Final Environmental Assessment for the Arcadia Lake Trail Project

Prepared for:
US Army Corps of Engineers
Tulsa District

July 2014

FINDING OF NO SIGNIFICANT IMPACT

Arcadia Lake Trail Project

In accordance with the National Environmental Policy Act of 1969 (NEPA), including guidelines in 33 Code of Federal Regulations, Part 230, the Tulsa District has assessed the environmental effects of construction and operation of a multi-use trail system around Arcadia Lake, Oklahoma. The proposed trail would be paved and vary in width from 12- to 18-feet and accommodate varying user groups of pedestrians, joggers, and cyclists. The trail would be constructed and operated by the City of Edmond, Oklahoma and would initially include an approximate 3.1 mile section along the north side of the lake. As funds and design information become available, the trail could ultimately be expanded to approximately 20 miles in length and encompass an area circling the lake.

For the first 3.1 miles of trail to be constructed, approximately 0.8-acre of wetlands would be impacted by the proposed trail alignment. Mitigation for these unavoidable impacts has been accomplished through the purchase of mitigation credits by the City of Edmond at the Excel Mitigation Center.

For the remaining approximate 17 miles of trail, a conceptual alignment of the trail corridor is assessed in this Environmental Assessment (EA). As the remaining trail is funded and site specific details are identified and developed, should the trail be aligned such that it is substantially different in design or outside the corridor evaluated in this EA, a supplement to this EA will be prepared by the City of Edmond and circulated to agencies and the public, to fulfill the requirements of NEPA.

The enclosed EA, which is incorporated by reference, indicates the above activities would have no significant adverse effects on the natural or human environment. Therefore, an environmental impact statement will not be prepared.

18 AUG 14
Date

Richard A. Pratt
Colonel, U.S. Army
District Engineer

Enclosure:
Environmental Assessment

EXECUTIVE SUMMARY

This Environmental Assessment (EA) has been prepared to assess the potential impacts of the City of Edmond Arcadia Lake Multi–Use Trail Project (trail). The goal of the project is to establish an approximately 20 mile multi-use trail around Arcadia Lake which will enable walkers, joggers, and cyclists and those of all ages and all abilities to enjoy the natural beauty of the Arcadia Lake area while preserving some native habitat and vegetation around the trail. The plan for the trail pavement is asphalt with a 4-6 inch gravel base, as needed. The overall 20 mile trail project will be constructed in phases as funding becomes available. The only funded segment of 20 mile trail is the highest traffic section of the trail, the Spring Creek Trail (approximately 3.1 mile section).

The initial 3.1 mile Spring Creek segment will be mostly 18 feet wide in order to accommodate the different user groups of pedestrians, joggers, and cyclists. In this 3.1-mile segment, approximately 0.8-acre of wetlands would be impacted. These unavoidable impacts have been mitigated through the purchase of credits from the Excel Mitigation Center in Lincoln County, Oklahoma. Specific information regarding the functional assessment of wetlands and the mitigation can be found in Appendices G and H, respectively.

A single 12-14 foot shared-use trail is proposed for the remainder of the trail, which is not funded for construction at this time. For the remaining approximate 17 miles of trail, a conceptual alignment of the trail corridor is assessed in this Environmental Assessment (EA). As the remaining trail is funded and site specific details are identified and developed, should the trail be aligned such that it is substantially different in design or outside the corridor evaluated in this EA, a supplement to this EA will be prepared by the City of Edmond and circulated to agencies and the public, to fulfill the requirements of NEPA. Appendix I includes a preliminary reconnaissance-level assessment of the Waters of the United States (WoUS), including wetlands, and a potential trail alignment that could be proposed in the future to avoid many impacts to WoUS.

Since the future trail segments will be funded with funds donated from private sources, it is unknown when the remaining approximate 17 miles would be designed and constructed. Should any future alignment of the trail deviate from the alignment depicted in this document, the City of Edmond will supplement this EA with an additional evaluation of impacts for those not included here. Future EA supplements will be coordinated with agencies and the public in accordance with the requirements of NEPA.

The trail around Arcadia Lake will be approximately 20 miles long and will be entirely on public land. The majority of the trail will be on land owned by the U.S. Army Corps of Engineers (USACE). A section along Route 66 will be located in the Oklahoma Department of Transportation (ODOT) right-of-way. The Tulsa District of the USACE is the lead agency for this National Environmental Policy Act (NEPA) document and ODOT is a cooperating agency.

The proposed action includes clearing a narrow corridor for the trail and construction of the trail. Small bridges will be built over creeks and drainages, and an approximately 500 foot bridge will be constructed over a portion of Arcadia Lake known as Eagle Cove. The trail will be open for use during daylight hours; therefore no lighting is planned for the trail.

Short-term impacts associated with the Proposed Action include land use, topography, drainage, minor surface water impacts, disturbance of soil and removal of vegetation, air and noise emissions, increased construction traffic, temporary closures or interruptions in the existing Equestrian Trail, and altered aesthetics from the presence of a construction site. Short-term impacts would cease with the completion of construction. Some long-term impacts would occur to the area of the trail covered by asphalt.

Eight alternatives were considered with respect to the trail construction. Most of these involved stopping the trail at certain points to avoid various issues. For example, ending the trail before crossing the existing equestrian trail was considered to accommodate concerns expressed by the equestrian group. This alternative would result in significantly shortening the trail and is less desirable than the preferred alternative since it would disrupt the continuity of the trail, limit patron access, reduce the recreational value of the project, and significantly reduce the expected economic benefits of completing the entire proposed multi-use trail. The preferred alternative has incorporated several changes of the proposed route to minimize the impact to the equestrian trail. Additional alternatives evaluated other turn-around points to avoid safety and environmental issues along Memorial Road, Eagle Cove, and the Arcadia Lake dam. Three different ways of passing across the dam area were considered.

Long-term impacts to land use, existing native habitats, and wetlands are detailed in the Final EA. The preferred alternative is anticipated to impact existing wetlands and other potential waters of the United States (WoUS), and the requirement for a 404 permit and mitigation plan have been determined by USACE for the initial funded 3.1 mile Spring Creek Trail segment and will be determined for the remainder of the future 17 miles by the USACE. In addition, the USACE has determined a 408 permit is not required for the 3.1 mile Spring Creek Trail segment. The 408 permit requirement has not been determined for remaining future 17 miles of trail project impact on the existing Arcadia Lake dam by USACE. The preferred alternative will involve the permanent removal of trees and other native vegetation. A large portion of the proposed trail, approximately 9 miles, will be built in “previously disturbed” habitat along existing roads, construction areas, and the Lake dam. After construction, areas disturbed along the edges of the asphalt trail will be reseeded with native forbs and it is expected that there will be a net increase of approximately 13.13 acres of native forb habitat. The following is a summary of expected habitat impacts.

- Creek Crossings 0.53 acres
- Creek Bank 0.61 acres
- Shrubs (including Red Cedar) 2.60 acres
- Post Oak/Blackjack Forest 16.62 acres

- Savannah/Forbes 15.59 acres
- Previously Disturbed Habitat 28.66 acres

The existing habitat in the Arcadia Lake area is significantly fragmented by existing highways, roads, primitive trails, residences, and commercial establishments. Although the trail will add to the existing habitat fragmentation, the total impact is expected to be relatively minor compared to what has already occurred. The trail is not expected to impact threatened and endangered species, aquatic resources, or wildlife. It is expected that the trail will significantly contribute to the economic and recreational resources of the area. Although this EA assesses the impacts of the entire trail, only 3.1 miles (Spring Creek Trail segment) will be built in the first phase. The remaining proposed trail, approximately 17 miles, will be constructed at a later date as funding becomes available.

This EA was prepared in compliance with NEPA (40 CFR 1500-1508) and applicable implementing regulations. A Proposed Action Alternative and a No-Action Alternative were identified for this project. Several of the Action Alternatives were eliminated from detailed evaluation as they did not meet the goals of the project and/or resulted in unacceptable levels of impact. The direct and indirect impacts of the Proposed Action Alternative and No-Action Alternative were evaluated for temporary, permanent, and cumulative impacts.

This document has been prepared by Terracon Consultants, Inc. of Oklahoma City, Oklahoma on behalf of MKEC, revised by LandPlan Consultants, Inc. of Tulsa, Oklahoma and the City of Edmond.

The planning and design of this project has been coordinated with multiple organizations including (but not limited to) USACE, the City of Edmond, the Oklahoma Department of Wildlife Conservation (ODWC), ODOT, Oklahoma Department of Environmental Quality (ODEQ), U.S. Fish and Wildlife Services (USFWS), Oklahoma Archaeological Survey (OAS), State Historical Preservation Office (SHPO), The Equestrian Coalition, local mountain bike riders, various homeowner associations, etc. The draft of this EA was available for public review and comment from November 22, 2013 to December 30, 2013.

ACRONYMS & ABREVIATIONS

ACOG ..... **Association of Central Oklahoma Governments**
AGS ..... **Applied Geographic Solutions**
AST ..... **Aboveground Storage Tank**
BGEPA ..... **Bald and Golden Eagle Protection Act**
BLM ..... **Bureau of Land Management**
BUMP ..... **Beneficial Use Monitoring Program**
CAA ..... **Clean Air Act**
CFR ..... **Code of Federal Register**
CMAQ Funds ..... **Congestion Mitigation/Air Quality Funds**
CO ..... **Carbon Monoxide**
CPR ..... **Cardio Pulmonary Resuscitation**
CY ..... **Cubic Yard**
EA ..... **Environmental Assessment**
EIS ..... **Environmental Impact Statement**
EO ..... **Executive Order**
FONSI ..... **Finding of no significant impact**
GLO ..... **General Land Office**
HHS ..... **Department of Health and Human Services**
I-35 ..... **Interstate 35**
LEP ..... **Limited English Proficiency**
LF ..... **Linear Feet**
LUST ..... **Leaking Underground Storage Tank**
MKEC ..... **MKEC Engineering Company**
MPH ..... **Miles per hour**
NAAQS ..... **National Ambient Air Quality Standards**
NEPA ..... **National Environmental Policy Act**
NGVD ..... **National Geodetic Vertical Datum**
NO2 ..... **Nitrogen Dioxide**
NRCS ..... **National Resource Conservation Service**
NRHP ..... **National Register of Historic Places**
O3 ..... **Ozone**
OAR ..... **Outdoor Adventure Recreation**
OAS ..... **Oklahoma Archaeological Survey**
ODEQ ..... **Oklahoma Department of Environmental Quality**
ODOT ..... **Oklahoma Department of Transportation**
ODWC ..... **Oklahoma Department of Wildlife Conservation**
OHWM ..... **Ordinary High Water Mark**
ONHI ..... **Oklahoma National Heritage Inventory**
OWRB ..... **Oklahoma Water Resources Board**
Pb ..... **Lead**
PD ..... **Police Department**
PLS ..... **Pure Live Seed**
PM10 ..... **Particulate Matter 10µ or less**

ACRONYMS & ABREVIATIONS

ROW.....**Right of way**
RV .....**Recreational Vehicle**
Section 404 .....**Section of Clean Water Act Referencing National Permits**
SHPO .....**State Historical Preservation Office**
SO2 .....**Sulfur Dioxide**
UCO .....**University of Central Oklahoma**
USACE.....**United States Army Corps of Engineers**
USC.....**United States Code**
USDA .....**United States Department of Agriculture**
USFWS .....**United States Fish and Wildlife Service**
USGS .....**United States Geological Service**
UST .....**Underground Storage Tank**

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1.0 - Introduction

The City of Edmond has prepared this Environmental Assessment (EA) as a part of their request to alter a federal project through acquisition of a Section 408 permit to construct a trail around Arcadia Lake, some of which would be sited on federal property. The EA has also been done in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [U.S.C.] Section 4321, et seq.), the Council on Environmental Quality (CEQ) regulations found in 40 Code of Federal Regulations (C.F.R.) Parts 1500-1508, and USACE Engineer regulations found in 33 C.F.R. Part 230. This EA describes the potential environmental consequences resulting from implementation of a proposed multi-use trail around Arcadia Lake in the City of Edmond, Oklahoma.

1.1– Purpose and Need

The purpose and need of this project is to increase recreational opportunities not currently available in the existing urban centers that would appeal to a wider audience of recreational users and enhance the outdoor experience. Arcadia Lake was formed in 1986 by impounding the Deep Fork arm of the Canadian River below its convergence with Spring Creek. At conservation pool elevation of 1006 NGVD, Arcadia Lake is a 1,725 acre reservoir with a volume of 29,705 acre-feet, mean depth of 17 feet and, maximum depth of 49 feet. Arcadia Lake has approximately 26 miles of shoreline and a watershed area of 105 square miles. Water released from Arcadia Lake flows east into the Deep Fork of the Canadian River until it reaches Lake Eufaula. Arcadia Lake is a source of recreation for the City of Edmond, Oklahoma City and, surrounding communities. Popular recreational activities include boating, sightseeing, camping, picnicking, fishing, swimming, skiing, sailing, group meetings, and hunting. Arcadia Lake is unique because it is the only municipal water supply reservoir in Oklahoma County that allows swimming. Some existing unpaved trails are currently used for hiking, mountain biking, and horse-back riding.

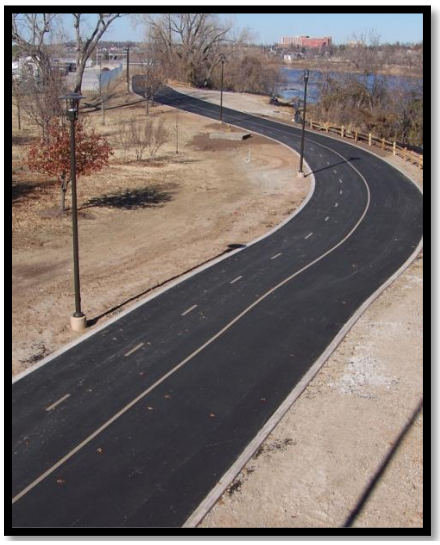


Figure 1 – Picture of a trail with similar design.
(City of Edmond Planning Department, 2013)

The City of Edmond in cooperation with a variety of supporters is interested in developing a multi-use trail around Arcadia Lake. Funding for this project is being obtained by the City of Edmond through private sources including commercial, industrial, serviced-based organizations, and residential users. No federal funds, including funds from the USACE, will be used to construct or maintain the trail. The City of Edmond will fund, operate and maintain the trail. The trail is intended to provide a safe venue for walkers, joggers, cyclists, and others interested in promoting physical activity, good health and an appreciation of the outdoors. The plan for the trail pavement is asphalt with a 4-6 inch gravel base, as needed. The Phase 1 funded Spring Creek Trail (approximate 3.1 mile segment) will be the highest traffic section will be

approximately 18 feet wide in order to accommodate the different user groups of pedestrians, joggers, and cyclists. A single 12-14 foot shared-use trail is proposed for the 17 mile remainder of the trail and is not funded currently. The 17 miles will be funded and built in segments at some point in the future. The trail around Arcadia Lake will be approximately 20 miles long and will be on public land. The existing trail unpaved walking/biking trails are too rough for some people in the community to use. The proposed asphalt trail will be accessible for a wide variety of people with various athletic abilities. The Arcadia Lake Trail Coalition was formed to promote the trail and has been meeting for more than a year. The Coalition meets on a monthly basis and includes members of the business community, local hospitals, the USACE, the City of Edmond, the Oklahoma Land Conservancy, environmental and engineering professionals, and concerned citizens. Coalition meetings are open to the public. It is the expressed desire of the Coalition to provide a trail that begins at a trailhead park in Edmond and continues completely around Arcadia Lake. The reason for this is that access to the multi-use trail by members of the public will be available from all locations around the Lake. In addition, this will allow linkage to existing or proposed trails near the Arcadia Lake Trail thereby facilitating the development of a network of trails in Oklahoma.

1.2 – Location of Proposed Action

The proposed action would be located from a proposed trail head park just west of I-35 and south of 2nd Street (US Route 66) in Edmond, Oklahoma. This park will be constructed on property owned by private entities. The trail parallels Spring Creek to Spring Creek Park and then continues around Arcadia Lake on lands owned by the USACE. Figure 2 shows the location of the trail on a series of 2010 USGS topographic maps. Figure 10 (see Appendix A) shows the project area and includes the proposed trail superimposed on an aerial photograph with the 100-year flood pool elevation highlighted in blue.

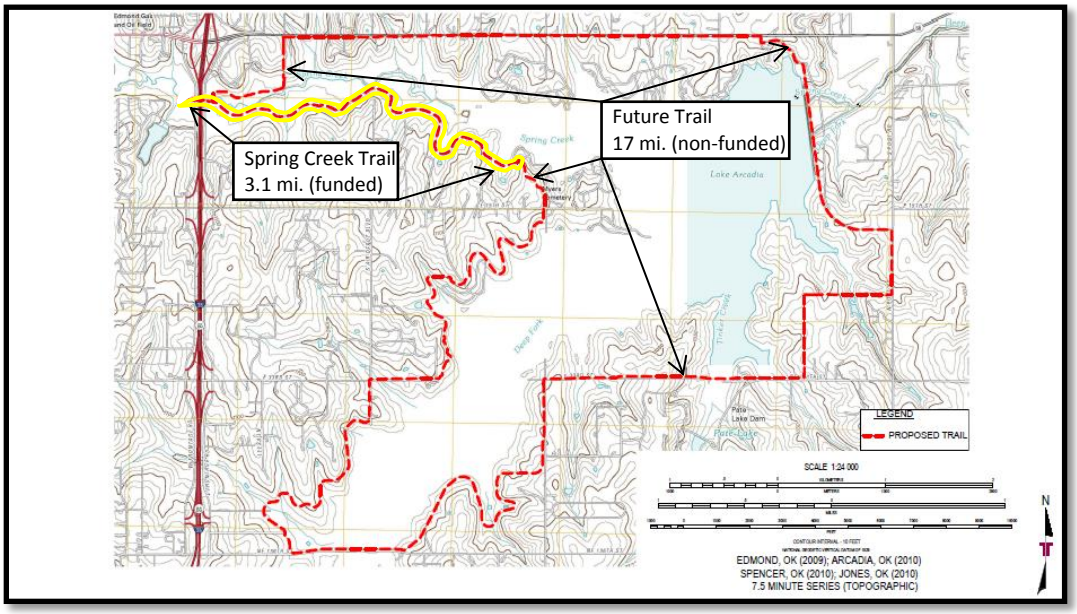


Figure 2. Location of the proposed project on a detail of a USGS 7.5 minute series of topographic maps. (Source: USGS topographic maps, OK, 2010).

2.0 –Alternative Actions

In addition to the preferred alternative and the no-action alternative, the City of Edmond has identified 8 additional alternatives for the proposed trail. Several of the alternatives involve stopping the trail and providing a turn-around; these locations are shown on Figure 47 in Appendix A. The final selection of the preferred action was based on environmental impacts, economic analysis, Equestrian group input, landowner input, and safety issues and is discussed in Section 3.0.

2.1 – No Action Alternative

Under the No-Action alternative, the current primitive trails around Lake Arcadia would be maintained. Access by individuals with disabilities would be continue to be restricted and the opportunity for many people to observe and experience the beauty of nature around the Lake would be limited. The existing primitive trails do not provide linkage to other existing or planned trails.

2.2 – Alternative 1 - Turn-around of the Trail Prior to the Equestrian Trail

An existing equestrian trail on the west side of Arcadia Lake crosses the originally proposed multi-use trail route at 7 locations (Figure 11, Appendix A). Users of the equestrian trail expressed concern that hikers and bicyclists, in particular, would spook the horses and pose a significant safety risk. Interference with the equestrians could be avoided by establishing a multi-use trail turn-around point before the existing equestrian trail is reached. This would result in a significant shortening of the multi-use trail.

2.3 – Alternative 2 - Turn-around of the Trail at Memorial Road

As the proposed multi-use trail reaches Memorial Road at the south end of Arcadia Lake, several challenges are presented. The original proposed multi-use trail route had it passing along the apron of Memorial Road (Figure 35, Appendix A). The apron is three feet wide between the road and the existing guard rail. Traffic moves rapidly at Memorial Road (posted speed limit of 55 mph) and poses a safety hazard to users of the trail. Although wetland delineation has not yet been completed for the route below Memorial Road, the area on the north side of Memorial road below the road was wet at the time of the field survey. (If this route becomes the preferred route, wetland delineation will be performed.) Therefore, a multi-use trail turn-around before Memorial Road would avoid these issues.

2.4 – Alternative 3 - Eagle Cove Alternatives

This alternative has been divided into 3 sub-categories: a) stop the trail before Eagle Cove to avoid wetlands issues, b) construct an approximately 500 foot bridge over the cove (the preferred action), and c) build the trail around the cove (Figure 48, Appendix A). If a 500 foot bridge across Eagle Cove is built, a full description of the bridge design, a wetland delineation of the area around the bridge, and the inclusion of this information in the project Section 404 Permit application will be necessary.

2.5 – Alternative 4 - Turn-around of the Trail at the Dam

The current plan for the trail is to build it across the existing Arcadia Lake Dam (Figure 13, Appendix A). If this is done it will be necessary to submit a Section 408 Permit. An alternative would be to provide a trail turn-around point before the dam is reached and this might reduce time for the 408 Permit.

2.6 – Alternative 5 - Limited Impact Trail across the Dam

Building an asphalt trail over the dam is anticipated to have more impact to the dam (the preferred alternative) than simply adding some striping and signage for the multi-use trail along the existing maintenance road that traverses the top of the dam.

2.7 – Alternative 6 - Build the Trail below the Dam

Although the route would not be as scenic, it might be possible to build the multi-use trail below the dam. If this is done, it will still be necessary to evaluate the need for a Section 408 Permit.

2.8 – Alternative 7 - Accommodation for Landowners

A variety of landowners had concerns and expressed them in writing or as a part of the public meetings that were held in conjunction with the project. Concerns included rerouting the multi-use trail to avoid visibility of the trail to some landowners, rerouting to avoid going behind a residence, avoidance of certain fence lines, and the development of the bridge concept across Eagle Cove to avoid encroachment on several properties. In all, eleven modifications to the original route were made to accommodate landowner requests. All of these modifications have been incorporated in the preferred alternative. Figure 48 shows the eleven modifications on a conceptual map for the trail project.

2.9 – Alternative 8 - Unacceptable Alternatives

Several alternatives were ruled unacceptable at an early stage of the multi-use trail planning process. Most of these alternatives included the provision of a marked lane in an existing roadway to reduce overall project costs. In general, these alternatives were rejected on the basis of safety considerations.

2.10 – The Public Scoping Process

A group known as the Arcadia Lake Trail Coalition has been meeting to discuss the Arcadia Lake Trail project on a monthly basis since the January of 2012. As the project began to take shape, a period of public comment was initiated by the City of Edmond on July 23, 2012 through August 22, 2012. A public meeting was held on September 27, 2012 to further discuss the project and solicit public input. On October 18, 2012 an open house scoping meeting was co-sponsored by the City of Edmond and the Tulsa District USACE. Comments from concerned citizens were received at this meeting and participants were encouraged to send in comments to the Tulsa District. More than 100 comments have been received and reviewed. These comments and a variety of private meetings with concerned individuals and groups have been used to help formulate the preferred plan (see Appendix E). Many commenters were very pleased about the proposed trail. Concern with the safety of equestrian trail users has been resolved by rerouting the trail. Several homeowners were concerned about the proximity of the trail to their property. Eleven trail reroutes have been incorporated into the preferred alternative

to resolve these concerns. Several commenters expressed concern about the impact of the trail to wildlife species; the impact to Bald Eagles was frequently mentioned. The EA addresses these concerns and proposes mitigation that will minimize these impacts. Finally, there were several comments regarding the potential safety risks presented by the proposed trail. These safety issues have been addressed throughout the EA with modifications and explanation showing that the safety issues are expected to be minimal. The Draft EA was sent out to all attendees of the public meetings and a large list of public agencies in December 2013 to initiate the 30-day review period. Forty-two (42) of the forty-five responders were very supportive of the EA and the project. Four (4) commenters had questions. All submittals and the answers to questions are included in Appendix E.

3.0 –Proposed Action

3.1 – Trailhead Park

The trail will begin at a proposed trailhead park. A concept plan is included in Figure 14, Appendix A. The trailhead park includes only the colored areas in Figure 14. As designed by The Orion Group, Edmond, Oklahoma, the park will be built on a 19.80 acre tract of land that is owned by private investors. This parcel is west of an I-35 overpass and just south of Second Street/Route 66 in Edmond, Oklahoma. It is currently undeveloped except for an existing man-made pond. An environmental survey was conducted in the park area during in February 2013. The present habitat contains wetlands that are further described in Section 4.4, Natural Resources, Section 5.2.2.3 and Section 5.10, Cumulative Effects. The plan for the park calls for significant reshaping of the existing pond and the creation of a larger second pond with a small island. Several asphalt pathways will loop around the park including the ponds, and a bridge will cross Spring Creek connecting two sections of the park. Some landscaping will be provided and some areas will be left in their natural state. Various pavilions and resting spots will be provided. A small parking area is also included in the concept plan. There is no provision to provide restrooms or other facilities requiring water. It is not expected that lighting or other equipment requiring electrical services will be provided.

Preliminary wetland delineation work described in Section 5.2.2.3 indicates that a significant portion of the 19.80 acres is a wetland. Wetland delineation for the proposed trailhead park will be necessary and a determination made by the USACE regarding Section 404 Permit status prior to beginning construction.

3.2 – Trail Engineering Details

The trail will generally be constructed of 3-4 inches of asphalt surfacing over 6 inches of aggregate base. The section of the trail that proceeds under the I-35 overpass (approximately 650 feet) will be 6 inch concrete over 6 inches of aggregate base. In some areas concrete block retaining walls will be required. The 650 feet of trail will be 12 feet in width. The remainder of the trail will be 18 feet in width to Spring Creek Park. The remaining 17 miles of trail will be 12 feet wide.

Drainage, where required, will pass under the trail through concrete flumes and/or reinforced concrete pipe culverts. Concrete drainage flumes will also parallel the trail in some areas in order to keep storm water run-off from damaging the proposed asphalt trail. There will be approximately 3,335 linear feet of 4 foot wide flumes.

Estimated material quantities for the 3.1 mile section of trail that has been engineered are as follows:

Excavation	17,000 CY
Fill	3,900 CY
Conc. Pavement	145 CY
Asphalt Pavement	2,870 CY
Aggregate Base	4,770 CY
Retaining Wall	1,500 LF (Avg. Height of 2.5')

Based on current plans, a net of 500 CY of material will be removed below the flood pool elevation of 1029.5 feet.

The plans include requirements for temporary fencing along the limits of grading to prevent disturbance of existing vegetation outside of the proposed construction limits.

The construction sequence is anticipated as follows:

1. Initial staking of alignment and protection fence locations.
2. Minor clearing of trees/brush/vegetation to allow for fence installation at construction limits.
3. Installation of a temporary protection fence at construction limits and establishment of temporary erosion control measures.
4. Clearing of vegetation, including trees within the limits of construction.
5. Grading of trail to proposed bottom of aggregate sub-base.
6. Installation of proposed retaining walls.
7. Installation of proposed drainage structures.
8. Installation of aggregate base.
9. Installation of 6 inch depth concrete trail for section under the I-35 overpass.
10. Installation of remaining asphalt trail.
11. Performance of final grading of shoulders and side slopes.
12. Installation of signs and striping.
13. Seeding of native forbs for all disturbed areas.

Construction staging areas will need to be located within the tree protection fence, or on private land outside of the USACE property.

Anticipated construction equipment will include the following:

Bulldozers
Scrapers
Excavators
Dump Trucks
Motor Graders
Front End Loaders
Skid Steers
Compaction Equipment, including Sheepsfoot and Vibratory Rollers
Asphalt lay-down machine
Concrete paving machine

Additional engineering details of the 3.1 mile Phase 1 Spring Creek Segment are provided in Figures 17 - 26, Appendix A. This is the only part of the project that has detailed engineering at the time of this EA report. Although this EA has evaluated the impacts for the entire proposed trail, only the first 3.1 miles is scheduled to be constructed at this time. The remainder of the trail is planned to be built after funding and engineering are available. The drawings show the existing grade of the trail area and the proposed grade. Approximately 48% of the proposed grade is above the Arcadia Lake flood pool (top of flood pool is 1029.5 feet NGVD) and the remainder is below the flood pool. The entire proposed grade for the 3.1 mile section of trail is below the Arcadia Lake maximum pool (1049 feet NGVD). It can be seen from the drawings and from information provided above that the amount of fill is moderately less than the excavation based on the proposed grade versus the existing grade. Consequently, it is expected that the construction of the trail will result in no net change in flood storage capacity at elevations to maximum pool and is not expected to impact the flood plain outside of USACE boundaries. All fill locations and quantities will be provided to Tulsa District USACE hydrologists for review and approval prior to construction.

Since the creek bank is narrow underneath I-35 (as shown in Figure 15, Appendix A) bank enhancement will be necessary. Figure 16, Appendix A shows the engineering detail of the section of the trail that will pass under the bridge. One existing section of gabions will be removed from the bank under the bridge on the south side of the creek. It will be replaced by a 1.5 foot in depth section of concrete. Twelve feet of 6 inch concrete trail will extend to the creek bank. Six inches of Type A aggregate will be placed below the concrete trail for added stabilization. A 4 foot section of concrete toe wall will be placed on the creek bank side of the concrete trail followed by a layer of rip rap.

Engineering details for the remaining 17 miles of proposed trail will be provided to the Tulsa District for review prior to construction.

3.3 – Proposed Trail East of the I-35 Underpass

On the east side of I-35, the proposed trail will split with a section continuing on the south side of Spring Creek towards Spring Creek Park and another section crossing the creek and heading north along the north side of Arcadia Lake. Figure 27, Appendix A, shows the proposed location of this crossing of the trail. Figure 28 is a photograph of the east side of the bridge at I-35 where the trail crosses the creek.

From the proposed trail head, the trail will extend approximately 3.1 miles to Spring Creek Park. Figure 29-A (Appendix A) shows the plan for the trail to Spring Creek Park. This part of the trail is expected to be the most used and will be the widest at 18 feet except when crossing under I-35 where it will be 12 feet. Other than beneath I-35, the trail will be located away from the creek bank meandering through upland meadows and wooded areas. To the extent feasible, the trail will remain at an elevation above the maximum flood pool elevation. The trail under I-35, which will be the lowest elevation on the route, will be constructed of concrete, as previously described, to help the trail to better withstand the periodic flooding that may occur. The occasional flooding that may occur in certain sections of the asphalt trail will require maintenance, but is not expected to cause major damage to the asphalt over gravel structure. Occasionally, sections of the trail may be closed during flooding. The portion of the proposed trail that crosses the Oklahoma Department of Wildlife Conservation (ODWC) land will be closed from October 1 to December 31 to accommodate the hunting season.

During the creation of the trail, some vegetation, as much as 9 feet, will be removed on either side of the asphalt. The type of vegetation removed will depend on the habitat being traversed. In road right-of-ways and across the Arcadia Lake dam, the vegetation consists primarily of Bermuda grass. Other habitats consist of grassy forbs or blackjack/post oak and red cedar forests. The project plan is to seed the impacted area with native vegetation. The seed mix will be developed in accordance with the recommendations from the Natural Resources Conservation Service (NRCS) the habitat conditions found along the trail. All seed mix must be comprised of pure live seed (PLS). A detailed re-vegetation plan will be developed prior to construction. An initial discussion with an NRCS recommended seed vendor has been held. The re-vegetation plan will include the recommended types, percent, and application rates of native grass and forbs seed for each habitat. The objective will be to re-vegetate with and maintain the area in native herbaceous vegetation for the benefit of wildlife as well as to control erosion. Special requirements for application of the native grass / forbs mix will include instructions for bed preparation, seeding, bed care, and any necessary mowing.

A bridge will be built across Spring Creek near I-35 to facilitate travel and mitigate environmental impact to the creek. There are a number of small drainages and intermittent creeks along the route that may also require a small bridge. Some of these are shown in Figures 30 - 32. These potential jurisdictional waterbodies or jurisdictional tributaries are detailed in Section 5.3. Most of these locations are along the southwestern portion of the trail. A larger bridge crossing is planned for a section of the lake known as Eagle Cove (Figure 38). It is expected that this bridge will be approximately 500 feet in length.

Two existing equestrian trails begin at Spring Creek Park which extend to the south along the western side of Arcadia Lake. The original plan for the multi-use trail crossed the equestrian at seven (7) locations. The revised and preferred multi-use trail plan has eliminated these crossings due to a safety issue that bicycle traffic might spook the horses. A proposed re-route of the equestrian trail will eliminate all but two crossings. The existing equestrian trail is 4.9 miles; the proposed re-route will reduce this distance to 4.6 miles. Some precautionary signage will be placed along the multi-use trail to have the cyclists slow down at these crossings. Figure 29-B shows the multi-use and equestrian trails where the crossings can be observed. The proposed multi-use trail is in red, the existing equestrian trail is in light green, and the proposed equestrian trail is in yellow on the illustration. Another view of the entire proposed multi-use trail that includes the equestrian trail is provided in Appendix A in the Cultural Resources report (Appendix C).

As the multi-use trail extends further around the lake, it comes to a section that passes alongside Memorial Road. Only three (3) feet separate the road and the guard rail. The plan is to build up the bank and move the guard rail back. This option will be confirmed as viable prior to construction with the North Oklahoma City Traffic Department which has jurisdiction for Memorial Road. A Jersey barrier will be placed at the edge of the road to protect the trail users from the traffic that passes at a rapid rate. The posted speed limit for Memorial Road at the proposed trail site is 55 mph. A Jersey barrier is 24 inches wide at its base. This will leave one (1) foot between the barrier and the rail if the rail is not moved. It will be necessary to move the rail or find an alternate crossing route for the trail. Figure 33 shows some typical Jersey barriers. Figure 34 shows a photograph of the existing 3 feet of space at the road. Figures 35 and 36 are aerial photographs of Memorial Road. It will be necessary to build a parallel bridge next to the road as it passes over the water at the red star indicated on Figure 36.

The proposed trail proceeds along Memorial Road to the northeast until it reaches Eagle Cove. At Eagle Cove the trail will cross Eagle Cove. This will require building a 500 foot bridge across the cove. Figure 37 shows the trail from Memorial Road to Eagle Cove. Figure 12 shows a detail of the Cove crossing. Figure 39 is a photograph looking across the Cove where the bridge is proposed to be built.

Figure 40 shows the alignment of the trail from Eagle Cove northwest to the Arcadia Lake dam. The preferred alternative crosses the top of the dam. The trail is planned to be directly on the existing road as the route continues down the north side of the dam. Figure 41 is a photograph of the road coming down from the dam. Building the trail across the dam will require a Section 408 Permit from the USACE prior to construction. If the cost and time required to obtain a Section 408 Permit become prohibitive, Alternative 4 listed in Section 2.5 (trail turn around before the dam) or Alternative 6 (build trail below the dam) may become the preferred action. If Alternative 6 is chosen, a Section 408 Permit may still be necessary as determined by the USACE.

The last section of the proposed trail extends from the dam to Route 66. Along Route 66 the trail will be located in the Oklahoma Department of Transportation (ODOT) right-of-way (ROW). There are a few areas along Route 66 where the apron of the road narrows. In these areas it

will be necessary to build the trail away from the apron up some hills to avoid safety issues along the proposed trail route. As the trail continues to the south of Route 66 it intersects Spring Creek. Here it will cross the creek bridge previously described and connect with the trail on the western side of Arcadia Lake. Figure 42 shows this last section of the trail. Figure 43 is a photograph showing one of the narrow apron areas along Route 66 and Figure 44 is a photograph showing one of the hills the trail will need to ascend.

3.4 – Comparison of the Actions

Table 1 below provides a list of the major components in each of the actions being analyzed by this EA. Refer to Section 2.0 for a description of alternatives. Alternative 3 (listed in Section 2) has 3 sub-categories defined as a, b, c). Alternative 7 is not present on the table since it is incorporated in the preferred alternative.

Table 1. Construction components included with each alternative.

	Preferred Action	Alternatives								No-Action Alternative
		1	2	3a	3b	3c	4	5	6	
Build trail head park west of I-35	x		x	x	x	x	x	x	x	
Landscape park area with grass and native plants	x			x	x	x	x	x	x	
Construct 18 foot wide multi-use asphalt trail from trail head park to Spring Creek Park	x	x	x	x	x	x	x	x	x	
Build concrete support and rip/rap slope for 12 foot wide trail under I-35 bridge	x	x	x	x	x	x	x	x	x	
Construct trail bridge across Spring Creek near I-35 overpass	x					x	x	x	x	
Build 12 foot wide multi-use asphalt trail from Spring Creek Park to equestrian trail then stop		x								
Route multi-use trail to avoid crossing existing equestrian trail	x		x	x	x	x	x	x	x	
Construct small bridges across small creeks and drainages in path of trail	x		x	x	x	x	x	x	x	
Build 12 foot wide multi-use asphalt trail from Spring Creek Park to Memorial Road then stop			x							
Move guardrail at least 3 feet further away from Memorial road to accommodate trail and build-up support under trail/guardrail	x			x	x	x	x	x	x	
Place Jersey barriers along Memorial Road trail section to protect users from traffic	x			x	x	x	x	x	x	
Construct multi-use bridge across narrow waterway at east side of trail route to avoid traffic issue	x			x	x	x	x	x	x	
Stop trail at Eagle Cove				x						
Construct longer (500 foot) multi-use trail bridge across Eagle Cove	x				x		x	x	x	
Build trail on landowner property around Eagle Cove						x				
Stop trail before dam							x			
Build asphalt trail along restricted access road across Arcadia Lake dam	x				x	x				
Build limited impact trail along restricted access road across Arcadia Lake dam								x		
Build trail below dam									x	

4.0 – Affected Environment

Based on the nature of the activities that would occur under the proposed action and alternatives, it has been determined that the following resources could be affected by this project:

- Land use
- Climate
- Social and Economic Conditions
- Biological Resources
    - Vegetation
    - Wildlife
    - Surface Water
    - Groundwater
    - Wetlands
    - Prime and Unique Farmland
    - Wild and Scenic Rivers
    - Invasive Species
    - Migratory Birds
- Threatened and Endangered Species
- Cultural Resources
- Air Quality
- Hazardous, Toxic, Radiological Waste
- Recreation

Each of these aspects of the potentially affected environment is described in detail in the sections that follow.

4.1 – Land Use

Arcadia Lake is located on the Deep Fork River, five miles east of downtown Edmond, Oklahoma, and one and one-half mile west of Arcadia, Oklahoma. Arcadia Lake offers water-oriented recreation opportunities in an urban setting. There are four parks at Arcadia Lake with a variety of amenities. These are further described in Section 4.9 Recreation. It is evident from aerial photography that at least 60% of the available land around Arcadia Lake is developed. The largest portion of the developed land is residential with associated roads. The lake itself makes up the second largest block of acreage. Another significant portion is park and camping facilities. The remainder of the land is divided between hospitals (there are two), a large church, a school, a water treatment facility, the lake dam, and other commercial establishments. The proposed multi-use trail can be put into perspective relative to the following acreage estimates:

- Proposed trail including buffer 29 acres
- Residential/Commercial areas 1,916 acres
- Arcadia Lake 1,820 acres
- Undeveloped/Native Vegetation 1,277 acres
- Parks and campgrounds 715 acres

The land use pattern has significantly fragmented the native habitat around Arcadia Lake. The trail will modify approximately 29 acres from undeveloped native vegetation to recreational use.

4.2 – Climate

Located in the Crosstimbers ecoregion, Arcadia Lake receives an average of 36 inches of precipitation per year (average for the United States is 37 inches). October and June are the wettest months, on average. Arcadia Lake was built as a flood control project and localized flooding around the Lake is common in the spring and fall. Snowfall ranges from 1 to 10 inches with an average around 5 inches. There is an average of 235 sunny days per year (United States average is 205). Temperatures average near 60 degree F with an average high of 93 degrees in July and an average low of 26 degrees in January. Winds can be quite strong with an average of 7.5 mph and gusts up to 59.8 mph. Relative humidity ranges from 41 to 91% with a daily annual average of 67%. Humidity is highest in May and lowest in February through April. Thunderstorms occur on about 49 days per year, predominantly in the spring and summer. During 1950 – 2003, Oklahoma County recorded 86 tornadoes. A few F5 tornadoes and some F4 tornadoes have caused extensive damage and many deaths. Hail events are common in the spring and some have caused extensive damage.

4.3 – Social and Economic Conditions

Socioeconomic data was collected to provide a comparative representation of the demographic composition of the project area. Toni Weinmeister, the Associate Director for the Edmond Economic Development Authority, provided demographics data for zip codes 73013 and 73034 near Arcadia Lake to Terracon. Ms. Weinmeister obtained this data from the AGS Demographic Comparison by the Tetrad Inc. website. Figure 3 shows the locations of the zip codes analyzed and Table 2 shows ethnicity data for these zip codes.

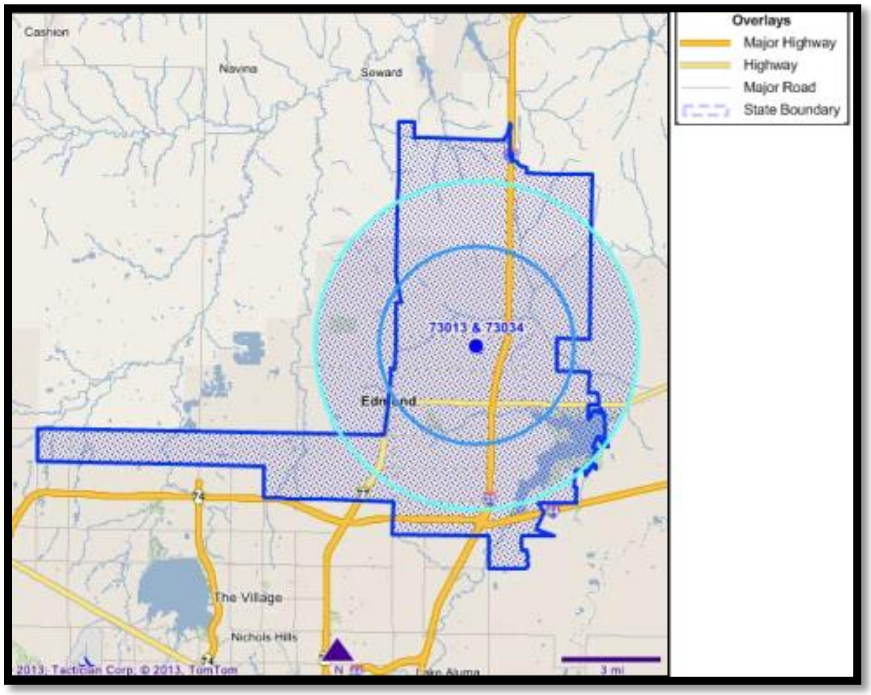


Figure 3. Zip codes located on or adjacent to the project area.
(Source: 2013 AGS Demographic Comparison, Tetrad Inc.)

Table 2. Ethnicity data for the proposed project area for 2012. Applicable zip codes outlined in red.

AGS Demographic Comparison - Ethnicity

Variable	73003: Edmond	73007: Arcadia	73012: Edmond	73013: Edmond	73025: Edmond	73034: Edmond	73044: Guthrie
% Race: White (2012)	77	80	80	78	90	81	80
% Race: Black (2012)	8	8	7	8	2	5	8
% Race: American Indian, Eskimo, Aleut (2012)	4	4	3	3	3	4	5
% Race: Asian (2012)	3	1	5	5	1	4	1
% Race: Native Hawaiian (2012)	0	0	0	0	0	0	0
% Race: Other (2012)	0	0	0	0	0	0	0
% Two or More Races (2012)	8	6	5	6	4	6	7
Race: White (2012)	16,762	2,175	21,158	35,582	10,831	32,079	17,435
Race: Black (2012)	1,787	220	1,758	3,657	216	2,033	1,845
Race: American Indian, Eskimo, Aleut (2012)	827	120	693	1,347	395	1,522	988
Race: Asian (2012)	608	23	1,324	2,168	139	1,452	114
Race: Native Hawaiian (2012)	32	0	27	40	4	52	14
Race: Other (2012)	28	5	36	79	1	94	35
Two or More Races (2012)	1,702	170	1,416	2,553	502	2,514	1,443

(Source: 2013 AGS Demographic Comparison, Tetrad Inc.)

As shown in Table 2, African American, Hispanic, and other minority populations exist within the general vicinity of the project. However, there are no distinct neighborhoods, ethnic groups, or other specific groups directly adjacent to the proposed project area.

The average income in Edmond, Oklahoma of $68,057 is considerably higher than the average for the state of Oklahoma and it is increasing as the statistics from the 2010 US Census below show.

Average Edmond Income in 2009: $68,057
Average Edmond Income in 2000: $54,556
Average Oklahoma Income in 2009: $41,664
Estimated Edmond median house value in 2009: $191,200
Estimated Edmond median house value in 2000: $118,000
Estimated Oklahoma median house value in 2009: $107,700

In Oklahoma, women make approximately 78.2% of the salary that men make. This is lower than the national average of 80.9%.

Based on employment statistics, the business climate of Edmond is concentrated in the professional and services sectors. The largest employers include the Edmond Public Schools, the University of Central Oklahoma, the City of Edmond, Aditech (providing quality control for the mortgage industry), OU Medical Center, Integris Medical Center, and a new Medical Center being built for the Mercy Hospital System. Industry is represented by Petra Industries (electronics distribution), Remy International (auto parts manufacturing), and Pelco Products (traffic and utility hardware manufacturing). The services sector employs 13,387, the retail trade sector employs 7,753, and construction employs 1,537. Finance, insurance and real estate employs 3,362 and manufacturing employs 799.

4.3.1 - Limited English Proficiency

Executive Order 13166, "Improving Access to Services for Persons with Limited English Proficiency," requires agencies to examine the services they provide, identify any need for services to those with Limited English Proficiency (LEP), and develop and implement a system to provide those services so that LEP persons can have meaningful access to them. The 2010 American Community Survey dataset was used in order to extract this information. Table 3 lists the census data and approximate number of people over 18 who speak English "Less Than Very Well" in the project area. It can be concluded the project and surrounding area supports a population that is generally lower in the percent of speakers that have limited English proficiency. Results of a field reconnaissance indicate that no non-English signs, advertisements, or other posted information are apparent in the proposed project area.

Table 3. Language census data for the proposed project area for 2010. (US Census Bureau)

	Oklahoma	Oklahoma County	City of Edmond
Total (18 years and older)	2,732,952	497,597	60,492
Spanish Speakers (18 years and older, Speaks English Less Than Very Well)	20,579	6,077	126
Languages Other Than Spanish (18 years and older, Speaks English Less Than Very Well)	18,158	5,632	441

4.3.2 - Environmental Justice

Executive Order (EO) 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low- Income Populations" requires each Federal agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations." There are identified three fundamental principles of environmental justice:

1. To avoid, minimize, or mitigate disproportionately high and adverse human health or environmental effects, including social and economic effects, on minority populations and low-income populations;
2. To ensure full and fair participation by all potentially affected communities in the transportation decision-making process;
3. To prevent the denial of, reduction in or significant delay in the receipt of benefits by minority populations and low-income populations.

Disproportionately high and adverse human health or environmental effects are defined as adverse effects that:

1. Are predominately borne by a minority population and/or a low-income population or
2. Will be suffered by the minority population and/or low-income population and are appreciably more severe or greater in magnitude than the adverse effects that will be suffered by the non-minority population and/or non-low-income population.

