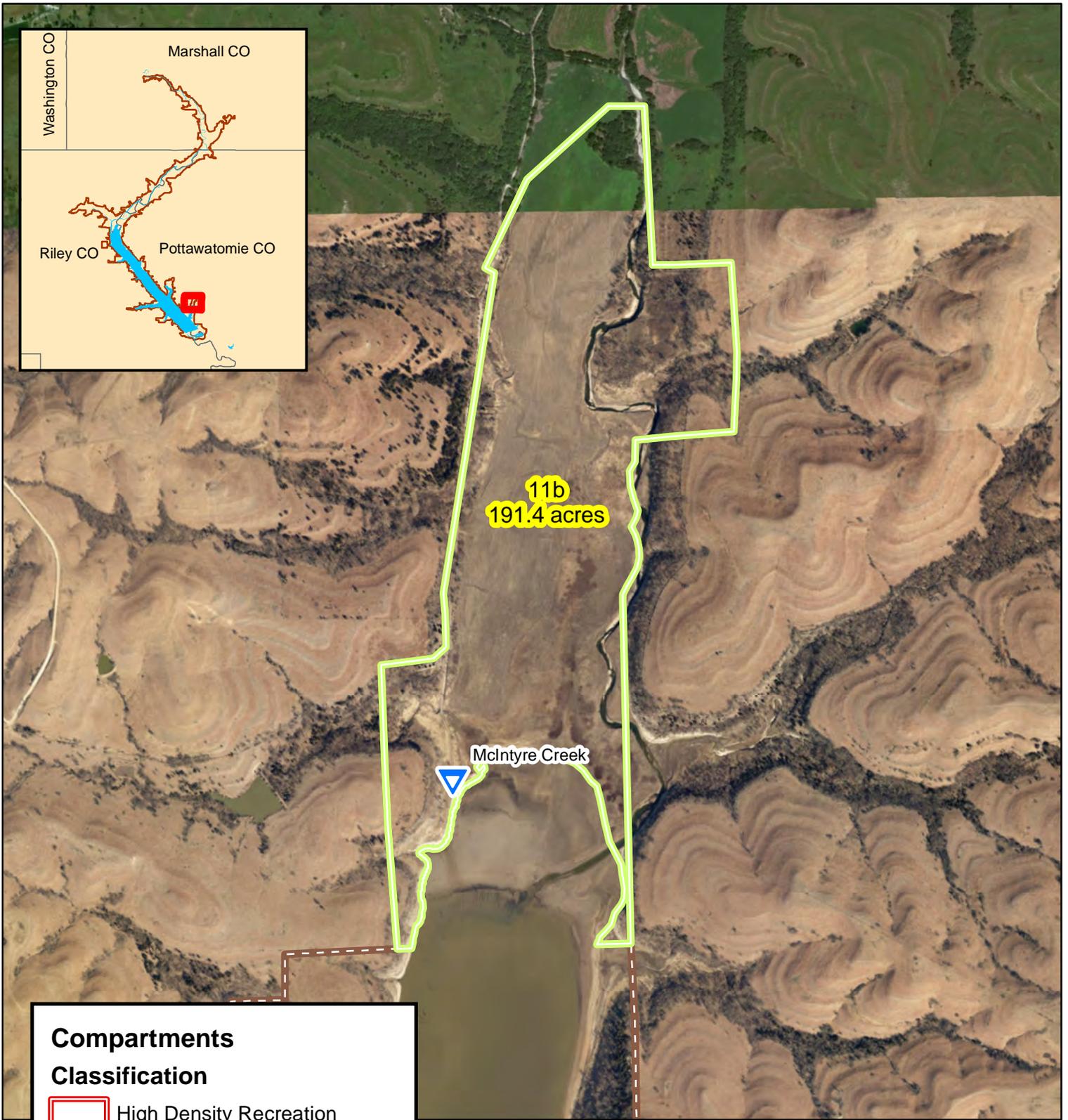


Compartments Classification

	High Density Recreation
	MRM: Low Density Recreation
	MRM: Vegetative Management
	MRM: Wildlife Management
	Project Operations
	Corps Boundary



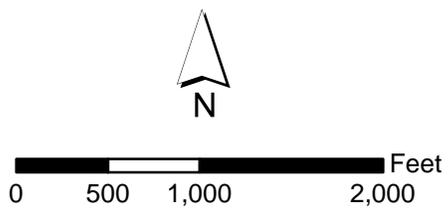
**Tuttle Creek Lake
Compartment 11a
South McIntyre
Cove**



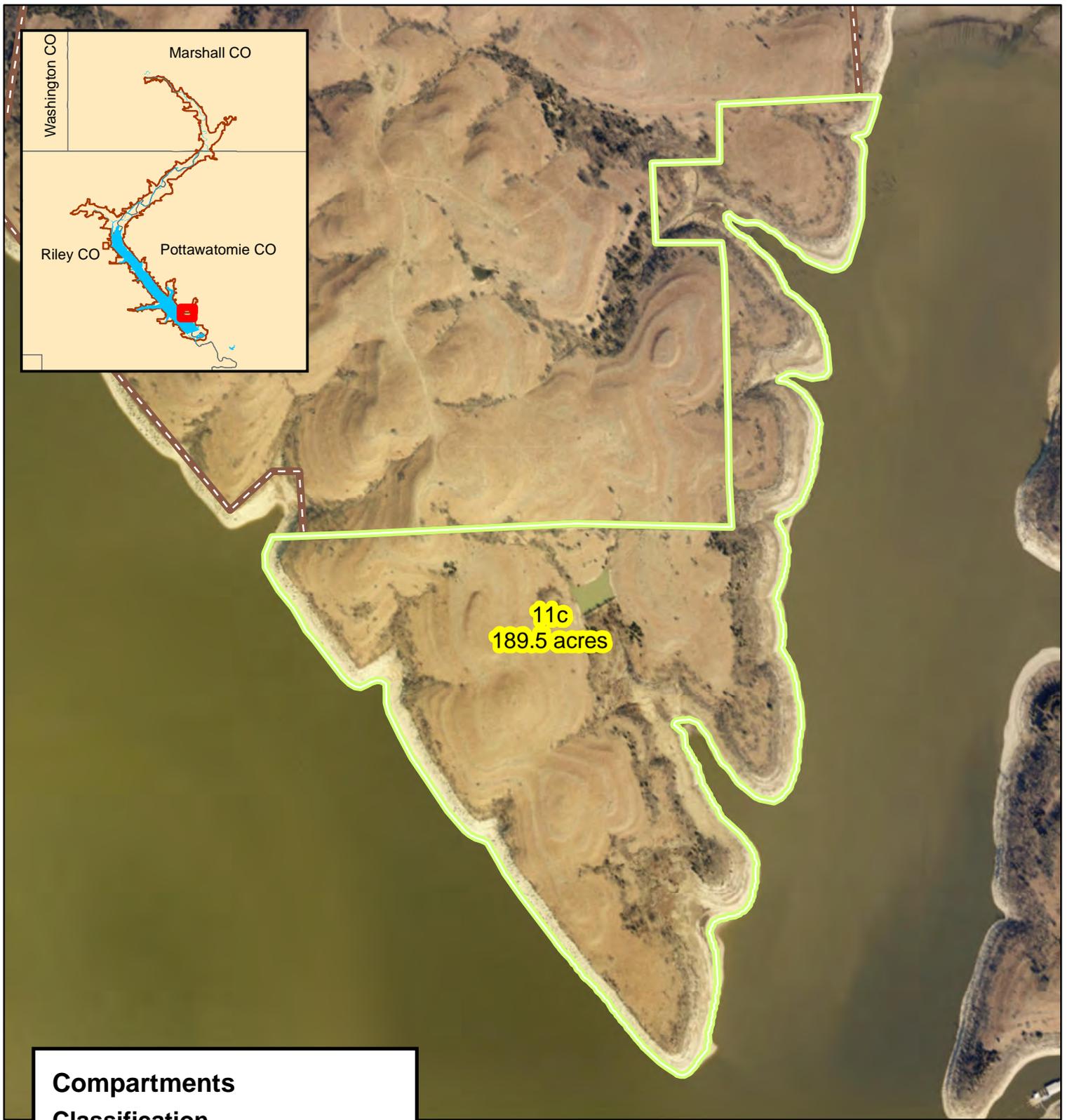
Compartments

Classification

-  High Density Recreation
-  MRM: Low Density Recreation
-  MRM: Vegetative Management
-  MRM: Wildlife Management
-  Project Operations
-  Corps Boundary
-  Access Point



**Tuttle Creek Lake
Compartment 11b
McIntyre Creek**

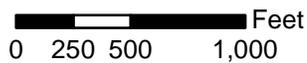


11c
189.5 acres

Compartments

Classification

-  High Density Recreation
-  MRM: Low Density Recreation
-  MRM: Vegetative Management
-  MRM: Wildlife Management
-  Project Operations
-  Corps Boundary



Tuttle Creek Lake
Compartment 11c
North McIntyre
Cove



Compartments

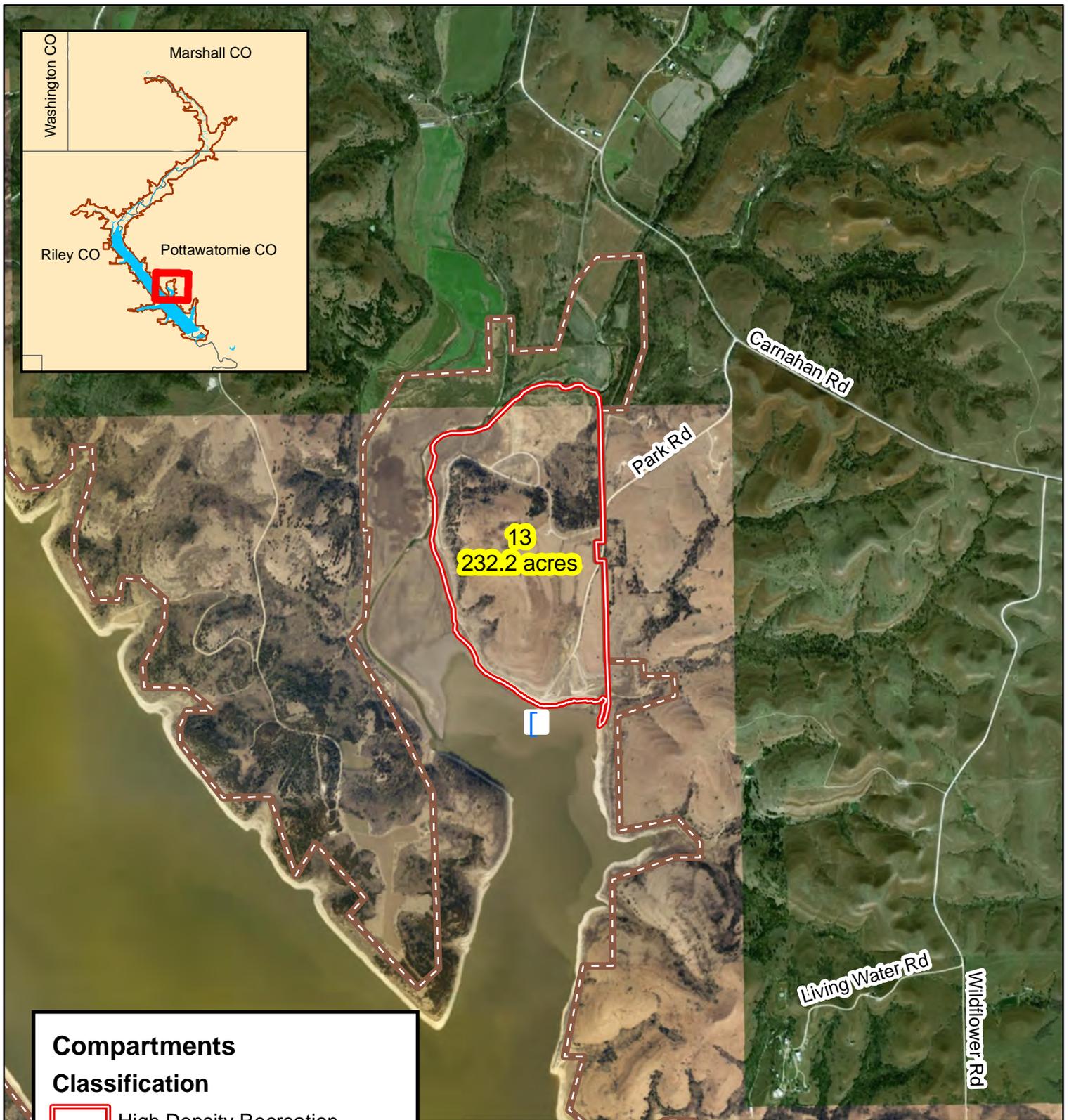
Classification

-  High Density Recreation
-  MRM: Low Density Recreation
-  MRM: Vegetative Management
-  MRM: Wildlife Management
-  Project Operations
-  Corps Boundary



0 500,000 2,000 Feet

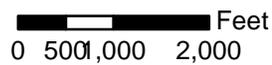
**Tuttle Creek Lake
Compartment 12
Wildflower**