A minority population is defined as a group of people and/or a community experiencing common conditions of exposure or impact that consists of persons classified by the U.S. Bureau of the Census as Black or African-American; Asian; American Indian or Alaska Native; Native Hawaiian or other Pacific Islander; Hispanic or Latino; or other non-white persons, including those persons of two or more races. A low-income population is defined as a population whose median household income is at or below the U.S. Department of Health and Human Service (HHS) poverty guidelines. The HHS poverty guideline for a family of four in the United States in 2012 is $23,050 (U.S. Department of Health and Human Services, 2012).

4.4 – Biological Resources

4.4.1 – Vegetation

According to ODWC's map, Eco-regions of Oklahoma, the project area lies within the Northern Cross Timbers eco-region of Oklahoma. This eco-region is a belt of forested area that is located from south-central Oklahoma into southeastern Kansas. It is a transition area between the once prairie, now winter wheat growing regions to the west, and the forested low mountains of eastern Oklahoma. Much of the area is comprised of rangeland and pastureland with predominant land cover consisting of mixed grasses and weedy flowering plants. The natural vegetation of this region is usually dominated by small bluestem grassland with scattered blackjack oak, honey locust, cedar, elm, cottonwood, and post oak trees. Arcadia Lake is located within a larger metropolitan area northeast of Oklahoma City, Oklahoma. Much of this area includes bottomlands and post oak/blackjack oak forests. Figure 4 shows the location of the project area in relation to the eco-regions of Oklahoma.

Figure 4. The proposed project area in relation to Eco-regions of Oklahoma. (ODWC, 2013)

The dominant tree species in this habitat are the Post Oak (Quercus stellata) and Blackjack Oak (Quercus marilandica). These two oaks may comprise as much as 90 percent of the canopy cover. Other common trees include Black Hickory (Carya texana), Black Oak (Quercus velutina) and Eastern Red Cedar (Juniperus virginiana). Eastern Red Cedar is common throughout the Region and has increased in abundance during the past century as a result of the reduction of periodic fires.

Prominent understory plants include Chinkapin Oak (Quercus muehlenbergii), Chittamwood (Bumelia lanuginosa), Eastern Redbud (Cercis canadensis), Roughleaf Dogwood (Cornus drummondii), Mexican Plum (Prunus mexicana), and Winged Sumac (Rhus copallina). In sites that are drier and/or have a higher frequency of fire, the Crosstimbers has a more woodland or savannah-like structure. These areas typically have a grassy understory dominated by Little Bluestem (Schizachyrium scoparium), but also with Indian Grass (Sorghastrum nutans), Big Bluestem (Andropogon gerardii), and Small Panicgrass (Panicum oligosanthes).

The general habitat around Arcadia Lake is highly fragmented. A review of high resolution aerial photography and field work indicates that habitat loss and the apportionment of the remaining habitat into smaller, more isolated pieces exists. Interstate 35 to the west of Arcadia Lake provides a large barrier for species. Conversion of native habitats to homesteads, pasture and commercial properties has contributed to major habitat loss and fragmentation. One property along the northwestern area of the proposed trail has converted approximately 39 acres of Post Oak/Blackjack Forest to a large residence and pasture. Causes of habitat fragmentation around Arcadia Lake include:

1. Commercial, Recreational and Residential Development
2. Road Building
3. Conversion of Forested Habitats to Pasture
4. The Expansion/Invasion of Eastern Red Cedar into Existing Habitats

Habitats identified as a part of the EA for Arcadia Lake Trail can be broken into six categories:

1. Post Oak/Blackjack Oak Forest Community
2. Post Oak/Eastern Red Cedar Forest Community
3. Oak/Eastern Red Cedar Savannah Community
4. Bottomland Hardwoods Community
5. Small Sandy-bottom Stream and Associated Riparian Forest
6. Disturbed Areas Along Commercial/Residential Properties, Roads and the Lake Dam

The Post Oak/Blackjack Forest is the dominant natural habitat around the proposed trail at Arcadia Lake. The dominant plant species in this community were post oak (*Quercus stellate*) and blackjack oak (*Quercus marilandica*). Other species found in this community include eastern redbud (*Cercis Canadensis*), roughleaf dogwood (*Cornus drummondii*), winged sumac (*Rhus copallinum*), and winged elm (*Ulmus alata*). This community was present for most of the 3.1 mile segment of the proposed trail from the I-35 underpass area to Spring Creek Park, the part of the proposed trail along the western side of the Lake before Memorial Road and the eastern portion of the proposed trail.

The Post Oak/Eastern Red Cedar Forest community was common at the trail site as well. As Eastern Red Cedars continue to expand their range in Oklahoma, they are continuing to encroach into the Post Oak/Blackjack Forest Communities. The dominant plant species in this community were Post Oak and Eastern Red Cedar (*Juniperus virginiana*). Other species found in this community include Eastern Redbud, Roughleaf Dogwood, Winged Sumac, and Winged Elm.

An oak/eastern red cedar savannah was found at several locations in the area of the proposed multi-use trail. Before European settlement, the oak savanna (a characteristic fire ecology) was extensive and was often a dominant part of the ecosystem. Fires, set by lightning or Native Americans, ensured that the savanna areas did not turn into forests. Only trees with a high tolerance for fire, principally certain oak species, were able to survive. On sandy soils, black oak predominated. These savanna areas provided habitat for many animals, including American bison, elk, and white-tailed deer. In the Arcadia Lake area, as mentioned previously, the eastern red cedar is beginning to replace the black oaks. Dominant species in this community included winged sumac, Virginia wildrye (*Elymus subuticus*), and eastern daisy fleabane (*Erigeron annuus*).

Bottomland hardwoods communities were found at a few selected areas in the vicinity of the proposed multi-use trail. One such area was found less than a mile west from Spring Creek Park (see Preliminary Wetland and Stream Delineation report in Appendix B). Dominant species in this community included sugarberry (*Celtis laevigata*) and black walnut (*Juglans nigra*).

The small sandy-bottom stream and associated riparian forest was found along a short section of the proposed multi-use trail from the section of creek bank just west of the I-35 underpass to where the trail moves to the upland post oak/blackjack oak forest habitat. This habitat is also present at numerous areas where the trail intersects intermittent streams and drainages along its 20 mile route. This will be discussed in more detail in Section 5.2.2.3. Figure 47, Appendix A is a topographical map showing potential wetland areas where the trail will cross. Locations 2 – 20 and 22 are those that may be determined to be small sandy bottom streams through future wetland delineation field work.

The longest sections of the trail, over 9 miles collectively, are along disturbed habitats. These formerly native areas have been disturbed by roads and the Arcadia Lake Dam primarily.

4.4.2 - Wildlife

The boundary between the Cross Timbers and the Central Great Plains coincides with the western limit of many mammals and insects. Species that utilize the site include those species adapted to urban floodplains. These species include, but are not limited to, mourning dove (Zenaida macroura), house sparrow (Passer domesticus), barn swallow (Hirundo rustica), great-tailed grackle (Quiscalus mexicanus), great egret (Ardea alba), snowy egret (Egretta thula), little blue heron (Egretta caerulea), yellow-crowned night heron (Nyctanassa violacea), mallard (Anas platyrhynchos), black vulture (Coragyps atratus), double-crested cormorant (Phalacrocorax auritus), northern mockingbird (Mimus polyglottos), whiptail lizard (Cnemidophorus sp.), spiny soft-shelled turtle (Apalone spinifera), striped skunk (Mephitis mephitis), eastern fox squirrel (Sciurus niger), raccoon (Procyon lotor), opossum (Didelphis virginiana), and eastern cottontail (Sylvilagus floridanus).

The Oklahoma Water Resources Board (OWRB, 2000) has reported extensively on aquatic species in Arcadia Lake. OWRB indicates that the Arcadia Lake watershed could potentially include 29 species of fish. Arcadia was stocked with fish during its construction. Stocking began with the earliest stages of the lake in 1986. The first stage was the stocking of an inundated 1.5

acre abandoned quarry located within the lake's basin. This was done during the pre-impoundment stage, and included populations of channel catfish and bluegill sunfish. The next stage took place while the lake was filling. During this period, blue catfish were introduced. In the final stage, populations of Florida bass were introduced once the lake reached conservation pool elevation. Game fishes currently present in the watershed are largemouth bass (*Micropterus salmoides),* spotted bass *(Micropterus punctulatus),* bluegill sunfish (*Lepomis macrochirus*), longear sunfish (*Lepomis megalotis*), redear sunfish (*Lepomis microlophus*), white crappie, (*Pomoxis annularis*), channel catfish (*Ictaluris punctatus*), and flathead catfish (*Pylodictus olivaris*). No endangered, threatened or special concern fish species are known to occur within the Arcadia Lake watershed.

Table 4 is a list of species observed at Arcadia Lake during a 2010 ODWC wildlife survey.

Table 4. Mammals, Birds, Reptiles and Amphibians of the Lake Arcadia Area

KEY: M = Only occurs as a migrant in spring and fall
W = Only occurs during the winter months
S = Only occurs during the late spring and summer months

Mammals

Virginia Opossum	Texas Mouse
Least Shrew	White-footed Mouse
Eastern Mole	Deer Mouse
Silver-haired Bat M	Hispid Cotton Rat
Red Bat S	Eastern Woodrat
Hoary Bat M	Prairie Vole
Nine-banded Armadillo	Coyote
Eastern Cottontail	Red Fox
Fox Squirrel	Gray Fox
Southern Flying Squirrel	Raccoon
Plains Pocket Gopher	Mink
Beaver	Striped Skunk
Fulvous Harvest Mouse	Bobcat
White-tailed Deer	

Birds

Common Loon W	American Coot	Northern Flicker	Northern Parula S
Pied-billed Grebe	Black-bellied Plover M	Pileated Woodpecker	Yellow Warbler M
American White Pelican M	Semipalmated Plover M	Olive-sided Flycatcher M	Yellow-rumped Warbler W
Double-crested Cormorant	Killdeer	Eastern Wood-Pewee S	Black-throated Green Warbler M
American Bittern M	American Avocet M	Least Flycatcher M	Black-and-white Warbler S
Great Blue Heron	Greater Yellowlegs	Eastern Phoebe S	American Redstart M
Great Egret S	Lesser Yellowlegs M	Great Crested Flycatcher S	Prothonotary Warbler S
Snowy Egret S	Solitary Sandpiper M	Western Kingbird S	Louisiana Waterthrush S
Little Blue Heron S	Spotted Sandpiper M	Eastern Kingbird S	Kentucky Warbler S
Cattle Egret S	Upland Sandpiper M	Scissor-tailed Flycatcher S	Common Yellowthroat M
Green Heron S	Semipalmated Sandpiper M	Purple Martin S	Yellow-breasted Chat
Black-crowned Night-Heron S	Least Sandpiper	Northern Rough-winged Swallow S	Summer Tanager S
Yellow-crowned Night Heron	White-rumped Sandpiper M	Cliff Swallow S	Northern Cardinal
Trumpeter Swan W	Baird=s Sandpiper M	Barn Swallow S	Rose-breasted Grosbeak M
Canada Goose	Pectoral Sandpiper M	Blue Jay	Blue Grosbeak S
Wood Duck	Dunlin M	American Crow	Indigo Bunting S

Green-winged Teal	W	Stilt Sandpiper	M	Carolina Chickadee		Painted Bunting	S
Mallard		Long-billed Dowitcher	M	Tufted Titmouse		Spotted Towhee	W
Northern Pintail	W	Wilson's Phalarope	M	Red-breasted Nuthatch	W	Chipping Sparrow	M
Blue-winged Teal	M	Wilson's Snipe	W	White-breasted Nuthatch		Clay-colored Sparrow	M
Northern Shoveler	W	American Woodcock		Brown Creeper	W	Field Sparrow	
Gadwall	W	Franklin's Gull	M	Carolina Wren		Lark Sparrow	S
American Wigeon	W	Bonaparte's Gull	W	Bewick's Wren		Savannah Sparrow	W
Canvasback	W	Ring-billed Gull	W	House Wren	S	LeConte's Sparrow	W
Ring-necked Duck	W	Forster's Tern	M	Winter Wren	W	Fox Sparrow	W
Lesser Scaup	W	Black Tern	M	Marsh Wren	M	Song Sparrow	W
Common Goldeneye	W	Mourning Dove		Golden-crowned Kinglet	W	Lincoln=s Sparrow	M
Bufflehead	W	Rock Pigeon		Ruby-crowned Kinglet	W	Swamp Sparrow	W
Hooded Merganser	W	Eurasian Collared Dove		Blue-gray Gnatcatcher	S	White-throated Sparrow	W
Ruddy Duck	W	Yellow-billed Cuckoo	S	Eastern Bluebird		White-crowned Sparrow	W
Turkey Vulture	S	Greater Roadrunner		Swainson=s Thrush	M	Harris's Sparrow	W
Osprey	M	Eastern Screech-Owl		Hermit Thrush	W	Dark-eyed Junco	W
Mississippi Kite	S	Great Horned Owl		American Robin		Red-winged Blackbird	
Bald Eagle	W	Barred Owl		Gray Catbird	M	Eastern Meadowlark	
Northern Harrier	W	Common Nighthawk	S	Northern Mockingbird		Yellow-headed Blackbird	M
Sharp-shinned Hawk	W	Chuck-will's-Widow	S	Brown Thrasher		Great-tailed Grackle	
Cooper's Hawk		Chimney Swift	S	American Pipit	M	Common Grackle	
Red-shouldered Hawk		Ruby-throated Hummingbird	S	White-eyed Vireo	S	Brown-headed Cowbird	
Red-tailed Hawk		Belted Kingfisher		Blue-headed Vireo	M	Orchard Oriole	S
Broad-winged Hawk	S	Red-headed Woodpecker		Warbling Vireo	S	Baltimore Oriole	S
American Kestrel		Red-bellied Woodpecker		Red-eyed Vireo	S	Purple Finch	W
Merlin	W	Yellow-bellied Sapsucker	W	Tennessee Warbler	M	House Finch	
Wild Turkey		Downy Woodpecker		Orange-crowned Warbler	M	Pine Siskin	W
Sora	M	Hairy Woodpecker		Nashville Warbler	M	American Goldfinch	

Amphibians

Barred Tiger Salamander	Gray Treefrog
Smallmouth Salamander	Blanchard's Cricket Frog
Dwarf American Toad	Cajun Chorus Frog
Woodhouse's Toad	Strecker's Chorus Frog
Great Plains Narrowmouth Toad	Plains Leopard Frog
Cope's Gray Treefrog	American Bullfrog

Reptiles

Common Snapping Turtle	Five-lined Skink	Speckled Kingsnake
Yellow Mud Turtle	Southern Prairie Skink	Bullsnake
Missouri River Cooter	Slender Glass Lizard	Brown Snake
Red-eared Slider	Eastern Hognose Snake	Lined Snake
Smooth Softshell Turtle	Ring-necked Snake	Western Ribbon Snake
Spiny Softshell Turtle	Variable Ground Snake	Red-sided Garter Snake
Three-toed Box Turtle	Rough Green Snake	Graham's Crayfish Snake
Collared Lizard	Coachwhip	Diamond-backed Water Snake
Fence (Prairie) Lizard	Yellow-bellied Racer	Plain-bellied Water Snake
Six-lined Racerunner	Black Rat Snake	Copperhead
Ground Skink	Prairie Kingsnake	Western Pygmy Rattlesnake

4.4.3 – Surface Water

Section 303(d) of the Clean Waters Acts requires all states to identify and monitor impaired bodies of water within the state's boundaries. Arcadia Lake and Spring Creek do appear on the 2010 list. Arcadia Lake is classified as eutrophic with bacteria and turbidity water quality issues. Specific problems in Arcadia Lake include excess nutrients, sediment, pesticides, metals, fecal bacteria, and trash. Because of the largely urban land use of the lake basin, the inability to

identify any one factor as the source contributes to the difficulty of water quality remediation in Arcadia Lake. These issues were detailed in a "Diagnostic and Feasibility Study of Lake Arcadia" report published in the year 2000 by the Oklahoma Water Resources Board (OWRB). Figure 45, Appendix A shows bodies of water that are listed as impaired in the Arcadia Lake – Deep Fork Watershed for 2010 (City of Edmond website). Efforts have been ongoing to monitor and control the waters of Lake Arcadia. OWRB's Financial Assistance Program has provided five loans to the City of Edmond to fund more than $25.7 million in various drinking water projects. A Beneficial Use Monitoring Program (BUMP) is ongoing through OWRB and collects water quality data at 5 locations at various depths in the Lake. OWRB data from October 2006 – August 2007 is included (Figure 46, Appendix A). Average turbidity is listed as 42 NTU. The water is considered to be eutrophic. The water is classified as "not supporting" fish and wildlife propagation.

4.4.4 - Groundwater

The proposed project area is located over the Garber-Wellington Aquifer. This aquifer consists of about 900 feet of inter-bedded sandstone, shale, and siltstone. Sandstone comprises 35 -75 percent of the aquifer and averages about 50 percent. Water-table conditions generally exist in the upper 200 feet in the outcropped area of the aquifer. Semi-artesian conditions exist below a depth of 200 feet and beneath rocks of the Hennessey Group; which are predominately shales (Carr & Marcher, 1977).

Water from the Garber-Wellington aquifer is normally suitable for public water supply, but in some areas natural concentrations of arsenic, chromium, uranium, and selenium exceed drinking water standards. As a result of new federal drinking water standards for arsenic, several municipal well fields were forced to close or severely curtail water production from water wells that had unacceptable high levels of arsenic. Another natural impairment to water quality is salinity, which increases with depth in the aquifer. Saline water is encountered as shallow as 100 feet in some portions of the Garber-Wellington aquifer. Currently, water from the aquifer is considered acceptable for drinking.

4.4.5 - Wetlands

Wetland and stream delineation has been completed for the initial 3.1 miles of the proposed multi-use trail from an area just west of the I-35 underpass to Spring Creek Park (Appendix B). This is the only section of the proposed trail that has been engineered to date. In addition, preliminary wetland delineation was done for part of the proposed trailhead park. Although details of the proposed trail are not complete, an effort to identify possible wetlands along the proposed trail has been completed using high resolution aerial photography, topographic maps, and a field survey. It is understood that a wetland delineation of all prospective wetland areas that may be impacted by the trail project must be conducted with review by USACE biologists and regulatory personnel prior to construction.

The wetland and stream delineation found five wetland areas within the 3.1 mile section of the proposed trail that meet the technical criteria of wetlands as defined by the 1987 *Corps of Engineers Wetland Delineation Manual*, along with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0) (March 2010). In*

addition, Spring Creek and three intermittent tributaries exhibiting OHWMs were found to flow through the proposed project area.

Although the trailhead park is not part of this proposed action, a preliminary wetland delineation indicates that wetlands are present. Given the extent of habitat modification suggested by the conceptual plan for the trailhead park, complete wetland delineation is necessary for the 19.80 acre tract of land reserved for the trailhead park prior to construction.

Using high definition aerial photographs and a USGS topographic series of maps with the proposed trail superimposed on it (Figure 47, Appendix A), 24 additional locations along the proposed remainder of the trail (marked on Figure 47) need to be field checked for wetlands status in accordance with the Corps' Wetland Delineation Manual. Location 21 shows blue-line creeks running underneath the Arcadia Lake dam and underneath the road at the bottom of the dam. Location numbers 23 – 29 show blue line creeks running underneath Route 66. The National Wetland Inventory Map for the Arcadia Lake area was not used to determine potential wetlands since the data used to create it was obtained in 1981 prior to the creation of Arcadia Lake by USACE in 1987.

4.4.6 – Prime and Unique Farmland

According to the U.S. Department of Agriculture (USDA), the definition of "prime farmland" is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and that is available for these uses. It has the combination of soil properties, growing season, and moisture supply needed to produce sustained high yields of crops in an economic manner if it is treated and managed according to acceptable farming methods. In general, prime farmland has an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, an acceptable level of acidity or alkalinity, an acceptable content of salt or sodium, and few or no rocks. Its soils are permeable to water and air. Prime farmland is not excessively eroded or saturated with water for long periods of time, and it either does not flood frequently during the growing season or is protected from flooding. No prime farmland exists in the project area on public lands and waters managed by the USACE.

4.4.7 – Wild and Scenic Rivers

Pursuant to the Wild and Scenic River Act (Public Law 90-542), Wild River Areas are defined as those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. Scenic river areas are defined as those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads. Neither Spring Creek nor the other tributaries that flow into Arcadia Lake are listed as wild and scenic rivers.

4.4.8 – Executive Order 13112, Invasive Species

On February 3, 1999, President Clinton issued Executive Order 13112 (EO 13112), Invasive Species, which notes that invasive species annually cause significant economic, ecological, and alien species whose introduction does or is likely to cause economic and environmental harm or harm to human health. EO 13112 requires Federal agencies to not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States; and that all feasible and prudent measure to minimize risk or harm will be taken in conjunction with the actions. EO 13112 is addressed in this NEPA document to incorporate measure that will prevent the inadvertent spread of exotic and invasive species. These preventive measures are described in Section 5.2.6.

4.4.9 Executive Order 13186, Responsibility of Federal Agencies to Protect Migratory Birds

On January 10, 2001, President Clinton issued Executive Order 13186 (EO 13186), Responsibility of Federal Agencies to Protect Migratory Birds, which notes that migratory bird conventions impose substantive obligations on the United States for the conservation of migratory birds and their habitats. EO 13186 requires, in part, Federal agencies to integrate conservation principles, measures, and practices into agency activities and prevent or abate the pollution or detrimental alteration of the Environment for the benefit of migratory birds, as practicable.

Partners in Flight identifies Arcadia Lake as being located in the Osage Plains, Crosstimbers sub-region, (Partners in Flight, 2012) with the uplands dominated by a complex mix of prairie, savannahs with scattered trees, and cedar/blackjack/post oak woodlands. Priority bird populations within the Crosstimbers associated with grassland include: the greater prairie chicken and the Dickcissel. Priority bird populations within the Crosstimbers associated with grasslands/shrubs or scattered trees include: Loggerheaded Shrike, Field sparrow, and Scissor-tailed flycatcher. Priority bird populations within the Crosstimbers associated with shrub/brush include: Bell's vireo, Painted bunting, and Harris's sparrow. Only the Field sparrow, Scissor-tailed flycatcher, and the Harris's sparrow were observed in the Arcadia Lake area during a recent field survey (Howery, 2010).

4.5 – Threatened and Endangered Species

A diverse set of species inhabit the Arcadia Lake area as indicated by the Oklahoma Department of Wildlife Conservation (ODWC). ODWC indicates that there are no state listed threatened and endangered species. Two species appear on the Federal list for Oklahoma County:

1. Interior Least Tern (*Sterna antillarum*) – endangered
2. Piping Plover (*Charadrius melodus*) – threatened

The USFWS Oklahoma Ecological Services Field Office website was consulted for threatened and endangered species in the project area. The Information, Planning, and Conservation (IPaC) tool on the website was used to help determine possible species. IPaC identified three species of concern for the project area. Further information regarding the impact of the project

on these three species is provided in Section 5 of this EA. Table 5 identifies threatened, endangered, proposed species, and candidate species that may occur within the boundary of the project and/or may be affected by the project as identified by IPac.

Table 5. Endangered Species List for Arcadia Lake Area

Species Name	Listing Status
Least tern *(Sterna antillarum)*	Endangered
Piping Plover (Charadrius melodus)	Threatened
Whooping crane (Grus americana)	Endangered

Figure 5. Least Turn; listed as endangered in Oklahoma. (USFWS website)

Description: The Least Tern is the smallest North American member of the gull and tern family. The Least Tern is a slender, streamlined bird with a white breast and belly, a gray back and long, narrow, pointed wings. It has a forked tail and a straight, pointed beak that is usually a deep yellow color. Least Terns feed on small fish that they catch near the surface of the water.

Habitat: Terns live along large rivers and may sometimes be found hunting fish in shallow wetlands and the margins of ponds and lakes. Least Terns require bare sand and gravel for nesting and typically nest in small colonies consisting of two to 20 pairs along large rivers on sand bars and scoured bends. Colonies also occur on salt flats such as the large one at Salt Plains National Wildlife Refuge.

Current and Historic Distribution: The Least Tern is a rare species and is found in Oklahoma during the late spring and summer breeding season (mid-May through late August). In Oklahoma, Least Terns may be found on portions of the Arkansas, Cimarron, Canadian and Red rivers. Outside of Oklahoma, Least Terns occur along the Atlantic and Gulf coasts of the U.S., as well as on several wide, sandy rivers in Great Plains such as the Missouri, Platte and Yellowstone. In the fall, all Least Terns migrate south to spend the winter in the Caribbean and the northern coast of South America.

Reasons for Decline: Widespread loss and alteration of its riverine nesting habitat has eliminated the Least Tern from many locations within its former breeding range in the interior U.S. The construction of large reservoirs has permanently submerged some nesting areas and has altered the seasonal flooding dynamics that are required to build and sustain the sandbars

that the terns need for nesting. Additionally, recreational vehicle use and other disturbances around nesting colonies have reduced nesting success and reproduction.

Figure 6. Piping Plover; listed as threatened in Oklahoma. (USFWS website)

Description: A small shorebird (similar to a sandpiper), the Piping Plover is about seven inches in length and height. The coloration on the back is a light gray-brown and the breast and belly are white. A single, black ring wraps around the back and sides of the neck, but does not connect in the front. The legs are yellowish in color and the bill may be solid black or yellow at the base and black at the tip. Piping Plovers feed on insects and small invertebrates that they pick off the surface of the ground.

Habitat: Piping Plovers are found on mudflats, sandy beaches and shallow wetlands with sparse vegetation. They may be found along the margins of lakes and large rivers where there is exposed (bare) sand or mud.

Current and Historic Distribution: The Piping Plover was once widespread on beaches, river sandbars and shorelines along the Atlantic Coast, the Great Lakes and inland rivers in the Midwest and Great Plains. Today it is listed as an endangered species in the Great Lakes and a threatened species across the rest of its range. There are two nesting records for the Piping Plover in the Oklahoma panhandle, but this species is normally a spring and fall migrant through our state. Most records for migrating Piping Plovers occur across the main body of the state; recent records have come from Woodward, Alfalfa, Oklahoma, Cleveland, Tulsa and Washington counties. Spring migration occurs in April and early May; fall migration occurs between the last week of July and late September.

Reasons for Decline: Piping Plover populations have declined in their nesting range as a result of habitat destruction and alteration due to dam construction and channelization projects along rivers and streams, as well as the draining and filling of shallow wetlands. Other threats include human disturbance of nests and nesting beaches, encroachment of vegetation into nesting habitats, predation and increased recreational use of nesting and wintering habitats.

Figure 7. Whooping Crane; listed as endangered in Oklahoma. (USFWS website)

Description: At a height of nearly five feet, the Whooping Crane is the tallest bird in North America. It is a large white crane with red markings on its face and crown, and black feathers on the outer ends of its wings. Cranes fly with their necks stretched out straight, and this distinguishes them from the similar-looking herons and egrets that hold their necks in an "S" shape while in flight. Cranes feed in marshes, shallow-water wetlands, wet meadows and sometime crop fields and eat a wide range of insects, crayfish, fish and seeds.

Habitat: Whooping Cranes pass through Oklahoma each spring and fall during migration. While in Oklahoma, they are typically found in shallow wetlands, marshes, the margins of ponds and lakes, sandbars and shorelines of shallow rivers, wet prairies and crop fields near wetlands.

Current and Historic Distribution: During their migration, they pass through the western half of Oklahoma – most sightings occur west of Interstate 35 and east of Guymon in the panhandle. Currently, the migratory population consists of approximately 270 birds that nest in northern Canada and winter along the Gulf Coast of Texas. Historically, the Whooping Crane's nesting range was much larger and extended across the northern plains of central Canada and the north-central U.S. There was also a small non-migratory population along the western Gulf Coast in Louisiana and Texas.

Reasons for Decline: The greatest cause of the Whooping Crane's decline was the loss of shallow wetland habitat in both the nesting and the wintering ranges. This species was affected also by unregulated market hunting in the 1800s before modern wildlife conservation laws were passed.

Bald eagles (Figure 8) are frequently seen in the area, but they are currently not threatened or endangered and they do not nest in the Arcadia Lake area. Bald eagles receive protection under the Bald and Golden Eagle Protection Act (16 U.S.C. 668). There is considerable habitat for Bald Eagles to roost at Arcadia Lake. Oklahoma is one of the top 10 states in the nation for winter eagle viewing. Each winter, as northern lakes freeze over, thousands of bald eagles migrate to warmer, southern waters. Oklahoma is especially attractive to these magnificent birds. During severe winters in the north, 750 to 1,500 eagles may gather in Oklahoma. A resident population of more than 100 bald eagles also lives in Oklahoma year-round, but they only stay in the Arcadia Lake area during the winter months The City of Edmond sponsors a

bald eagle observation day in January. From 2 to 6 bald eagles have been observed over the last several years; they are usually observed from mid-October to early March in tree tops near the Lake. Figure 9 shows two eagles roosting in trees near the Lake dam.

Figure 8. Bald Eagle; protected by the BGEPA. (USFWS website)

Figure 9. Bald Eagles roosting in trees near Arcadia Lake dam. (Travelok.com, 2013)

There are no listed threatened or endangered plants in the area. Two species of orchids are listed as endangered in Oklahoma, but they are not present in the project area. There are no other plants, including agricultural species (as defined by the USDA) that are of concern.

4.6– Cultural Resources

This project is located on land with adjacent waterways under the jurisdiction of the USACE. Therefore, a "Section 106 Review" for cultural resources that could be affected by the proposed project is required. The proposed trail consists of approximately 73 acres of cycling and pedestrian trail installation. The proposed trail will require the area to be cleared and the placement of paved asphalt approximately twelve (12) feet in width for the trail. A total width including asphalt trail and edging planted with native forbs of 30 feet is used for calculation

purposes. A Phase I Archival Review and Field Survey was performed for this project and been reported under separate cover (Open Range Archaeology, February 22, 2013). This report has been reviewed by the State Historical Preservation Office (SHPO) and Oklahoma Archeology Survey (OAS) and is included in Appendix C. Comments provided by these agencies are included at the end of the cultural resources report.

In summary, the survey determined that thirty (30) previously recorded cultural resources, twenty-three (23) prehistoric and seven (7) historic sites were located within one mile of the proposed project location within Oklahoma County, Oklahoma. Of the seven historic properties, only five structures can be identified on the 1964 USGS Aerial map. Examination of the historic maps and aerials for the study area did indicate a potential for encountering historic (19th and 20th century) cultural resources. No known GLO (General Land Office) structures are known to exist within the NEPA study area. The field survey revealed five previously unrecorded cultural resources located within the study area.

4.7 – Air Quality

The City of Edmond regulates air quality through its Code of Ordinances, Title 5, Health and Sanitation, Chapter 5.16. In addition, the Clean Air Act (CAA), Title 40 CFR Parts 50 and 51, dictates that the National Ambient Air Quality Standards (NAAQS), established by the EPA, must be maintained nationwide. The NAAQS were established to protect the public health and welfare with an adequate margin of safety. The NAAQS include standards for six “criteria” pollutants: ozone (O3), nitrogen dioxide (NO2), carbon monoxide (CO), “respirable” particulates (particulate matter less than 10 microns in diameter [PM10]), sulfur dioxide (SO2), and lead (Pb). These standards include short-term standards (1-hour, 8-hour, or 24-hour periods) for pollutants with health effects. The Association of Central Oklahoma Governments (ACOG) administers Congestion Mitigation/Air Quality (CMAQ) funds to assist central Oklahoma communities to help maintain air quality and continue to meet federal attainment standards.

The proposed project area is located in Oklahoma County, Oklahoma, which has been classified as an attainment area under the federal 8-hour national ambient air quality standards; therefore, it is not subject to the stringent rules associated with non-attainment. The site currently has no sources of air emissions in place, with the exception of periodic use of combustion engines for landscape management and minor repair activities. Minor releases of sulfur dioxide and hydrogen sulfide may occur in stagnant water along the river or lake due to normal biological activity. Traffic contributes an insignificant amount of air pollution. Also, no major stationary, point sources of air emissions are located in adjacent properties.

4.8 – Hazardous, Toxic, and Radiological Waste

The pre-impoundment survey for Arcadia Lake projected significant water quality problems as a consequence of historical land and water usage in the watershed. In an effort to alleviate some of these potential water quality problems, point source discharges were diverted outside the Arcadia watershed. Thus, all pollutants in Arcadia Lake and its watershed are currently derived from nonpoint sources (OWRB, 2000).

The pre-impoundment survey identified DDT, dieldrin, chlordane, lindane, diazanon, 2,4-D, 2,4,5-T, and silvex as potential water quality problems in Arcadia Lake and downstream water resources, based on USGS monitoring data near Arcadia (USACE, 1977). Since impoundment, pesticides in sediments, water, and fish flesh have been closely monitored. The toxics monitoring program performed by the Oklahoma State Department of Health (OSDH) (ODEQ, 1995) detected chlordane levels in fish which exceeded various state and federal warning levels. Follow up sampling has not resulted in chlordane advisories. Recent lake sediment surveys were free of detectable levels of pesticides (Bates, 1989). Postings of fish flesh advisories in the early1990s adversely affected public opinion of the lake's aesthetics. Although no known concerns exist currently, there is still a segment of negative public opinion related to these events.

A regulatory review of the area for hazardous, toxic, and radiological waste sites within a one mile radius of the Arcadia Lake Trail project area was completed (Appendix D). No sites were found within the target area in the reviewed data base.

- One site was within the one mile radius was identified as a small quantity generator (SQG) and it is currently in compliance with ODEQ regulations.
- Five sites were identified as having underground storage tanks (UST), above ground storage tanks (AST), or as generators of waste classified as non-hazardous. One of these sites was listed as having a confirmed release of gasoline from a leaking underground storage tank (LUST). This site was cleaned up in 1998 and the LUST issue is now closed. All five of the above sites are currently in compliance with ODEQ regulations.
- Unmapped facilities are those that do not contain sufficient address or location information to evaluate the facility listing locations relative to the site. The regulatory review listed 49 facilities in the unmapped section. Determining the location of unmapped facilities is beyond the scope of this assessment; however, none of these facilities were identified as being located on USACE property where the multi-use trail project is located. These facilities are listed in the database report in Appendix D.

4.9 – Recreation

Current recreational activities include boating, sightseeing, camping, hiking on primitive trails, horseback riding on equestrian trails, picnicking, fishing, swimming, skiing, sailing, group meetings, mountain biking and hunting. The City of Edmond maintains four distinct parks at Arcadia Lake. Picnicking facilities are available at all four parks. Arcadia Lake has a total of over 140 campsites with a number of amenities for campers, including fire ring, picnic table and charcoal grill. "Primitive" sites do not include water or electrical service while other campsites feature hookups and community water. "Full Hook-up" sites include electric, water and sewage connections.

4.9.1 - Spring Creek Park

This park consists of 194 acres and features a boat ramp, disc golf, parking, pavilions available for rent, a pay phone, a playground, restrooms, RV hookups, a beach for swimming, and a

water fountain. It has direct access to a primitive series of hiking/biking trails. It is located 2.5 miles east of I-35 on 15th Street and is on the path of the proposed multi-use trail.

A heated dock at Spring Creek Park makes fishing a year-round activity for all ages. The blue metal structure provides a sheltered 14-by-40-foot open fishing area inside with an 8-foot walk surrounding it. Red cedar trees are tied off underneath for fish habitat. Outside, there's another 8-foot walk around all four sides of the building and a wide ramp from the parking area. Anglers are allowed two fishing poles at the heated dock, which is lighted inside and out. The structure is power-washed weekly to keep it clean. Everything is handicapped-accessible.

4.9.2 - Edmond Park

This park consists of 131 acres and is located 2 miles east of I-35 just below Route 66. The northeastern section of the proposed multi-use trail will run along the northern side of Edmond Park. The park features a boat ramp, parking, camping, fishing, pavilions, a pay phone, playground, restrooms, a beach for swimming, and a water fountain.

4.9.3 - Central State Park

This park is located on the northwestern section of the proposed multi-use trail and consists of 249 acres. The park features a boat ramp, parking, camping, RV hookups, fishing, pavilions, a pay phone, playground, restrooms, showers, a beach for swimming, and a water fountain.

4.9.4 - Scissortail Campground

This park is located on the southwestern part of the proposed multi-use trail and consists of 141 acres. Scissortail has 38 campsites and hookups for 20 RVs. It also features pavilions, a playground, and a water fountain.

4.9.5 - Equestrian Trail

A six mile equestrian trail begins near Spring Creek Park and heads south along the western side of Arcadia Lake towards Memorial Road. A group called Friends of Arcadia Lake Equestrian Trails is concerned about the impact of the proposed multi-use trail on the equestrian trail. This will be discussed more fully in Section 5 of this EA.

4.9.6 - UCO Outdoor Adventure Recreation Boathouse

The University of Central Oklahoma (UCO) Outdoor Adventure Recreation (OAR) boathouse on Lake Arcadia provides a variety of activities on and around the Lake. Located on Midwest Boulevard south of Route 66, the center opened in 2009 as an extension of UCO's Wellness Center. The 4,800-square-foot facility is open to the public and students all year. The facility provides courses on canoeing, kayaking, and environmental stewardship, among others. Mountain and road bikes can be rented for use on existing trails. A meeting room can also be reserved at no cost for UCO students and faculty and for $35 per hour to the public. Those wanting to venture into new activities can take a variety of courses in bike maintenance, outdoor cooking, camping, team building and kayak safety. OAR also offers American Red Cross safety and certification classes such as CPR, first aid, blood borne pathogens and lifeguard training.

5.0 – Environmental Impacts of Proposed Action

A summary of the environmental and social impacts of the "No Action" alternative and the recommended alternatives are presented in Tables 6.1, 6.2, 6.3, 6.4 and 6.5, Impact Assessment Matrices.

5.1 – "No Action" Future Conditions

5.1.1 - Social and Economic Conditions

5.1.1.1 - Population

Due to current economic conditions, it is expected that the population of Oklahoma County and the Arcadia Lake area, in particular, will continue to increase. The median age of the population may moderately increase as young people will move to the area attracted by a strong job base, but this may be out-paced by people living longer. The racial make-up is expected to remain similar to its current composition.

5.1.1.2 - Employment and Education

The Edmond area has been one of the brighter spots in the State of Oklahoma with respect to unemployment. The unemployment rate of 3.0 is one of the lowest in the United States. The presence of the University of Central Oklahoma, Oklahoma Christian University and several other institutions of higher learning in the area will continue to be a source of skilled workers.

5.1.1.3 - Income

The absence of the proposed multi-use trail is not expected to impact the income of those living in the project area. It is expected that incomes will continue to rise. The median household income for the City of Edmond and Oklahoma County should remain considerably higher than the state of Oklahoma.

5.1.1.4 - Other Economic Effects

Property values are expected to continue to rise at a rate similar to the current trend if the multi-use trail is not built. There will continue to be periodic flooding at a rate and extent similar to the existing trend. The absence of the multi-use trail is expected to have no effect on current public facilities and services.

5.2 - "With Action" Future Conditions

5.2.1 - Social and Economic Conditions

5.2.1.1 - Population

Population trends of the past decade are expected to continue in the region. Construction would create short-term employment opportunities. The multi-use trail would be a feature that could attract additional people to move into the area creating a substantial increase in population growth.

5.2.1.2 - Employment

Initially the project should provide a boost to the economy during the construction phase. Worker's building the proposed trail will need to stay in local hotels, eat in local restaurants, purchase fuel for vehicles and construction equipment, purchase construction materials, and otherwise use local business establishments. It is expected that the project will take from one to five years to complete. Long term socioeconomics is not expected be negatively impacted by the proposed action. In fact, an improved park area would likely attract more patrons to the area. Additionally, new businesses may be attracted to the area, providing employment opportunities for minority populations and economically disadvantaged populations. A study entitled *"Measuring the Economic Impact and Value of Parks, Trails and Open Spaces in Jefferson County"* (S. Carleyolsen et al, December 15, 2005) estimated an annual $9.8 million increase in revenue in Jefferson County, Wisconsin for 2005 for a proposed project. Although the project and circumstances in Jefferson County are not identical to the Arcadia Lake Trail project, the financial implications are similar. In conclusion, the proposed action may result in an improvement in the economy of the project area.

5.2.1.3 - Income

Construction related expenditures would temporarily increase area income. A slight increase in area income over the long term is possible as patrons of the Arcadia Lake park system increase and some new business opportunities are created.

5.2.1.4 - Other Economic Effects

The impact of the eight alternative actions on socioeconomics would be positive. However, the degree of economic impact would be less for these alternatives since the trail lengths for each alterative is shorter than the proposed action thereby requiring a shorter construction period, smaller construction budget, and less reliance by construction workers on the local economy. Also, a reduced trail would result in fewer people using the trail which could result in a smaller boost to the local economy. The table below illustrates this concept. Refer to Section 2.0 for descriptions of alternatives.

Alternative	Impact
1. Turnaround before equestrian trail	Much shorter trail (5.1 miles), construction budget reduced, workers use less local economic resources, fewer patrons attracted
2. Turnaround at Memorial Road	Shorter trail (9.3 miles), impacts similar to 1
3. Turnaround before Eagle Cove	Shorter trail (12.9 miles), impacts similar to 1
4. Loop around Eagle Cove	Bridge budget eliminated, somewhat longer trail, substantial economic effect
5. Turnaround at the dam	Lower permitting cost for project, little impact on trail length or expected economic boost
6. Limited impact trail across the dam	Lower permitting cost for project, little impact on trail length or expected economic boost

7. Build trail below the dam	Possible lower permit cost, no impact on trail length (20.1 miles), economic boost similar to preferred alternative
8. Landowner accommodations	Other than bridge construction, little economic difference from preferred plan

There is evidence to suggest that building the trail will have a positive effect on property values in the vicinity of the trail (Fuller, D., *New Research Finds that Homeowners and City Planners Should 'Hit the Trail' When Considering Property Values*, October 11, 2011). It is expected that there will continue to be periodic flooding at a rate and extent similar to the existing trend since the multi-use trail is not expected to significantly affect the maximum flood pool. The multi-use trail is expected to significantly expand current public facilities and recreational services.

5.2.1.5 - Executive Order 12898, Environmental Justice

Executive Order 12898 requires federal agencies to identify and address disproportionately high and adverse human health and environmental effects of federal programs, policies, and activities on minority and low-income populations. Federal agencies are directed to ensure that federal programs or activities do not result, either directly or indirectly, in discrimination on the basis of race, color or national origin. Federal agencies are required to provide opportunities for input in the NEPA process from affected communities and to evaluate significant and adverse environmental effects of proposed federal actions on minority or low income communities during the preparation of federal environmental documents. The proposed project was evaluated in accordance with E.O. 12898 and it has been determined there is no adverse impact to minority and low-income populations for the reasons that minority and low-income populations do not comprise more than 50% of the total population (Table 2).

A summary of the environmental and social impacts of the “No Action” alternatives and the recommended alternatives is provided in the following Tables 6.1 – 6.5.

Table 6.1. Impact Assessment Matrix - “No Action” (1), and Accommodation for Equestrians and Landowners Alternative (2)

Name of Parameter	Magnitude of Probable Impact				
	Increasing Beneficial Impact		No Appreciable Effect	Increasing Adverse Impact	
	Substantive	Minor		Minor	Substantive
A. Social Effects					
1. Noise Levels			1, 2		
2. Aesthetic Values		2	1		
3. Recreational Opportunities	2		1		
4. Transportation			1,2		
5. Public Health and Safety			1	2	
6. Community Cohesion (Sense of Unity)	2		1		
7. Community Growth and Development	2		1		
8. Business and Home Relocations			1, 2		
9. Existing/Potential Land Use			1	2	
10. Controversy				1, 2	
B. Economic Effects					
1. Property Values	2		1		
2. Tax Revenues			1, 2		
3. Public Facilities and Services	2		1		
4. Regional Growth		2	1		
5. Employment		2	1		
6. Business Activity		2	1		
7. Farmland/Food Supply			1, 2		
8. Flooding Effects			1, 2		
C. Natural Resource Effects					
1. Air Quality			1, 2		
2. Terrestrial Habitat			1	2	
3. Wetlands			1	2	
4. Aquatic Habitat			1, 2		
5. Habitat Diversity and Interspersion			1	2	
6. Biological Productivity			1, 2		
7. Surface Water Quality			1, 2		
8. Water Supply			1, 2		
9. Groundwater			1, 2		
10. Soils			1, 2		
11. Threatened and Endangered Species			no effect 1, 2		
D. Cultural Resources					
1. Historic Architectural Values			1, 2		
2. Pre-Historic & Historic Archeological Values			1, 2		

Table 6.2. Impact Assessment Matrix - Preferred Alternative (x)

Name of Parameter	Magnitude of Probable Impact				
	Increasing Beneficial Impact		No Appreciable Effect	Increasing Adverse Impact	
	Substantive	Minor		Minor	Substantive
A. Social Effects					
1. Noise Levels			x		
2. Aesthetic Values		x			
3. Recreational Opportunities	x				
4. Transportation			x		
5. Public Health and Safety			x		
6. Community Cohesion (Sense of Unity)	x				
7. Community Growth and Development	x				
8. Business and Home Relocations			x		
9. Existing/Potential Land Use				x	
10. Controversy				x	
B. Economic Effects					
1. Property Values	x				
2. Tax Revenues			x		
3. Public Facilities and Services	x				
4. Regional Growth		x			
5. Employment		x			
6. Business Activity		x			
7. Farmland/Food Supply			x		
8. Flooding Effects			x		
C. Natural Resource Effects					
1. Air Quality			x		
2. Terrestrial Habitat				x	
3. Wetlands				x	
4. Aquatic Habitat			x		
5. Habitat Diversity and Interspersion				x	
6. Biological Productivity			x		
7. Surface Water Quality			x		
8. Water Supply			x		
9. Groundwater			x		
10. Soils			x		
11. Threatened and Endangered Species			no effect		
D. Cultural Resources					
1. Historic Architectural Values			x		
2. Pre-Historic & Historic Archeological Values			x		

Table 6.3. Impact Assessment Matrix – Turn Around Prior to Equestrian Trail (1), and Turn Around Prior to Memorial Road (2)

Name of Parameter	Magnitude of Probable Impact				
	Increasing Beneficial Impact		No Appreciable Effect	Increasing Adverse Impact	
	Substantive	Minor		Minor	Substantive
A. Social Effects					
1. Noise Levels			1, 2		
2. Aesthetic Values		1, 2			
3. Recreational Opportunities		1, 2			
4. Transportation			1, 2		
5. Public Health and Safety			1, 2		
6. Community Cohesion (Sense of Unity)		1, 2			
7. Community Growth and Development		1, 2			
8. Business and Home Relocations			1, 2		
9. Existing/Potential Land Use				1, 2	
10. Controversy			1	2	
B. Economic Effects					
1. Property Values		1, 2			
2. Tax Revenues			1, 2		
3. Public Facilities and Services		1, 2			
4. Regional Growth		1, 2			
5. Employment		1, 2			
6. Business Activity		2	1		
7. Farmland/Food Supply			1, 2		
8. Flooding Effects			1, 2		
C. Natural Resource Effects					
1. Air Quality			1, 2		
2. Terrestrial Habitat				1, 2	
3. Wetlands				1, 2	
4. Aquatic Habitat			1, 2		
5. Habitat Diversity and Interspersion				1, 2	
6. Biological Productivity			1, 2		
7. Surface Water Quality			1, 2		
8. Water Supply			1, 2		
9. Groundwater			1, 2		
10. Soils			1, 2		
11. Threatened and Endangered Species			no effect 1, 2		
D. Cultural Resources					
1. Historic Architectural Values			1, 2		
2. Pre-Historic & Historic Archeological Values			1, 2		

Table 6.4. Impact Assessment Matrix – Trail Around Eagle Cove (1), and Trail Across Eagle Cove (2)

Name of Parameter	Magnitude of Probable Impact				
	Increasing Beneficial Impact		No Appreciable Effect	Increasing Adverse Impact	
	Substantive	Minor		Minor	Substantive
A. Social Effects					
1. Noise Levels			1, 2		
2. Aesthetic Values		1, 2			
3. Recreational Opportunities	1, 2				
4. Transportation			1, 2		
5. Public Health and Safety			1, 2		
6. Community Cohesion (Sense of Unity)	1, 2				
7. Community Growth and Development	1, 2				
8. Business and Home Relocations			1, 2		
9. Existing/Potential Land Use				2	1
10. Controversy				2	1
B. Economic Effects					
1. Property Values	1, 2				
2. Tax Revenues			1, 2		
3. Public Facilities and Services	1, 2				
4. Regional Growth		1, 2			
5. Employment		1, 2			
6. Business Activity		1, 2			
7. Farmland/Food Supply			1, 2		
8. Flooding Effects					
C. Natural Resource Effects					
1. Air Quality			1, 2		
2. Terrestrial Habitat				1, 2	
3. Wetlands				1, 2	
4. Aquatic Habitat			1, 2		
5. Habitat Diversity and Interspersion				1, 2	
6. Biological Productivity			1, 2		
7. Surface Water Quality			1, 2		
8. Water Supply			1, 2		
9. Groundwater			1, 2		
10. Soils			1, 2		
11. Threatened and Endangered Species			no effect 1, 2		
D. Cultural Resources					
1. Historic Architectural Values			1, 2		
2. Pre-Historic & Historic Archeological Values			1, 2		

Table 6.5. Impact Assessment Matrix – Turn Around Before Dam (1), Limited Impact Trail Across Dam (2), and Trail Below Dam (3)

Name of Parameter	Magnitude of Probable Impact				
	Increasing Beneficial Impact		No Appreciable Effect	Increasing Adverse Impact	
	Substantive	Minor		Minor	Substantive
A. Social Effects					
1. Noise Levels			1, 2, 3		
2. Aesthetic Values		1, 2	3		
3. Recreational Opportunities		1			
4. Transportation	2, 3				
5. Public Health and Safety			1, 2, 3		
6. Community Cohesion (Sense of Unity)	2, 3	1			
7. Community Growth and Development	1, 2, 3				
8. Business and Home Relocations			1, 2, 3		
9. Existing/Potential Land Use				1, 2, 3	
10. Controversy				1, 2, 3	
B. Economic Effects					
1. Property Values	2, 3	1			
2. Tax Revenues			1, 2, 3		
3. Public Facilities and Services	2, 3	1			
4. Regional Growth	2, 3	1			
5. Employment		1, 2, 3			
6. Business Activity		1, 2, 3			
7. Farmland/Food Supply			1, 2, 3		
8. Flooding Effects			1, 2, 3		
C. Natural Resource Effects					
1. Air Quality			1, 2, 3		
2. Terrestrial Habitat				1, 2, 3	
3. Wetlands				1, 2, 3	
4. Aquatic Habitat			1, 2, 3		
5. Habitat Diversity and Interspersion				1, 2, 3	
6. Biological Productivity			1, 2, 3		
7. Surface Water Quality			1, 2, 3		
8. Water Supply			1, 2, 3		
9. Groundwater			1, 2, 3		
10. Soils			1, 2, 3		
11. Threatened and Endangered Species			no effect 1, 2, 3		
D. Cultural Resources					
1. Historic Architectural Values			1, 2, 3		
2. Pre-Historic & Historic Archeological Values			1, 2, 3		

5.2.2 – Natural Resources Impacts

Habitats were evaluated using a combination of field observations and review of high resolution aerial photographs. Habitats were divided into categories as follows: Creek Crossings, Creek Banks, Shrubs (including Eastern Red Cedars), Post Oak/Blackjack Forests, Savannah/Forbes, and Disturbed Habitats. The Creek Crossings category does not include the possible wetlands that will be crossed and avoided with a bridge or culvert (locations 2 -20 and 22, Figure 47, Appendix A). Wetlands will be further discussed in Section 5.2.2.3. Disturbed habitats are those areas where the proposed trail will be located in existing road right-of-ways, across the Arcadia Lake dam, along areas that have been disturbed by construction, and along existing trails.

In calculating the native habitat impacts of the various alternatives for the multi-use trail, an impact zone 30 feet wide was assumed. It was further assumed that an area up to 9 feet on either side of the asphalt multi-use trail would be reseeded with native forbs. Five options for the trail were evaluated for habitat impact:

- Option A – Turn around before the equestrian trail
- Option B – Turn around before Memorial Road
- Option C – Turn around before Eagle Cove
- Option D – Turn around before the Lake dam
- Option E – Completion of the entire proposed trail

Option E includes all alternatives related to the dam: proceeding across the top of the dam with an asphalt trail, proceeding across the dam with a low impact trail, and proceeding below the dam. For each of the options the impact for habitats was calculated with respect to linear feet, percent of total habitat, acres of impact assuming a 30 foot wide impact zone (acres max), and acres of impact from the asphalt trail only (acres trail). Habitats were consolidated into seven categories: creek crossing, creek bank, shrubs (including red cedars), post oak/blackjack forest, savannah/forbs, net forbs change, and disturbed habitat. It is evident that the shorter multi-use trail options will impact less existing habitat. However, shortening the trail will have a variety of negative impacts when compared to the preferred alternative including: less access by the community surrounding Arcadia Lake, curtailed opportunities to connect to other existing or proposed trails, less recreational benefits, reduced opportunities to achieve health benefits, less community cohesion (sense of unity), and reduced economic benefits.

The following tables (Tables 7 - 11) show the habitat impacts for the considered trail options. In reviewing these options it should be understood that even the longest trail option (the preferred alternative) has much less direct habitat impact as measured in acres of habitat removed than various residential/commercial properties located throughout the Arcadia Lake area.

Table 7: Option A – Turn Around Before Equestrian Trail – Alternative 1

Habitat	Linear Ft.	%	Acres Max	Acres Trail
Creek Crossing	0	0	0	0
Creek Bank	884	5.9	0.61	0.24
Shrubs (including Cedars)	1,363	9.2	0.94	0.56
Post Oak Blackjack	5,037	33.8	3.47	2.08
Savannah/Forbes	7,171	48.1	4.94	2.96
Net Forbes Change	--	--	-2.05	--
Disturbed Habitat	4,047	11.1	2.79	1.67

Table 8: Option B – Turn Around Before Memorial Road – Alternative 2

Habitat	Linear Ft.	%	Acres Max	Acres Trail
Creek Crossing	0	0	0	0
Creek Bank	884	2.4	0.61	0.24
Shrubs (including Cedars)	2,549	7.0	1.76	1.00
Post Oak Blackjack	16,475	45.2	11.35	5.60
Savannah/Forbes	12,518	34.3	8.62	4.80
Net Forbes Change	--	--	-2.25	--
Disturbed Habitat	4,047	11.1	2.79	1.67

Table 9: Option C – Turn Around Before Eagle Cove – Alternative 3

Habitat	Linear Ft.	%	Acres Max	Acres Trail
Creek Crossing	0	0	0	0
Creek Bank	884	1.6	0.61	0.24
Shrubs (including Cedars)	3,769	6.7	2.60	1.05
Post Oak Blackjack	20,148	36.0	13.90	6.81
Savannah/Forbes	17,452	31.2	12.00	5.17
Net Forbes Change	--	--	+3.60	--
Disturbed Habitat	13,756	24.6	9.5	3.80

Table 10: Option D – Turn Around At Dam – Alternative 5

Habitat	Linear Ft.	%	Acres Max	Acres Trail
Creek Crossing	763	0.8	0.53	0.21
Creek Bank	884	1.0	0.61	0.24
Shrubs (including Cedars)	3,769	4.2	2.60	1.00
Post Oak Blackjack	42,125	26.8	16.60	6.60
Savannah/Forbes	22,636	25.1	15.60	6.20
Net Forbes Change	--	--	+11.70	--
Disturbed Habitat	37,859	42.0	26.10	10.40

Table 11: Option E – Entire Proposed Trail – Alternatives 4, 6, 7, 8

Habitat	Linear Ft.	%	Acres Max	Acres Trail
Creek Crossing	763	0.8	0.53	0.21
Creek Bank	884	0.9	0.61	0.24
Shrubs (including Cedars)	3,746	4.0	2.60	1.04
Post Oak Blackjack	24,125	25.7	16.62	6.65
Savannah/Forbes	22,636	24.1	15.59	6.24
Net Forbes Change	--	--	+13.13	--
Disturbed Habitat	41,619	44.4	28.66	11.47

Legend
Disturbed Habitat = Areas in road right of ways, along construction areas, across dam
Linear Ft = Length of habitat affected
% = Percent of habitat affected
Acres Max = Acres removed to build trail (30 foot width)
Acres Trail = Acres that asphalt trail will cover (12 foot width)
Net Forbes Increase = Acres within 30 foot width planted with native forbs
*18 foot width used for initial 3.1 miles

Alternatives 4, 6, 7 and 8 (as discussed in Section 5.2.1.4) are all variations that will still result in completing the entire proposed trail. Completing the entire trail (Option E in the Table above) will impact a total of 35.95 acres assuming an impact width of 30 feet. A total of 14.68 acres will be covered by asphalt trail. There is expected to be a net increase of 13.13 acres of native forbs that will be planted along the sides of the multi-use trail. Of the 35.95 total acres of impact there will be a net loss of 16.62 acres of Post Oak/Blackjack forest, a loss of 15.59 acres of savannah/forb habitat, a loss of 2.60 acres of shrub habitat, a loss of 0.61 acres of creek bank, and a total of 0.53 acres where bridges and culverts will cross streams and Eagle Cove. The largest habitat type (disturbed habitat) will have 28.66 acres of impact.

The habitat impacts from the other trail alternatives will be less than the preferred alternative. Option D (turn-around at the dam) will impact a total of 35.95 acres of native habitat, the same as the preferred alternative since the area across the dam is considered to be disturbed. Option C (turn-around before Eagle Cove) will have a habitat impact of 29.11 acres of native habitat. Option B (turn-around before Memorial Road) will have a habitat impact of 22.34 acres of native habitat. Option A (turn-around before the equestrian trail) will have a habitat impact of 9.96 acres of native habitat. The habitat impact of all multi-use trail alternatives is considered to be slight when compared to existing and future impacts from residential/commercial development and roads.

5.2.2.1 – Terrestrial Resources

The preferred trail and alternatives considered are expected to have a minor impact to terrestrial species. This is based on the habitat evaluation described above. It is known that some habitat fragmentation will occur as a result of the trail, but it is considered to be minor when compared to the existing and future habitat fragmentation at Arcadia Lake. Priority bird populations within the Crosstimbers sub-region include several bird species (Partners in Flight, 2012). However, only the Field sparrow, Scissor-tailed flycatcher, and the Harris's sparrow on the PIF list for the Crosstimbers sub-region were observed in the Arcadia Lake area during a recent field survey (Howery, 2010). In addition, bald eagles are known to roost in the tops of trees near the Lake in the winter months. To date they are not present during the breeding period in the spring. A picture showing two bald eagles roosting in trees near the Arcadia Lake dam is shown in Figure 9. Cautionary signage to warn trail users of the possible presence of bald eagles at known roosting areas will be posted.

5.2.2.2 – Aquatic Resources and Water Quality

The preferred multi-use trail is expected to have no impact on aquatic resources. During construction of the trail, siltation and erosion control barriers will be employed to minimize run-off. A Spill Prevention Control and Countermeasures plan (SPCC) will be developed for all contractors that will build the trail. Arcadia Lake is currently quite high in turbidity (42 NTU) and is considered eutrophic. Construction of the trail may add temporarily to the existing turbidity, but the control measures are expected to make turbidity changes imperceptible. After construction is complete and trail drainage controls installed, it is expected that no additional run-off from the trail will materially affect water quality.

5.2.2.3 – Wetlands

A WoUS report has been completed for the Spring Creek Trail, first 3.1 miles of the proposed multi-use trail (Appendix B). This is the only section that has complete engineering and the trail segment to be built first. The intent is to start construction on this segment when permitting is complete. The text of the report and the figures illustrate the wetlands found based on procedures described in the 1987 *Corps of Engineers Wetlands Delineation Manual* (Corps Manual) and the *Great Plains Region Supplement* to the Corps Manual (March 2010). The results of this wetland delineation confirm that potential wetlands were present at 5 of 15 locations evaluated totaling approximately 0.8 acres. Refer to Function Wetland Assessment (Appendix G) and Compensatory Mitigation Plan (Appendix H) for further information.

Preliminary wetland evaluation was initiated in the area of the proposed trailhead park. Results of the initial resource material review and observations suggest that wetlands are present at the proposed trailhead park site. A complete wetland delineation of the proposed park will be conducted and evaluated by USACE prior to any construction. The trailhead park is not part of this action since it is on private property and will be developed by others as a future date.

Possible additional wetlands were identified by reviewing USGS topographical maps for the area and reviewing high resolution photographs. Figure 47, Appendix A, identifies a total of 29 possible wetlands not including the proposed trailhead park discussed above. Five of these locations have received wetland evaluation using the Corps Manual. The remaining 24 locations will require wetland delineation and review by USACE prior to construction. It is possible that wetland delineation will remove many of the possible sites from consideration. It is also possible that wetland delineation will add some additional areas.

Another WoUS report was prepared April, 2014 and delineates impacted wetlands for a possible alignment for the future unfunded 17 mile segment of the Arcadia Lake Multi-Use Trail (Appendix I). After site investigations and a conceptual plan to minimize future, anticipated impacts to wetlands, approximately 1.05 acres could be impacted. This report identifies a potential trail route which accounts for important alignment design issues such as wetlands avoidance, cost of excavation and blasting, American with Disabilities Act provisions for trails, equestrian trail issues and other safety issues. The potential alignment varies in some locations from the corridor identified in the Draft EA report to address these important alignment design issues. If the alignment shown in Appendix I is defined as the 'final trail alignment' by the City for construction, all NEPA requirements will be met by the City of Edmond and this document will be supplemented and public comment will be solicited.

In many cases it is possible that proposed impacts to identified wetlands can be avoided by building small bridges over wetland areas. In other cases this may not be possible and various forms of mitigation will be considered. Part of the difficulty in being more specific at this time regarding avoidance/mitigation is that most areas of the 20 mile trail have not yet been engineered or specified. The first 3.1 miles of the trail have been engineered and a Wetland and Stream Delineation report has been sent to USACE Tulsa District for review. Based on this review, Section 404 Permitting and mitigation/avoidance plans will be developed prior to construction of this section. The trailhead park and the remaining 17 miles of multi-use trail will be further evaluated when engineering plans and future wetland delineations are complete.

5.2.3 – Threatened and Endangered Species

There are three federally listed threatened and endangered species listed in the Arcadia Lake multi-use trail project. They are:

- Least Tern (*Sterna antillarum*) Endangered
- Piping Plover (*Charadrius melodus*) Threatened
- Whooping Crane (*Grus americana)* Endangered

None of these species have been observed to be present in the project area. In addition, there is no critical habitat present for these species nor do they nest in the Arcadia Lake area. The Species Conclusion Table is presented below for reference (Table 12).

Table 12: Species Conclusions Table

Species / Resource Name	Conclusion	ESA Section 7	Notes / Documentation
Piping plover	Species not present, no potential habitat present	No effect	Recent surveys by qualified surveyors did not find this species present within the project area. Arcadia Lake is on the potential migratory route.
Whooping crane	Species not present, no potential habitat present	No effect	Recent surveys by qualified surveyors did not find this species present within the project area. Arcadia Lake is on the potential migratory route.
Least tern	Species not present, no potential habitat present	No effect	Recent surveys by qualified surveyors did not find this species present within the project area. Arcadia Lake is on the potential migratory route.

5.2.4 Prime and Unique Farmland

There would be no significant impact on prime farmland located within the Arcadia Lake area since no farming is currently done, nor is any expected in the future.

5.2.5 Wild and Scenic Rivers

There are no streams within the project area that are classified as wild and scenic pursuant to the Federal Wild and Scenic Rivers Act, Public Law 90-542.

5.2.6 Executive Order 13112, Invasive Species

Species of exotic or invasive plants and animals have the potential to be transported into or out of the Arcadia Lake multi-use trail area by the equipment to be used by the contractor. Executive Order 13112 requires Federal agencies to not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States; and that all feasible and prudent measures to minimize risk or harm will be taken in conjunction with the actions. The potential exists at this project for the transport of species covered under this Executive Order. Plant and animal species classified as invasive include: bull thistle (*Cirsium vulgare*), Chinaberry (*Melia azedarch*), Chinese privet (*Ligustrum sinense*), curly dock (*Rumex crispus*), field bindweed (*Convolvulus arvensis*), Japanese honeysuckle (*Lonicera japonica*), Japanese privet (*Ligustrum japonicum*), Johnson grass (*Sorghum halepense*), marijuana (*Canabis sativa*), multiflora rose (*Rosa multiflora*), musk thistle (*Carduus nutans*), Chinese lespedeza (*Sericea lespedeza*), sheep sorrel (*Rumex acetosella*), tall fescue (*Schedonorus arundinaceus*), five-stamen tamarisk (*Tamarix chinensis*), and red imported fire ant (*Solenopsis invicta*).

The introduction and spread of exotic and invasive species is a concern with the use of heavy equipment for this project. Therefore, the contract specifications for this project will include the following conditions. All equipment brought on site will be thoroughly washed to remove dirt, seeds, and plant parts. Any equipment that has been in any body of water within 30 days of its arrival at the work site will be thoroughly cleaned with hot water (hotter than 40° C or
104°F) and dried for a minimum of five days before being used at the Arcadia Lake trail project site. In addition, before transporting equipment from the project site all visible mud, plants, and fish/animals will be removed, all water will be eliminated, and the equipment will be thoroughly cleaned. Anything that had come in contact with water at this or other construction sites will be cleaned and dried following the above procedure.

5.2.7 Executive Order 13186, Migratory Birds

While many of the priority bird populations identified as at risk to habitat loss and land use change by *Partners in Flight* (2012), no significant habitat loss or impact would occur to these migratory bird populations within the project area.

5.2.8 – Cultural Resources

Based upon the review of the proposed route and the cultural resources survey completed for the project, the identified cultural resources will be avoided by fifty (50) meters or more, except for the nine locations identified in the report (Appendix C). While these nine sites may be impacted, they are not eligible to be nor are they listed in the National Register of Historic Places (NRHP). Therefore, no potentially eligible NRHP properties or places would be affected by the proposed trail. Therefore, the report concludes that the project may proceed without further cultural resources

evaluation. If potential cultural resources are potentially identified during construction activities, the work will stop until such time that a cultural resource professional can be sent to the site, evaluate the find, and send a report with recommendations to SHPO for review and concurrence.

5.2.9 – Air Quality

Air quality within the area would not be negatively impacted as a result of this project. There would be minor temporary air emissions during the construction phase of the project; this would not likely adversely affect the air quality. This area is currently in attainment with the Clean Air Act (as amended).

5.2.10 – Hazardous, Toxic, or Radiologic Waste (HTRW)

Based on the findings of the HTRW survey discussed in Section 4.10, the potential for discovery and significant problems related to HTRW during project construction or operation is believed to be low for all alternatives assessed.

During construction activities associated with these actions, a Stormwater Pollution Prevention Plan will be prepared prior to the start of construction detailing the handling and storage of all fuels, waste oils, and solvents. All personnel briefed on the implementation and responsibilities of this plan to reduce potential adverse impacts to surface water resources during all phases of construction.

5.2.11 – Recreation

Although it is unknown what the impact of creating a new 20 mile recreational trail will have on monthly average visitor days to the Arcadia Lake area will be, it is expected that the impact will be positive. The trail will link many existing recreational facilities already present at Arcadia Lake. An extensive study of expanding recreational trails and parks in Jefferson County, Wisconsin (S. Carleyolsen et al, *Measuring the Economic Impact and Value of Parks, Trails and Open Space in Jefferson County - Accounting for Current and Future Scenarios,* December 15, 2005) indicated that approximately $13 million was added per year to the Jefferson County economy in 2005 dollars. Although the project in Wisconsin is not directly comparable to the Arcadia Lake trail project, the potential for recreational and economic benefit is positive.

5.2.12 – Noise

The City of Edmond regulates noise as a nuisance under its Code of Ordinances, Title 8, Offences and Nuisances, Chapter 24.010.

During the field reconnaissance, it was noted that most noise emanates from a single major source. Traffic along Route 66 on the northern side of the proposed trail and from Memorial Road along the southern side of the trail is a significant source of noise. Spring Creek itself is a minor source of noise as it flows toward Lake Arcadia. Equipment to be used during trail construction is expected to be a major, but temporary, source of noise. Some periodic noise will also occur from maintenance activities after construction is complete. A minor source of noise on the project site will be pedestrians and cyclists.

5.2.13 – Cumulative Impacts

40 CFR § 1508.7 defines a cumulative impact as “an 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.”

No current USACE Public Works projects exist within or in the immediate vicinity of the proposed project area other than the proposed multi-use trail. The Tulsa District USACE was involved in building the dam in 1986 – 1987 which created Arcadia Lake, constructing the various parks and campgrounds, and building the boat ramps. The proposed project will have a beneficial impact on those projects that have been completed for a number of years.

In 2002, 8 miles of primitive equestrian trails were started as a pilot project. They have been constructed around the southwestern portion of Arcadia Lake. There are no rest rooms, picnic areas or camping. Parking is very limited for about four pickups with horse trailers. There is an ongoing effort to clean up the substantial amount of refuse deposited around several areas of Arcadia Lake. However, much of the area still has trash that washed ashore when the lake flooded. The original plan for the multi-use trail had it crossing the existing equestrian trails at 7 locations. Users of the equestrian trails were concerned that cyclists using the proposed multi-use trail would spook the horses and be an issue for the safety of the equestrians. The original plan for the multi-use trail has subsequently been modified along with some proposed modification of the equestrian trail route. Consequently, the preferred multi-use trail now intersects the equestrian trail at 2 locations. Precautionary signage will be posted to warn users of the multi-use trail to proceed at a low speed past the two crossing locations and give equestrians the right of way when they are present. The multi-use trail may actually provide some benefit to equestrians as it will provide access to existing parks along the trail and may spawn some additional advantages such as improved maintenance of the area (i.e., trash pick-up, etc.), picnic areas, and other amenities.

The proposed trail will impact habitat fragmentation. Existing highways, roads, residences, parks, campgrounds, commercial establishments, and trails have significantly fragmented the habitat at Arcadia Lake. The proposed project is expected to be a minor contributor to existing fragmentation. As for other areas that experience population growth, it is expected that habitat fragmentation at Arcadia Lake will continue into the future. Prudent planning can minimize future impacts to the area.

The conceptual trail alignment for the future, unfunded 17 mile segment of the Arcadia Lake Multi-Use Trail (Appendix I) is a reasonable trail corridor. The conceptual trail route which accounts for important alignment design issues such as wetlands avoidance, cost of excavation and blasting, American with Disabilities Act provisions for trails, equestrian trail issues and other safety issues. The potential alignment varies in some locations from the corridor identified in the Draft EA report to address these important alignment design issues. If the alignment shown in Appendix I is the final trail alignment for construction, all NEPA requirements will be met by the City of Edmond and this EA will be supplemented and public comment will be solicited. Any necessary Section 404 and 408 permitting will be obtained prior to construction.

Some cumulative impact is likely from the proposed trailhead park. The conceptual plan for the park has it reshaping an existing pond, creating a circuitous asphalt trail around the existing pond and a new pond that is planned for the northern portion of the 20 acre tract, and crossing Spring Creek with a bridge. Although the land for the proposed park is owned by a private developer, it is likely that it will have impact on existing wetlands. The developer is aware that wetland delineation will be necessary for the entire proposed trailhead park with submittal to the USACE for review. Any necessary Section 404 permitting will be obtained prior to construction.

Minor impacts are expected from the proposed trail that may cross driveways along Route 66.

6.0 - Mitigation

Mitigation has been discussed, as appropriate, throughout Section 5. USACE will review this EA and other documents submitted with respect to permitting. Investigations for the Spring Creek Trail segment, confirm wetlands were present at 5 locations totaling approximately 0.8 acres. Refer to Function Wetland Assessment (Appendix G). City of Edmond has purchased 2 Riverine Emergent Wetland credits and 3 Riverine Forested Wetland credits from the Excel Mitigation Center in order to meet the compensatory mitigation requirements for this project per Compensatory Mitigation Plan for Spring Creek Trail (Appendix H).

For the future 17 mile trail segment, mitigation for impacted wetlands will be addressed as the final trail location is determined. The City will mitigate for all unavoidable impacts to WOUS, including wetlands, as they have done for the first 3.1-mile Spring Creek Trail portion. Future mitigation plans will be submitted and reviewed by the USACE as part of the Section 404 permit process. If the preferred alternative for the trail, which crosses the dam, is accepted it may be necessary to apply for a Section 408 Permit.

As part of all trail construction at Arcadia Lake, best management practices will be utilize to seed disturbed/cleared areas to re-establish appropriate vegetation. The City is committed to preventing degradation to habitat from erosion as a result of construction.

7.0 - Irreversible and Irretrievable Commitment of Resources

Irreversible and irretrievable resource commitments are defined as the use of nonrenewable resources and the effects that the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource, such as fossil fuels or minerals that cannot be replaced within a reasonable time period. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action, such as an archaeological site.

Proposed Action

Irreversible and irretrievable resource commitments would be minor for the proposed action. The only resources necessary to accomplish the proposed action would primarily be fossil fuels for transport of construction items, as well as for operation of heavy equipment used to complete the proposed action. Overall, the proposed action would protect and conserve natural and cultural resources of Arcadia Lake and Spring Creek.

Alternative Action

Irreversible and irretrievable commitment of resources used under Alternative Actions would be similar to those described under the Proposed Action. The positive protection and conservation of resources would also be the same.

No-Action Alternative

Under the No-Action Alternative, the Lake Arcadia environment would remain in its current state and no further action would occur. Thus, overall, the No-Action Alternative would result in no

irreversible or irretrievable loss of resources compared to the Proposed Action and Alternative Actions.

8.0 – Findings and Conclusions

The proposed alternatives have been evaluated in this EA. Minor impacts to the human environment from the implementation of the Proposed Action are identified in the EA. Some native habitat impacts would be permanent; approximately 36 acres in total. Due to native species seeding along the edges of the proposed multi-use trail, approximately 13 additional acres of native species will be added thus reducing the total impact. The proposed trail will potentially impact wetland areas although avoidance and mitigation through Section 404 Permitting will minimize these impacts. The Proposed Action is not expected to adversely affect threatened or endangered species. The Proposed Action is expected to have a significant positive effect on the economy of the area and significantly enhance the recreation opportunities that already exist.

9.0 – Agency Coordination

9.1 – Agency Coordination

This section discusses consultation and coordination that has occurred during preparation of this document. This includes contacts made during development of the proposed action, other alternatives considered, and writing of the draft EA. Copies of agency coordination letters are presented in Appendix E. Formal and informal coordination has been conducted with the following agencies:

- U.S. Army Corps of Engineers (USACE, Tulsa District),
- State Historic Preservation Office (SHPO),
- U.S. Fish and Wildlife Service (USFWS),
- Environmental Protection Agency (EPA),
- Oklahoma Department of Environmental Quality (ODEQ),
- Oklahoma Department of Wildlife Conservation (ODWC),
- Oklahoma Natural Heritage Inventory (ONHI), and.
- Oklahoma Archaeological Survey (OAS).

9.2 – Public Information

In accordance with NEPA, a 30-day review period of the draft EA will be provided via a Notice of Availability (Appendix F), posting of the document on the Tulsa District Website www.swt.usace.army.mil, and a local mailing.

10.0 - Resources

1. Flood Insurance Rate Maps (FIRM), City of Edmond, Oklahoma County, Oklahoma (June 8, 2010).
2. Minutes of Public Meetings and Comments Submitted for Lake Arcadia Trail Project, City of Edmond, OK, 2013.
3. Oklahoma Department of Wildlife Conservation website, www.wildlifedepartment.com, and conversations and data from Mark Howery, ODWC Biologist.
4. Oklahoma Water Resources Board (OWRB), Diagnostic and Feasibility Study of Arcadia Lake, March 13, 2000.
5. United States Fish and Wildlife Service websites, www.fws.gov and www.fws.gov/southwest/es/oklahoma. Specific parts of the website used include:
   (a) IPaC System
   (b) Wetlands Mapper
   (c) Critical Habitat Mapper
6. City of Edmond website, www.edmondok.com, Specific parts of the website used include:
   (a) Arcadia Lake
   (b) City Ordinances
7. AGS Demographic Comparison by Zipcode for Edmond, OK, Tetrad, Inc.
8. Phase I Archaeology Survey Report for Arcadia Lake Multi-Use Trail Project, Open Range Archaeology, LLC. February 22, 2013.
9. United States Geological Survey (USGS) website, www.usgs.gov.
10. Google maps, from website, www.google.com. 2013.
11. United States Army Corps of Engineers (USACE) website for Lake Arcadia, www.swt.usace.army.mil/Locations/Tulsa/DistrictLakes/Oklahoma/ArcadiaLake .
12. United States Geological Survey (USGS), various topographical maps.
13. Partners in Flight, 2012.
14. Wetlands Delineation Manual, USACE, 1987.
15. Great Plains Regional Supplement to Wetlands Delineation Manual, USACE, 2010.
16. MKEC Engineering Consultants, Inc., Engineering information and drawings, 2013.
17. The Orion Group, Fox Lake Commercial South Tract Master Plan, Edmond, Oklahoma, 2012.
18. Sanya Carleyolsen et al, *Measuring the Economic Impact and Value of Parks, Trails and Open Space in Jeffereson County,* University of Wisconsin-Madison, December 15, 2005.
19. U.S. Department of Health and Human Services, *Poverty Guidelines,* 2012.
20. Fuller, D., *New Research Finds That Homeowners and City Planners Should "Hit the Trail When Considering Property Values",* October 11, 2011.
21. United States Army Corps of Engineers, 1977, *Arcadia Lake Water Quality Evaluation*, Environmental Effects Laboratory, Waterways Experiment Station. Vicksburg, MS.

11.0 – List of Preparers

Tom Bauckham, CIH, CSP- Senior Environmental Project Manager, Terracon Consultants, Inc. - 35 years of service

Aislinn McLeod, Staff Environmental Scientist, Terracon Consultants, Inc. – 3 years

Juliet Caplinger, Natural Resource Project Manager, Terracon Consultants, Inc. – 9 years

Traci Guckian, Staff Environmental Scientist, Terracon Consultants, Inc. – 3 years

John Rathgeber, Senior Environmental Biologist, Terracon Consultants, Inc. - 15 years

Ginger Horn, Senior Environmental Project Manager, Terracon Consultants, Inc. – 25 years

Tom Gruber, Archeologist, Open Range Archaeology – 21 years

Jana Gruber, Archeologist, Flat Earth Archaeology – 20 years

Doyle Bowman, Archeologist, Flat Earth Archaeology – 20 years

David Tarver, CAD Technician, Terracon Consultants, Inc. – 6 years

The Draft EA was prepared by Terracon Consultants, Inc. of Oklahoma City, Oklahoma for MKEC Engineering Consultants, Inc. of Oklahoma City, Oklahoma and the City of Edmond, Oklahoma.

Revisions for the Final EA were made by LandPlan Consultants, Inc. of Tulsa, Oklahoma in conjunction with the City of Edmond.

APPENDIX A –Supplementary Figures and Tables

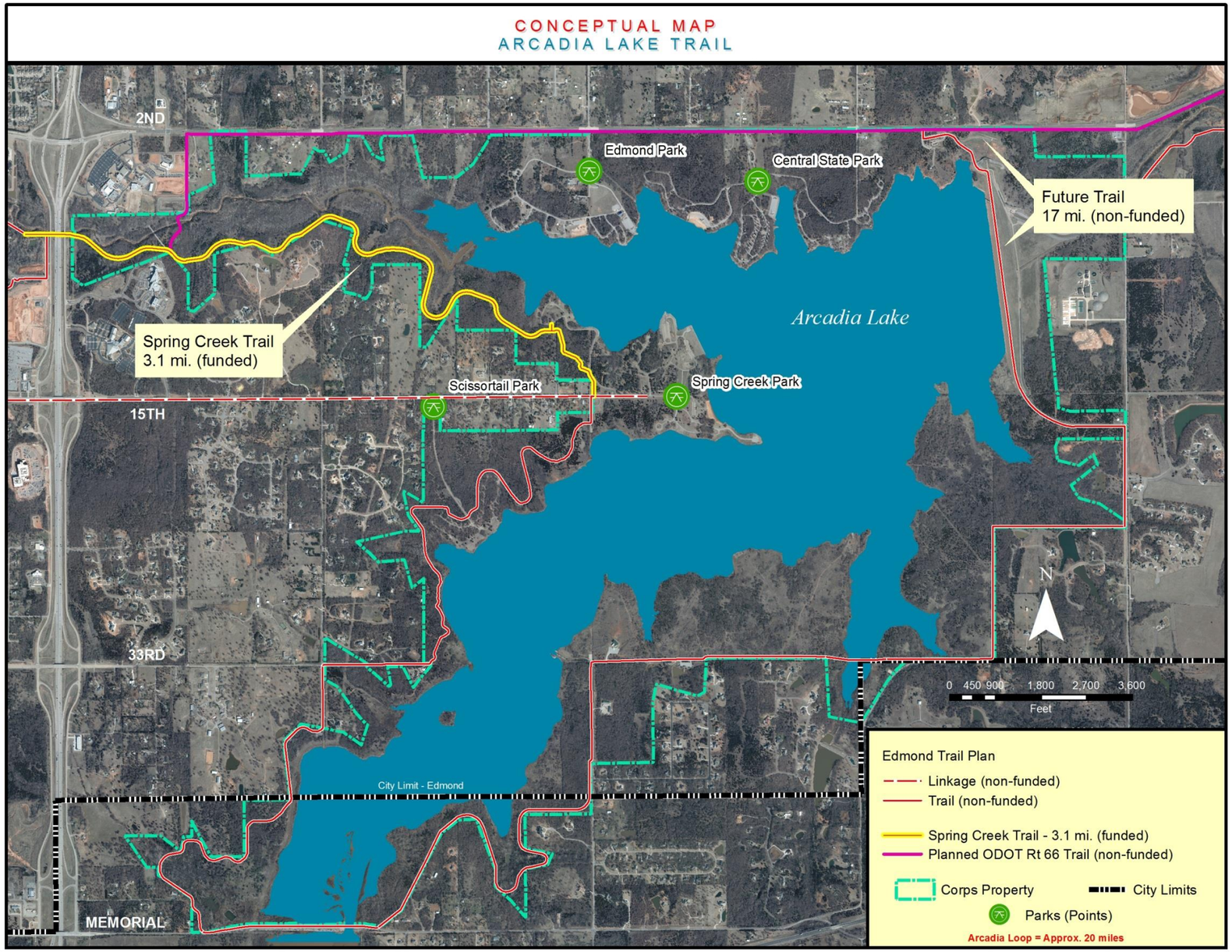


Figure 10. Arcadia Lake Trail Conceptual Map

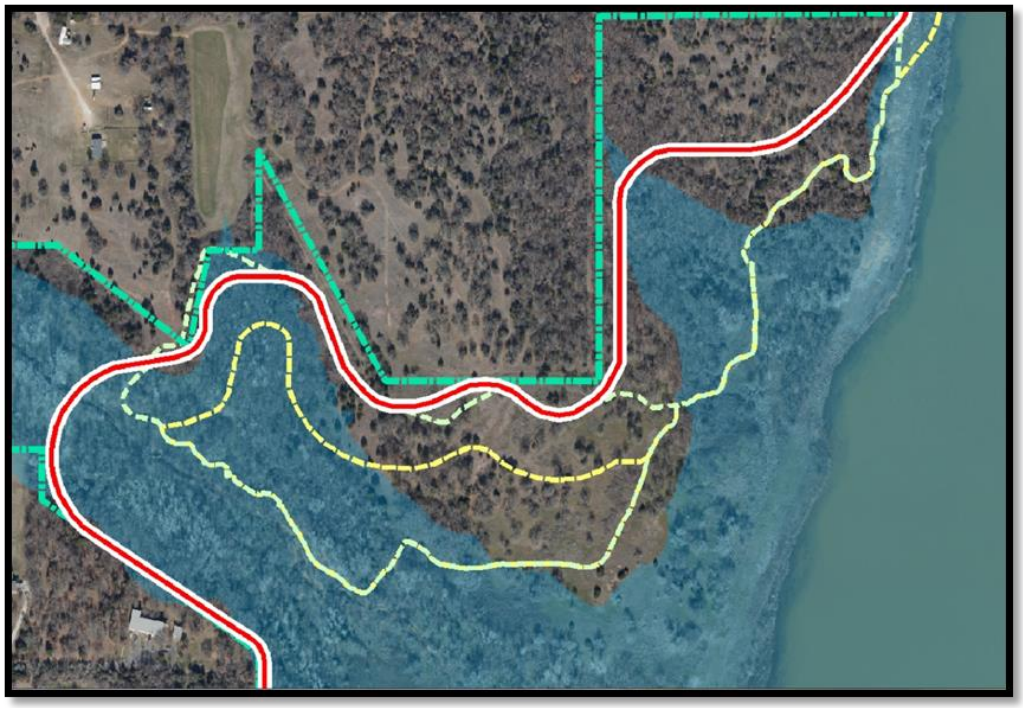


Figure 11. Area of multi-use and equestrian trail interaction. (Source: City of Edmond Planning Department, 2013)

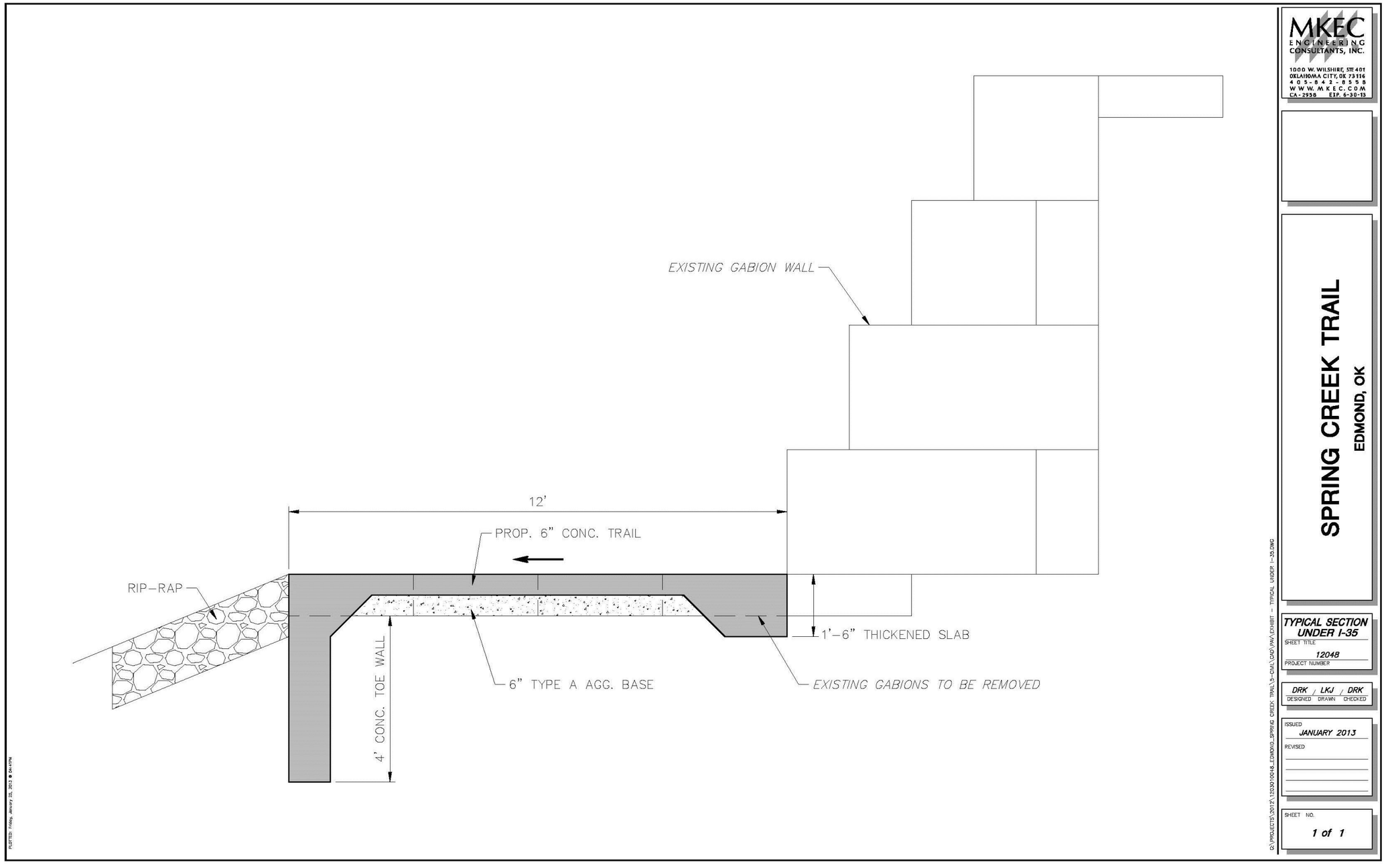
Figure 12. Eagle Cove crossing detail

Figure 13. Preferred Acadia Lake trail across Lake dam. (Source: City of Edmond Planning Department, 2013)

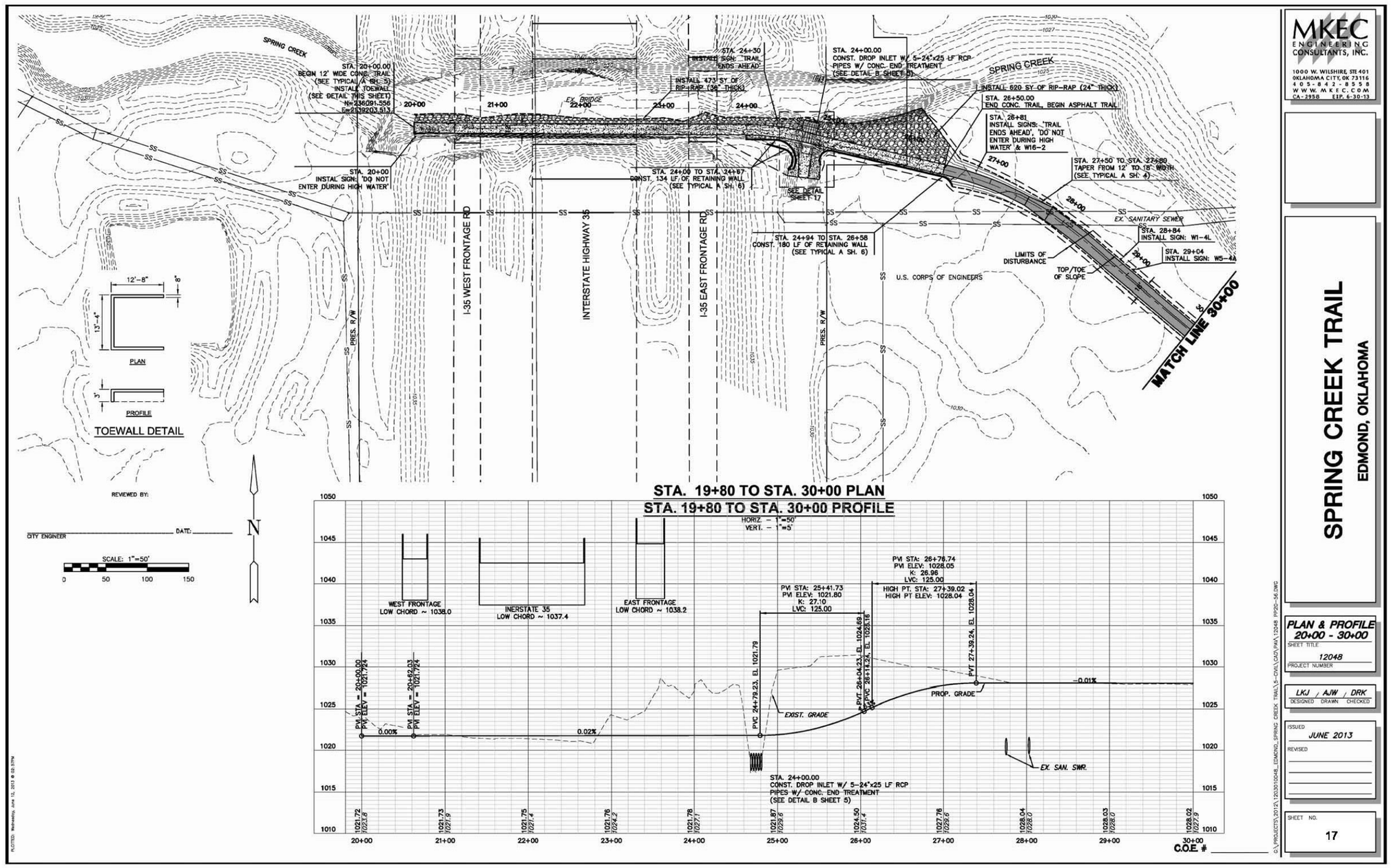
Figure 14. Conceptual Plan of Trailhead Park (Orion Group, 2012)

Figure 15. Photograph showing narrow bank underneath I-35.