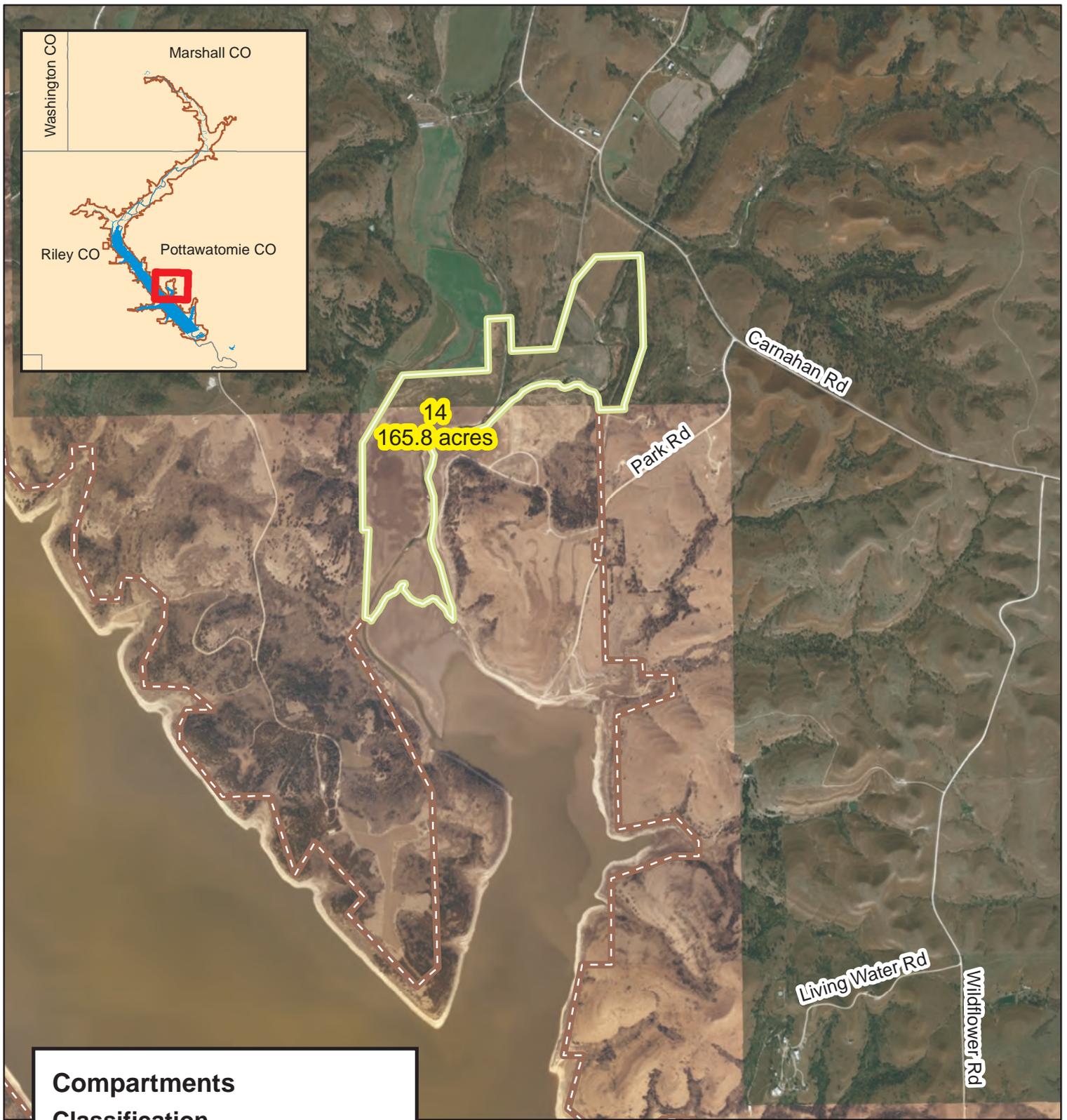
Compartments

Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary
- [Boat Ramp



**Tuttle Creek Lake
Compartment 13
Carnahan Park PUA**



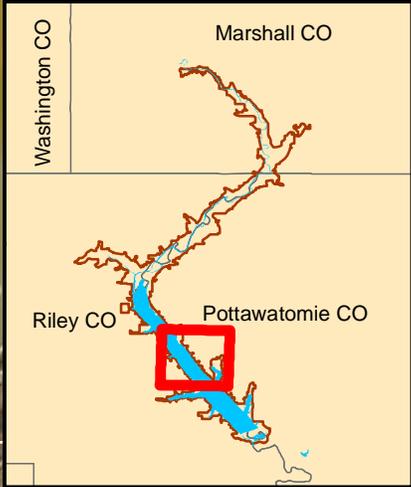
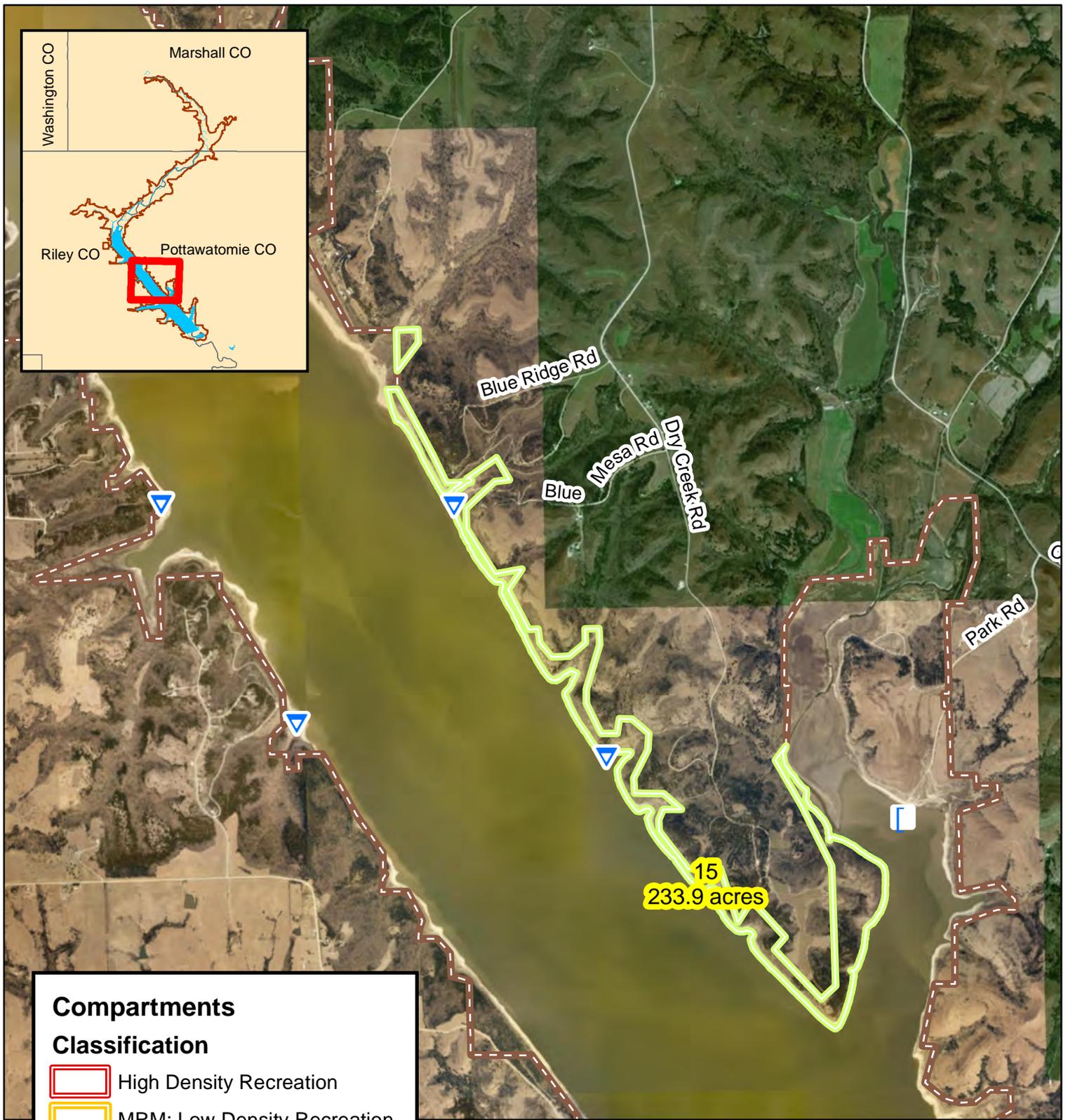
Compartments

Classification

-  High Density Recreation
-  MRM: Low Density Recreation
-  MRM: Vegetative Management
-  MRM: Wildlife Management
-  Project Operations
-  Corps Boundary

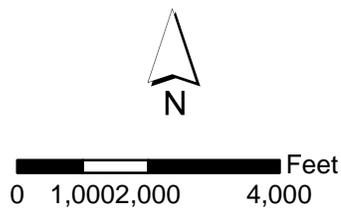


**Tuttle Creek Lake
Compartment 14
Carnahan Creek**

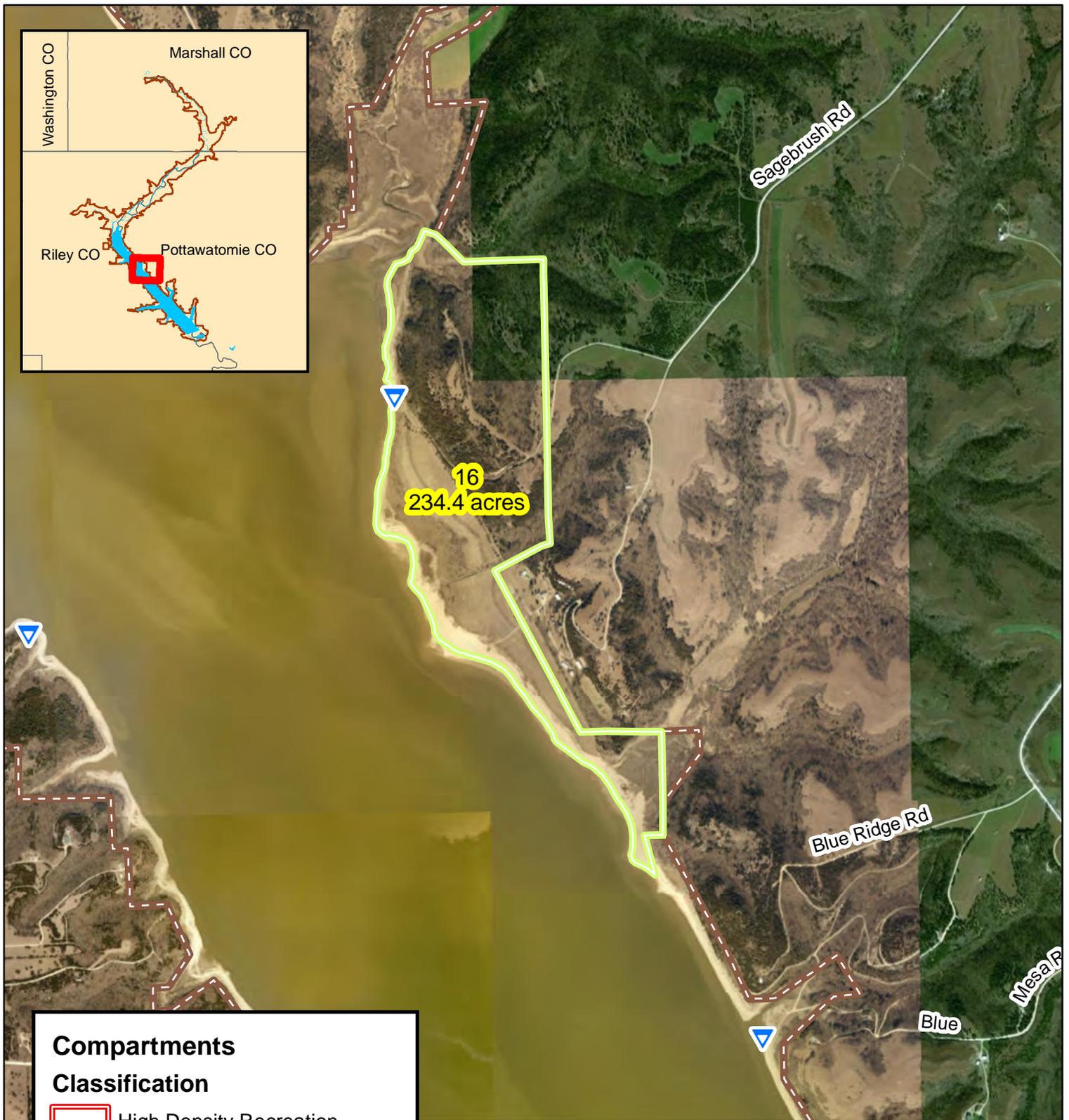


Compartments Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary
- [Boat Ramp
- ▼ Access Point



**Tuttle Creek Lake
Compartment 15
Dry Creek**



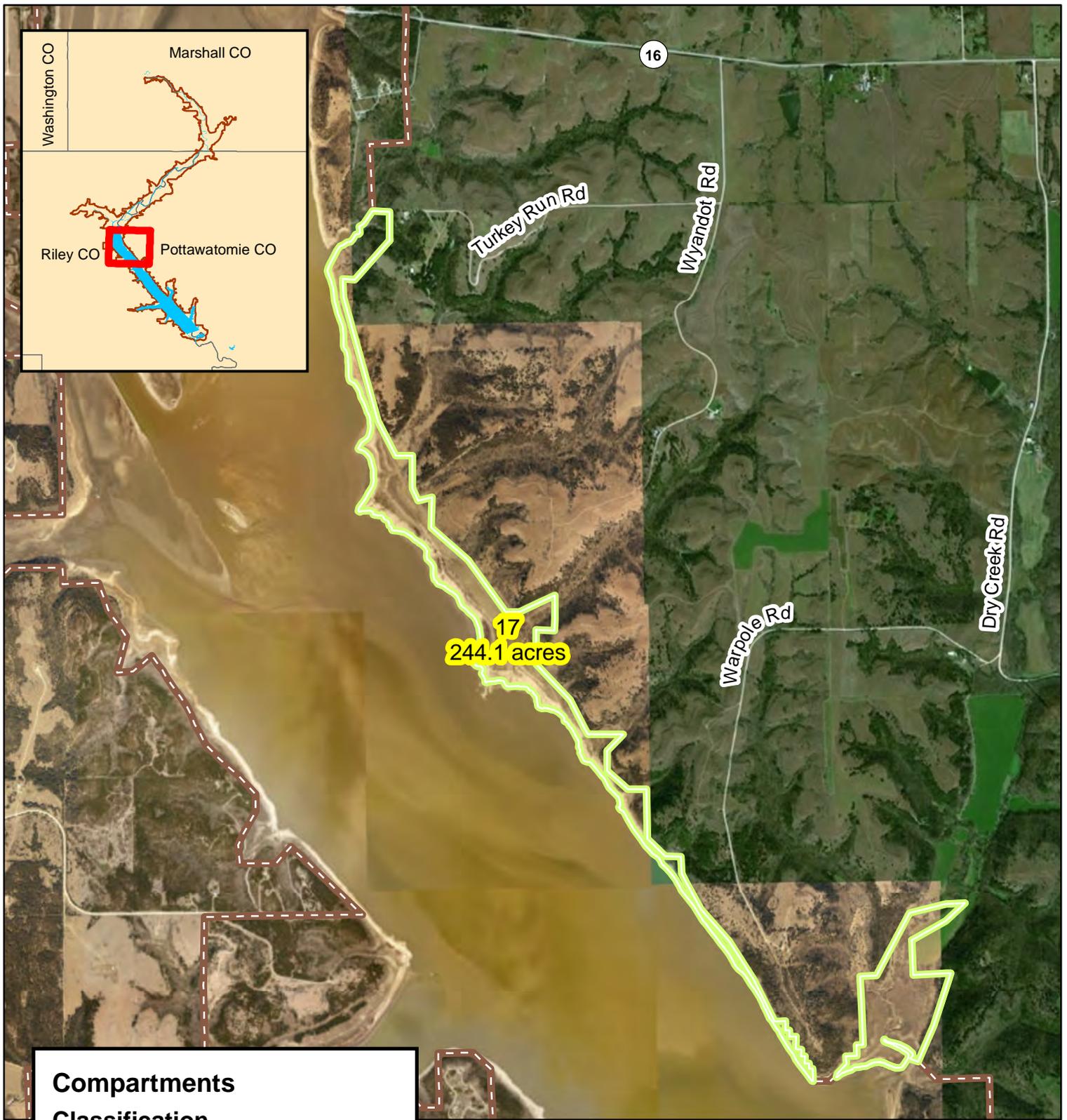
Compartments

Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary
- ▼ Access Point



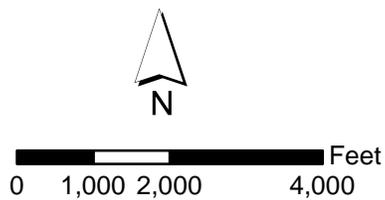
**Tuttle Creek Lake
Compartment 16
Garrison**