Figure 16. Engineering detail of proposed trail underneath I-35. (Source: MKEC, January 2013)



Figures 17 – 26. Engineering details of Spring Creek trail. (MKEC, 2013)



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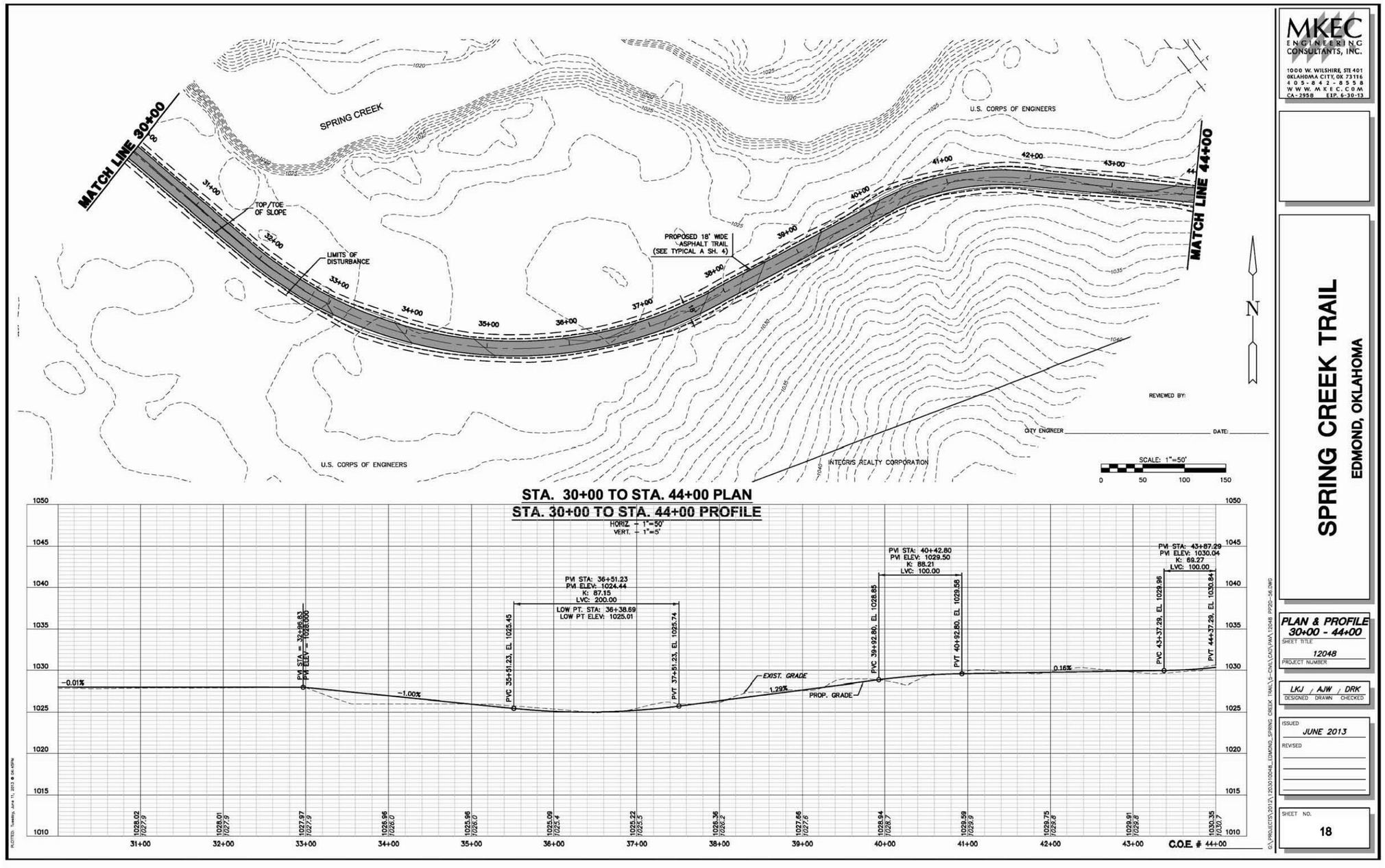

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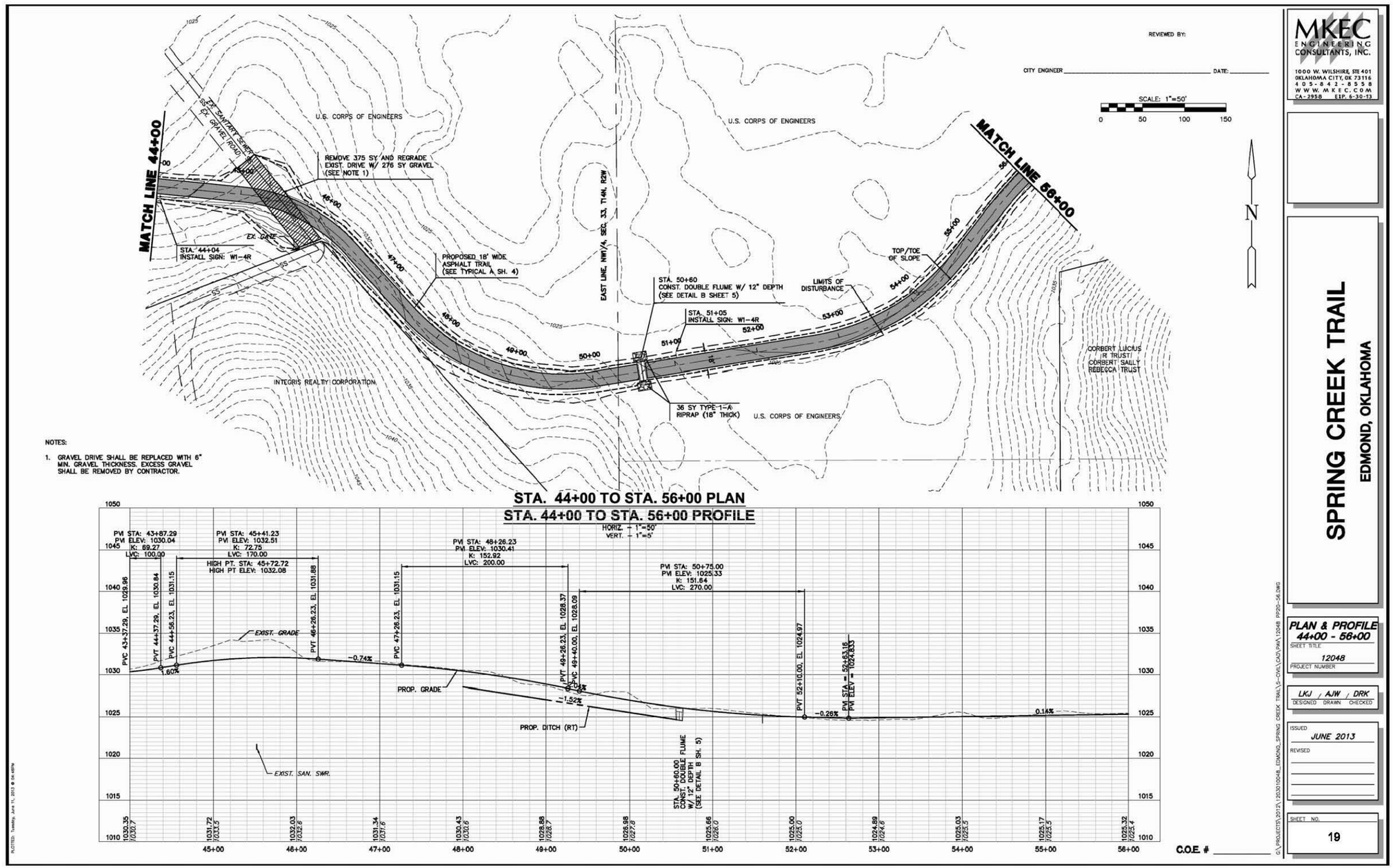

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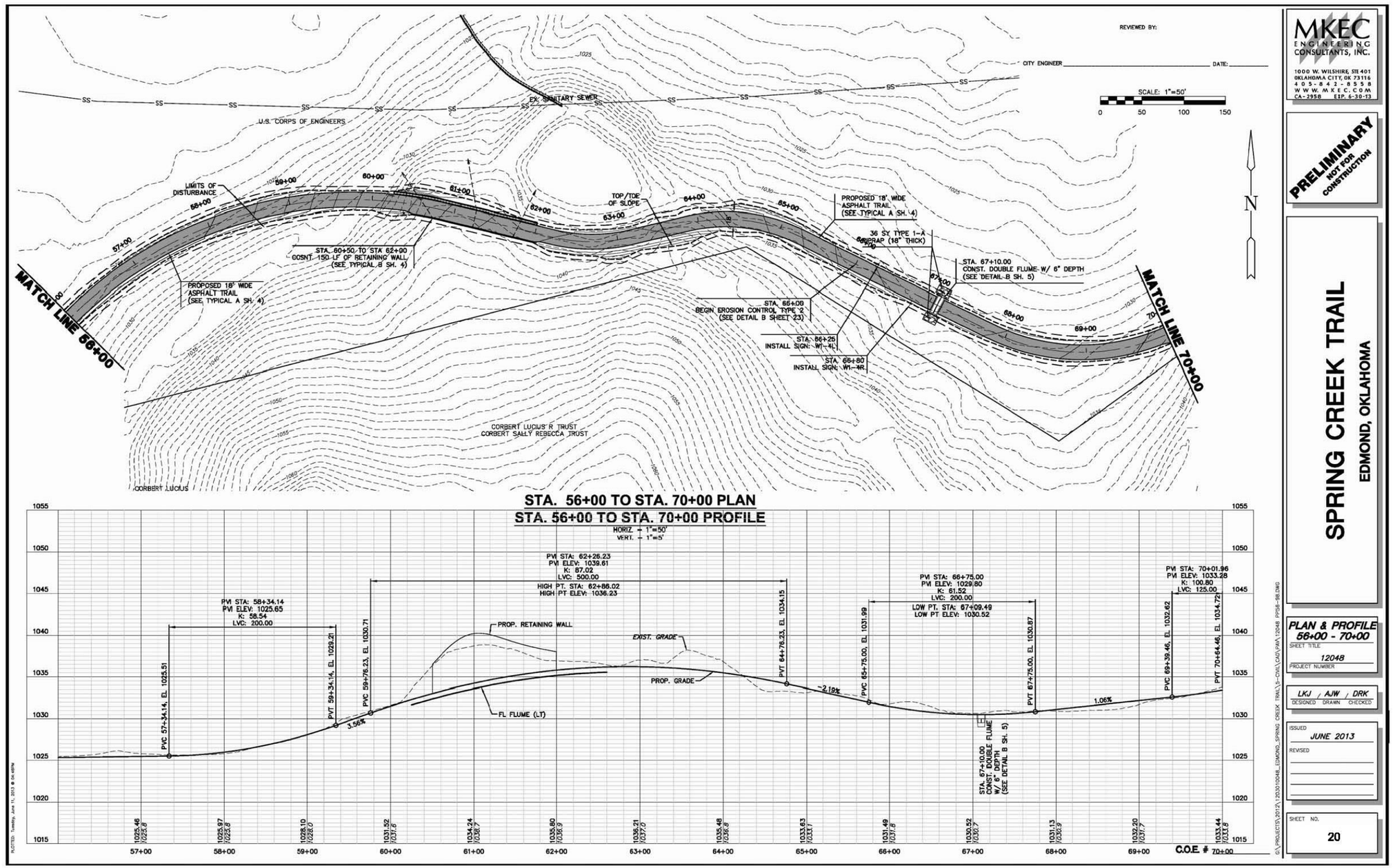

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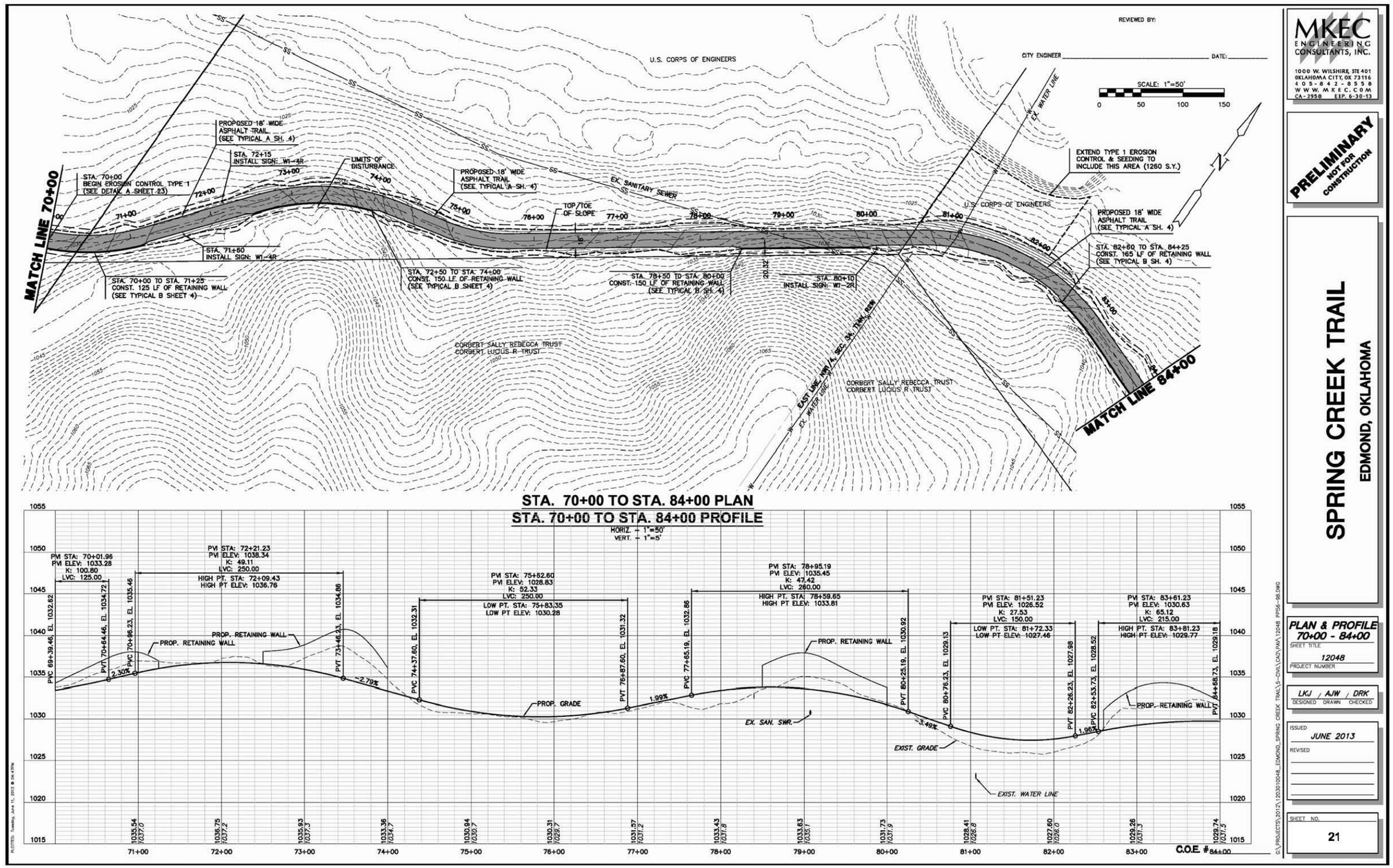

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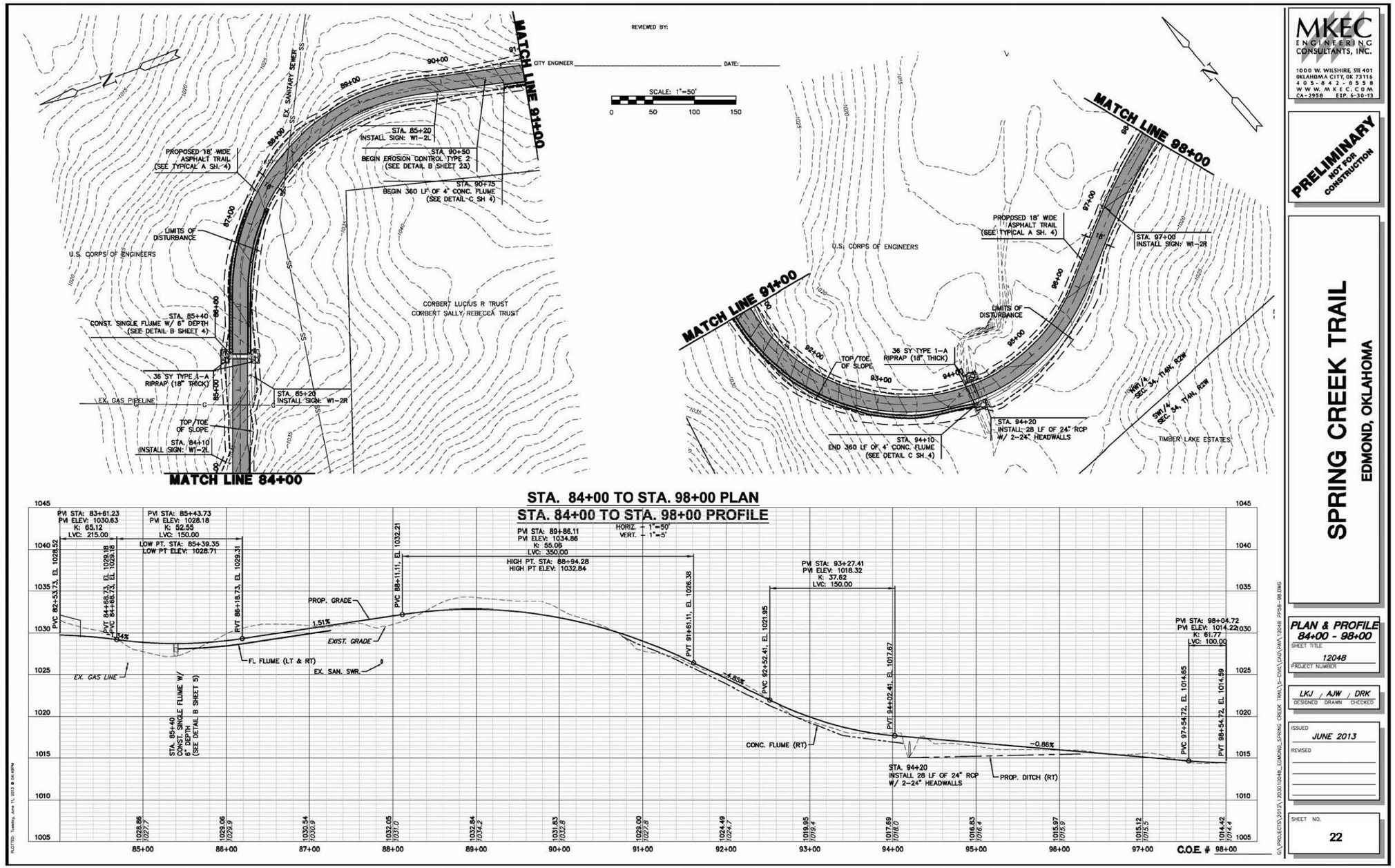

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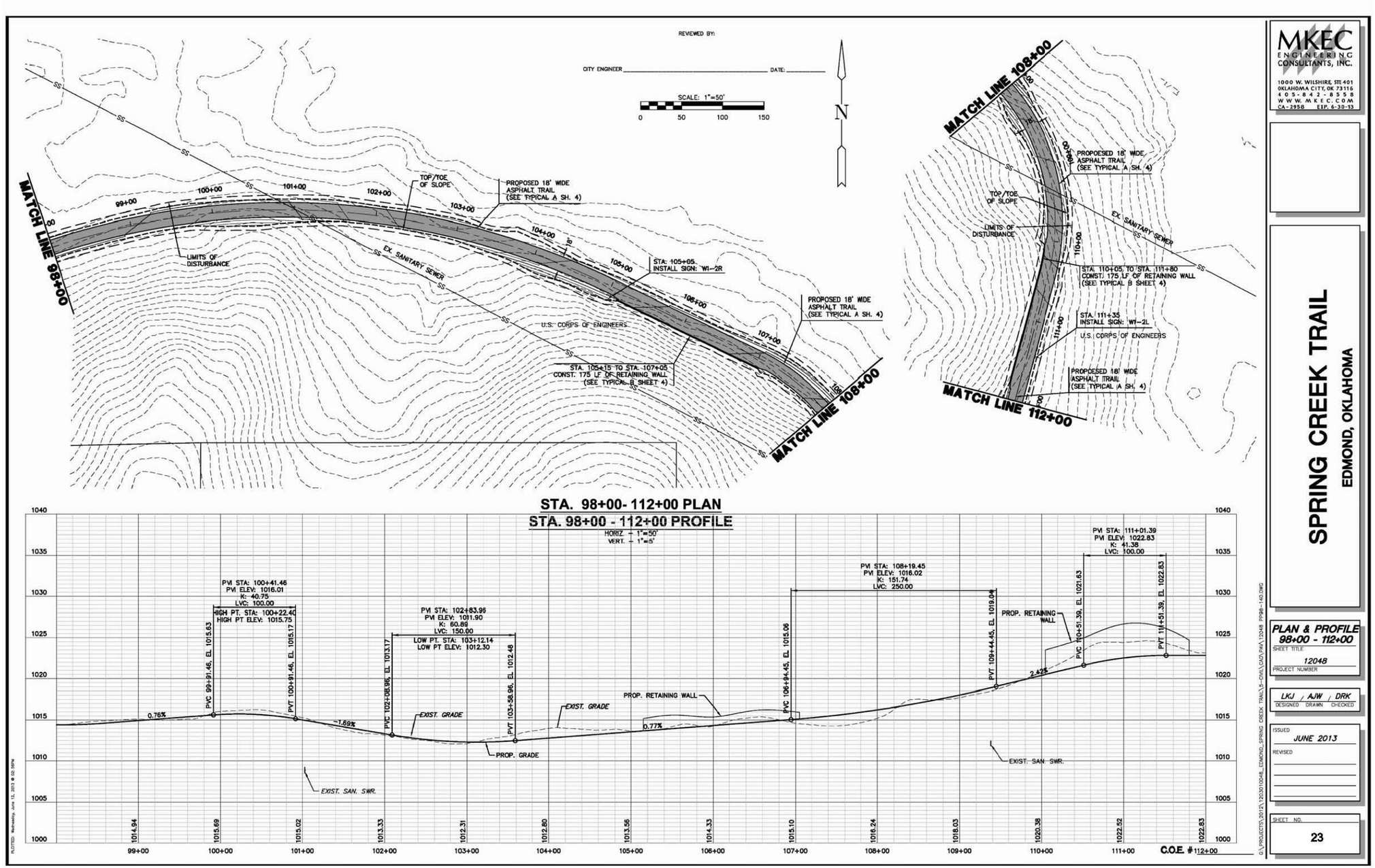

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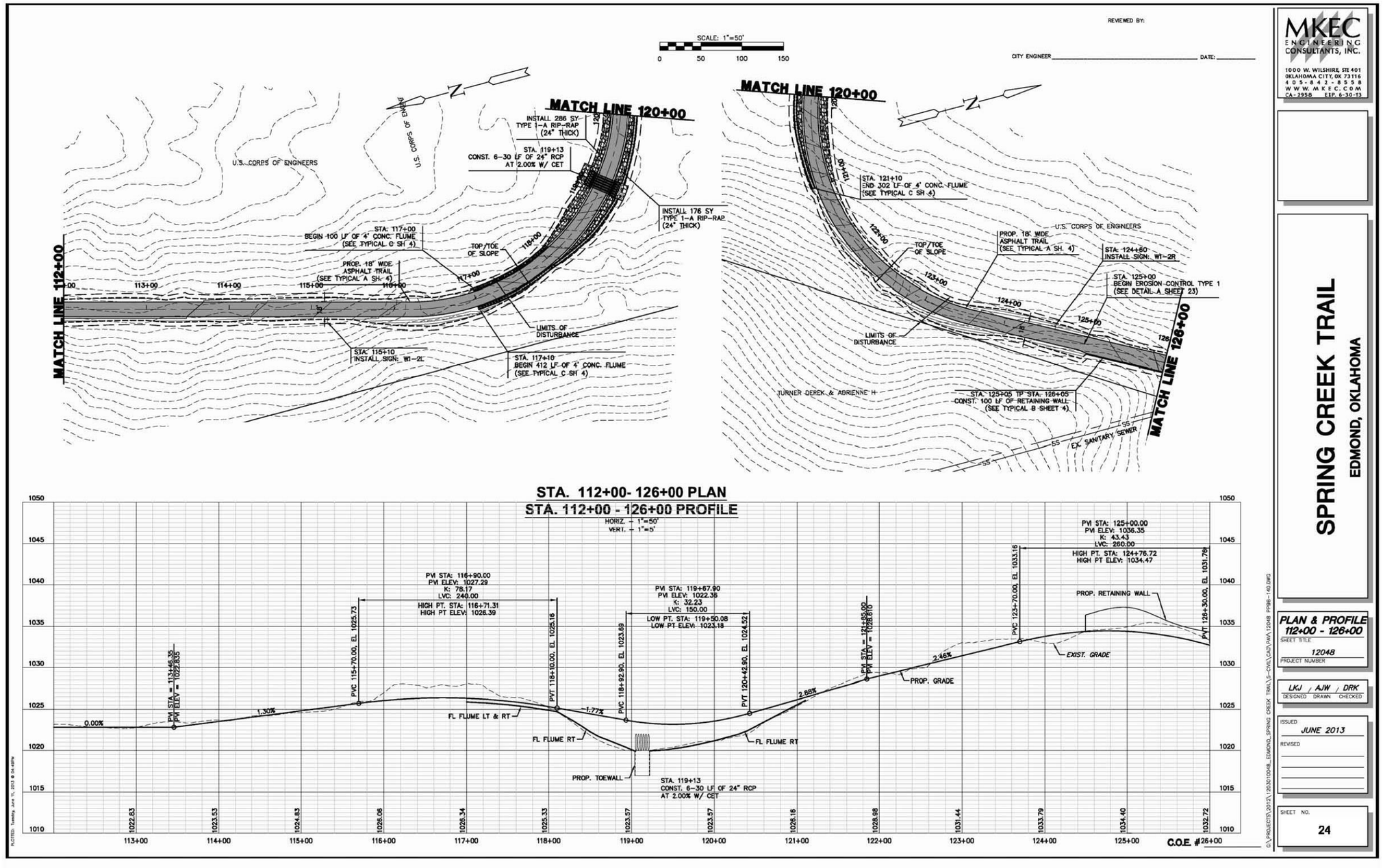

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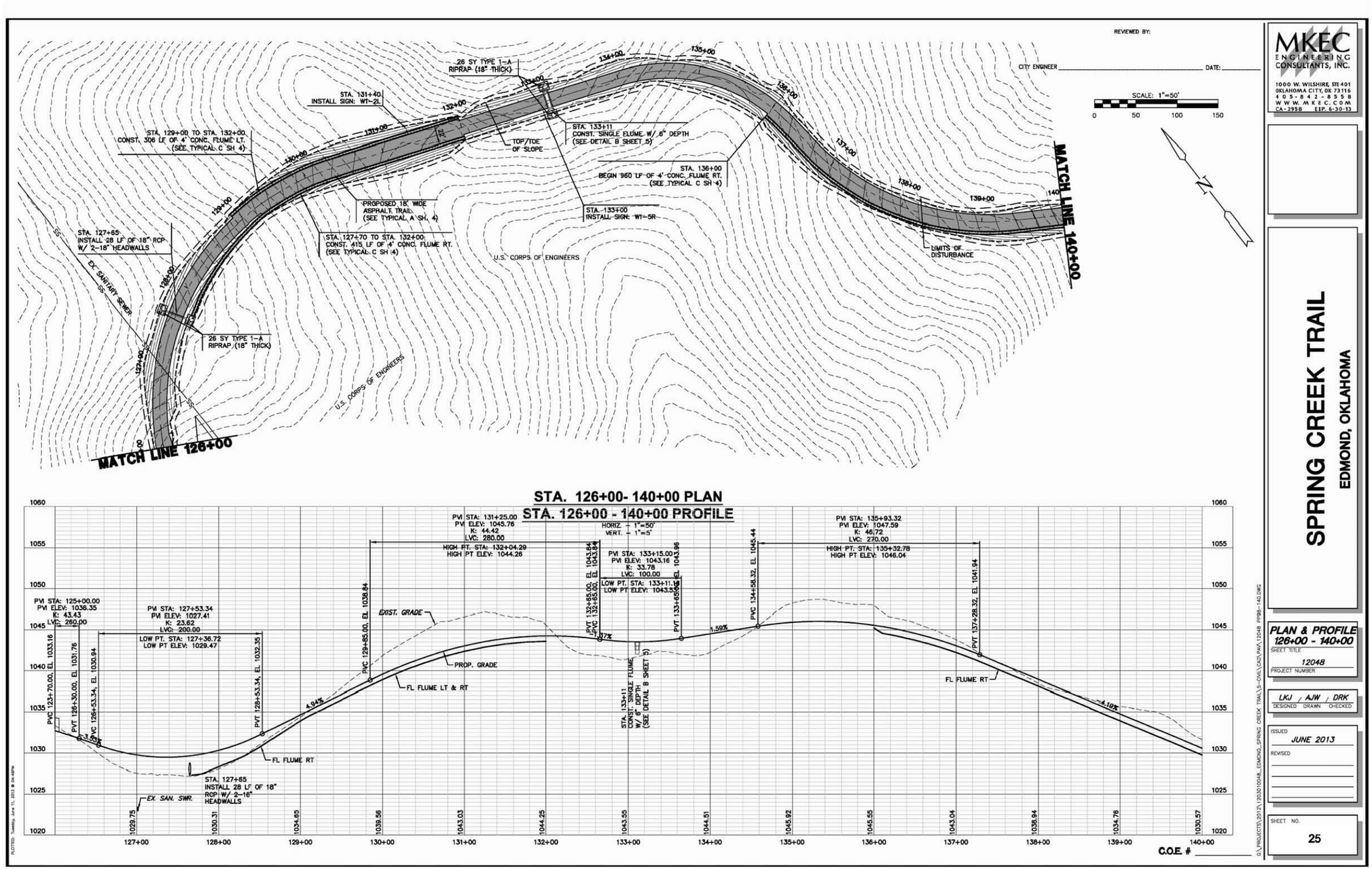

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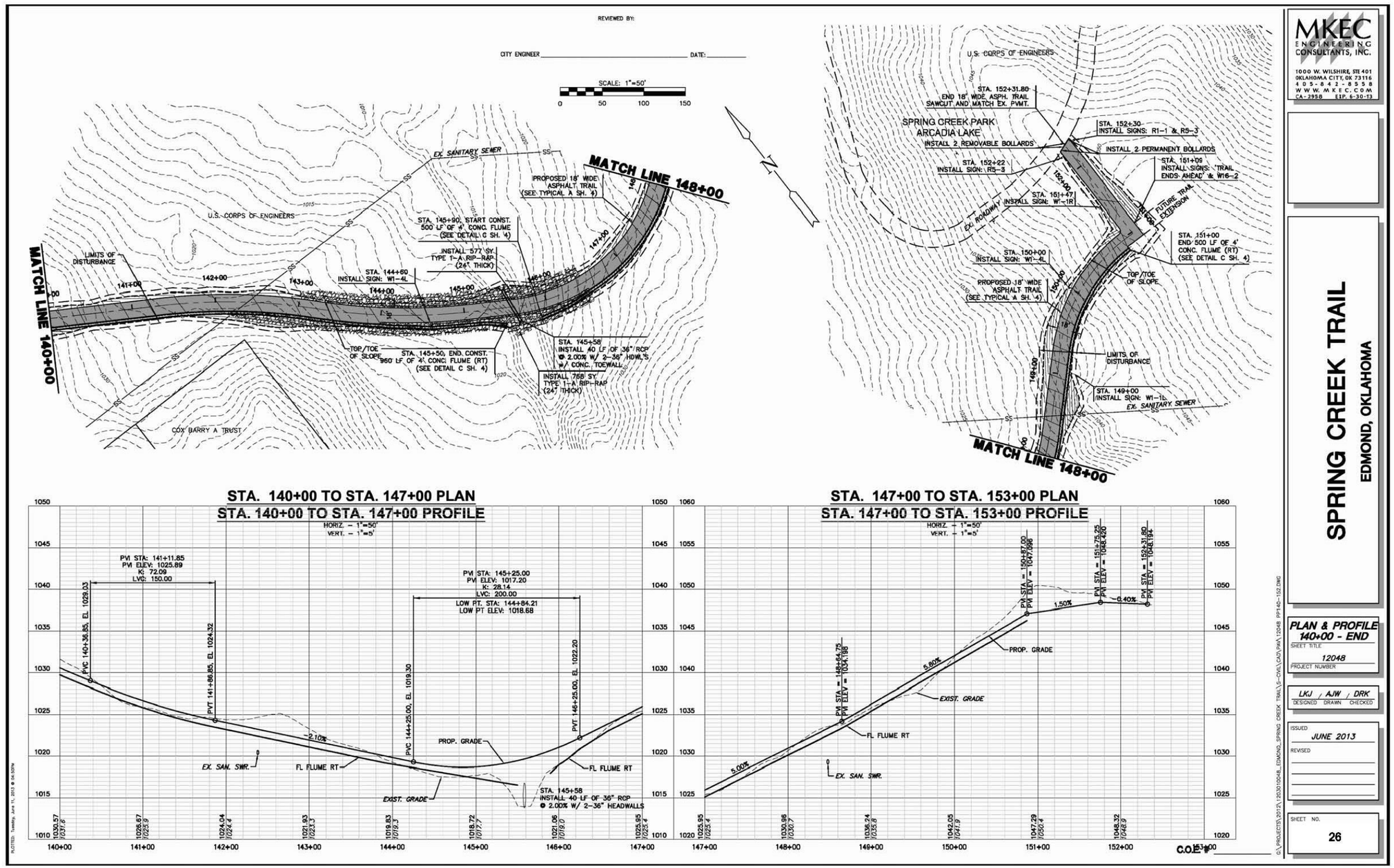


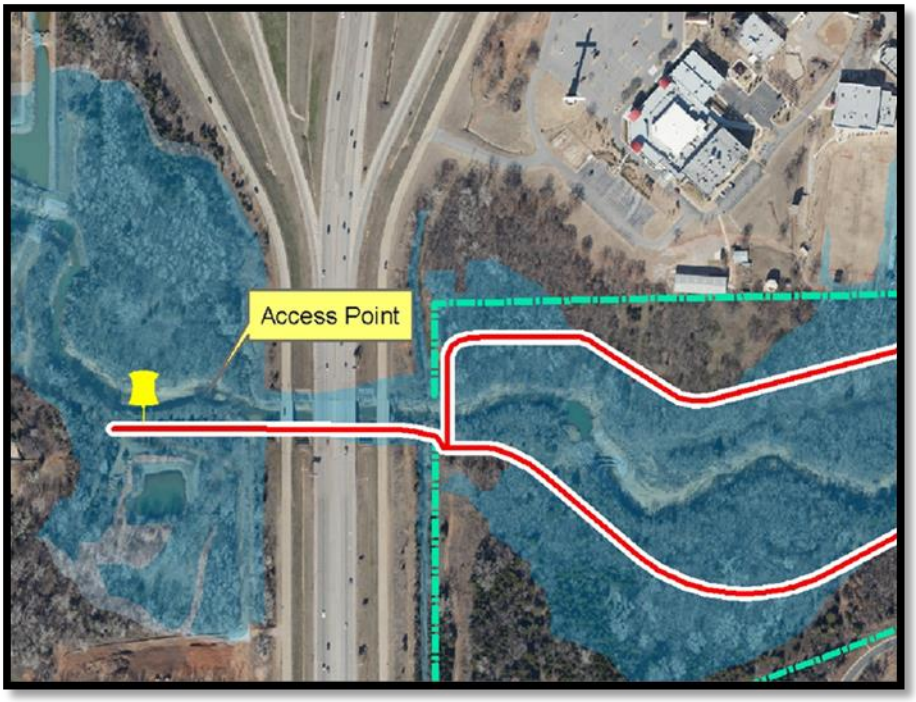


Figure 27. Detail of the proposed trail showing creek crossing. 100-year flood plain is in blue.

(Source: City of Edmond Planning Department, 2013)

Figure 28. Photograph of the east side of the I-35 bridge where the proposed trail will cross.

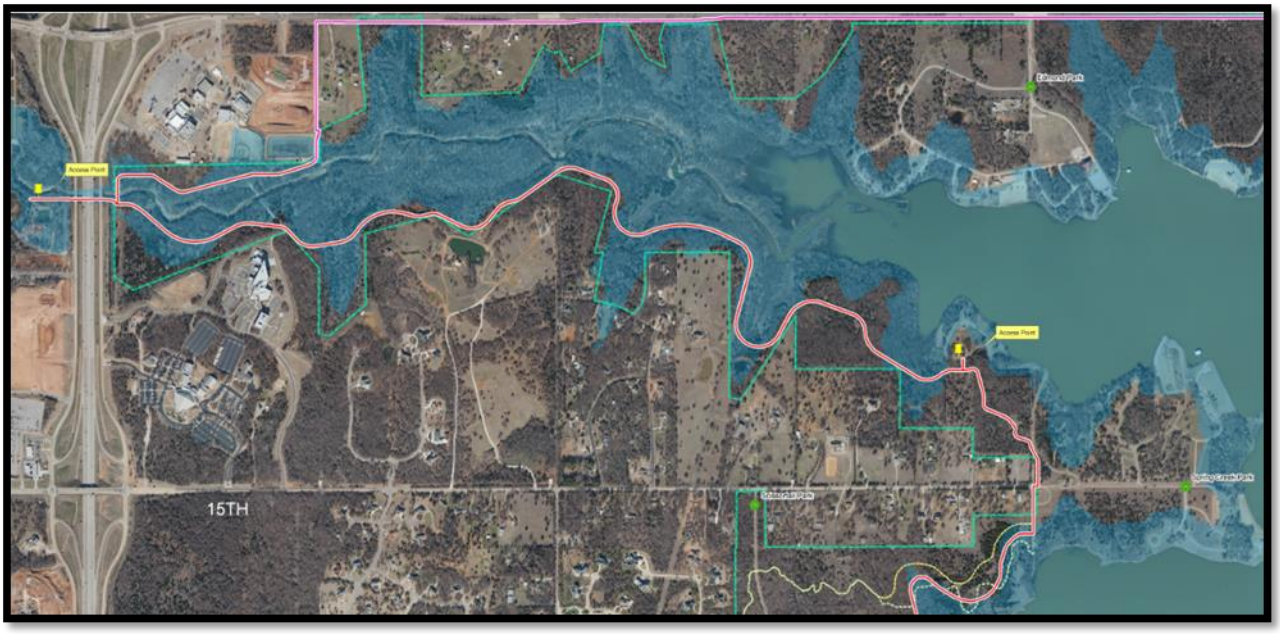


Figure 29-A. 3.1 mile section of a trail to Spring Creek Park. Blue shading is maximum flood pool elevation. Dotted line is USACE boundary. Proposed trail is red line. (Source: City of Edmond Planning Department, 2013)

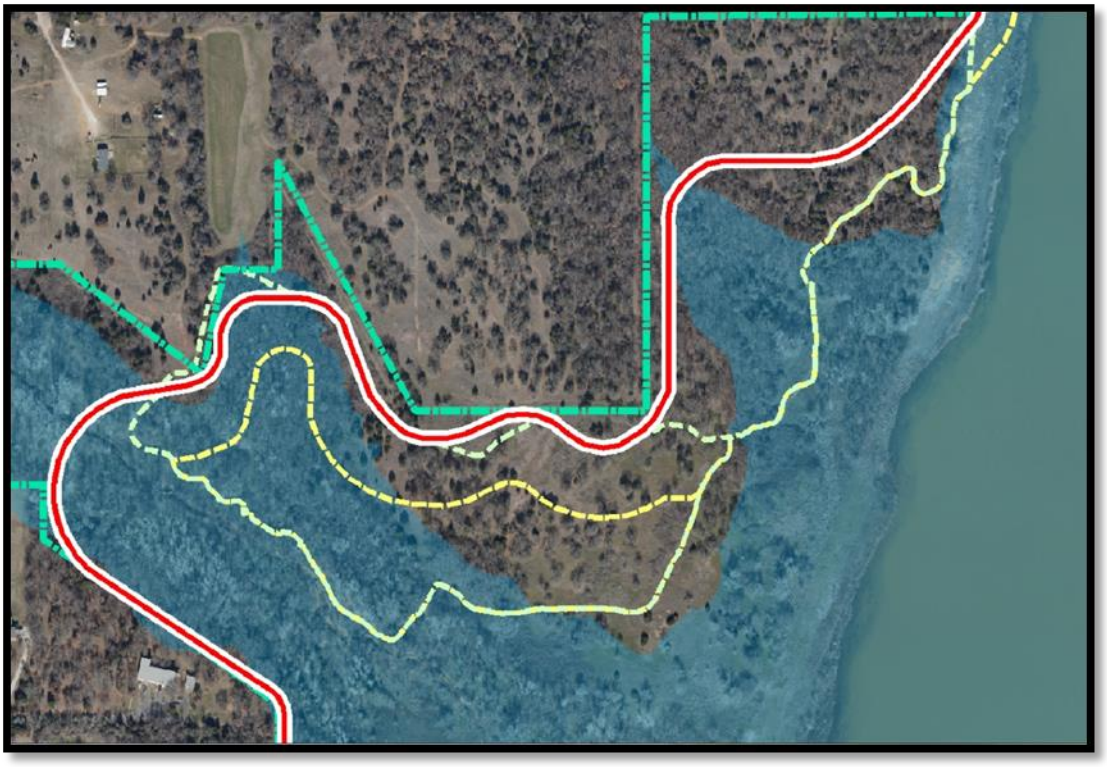


Figure 29-B. Detail of equestrian trails

Figure 30. Drainage/Gully where trail crosses @ 35.6172, -97.409

Figure 31. Trail crosses @ 35.6132, -97.4180

Figure 32. Trail crosses creek @35.6321, -97.3997

Figure 33. Jersey barriers

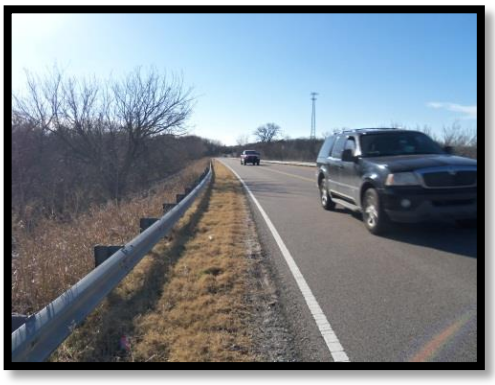


Figure 34. Three feet from road to guard rail.

Figure 35. Proposed trail runs alongside Memorial Road at south end of Arcadia Lake. (Google Maps, 2013)

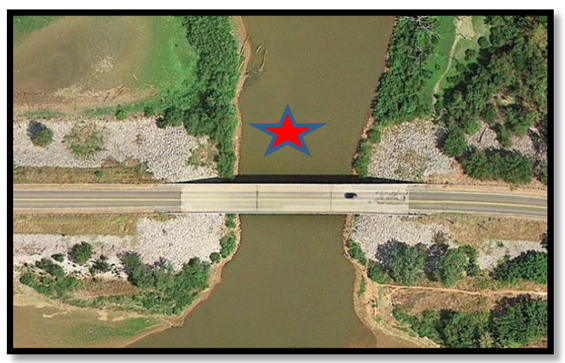


Figure 36. Detail of the road bridge where a parallel trail bridge is needed.

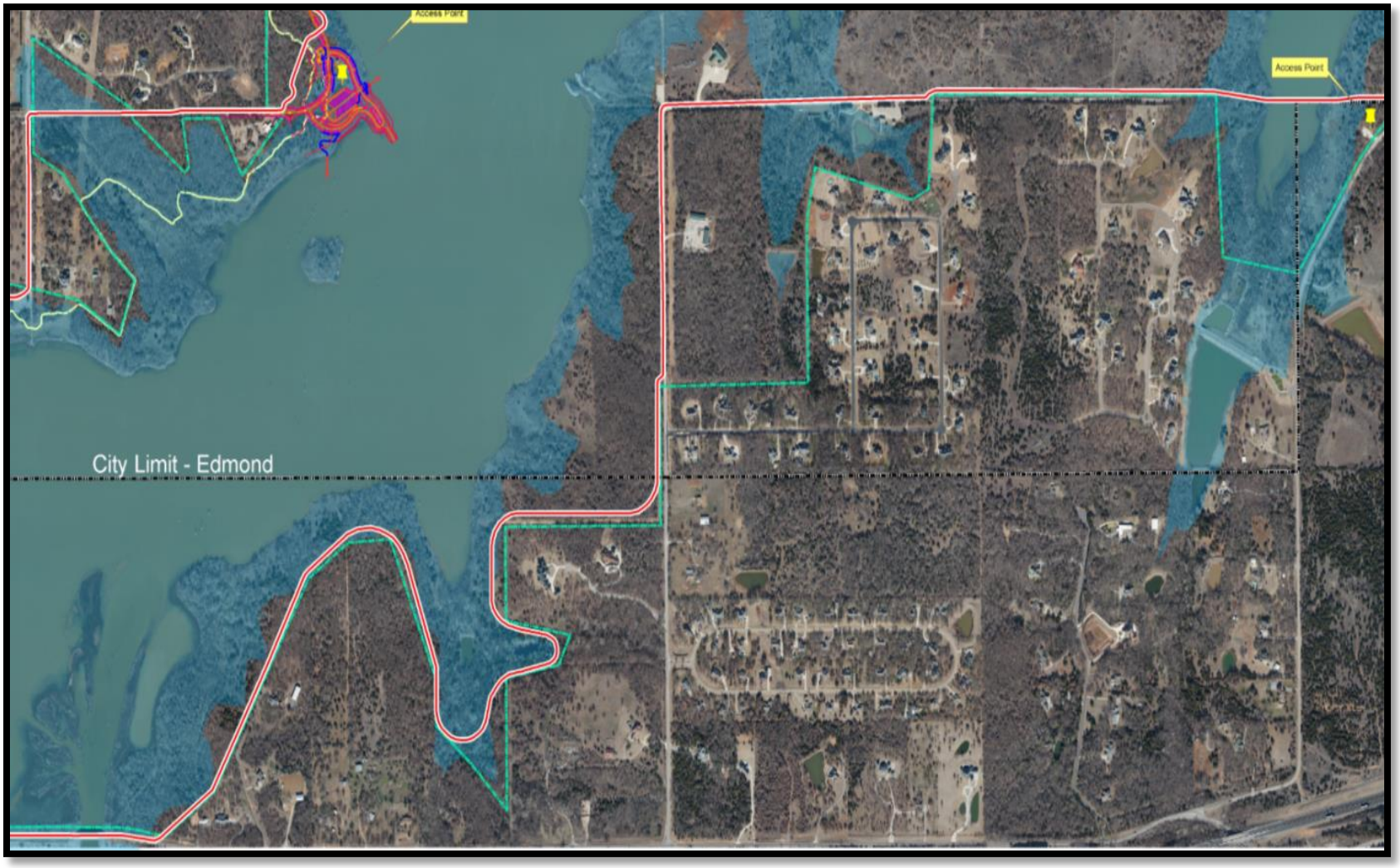


Figure 37. Portion of the proposed trail from Memorial Road to Eagle Cove. (City of Edmond Planning Department, 2013)

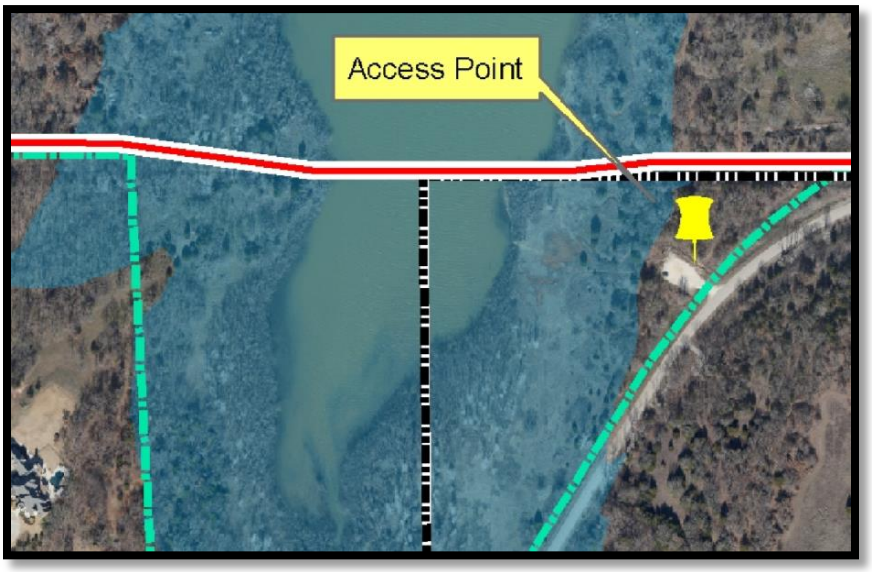


Figure 38. Eagle Cove crossing detail

Figure 39. Eagle Cove crossing photograph

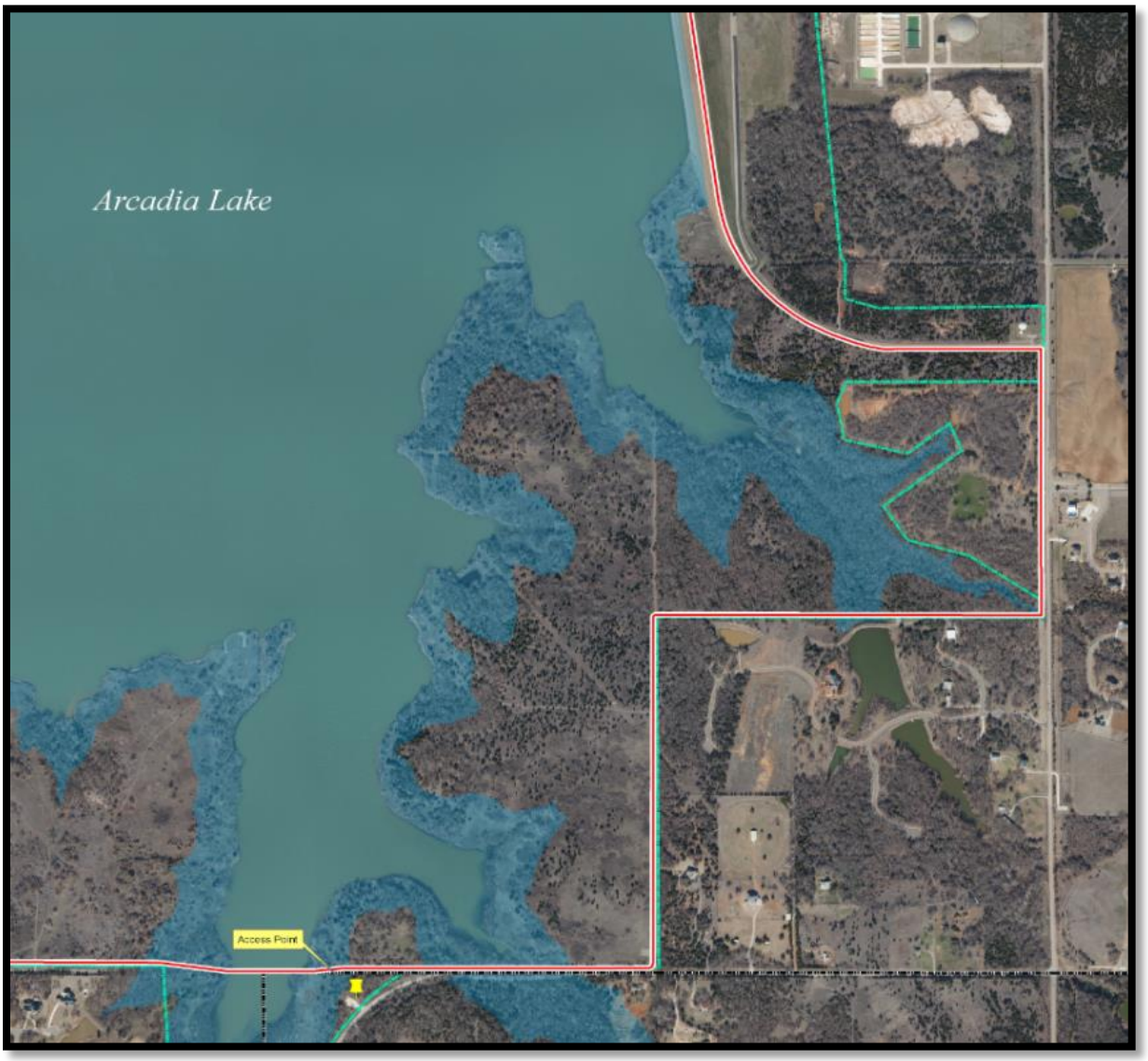


Figure 40. Preferred trail route from Eagle Cove to the Arcadia Lake dam. (City of Edmond Planning Department, 2013)

Figure 41. Restricted access road coming down from the dam where the proposed multi-use trail will be placed.

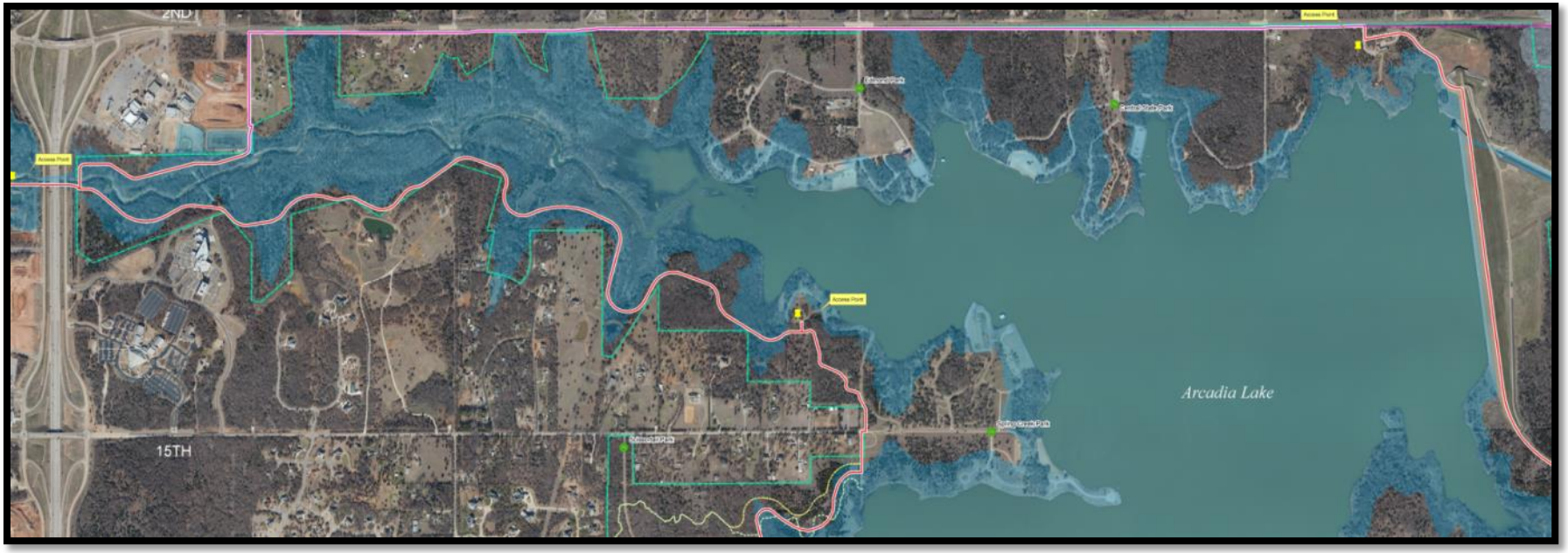


Figure 42. The proposed trail crossing the dam to Route 66, in the ROW of Route 66, and down to Spring Creek where it ultimately crosses and joins the trail crossing the southern side of Spring Creek to Spring Creek Park. (City of Edmond Planning Department, 2013)

Figure 43. Narrow apron in ROW of Route 66.

Figure 44. Hill adjacent to narrow apron where trail needs to go to avoid traffic safety issue.

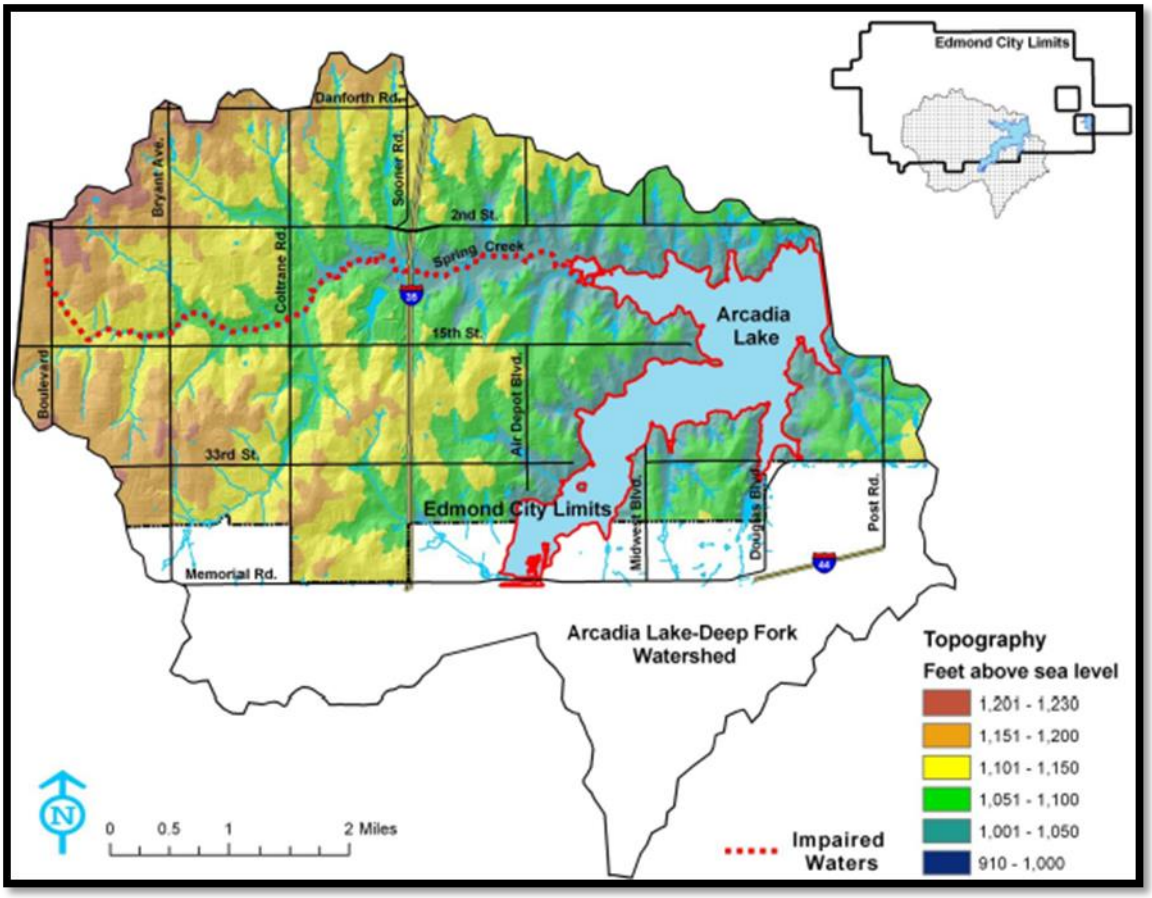


Figure 45. A map showing bodies of water that are impaired (outlined in red) in the Arcadia Lake – Deep Fork Watershed.

Arcadia

Sample Period	Times Visited	Sampling Sites
October 2006 - August 2007	4	5

General

Location	Oklahoma County	Click map for site data
Impoundment	1986	
Area	1,820 acres	
Capacity	27,520 acre-feet	
Purposes	Water Supply, Flood Control, Recreation	

Click Site Names for Available Data

Parameters

	Parameter (Descriptions)	Result	Notes/Comments
	Average Turbidity	42 NTU	30% of values > OWQS of 25 NTU
	Average True Color	53 units	10% of values > OWQS of 70
	Average Secchi Disk Depth	67 cm	
	Water Clarity Rating	average	
	Trophic State Index	58	
	Trophic Class	eutrophic	
Profile	Salinity	0.10 – 0.20 ppt	
Profile	Specific Conductivity	209.7 - 422 µS/cm	
Profile	pH	7.32 - 8.47 pH units	Neutral to slightly alkaline
Profile	Oxidation-Reduction Potential	148 to 415 mV	
Profile	Dissolved Oxygen	Up to 38% of water column < 2 mg/L in August	
Nutrients	Surface Total Nitrogen	0.75 mg/L to 1.85 mg/L	
Nutrients	Surface Total Phosphorus	0.025 mg/L to 0.231 mg/L	
Nutrients	Nitrogen to Phosphorus Ratio	15:1	Phosphorus limited

Beneficial Uses

Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	TSI	True Color	Sulfates	Chlorides	Total Dissolved Solids	Enterro. & E. coli	Chlor-a
Fish & Wildlife Propagation	NS	S	S	S							
Aesthetics					S	S					
Agriculture							S	S	S		
Primary Body Contact Recreation										NEI	
Public & Private Water Supply											NS

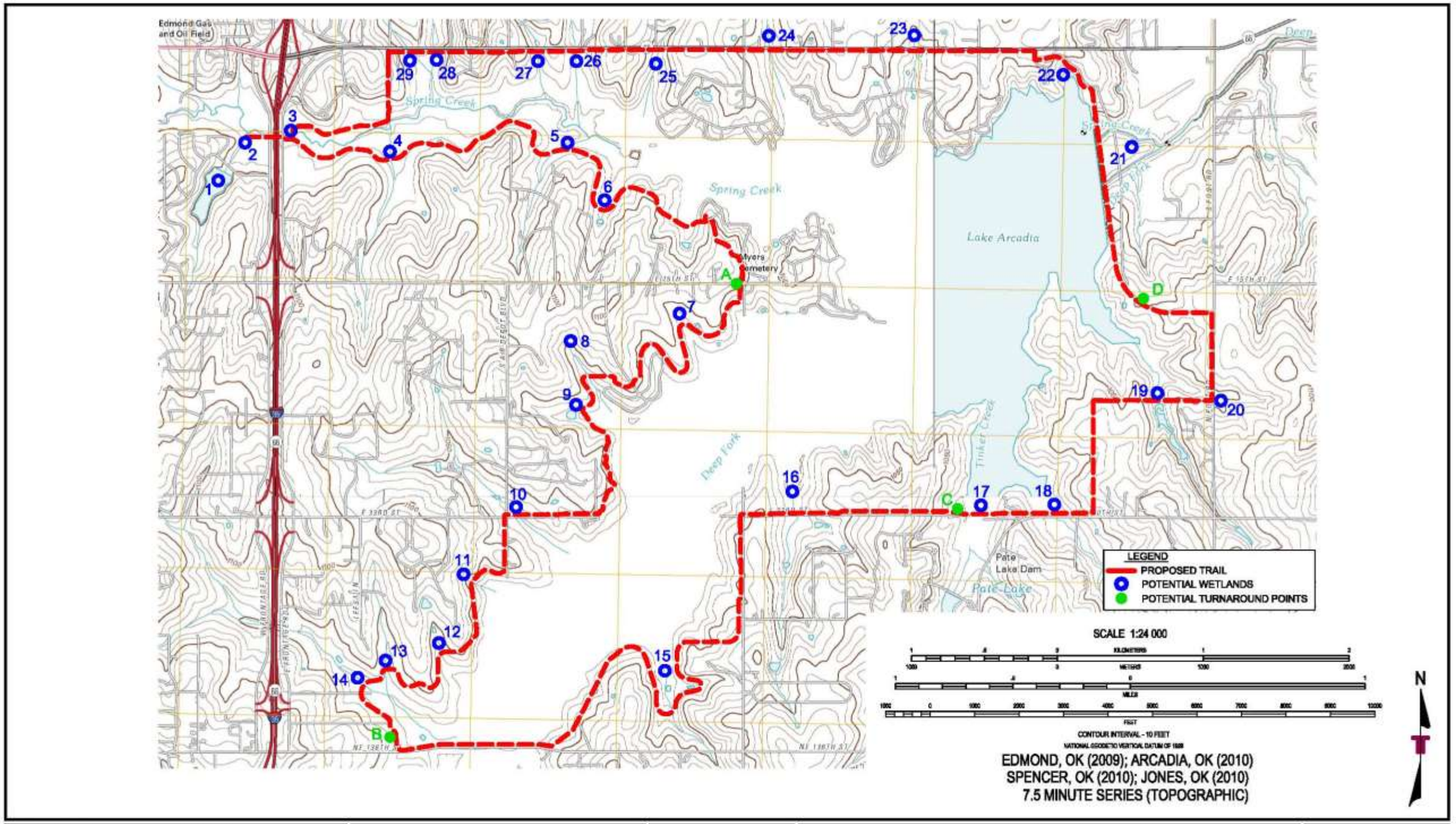
S = Fully Supporting
NS = Not Supporting
NEI = Not Enough Information

Notes

NTU = nephelometric turbidity units
µS/cm = microsiemens per centimeter
E. coli = Escherichia coli
OWQS = Oklahoma Water Quality Standards
mV = millivolts
Chlor-a = Chlorophyll-a
mg/L = milligrams per liter
µS/cm = microsiemens/cm
ppt = parts per thousand
En = Enterococci

Figure 46. OWRB water quality data for Arcadia Lake, October 2006 – August 2007.

Figure 47. Potential Wetlands Map



REV.	DATE	BY	DESCRIPTION

Terracon
Consulting Engineers and Scientists
4701 N STILES AVE — OKLAHOMA CITY, OK 73105
PH. (405) 525-0433 — FAX. (405) 557-0549

POTENTIAL WETLANDS MAP

ARCADIA LAKE TRAIL ENVIRONMENTAL ASSESSMENT
NEAR EDMOND
EDMOND, OKLAHOMA COUNTY, OKLAHOMA

47

PROJECT MNGR:	TAB
DRAWN BY:	DWT
APPVD. BY:	TAB
SCALE:	AS SHOWN
DATE:	AUG 2013
JOB NO.	03137074
ACAD NO.	03137074 (TOPO)
SHEET NO.:	47 OF 47

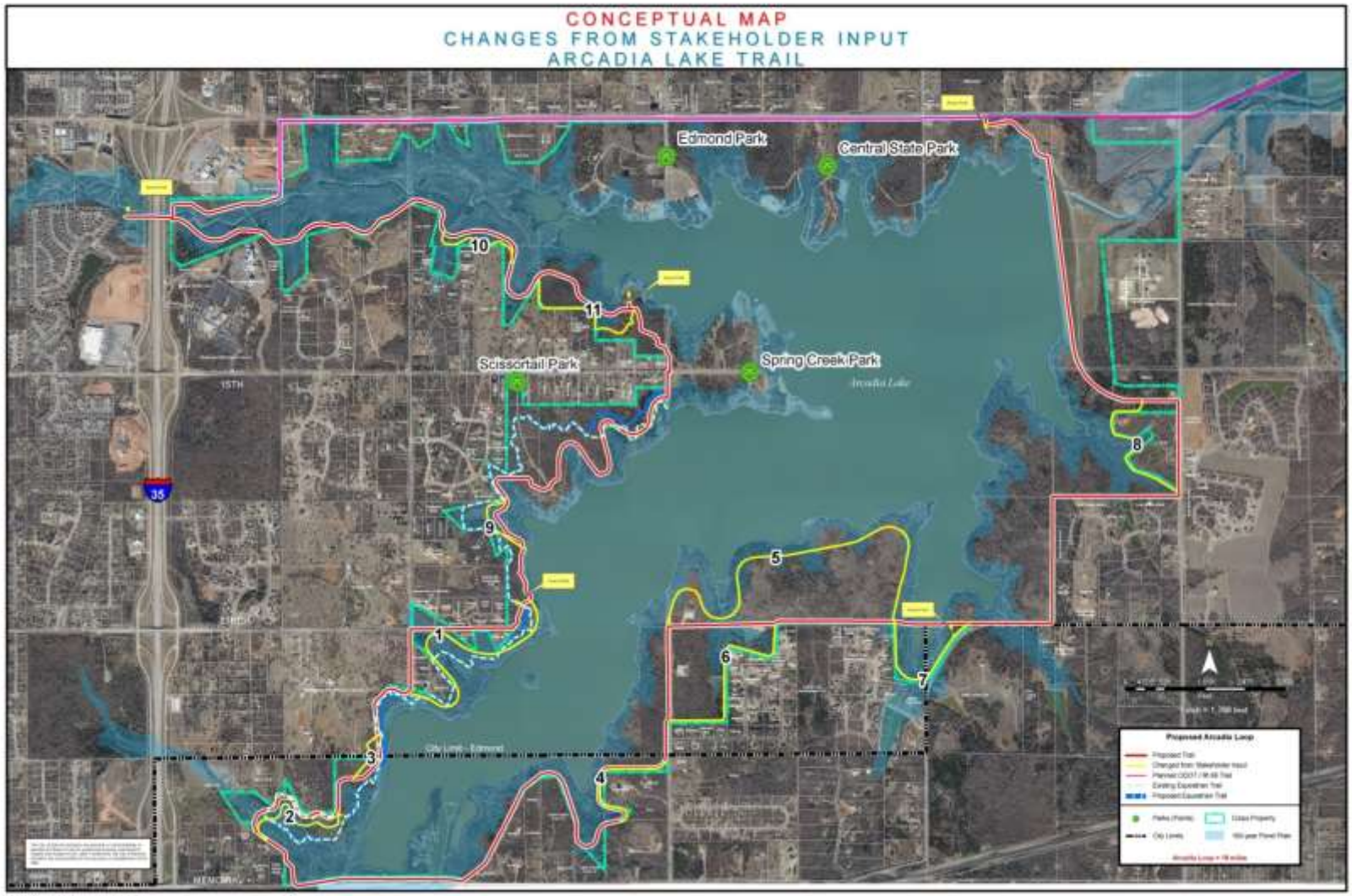


Figure 48 – Conceptual Map – Changes from Stakeholder Input

APPENDIX B – Preliminary Wetland and Stream Delineation

Preliminary Waters of the U.S. Delineation

Arcadia Lake Trail Project, 3.1 Mile Section

Edmond, Oklahoma County, Oklahoma

July 2013

Terracon Project No. 03137074

Prepared for:

The City of Edmond
Edmond, Oklahoma

Prepared by:

Terracon Consultants, Inc.
Oklahoma City, Oklahoma

Offices Nationwide
Employee-Owned
Established in 1965
terracon.com

Terracon

Geotechnical ■ Environmental ■ Construction Materials ■ Facilities

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PRELIMINARY WATERS OF THE U.S. DELINEATION
Arcadia Lake Trail Project, 3.1 Mile Section
Edmond, Oklahoma County, Oklahoma
Terracon Project No. 03137074

1.0 INTRODUCTION

This report presents the findings of a waters of the U.S. (WoUS) assessment conducted within the proposed City of Edmond Arcadia Lake Multi–Use Trail Project (trail) area located along the limits of Arcadia Lake and Spring Creek in Edmond, Oklahoma County, Oklahoma. The objective of the delineation is to evaluate whether WoUS, including wetlands, are present within the proposed project area and, if so, to identify the respective boundaries within the site. This delineation was conducted in general accordance with the 1987 *Corps of Engineers Wetland Delineation Manual* (Manual), along with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0)* (March 2010). The identification of other WoUS on the proposed property is in accordance with the definitions provided in 33 CFR 328.3(a). Findings on the proposed project site are not official until concurred upon by the U.S. Army Corps of Engineers, Tulsa District (USACE).

2.0 PROPERTY LOCATION

The delineation assessment area includes approximately 3.1 miles of public land, mostly owned by the USACE, that is anticipated to be impacted from the proposed trail project. More specifically, the site is located in the following 7.5 minute series topographic quadrangle map locations: Sections 32-34, Township 14 North, Range 2 West, Edmond, Oklahoma, 1966, photorevised 1983. Please reference Exhibits 1 and 2 in Appendix A for further project location information.

3.0 GENERAL DESCRIPTION OF THE PROPERTY

The proposed project area is located in the Crosstimbers (29) and Central Great Plains (27) ecoregions of Oklahoma. Ecoregion 29 is a mix of savanna, woodland, and prairie. Two types of streams are common. The first is characterized by a mixture of shaded riffles, runs, and pools that have gravel or cobble substrates. The second stream type has lower gradients and is found downstream of the first; it is characterized by wide, shallow, sand-choked channels. Post oak-blackjack oak woodland and savanna are native on porous, course-textured soils derived from sandstone. Tall grasses are native on fine-textured,

moisture deficient soils derived from limestone, shale, or marl. Today, woodland, rangeland, pastureland, and several extensive, but declining, oil fields occur. Abandoned, depleted farmland is common (OOSE 2012).

The Central Great Plains in Oklahoma (27), are largely underlain by red, Permian-age sedimentary rocks and include scattered hills, breaks, salt plains, low mountains, gypsum karst, sandy flats, and sand dunes. The upland natural vegetation in this dry-subhumid area is mostly mixed grass prairie, but mesquite-buffalograss and shinnery are native, respectively, to the south and to sandy areas. Riparian corridors can be wooded. Typically, after heavy rains, streams flow strongly. Salt or gypsum deposits and leaching produce high mineral concentrations in many streams and rivers (OOSE 2012).

The majority of the site is overgrown with vegetation, including a wide variety of grass, forb, vine, and tree species. Previously impacted areas were identified along the bridge on both the north and south banks of Spring Creek. Impacts to this area include a highway overpass associated with Interstate Highway 35, as well as user-created impacts from foot traffic along designated hiking trails and vehicle traffic associated with commercial and residential development of the surrounding area. River recreation is common in this area.

4.0 METHODOLOGY

4.1 Study Objectives

This delineation was prepared in accordance with the USACE requirements for delineation and reporting. Specific objectives of the assessment were to conduct a WoUS delineation within the site area using the 1987 Manual, along with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region* (*Version 2.0)* (March 2010).

4.2 Review of Existing Information

Before undertaking onsite observations, a literature review was performed to assist with the identification of WoUS within the assessment area. The following information was collected and examined:

4.2.1 Topographic Quadrangle Map

A United States Department of the Interior, United States Geologic Survey (USGS) 7.5-Minute Topographic Map (Edmond, Oklahoma, 1966, photorevised 1983) was reviewed to identify WoUS within the site boundaries. This map depicted Spring Creek to be within the limits of the western section of the proposed trail path. Two unnamed tributaries of Spring Creek, in which the proposed trail will intersect, are apparent on the topographic map. A portion of this map is represented in Appendix A, Exhibit 1.

4.2.2 National Wetlands Inventory Map

National Wetlands Inventory (NWI) maps are published by the U.S. Department of the Interior's Fish and Wildlife Service (USFWS) to depict probable wetland and riparian areas based on stereoscopic analysis of high altitude aerial photographs. Terracon reviewed an NWI map of the site accessed on the USFWS website. Wetlands identified on this map included palustrine, unconsolidated shore, seasonally flooded, diked/impounded wetlands (western portion of the proposed trail path) and palustrine, unconsolidated shore, semipermanently flooded, diked/impounded wetlands (a pond area located within the central portion of the proposed trail path) (USFWS Wetlands Mapper). Please see Exhibit 3 in Appendix A for further information.

4.2.3 Flood Insurance Rate Map

The Federal Emergency Management Agency (FEMA) maps flood zones on Flood Insurance Rate Maps (FIRMs). The project site is located on FIRM Panel 40109C0070H, with a majority being denoted as being inside Zone X which are "areas determined to be outside the 0.2% annual chance floodplain" and portions denoted as being inside Zone AE which is a "special flood hazard area subject to inundation by the 1% annual chance flood". No base flood elevations have been determined in this area, according to the FIRM (FEMA Map Service Center). Please see Exhibit 5 in Appendix A for further information.

4.2.4 National Cooperative Soil Survey

The U.S. Department of Agriculture, Natural Resource Conservation Service (NRCS), maintains the Web Soil Survey website which was reviewed to identify soil types, including hydric soils, in the subject area. Six dominant soil types are identified on the site:

- **Pulaski fine sandy loam, 0 to 1 percent slopes, occasionally flooded (PulA)** – This component is on floodplains on valleys. The parent material consists of coarse-loamy alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well-drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is high. Shrink-swell potential is low. This soil is occasionally flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This soil is listed by the NRCS as being non-hydric (NRCS Soil Data Mart). Please see Exhibit 4 in Appendix A for further information.

- **Harrah fine sandy loam, 3 to 5 percent slopes (HarC) –** This component is on hillslopes on uplands. The parent material consists of loamy and sandy colluvium derived from sandstone. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well-drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the

surface horizon is about 1 percent. This soil is listed by the NRCS as being non-hydric (NRCS Soil Data Mart). Please see Exhibit 4 in Appendix A for further information.

- **Harrah fine sandy loam, 3 to 5 percent slopes, eroded (HarC2) –** This component is on hillslopes on uplands. The parent material consists of loamy and sandy colluvium derived from sandstone. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well-drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This soil is listed by the NRCS as being non-hydric (NRCS Soil Data Mart). Please see Exhibit 4 in Appendix A for further information.

- **Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes (SDND)** – The Stephenville component makes up 48 percent of this soil unit. This component is on hillslopes on uplands. The parent material consists of loamy residuum weathered from sandstone. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 40 inches. The natural drainage class is well-drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This soil is listed by the NRCS as being non-hydric (NRCS Soil Data Mart).

  The Darsil component makes up 25 percent of this soil unit. This component is on hillslopes on uplands. The parent material consists of sandy residuum weathered from sandstone. Depth to a root restrictive layer, bedrock, paralithic, is 10 to 20 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This soil is listed by the NRCS as being non-hydric (NRCS Soil Data Mart).

  The Newalla component makes up 23 percent of this soil unit. This component is on hillslopes on uplands. The parent material consists of loamy residuum weathered from sandstone over clayey residuum weathered from shale. Depth to a root restrictive layer, bedrock, paralithic, is 40 to 60 inches. The natural drainage class is moderately well-drained. Water movement in the most restrictive layer is low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is high.

This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This soil is listed by the NRCS as being non-hydric (NRCS Soil Data Mart). Please see Exhibit 4 in Appendix A for further information.

- **Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes, eroded (SDND2)** – The Stephenville, Eroded component makes up 61 percent of this soil unit. This component is on hillslopes on uplands. The parent material consists of loamy residuum weathered from sandstone. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 40 inches. The natural drainage class is well-drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This soil is listed by the NRCS as being non-hydric (NRCS Soil Data Mart).

  The Darsil, Eroded component makes up 20 percent of this soil unit. This component is on hillslopes on uplands. The parent material consists of sandy residuum weathered from sandstone. Depth to a root restrictive layer, bedrock, paralithic, is 10 to 20 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This soil is listed by the NRCS as being non-hydric (NRCS Soil Data Mart).

  The Newalla, Eroded component makes up 16 percent of this soil unit. This component is on hillslopes on uplands. The parent material consists of loamy residuum weathered from sandstone over clayey residuum weathered from shale. Depth to a root restrictive layer, bedrock, paralithic, is 40 to 60 inches. The natural drainage class is moderately well-drained. Water movement in the most restrictive layer is low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This soil is listed by the NRCS as being non-hydric (NRCS Soil Data Mart). Please see Exhibit 4 in Appendix A for further information.

- **Tribbey fine sandy loam, 0 to 1 percent slopes, frequently flooded (TriA) –** This component is on floodplains on valleys. The parent material consists of loamy and/or sandy alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate.

Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 24 inches during January, February, March, April, May, October, November, December. Organic matter content in the surface horizon is about 1 percent. This soil is listed by the NRCS as being non-hydric (NRCS Soil Data Mart). Please see Exhibit 4 in Appendix A for further information.

4.2.5 Aerial Photographs

Aerial photographs taken between 1991 and 2013 were reviewed to obtain general information concerning indications of hydrology and wetland vegetation within the boundaries of the site. Although generally taken at medium to high altitudes, aerial photographs may be useful in assessing historic and current hydrologic conditions and land use at the site. A review of these photographs depicted Spring Creek to be along the western trail's proposed path. Three channels flowing south from Spring Creek are also apparent in the aerial photographs. A 2012 aerial photograph is included as the background of Exhibit 2 in Appendix A.

4.3 Wetland Delineation Field Activities

Field reconnaissance of the site was performed on June 18 through June 20, 2013. Field conditions were evaluated by walking the project area to identify wetland characteristics. According to the Manual, an area must exhibit indicators of hydrophytic vegetation, hydric soils, and wetland hydrology to be considered a wetland. These criteria are mandatory and must be met for an area to be identified as a wetland, except under circumstances when a wetland is considered a disturbed area or problem wetland. These criteria are discussed in more detail below.

Within the project area, 14 data points were observed to record current site conditions. Data was recorded on wetland data forms (see Appendix B) to indicate dominant plant species, soil conditions in test pits, and evidence of hydrologic conditions. Based on the field data, a wetland/non-wetland determination was made for each area examined. Color photographs were taken of representative areas of the site (Appendix C).

Potential wetland areas within the project area were identified as distinct plant community types, to which the three parameters listed above were applied. A plant community is an area having similar physical features of plant characteristics. Features such as species uniformity, dominance, distinct topographic breaks, and obvious similarities in soils of hydrologic indicators are factors that define a plant community. Following the confirmation of the three wetland parameters, wetland boundaries were identified and mapped.

4.3.1 Vegetation

Plant species are divided into three strata: trees, shrubs, and herbaceous species. The "50/20 rule" is the recommended method for selecting dominant species from a plant

community when quantitative data are available. The rule states that for each stratum in the plant community, dominant species are the most abundant plant species (when ranked in descending order of abundance and cumulatively totaled) that immediately exceed 50 percent of the total dominance measure for the stratum, plus any additional species that individually comprise 20 percent or more of the total dominance measure for the stratum (Environmental Laboratory, 1987).

Hydrophytic vegetation is defined as macrophytic plant life growing in water, soil or substrate that is periodically deficient in oxygen. For each plot, the percent coverage was estimated for each plant species present and dominant species were determined. Plants were identified using references such as *Master Tree Finder: A Manual for the Identification of Trees by Their Leaves* (Watts). Species were assigned a Wetland Indicator Status using the *National Wetland Plant List* (2012), which is based on the estimated probability of each plant species' occurrence in wetlands or non-wetlands. The indicator categories for vegetation are as follows:

- **Obligate Wetland (OBL)** – Occur almost always (estimated probability 99%) under natural conditions in wetlands.
- **Facultative Wetland (FACW)** – Usually occur in wetlands (estimated probability 67% to 99%), but occasionally found in non-wetlands.
- **Facultative (FAC) –** Equally likely to occur in wetlands and non-wetlands (estimated probability 34% to 66%).
- **Upland (UPL)** – Rarely occurs in wetlands, but occur almost always (estimated probability greater than 99%) under natural conditions in non-wetlands.

The indicator of the dominant species within each vegetative unit (tree, shrub, and herb) is used to determine if the plant community of an area is characterized as hydrophytic. If greater than 50 percent of the dominant plants in a unit have an indicator status of OBL, FACW or FAC, the vegetation is considered to be hydrophytic.

4.3.2 Soil

Hydric soil indicators have been established to determine whether an area contains the required hydric soil parameters. Soils were assessed in the field using a soil shovel (sharpshooter) to examine soil for hydric indicators to a minimum depth of 16 inches, when possible. Soil characteristics examined include hue, value and chroma, as identified on a Munsell Soil Color Chart (Munsell Color, 2000). Hydric soil indicators include iron-manganese masses, orange mottling, and root oxidation. Mottles are spots or blotches of contrasting color occurring within the soil matrix.

4.3.3 Hydrology

Wetland hydrology is more specifically defined as flooding, ponding, or saturation to the surface for a long or very long duration during the growing season. Long duration is a single event that lasts 7 to 30 days. Very long duration is a single event that lasts more than 30 days. Wetland hydrology is sometimes defined as flooding, ponding, or saturation for 3 – 5 percent of the growing season. Field indicators have been developed to document whether an area meets the mandatory criteria to establish if the required wetland parameters exist. The presence of surface water on a given day is insufficient to establish that an area is flooded, ponded, or saturated for 14 consecutive days. Other indicators have been established and used to assess the duration of soil saturation (i.e. water stained leaves, sediment deposits, watermarks, oxidized root channels). Likewise, the absence of water on the date of wetland delineations does not mean that wetlands are not present. Most wetlands are dry during a portion of the year.

Jurisdictional characteristics of other WoUS include a discernible ordinary high water mark (OHWM) and/or outfall or connection with another WoUS.

5.0 RESULTS

The following section presents the results of the WoUS delineation conducted in the proposed 3.1 mile Arcadia Lake Trail section in Edmond, Oklahoma. A total of 14 locations were examined in detail for the three required wetland parameters necessary (hydrophytic vegetation, hydric soils, and wetland hydrology), as depicted below. The sampling point locations are shown on Exhibit 2 in Appendix A.

Sampling Point No.	Hydrophytic Vegetation	Hydric Soils	Wetland Hydrology	Wetland
1	Yes	Yes	No	**No**
2	No	Yes	No	**No**
3	No	Yes	Yes	**No**
4	No	No	Yes	**No**
5	No	No	No	**No**
6	No	No	No	**No**
7	No	Yes	Yes	**No**
8	Yes	Yes	Yes	**Yes**
9	No	No	No	**No**
10	Yes	Yes	Yes	**Yes**
11	Yes	Yes	Yes	**Yes**
12	No	No	No	**No**
13	Yes	Yes	Yes	**Yes**
14	No	No	No	**No**

5.1 Vegetation

The project area supported the following five plant community types:

1. Post oak – blackjack oak forest community
2. Post oak – Eastern red cedar forest community
3. Oak savannah community
4. Bottomland hardwoods community
5. Small sandy-bottom stream and associated riparian forest community

The site was dominated by a post oak-blackjack oak forest community. The dominant plant species in this community were post oak (*Quercus stellate*) and blackjack oak (*Quercus marilandica*). Other species common to this community include Eastern redbud (*Cercis Canadensis*), roughleaf dogwood (*Cornus drummondii*), winged sumac (*Rhus copallinum*), and winged elm (*Ulmus alata*).

A post oak-Eastern red cedar forest community was common to the site as well. The dominant plant species in this community were post oak and Eastern red cedar (*Juniperus virginiana*). Other species found in this community include Eastern redbud, roughleaf dogwood, winged sumac, and winged elm.

An oak savannah community was found onsite between sampling points 6 and 10. Dominant species in this community included winged sumac, Virginia wildrye (*Elymus submuticus*), and Eastern daisy fleabane (*Erigeron annuus*).

A bottomland hardwoods community was found onsite near sampling points 9 and 12. Dominant species in this community included sugarberry (*Celtis laevigata*) and black walnut (*Juglans nigra*).

A small sandy-bottom stream and associated riparian forest community was found onsite near sampling points 8, 10, 11, and 13. Intermittent tributaries with sandy bottoms were found to flow through these areas. Dominant species in this community type included American elm (*Ulmus americana*), boxelder (*Acer negundo*), and black willow (*Salix nigra*).

A prevalence of hydrophytic vegetation was observed at sampling points 1, 8, 10-11, and 13, although sampling point 1 was found not to be associated with a wetland. Please see the attached data sheets in Appendix B for further vegetation information.

5.2 Hydric Soils

The National Cooperative Soil Survey has identified six soil series to exist onsite: Pulaski fine sandy loam, 0 to 1 percent slopes, occasionally flooded, Harrah fine sandy loam, 3 to 5

percent slopes, Harrah fine sandy loam, 3 to 5 percent slopes, eroded, Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes, Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes, eroded, and Tribbey fine sandy loam, 0 to 1 percent slopes, frequently flooded. Soils within the site were predominantly brown in color.

Positive indicators of hydric soils was observed at sampling points 1-3, 7-8, 10-11, and 13, although sampling points 1-3 and 7 were found not to be associated with a wetland. Please see the attached data sheets in Appendix B for further soils information.

5.3 Wetland Hydrology

Seven areas within the site were identified as having hydrology associated with wetlands. Positive indicators of hydrology within these areas included surface water, sediment deposits, oxidized rhizospheres on living roots, and water-stained leaves.

Positive indicators of wetland hydrology were observed at sampling points 3-4, 7-8, 10-11, and 13, although sampling points 3-4 and 7 were found not to be associated with a wetland. Please see the attached data sheets in Appendix B for further hydrology information.

5.4 Wetlands

Five areas, totaling approximately 1.06 acre within the site area, were identified as potential wetlands (Appendix A, Exhibit 2) and likely jurisdictional. These wetland areas were identified as having the three parameters necessary for a wetland: hydric soil, wetland hydrology, and hydrophytic vegetation. These wetland areas were also located within an area, mapped by FEMA, that is subject to flooding during the 1 percent annual chance flood.

Appendix B provides completed USACE data forms for each of the 14 sampling points. The table above provides a summary of findings at each sampling point. Appendix C provides representative photographs of onsite features.

5.5 Other Waters of the United States

The western start of the proposed Arcadia Lake Trail 3.1 mile portion begins along the southern banks of Spring Creek and follows the Creek to the east. Spring Creek in this area was found to be approximately 20-30 feet wide with an OHWM of approximately 2 feet. Water was present to a depth of approximately 3-12 inches and the bottom was sandy with a great amount of sediment build-up. The eastern end of the Trail portion is just south of Arcadia Lake. The proposed trail crosses three intermittent tributaries.

One intermittent tributary was identified near sample point 13 (Tributary 1). It was found to be approximately 2 feet wide with an OHWM of approximately 6 inches. No water was present and the bottom was sandy.

Another intermittent tributary was identified near sample point 11 (Tributary 2). It was found to be approximately 2 feet wide with an OHWM of approximately 1 foot. No water was present and the bottom was sandy.

A third intermittent tributary was identified near sample point 10 (Tributary 3). It was found to be approximately 2 feet wide with an OHWM of approximately 6 inches. No water was present and the bottom was sandy.

In summary, it is the opinion of Terracon that Spring Creek and the three intermittent tributaries (these three tributaries were identified as having a connection to Spring Creek) exhibiting an OHWM would likely be regulated by the USACE under Section 404 as other waters of the United States. A total of approximately 1,358 linear feet of potentially jurisdictional tributaries were identified within the proposed project area.

6.0 SUMMARY

This report presents the detailed findings of a WoUS delineation assessment conducted in the proposed 3.1 mile Arcadia Lake Trail section in Edmond, Oklahoma County, Oklahoma, located along Arcadia Lake and Spring Creek. The objective of the delineation is to evaluate whether waters of the United States (WoUS), including wetlands, are present within the proposed project area and, if so, to identify the respective boundaries within the site.

During Terracon's assessment, five wetland areas were found to exist onsite, totaling approximately 1.06 acres, that meet the technical criteria of wetlands as defined by the 1987 *Corps of Engineers Wetland Delineation Manual*, along with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0)* (March 2010). It is the opinion of Terracon that these wetlands would likely be considered jurisdictional by the USACE under Section 404 of the Clean Water Act (CWA).

Spring Creek and three intermittent tributaries exhibiting OHWMs were found to flow through the proposed project area. It is the opinion of Terracon that these tributaries would likely be considered jurisdictional by the USACE under Section 404 of the CWA. A total of approximately 1,358 linear feet of potentially jurisdictional tributaries were identified within the proposed project area.

If future development of the project site does not avoid impacts to the wetlands or tributaries, it is the opinion of Terracon that these features would be considered under the jurisdiction of the USACE and a Section 404 permit would ne required. However, for all

onsite areas, only the USACE can make the final determination on the jurisdictional status of wetlands or waterbodies, and on the need for permit processing and compensatory mitigation.