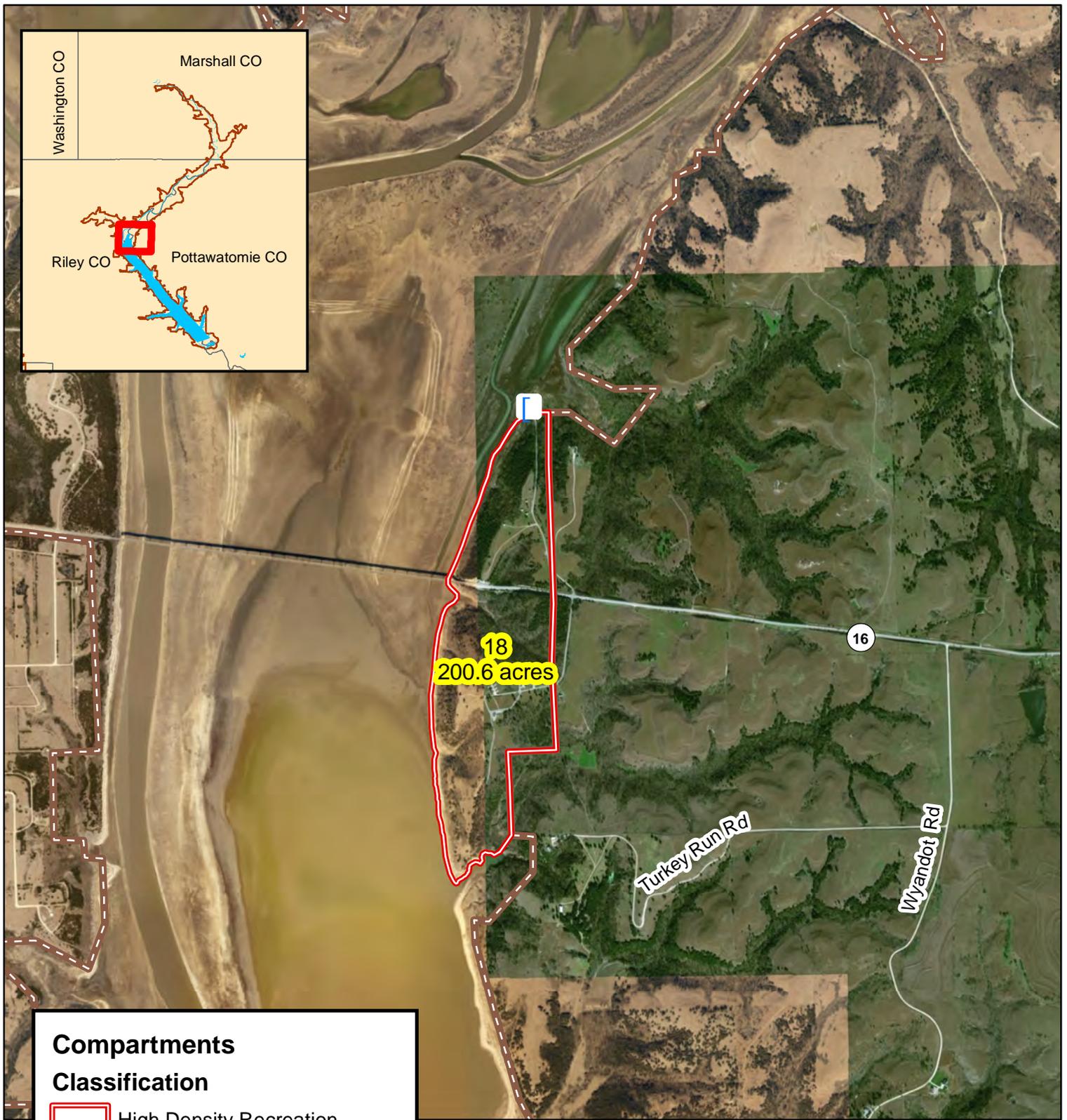
Compartments

Classification

-  High Density Recreation
-  MRM: Low Density Recreation
-  MRM: Vegetative Management
-  MRM: Wildlife Management
-  Project Operations
-  Corps Boundary



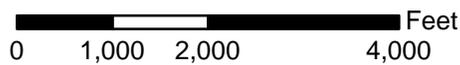
**Tuttle Creek Lake
Compartment 17
Warpole**



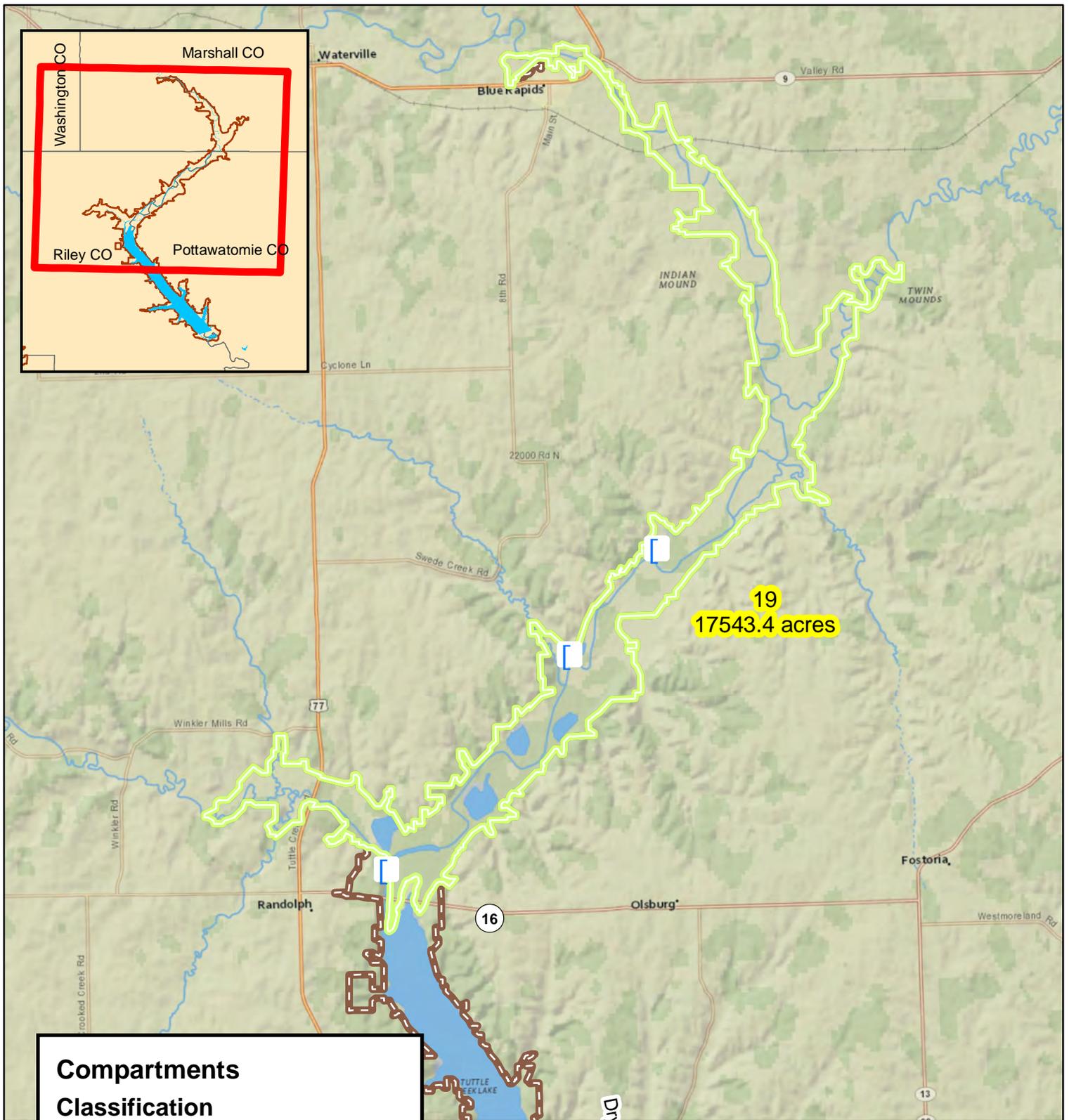
Compartments

Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary
- [Boat Ramp



**Tuttle Creek Lake
Compartment 18
Randolph PUA**



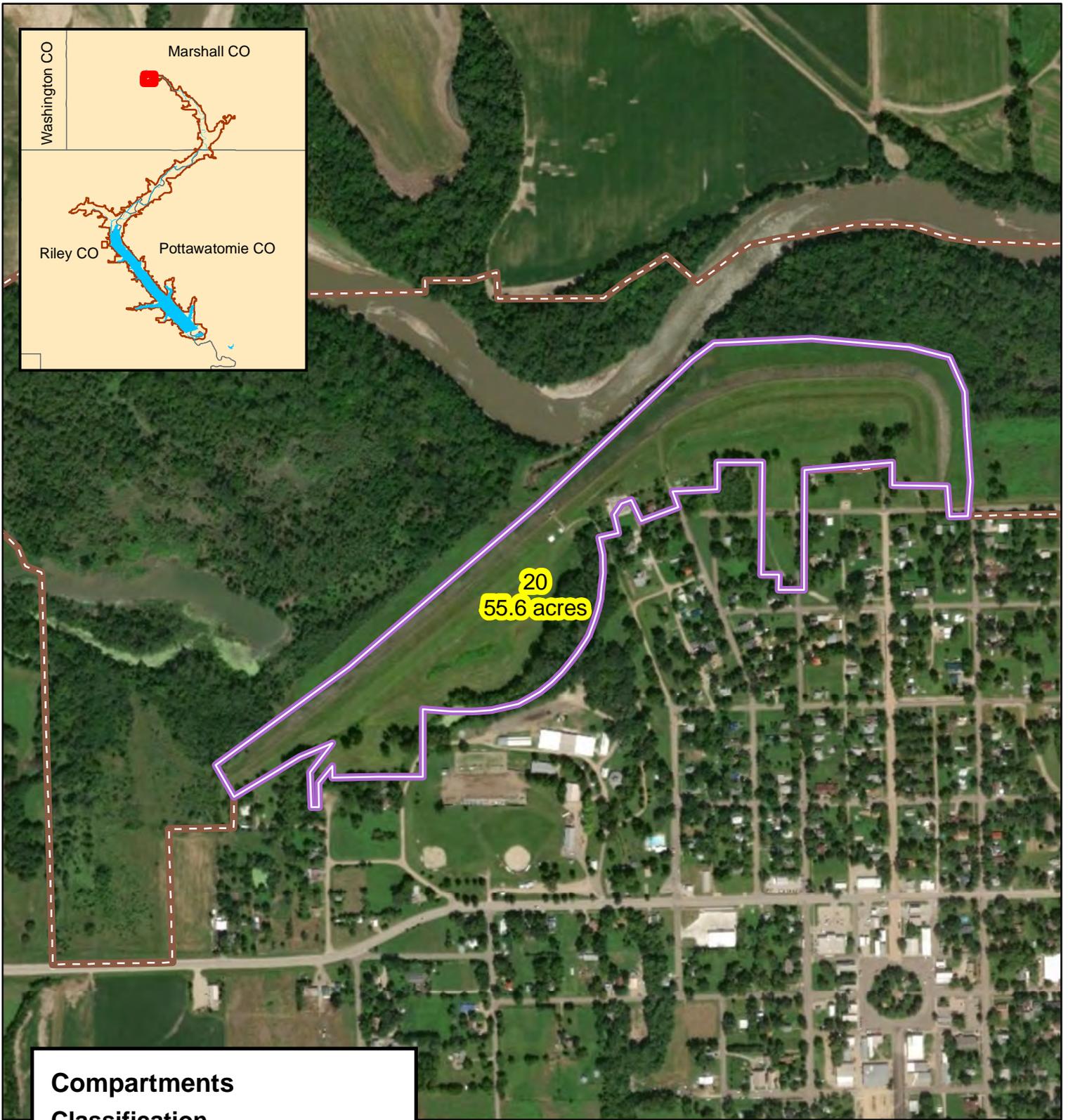
Compartments

Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary
- [Boat Ramp



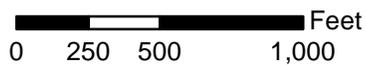
**Tuttle Creek Lake
Compartment 19
KDWP&T Wildlife
Management**



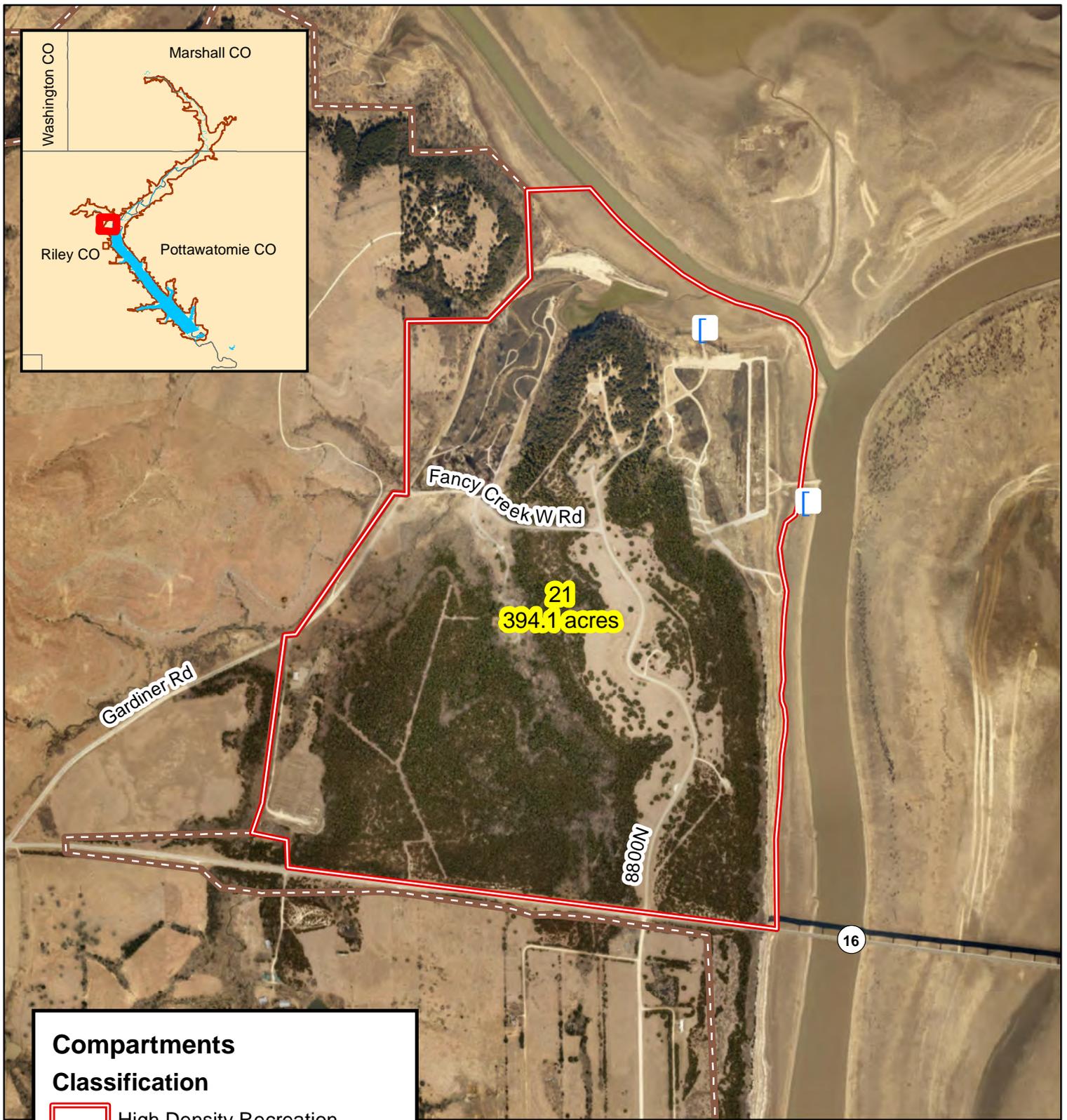
Compartments

Classification

-  High Density Recreation
-  MRM: Low Density Recreation
-  MRM: Vegetative Management
-  MRM: Wildlife Management
-  Project Operations
-  Corps Boundary