7.0 REFERENCES

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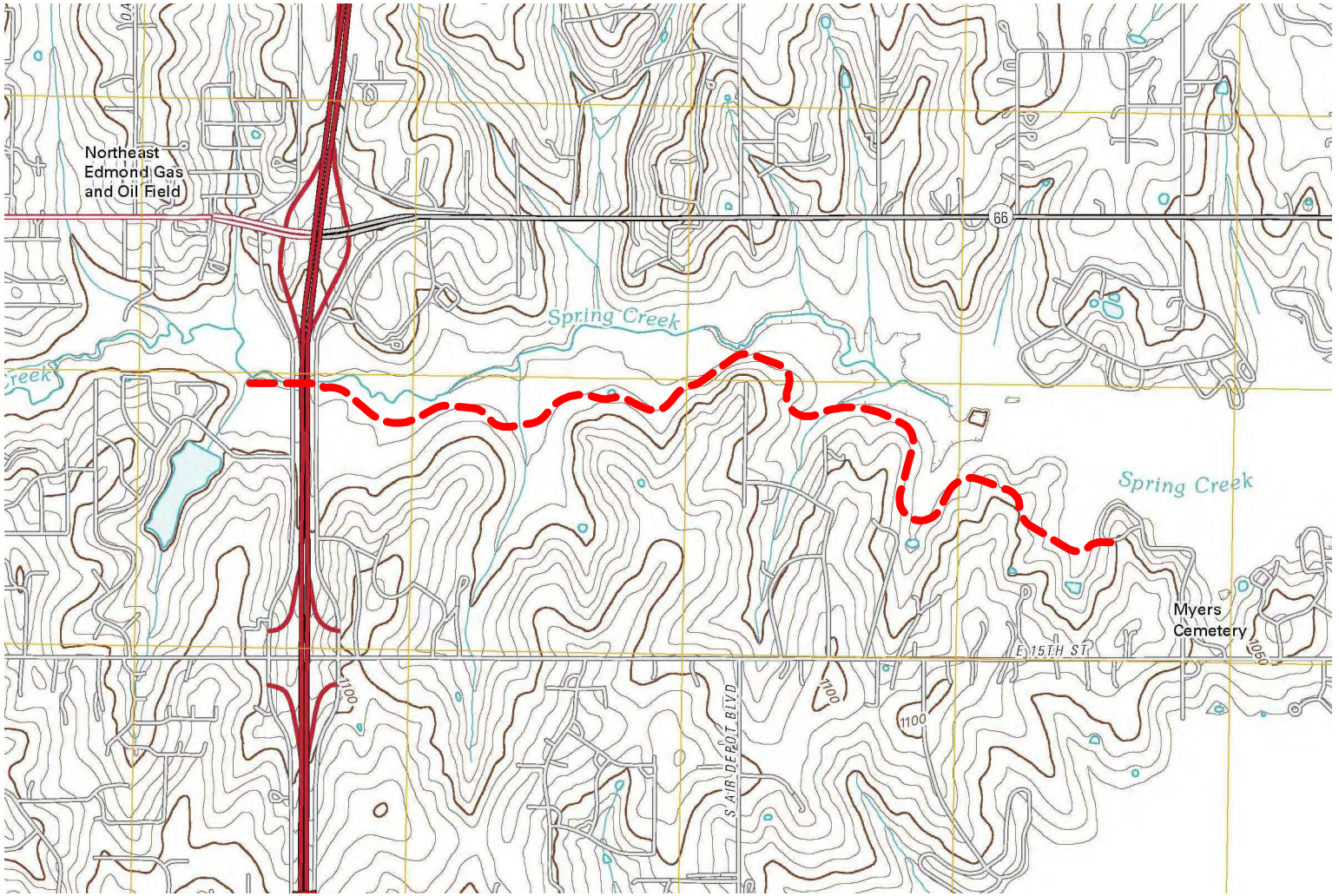
APPENDIX A

Exhibits



Topographic map image courtesy of the U.S. Geological Survey

SCALE 1:24000

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0.5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET

USGS 7.5 MINUTE SERIES TOPOGRAPHIC MAP

STATE OF OKLAHOMA QUADRANGLE

EDMOND, OK

2009

LEGEND

PROPOSED TRAIL

N

Project Mngr: TAB	Project No. 03137074	Terracon Consulting Engineers and Scientists	TOPOGRAPHIC MAP
Drawn By: DWT	Scale: AS SHOWN	4701 N STILES AVE OKLAHOMA CITY, OKLAHOMA 73105	ARCADIA LAKE TRAIL ENVIRONMENTAL ASSESSMENT
Checked By: TAB	File No. 03137074 (DIAG)	PH. (405) 525-0453 FAX. (405) 557-0549	NEAR EDMOND
Approved By: BJO	Date: JULY 2013		EDMOND, OKLAHOMA COUNTY, OKLAHOMA

EXHIBIT 1

2011 AERIAL PROVIDED BY CITY OF EDMOND

N

LEGEND

- PROPOSED TRAIL
- SAMPLING POINT
- WETLANDS AREA
- TRIBUTARIES
- SPRING CREEK

0 600 1200

APPROXIMATE SCALE IN FEET

Project Mngr:	TAB
Drawn By:	DWT
Checked By:	TAB
Approved By:	BJO

Project No.	03137074
Scale:	AS SHOWN
File No.	03137074 (DIAG)
Date:	JULY 2013

Terracon
Consulting Engineers and Scientists
4701 N STILES AVE OKLAHOMA CITY, OKLAHOMA 73105
PH. (405) 525-0453 FAX. (405) 557-0549

SITE DIAGRAM, WETLANDS, OTHER WoUS, AND SAMPLING POINTS MAP

ARCADIA LAKE TRAIL ENVIRONMENTAL ASSESSMENT
NEAR EDMOND
EDMOND, OKLAHOMA COUNTY, OKLAHOMA

EXHIBIT 2

U.S. Fish and Wildlife Service

National Wetlands Inventory

Lake Arcadia Trail

Jul 9, 2013

Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

LEGEND

PROPOSED TRAIL

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

N

User Remarks:

0 660 1320

APPROXIMATE SCALE IN FEET

Project Mngr:	TAB
Drawn By:	DWT
Checked By:	TAB
Approved By:	BJO

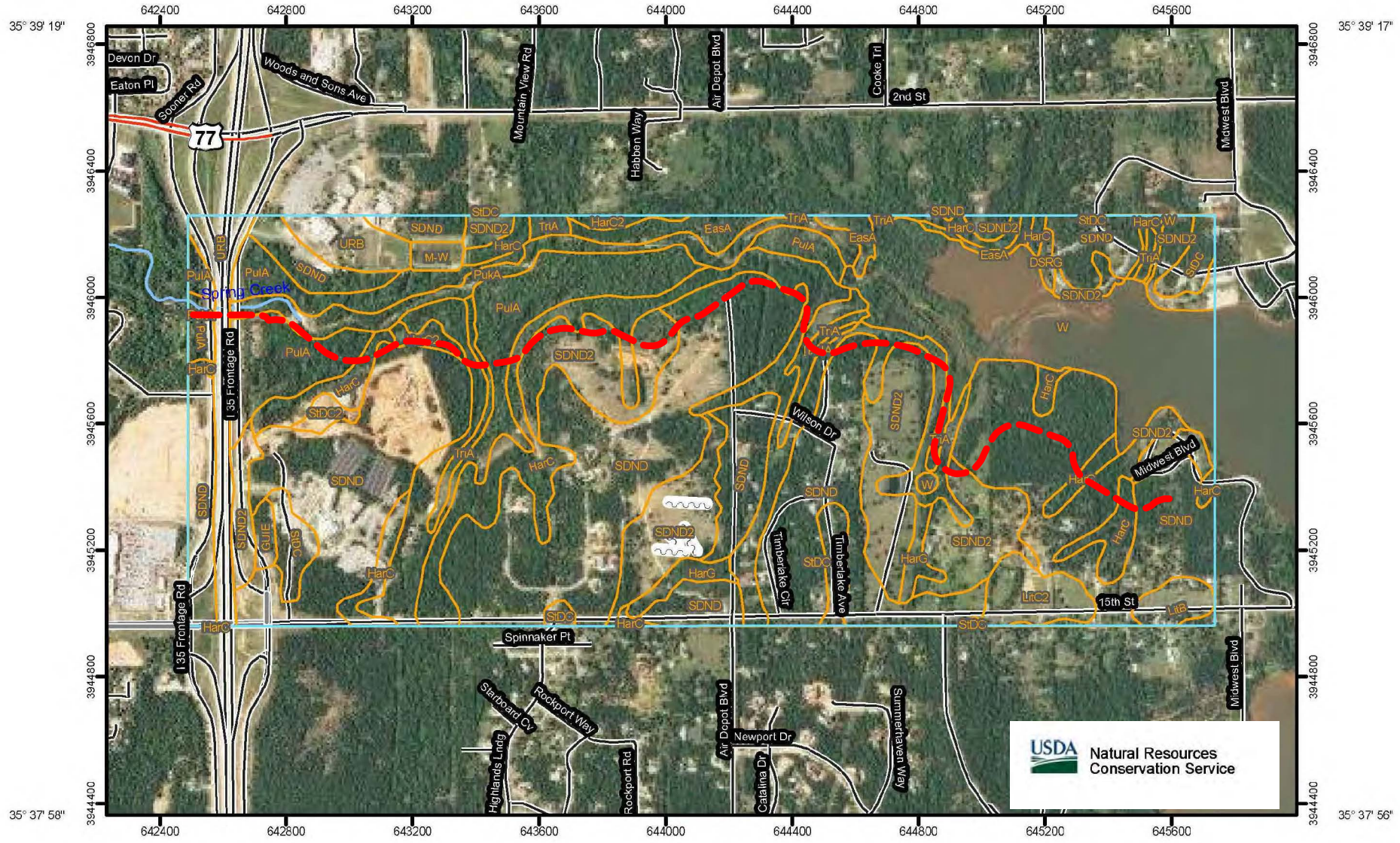
Project No.	03137074
Scale:	AS SHOWN
File No.	03137074 (DIAG)
Date:	JULY 2013

Terracon
Consulting Engineers and Scientists
4701 N STILES AVE OKLAHOMA CITY, OKLAHOMA 73105
PH. (405) 525-0453 FAX. (405) 557-0549

NATIONAL WETLANDS INVENTORY MAP

ARCADIA LAKE TRAIL ENVIRONMENTAL ASSESSMENT
NEAR EDMOND
EDMOND, OKLAHOMA COUNTY, OKLAHOMA

EXHIBIT 3



Project Mngr:	TAB
Drawn By:	DWT
Checked By:	TAB
Approved By:	BJO

Project No.	03137074
Scale:	AS SHOWN
File No.	03137074 (DIAG)
Date:	JULY 2013

Terracon
Consulting Engineers and Scientists
4701 N STILES AVE OKLAHOMA CITY, OKLAHOMA 73105
PH. (405) 525-0453 FAX. (405) 557-0549

SOILS MAP

ARCADIA LAKE TRAIL ENVIRONMENTAL ASSESSMENT
NEAR EDMOND
EDMOND, OKLAHOMA COUNTY, OKLAHOMA

EXHIBIT 4

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevation determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.
ZONE A99	Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0070H

FIRM

FLOOD INSURANCE RATE MAP

OKLAHOMA COUNTY, OKLAHOMA AND INCORPORATED AREAS

PANEL 70 OF 370

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

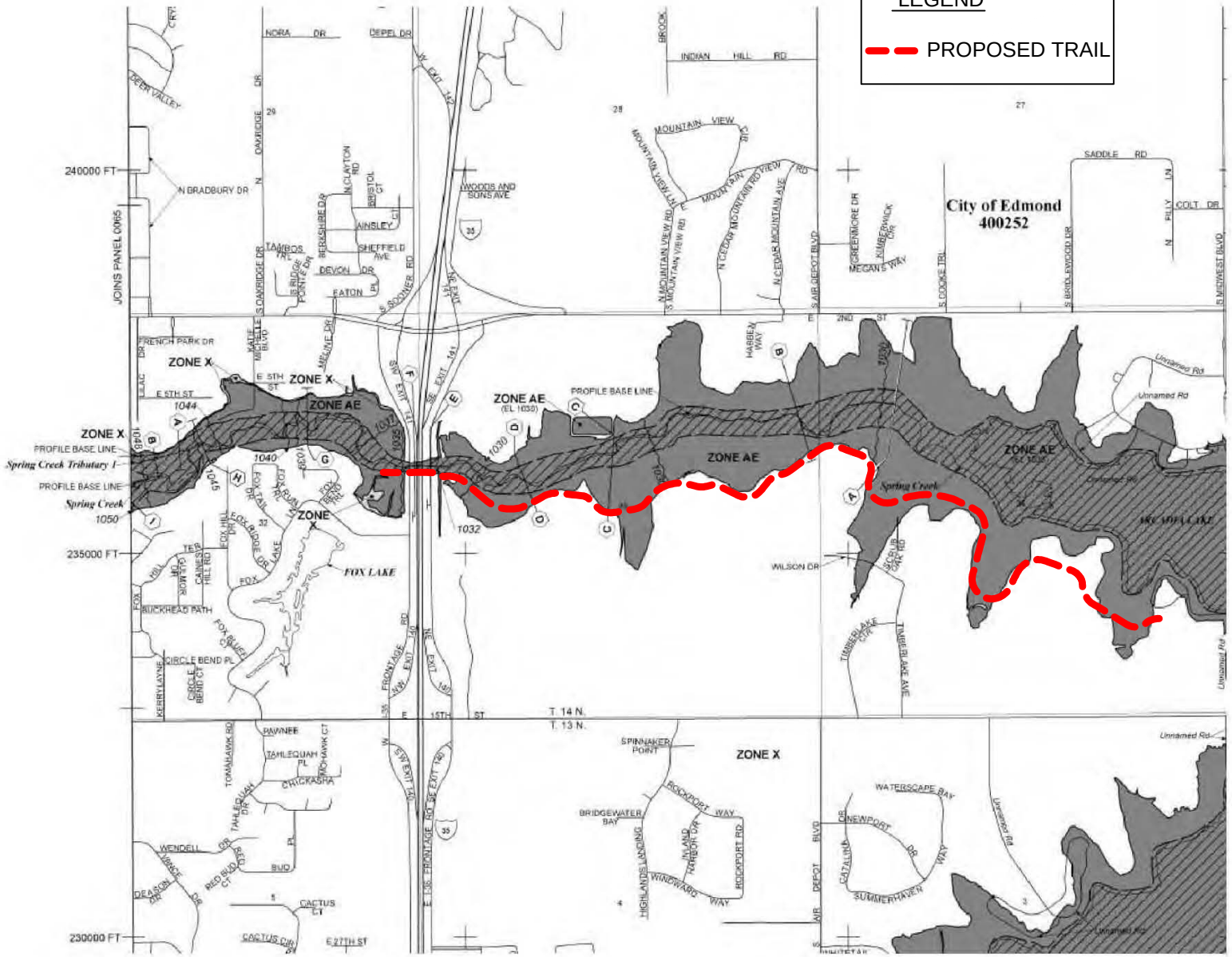
COMMUNITY	NUMBER	PANEL	SUFFIX
EDMOND, CITY OF	400252	0070	H

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used for insurance applications for the subject community.

MAP NUMBER
40109C0070H

REVISED DATE
DECEMBER 18, 2009

Federal Emergency Management Agency



N

0 1000 2000

APPROXIMATE SCALE IN FEET

Project Mngr: TAB	Project No. 03137074	Terracon Consulting Engineers and Scientists	FLOOD INSURANCE RATE MAP
Drawn By: DWT	Scale: AS SHOWN	4701 N STILES AVE OKLAHOMA CITY, OKLAHOMA 73105	ARCADIA LAKE TRAIL ENVIRONMENTAL ASSESSMENT
Checked By: TAB	File No. 03137074 (DIAG)	PH. (405) 525-0453 FAX. (405) 557-0549	NEAR EDMOND
Approved By: BJO	Date: JULY 2013		EDMOND, OKLAHOMA COUNTY, OKLAHOMA

EXHIBIT 5

APPENDIX B

Data Forms

(1)

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake, 3.1 Mile Portion City/County: Edmond, Oklahoma County Sampling Date: 06.18.13
Applicant/Owner: City of Edmond State: OK Sampling Point: 01
Investigator(s): J. Caplinger, T. Guckian, T. Buckham Section, Township, Range: S34 T14N R2W
Landform (hillslope, terrace, etc.): Hill Local relief (concave, convex, none): Concave Slope (%): 8%
Subregion (LRR): LRR H Lat: 35.64184 Long: -97.39319 Datum: WGS84
Soil Map Unit Name: HarC NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ____ No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Blackjack oak – Quercus marilandica	100	Y	NI
2.			
3.			
4.			
	100 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30ft.)			
1. Blackjack oak – Quercus marilandica	30	Y	NI
2. Tree of heaven – Ailanthus altissima	40	Y	FACU
3. Eastern red cedar – Juniperus virginiana	10	N	UPL
4. American elm – Ulmus americana	10	N	FAC
5. Eastern redbud – Cercis canadensis	10	N	UPL
	= Total Cover		
Herb Stratum (Plot size: 30ft.)			
1. Deer tongue – Dichanthelium clandestinum	80	Y	FAC
2. Carex sp. –	20	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30ft.)			
1. Summer grape – Vitis aestivalis	100	Y	FAC
2.			
	100 = Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
✓ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

SOIL

Sampling Point: 01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-2	2.5YR4/4	50				M	Sandy	
			2.5YR2.5/1	50			Sandy	
2-12	2.5YR4/4	80				M	Sandy	
			2.5YR5/8	20			Sandy	
12-16	2.5YR4/6	80				M	Sandy clay	
			2.5YR5/4	20			Sandy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ✓ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks) NONE

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): _____

Water Table Present? Yes ___ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): _____

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

(1)

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake, 3.1 Mile Portion City/County: Edmond, Oklahoma County Sampling Date: 06-18-13

Applicant/Owner: City of Edmond State: OK Sampling Point: 02

Investigator(s): J. Caplinger, T. Guckian, T. Bauchham Section, Township, Range: S34 T14N R2W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 4%

Subregion (LRR): LRR H Lat: 35.64109 Long: -97.39368 Datum: WGS84

Soil Map Unit Name: HarC NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Postoak-Quercus stellata	50	Y	FACU
2. Blackjackoak-Quercus marilandica	50	Y	NI
3.			
4.			
	100	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30ft.)			
1. Roughleaf dogwood-Cornus drummondii	60	Y	FAC
2. Eastern redbud-Cercis canadensis	40	Y	UPL
3.			
4.			
5.			
	100	= Total Cover	
Herb Stratum (Plot size: 30ft.)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
		= Total Cover	
Woody Vine Stratum (Plot size: 30ft.)			
1. Virginia Creeper-Parthenocissus quinquefolia	80	Y	FACU
2. Roundleaf greenbrier-Smilax rotundifolia	20	Y	FAC
	100	= Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species 80	x 3 = 240
FACU species 130	x 4 = 520
UPL species 40	x 5 = 200
Column Totals: 250 (A)	960 (B)

Prevalence Index = B/A = 3.8

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: 02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-2	7.5YR2.5/1	90				M	Sandy	
1-2			7.5YR5/4	10			Sandy	
2-6	7.5YR4/3	60				M	Sandy	
2-6			7.5YR3/2	40			Sandy	
6-16	5YR5/6	90				M	Sandy	
			5YR 2.5/1	10			Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ✓ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks: low chroma.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks) NONE

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

(N)

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake 3.1 Mile Portion City/County: Edmond, Oklahoma County Sampling Date: 06.18.13

Applicant/Owner: City of Edmond State: OK Sampling Point: 03

Investigator(s): J. Caplinger, T. Guckian, T. Bauckham Section, Township, Range: S34 T14N R2W

Landform (hillslope, terrace, etc.): Creek bank Local relief (concave, convex, none): Concave Slope (%): 15

Subregion (LRR): LRR H Lat: 35.64170 Long: -97.39378 Datum: WGS84

Soil Map Unit Name: SDND NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Eastern red cedar – Juniperus virginiana	25	Y	UPL
2. Post oak – Quercus stellata	40	Y	FACU
3. Silver maple – Acer saccharinum	15	N	FAC
4. White oak – Quercus alba	20	Y	FACU
	100	= Total Cover	

Sapling/Shrub Stratum (Plot size: 30ft.)			
1. American beech – Fagus grandifolia	40	Y	FACU
2. Flowering dogwood – Cornus florida	20	Y	FACU
3. Osage orange – Maclura pomifera	20	Y	FACU
4. Eastern red cedar – Juniperus virginiana	20	Y	UPL
5.			
	100	= Total Cover	

Herb Stratum (Plot size: 30ft.)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
		= Total Cover	

Woody Vine Stratum (Plot size: 30ft.)			
1. Roundleaf greenbrier – Smilax rotundifolia	100	Y	FAC
2.			
	100	= Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): 1 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 13% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	115	x 3 =	345
FACU species	140	x 4 =	560
UPL species	45	x 5 =	225
Column Totals:	300 (A)		1130 (B)

Prevalence Index = B/A = 3.8

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: 03

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-3	5Y2.5/1	90				M	Sandy	
1-3			5YR5/6	10			Sandy	
3-16	5YR5/6	100				M	Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Low chroma.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ✓ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✓ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

(1)

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake, 3.1 Mile Portion City/County: Edmond; Oklahoma County Sampling Date: 06.18.13

Applicant/Owner: City of Edmond State: _____ Sampling Point: 04

Investigator(s): J. Caplinger, T. Guchian, T. Bauckham Section, Township, Range: S34 T14N R2W

Landform (hillslope, terrace, etc.): 'Slight hill' Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR): LRR H Lat: 35.64259 Long: -97.39541 Datum: WGS 84

Soil Map Unit Name: SDND NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Post oak – Quercus stellata	10	N	FACU
2. Blackjack oak – Quercus marilandica	90	Y	NI
3.			
4.			
	100	= Total Cover	

Sapling/Shrub Stratum (Plot size: 30ft.)			
1. Post Oak – Quercus stellata	40	Y	FACU
2. Chinese privet – Ligustrum sinense	10	N	UPL
3. Roughleaf dogwood – Cornus drummondii	40	Y	FAC
4. Eastern red cedar – Juniperus virginiana	5	N	UPL
5. Flowering dogwood – Cornus florida	5	N	FACU
	100	= Total Cover	

Herb Stratum (Plot size: 30 ft.)			
1. Deertongue – Dichanthelium clandestinum	100	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	

Woody Vine Stratum (Plot size: 30ft.)			
1. Summer grape – Vitis aestivalis	30	Y	FAC
2. Virginia creeper – Parthenocissus quinquefolia	70	Y	FACU
	100	= Total Cover	

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 – Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 04

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
1-3	7.5YR 3/3	100				M		
3-16	5YR 4/4	100				M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks) NONE

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

(P2)

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake, 3.1 Mile Portion City/County: Edmond; Oklahoma County Sampling Date: 06.18.13

Applicant/Owner: City of Edmond State: OK Sampling Point: 05

Investigator(s): J. Cadinger, T. Guchian, T. Buckham Section, Township, Range: S34 T14N R2W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 2

Subregion (LRR): LRR H Lat: 35.64430 Long: -97.39845 Datum: WGS 84

Soil Map Unit Name: SDND NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Post oak – Quercus stellata	100	Y	FACU
2.			
3.			
4.			
	100 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30ft.)			
1. Eastern redbud – Cercis canadensis	20	Y	UPL
2. Post oak – Quercus stellata	40	Y	FACU
3. Pawpaw – Asimina triloba	10	N	FACU
4. Eastern red cedar – Juniperus virginiana	20	Y	UPL
5. Common privet – Ligustrum sinense	10	N	UPL
	100 = Total Cover		
Herb Stratum (Plot size: 30ft.)			
1. Deertongue – Dichanthelium clandestinum	30	Y	FAC
2. Eastern daisy fleabane – Erigeron annuus	30	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30ft.)			
1. Virginia creeper – Parthenocissus quinquefolia	50	Y	FACU
2. Roundleaf greenbrier – Smilax rotundifolia	50	Y	FAC
	100 = Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): 2 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 = ____	
FACW species ____	x 2 = ____	
FAC species 120	x 3 = 360	
FACU species 230	x 4 = 920	
UPL species 50	x 5 = 250	
Column Totals: 400 (A)	1530 (B)	

Prevalence Index = B/A = 3.8

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: 05

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-3	2.5YR4/3	70				M	Loamy sand	
1-3			2.5YR3/6	30			Loamy sand	
3-16	2.5YR4/6	100				M	Sandy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

NONE

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

NONE

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): _____

Water Table Present? Yes ____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

(B)

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake 3.1 Mile Portion City/County: Edmond, Oklahoma County Sampling Date: 06.18.13

Applicant/Owner: City of Edmond State: OK Sampling Point: 06

Investigator(s): J. Caplinger, T. Gyuckian, T. Baucham Section, Township, Range: S34 T14N R2W

Landform (hillslope, terrace, etc.): Slight hill Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR): LRR H Lat: 35.64212 Long: -97.39845 Datum: WGS84

Soil Map Unit Name: SDND NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 30ft.)			
1. Winged sumac – Rhus copallinum	60	Y	UPL
2. Post oak – Quercus stellata	20	Y	FACU
3. Blackjack oak – Quercus marilandica	20	Y	NI
4.			
5.			
	100 = Total Cover		
Herb Stratum (Plot size: 30ft.)			
1. Needlepod rush – Juncus scirpoides	5	N	FACW
2. Black eyed susan – Rudbeckia hirta	5	N	FACU
3. Virginia wildrye – Elymus submuticus	10	Y	FAC
4. Grassleaf rush – Juncus marginatus	10	N	FACW
5. Eastern daisy fleabane – Erigeron annuus	40	Y	FACU
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30ft.)			
1. Summer grape – Vitis aestivalis	50	Y	FAC
2. Virginia creeper – Parthenocissus quinquefolia	50	Y	FACU
	100 = Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): 2 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 29% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species 15	x 2 =	30
FAC species 90	x 3 =	270
FACU species 115	x 4 =	460
UPL species 60	x 5 =	300
Column Totals: 280 (A)		1060 (B)

Prevalence Index = B/A = 3.8

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: 06

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
1-16	5YR4/6	100				M	Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)** NONE

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks) NONE

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

(2)

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake 3.1 Mile Portion City/County: Edmond, Oklahoma County Sampling Date: 06.18.13
Applicant/Owner: City of Edmond State: OK Sampling Point: 07
Investigator(s): J. Caplinger, T. Gyuchian, T. Bauckham Section, Township, Range: 534 T14N R2W
Landform (hillslope, terrace, etc.): Slight hill Local relief (concave, convex, none): concave Slope (%): 3
Subregion (LRR): LRR H Lat: 35.64582 Long: -97.40168 Datum: WGS84
Soil Map Unit Name: SDND2 NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ✓ No ____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Eastern red cedar – Juniperus virginiana	70	Y	UPL
2. Eastern cottonwood – Populus deltoides	30	Y	FAC
3.			
4.			
	100 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30ft.)			
1. American elm – Ulmus americana	30	Y	FAC
2. Winged sumac – Rhus copallinum	30	Y	UPL
3. Post oak – Quercus stellata	40	Y	FACU
4.			
5.			
	100 = Total Cover		
Herb Stratum (Plot size: 30ft.)			
1. Eastern daisy fleabane – Erigeron annuus	60	Y	FACU
2. Tall thoroughwort – Eupatorium altissimum	20	Y	NI
3. Needlepod rush – Juncus scirpoides	20	Y	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30ft.)			
1.			
2. Summer grape – Vitis aestivalis	100	Y	FAC
	100 = Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): 4 (A)
Total Number of Dominant Species Across All Strata: 9 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 44% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 = ____	
FACW species 20	x 2 = 40	
FAC species 160	x 3 = 480	
FACU species 100	x 4 = 400	
UPL species 100	x 5 = 500	
Column Totals: 380 (A)	1420 (B)	

Prevalence Index = B/A = 3.7

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: 07

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-2	5YR 4/2	100				M	Sandy silt	
2-9	5YR 6/8	100				M	Sandy clay	
9-16	2.5YR 5/8	50				M	Sandy clay	
9-16			10YR 4/6	50			Clay	Purple mottling

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Low chroma.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ✓ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 1-2"

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

(5)

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake ~3.1 mile portion City/County: Edmond, Oklahoma County Sampling Date: 06.19

Applicant/Owner: City of Edmond State: OK Sampling Point: 8

Investigator(s): J. Caplinger, T. Guchian, T. Barickhem Section, Township, Range: S32 T14N R2W

Landform (hillslope, terrace, etc.): stream bank Local relief (concave, convex, none): concave Slope (%): 15%

Subregion (LRR): LRR H Lat: 35.64725 Long: 97.42553 Datum: WGS84

Soil Map Unit Name: PuA NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation N, Soil Y, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ✓

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ✓ No ____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 30ft)			
1. Black willow – Salix nigra	30	Y	FACW
2. Eastern cottonwood – Populus deltoides	20	Y	FAC
3. Silktree – Albizia julibrissin	5	N	NI
4. Winged sumac – Rhus copallinum	15	N	UPL
5. Box elder – Acer negundo	30	Y	FAC
	100 = Total Cover		
Herb Stratum (Plot size: 30ft.)			
1. Sweetclover – Melilotus officinalis	5	N	FACU
2. Torrey's rush – Juncus torreyi	50	Y	FACW
3. Perennial ryegrass – Lolium perenne	40	Y	FACU
4. Tall thoroughwort – Eupatorium altissimum	5	N	NI
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30ft.)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

8

SOIL

Sampling Point: ___

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ (assuming) No ___

Remarks: Flooding recently from storms. Great amount of sediment build-up. Based on surrounding soil conditions, we are assuming the site to have hydric soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ✓ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

(4)

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake, 3.1 Mile Portion City/County: Edmond, Oklahoma County Sampling Date: 06-19-13

Applicant/Owner: City of Edmond State: OK Sampling Point: 9

Investigator(s): J. Caplinger, T. Guckian, T. Banckham Section, Township, Range: S33 T14N R2W

Landform (hillslope, terrace, etc.): Slight hill Local relief (concave, convex, none): concave Slope (%): 1%

Subregion (LRR): LRR H Lat: 35.64629 Long: -97.41801 Datum: WGS 84

Soil Map Unit Name: HarC2 NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30ft)			
1. Prickly pear – Opuntia polyacantha	10	N	NI
2. Sugarberry – Celtis laevigata	40	Y	FAC
3. Post oak – Quercus stellata	50	Y	FACU
4.			
5.			
	100	= Total Cover	
Herb Stratum (Plot size: 30ft)			
1. Eastern daisy fleabane – Erigeron annuus	20	Y	FACU
2. Winter vetch – Vicia villosa	10	N	NI
3. Salsify – Tragopogon porrifolius	10	N	NI
4. Tall poppymallow – Callirhoe leiocarpa	10	N	NI
5. Giant ragweed – Ambrosia trifida	30	Y	NI
6. Perennial ryegrass – Lolium perenne	20	Y	FACU
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30ft)			
1.			
2.			
	____	= Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 = ____	
FACW species ____	x 2 = ____	
FAC species 40	x 3 = 120	
FACU species 90	x 4 = 360	
UPL species ____	x 5 = ____	
Column Totals: 130 (A)	480 (B)	

Prevalence Index = B/A = 3.7

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: 9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-16	5YR 4/6	100					Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

NONE

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

NONE

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

(3)

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake 3.1 Mile Portion City/County: Edmond, Oklahoma County Sampling Date: 06-20-13

Applicant/Owner: City of Edmond State: OK Sampling Point: 10

Investigator(s): J. Caplinger, T. Guckian, T. Baudcham Section, Township, Range: S34 T14N R2W

Landform (hillslope, terrace, etc.): Pond bank Local relief (concave, convex, none): Concave Slope (%): 20%

Subregion (LRR): LRR H Lat: 35.64207 Long: -97.40014 Datum: WGS84

Soil Map Unit Name: TriA NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ✓ No ____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Blackwillow – Salix nigra	40	Y	FACW
2. Post oak – Quercus stellata	60	Y	FACU
3.			
4.			
	100	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30ft.)			
1. Eastern red cedar – Juniperus virginiana	30	Y	UPL
2. Sugarberry – Celtis laevigata	20	Y	FAC
3. Box elder – Acer negundo	10	Y	FAC
4. Roughleaf dogwood – Cornus drummondii	30	Y	FAC
5.			
	100	= Total Cover	
Herb Stratum (Plot size: 30ft.)			
1. Silverleaf nightshade – Solanum elaeagnifolium	80	Y	NI
2. Browneyed Susan – Rudbeckia triloba	20	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30ft.)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): 4 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

SOIL

Sampling Point: 10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-2	2.5YR3/1	100				M	Sandy loam	
2-16	2.5YR4/4	100				M	Sandy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks: Low chroma.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 1-2"

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

(5)

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake, 3.1 Mile Portion City/County: Edmond, Oklahoma County Sampling Date: 06-20-13

Applicant/Owner: City of Edmond State: OK Sampling Point: 11

Investigator(s): J. Caplinger, T. Guckian, T. Buckham Section, Township, Range: 34 T14N R2W

Landform (hillslope, terrace, etc.): Creek bed Local relief (concave, convex, none): Concave Slope (%): 10%

Subregion (LRR): LRR H Lat: 35.64594 Long: -97.40457 Datum: WGS84

Soil Map Unit Name: TriA NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ✓ No ____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Eastern cottonwood - Populus deltoides	30	Y	FAC
2. Boxelder - Acer negundo	30	Y	FAC
3. Eastern red cedar - Juniperus virginiana	10	N	UPL
4. Red maple - Acer rubrum	40	Y	FAC
	100	= Total Cover	

Sapling/Shrub Stratum (Plot size: 30 ft.)			
1. Red mulberry - Morus rubra	70	Y	FACU
2. American elm - Ulmus americana	30	Y	FAC
3.			
4.			
5.			
	100	= Total Cover	

Herb Stratum (Plot size: 30 ft.)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	____	= Total Cover	

Woody Vine Stratum (Plot size: 30 ft.)			
1. Roundleaf greenbrier - Smilax rotundifolia	100	Y	FAC
2.			
	100	= Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
FACW species ____	x 2 =	____
FAC species ____	x 3 =	____
FACU species ____	x 4 =	____
UPL species ____	x 5 =	____
Column Totals: ____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-5	7.5YR 4/6	62%				M	Sandy clay	
1-5			Gley 1 8/5GY	3%			Sandy clay	
1-5			Gley 1 2.5/N	35%			Sandy clay	
5-16	7.5YR 6/6	75%				M	Sandy clay	
5-16			5YR 2.5/2	25%			Sandy clay	Black streaking

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ✓ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ✓ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ✓ Water Marks (B1)
- ✓ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Dry-Season Water Table (C2)
- ✓ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ✓ Surface Soil Cracks (B6)
- ✓ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

(4)

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake Trail 3.1 Mile Portion City/County: Edmond, Oklahoma County Sampling Date: 06.20.13

Applicant/Owner: City of Edmond State: OK Sampling Point: 12

Investigator(s): J. Caplinger, T. Guckian, T. Baucham Section, Township, Range: S33 T14N R2W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0%

Subregion (LRR): LRR H Lat: 35.64553 Long: -97.41208 Datum: WGS84

Soil Map Unit Name: SDND2 NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Black walnut – Juglans nigra	100	Y	FACU
2.			
3.			
4.			
	100 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30ft.)			
1. Post oak – Quercus stellata	100	Y	FACU
2.			
3.			
4.			
5.			
	100 = Total Cover		
Herb Stratum (Plot size: 30ft.)			
1. Eastern daisy fleabane – Erigeron annuus	30	Y	FACU
2. Black-eyed Susan – Rudbeckia hirta	20	Y	FACU
3. Tall thoroughwort – Eupatorium altissimum	50	Y	NI
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30ft.)			
1. Roundleaf greenbrier – Smilax rotundifolia	100	Y	FAC
2.			
	100 = Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 17% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species 100	x 3 =	300
FACU species 250	x 4 =	1000
UPL species	x 5 =	
Column Totals: 350 (A)		1300 (B)

Prevalence Index = B/A = 3.7

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

Sampling Point: 12

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
1-16	5YR 5/4	100%				M	Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

NONE

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

NONE

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

(5)

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake Trail, 3.1 Mile Portion City/County: Edmond; Oklahoma County Sampling Date: 06.20.13
Applicant/Owner: City of Edmond State: OK Sampling Point: 13
Investigator(s): J. Caplinger, T. Guchian, T. Baughman Section, Township, Range: S33 T14N R2W
Landform (hillslope, terrace, etc.): Creekbank Local relief (concave, convex, none): Concave Slope (%): 5%
Subregion (LRR): LRR H Lat: 35.64547 Long: -97.41605 Datum: WGS84
Soil Map Unit Name: LriA NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ✓ No ____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Blackwillow – Salix nigra	10	N	FACW
2. American elm – Ulmus americana	90	Y	FAC
3.			
4.			
	100 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30ft.)			
1. Eastern cottonwood – Populus deltoides	70	Y	FAC
2. American elm – Ulmus americana	30	Y	FAC
3.			
4.			
5.			
	100 = Total Cover		
Herb Stratum (Plot size: 30ft.)			
1. Deertongue – Dichanthelium clandestinum	100	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30ft.)			
1. Blackberry sp. – Rubus sp.	100	Y	FAC
2.			
	100 = Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): ____ (A)
Total Number of Dominant Species Across All Strata: ____ (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
✓ 1 - Rapid Test for Hydrophytic Vegetation
__ 2 - Dominance Test is >50%
__ 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

SOIL

Sampling Point: ___ 13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-16	5YR 5/8	97%				M	Sandy clay	
1-16			5YR 2.5/1	3%			Sandy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ✓ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ✓ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ✓ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ✓ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): @ 10"

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

(9)

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake Trail, 3.1 Mile Portion City/County: Edmond, Oklahoma County Sampling Date: 06.20.13

Applicant/Owner: City of Edmond State: OK Sampling Point: - 14

Investigator(s): J. Caplinger, T. Guckian, T. Bancham Section, Township, Range: S33 T14N R2W

Landform (hillslope, terrace, etc.): Slight hill Local relief (concave, convex, none): concave Slope (%): 2%

Subregion (LRR): LRR H Lat: 35.64546 Long: -97.42042 Datum: WGS 84

Soil Map Unit Name: HarC NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Eastern red cedar – Juniperus virginiana	90	Y	UPL
2. American elm – Ulmus americana	10	N	FAC
3.			
4.			
	100	= Total Cover	

Sapling/Shrub Stratum (Plot size: 30ft.)			
1. Eastern red cedar – Juniperus virginiana	50	Y	UPL
2. Black walnut – Juglans nigra	20	Y	FACU
3. Post oak – Quercus stellata	30	Y	FACU
4.			
5.			
	100	= Total Cover	

Herb Stratum (Plot size: 30ft.)			
1. Tall thoroughwort – Eupatorium altissimum	30	Y	NI
2. Eastern daisy fleabane – Erigeron annuus	40	Y	FACU
3. Deer tongue – Dicanthelium clandestinum	30	Y	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	

Woody Vine Stratum (Plot size: 30ft.)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): 1 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 14% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	____	x 1 =	____
FACW species	____	x 2 =	____
FAC species	40	x 3 =	120
FACU species	90	x 4 =	360
UPL species	140	x 5 =	700
Column Totals:	270 (A)		1180 (B)

Prevalence Index = B/A = 4.4

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: 14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-16	5YR 4/3	100%				M	Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

NONE

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

NONE

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

APPENDIX C

Photographs

Photo #1 Sample point 1; view looking east.

Photo #2 Tributary approximately 50 feet east of Sample point 4.

Photo #3 Sample point 9; view looking west.

Photo #4 Sample point 10; view looking southwest at Turner Pond.

Photo #5 Pipeline markers observed along the proposed trail path between Sample points 7 and 10.

Photo #6 Sample point 11 within an intermittent stream to be impacted by proposed trail path.

Photo #7 Overall view of the proposed trail path between Sample points 11 and 12.

Photo #8 Sample point 12; view looking north.

Photo #9 Sample point 13; view looking west.

Photo #10 Spring Creek overpass, view looking east, to be impacted by the proposed trail path.

APPENDIX C – Cultural Resources Report

Phase I
Archaeological Survey Report

Associated with the
Arcadia Lake
Proposed City of Edmond
Arcadia Lake Multi-Use Project
Oklahoma County, Oklahoma
February 22, 2013

Prepared for:
City of Edmond
2733 Marilyn Williams Drive
Edmond, Oklahoma 73003

Prepared by:

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Oklahoma County, Oklahoma

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ORA Project #: 2012-1116

Authored by:

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Reviewed by:

Thomas E. Gruber, Principal Investigator

07/09/2013
Date

DISCLAIMER

This archaeological field inspection was performed by Open Range Archaeology, LLC (ORA) with all reasonable skill, care, and diligence ordinarily exercised, under similar circumstances, by professional consultants practicing in this or similar localities (within the terms of the Contract with the client) no other warranty expressed or implied, is made. **ORA disclaim responsibility for any incorrect information that may have been supplied by agencies, organizations, or individuals that may be included in the findings or recommendations of this report.** ORA claim no responsibility for any environmental issues or impacts to cultural resources, the detection of which would require examinations beyond the scope of this evaluation. This report is confidential and specifically for use by the City of Edmond (Client). Use of or reliance upon this information by any other party without express written permission granted by ORA and the Client is not authorized and is completely at the risk of the user.

ABSTRACT

At the request of the City of Edmond, Open Range Archaeology, LLC (ORA project # 2012-1116) conducted a Phase I Archaeological Investigation of approximately 260 acres for the proposed City of Edmond Arcadia Lake Multi-Use Project. Specifically, the proposed City of Edmond Arcadia Lake Multi-Use Project lies within multiple sections (see Table 1 Legal Descriptions) within T14N R2W and T13N R2W on Edmond, Arcadia, Jones, and Spencer Quadrangles, Oklahoma County, Oklahoma (Appendix A: Maps). Access to the property was gained via Public Roads Air Depot Road that runs around the project area. For archaeological purposes, the approximate 260 acre study area was surveyed (Appendix A: Maps).

This project is located on land with adjacent waterways under the jurisdiction of the United States Army Corps of Engineers (USACE). Therefore, a "Section 106 Review" for cultural resources that could be affected by the proposed project would be required. The proposed City of Edmond Arcadia Lake Multi-Use Project consists of approximately 260 acres of equestrian and pedestrian trail Installation (Appendix A: Maps). The proposed trail will require the area to be cleared and the placement of paved asphalt approximately eighteen (18) feet in width for the pedestrian trail. The majority of the current equestrian trail will remain unchanged.

ORA has conducted a Phase I Archival Review and determined that thirty (30) previously recorded cultural resources (see Table 2 Cultural Resources), twenty-three (23) prehistoric and seven (7) historic sites were located **within one (1) mile** of the proposed project location within Oklahoma County, Oklahoma (Appendix A: Maps). Of the seven (7) historic properties only Five (5) structures can be identified on the 1964 USGS Aerial map (Appendix A: Maps). Examination of the historic maps and aerials for the study area did indicate a potential for encountering historic (19th and 20th century) cultural resources. No known GLO structures are known to exist within the NEPA study area. The field survey revealed five (5) previously unrecorded cultural resources located within the study area **(34OK229, 34OK230, 34OK231, 34OK232, 34OK233**) (Appendix A: Maps).

Based upon this review of the proposed route, the identified cultural resources will be avoided by fifty (50) meters or more, except for the following locations: **34OK42, 34OK45, 34OK207**, **34OK209, 34OK229, 34OK230**, **34OK231, 34OK232, and 34OK233** (Appendix A: Maps). While these nine sites may be impacted they are not eligible to be nor are they listed in the National Register of Historic Places (NRHP). Therefore, no potentially eligible NRHP properties or places would be affected by the proposed City of Edmond Arcadia Lake Multi-Use Project. ORA anticipate that the project may proceed without further cultural resources evaluation.

Project personnel should be aware that negative results do not guarantee cultural resources are absent. Buried cultural materials such as pottery, chipped stone, bone, metal, glass, brick and other materials may be encountered during construction activities. In the event of discovery, all activities that could potentially disturb the site should cease, ORA and the State Archaeologist at the Oklahoma Archeological Survey should then be notified promptly in order to determine the possible significance and/or mitigation measures of the cultural materials before construction activities can continue.

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Appendix A – Maps
Appendix B – NRCS Soil Report
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Appendix D – Site Forms
Appendix E – Communications

1.0 Proposed Action

ORA are providing archaeological consulting services to the City of Edmond for The City of Edmond Arcadia Lake Multi-Use Project (ORA project # 2012-1116) in Oklahoma County, Oklahoma (Appendix A: Maps). The entire project encompasses approximately 260 acres in multiple sections (Table 1) within T13N R2W and T14N R2W on Edmond, Arcadia, Jones, and Spencer Quadrangles, Oklahoma County, Oklahoma (Appendix A: Maps). Access to the property was gained via Public Roads; Air Depot Road that runs around the project area. For archaeological purposes, the approximate 260 acre study area was surveyed.

Table 1. Legal Descriptions for Survey Area

Township and Range	Section	Quadrangle
T14N R2W	32, 33, 34, 35, 36	Edmond, Arcadia
T13N R2W	1, 2, 3, 9, 10,	Edmond, Arcadia, Jones, Spencer

2.0 Pre-field Investigation and Archival Records Search

An archival records search was completed on January 4th utilizing data at the Oklahoma Archaeological Survey (OAS), in Norman, Oklahoma, USGS map server (http://eros.usgs.gov/), and the BLM General Land Office Records (http://www.glorecords.blm.gov/). Prefield investigation was carried out in order to ensure that no known prehistoric or historic archaeological sites existed near the project location. Prefield investigation included four (4) previous research projects carried out within the project area. Two (2) pre-reservoir investigations (Neal 1973 and Hartley 1976) and two (2) post-reservoir investigations (Ricker 2008 and Gruber and Gruber 2012) were included in prefield research. The initial cultural resource review at the proposed Arcadia Lake Reservoir was undertaken by Larry Neal (1973). The Neal survey was initiated to identify cultural resources present before the construction of Arcadia Lake Reservoir. The Neal survey identified sixteen (16) sites; in which two (2) were tested, none were historic period sites. Of the sixteen (16) Neal (1973) sites identified he recommended none for preservation. A resurvey of the initial Neal (1973) project area was performed from May 17 through June 11, 1976 by John D. Hartley. The investigation by Hartley (1976) re-identified and assessed the potential significance of fifteen (15) sites previously recorded. Hartley determined that none were significance and did not recommend further investigation. A post-reservoir investigation was initiated by Jim Ricker (2008) for the Oklahoma Department of Wildlife Conservation (ODWC) as a proactive cultural review performed for the proposed educational facility and parking area. The re-investigation by Ricker covered approximately 500 acres identified eight (8) new cultural resources one (1) prehistoric and seven (7) historic); none were determined to be significant and most completely destroyed. The Open Range Archaeology (Gruber 2012) was initiated by the City of Edmond prior to the installation of the proposed boating/fishing access area. A Phase I intensive archaeological survey was conducted of approximately 30 acres in March of 2012. The survey revealed no archaeological site or historic places.

Table 2. Known Cultural Resources For Arcadia Lake Area

Site Number	Quadrangle
OK09, OK24, OK207, OK176, OK206, OK207	Jones 1955
OK19, OK36, OK37, OK45, OK210	Arcadia 1966
OK40, OK41, OK42, OK43,OK147, OK205, OK208, OK209	Spencer 1986
OK20, OK21, OK22, OK23, OK38, OK39, OK44, OK57, OK92, OK203, OK204	Edmond 1966

34OK09

34OK09 is a possible site in a washed out area on a high knoll along the north ridge of the North Canadian River bottom. Artifacts found are a Calf Creek white Chert (Frisco?) and flaking debris of Ogallala Chert.

Eligibility to the National Register (NRHP) has not been assessed for this site.

34OK24

34OK24 is a site on a ridge arm on the east side of Tinker Creek where it enters the Deep Fork Valley. Site extent is indicated to be approximately 2 acres. The site area has been previously cleared and turned over. Artifacts found are a Palmillas Type dart point, 2 preforms, and Ogallala Chert flakes.

Eligibility to the National Register (NRHP) has not been assessed for this site.

34OK176

34OK176 is identified as the Chitwood Cemetery site. This is a historic non-Indian cemetery consisting of 15+ graves with approximate 50 x 50 feet with a fenced enclosure (Cojean 2002). The grave dates range from 1897 (O.E. Chaffin), 1893 (H. Chitwood), 1912 (M.A. Horney), 1936 (G.W. Chitwood), 1944 (E. Chitwood), 1947 (C.A. Stevens), 1958 (A. Stevens), 1960 (L. Snyder), and one unknown grave marked, but illegible tombstone (okcemeteries.net).

Chris Cojeen argues that this is a 1890-1960 fenced cemetery and disturbance should be avoided and considers it an Inventory site. This site is Eligible to be listed on the National Register (NRHP) under Criteria D and possibly A, B, and C that were not investigated.

34OK206

34OK206 is a historic non-Indian, historic farmstead 72 meters x 25 meters in area, including a large 15 x 8 meter, pattern of stem walls. There is a front door stoop at the end of the visible north end and a three (3) meter diameter cellar depression. Also present at the location is a concentration of asphalt concrete in a ditch, which was identified as a formal access road and

gravel parking lot. Prefield investigation did not reveal this location on maps or aerial photographs; however the photo-revised Jones Quadrangle map does indicate a structure at this location (Appendix A: Maps). Post-field research indicated that the U.S. Government awarded the original patent to A. Smith in 1897, the property was then deeded it to M. Gunderman, except for one acre in the SE/4 for a school house in 1898. In that same year Gunderman deeded it to John Nare except for the one acre school house. John and Louisa Nare then deeded it to W.A. Chitwood, except for the school house acreage. In 1922 Chitwood deeded thirty-two (32) acres including this location to Fred Harmon. In 1955 the Oklahoma County Clerk awarded the property to Pearl Harmon (Fred's widow). Pearl Harmon deeded it to her son Edmond Harmon, who later sold it to the U.S Government in 1981.

Jim Ricker (2008) argues that this site reflects a very recent occupation and is not significant at this time. Likewise, during the ORA field investigation we discovered that the site is completely destroyed and contains little remaining integrity or research potential. The site has been inventoried, but is not likely to yield further information and should not be considered for potential eligibility to the National Register (NRHP).

34OK207

34OK207 is a historic non-Indian, historic farmstead 40 meters x 30 meters in area, including a large concentration of concrete debris located three (3) meters from Arcadia Lake shoreline that could represent slab remains. A 1.2 meter m^2 concrete water wind pump platform located approximately twenty-five (25) meters from the shoreline. Artifacts include on wire nail and one flat clear fragment of glass. Prefield investigation indicated a possible structure at this location on the 1951 aerial photographs the photo-revised Jones Quadrangle map also indicates a structure at this location (Appendix A: Maps). It is indicated in the site form that this structure may represent the schoolhouse associated with 34OK206. Post-field research indicated that the U.S. Government awarded the original patent to A. Smith in 1897, who then deeded it to M. Gunderman, except for one acre in the SE/4 for a school house in 1898. In that same year Gunderman deeded it to John Nare except for the one acre school house. John and Louisa Nare then deeded it to W.A. Chitwood, except for the school house acreage. In 1922 Chitwood deeded 32 acres including this location to Fred Harmon. In 1955 the Oklahoma County Clerk awarded the property to Pearl Harmon (Fred's widow). Pearl Harmon deeded it to her son Edmond Harmon, who later sold it to the U.S Government in 1981.

Jim Ricker (2008) argues that the site is completely destroyed and contains little remaining integrity or research potential. The site has been inventoried, but is not likely to yield further information and should not be considered for potential eligibility to the National Register (NRHP).