**Tuttle Creek Lake
Compartment 20
Blue Rapids Levee**



Compartments

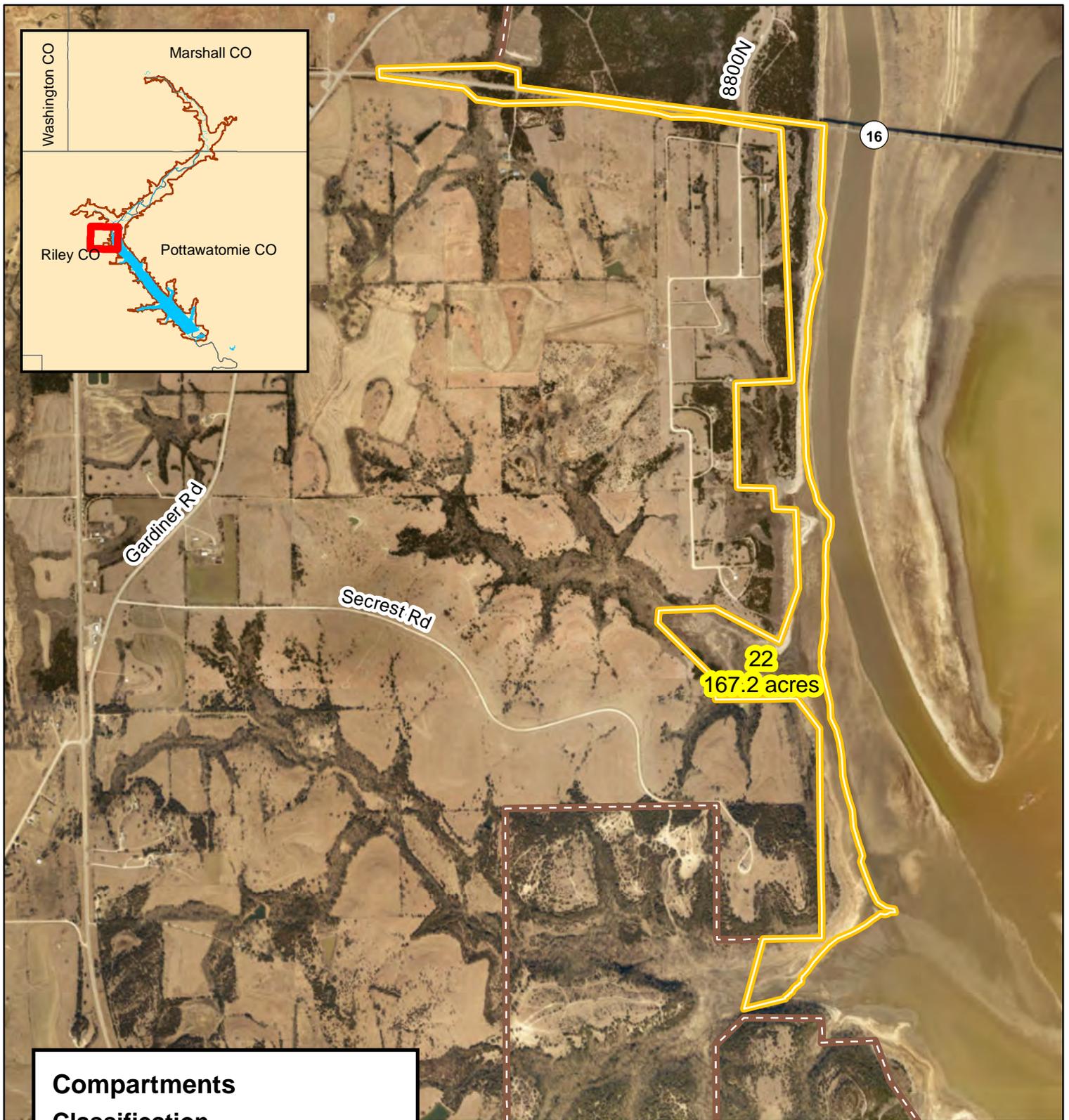
Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary
- [Boat Ramp



0 250 500 1,000 Feet

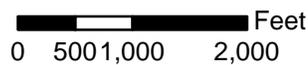
**Tuttle Creek Lake
Compartment 21
Fancy Creek PUA**



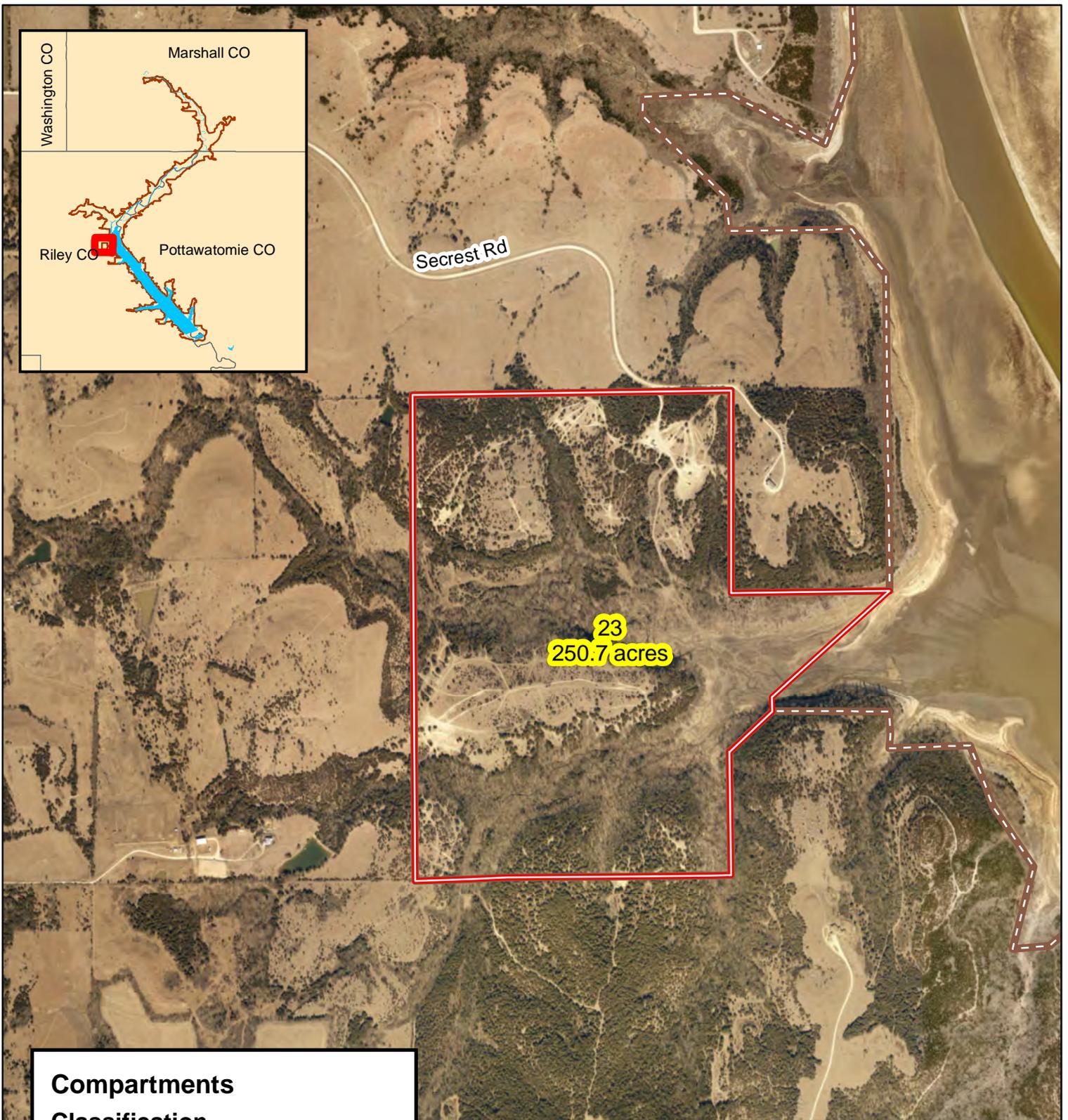
Compartments

Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary



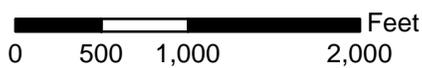
**Tuttle Creek Lake
Compartment 22
Bridgeview Heights**



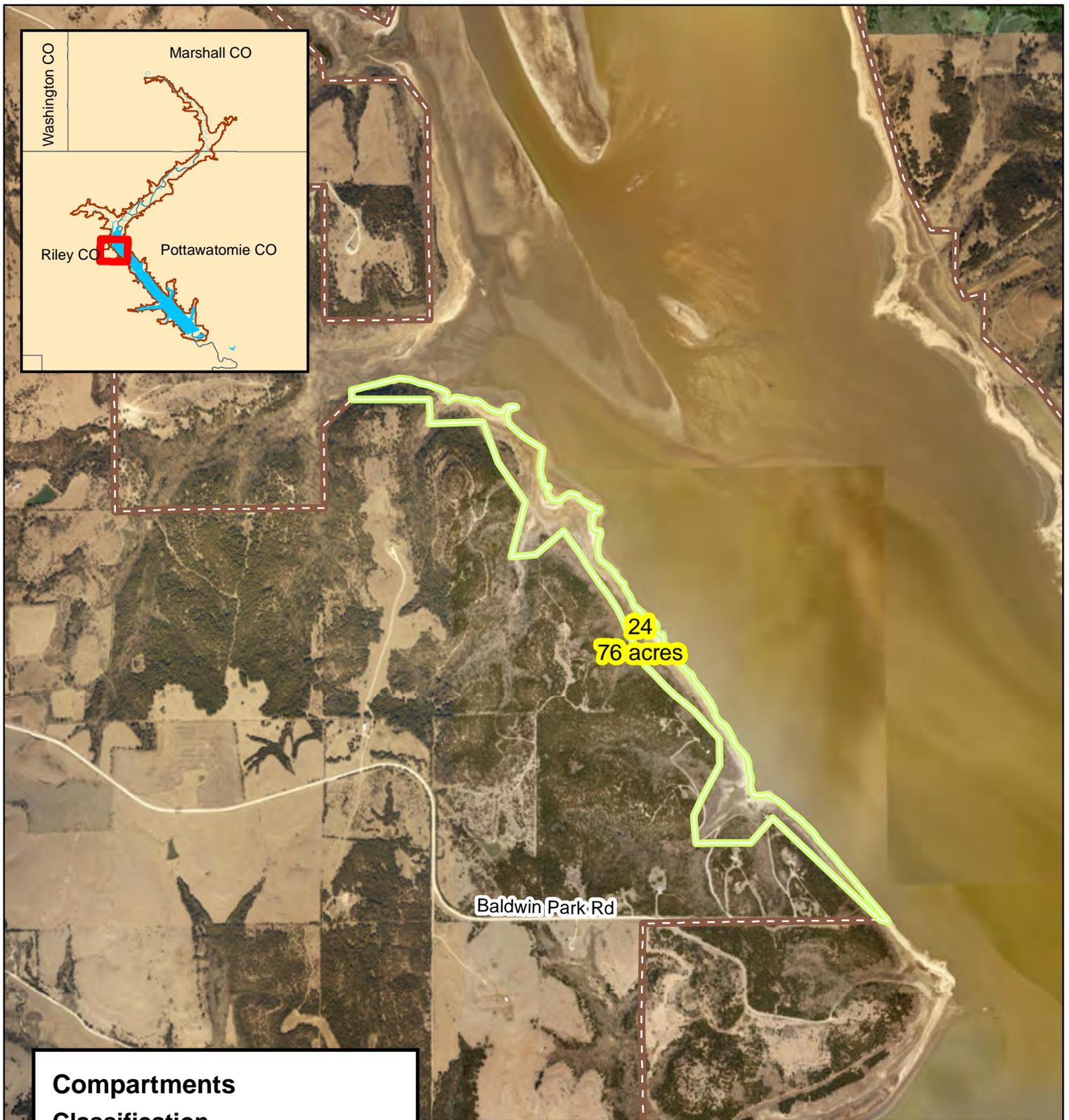
Compartments

Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary



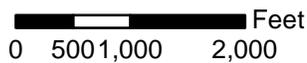
**Tuttle Creek Lake
Compartment 23
ORV Area PUA**



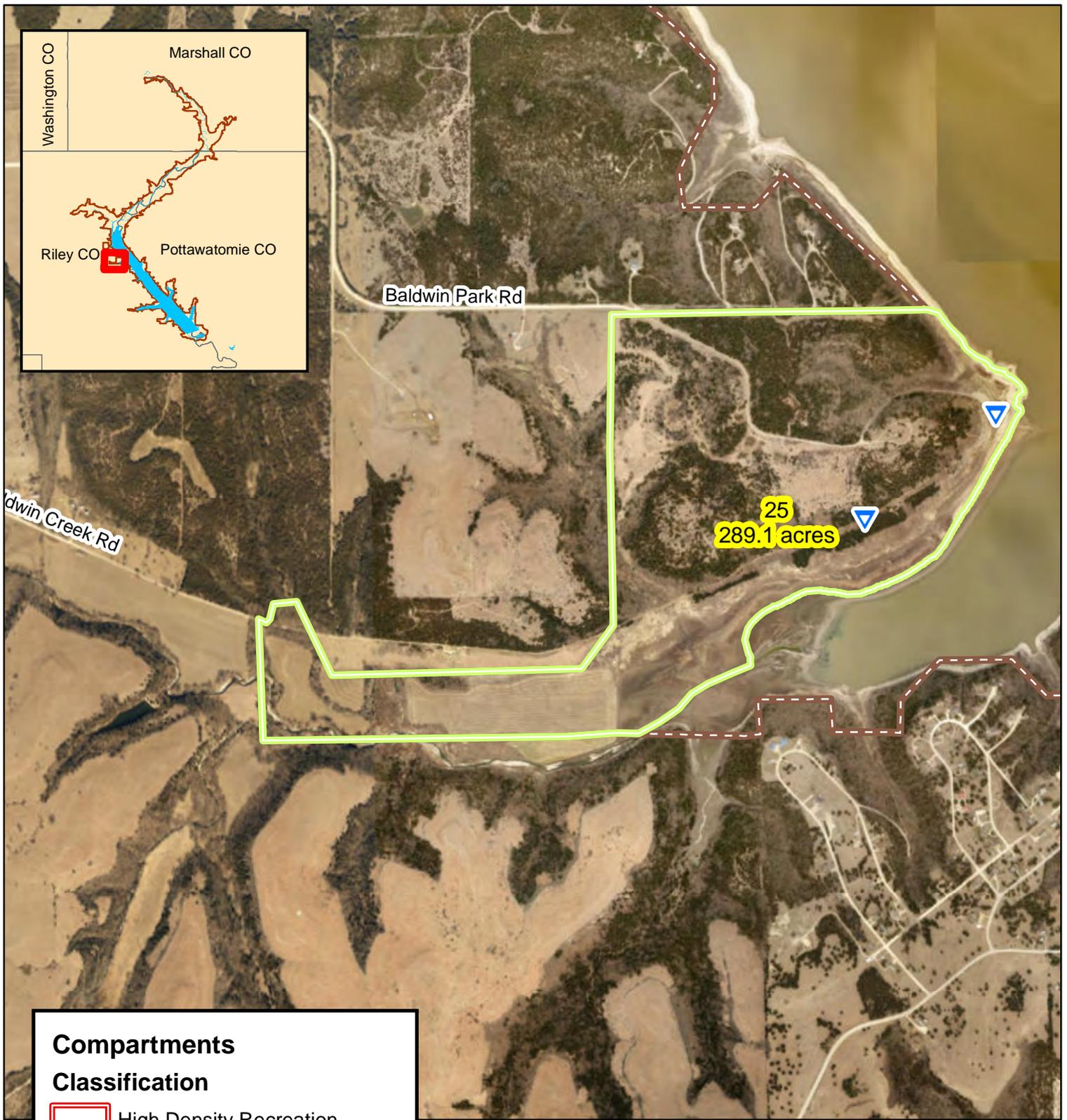
Compartments

Classification

-  High Density Recreation
-  MRM: Low Density Recreation
-  MRM: Vegetative Management
-  MRM: Wildlife Management
-  Project Operations
-  Corps Boundary



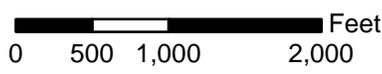
**Tuttle Creek Lake
Compartment 24
White Canyon**



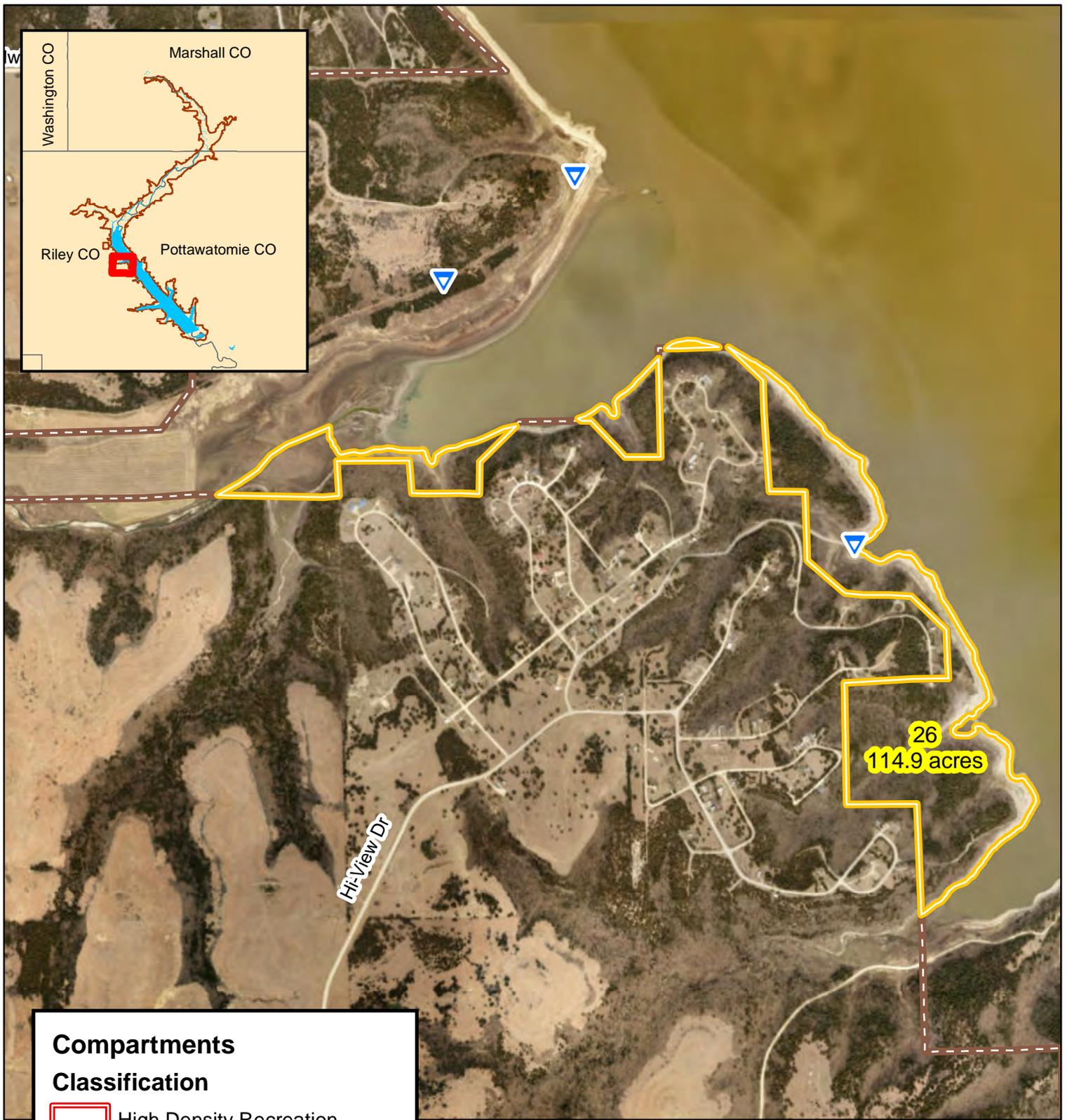
Compartments

Classification

-  High Density Recreation
-  MRM: Low Density Recreation
-  MRM: Vegetative Management
-  MRM: Wildlife Management
-  Project Operations
-  Corps Boundary
-  Access Point



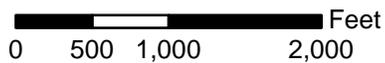
**Tuttle Creek Lake
Compartment 25
Baldwin Creek**



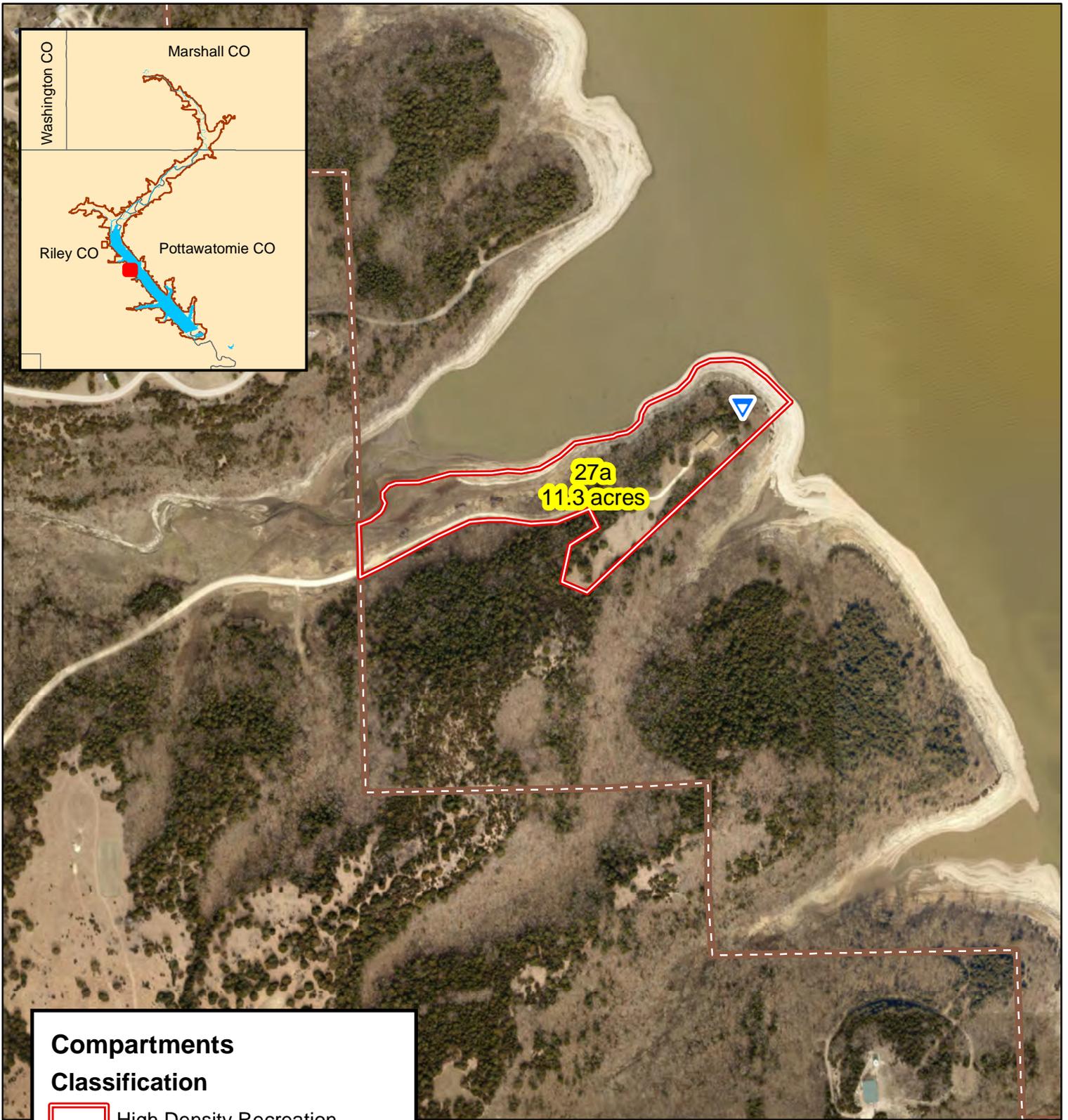
Compartments

Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary
- ▼ Access Point



**Tuttle Creek Lake
Compartment 26
University Park**



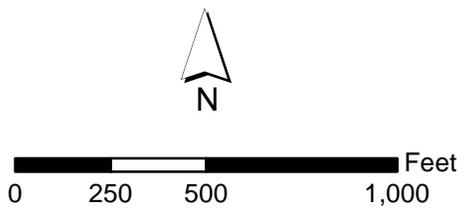
27a
11.3 acres



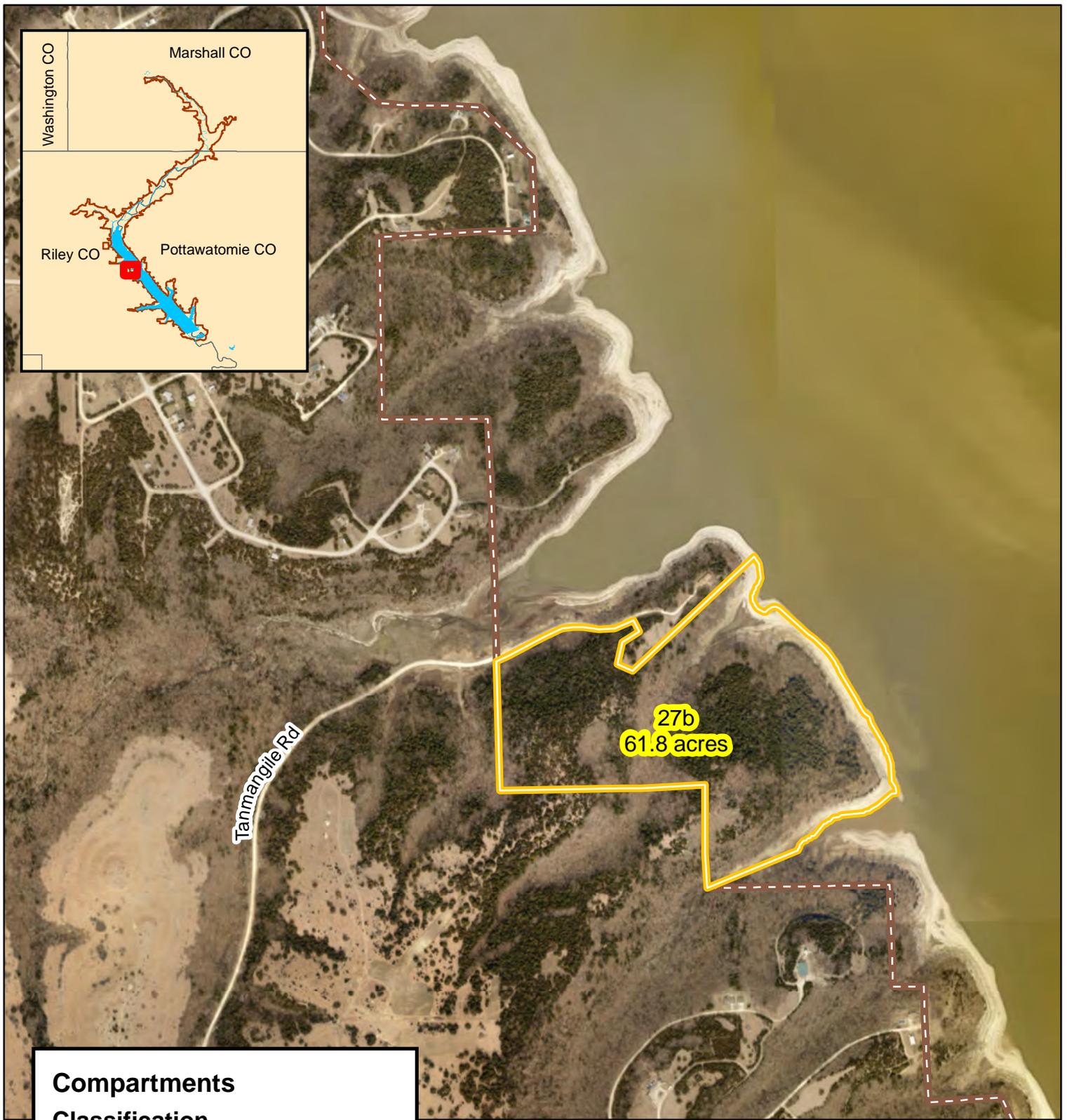
Compartments

Classification

-  High Density Recreation
-  MRM: Low Density Recreation
-  MRM: Vegetative Management
-  MRM: Wildlife Management
-  Project Operations
-  Corps Boundary
-  Access Point



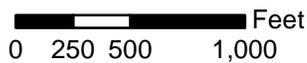
Tuttle Creek Lake
Compartment 27a
Scout Lodge



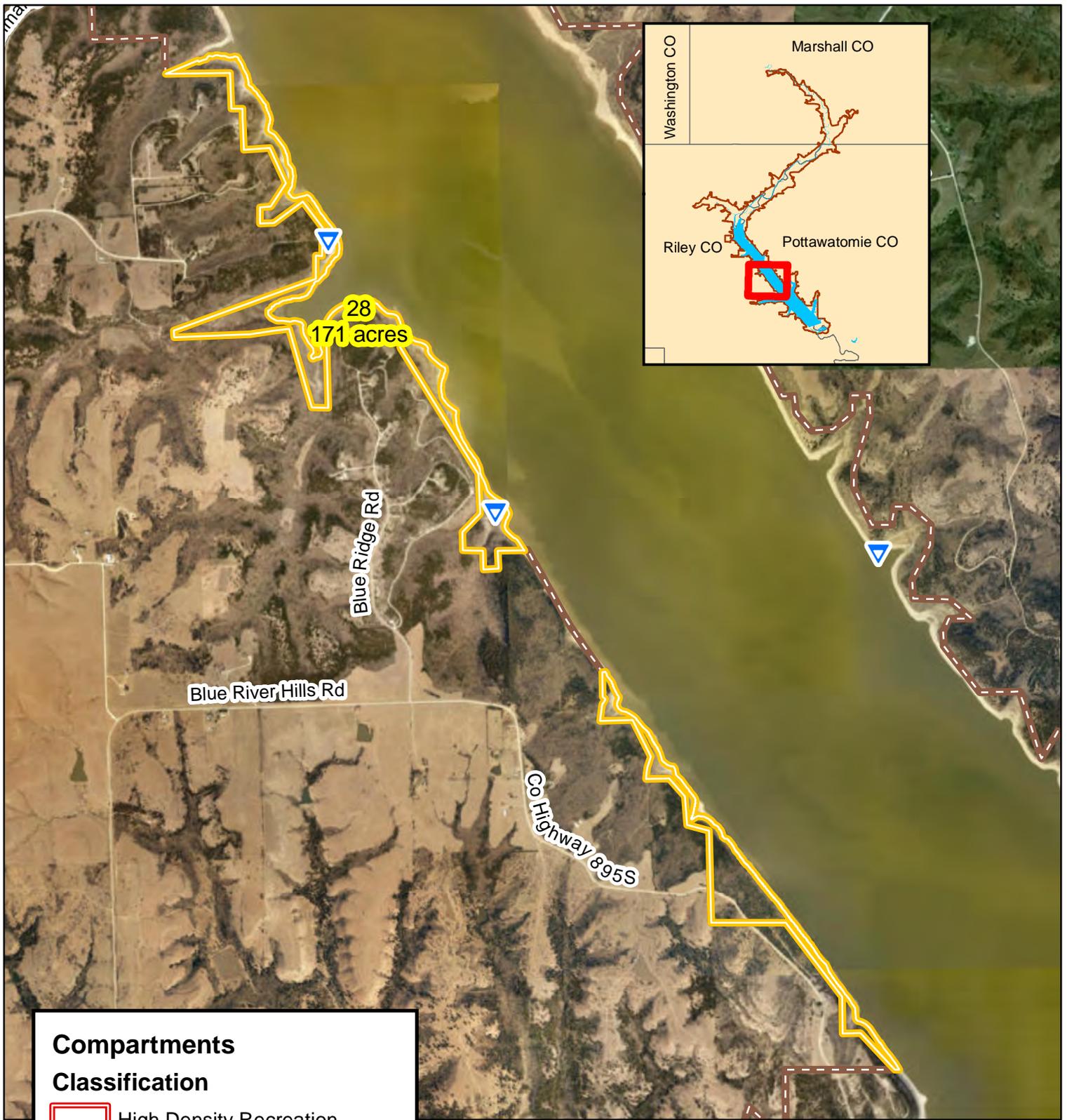
Compartments

Classification

-  High Density Recreation
-  MRM: Low Density Recreation
-  MRM: Vegetative Management
-  MRM: Wildlife Management
-  Project Operations
-  Corps Boundary