34OK19

34OK19 is a site occupying a narrow corridor for a natural mound made up of sandstone blocks approximately 30x12 feet. Artifacts identified at this site consist of Flakes made from Ogallala Chert.

Eligibility to the National Register (NRHP) has not been assessed for this site.

34OK36
34OK36 was originally identified as on the top of a hill sloping toward Tinker Creek and to the north toward Deep Fork River. Artifacts identified were one Maude-like arrow point base, scrapers, flakes, some Kay County Flint and Ogallala Chert. This site was later reassessed in 2008. The site was located again and it was identified approximately 25 meters north of the Arcadia Lake shoreline leaving approximately 60% of the site boundary under water. Only one secondary flake was noted on the shoreline during the 2008 revisit.

Eligibility to the National Register (NRHP) has not been assessed for this site.

34OK37
34OK37 is a site located on a small gravelly knoll approximately 10 feet above the Deep Fork floodplain and is about 80 feet in diameter. Artifacts identified were several large Peoria Flint scrapers and Ogallala Chert flakes and scrapers.

Eligibility to the National Register (NRHP) has not been assessed for this site.

34OK45
34OK45 is a site located on a small ridge projecting in a valley south of Spring Creek. Artifacts identified were one biface fragment and three flakes.

Eligibility to the National Register (NRHP) has not been assessed for this site. However, during the ORA field investigation we discovered that the site was completely destroyed during the construction of the dam where the surface was cleared to bedrock and no artifacts were identified. Thus the site contains little to no remaining integrity or research potential. The site has been inventoried, but is not likely to yield further information and should not be considered for potential eligibility to the National Register (NRHP).

34OK210
34OK210 is a historic non-Indian, historic farmstead 30 x 18 meters in area, 250 meters from Arcadia Lake shoreline, located on an east-facing ridge toe. The visible parts appear to be the remains of a dugout carved out of the eastern end of the ridge toe evidenced by the presence of a 30cm thick, 11.0 meter long, western wall. This wall may have extended further as evidenced by the presence of fractured sandstone blocks, concrete, cinderblocks, and tile bricks. Artifacts include a few metal fragments and many glass fragments of different color hues several that are ornately decorated. Prefield investigation reveals this location on 1951 aerial photographs and on the 1966 (1981) Arcadia Quadrangle map (Appendix A: Maps). Post-field research indicated that the U.S. Government awarded the original patent to A. Smith in 1897, who then deeded it to M. Gunderman, except for one acre in the SE/4 for a school house in 1898. In that same year Gunderman deeded it to John Nare except for the one acre school house. John and Louisa Nare then deeded it to W.A. Chitwood, except for the school house acreage. In 1922 Chitwood deeded 32 acres including this location to Fred Harmon. In 1955 the Oklahoma County Clerk awarded the property to Pearl Harmon (Fred's widow). Pearl Harmon deeded it to her son Edmond Harmon, who later sold it to the U.S Government in 1981.

Jim Ricker (2008) argues that the site is completely destroyed and contains little remaining integrity or research potential. The site has been inventoried, but is not likely to yield further information and should not be considered for potential eligibility to the National Register (NRHP).

34OK40
34OK40 is a site on the side of a hill or ridge, above an intermittent stream running to the Deep Fork River. Artifacts identified were possible cores, flakes, and one carver.

Eligibility to the National Register (NRHP) has not been assessed for this site.

34OK41
34OK41 is a site located on the slope of a hill overlooking a creek that runs to the Deep Form River. Artifacts identified were one arrow point fragment, one dart point fragment, scrapers, and flakes.

Eligibility to the National Register (NRHP) has not been assessed for this site.

34OK42
34OK42 is a site located on a hill top of a small stream flowing to the Deep Fork River. Artifacts identified were scrapers and lithic debris.

Eligibility to the National Register (NRHP) has not been assessed for this site. However, during the ORA field investigation we discovered that the site is most likely under Memorial Road as we place four shovel tests at 10 meter spacing along the northern edge of the site and no artifacts were discovered. However, the southern boundary was not assessed and significant resources may be present south of Memorial Road.

34OK43
34OK43 is a site located on top of a ridge between two small spring fed streams flowing to the Deep Fork River. Artifacts identified were one small core scraper and flakes.

Eligibility to the National Register (NRHP) has not been assessed for this site.

34OK147
34OK147 is a Woodland Plains open habitation site without mounds located on a dissected upland area on a permanent spring feeding into the Deep Fork River. Artifacts identified are two Scallorn points, one biface, and one flake of unidentified gray chert. This site is highly disturbed with two pipelines bisecting the site.

Francie Gettys argues that the site has little research potential because the artifacts are so scarce. However, she discusses the possibility of buried materials which indicates the need for further testing to determine the sites potential eligibility to the National Register (NRHP).

34OK205

34OK205 is a historic non-Indian, historic farmstead 18 meters x 17 meters in area, including a large 13.5 x 13.0 meters, well preserved structural slab with no apparent internal stem walls. Floor plan suggests one main living area, back and front porches. Artifacts identified are wire, nails pane glass fragments, copper conduit or plumb piping fragments, and asbestos siding. Prefield investigation did not reveal this location on maps or aerial photographs. Post-field research indicated that the U.S. Government awarded the original patent to S. Wilbur in 1891, who then deeded it to R.A. Lord later in 1891. Subsequently R.A. Lord deeded the property to J. Pence in 1892, which then deeded it to W. Young (date missing). Young then deeded the land I. Dawson in 1911; Dawson to India Dawson in 1912; India Sawson to Jessie Harrah 1919; County Clerk to C.S. Harrah after Jessie's death in 1946; Joy Christman (executrix) to G. Spunaugle via Executors Deed in 1975; and Spunaugle to U.S. Government in 1984. The research suggest that the site represents a habitation structure built between 1951 and the 1960's and inhabited by either the Richard Christman or Glenn Spunaugle families, or both.

Jim Ricker (2008) argues that this site reflects a very recent occupation and is not significant at this time. Likewise, during the ORA field investigation we discovered that the site is completely destroyed and contains little remaining integrity or research potential. The site has been inventoried, but is not likely to yield further information and should not be considered for potential eligibility to the National Register (NRHP).

34OK208

34OK208 is a historic non-Indian, historic farmstead 32 meters x 30 meters in area, including two sets of stem walls covering concrete slabs in each, but without slab between. The western stem walls contain what appears to be a 2.5 meter wide, concrete porch, walkway or staircase slab. There is a dense scatter of artifacts identified throughout the site with most concentrated amongst the stem walls and include wire nails, clear flat and vessel glass fragments, one aqua-colored glass fragment modified into a tool, red-colored brick fragments, mortar fragments, burned wood fragments, and corrugated metal. Prefield investigation reveals this location on 1951 aerial photographs, but the 1995 Spencer Quadrangle map does not (Appendix A: Maps). Post-field research indicated that the U.S. Government awarded the original patent to Z. Smales in 1894, Smales then deed the 40 acres (N/2 of the NE/4 of the NE/4) includes this structure to S. Smales on 1896. County deed books include a break in the transfers for this property until 1966 when Lilia Chitwood deeds the property to R.W. Chitwood. In 1980 R. W., Iris, and Hattie Chitwood sell their interests in this property to B &R Farms. Finally the property is acquired by the U.S. Government for "public use" in 1981. The site form indicates that this site may be connected to the domesticate structure (34OK209) located to the east.

Jim Ricker (2008) argues that the site is completely destroyed and contains little remaining integrity or research potential. The site has been inventoried, but is not likely to yield further information and should not be considered for potential eligibility to the National Register (NRHP).

34OK209

34OK209 is a historic non-Indian, historic farmstead 10 meters in diameter, located on a ridge crest slopes to the north. This site includes several barely visible, small; soil push piles yielding dense concentrations of historic artifacts down to 80cm. Artifacts included selenium glass, amethyst-colored glass, clear vessel glass, partial whiskey bottle, ironstone ceramics, sandstone building blocks, and mortar fragments. Prefield investigation reveals this location on 1951 aerial photographs, but the 1995 Spencer Quadrangle map does not. Post-field research indicated that the U.S. Government awarded the original patent to Z. Smales in 1894, Smales then deed the 40 acres (N/2 of the NE/4 of the NE/4) includes this structure to S. Smales on 1896. County deed books include a break in the transfers for this property until 1966 when Lilia Chitwood deeds the property to R.W. Chitwood. In 1980 R. W., Iris, and Hattie Chitwood sell their interests in this property to B &R Farms. Finally the property is acquired by the U.S. Government for "public use" in 1981. The site form indicates that this site may be connected to the barn structure (34OK208) located to the west.

Jim Ricker (2008) argues that the site is completely destroyed and contains little remaining integrity or research potential. The site has been inventoried, but is not likely to yield further information and should not be considered for potential eligibility to the National Register (NRHP).

34OK20

34OK20 was originally identified as on a hill projection from a ridge 15-20 feet in diameter. Artifacts identified were one Kay County Flint knife, a Kay County Flint point fragment, and a number of Kay County Flint flakes. This was later reassessed during the pre-reservoir analysis in 1976. The 1976 analysis revealed little evidence of any prehistoric occupation (Hartley 1976). Later in 2008 the site was located again and it was only a few feet from Arcadia Lake shoreline with approximately 50% of the site boundary under water. No artifacts were noted during the 2008 investigation, though there is an indication that deeper cultural deposits could be present in the soils south of the shoreline on the sloped hillside.

Eligibility to the National Register (NRHP) has not been assessed for this site.

34OK21

34OK21 is a site located on an old terrace on a ridge remnant of the Deep Fork River approximate 15 feet above the flood plain. The site is indicated to about 60 feet in diameter and contained preforms, flakes, cobbles of Ogallala Chert and fine grained sandstone and a Kay County Flint scraper.

Eligibility to the National Register (NRHP) has not been assessed for this site.

34OK22

34OK22 is a site located on the slope of a hill, north of a railroad, about 100 feet from the Deep Fork River. The site is indicated to have been destroyed by the railroad installation. Artifacts identified at the site are preforms, cobbles, cores, and flakes.

Eligibility to the National Register (NRHP) has not been assessed for this site.

34OK23
34OK23 is a site located on an old terrace or ridge points above the flood plain of Spring Creek. The site was previously cleared and plowed producing deep soil deposits. Artifacts identified at the site are Ogallala Chert flakes and a core, two pieces of Kay County Chert from the base of the hill. Test pit exploration revealed buried cultural artifacts of Ogallala Chert flakes.

Eligibility to the National Register (NRHP) has not been assessed for this site.

34OK38
34OK38 is a site located on the ridge slope bordering Spring Creek and it is indicated to be heavily disturbed and eroded (Drass). Artifacts identified at the site are one Kay County Flint scraper, one dart point tip, and flakes.

Eligibility to the National Register (NRHP) has not been assessed for this site.

34OK39
34OK39 is a site located on a ridge or old eroded terrace part of which is used for cultivation and includes a farm pond. The site is bisected by a road. Artifacts identified at the site are one Fresno and one Rockwall arrow points, two end scrapers, flakes and utilized flakes.

Eligibility to the National Register (NRHP) has not been assessed for this site.

34OK44
34OK44 is a site located on a ridge toe extending to the Spring Creek bottom. Artifacts included scattered Ogallala flakes.

Eligibility to the National Register (NRHP) has not been assessed for this site.

34OK57
34OK57 is an open site or workshop located on a series of ridge spurs above Spring Creek, possible area extent is about 10 acres. Artifacts identified were one biface knife, one preform, one biface fragment, 2 hammerstone, and one fragment, 7 utilized flakes, one modified flake, w cores, 133 unmodified flakes, and 62 pieces of miscellaneous chipped stone debris. This site was revisited in 1977 and this investigation indicated that there were lots of flakes, chipped cobbles, and fragments that still remain on knoll top and slope, suggesting that deep cultural deposits remain at site (Drass).

Eligibility to the National Register (NRHP) has not been assessed for this site.

34OK92
34OK92 is a site located on ridge toe above Spring Creek about 100 m^2 in size. The site is located behind a house to the south with an old silo and trench. Artifacts identified were scattered flakes of Ogallala Chert and quartzite.

Eligibility to the National Register (NRHP) has not been assessed for this site.

34OK203

34OK203 is an unassigned prehistoric open habitation without mounds, specialized activity site, located at the end of a peninsula jutting northward into Arcadia Lake. The promontory previously consisted of a high ridge on south bank of the Deep Fork River before Arcadia Lake Reservoir construction. Due to the construction of the reservoir the ridge has been subjected to wave – induced erosion and therefore could have be initially larger than it is at present. Artifacts identified are a secondary flake of an unknown gray chert (Boone) and fourteen secondary and tertiary flakes were identified ten of the flakes were identified as Ogallala and four possibly the gray or Boone Chert.

Jim Ricker (2008) argues that the site is nearly destroyed and contains little remaining integrity or research potential. The site has been inventoried, but is not likely to yield further information and should not be considered for potential eligibility to the National Register (NRHP).

34OK204

34OK204 is a historic non-Indian farmstead located on the shoreline of Arcadia Lake. Oklahoma Geological Survey data indicate that a structure was present in 1951 (possibly inhabited by Dudley Ellis) at this location and by 1966 the structure in inhabited. Oklahoma County courthouse documents indicate the U.S. Government awarded the original Patent to Abraham Evans in 1895, after which Evans deeded the property to Mr. and Mrs. Sallinger in 1901. In 1902 the Sallinger's deeded the property to Julius Boyce who later deeded it to J.S. McKee in 1905. After Mr. McKee's death the Oklahoma County Clerk deeded the land to his widow and daughter. The daughter later sold the property to W.M. Ellis in 1938, which later deeded I to his son Dudley in 1947. Though the records become fragmented it appears that the property remains with the Ellis family until the U.S. Attorney finalized the purchase and granted it "the public: in 1982.

Jim Ricker (2008) argues that the site is nearly destroyed and contains little remaining integrity or research potential. The site has been inventoried, but is not likely to yield further information and should not be considered for potential eligibility to the National Register (NRHP).

3.0 Project Description

An archaeological survey geared towards identifying any cultural resources was conducted for the proposed City of Edmond Arcadia Lake Multi-Use Project (ORA project # 2012-1116). Based on the tract ownership information provided by City of Edmond, This project is located on land with adjacent waterways under the jurisdiction of the United States Army Corps of Engineers (USACE) (Appendix A: Maps). The project consists of approximately 260 acres of equestrian and pedestrian trail Installation.

Information provided to ORA via The City of Edmond suggests that the proposed project area will consist of approximately 260 acres of trail approximately eighteen (18) feet in width for the pedestrian trail. The majority of the current equestrian trail will remain unchanged. In total the

Area of Potential Effect (APE) will be approximately 260 acres. In addition to implementing strict best management practices (BMPs) throughout the course of the project, all construction activities will be in full accordance with all other applicable environmental permits and clearances. Identified cultural resources will be avoided by fifty (50) meters or more, except for the following locations: previously recorded sites **34OK42, 34OK45, 34OK207**, and **34OK209,** as well as newly recorded sites **34OK229, 34OK230**, **34OK231, 34OK232, and 34OK233** (Appendix A: Maps).

4.0 Environmental Description

The proposed project is located within the Northern Cross Timbers ecoregion of Oklahoma. In Oklahoma, the Northern Cross Timbers ecoregion are a belt of forested area that is located from south-central Oklahoma into southeastern Kansas (Woods, A.J., et al. 2005). The Cross Timbers region is a transitional area between the former westward prairie land to an area presently of westward winter wheat growing regions and an area of forested low mountains to the east (Woods, A.J., et al. 2005). This is an area of low soil arability, with native vegetation consisting of little bluestem grasslands, blackjack oak, honey locust, cedar, elm, cottonwood and post oak trees. Much of the area is comprised of rangeland and pastureland with predominant land cover, consisting of mixed grasses and weedy plants. Along with the mixed hardwood oak canopy there is an understory of mixed grasses and flowering plants. Arcadia Lake is located within a larger metropolitan area northeast of Oklahoma City, Oklahoma. Arcadia Lake is a manmade lake created through the placement of a dam on the Deep Fork River. The Deep Fork River is a major tributary for central Oklahoma and is dammed in central to create Arcadia Lake and in southeastern Oklahoma to create Lake Eufala. Central and eastern portions of the City of Edmond are within the Deep Fork drainage basin; the western portion is within the Chisholm Creek basin (Luza, 2008). Much of this area includes bottomlands and post oak-blackjack oak forests. The topography is the result of weathering alternating sandstones and shales that form gentle hills with low dips. The age of the exposed strata in Oklahoma County range from the Cambrian to present.

The soils consist of a loose to moderate compaction of soils that contain 0-10% cobbles, gravels, or rocks in less than 5% of shovel tests. Weathered sandstone outcrops were intermittently present throughout the entire survey area. Soil deposits (Carter and Gregory 2008; NRCS 2012) in the survey area consist of Red and Brown, clayish sands to clayish silty sands. Stephenvill-Darsil-Gullied Land Complex with 3% to 8% slopes and Harrah Fine Sandy Loam with 3% to 5% slopes were the most noted soil components, but the area around(Appendix B: NRCS Soil Report). Arcadia Lake has many disparate soil components most consist of sandy loams (5YR 4/3 reddish brown) and silty clay loams (5YR 5/6 yellowish red) with <8 % slopes (Appendix B: NRCS Soil Report). Most of the shovel tests revealed deep deposits +50-60 cm of these soils with only a few transitioning at 20 cm to 30 cm where color changes of the sand went from Dark Brown to Red.

5.0 Cultural Background

In recent decades, increasing numbers of archaeological surveys and archaeological research projects have demonstrated a long and continuous occupation of the area by several native tribal groups. Prehistoric archaeological evidence for Oklahoma indicates some of the earliest human occupations in North America, commonly referred to as the *Paleo-Indian* period (12,000-8,000BP). Evidence of *Archaic* period (8,000-2,000BP), *Woodland* period (2,000-1,000BP), *Plains Village* period (1,000-500BP) and *Protohistoric* period (500-250BP) have also been recorded in the region (Wyckoff and Brooks 1983; Brooks and Drass 1984, Oklahoma Archaeological Survey 2012). In general in the Edmond area has not been extensively surveyed for archaeological sites, except in areas of the reservoirs in the area. Many major reservoir areas that previously were major drainages can have increased amounts of Native American occupations due to available resource availability. Many Native American groups would have exploited available food resources, as well as the use of the floodplain for crop cultivation.

The east and central Cross Timbers Ecoregion of Oklahoma has an early occupations represented by Paleo-Indian spear points dating around 8,000 B.C., though there could be earlier sites in the area (Brooks and Drass 1984; Ricker 2008). This area has several Archaic Period sites associated with nomadic or semi-nomadic hunters and gatherers, who may have been moving across the plains hunting bison. Later during the Woodland Period (AD 1 to 900 AD) groups occupy this area represented by differing tool technologies as well as subsistence strategies (Vehik 1984). This time period is represented by a reduction in the size and use of tools and the introduction of pottery as a resource. New tool technologies are associated with changing subsistence strategies represented by semi-nomadic camp sites located in the area. The Arcadia Lake surveys indicate that the area has had semi-nomadic or camp site occupations that consist of flake scatters, tools, and artifacts. According to the Oklahoma Archaeological Survey (OAS) website there have been approximately 233 archaeological sites, including the five (5) discovered during the current research, within Oklahoma County, Oklahoma.

In the Cross Timbers area of eastern and central Oklahoma after AD 900 is represented by large communal farming populations, especially along watershed areas (Brooks and Drass 1984). These Native American groups relied more on cultivated crops with a reduced reliance on hunting and gathering. Though, hunting and gathering were still used as a supplement to their cultivated diet. Later Plains Village groups were replaced by groups of Native Americans like the Apache and Kiowa. European and American explorers are known to have traveled throughout the region. Many of these groups by the 1800's are moving northward along drainages where resources were plentiful and European Trade had been established. Prior to statehood the Deep Fork River was an important waterway with many cultural resources located along the river's shoreline. Much of this region in central Oklahoma was selected for Native Americans in the mid 1800's. Many of the original occupants are further dispersed as relocated groups are moved into the area (Brooks and Drass 1984; Wilson 2012; Oklahoma Archeological Survey 2012).

After the Civil War these areas of land were ceded as a part of Reconstruction Treaties to become Unassigned Lands. Unassigned Lands were used in the Land Run at the end of the 1800's. Most of the early non-native settlers were traders and Sooners that occupied areas of Unassigned Land in what is now Oklahoma County (Wilson 2012). The Deep Fork River divided the Iowa and Kickapoo reserves and in 1880's the Deep Fork River was a hub for Boomer activity in Indian Territory. After the occupation of Unassigned Land and Statehood, economic activities in Oklahoma County were based primarily on agriculture (Wilson 2012). Crops grown in the area were corn, wheat, cotton, alfalfa and oats. Livestock was also an economic venture in this area due to the existence of multiple railroad systems that were established prior to statehood. The establishment of the City of Edmond can be directly related to the Atchison, Topeka and Santa Fe Railway lines built in the Unassigned Lands in the 1880s. Like many of the other communities within Oklahoma, Edmond transitioned from a railway stop to a town on April 22, 1889, with the opening of the Unassigned Lands. By the mid-1900's the economy of this area shifted to oil and gas development, transportation, and manufacturing (Boyd, 2008). The West Edmond Oil Field was discovered in the 1930-40's, bringing oil production to the forefront for Edmond. Transportation access spurred the growth of Edmond, beyond the establishment of railroad systems, Edmond was aided by its location along U.S. Highway 66 (Route 66) and Highway 77 in the late 1920s, as well as its proximity to Interstate 35 from the 1960s to present. Booming oil and gas industries and transportation in the 1950s and 1960s brought population growth which in turn created the need for an increase in the infrastructure, more schools and businesses in the 1970s and 1980s. Also in 1980 the Arcadia reservoir was authorized for three purposes, the first was a flood management system, second was as a water supply system for the City of Edmond, and finally to provide recreational resources to the community.

Arcadia Lake is a relatively new reservoir created by the Army Corps of Engineers and the City of Edmond created through the construction of an earthen dam that was erected in October of 1980 on the Deep Fork River and completed in 1987 (ACOE 2013). Arcadia Lake is located east of Edmond and west of Arcadia, in Oklahoma County, Oklahoma. Arcadia Lake has many recreational opportunities that include picnicking, fishing, camping, swimming, water skiing, boating, biking, hiking and equestrian trails. As a part of this new project The City of Edmond is expanding the recreational aspect of Arcadia Lake to include further development of a multi-use trail.

6.0 Field Methodology

The location of the project area was determined by the placement of the pedestrian and equestrian trail, some of which is already in place (Appendix A: Maps). The total area of the project is approximately 260 acres and all 260 acres were examined on several survey field days. Surface visibility was generally good, except in wooded areas where leaf litter debris was very thick due to the time of year the survey was conducted. The project site was covered by two-person teams at fixed ten (10) meter intervals in order to follow the irregular pattern of The City of Edmond Arcadia Lake Multi-Use Project (ORA project # 2012-1116) prefield shovel test points were determined at 75-100 meter spacing (Appendix A: Maps). Additional shovel tests were placed based on in-field conditions. Shovel tests, thirty (30) cm in diameter and excavated

to a maximum of eighty (80) cm or noticeable color change throughout the project area. A hand-held DeLorme GPS receiver, set to the 1927 NAD datum was used to spot locate each test. Fill from each of the 30 x 80 cm (or noticeable soil type change) test was hand sifted through one-quarter (1/4) inch screen before backfilling each hole.

7.0 Paleontological Resources

No vertebrate paleontological resources or invertebrate resources were observed during the course of the archaeological investigation.

8.0 Cultural Resources

This survey was conducted on behalf of the City of Edmond to identify any cultural resources that could be adversely affected by the proposed development of the referenced The City of Edmond Arcadia Lake Multi-Use Project (ORA project # 2012-1116). The archival research revealed thirty (30) recorded cultural sites (see Table 2 Cultural Resources), twenty-three (23) prehistoric and seven (7) historic sites listed by the Oklahoma Archaeological Survey (OAS). Additionally, ORA have recorded five (5) previously undocumented archaeological resources within One (1) mile of the project area (34OK229, 34OK230, 34OK231, 34OK232, 34OK233) (Appendix A: Maps).

34OK229

34OK229 is a historic trash dump in a creek at the base of a man-made pond in a wooded forest area. The site is located in a drainage below a man-made pond south of Arcadia Lake Dam. Artifacts at the site are a 1960-70's era clothes washer and oven. It appears based on the sever state of the appliances, that they may have been mechanically pushed into the creek during the construction of the pond.

This is an area of low soil arability, with native vegetation consisting of little bluestem grasslands, blackjack oak, honey locust, cedar, elm, cottonwood and post oak trees. Much of the area is comprised of rangeland and pastureland with predominant land cover, consisting of mixed grasses and weedy plants. Along with the mixed hardwood oak canopy there is an understory of mixed grasses and flowering plants. Arcadia Lake is located within a larger metropolitan area northeast of Oklahoma City, Oklahoma (Appendix A: Maps). Much of this area includes bottomlands and post oak-blackjack oak forests. The topography is the result of weathering alternating sandstones and shales that form gentle hills with low dips. It appears that during the damming of the creek to make the pond, the metal features were pushed and severely damaged.

This site is completely destroyed and contains little remaining integrity or research potential. The site has been inventoried, but is not likely to yield further information and should not be considered for potential eligibility to the National Register (NRHP).

34OK230

This historic farmstead that has been mechanically cleared located along old N.E. 150th Street that existed prior to Arcadia Lake. The visible features remaining at the site are the driveway, a

long rectilinear (40 X 3 m) trench into sandstone bedrock with modern trash in it, 1980's – present (household appliances, mattress), a fence along the southern border just north of N.E. 150th Street. Modern pressed brick, concrete, mortar, excavated pit, stop ahead sign, metal tank with 1/2 " thick steel walls, that was hot riveted. The artifacts and features appear to be the remains of an historic homestead that existed on the property. While there are no structures noted on the 1872 BLM/GLO Map, however, the area seems to be developed at the time of the 1955 aerial photograph and by the 1964 aerial photograph there are three (3) structures on the property (Appendix A: Maps). Field investigation did not discover residue or depressions where they once stood, except for a pile of cement foundation and brick wall remains in the southeast portion of the site along the fence line. This site is 100% completely destroyed.

This is an area of low soil arability, with native vegetation consisting of little bluestem grasslands, blackjack oak, honey locust, cedar, elm, cottonwood and post oak trees. Much of the area is comprised of rangeland and pastureland with predominant land cover, consisting of mixed grasses and weedy plants. Along with the mixed hardwood oak canopy there is an understory of mixed grasses and flowering plants. Arcadia Lake is located within a larger metropolitan area northeast of Oklahoma City, Oklahoma. Much of this area includes bottomlands and post oak-blackjack oak forests. The topography is the result of weathering alternating sandstones and shales that form gentle hills with low dips.

Archival research at the Oklahoma County courthouse revealed that the U.S. Government awarded the original patent for this property to John W. Dickerson in 1989. Dickerson then deeded it to GW Limerick on 1/15/1894. Limerick then deeded the property to William A. and Lelia I. Chitwood. After William A. Chitwoods death Lelia I. Chitwood and Ross H. Chitwood (son) each inherited 50% ownership of the property on 6/3/1946. On 12/21/1964 after the death of Ross H. Chitwood his wife Hattie Chitwood inherited the property. On 1/21/1966 Lilia Chitwood gives her 50% ownership to Ross H. and Hattie Chitwood's Children Ross W. and Iris Ellen Chitwood. On 5/16/1980 all ownership to the property was sold to B & R Farms Inc. for 10 dollars each. Then on 7/17/1981 the U.S. Attorney began condemnation procedures which ultimately result in the ownership to be transferred to the Corps of Engineers. B & R farms (also known as Chitwood Farms) are (as of 2/18/13) a working farm just outside of Sulfur Oklahoma and is a prominent agro-tourism destination.

This site is completely destroyed and contains little remaining integrity or research potential. The site has been inventoried, but is not likely to yield further information and should not be considered for potential eligibility to the National Register (NRHP).

34OK231

34OK231 consists of historic outbuildings has been mechanically cleared located 188 meters west of Arcadia Lake and 470 meters south of E. 33rd Street. These outbuildings were most likely constructed prior to filling of Arcadia Lake sometime between 1964 and 1984, based on the 1964 aerial photograph, which do not show the buildings and the 1984 aerial photographs which have the outbuildings in place. The visible features remaining at the site are the driveway, the chain link fence and a push pile containing metal pipe and concrete slab fragments. This site is completely destroyed and contains little remaining integrity or research

potential. The site has been inventoried, but is not likely to yield further information and should not be considered for potential eligibility to the National Register (NRHP).

This is an area of low soil arability, with native vegetation consisting of little bluestem grasslands, blackjack oak, honey locust, cedar, elm, cottonwood and post oak trees. Much of the area is comprised of rangeland and pastureland with predominant land cover, consisting of mixed grasses and weedy plants. Along with the mixed hardwood oak canopy there is an understory of mixed grasses and flowering plants. Arcadia Lake is located within a larger metropolitan area northeast of Oklahoma City, Oklahoma. Much of this area includes bottomlands and post oak-blackjack oak forests. The topography is the result of weathering alternating sandstones and shales that form gentle hills with low dips.

Archival research at the Oklahoma County courthouse revealed that the U.S. Government awarded the original patent for this property to Soloman Shell on 4/12/1900. Shell then deeded it to Mary E. Neville on 10/18/1902. There is a gap in the records and the next record is on 4/12/1912 where the Deming Investment Company sells the property to Robert and Victoria Wilkin. Wilkin then deeded the property to Albert L. Bonner on 8/25/1925. Albert L. Bonner wills the property to his minor son William W. Bonner on 9/1/1939. William W. Bonner is in possession of the land until 7/17/1981 when the U.S. Attorney began condemnation procedures which ultimately result in the ownership to be transferred to the Corps of Engineers**.**

34OK232

34OK232 is a historic trash dump/push pile located 50 meters to the east of White Tail Run and off of south Air Depot BLVD. 344 meters to the west of Arcadia Lake. Artifacts include metal artifacts, pre-W beam guard rail, bed frame, angle iron, 55 gal drum, expanded metal and other unidentifiable sheet metal objects, 1970's-80's era pvc pipe fragments, tires, 1970's-80's era hair dryer, modern glass bottles. There is no evidence of a structure or occupation at this location on any of the historic aerial photographs.

This is an area of low soil arability, with native vegetation consisting of little bluestem grasslands, blackjack oak, honey locust, cedar, elm, cottonwood and post oak trees. Much of the area is comprised of rangeland and pastureland with predominant land cover, consisting of mixed grasses and weedy plants. Along with the mixed hardwood oak canopy there is an understory of mixed grasses and flowering plants. Arcadia Lake is located within a larger metropolitan area northeast of Oklahoma City, Oklahoma. Much of this area includes bottomlands and post oak-blackjack oak forests. The topography is the result of weathering alternating sandstones and shales that form gentle hills with low dips.

The site is likely not associated with any structure in the past. This site is completely destroyed and contains little remaining integrity or research potential. The site has been inventoried, but is not likely to yield further information and should not be considered for potential eligibility to the National Register (NRHP).

34OK233

34OK233 is a historic trash dump located 370 meters south of NE 164th Street and 837 meters east of South Air Depot BLVD. Artifacts include a 1961 to 1967 Ford Falcon Clubwagon, front car axle with bumper not associated with Ford, 1960's-70's era Murray Eliminator bicycle, automotive related items, rusted oil cans, etc. This site is not identified on any aerial photograph.

This is an area of low soil arability, with native vegetation consisting of little bluestem grasslands, blackjack oak, honey locust, cedar, elm, cottonwood and post oak trees. Much of the area is comprised of rangeland and pastureland with predominant land cover, consisting of mixed grasses and weedy plants. Along with the mixed hardwood oak canopy there is an understory of mixed grasses and flowering plants. Arcadia Lake is located within a larger metropolitan area northeast of Oklahoma City, Oklahoma. Much of this area includes bottomlands and post oak-blackjack oak forests. The topography is the result of weathering alternating sandstones and shales that form gentle hills with low dips (Appendix C: Photographic Log).

This site is a trash dump and has been inventoried, but is not likely to yield further information and should not be considered for potential eligibility to the National Register (NRHP).

9.0 Recommendations

Based on the results of the Phase I Field Survey and data generated from the prior Phase I Archival Review of Oklahoma Archaeological Survey (OAS) records (including NRHP data), cultural resources were located within the project area. The identified cultural resources outside the APE will be avoided by fifty (50) meters or more (Appendix A: Maps). Those resources within the APE (fifty (50) meters) do not meet potential eligibility to the National Register (NRHP) because these sites (**34OK42, 34OK45, 34OK207**, **34OK209, 34OK229, 34OK230**, **34OK231, 34OK232, and 34OK233**) are completely destroyed and contain little remaining integrity or research potential. These sites have been inventoried and are not likely to yield further information (Appendix C: Photographic Log). ORA anticipate that the project may proceed without further evaluation. This recommendation is subject to the concurrence for Section 106 Review.

Project personnel should be aware that negative results do not guarantee cultural resources are absent. Buried cultural materials such as pottery, chipped stone, bone, metal, glass, brick and other materials may be encountered during construction activities. In the event of discovery, all activities that could potentially disturb the site should cease, ORA and the State Archaeologist at the Oklahoma Archeological Survey should then be notified promptly in order to determine the possible significance and/or mitigation measures of the cultural materials before construction activities can continue.

10.0 Professional Assessments

In the professional opinion of Thomas E. Gruber, RPA, and Principal Investigator for this investigation, the referenced investigation and recommendations comply with standards for

archaeological performance set forth by the Secretary of Interior of the United States and guidelines for archaeological performance within the State of Oklahoma.

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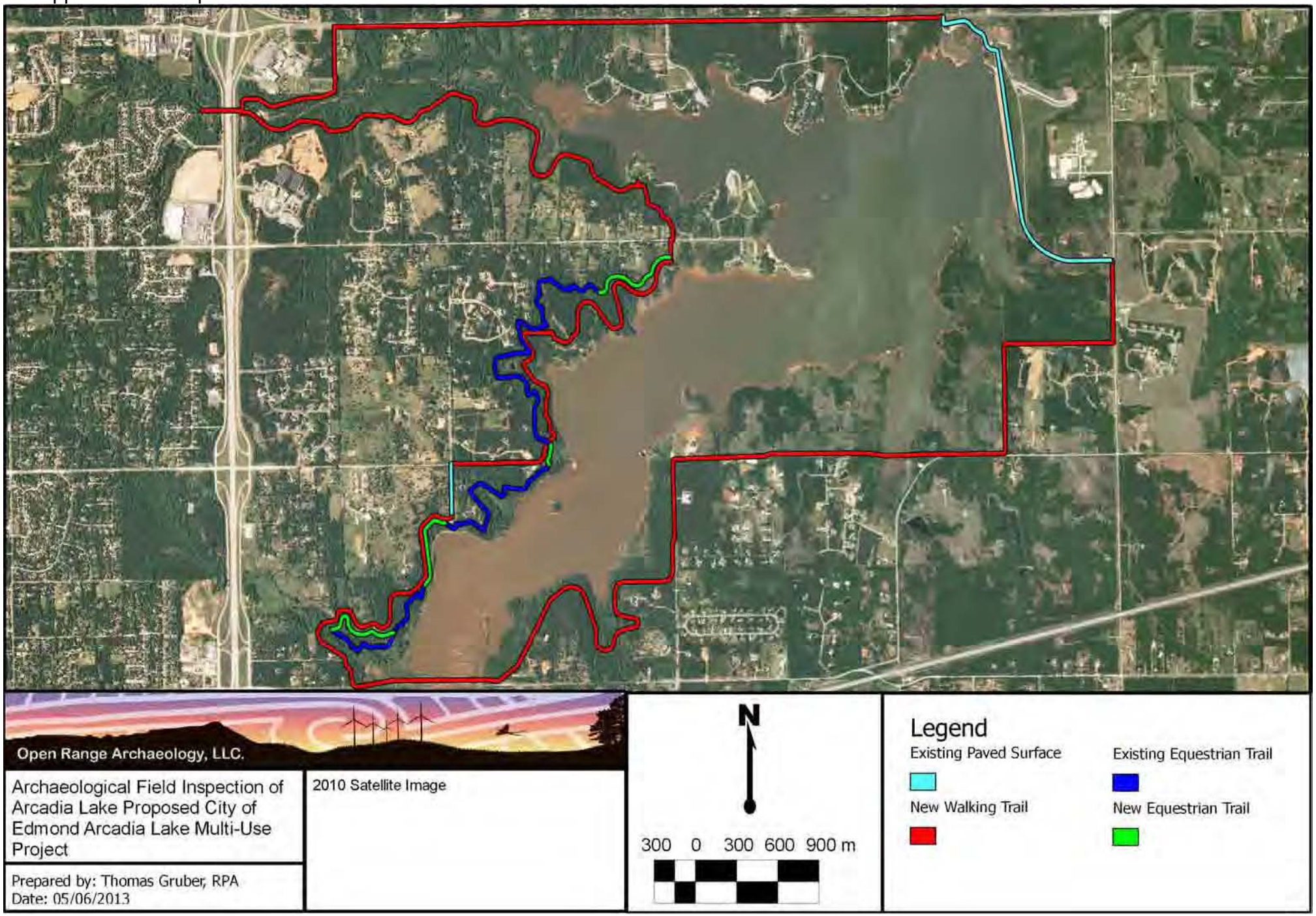

Open Range Archaeology, LLC.
Archaeological Field Inspection of Arcadia Lake Proposed City of Edmond Arcadia Lake Multi-Use Project
Prepared by: Thomas Gruber, RPA
Date: 05/06/2013
2010 Satellite Image
N
300 0 300 600 900 m
Legend
Existing Paved Surface
Existing Equestrian Trail
New Walking Trail
New Equestrian Trail

Soil Map—Oklahoma County, Oklahoma

Soil Map–Oklahoma County, Oklahoma

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads

MAP INFORMATION

Map Scale: 1:41,100 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 14N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Oklahoma County, Oklahoma
Survey Area Data: Version 11, Sep 16, 2008

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Oklahoma County, Oklahoma (OK109)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
AhpA	Ashport silty clay loam, 0 to 1 percent slopes, occasionally flooded	46.8	0.8%
AspA	Ashport silt loam, 0 to 1 percent slopes, occasionally flooded	6.5	0.1%
AstA	Ashport silt loam, 0 to 1 percent slopes, frequently flooded	25.4	0.5%
DAM	Dams	52.8	1.0%
DerE	Derby loamy fine sand, 8 to 15 percent slopes	8.3	0.2%
DSRG	Darsil-Stephenville-Rock outcrop complex, 3 to 45 percent slopes	20.0	0.4%
EasA	Easpur loam, 0 to 1 percent slopes, occasionally flooded	60.2	1.1%
GraC	Grainola silty clay loam, 3 to 5 percent slopes	58.8	1.1%
GrIE	Grainola-Ironmound complex, 3 to 12 percent slopes	68.3	1.2%
GUIE	Grainola-Urban land-Ironmound complex, 3 to 12 percent slopes	3.3	0.1%
HarC	Harrah fine sandy loam, 3 to 5 percent slopes	714.4	13.0%
HarC2	Harrah fine sandy loam, 3 to 5 percent slopes, eroded	18.8	0.3%
HarG	Harrah fine sandy loam, 3 to 45 percent slopes	43.8	0.8%
LatG	Latrass loam, 1 to 45 percent slopes	6.4	0.1%
LitB	Littleaxe fine sandy loam, 1 to 3 percent slopes	45.1	0.8%
LitC	Littleaxe fine sandy loam, 3 to 5 percent slopes	3.2	0.1%
LitC2	Littleaxe fine sandy loam, 3 to 5 percent slopes, eroded	18.5	0.3%
LwfA	Lawrie fine sandy loam, 0 to 1 percent slopes, occasionally flooded	1.3	0.0%
M-W	Miscellaneous water	3.7	0.1%
MllA	Miller silty clay, 0 to 1 percent slopes, occasionally flooded	6.3	0.1%
NewB	Newalla fine sandy loam, 1 to 3 percent slopes	2.5	0.0%
PIT	Pits	7.1	0.1%
PukA	Pulaski fine sandy loam, 0 to 1 percent slopes, frequently flooded	30.7	0.6%
PulA	Pulaski fine sandy loam, 0 to 1 percent slopes, occasionally flooded	141.3	2.6%
SDGD4	Stephenville-Darsil-Gullied land complex, 3 to 8 percent slopes	38.2	0.7%
SDND	Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes	1,635.8	29.7%

Oklahoma County, Oklahoma (OK109)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
SDND2	Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes, eroded	237.9	4.3%
StDC	Stephenville-Darsil complex, 1 to 5 percent slopes	325.0	5.9%
StDC2	Stephenville-Darsil complex, 1 to 5 percent slopes, eroded	40.7	0.7%
TlrB	Teller fine sandy loam, 1 to 3 percent slopes	0.6	0.0%
TlrC	Teller fine sandy loam, 3 to 5 percent slopes	2.1	0.0%
TlrC2	Teller fine sandy loam, 3 to 5 percent slopes, eroded	21.0	0.4%
TlUD	Teller-Urban land complex, 1 to 8 percent slopes	27.2	0.5%
TriA	Tribbey fine sandy loam, 0 to 1 percent slopes, frequently flooded	71.1	1.3%
URB	Urban land	39.8	0.7%
W	Water	1,679.9	30.5%
ZanB	Zaneis loam, 1 to 3 percent slopes	2.4	0.0%
Totals for Area of Interest		**5,515.9**	**100.0%**

APPENDIX C: Photographic Log

Photograph #1 Route of survey area near “Access Point” - East of Central State Park. Direction: West.

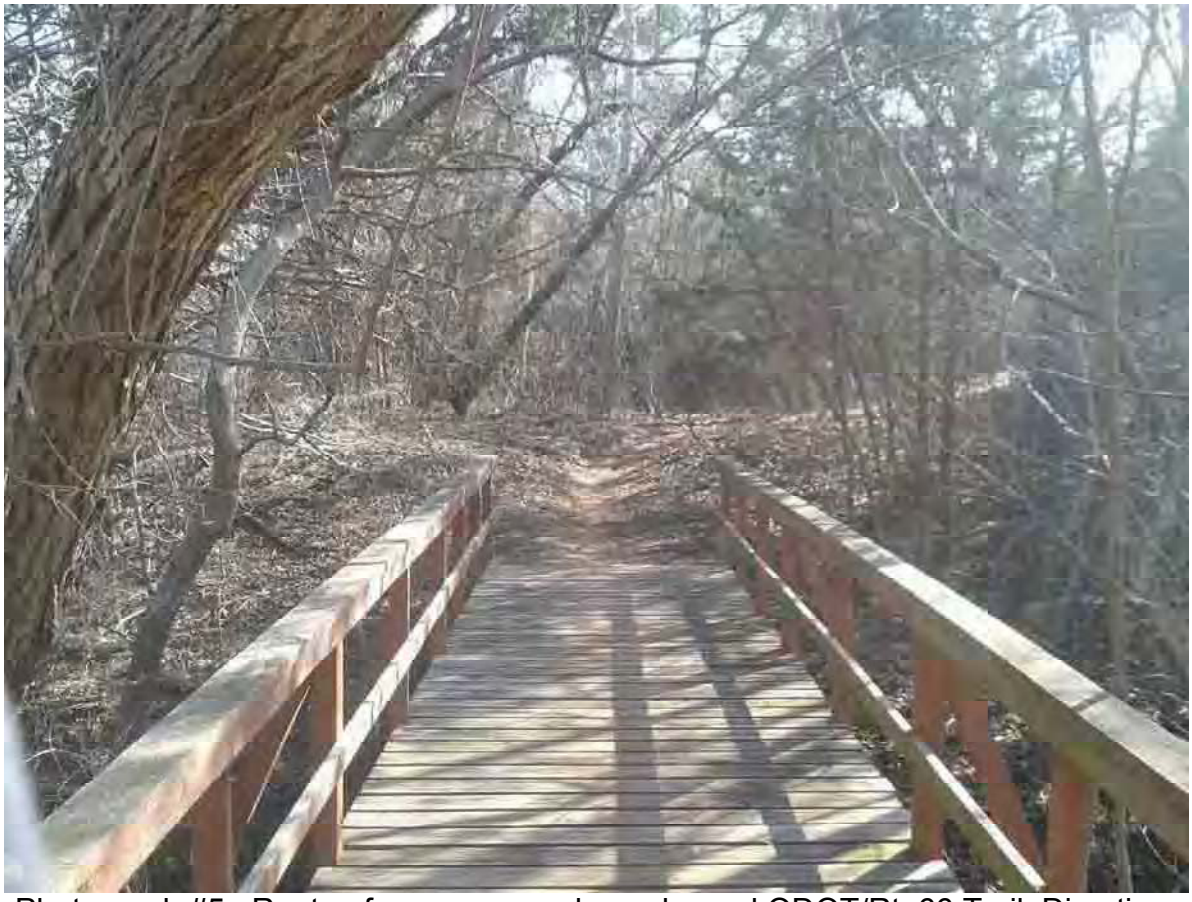
Photograph #2 Route of survey area along planned ODOT/Rt. 66 Trail. Direction: East.

APPENDIX C: Photographic Log

Photograph #3 Route of survey area near City of Edmond facility. Direction: East.

Photograph #4 Route of survey area along planned ODOT/Rt. 66 Trail. Direction: West.

APPENDIX C: Photographic Log



Photograph #5 Route of survey area along planned ODOT/Rt. 66 Trail. Direction: East.

Photograph #6 Route of survey area along planned ODOT/Rt. 66 Trail. Direction: West.

APPENDIX C: Photographic Log

Photograph #7 Route of survey area along planned ODOT/Rt. 66 Trail. Direction: West.

Photograph #8 Route of survey area along planned ODOT/Rt. 66 Trail. Direction: East.

APPENDIX C: Photographic Log

Photograph #9 Route of survey area along planned ODOT/Rt. 66 Trail. Direction: West.

Photograph #10 Route of survey area along planned ODOT/Rt. 66 Trail. Direction: West.

Photograph #11 Overview of Isolated Find: “John Deere” Historic Farm Equipment – Direction: South.

Photograph #12 Overview of Isolated Find: “John Deere” Historic Farm Equipment – Direction: West.

Photograph #13 Detail of Isolated Find: “John Deere” Historic Farm Equipment - Direction: N/A.

Photograph #14 Route of survey area along planned ODOT/Rt. 66 Trail. Direction: West.

Photograph #15 Route of survey area along planned ODOT/Rt. 66 Trail. Direction: West.

Photograph #16 34OK38 located in a residential area. Direction: East.

Photograph #17 Route of survey area along planned ODOT/Rt. 66 Trail at Arcadia Loop Trail. Direction: South.

Photograph #18 Route of survey area along planned Arcadia Loop Trail at Spring Creek. Direction: West.

Photograph #19 Route of survey area along planned Arcadia Loop Trail at Spring Creek. Direction: East.

Photograph #20 Route of survey area along planned Arcadia Loop Trail. Direction: East.

APPENDIX C: Photographic Log

Photograph #21 Sewer main located where 34OK39 was located. Direction: South.

Photograph #22 Overview of Isolated Find: Cattle Tank Just South of 34OK39 – Direction: North.

APPENDIX C: Photographic Log

Photograph #23 Route of survey near Scissortail Park Access Point. Direction: East.