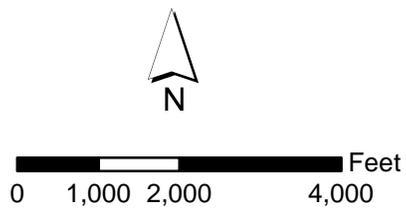


**Tuttle Creek Lake
Compartment 27b
Scout Camp**

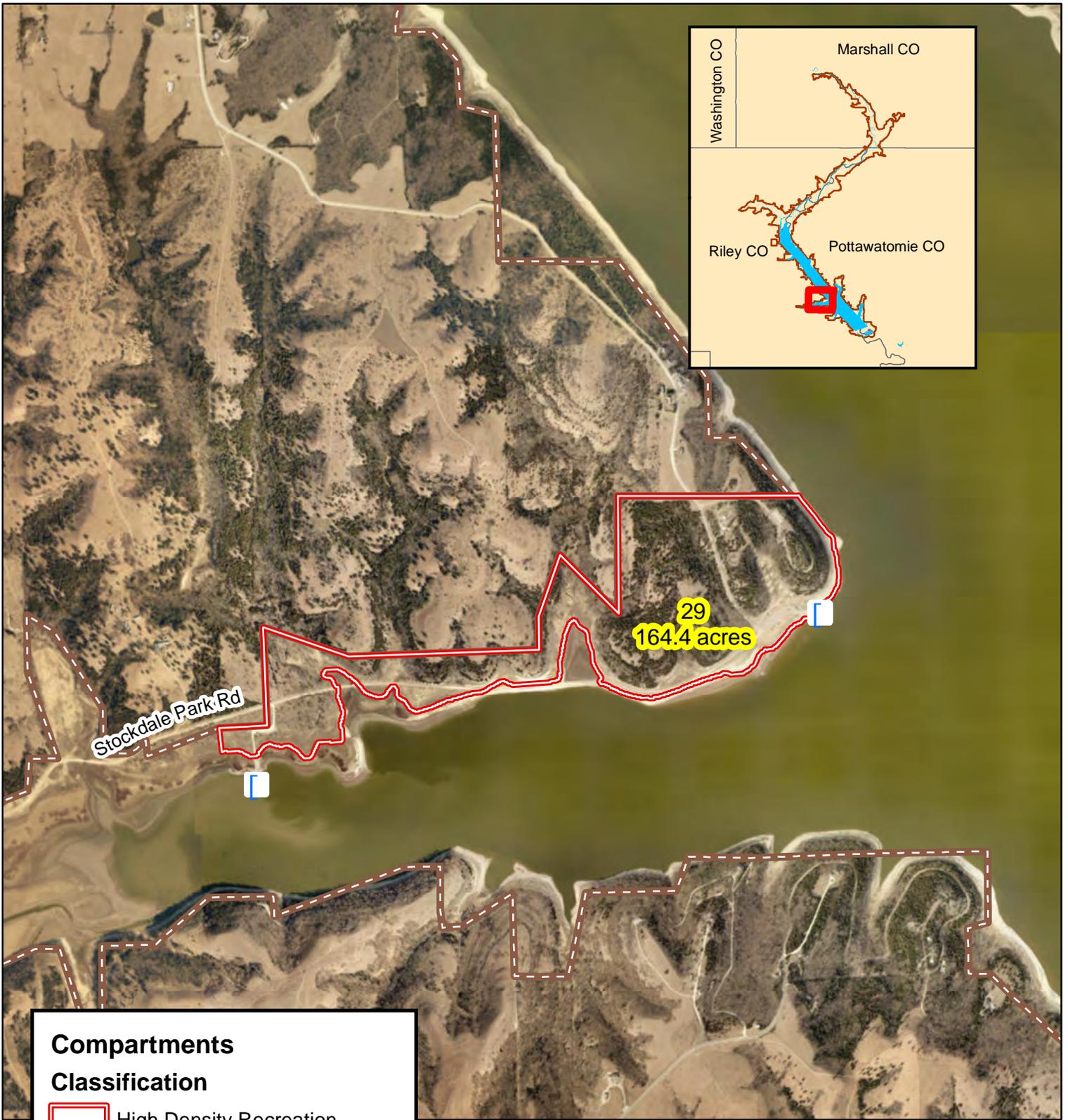


Compartments Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary
- ▼ Access Point



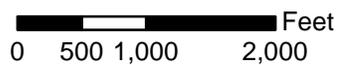
**Tuttle Creek Lake
Compartment 28
Blue River Hills**



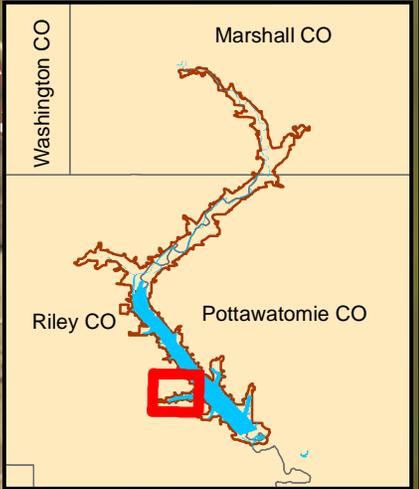
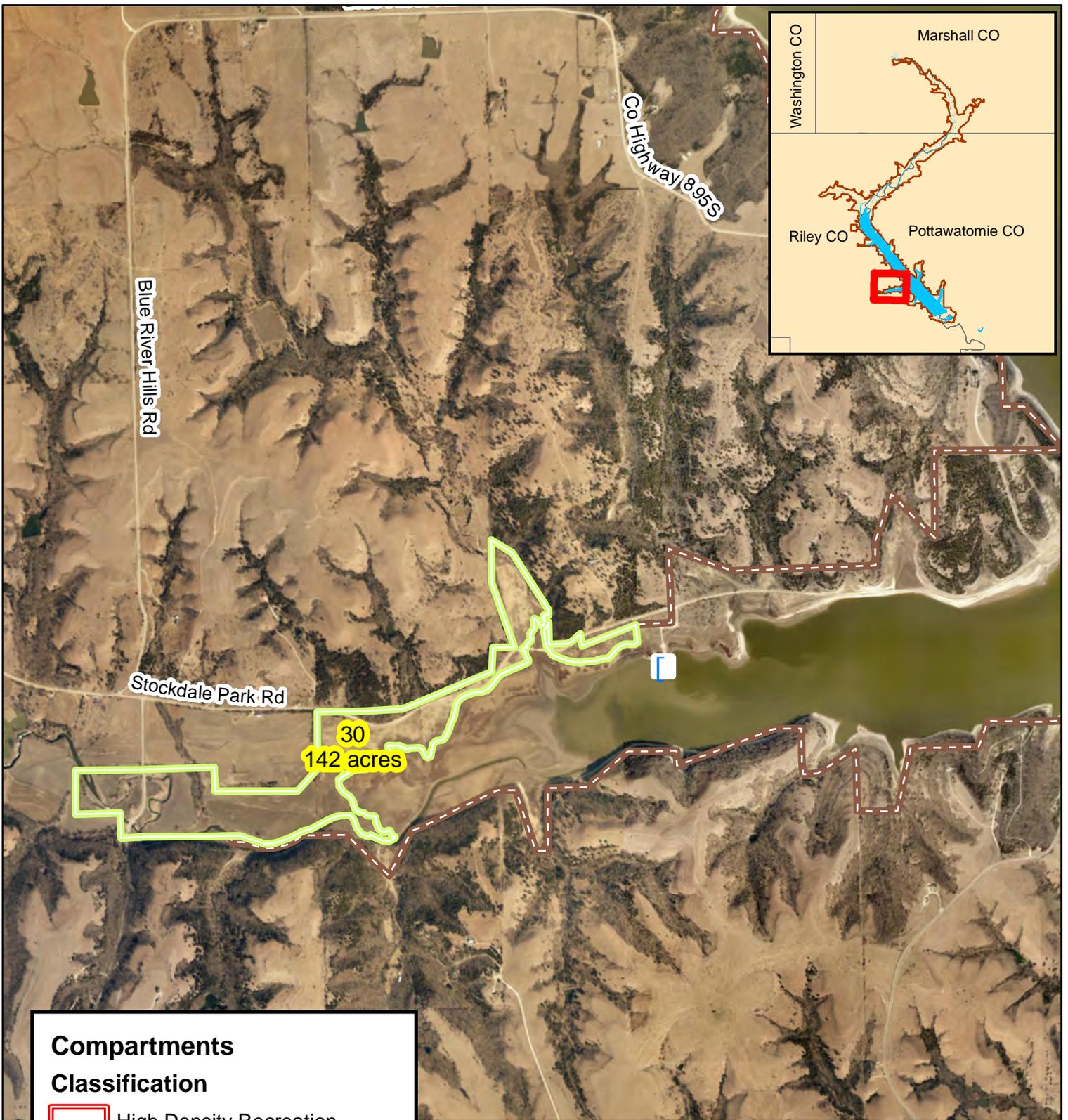
Compartments

Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary
- [Boat Ramp



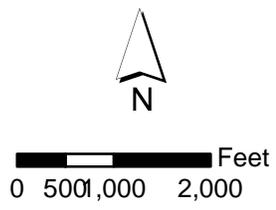
**Tuttle Creek Lake
Compartment 29
Stockdale Park PUA**



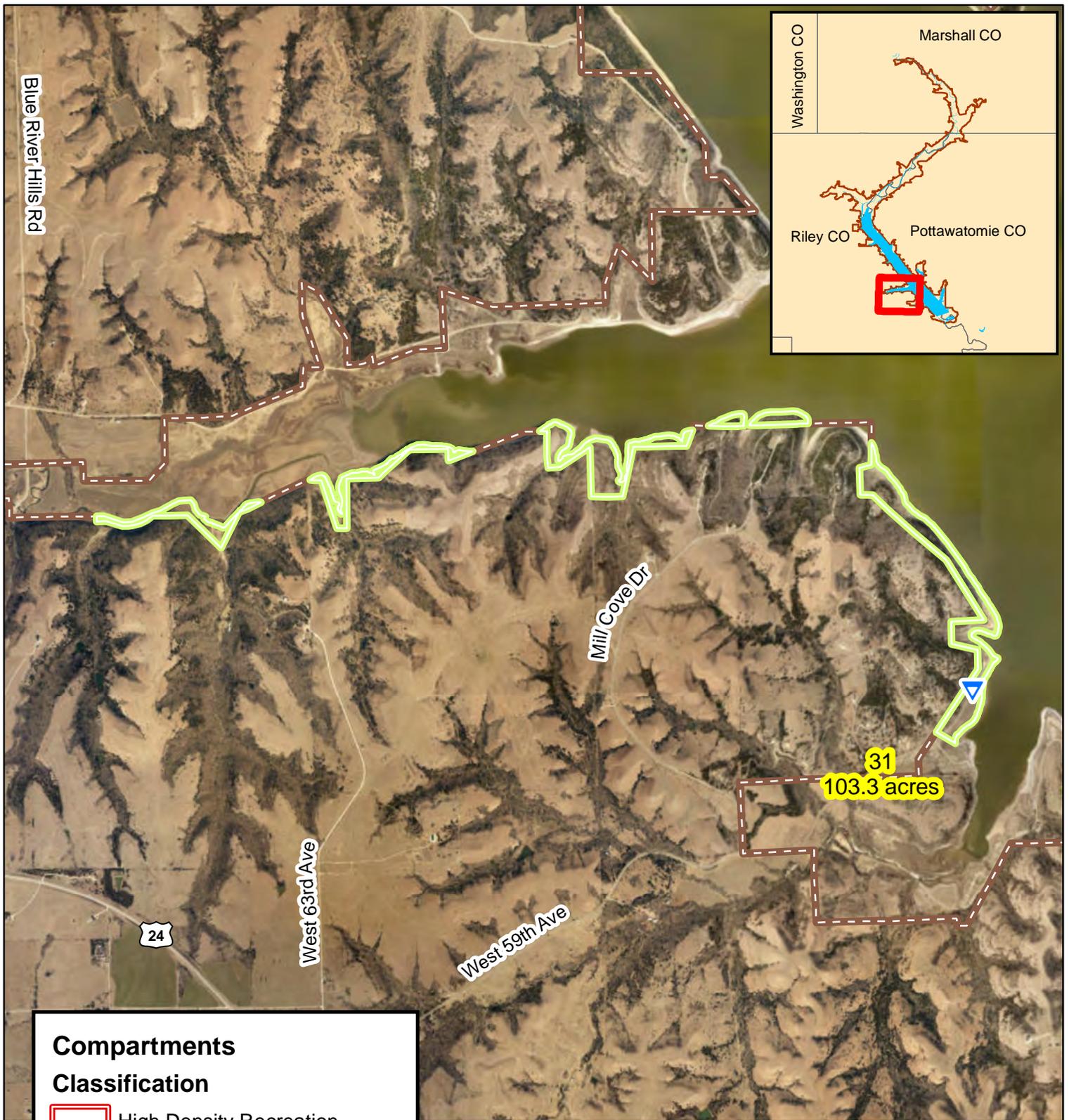
Compartments

Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary
- L Boat Ramp



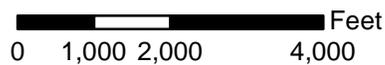
**Tuttle Creek Lake
Compartment 30
North Mill Cove**



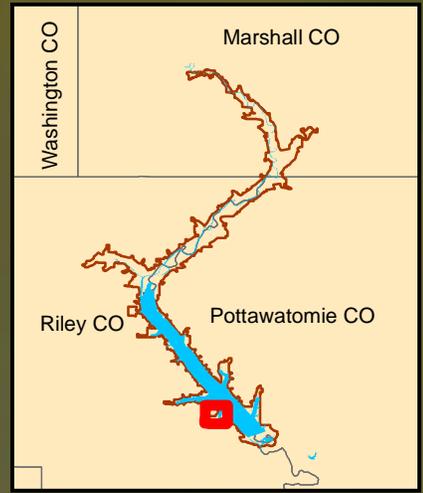
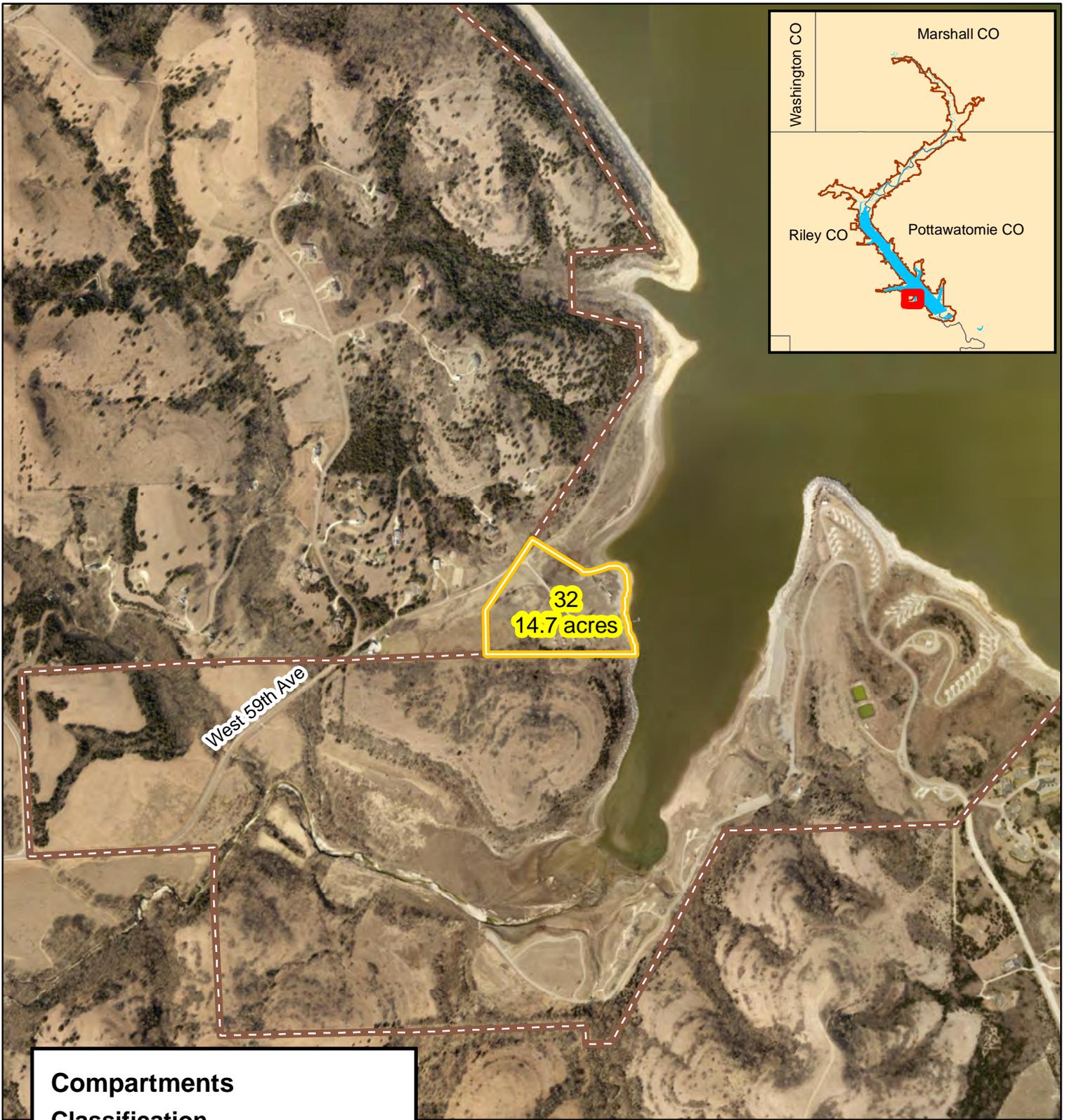
Compartments

Classification

-  High Density Recreation
-  MRM: Low Density Recreation
-  MRM: Vegetative Management
-  MRM: Wildlife Management
-  Project Operations
-  Corps Boundary
-  Access Point



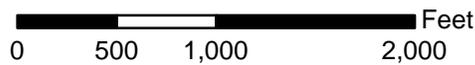
**Tuttle Creek Lake
Compartment 31
South Mill Cove**



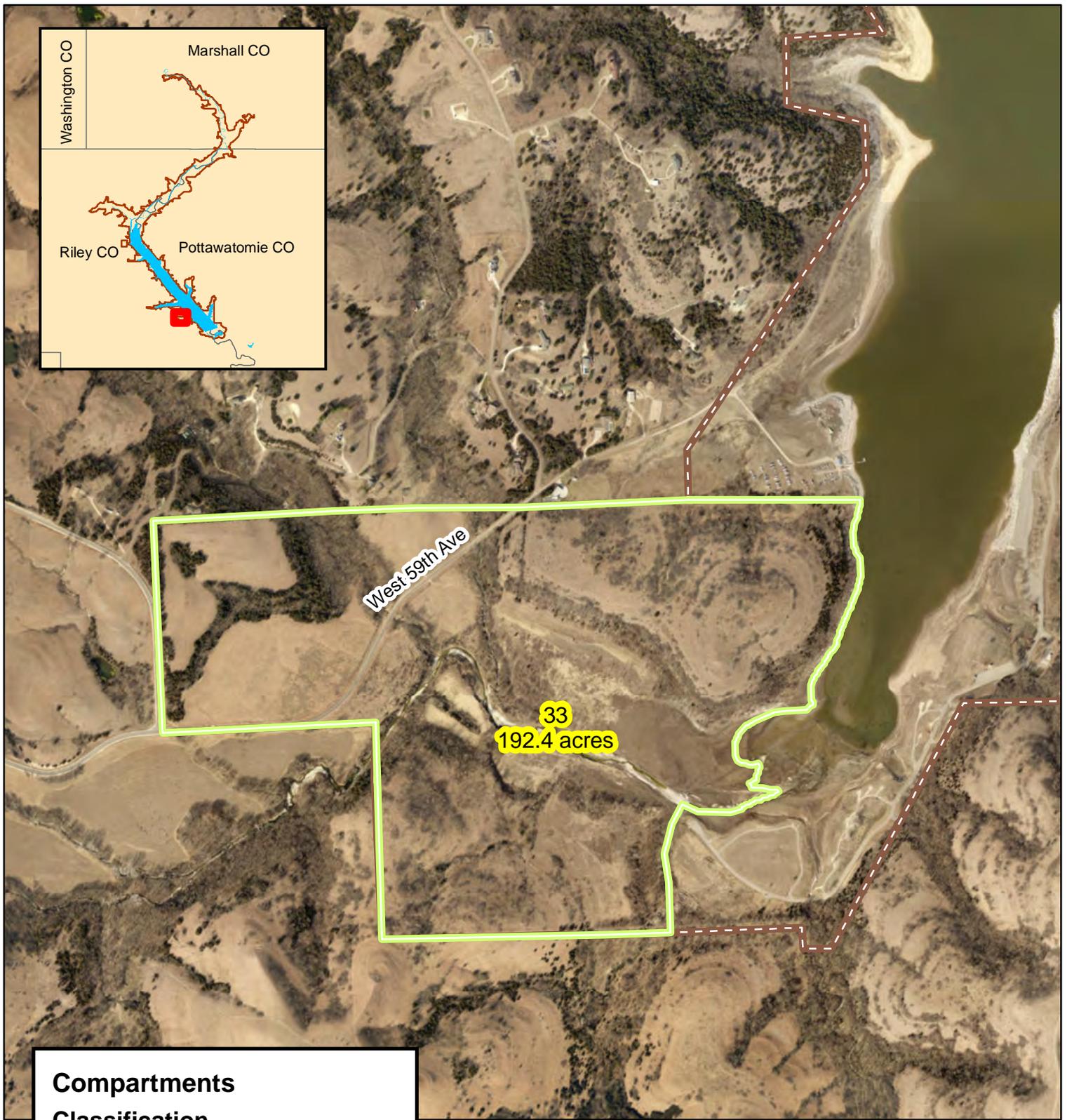
Compartments

Classification

-  High Density Recreation
-  MRM: Low Density Recreation
-  MRM: Vegetative Management
-  MRM: Wildlife Management
-  Project Operations
-  Corps Boundary



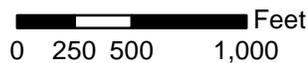
**Tuttle Creek Lake
Compartment 32
Yacht Club**



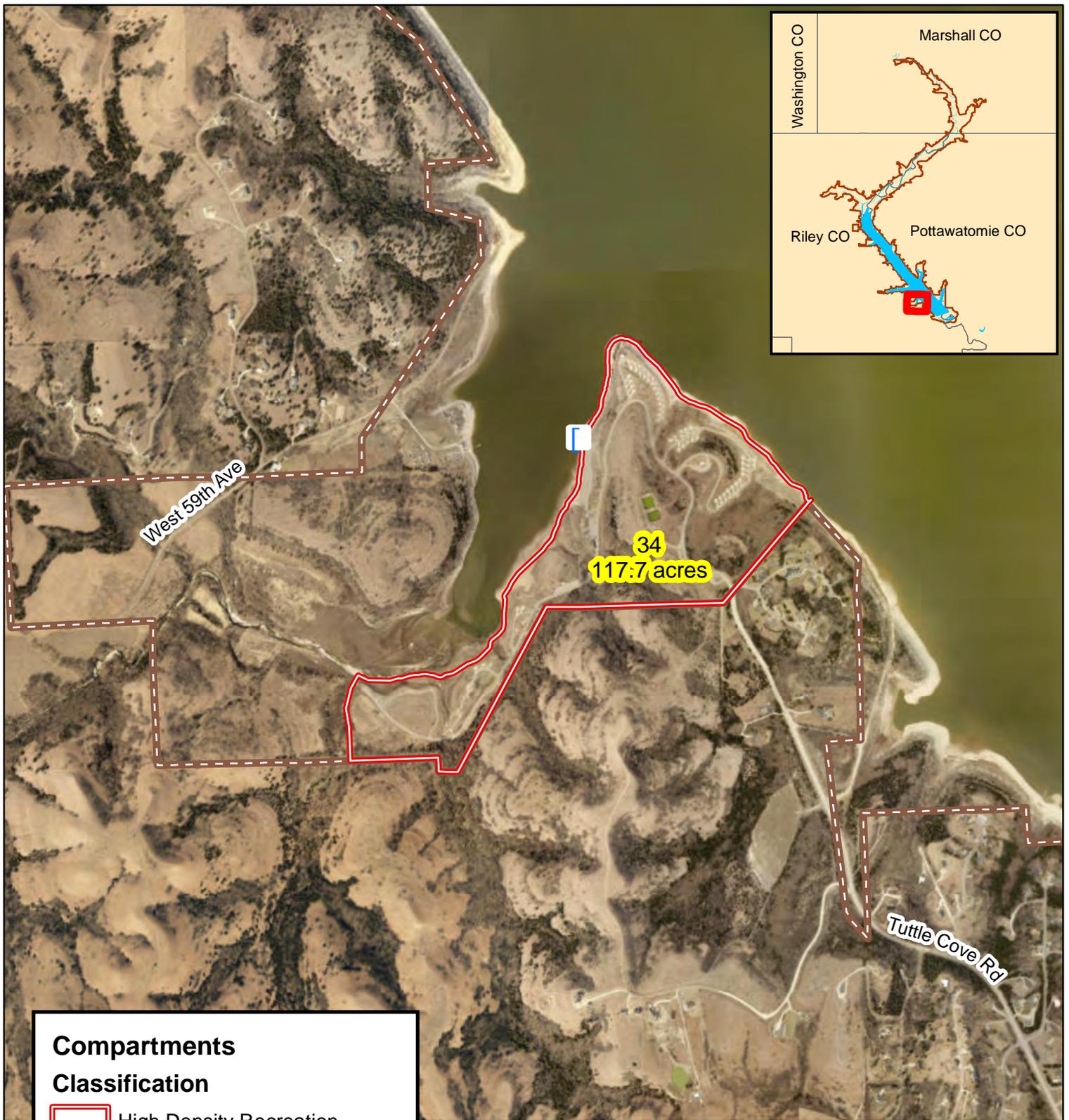
Compartments

Classification

-  High Density Recreation
-  MRM: Low Density Recreation
-  MRM: Vegetative Management
-  MRM: Wildlife Management
-  Project Operations
-  Corps Boundary



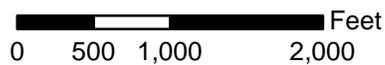
**Tuttle Creek Lake
Compartment 33
Tuttle Creek**



Compartments

Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary
- [Boat Ramp



**Tuttle Creek Lake
Compartment 34
Tuttle Creek Cove
PUA**



Compartments

Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary
- ▼ Access Point



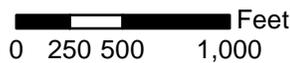
**Tuttle Creek Lake
Compartment 35
Thomas Divisions**



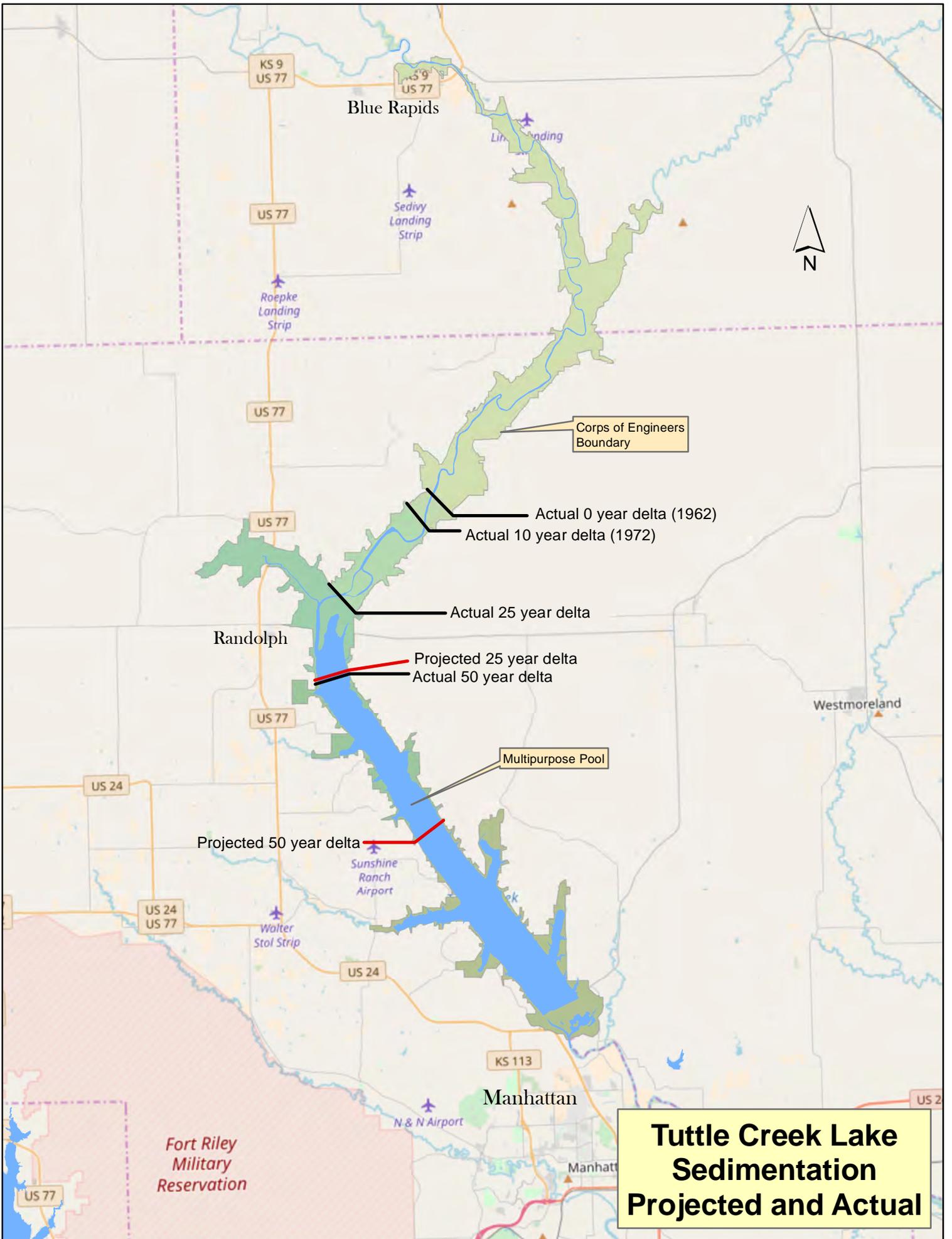
Compartments

Classification

- High Density Recreation
- MRM: Low Density Recreation
- MRM: Vegetative Management
- MRM: Wildlife Management
- Project Operations
- Corps Boundary



**Tuttle Creek Lake
Compartment 36
Observation Point PUA**



**Tuttle Creek Lake
Sedimentation
Projected and Actual**

Appendix C Faunal Species occurring at or near Tuttle Creek Lake

MAMMALS

The following species have been documented to have occurred in Marshall, Pottawatomie and Riley County and could occur on the management area.

Opossums

- Virginia Opossum

Shrews

- Hayden's Shrew
- Least Shrew

Moles

- Eastern Mole

Common Bats

- Little Brown Myotis
- Northern Myotis
- Evening Bat
- Big Brown Bat
- Eastern Red Bat
- Hoary Bat

Free-tailed Bats

- Brazilian Free-tailed Bat

Hares & Rabbits

- Eastern Cottontail
- Black-tailed Jackrabbit

Squirrels

- East Chipmunk
- Woodchuck
- Thirteen-lined Ground Squirrel
- Franklin's Ground Squirrel
- Eastern Gray Squirrel
- Eastern Fox Squirrel
- Southern Flying Squirrel

Pocket Gophers

- Plains Pocket Gopher

Beavers

- Beaver

Pocket Mice

- Silky Pocket Mouse
- Hispid Pocket Mouse

New World Mice & Rats

- Western Grasshopper Mouse
- Plains Harvest Mouse
- Western Harvest Mouse
- Deer Mouse
- White-footed Mouse
- Hispid Cotton Rat
- Eastern Wood Rat
- Prairie Vole
- Woodland Vole
- Muskrat
- Southern Bog Lemming

Old World Mice & Rats

- Norway Rat
- House Mouse

Jumping Mice

- Meadow Jumping Mouse

Porcupine

- Common Porcupine

Dogs

- Coyote
- Red Fox
- Common Gray Fox

Procyonids

- Common Raccoon

Weasels

- Least Weasel
- Long-tailed Weasel
- Mink
- American Badger
- Striped Skunk
- Eastern Spotted Skunk
- River Otter

Cats

- Bobcat

Deer

- White-tailed Deer
- Mule Deer
- Wapiti-Elk

BIRDS

The following species have been documented to have occurred on the management area (Checklist prepared by members of the Northern Flint Hills Audubon Society).

Loons & Grebes

- Pacific Loon
- Red-Throated Loon
- Canvasback
- Common Loon
- Redhead
- Pied-Billed Grebe

- Horned Grebe

- Eared Grebe
- Western Grebe

- Clark's Grebe

Pelicans & Cormorants

- Brown Pelican
- American White Pelican
- Double-Crested Cormorant
- Neotropic Cormorant

Wading Birds

- American Bittern
- Least Bittern
- Great Blue Heron*

- Great Egret
- Snowy Egret
- Little Blue Heron
- Cattle Egret
- Green Heron
- Black-Crowned Night Heron
- Yellow-Crowned Night Heron
- Tri-Colored Heron
- White Faced Ibis

Waterfowl

- Fulvous Whistling Duck
- Trumpeter Swan
- Tundra Swan
- Greater White-Fronted Goose
- Snow Goose
- Canada Goose
- Ross's Goose
- Wood Duck*

Waterfowl (continued)

- Northern Pintail
- Blue-winged Teal
- Cinnamon Teal
- Northern Shoveler
- Gadwall
- American Wigeon
- Ring-Necked Duck
- Lesser Scaup
- Greater Scaup
- Oldsquaw
- Surf Scoter
- Black Scoter
- White-Winged Scoter

- Common Goldeneye
- Long-Tailed Duck
- Bufflehead
- Hooded Merganser
- Common Merganser

- Red-Breasted Merganser
- Ruddy Duck
- Barrow's Goldeneye

Diurnal Raptors

- Turkey Vulture*
- Osprey
- Mississippi Kite
- Bald Eagle
- Northern Harrier*
- Sharp-Shinned Hawk*
- Cooper's Hawk
- Swallow-Tailed Kite
- Northern Goshawk
- Red-Shouldered Hawk
- Broad-Winged Hawk

- Swainson's Hawk*
- Red-Tailed Hawk
- Ferruginous Hawk
- Rough-Legged Hawk

- Golden Eagle

- Green-Winged Teal
- American Black Duck
- Mallard

- American Kestrel*
- Merlin
- Peregrine Falcon
- Prairie Falcon

Marsh Birds

- Yellow Rail
- Black Rail

- King Rail
- Virginia Rail

- Sora
- Purple Gallinule
- American Coot

- Sandhill Crane
- Whooping Crane

Shorebirds

- Black-Bellied Plover
- American Golden Plover
- Snowy Plover
- Semipalmated Plover
- Piping Plover
- Killdeer*
- American Avocet
- Greater Yellowlegs
- Lesser Yellowlegs
- Solitary Sandpiper
- Willet
- Spotted Sandpiper
- Upland Sandpiper*
- Whimbrel
- Long-Billed Curlew
- Ruddy Turnstone
- Redknot
- Hudsonian Godwit
- Marbled Godwit
- Sanderling
- Semipalmated Sandpiper
- Western Sandpiper
- Least Sandpiper
- White-Rumped Sandpiper

Fowl

- Ring-Necked Pheasant*
- Greater Prairie Chicken*
- Wild Turkey*
- Northern Bobwhite*

Gulls & Terns

- Laughing Gull
- Little Gull
- Franklin's Gull
- Bonaparte's Gull
- Ring-Billed Gull
- California Gull
- Herring Gull
- Thayer's Gull
- Glaucous Gull
- Sabine's Gull
- Black-Legged Kittiwake
- Caspian Tern
- Common Tern
- Forster's Tern
- Least Tern
- Black Tern

Owls

- Common Barn Owl
- Eastern Screech Owl*
- Great Horned Owl*
- Snowy Owl
- Burrowing Owl
- Barred Owl*
- Long-Eared Owl
- Short-Eared Owl

- Northern Saw-Whet Owl

Goatsuckers, Swifts, Hummingbirds, Kingfishers

- Common Nighthawk*
- Common Poor-Will*
- Chuck-Wills-Widow*
- Whip-Poor-Will
- Chimney Swift*
- White-Throated Swift

- Baird's Sandpiper
- Dunlin
- Pectoral Sandpiper
- Stilt Sandpiper
- Buff-Breasted Sandpiper
- Short-Billed Dowitcher
- Long-Billed Dowitcher
- Wilson's Snipe
- American Woodcock
- Wilson's Phalarope
- Red-Necked Phalarope

Doves & Cuckoos

- Rock Dove*
- Mourning Dove*
- Inca Dove
- Common Ground Dove
- Black-Billed Cuckoo*
- Yellow-Billed Cuckoo*

Flycatchers

- Yellow-Bellied Flycatcher
- Acadian Flycatcher
- Alder Flycatcher
- Olive-Sided Flycatcher
- Eastern Wood-Pewee*
- Willow Flycatcher
- Least Flycatcher
- Eastern Phoebe*
- Say's Phoebe
- Great Crested Flycatcher*
- Western Kingbird*
- Eastern Kingbird*
- Scissor-Tailed Flycatcher*

Swallows

- Purple Martin*
- Tree Swallow*
- N. Rough-Winged Swallow*
- Bank Swallow*
- Cliff Swallow*
- Barn Swallow*

Jays & Crows

- Clark's Nutcracker
- Steller's Jay
- Blue Jay*
- Black-Billed Magpie
- American Crow*

- Rufous Hummingbird
- Ruby-Throated Hummingbird
- Belted Kingfisher*

Woodpeckers

- Red-Headed Woodpecker*
- Red-Bellied Woodpecker*
- Yellow-Bellied Sapsucker
- Downy Woodpecker*
- Hairy Woodpecker*
- Northern Flicker*
- Pileated Woodpecker

Larks

- Horned Lark*

Thrushes

- Eastern Bluebird*
- Mountain Bluebird*
- Townsend's Solitaire
- Veery
- Gray-Cheeked Thrush
- Swainson's Thrush
- Hermit Thrush
- Wood Thrush
- American Robin*
- Varied Thrush

Thrashers

- Gray Catbird*
- Northern Mockingbird*
- Brown Thrasher*

Pipits, Waxwings, Shrikes & Starlings

- American Pipit
- Sprague's Pipit
- Bohemian Waxwing
- Cedar Waxwing*
- Northern Shrike
- Loggerhead Shrike*
- European Starling*

Wrens

- Rock Wren
- Carolina Wren*
- Bewick's Wren*
- House Wren*
- Winter Wren
- Sedge Wren
- Marsh Wren

Kinglets & Gnatcatchers

- Golden-Crowned Kinglet
- Ruby-Crowned Kinglet
- Blue-Gray Gnatcatcher*

Titmice, Nuthatches & Creepers

- Black-Capped Chickadee*
- Tufted Titmouse*
- Red-Breasted Nuthatch
- White-Breasted Nuthatch*
- Brown Creeper

Wood Warblers

- Golden-Winged Warbler
- Tennessee Warbler
- Orange-Crowned Warbler
- Nashville Warbler
- Northern Parula*
- Yellow Warbler*
- Chestnut-Sided Warbler
- Magnolia Warbler
- Cape May Warbler
- Yellow-Rumped Warbler
- Townsend's Warbler
- Black-Throated Green Warbler
- Black-Throated Gray Warbler
- Black-Throated Blue Warbler
- Blackburnian Warbler
- Yellow-Throated Warbler
- Pine Warbler
- Palm Warbler
- Bay-Breasted Warbler
- Blackpoll Warbler
- Worm-Eating Warbler
- Black-and-White Warbler
- American Redstart
- Prothonotary Warbler
- Ovenbird
- Northern Waterthrush
- Louisiana Waterthrush*

Vireos

- White-Eyed Vireo
- Bell's Vireo*
- Solitary Vireo
- Yellow-Throated Vireo
- Warbling Vireo*
- Philadelphia Vireo
- Red-Eyed Vireo*

Grosbeaks & Buntings

- Northern Cardinal*
- Rose-Breasted Grosbeak*
- Black-Headed Grosbeak
- Blue Grosbeak*
- Lazuli Bunting
- Indigo Bunting*
- Painted Bunting*
- Dickcissel*

Sparrows

- Spotted Towhee
- Eastern Towhee*
- Rufous-Crowned Sparrow
- American Tree Sparrow
- Chipping Sparrow*
- Clay-colored Sparrow
- Field Sparrow*
- Vesper Sparrow
- Lark Sparrow*
- Lark Bunting*
- Savannah Sparrow

- Grasshopper Sparrow*
- Henslow's Sparrow*
- LeConte's Sparrow
- Fox Sparrow
- Song Sparrow
- Lincoln's Sparrow
- Swamp Sparrow
- White-Throated Sparrow
- White-Crowned Sparrow
- Harris's Sparrow
- Dark-Eyed Junco
- McCown's Longspur

- MacGillivray's Warbler
- Kentucky Warbler*
- Connecticut Warbler
- Mourning Warbler
- Common Yellowthroat*
- Hooded Warbler
- Wilson's Warbler
- Canada Warbler
- Yellow-Breasted Chat

Tanagers

- Summer Tanager*
- Scarlet Tanager

Finches

- Pine Grosbeak
- Purple Finch
- House Finch
- Red Crossbill
- White-Winged Crossbill
- Common Redpoll
- Pine Siskin*
- American Goldfinch*
- Evening Grosbeak

*Denotes nesting species

- Lapland Longspur
- Smith's Longspur
- Chestnut-Collared Longspur
- Snow Bunting

Blackbirds, Meadowlarks & Orioles

- Bobolink
- Red-Winged Blackbird*
- Eastern Meadowlark*
- Western Meadowlark*
- Yellow-Headed Blackbird
- Rusty Blackbird
- Brewer's Blackbird
- Great-Tailed Grackle*
- Common Grackle*
- Brown-Headed Cowbird*

- Orchard Oriole*
- Baltimore Oriole*
- Bullock's Oriole

Weaver Finch

- House Sparrow*

FISH

The following species have been documented to have occurred in Tuttle Creek, (Bever, 1995).

White Bass	Creek Chub
Largemouth Bass	Northern Redhorse
Green Sunfish	Southern Red-Bellied Dace
Blue Gill	
Orange-spotted Sunfish	
Long-Eared Sunfish	
White Crappie	
Black Crappie	
Walleye	
Logperch	
Freshwater Drum	
Gizzard Shad	
Carp	
Golden Shiner	
Sand Shiner	
Fathead Minnow	
Suckermouth Minnow	
Red Shiner	
Stoneroller	
Bigmouth Buffalo	
River Carpsucker	
Black Bullhead	
Yellow Bullhead	
Blue Catfish	
Channel Catfish	
Flathead Catfish	
Mosquitofish	
Orange-throated Darter	
Johnny Darter	
Blue Sucker	
White Sucker	
Smallmouth Buffalo	
Emerald Shiner	
Saugeye	
Paddlefish	
Long-nosed Gar	
Rainbow Trout	
Topeka Shiner	
White Amur	
American Eel	

AMPHIBIANS

The following species have been documented to have occurred in Marshall, Riley and Pottawatomie Counties (Collins, et al., 1982) and could occur on the wildlife area.

Salamanders

- Tiger Salamander

Toads & Frogs

- Plains Spadefoot Toad
- Great Plains Toad
- Woodhouse's Toad
- Northern Cricket Frog
- Western Chorus Frog
- Gray Treefrog
- Plains Leopard Frog
- Bullfrog
- Great Plains Narrowmouth Toad
- American Toad

REPTILES

The following species have been documented to have occurred in Marshall, Riley and Pottawatomie Counties (Collins, et al., 1982) and could occur on the wildlife area.

Turtles

- Common Snapping Turtle
- Western Box Turtle
- Western Spiny Softshell

- Midland Smooth Softshell
- Western Painted Turtle
- Ouachita Map Turtle

Snakes (non-venomous)

- Western Hognose Snake
- Eastern Hognose Snake
- Western Worm Snake
- Prairie Ringneck Snake
- Eastern Yellowbelly Racer
- Great Plains Rat Snake
- Black Rat Snake
- Bullsnake
- Prairie Kingsnake
- Common Kingsnake
- Milksnake
- Western Ribbon Snake
- Common Garter Snake
- Western Plains Garter Snake
- Red-sided Garter Snake
- Lined Snake
- Texas Brown Snake
- Plainbelly Water Snake
- Blotched Water Snake
- Diamondback Water Snake
- Northern Water Snake
- Flathead Snake
- Plains Blackhead Snake
- Corn Snake
- Gopher snake
- Graham's Crayfish Snake

Lizards

- Eastern Fence Lizard
- Texas Horned Lizard
- Prairie-lined Racerunner
- Six-lined Racerunner
- Western Slender Glass Lizard
- Five-lined Skink
- Great Plains Skink
- Prairie Skink
- Ground Skink
- Eastern Collared Lizard

Snakes (venomous)

- Copperhead
- Massasagua
- Timber Rattlesnake