Photograph #24 Route of survey in the Northern portion of Scissortail Park Access Point. Direction: West.

Photograph #25 Overview of Isolated Find: Cattle Tank in Scissortail Park – Direction: West.

Photograph #26 Overview of Isolated Find: Tank, Tire, and Cinderblock Fragments in Scissortail Park – Direction: West.

Photograph #27 Overview of Isolated Find: Tank, Tire, and Cinderblock Fragments in Scissortail Park – Direction: Northwest.

Photograph #28 Overview of Isolated Find: Collapsed Shed in Scissortail Park – Direction: East.

Photograph #29 Route of survey crossing the access road for Scissortail Park. Direction: Southwest.

Photograph #30 Route of survey in the Southern portion of Scissortail Park Access Point. Direction: Northwest.

Photograph #31 Route of survey in the Southern portion of Scissortail Park Access Point. Direction: West.

Photograph #32 Route of survey crossing the access road for Scissortail Park. Direction: Northeast.

Photograph #33 Route of survey in the Southern portion of Carl Reherman Park Access Point. Direction: West.

Photograph #34 Route of survey at E 33rd St. and S Air Depot Rd. Direction: East.

APPENDIX C: Photographic Log

Photograph #35 Route of survey at E 33rd St. and S Air Depot Rd. Direction: South.

Photograph #36 Route of survey south of Carl Reherman Park. Direction: Northeast.

Photograph #37 Route of survey along the southern most equestrian trail. Direction: North.

Photograph #38 Route of survey along the southern most equestrian trail. Direction: Southwest.

Photograph #39 Overview of Isolated Find: Cut into sandstone bedrock along the southern most equestrian trail – Direction: South.

Photograph #40 Route of survey along the southern most equestrian trail. Direction: West.

APPENDIX C: Photographic Log

Photograph #41 34OK41 located in the flood plain of Lake Arcadia. Direction: East.

Photograph #42 34OK42 located in the flood plain of Lake Arcadia and under Memorial Rd. Direction: North.

Photograph #43 Route of survey along Deep Fork Point. Direction: Northeast.

Photograph #44 Overview of Isolated Find: Cattle Tank along Deep Fork Point – Direction: Northeast.

Photograph #45 Route of survey along Deep Fork Point. Direction: East.

Photograph #46 Route of survey along Deep Fork Point. Direction: Southeast.

Photograph #47 Route of survey east of Indian Springs Rd. Direction: Northwest.

Photograph #48 Route of survey north of Indian Springs Rd. Direction: East.

Photograph #49 Route of survey along Midwest Boulevard. Direction: North.

Photograph #50 34OK209 located east of Midwest Boulevard. Direction: West.

Photograph #51 34OK205 located northwest of the intersection of Midwest Boulevard and East 33rd. Direction: Northwest.

Photograph #52 34OK206 located north of East 33rd. Direction: North.

Photograph #53 34OK206 located north of East 33rd. Direction: East.

Photograph #54 34OK207 located north of East 33rd. Direction: Northwest.

APPENDIX C: Photographic Log

Photograph #55 34OK207 located north of East 33rd. Direction: North.

Photograph #56 Route of survey along East 33rd. Direction: East.

Photograph #57 Route of survey along East 33rd. Direction: West.

Photograph #58 Route of survey along East 33rd or the old NE 150th St. Direction: East.

Photograph #59 Route of survey east of Tinker Creek at Gas line crossing. Direction: Southeast.

Photograph #60 Route of survey east of Tinker Creek. Direction: North.

Photograph #61 Route of survey west of Post Rd. Direction: West.

Photograph #62 Route of survey at Post Rd. Direction: West.

Photograph #63 Route of survey along Post Rd. Direction: South

Photograph #64 Route of survey along Post Rd toward Dam. Direction: West.

Photograph #65 Route of survey along Dam. Direction: South.

Photograph #66 34OK45 located west of the Northern portion of the Dam. Directio: South.

Photograph #67 34OK45 located west of the Northern portion of the Dam.
Direction: North.

Photograph #68 Route of survey at the Arcadia Lake Park Headquarters.
Direction: West.

Photograph #69 Showing sheet metal debris and household appliances at 34OK229. Direction: North.

Photograph #70 Showing sheet metal debris and household appliances at 34OK229. Direction: Northeast.

Photograph #71 Showing Stop Ahead sign at 34OK230. Direction: South.

Photograph #72 Showing brick fragments at 34OK230. Direction: N/A.

Photograph #73 Showing foundation fragments in the push pile at 34OK230. Direction: North.

Photograph #74 Showing brick fragments in the push pile at 34OK230. Direction: N/A.

Photograph #75 Showing Steel Tank at 34OK230. Direction: Southeast.

Photograph #76 Showing close up of rivets of the Steel Tank at 34OK230. Direction: North.

Photograph #77 Showing foundation fragments in the push pile at 34OK231.
Direction: Northeast.

Photograph #78 Showing concrete foundation and debris pile at 34OK231.
Direction: South.

Photograph #79 Showing concrete foundation and chain link fence at 34OK231.
Direction: West.

Photograph #80 Showing bed frame and pipe at 34OK231.
Direction: East.

Photograph #81 Showing concrete foundation and debris pile at 34OK231. Direction: West.

Photograph #82 Showing metal feeder at 34OK231. Direction: N/A.

Photograph #83 Showing metal in the push pile at 34OK232. Direction: Southeast.

Photograph #84 Showing metal guardrail in the push pile at 34OK232. Direction: N/A.

Photograph #85 Showing metal in the push pile at 34OK232. Direction: North.

Photograph #86 Showing 1960's Ford Van at 34OK233. Direction: West.

Photograph #87 Showing 1960's-1970's Bicycle at 34OK233. Direction: N/A.

Photograph #88 Showing modern electrical junction box and conduit at 34OK233. Direction: N/A.

Photograph #89 Showing car frame and axles at 34OK233. Direction: West.

Photograph #90 Showing cinder block fragments at 34OK233. Direction: North.

Photograph #91 Showing wood pile at 34OK233. Direction: West.

Oklahoma Historical Society *Founded May 27, 1893*
State Historic Preservation Office
Oklahoma History Center • 800 Nazih Zuhdi Drive • Oklahoma City, OK 73105-7917
(405) 521-6249 • Fax (405) 522-0816 • www.okhistory.org/shpo/shpom.htm

June 14, 2013

Mr. Jeff Knack, Acting Chief
Environmental Analysis & Compliance
Tulsa District Corps of Engineers
1645 South 101st East Avenue
Tulsa, OK 74128

RE: File #1599-13; City of Edmond Proposed Pedestrian Trail around Arcadia Lake, Oklahoma County

Dear Mr. Knack:

We have reviewed the documentation submitted on the referenced project. We find that we are unable to complete the review of your project without the following additional information:

(1) Provide updated archaeological site forms for 34OK207 and 34OK209.

(2) Provide the search radius used for the background research in order to explain why 30 previously recorded archaeological sites were included and summarized within the report.

(3) Provide a summary of previous studies that were conducted within the project area. As was noted in the bibliography of the report, there are four studies listed (see below) but they are not summarized within Section 2.0 of the Pre-field Investigation section on Page 8. This summary of previous work is important to the understanding of the history of the project area and of the archaeological sites that have been previously identified and thus aids in the current evaluation of the new sites identified and the project as a whole. Also, it is inappropriate to include bibliographic references that have not been mentioned within the text of the report.

Gruber, Thomas E. and Janna L. Gruber
2012 Open Range Archaeology 2012-008: Archaeological Survey Report: Arcadia Lake Proposed Boating/Fishing Access, Oklahoma County, OK.

Hartley, John D.
1976 A Resource Survey and Assessment of the Prehistoric Resources of Arcadia Lake, Oklahoma County, OK. Oklahoma River Basin Survey Project.

Neal, Larry
1973 An Assessment of the Prehistoric Cultural Resources of the Proposed Arcadia Reservoir Oklahoma County, OK.

Rickers, J.
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RE: File #1599-13; City of Edmond Proposed Pedestrian Trail around Arcadia Lake, Oklahoma County

(4) Page 17, Section 4.0 Environmental Description, introduce the fact that Arcadia Lake is manmade and describe any other water resources within the project area.

(5) Page 18, Section 5.0 Cultural Background, the description jumps from statehood to 1987 and the development of Arcadia Lake. Provide a transition that discusses the development of Edmond. The discussion of the Deep Fork River would be more appropriate in the third paragraph on Page 18.

(6) There is a noted absence of references in the Cultural Background Section. Please revise to prove where this information was taken from to write this section. This also refers back to the previous comment #3 on including bibliographic references that are missing in the text of the report.

If you should have any questions concerning this request, please contact me at 405/521-6381.

Thank you for the opportunity to review this project. Please reference the above underlined file number when responding.

Sincerely,

Catharine M. Wood
Historical Archaeologist

CMW:pm

APPENDIX D– Hazardous, Toxic, and Radiological Waste Report

EDR DataMap® - Area Study

Arcadia Lake Trails

EDR Environmental Data Resources Inc

Edmond, OK

- Listed Sites
- Earthquake Epicenters (Richter 5 or greater)
- Search Boundary
- Roads
- Major Roads
- Waterways
- Railroads
- Contour Lines
- Pipelines
- Powerlines
- Fault Lines
- Water
- Superfund Sites
- Federal DOD Sites
- Indian Reservations BIA
- 100-Yr Flood Zones
- National Wetland Inventory

N

0 1/2 1

Scale in Miles

Copyright © 2013 EDR, Inc. © 2010 Tele Atlas Rel. 07/2009. 3620532.1s - 03 Jun 13

Arcadia Lake Trails
Edmond, OK 73013

Inquiry Number: 3620532.1s
June 03, 2013

EDR DataMap™ Area Study

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

TARGET PROPERTY INFORMATION

ADDRESS

EDMOND, OK 73013
EDMOND, OK 73013

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records within the requested search area for the following databases:

FEDERAL RECORDS

NPL	National Priority List
Proposed NPL	Proposed National Priority List Sites
Delisted NPL	National Priority List Deletions
NPL LIENS	Federal Superfund Liens
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CERC-NFRAP	CERCLIS No Further Remedial Action Planned
LIENS 2	CERCLA Lien Information
CORRACTS	Corrective Action Report
RCRA-TSDF	RCRA - Treatment, Storage and Disposal
RCRA-LQG	RCRA - Large Quantity Generators
RCRA-CESQG	RCRA - Conditionally Exempt Small Quantity Generator
US ENG CONTROLS	Engineering Controls Sites List
US INST CONTROL	Sites with Institutional Controls
ERNS	Emergency Response Notification System
HMIRS	Hazardous Materials Information Reporting System
DOT OPS	Incident and Accident Data
US CDL	Clandestine Drug Labs
US BROWNFIELDS	A Listing of Brownfields Sites
FUDS	Formerly Used Defense Sites
LUCIS	Land Use Control Information System
CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Records Of Decision
UMTRA	Uranium Mill Tailings Sites
DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations
ODI	Open Dump Inventory
US MINES	Mines Master Index File
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
SSTS	Section 7 Tracking Systems
ICIS	Integrated Compliance Information System
PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System

EXECUTIVE SUMMARY

RADINFO	Radiation Information Database
RAATS	RCRA Administrative Action Tracking System
RMP	Risk Management Plans
US AIRS	Aerometric Information Retrieval System Facility Subsystem
PRP	Potentially Responsible Parties
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
EPA WATCH LIST	EPA WATCH LIST
US FIN ASSUR	Financial Assurance Information
US HIST CDL	National Clandestine Laboratory Register
PCB TRANSFORMER	PCB Transformer Registration Database
COAL ASH DOE	Steam-Electric Plant Operation Data
FEMA UST	Underground Storage Tank Listing
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
FEDERAL FACILITY	Federal Facility Site Information listing
LEAD SMELTERS	Lead Smelter Sites
2020 COR ACTION	2020 Corrective Action Program List

STATE AND LOCAL RECORDS

SHWS	The Land Report
SWF/LF	Permitted Solid Waste Disposal & Processing Facilities
UIC	Underground Injection Wells Database Listing
SWRCY	Recycling Facilities
LAST	Leaking Aboveground Storage Tanks List
INST CONTROL	Institutional Control Sites
VCP	Voluntary Cleanup Site Inventory
DRYCLEANERS	Drycleaner Facility Listing
BROWNFIELDS	Brownfield Sites
AIRS	Permitted AIRS Facility Listing
TIER 2	Tier 2 Data Listing
OK COMPLAINT	Oklahoma Complaint System Database

TRIBAL RECORDS

INDIAN RESERV	Indian Reservations
INDIAN ODI	Report on the Status of Open Dumps on Indian Lands
INDIAN LUST	Leaking Underground Storage Tanks on Indian Land
INDIAN UST	Underground Storage Tanks on Indian Land
INDIAN VCP	Voluntary Cleanup Priority Listing

EDR PROPRIETARY RECORDS

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR US Hist Cleaners	EDR Exclusive Historic Dry Cleaners

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified.

Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

FEDERAL RECORDS

RCRA-SQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

A review of the RCRA-SQG list, as provided by EDR, and dated 02/12/2013 has revealed that there is 1 RCRA-SQG site within the searched area.

Site	Address	Map ID	Page
WAL-MART SUPERCENTER # 389	1225 W I-35 FRONTAGE RD	6	13

RCRA NonGen / NLR: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 02/12/2013 has revealed that there are 2 RCRA NonGen / NLR sites within the searched area.

Site	Address	Map ID	Page
SQG SERVICES INC	***4521 E 2ND STREET STE A***	***2***	***5***
WHITETAIL SVCS INC	***4521 E 2ND STREET***	***2***	***6***

DOD: Consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

A review of the DOD list, as provided by EDR, and dated 12/31/2005 has revealed that there is 1 DOD site within the searched area.

Site	Address	Map ID	Page
ARCADIA LAKE		0	3

FINDS: The Facility Index System contains both facility information and "pointers" to other sources of information that contain more detail. These include: RCRIS; Permit Compliance System (PCS); Aerometric Information Retrieval System (AIRS); FATES (FIFRA [Federal Insecticide Fungicide Rodenticide Act] and TSCA Enforcement System, FTTS [FIFRA/TSCA Tracking System]; CERCLIS; DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes); Federal Underground Injection Control (FURS); Federal Reporting Data System (FRDS); Surface Impoundments (SIA); TSCA Chemicals in Commerce Information System (CICS); PADS; RCRA-J (medical waste transporters/disposers); TRIS; and TSCA. The source of this database is the U.S. EPA/NTIS.

A review of the FINDS list, as provided by EDR, and dated 10/23/2011 has revealed that there are 2

FINDS sites within the searched area.

Site	Address	Map ID	Page
SQG SERVICES INC	*4521 E 2ND STREET STE A*	*2*	*5*
WHITETAIL SVCS INC	*4521 E 2ND STREET*	*2*	*6*

STATE AND LOCAL RECORDS

LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the Oklahoma Corporation Commission's Leaking UST list.

A review of the LUST list, as provided by EDR, and dated 04/22/2013 has revealed that there is 1 LUST site within the searched area.

Site	Address	Map ID	Page
POPS	*11000 E HWY 66*	*5*	*10*
STATUS: Closed			

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the Oklahoma Corporation Commission's State UST List, List II Version.

A review of the UST list, as provided by EDR, and dated 04/24/2013 has revealed that there are 3 UST sites within the searched area.

Site	Address	Map ID	Page
WHITETAIL SERVICE INC.	*4521 E 2ND*	*2*	*3*
FOUNTAIN OAKS	*201 S MELINE*	*4*	*8*
POPS	*11000 E HWY 66*	*5*	*10*

HIST UST: This underground storage tank listing includes tank information through March 2003. This listing is no longer updated by the Oklahoma Corporation Commission.

A review of the HIST UST list, as provided by EDR, and dated 03/21/2003 has revealed that there are 3 HIST UST sites within the searched area.

Site	Address	Map ID	Page
WHITETAIL SERVICE INC.	*4521 E 2ND*	*2*	*3*
FOUNTAIN OAKS	*201 S MELINE*	*4*	*8*
POPS	*11000 E HWY 66*	*5*	*10*

EXECUTIVE SUMMARY

AST: The Aboveground Storage Tank database contains registered ASTs. The data come from the Oklahoma Corporation Commission's State AST List, List II Version.

A review of the AST list, as provided by EDR, and dated 04/24/2013 has revealed that there is 1 AST site within the searched area.

Site	Address	Map ID	Page
WHITETAIL SERVICE INC.	***4521 E 2ND***	***2***	***3***

EDR PROPRIETARY RECORDS

EDR US Hist Auto Stat: EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR US Hist Auto Stat list, as provided by EDR, has revealed that there are 3 EDR US Hist Auto Stat sites within the searched area.

Site	Address	Map ID	Page
Not reported	5816 MEGANS WAY	1	3
Not reported	5500 E 2ND ST	3	7
Not reported	201 MELINE DR	4	8

EXECUTIVE SUMMARY

Please refer to the end of the findings report for unmapped orphan sites due to poor or inadequate address information.

MAP FINDINGS SUMMARY

Database	Total Plotted
FEDERAL RECORDS	
NPL	0
Proposed NPL	0
Delisted NPL	0
NPL LIENS	0
CERCLIS	0
CERC-NFRAP	0
LIENS 2	0
CORRACTS	0
RCRA-TSDF	0
RCRA-LQG	0
RCRA-SQG	1
RCRA-CESQG	0
RCRA NonGen / NLR	2
US ENG CONTROLS	0
US INST CONTROL	0
ERNS	0
HMIRS	0
DOT OPS	0
US CDL	0
US BROWNFIELDS	0
DOD	1
FUDS	0
LUCIS	0
CONSENT	0
ROD	0
UMTRA	0
DEBRIS REGION 9	0
ODI	0
US MINES	0
TRIS	0
TSCA	0
FTTS	0
HIST FTTS	0
SSTS	0
ICIS	0
PADS	0
MLTS	0
RADINFO	0
FINDS	2
RAATS	0
RMP	0
US AIRS	0
PRP	0
SCRD DRYCLEANERS	0
EPA WATCH LIST	0
US FIN ASSUR	0
US HIST CDL	0
PCB TRANSFORMER	0

MAP FINDINGS SUMMARY

Database	Total Plotted
COAL ASH DOE	0
FEMA UST	0
COAL ASH EPA	0
FEDERAL FACILITY	0
LEAD SMELTERS	0
2020 COR ACTION	0
STATE AND LOCAL RECORDS	
SHWS	0
SWF/LF	0
UIC	0
SWRCY	0
LUST	1
UST	3
HIST UST	3
LAST	0
AST	1
INST CONTROL	0
VCP	0
DRYCLEANERS	0
BROWNFIELDS	0
AIRS	0
TIER 2	0
OK COMPLAINT	0
TRIBAL RECORDS	
INDIAN RESERV	0
INDIAN ODI	0
INDIAN LUST	0
INDIAN UST	0
INDIAN VCP	0
EDR PROPRIETARY RECORDS	
EDR MGP	0
EDR US Hist Auto Stat	3
EDR US Hist Cleaners	0

NOTES:

Sites may be listed in more than one database

DOD Region **ARCADIA LAKE** **DOD** **CUSA138816** **N/A**

ARCADIA LAKE (County), OK

DOD:
- Feature 1: Army Corps of Engineers DOD
- Feature 2: Not reported
- Feature 3: Not reported
- URL: Not reported
- Name 1: Arcadia Lake
- Name 2: Not reported
- Name 3: Not reported
- State: OK
- DOD Site: Yes
- Tile name: OKOKLAHOMA

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1 **EDR US Hist Auto Stat** **1015560959** **N/A**

5816 MEGANS WAY
EDMOND, OK 73034

EDR Historical Auto Stations:
- Name: OIL & GAS ASSET CLEARINGHOUSE
- Year: 2009
- Address: 5816 MEGANS WAY

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2 **WHITETAIL SERVICE INC.** **UST** **U001885017**
4521 E 2ND **HIST UST** **N/A**
EDMOND, OK 73034 **AST**

UST:
- Facility ID: 5511477
- Lat/Long: 35.6531999 / -97.423599
- Contact Name: Whitetail Services, Inc
- Contact Address: 3301 NE 50TH STREET
- Contact City,St,Zip: Oklahoma City, OK 73121

- Tank ID: 1
- Tank Status: Permanently Out Of Use
- Tank Type: UST
- Substance: Used Oil
- Total Capacity: 2000
- Date Installed: 01/01/1990

Additional Tank/Pipe Info:
- Facility Number: 5511477
- Tank Number: 1
- Tank Material: Steel
- Tank Construction: Single Walled
- Pipe Material: Steel

- Tank ID: 2
- Tank Status: Permanently Out Of Use
- Tank Type: UST
- Substance: Used Oil
- Total Capacity: 6100
- Date Installed: 01/01/1990

WHITETAIL SERVICE INC. (Continued) **U001885017**

Additional Tank/Pipe Info:
- Facility Number: 5511477
- Tank Number: 2
- Tank Material: Steel
- Tank Construction: Single Walled
- Pipe Material: Steel

HIST UST:
- Facility ID: 5511477
- Owner Name: WHITETAIL SERVICES, INC
- Owner Address: 3301 NE 50TH STREET
- Owner City,St,Zip: Oklahoma City, OK 73121
- Tank ID: 1
- Tank Status: Permanently Out of Use
- Installed Date: 1/1/1990 0:00:00
- Tank Capacity: 2000
- Product: Used Oil

- Facility ID: 5511477
- Owner Name: WHITETAIL SERVICES, INC
- Owner Address: 3301 NE 50TH STREET
- Owner City,St,Zip: Oklahoma City, OK 73121
- Tank ID: 2
- Tank Status: Permanently Out of Use
- Installed Date: 1/1/1990 0:00:00
- Tank Capacity: 6100
- Product: Used Oil

AST:
- Facility ID: 5522044
- Tank ID: 2
- Tank Status: Permanently Out of Use
- Tank Type: AST
- Install Date: 05/01/1990
- Total Capacity: 400
- Substance: Used Oil
- Lat/Long: 35.6531999 / -97.423599
- Contact Name: Whitetail Services, Inc
- Contact Address: 3301 NE 50TH STREET
- Contact City,St,Zip: Oklahoma City, OK 73121

Additional Tank/Pipe Info:
- Facility Number: 5522044
- Tank Number: 2
- Tank Material: Steel
- Tank Construction: Single Walled
- Pipe Material: Steel

- Facility ID: 5522044
- Tank ID: 1
- Tank Status: Permanently Out of Use
- Tank Type: AST
- Install Date: 05/01/1990
- Total Capacity: 16000

WHITETAIL SERVICE INC. (Continued) **U001885017**

Substance: Diesel
Lat/Long: 35.6531999 / -97.423599
Contact Name: Whitetail Services, Inc
Contact Address: 3301 NE 50TH STREET
Contact City,St,Zip: Oklahoma City, OK 73121

Additional Tank/Pipe Info:
Facility Number: 5522044
Tank Number: 1
Tank Material: Steel
Tank Construction: Single Walled
Pipe Material: Steel

---

2 **SQG SERVICES INC** **RCRA NonGen / NLR** **1000873991**
4521 E 2ND STREET STE A **FINDS** **OKD987097714**
EDMOND, OK 73034

RCRA NonGen / NLR:
Date form received by agency: 05/14/1993
Facility name: SQG SERVICES INC
Facility address: 4521 E 2ND STREET STE A
EDMOND, OK 73034
EPA ID: OKD987097714
Mailing address: E 2ND STREET STE A
EDMOND, OK 73034
Contact: RICK CORDRAY
Contact address: 4521 E 2ND STREET STE A
EDMOND, OK 73034
Contact country: US
Contact telephone: (405) 341-6348
Contact email: Not reported
EPA Region: 06
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: BEARD INVESTMENT CO
Owner/operator address: 5600 N MAY AVE STE 200
OKLAHOMA CITY, OK 73112
Owner/operator country: Not reported
Owner/operator telephone: (405) 842-2333
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No

SQG SERVICES INC (Continued) **1000873991**

Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

FINDS:

Registry ID: 110009434763

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

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2 **WHITETAIL SVCS INC** **RCRA NonGen / NLR** **1000834634**
4521 E 2ND STREET **FINDS** **OKD987096880**
EDMOND, OK 73034

RCRA NonGen / NLR:
Date form received by agency: 09/20/1995
Facility name: WHITETAIL SVCS INC
Facility address: 4521 E 2ND STREET
EDMOND, OK 73034
EPA ID: OKD987096880
Mailing address: E 2ND STREET
EDMOND, OK 73034
Contact: RICK CORDRAY
Contact address: 4521 E 2ND STREET
EDMOND, OK 73034
Contact country: US
Contact telephone: (405) 341-1122
Contact email: Not reported
EPA Region: 06
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: BEARD OIL CO
Owner/operator address: 5600 N MAY STE 200
OKLAHOMA CITY, OK 73113
Owner/operator country: Not reported
Owner/operator telephone: (405) 842-2333
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No

WHITETAIL SVCS INC (Continued) **1000834634**

Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Hazardous Waste Summary:

Waste code: D001

Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.

Violation Status: No violations found

FINDS:

Registry ID: 110004766352

Environmental Interest/Information System

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

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3 **EDR US Hist Auto Stat** **1015550210**

5500 E 2ND ST **N/A**
EDMOND, OK 73034

EDR Historical Auto Stations:

Name: PERFECTION AUTO PAINT
Year: 1999
Address: 5500 E 2ND ST

Name: PERFECTION AUTO PAINT
Year: 2000
Address: 5500 E 2ND ST

Name: PERFECTION AUTO PAINT
Year: 2001
Address: 5500 E 2ND ST

Name: PERFECTION AUTO PAINT

(Continued) **1015550210**

Year: 2002
Address: 5500 E 2ND ST

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4 **EDR US Hist Auto Stat** **1015304847**
201 MELINE DR **N/A**
EDMOND, OK 73034

EDR Historical Auto Stations:

Name: FOUNTAIN OAKS STATION LLC
Year: 2003
Address: 201 MELINE DR

Name: FOUNTAIN OAKS STATION LLC
Year: 2004
Address: 201 MELINE DR

Name: FOUNTAIN OAKS STATION
Year: 2005
Address: 201 MELINE DR

Name: FOUNTAIN OAKS STATION
Year: 2007
Address: 201 MELINE DR

Name: FOUNTAIN OAKS STATION
Year: 2008
Address: 201 MELINE DR

Name: FOUNTAIN OAKS STATION
Year: 2009
Address: 201 MELINE DR

Name: STATION AT FOUNTAIN OAKS
Year: 2010
Address: 201 MELINE DR

Name: STATION AT FOUNTAIN OAKS
Year: 2011
Address: 201 MELINE DR

Name: STATION AT FOUNTAIN OAKS
Year: 2012
Address: 201 MELINE DR

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4 **FOUNTAIN OAKS** **UST** **U003429275**
201 S MELINE **HIST UST** **N/A**
EDMOND, OK 73034

UST:
Facility ID: 5514024
Lat/Long: 35.6516000 / -97.428899
Contact Name: Station Operation Llc
Contact Address: 13701 N MAY SUITE 100
Contact City,St,Zip: Oklahoma City, OK 73134

Tank ID: 1

FOUNTAIN OAKS (Continued) **U003429275**

Tank Status: Currently In Use
Tank Type: UST
Substance: Gasoline
Total Capacity: 20000
Date Installed: 04/01/1997

Additional Tank/Pipe Info:
Facility Number: 5514024
Tank Number: 1
Tank Material: Fiberglass Reinforced Plastic
Tank Construction: Double Walled
Pipe Material: Fiberglass

Tank ID: 2
Tank Status: Currently In Use
Tank Type: UST
Substance: Gasoline
Total Capacity: 12000
Date Installed: 04/01/1997

Additional Tank/Pipe Info:
Facility Number: 5514024
Tank Number: 2
Tank Material: Fiberglass Reinforced Plastic
Tank Construction: Double Walled
Pipe Material: Fiberglass

Tank ID: 3
Tank Status: Currently In Use
Tank Type: UST
Substance: Ethanol
Total Capacity: 10000
Date Installed: 08/01/2010

Additional Tank/Pipe Info:
Facility Number: 5514024
Tank Number: 3
Tank Material: Fiberglass Reinforced Plastic
Tank Construction: Double Walled
Pipe Material: Fiberglass

Facility Number: 5514024
Tank Number: 3
Tank Material: Fiberglass Reinforced Plastic
Tank Construction: Double Walled
Pipe Material: Fiberglass

Tank ID: 3
Tank Status: Currently In Use
Tank Type: UST
Substance: Diesel
Total Capacity: 10000
Date Installed: 08/01/2010

FOUNTAIN OAKS (Continued) **U003429275**

Additional Tank/Pipe Info:

Facility Number:	5514024
Tank Number:	3
Tank Material:	Fiberglass Reinforced Plastic
Tank Construction:	Double Walled
Pipe Material:	Fiberglass

Facility Number:	5514024
Tank Number:	3
Tank Material:	Fiberglass Reinforced Plastic
Tank Construction:	Double Walled
Pipe Material:	Fiberglass

HIST UST:

Facility ID:	9913596
Owner Name:	FOUNTAIN OAKS STATION, LLC
Owner Address:	201 S MELINE
Owner City,St,Zip:	Edmond, OK 73034
Tank ID:	1
Tank Status:	Currently In Use
Installed Date:	4/1/1997 0:00:00
Tank Capacity:	20000
Product:	Gasoline

Facility ID:	9913596
Owner Name:	FOUNTAIN OAKS STATION, LLC
Owner Address:	201 S MELINE
Owner City,St,Zip:	Edmond, OK 73034
Tank ID:	2
Tank Status:	Currently In Use
Installed Date:	4/1/1997 0:00:00
Tank Capacity:	12000
Product:	Gasoline

---

5 **POPS** **LUST** **U001884531**
11000 E HWY 66 **UST** **N/A**
ARCADIA, OK 73007 **HIST UST**

LUST:

Facility ID:	5504573
Case Number:	064-2115
Case Type:	Confirmed Release
Tank Type:	**UST**
Release Date:	**08/13/1998**
Close Date:	**12/29/1999**
Lat/Long:	35.658499999 / -97.33570000
Status:	**Closed**

UST:

Facility ID:	5504573
Lat/Long:	35.6584999 / -97.335700
Contact Name:	Arcadia Farm, Llc
Contact Address:	100 S WESTMINSTER RD
Contact City,St,Zip:	Arcadia, OK 73007

POPS (Continued) **U001884531**

Tank ID: 1
Tank Status: Permanently Out Of Use
Tank Type: UST
Substance: Gasoline
Total Capacity: 8000
Date Installed: 04/16/1984

Additional Tank/Pipe Info:
Facility Number: 5504573
Tank Number: 1
Tank Material: Steel
Tank Construction: Single Walled
Pipe Material: Fiberglass

Tank ID: 2
Tank Status: Permanently Out Of Use
Tank Type: UST
Substance: Diesel
Total Capacity: 6000
Date Installed: 04/16/1984

Additional Tank/Pipe Info:
Facility Number: 5504573
Tank Number: 2
Tank Material: Steel
Tank Construction: Single Walled
Pipe Material: Fiberglass

Tank ID: 3
Tank Status: Permanently Out Of Use
Tank Type: UST
Substance: Kerosene
Total Capacity: 1000
Date Installed: 04/16/1985

Additional Tank/Pipe Info:
Facility Number: 5504573
Tank Number: 3
Tank Material: Steel
Tank Construction: Single Walled
Pipe Material: Fiberglass

Tank ID: 4
Tank Status: Permanently Out Of Use
Tank Type: UST
Substance: Diesel
Total Capacity: 8000
Date Installed: 04/16/1984

Additional Tank/Pipe Info:
Facility Number: 5504573
Tank Number: 4
Tank Material: Steel

POPS (Continued) **U001884531**

Tank Construction: Single Walled
Pipe Material: Fiberglass

Tank ID: 5
Tank Status: Permanently Out Of Use
Tank Type: UST
Substance: Gasoline
Total Capacity: 10000
Date Installed: 04/16/1984

Additional Tank/Pipe Info:
Facility Number: 5504573
Tank Number: 5
Tank Material: Steel
Tank Construction: Single Walled
Pipe Material: Fiberglass

HIST UST:
Facility ID: 5504573
Owner Name: Midwest Oil Company, Ltd.
Owner Address: P.O. Box 1681
Owner City,St,Zip: Enid, OK 73702
Tank ID: 2
Tank Status: Currently in Use
Installed Date: 4/16/1984 0:00:00
Tank Capacity: 6000
Product: Diesel

Facility ID: 5504573
Owner Name: Midwest Oil Company, Ltd.
Owner Address: P.O. Box 1681
Owner City,St,Zip: Enid, OK 73702
Tank ID: 3
Tank Status: Currently in Use
Installed Date: 4/16/1985 0:00:00
Tank Capacity: 1000
Product: Kerosene

Facility ID: 5504573
Owner Name: Midwest Oil Company, Ltd.
Owner Address: P.O. Box 1681
Owner City,St,Zip: Enid, OK 73702
Tank ID: 4
Tank Status: Currently in Use
Installed Date: 4/16/1984 0:00:00
Tank Capacity: 8000
Product: Diesel

Facility ID: 5504573
Owner Name: Midwest Oil Company, Ltd.
Owner Address: P.O. Box 1681
Owner City,St,Zip: Enid, OK 73702
Tank ID: 5
Tank Status: Currently in Use

POPS (Continued) **U001884531**

Installed Date: 4/16/1984 0:00:00
Tank Capacity: 10000
Product: Gasoline

Facility ID: 5504573
Owner Name: Midwest Oil Company, Ltd.
Owner Address: P.O. Box 1681
Owner City,St,Zip: Enid, OK 73702
Tank ID: 1
Tank Status: Currently in Use
Installed Date: 4/16/1984 0:00:00
Tank Capacity: 8000
Product: Gasoline

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6 **WAL-MART SUPERCENTER # 389** **RCRA-SQG** **1010329899**
1225 W I-35 FRONTAGE RD **OKR000021253**
EDMOND, OK 73034

RCRA-SQG:
Date form received by agency: 11/10/2010
Facility name: WAL-MART SUPERCENTER # 389
Facility address: 1225 W I-35 FRONTAGE RD
EDMOND, OK 73034
EPA ID: OKR000021253
Mailing address: PO BOX 8041
BENTONVILLE, AR 727128041
Contact: CHRIS STEWART
Contact address: PO BOX 8041
BENTONVILLE, AR 727128041
Contact country: US
Contact telephone: (479) 204-0402
Contact email: CHRISTOPHER.STEWART@WAL-MART.COM
EPA Region: 06
Land type: Private
Classification: Small Small Quantity Generator
Description: Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:
Owner/operator name: WAL-MART STORES EAST LP
Owner/operator address: PO BOX 8041
BENTONVILLE, AR 72712
Owner/operator country: US
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 09/20/2006
Owner/Op end date: Not reported

Owner/operator name: WAL-MART STORES EAST LP
Owner/operator address: PO BOX 8041
BENTONVILLE, AR 72712
Owner/operator country: US
Owner/operator telephone: Not reported

WAL-MART SUPERCENTER # 389 (Continued) **1010329899**

Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 09/20/2006
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 02/18/2010
Facility name: WAL-MART SUPERCENTER # 389
Classification: Conditionally Exempt Small Quantity Generator

Date form received by agency: 01/23/2009
Facility name: WAL-MART SUPERCENTER # 389
Classification: Small Quantity Generator

Date form received by agency: 08/25/2006
Facility name: WAL-MART SUPERCENTER # 389
Classification: Conditionally Exempt Small Quantity Generator

Hazardous Waste Summary:
Waste code: D001
Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.

Waste code: D002
Waste name: A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.

Waste code: D003
Waste name: A MATERIAL IS CONSIDERED TO BE A REACTIVE HAZARDOUS WASTE IF IT IS

WAL-MART SUPERCENTER # 389 (Continued) **1010329899**

NORMALLY UNSTABLE, REACTS VIOLENTLY WITH WATER, GENERATES TOXIC GASES WHEN EXPOSED TO WATER OR CORROSIVE MATERIALS, OR IF IT IS CAPABLE OF DETONATION OR EXPLOSION WHEN EXPOSED TO HEAT OR A FLAME. ONE EXAMPLE OF SUCH WASTE WOULD BY WASTE GUNPOWDER.

Waste code: D004
Waste name: ARSENIC

Waste code: D005
Waste name: BARIUM

Waste code: D006
Waste name: CADMIUM

Waste code: D007
Waste name: CHROMIUM

Waste code: D008
Waste name: LEAD

Waste code: D009
Waste name: MERCURY

Waste code: D011
Waste name: SILVER

Waste code: D016
Waste name: 2,4-D

Waste code: D018
Waste name: BENZENE

Waste code: D022
Waste name: CHLOROFORM

Waste code: D026
Waste name: CRESOL

Waste code: D027
Waste name: 1,4-DICHLOROBENZENE

Waste code: D035
Waste name: METHYL ETHYL KETONE

Waste code: D039
Waste name: TETRACHLOROETHYLENE

Waste code: U002
Waste name: ACETONE (I)

Waste code: U080
Waste name: METHANE, DICHLORO-

Waste code: U154
Waste name: METHANOL (I)

Waste code: U159

WAL-MART SUPERCENTER # 389 (Continued) **1010329899**

Waste name: 2-BUTANONE (I,T)

Waste code: U165
Waste name: NAPHTHALENE

Waste code: U249
Waste name: ZINC PHOSPHIDE ZN3P2, WHEN PRESENT AT CONCENTRATIONS OF 10% OR LESS

Waste code: U279
Waste name: CARBARYL (OR) 1-NAPHTHALENOL, METHYLCARBAMATE

Waste code: U409
Waste name: CARBAMIC ACID, [1,2-PHENYLENEBIS (IMINOCARBONOTHIOYL)]BIS-, DIMETHYL ESTER (OR) THIOPHANATE-METHYL

Waste code: U411
Waste name: PHENOL, 2-(1-METHYLETHOXY)-, METHYLCARBAMATE (OR) PROPOXUR

Violation Status: No violations found

Evaluation Action Summary:
Evaluation date: 07/15/2011
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Count: 49 records

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
ARCADIA	U004132961	BELL GAS (1710)	HWY 66 E	73007	UST
ARCADIA	U004108434	POP'S	660 W HWY 66	73007	UST
ARCADIA	1004768485	US ARMY COE ARCADIA PROJECT OFFICE	3 W	73007	RCRA-CESQG, FINDS
EDMOND	1012135021	ROARING FORKS	150TH & PENN	73013	US BROWNFIELDS, FINDS
EDMOND	U004132788	FORMER SOUTHLAND #26891	2ND	73034	UST
EDMOND	1004768808	COTTONWOOD SALON	35 SE 33RD	73013	RCRA-CESQG, FINDS
EDMOND	S110455776	RECYCLING DROP OFF CENTER	I 35 & COVELL ROAD OFF PROGRESSIVE ST		SWRCY
EDMOND	1004768457	FORMER EDMOND STATION	5 I 35 ONWATERLOO RD	73034	RCRA NonGen / NLR, FINDS
EDMOND	S112431668	ODOT EDMOND SALT STORAGE FACILITY	I 35		VCP
EDMOND	U001883387	FOUR COUNTIES FARM ENTERPRISES	4TH & 2ND M SO OF CASHION	73034	UST, HIST UST
EDMOND	S109997304	ACADEMY SPORTS + OUTDOORS	2501 S BROADWAYBETWEEN 15TH	73013	SWRCY
EDMOND	U004132803	EDMOND HIGH SCHOOL N	DANFORTH & THOMAS	73034	UST
EDMOND	1001224923	ERNEST & HELEN GRAHAM	306 W DANFORTH	73034	RCRA NonGen / NLR, FINDS
EDMOND	1007445105	TOMMY L BELL C AND D SITE	2 MI E OF I-35 AND 3 MI N ON STATE HWY 66		ODI
EDMOND	1004769253	STOUTS BODY SHOP	5716 N I 35 INDUSTRIAL BLVD	73034	RCRA-CESQG, FINDS
EDMOND	1000146520	FORMER OKLAHOMA INDUSTRIAL SILVER INC	300 N I 35	73034	RCRA NonGen / NLR, FINDS
EDMOND	1012309019	HIGHLAND TRAILS SUBDIVISION	UNNAMED CREEK	73034	FINDS
MAYSVILLE	1014202477	KELLY DISPOSAL PITS	RT 2	73007	CERC-NFRAP
OKLAHOMA CITY	A100306414	MIDWEST WRECKING CO	10200 N I 35 SERVICE RD E	73131	AST
OKLAHOMA CITY	1010787787	WELCHEL ENTERPRISES LLC	11301 I-35	73131	RCRA-CESQG
OKLAHOMA CITY	1013093129	DUIT CONSTRUCTION COMPANY	WATERLOO & I-35 NORTH	73034	US MINES
OKLAHOMA COUNTY	S107030615	TOWN OF HARRAH DISPOSAL SITE	CORNER OF HOLDEN STREET / COUNTY ROAD ST		SWF/LF
OKLAHOMA COUNTY	S106496826	PICKERING ENVIRONMENTAL SOIL WASHERS	SW CORNER OF SE/4 OF S31 T12N R4W (8301		SWF/LF
OKLAHOMA COUNTY	S106496811	RUFUS BRYANT & SON LANDFILL	GOVERNMENT LOTS 7 / 8 IN NW/4 OF S31 T12		SWF/LF
OKLAHOMA COUNTY	S106496824	AMERICAN MEDICAL DISPOSAL, INC.	LOTS 41 - 44, SWASTIKA ADDITION, A SUBDI		SWF/LF
OKLAHOMA COUNTY	S106496805	SPANN LANDFILL	LOTS 6, 7, 11 - 49, BLOCK 32, EAST OKLAH		SWF/LF
OKLAHOMA COUNTY	S106496818	LAND RECLAIMERS, INC. LANDFILL	NW/4 NE/4 NW/4 / E/2 NE/4 NE/4 NW/4 OF S		SWF/LF
OKLAHOMA COUNTY	S107030616	OKLAHOMA CITY SLUDGE LANDFILL #1	N/2 NE/4 OF S21 T12N R2W		SWF/LF
OKLAHOMA COUNTY	S106496825	EDMOND YARD WASTE COMPOSTING FACILITY	NE/4 NW/4 OF S16 T14N R3W		SWF/LF
OKLAHOMA COUNTY	S106496813	TINKER AFB LANDFILL	NE/4 NW/4 OF S25 T11N R2W		SWF/LF
OKLAHOMA COUNTY	S106496809	CITY OF DEL CITY LANDFILL	NW/4 OF S32 T12N R2W LYING NORTH OF FRIS		SWF/LF
OKLAHOMA COUNTY	S106496817	OKLAHOMA CITY LANDFILL COMPANY	NE/4 OF S8 T11N R4W / GOVERNMENT LOTS 5,		SWF/LF
OKLAHOMA COUNTY	S106496820	VILLA LANDFILL	NW/4 OF S31 T12N R3W (NW 10TH / VILLA)		SWF/LF
OKLAHOMA COUNTY	S106496830	DAYTON TIRE & RUBBER COMPANY	W/2 OF S8 T11N R4W		SWF/LF
OKLAHOMA COUNTY	S106496821	STOCKYARDS RECYCLERS, L.L.C.	SW/4 OF S6 T11N R3W		SWF/LF
OKLAHOMA COUNTY	S106496828	CITY OF OKLAHOMA CITY HOUSEHOLD HAZARDOU	NE/4 OF S11 T11N R4W		SWF/LF
OKLAHOMA COUNTY	S106496806	CITY OF MIDWEST CITY LANDFILL	SW/4 OF S15 T12N R2W		SWF/LF
OKLAHOMA COUNTY	S106496807	CUSTOM EQUIPMENT COMPANY LANDFILL	SE/4 OF S25 T11N R3W		SWF/LF
OKLAHOMA COUNTY	S106496808	A-1 SANITARY LANDFILL	NE/4 OF S21 T12N R2W		SWF/LF
OKLAHOMA COUNTY	S108061238	ENSERV MIDWEST, LLC (FORMALLY ERS)	S/2 OF S6 T11N R4W (8800 SW 8TH ST.)		SWF/LF
OKLAHOMA COUNTY	S106496819	MIDWEST C\D LANDFILL	NW/4 OF S24 T11N R2W		SWF/LF
OKLAHOMA COUNTY	S106496810	MIDWEST MAINTENANCE & CONSTRUCTION COMPA	S/2 S/2 NW/4 OF S24 T11N R2W		SWF/LF
OKLAHOMA COUNTY	M300005142	GENERAL MATERIALS, INC.	SOONER ROAD PIT		US MINES

Count: 49 records

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
OKLAHOMA COUNTY	S106496815	CITY OF DEL CITY MUNICIPAL INCINERATOR	NE/4 SW/4 OF S32 T12N R2W		SWF/LF
OKLAHOMA COUNTY	S106496827	EDMOND SOLID WASTE TRANSFER STATION	S/2 SW/4 SW/4, / SW/4 SE/4 SW/4, & S 50'		SWF/LF
OKLAHOMA COUNTY	S106496822	CMI ENERGY CONVERSION SYSTEMS WASTE-TO-E	S6 T11N R3W (801 S. AGNEW)		SWF/LF
OKLAHOMA COUNTY	S106496823	SOUTHEAST LANDFILL	S25 T11N R3W		SWF/LF
OKLAHOMA COUNTY	S106496812	WMO-MOSLEY ROAD LANDFILL	S21 T12N R2W		SWF/LF
OKLAHOMA COUNTY	S106496816	NORTH CANADIAN WW TREATMENT PLANT	S16 T13N R1W		SWF/LF

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

FEDERAL RECORDS

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 02/01/2013
Date Data Arrived at EDR: 03/01/2013
Date Made Active in Reports: 03/13/2013
Number of Days to Update: 12

Source: EPA
Telephone: N/A
Last EDR Contact: 05/09/2013
Next Scheduled EDR Contact: 07/22/2013
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 02/01/2013
Date Data Arrived at EDR: 03/01/2013
Date Made Active in Reports: 03/13/2013
Number of Days to Update: 12

Source: EPA
Telephone: N/A
Last EDR Contact: 05/09/2013
Next Scheduled EDR Contact: 07/22/2013
Data Release Frequency: Quarterly

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 02/01/2013
Date Data Arrived at EDR: 03/01/2013
Date Made Active in Reports: 03/13/2013
Number of Days to Update: 12

Source: EPA
Telephone: N/A
Last EDR Contact: 05/09/2013
Next Scheduled EDR Contact: 07/22/2013
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/04/2013
Date Data Arrived at EDR: 03/01/2013
Date Made Active in Reports: 03/13/2013
Number of Days to Update: 12

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 05/29/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Quarterly

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 02/05/2013
Date Data Arrived at EDR: 03/01/2013
Date Made Active in Reports: 03/13/2013
Number of Days to Update: 12

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 05/29/2013
Next Scheduled EDR Contact: 05/09/2013
Data Release Frequency: Quarterly

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/06/2013
Date Data Arrived at EDR: 04/25/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 15

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 02/12/2013
Date Data Arrived at EDR: 02/21/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 6

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 05/02/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Quarterly

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 02/12/2013
Date Data Arrived at EDR: 02/15/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 12

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 05/02/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Quarterly

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 02/12/2013
Date Data Arrived at EDR: 02/15/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 12

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 05/02/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 02/12/2013
Date Data Arrived at EDR: 02/15/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 12

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 05/02/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 02/12/2013
Date Data Arrived at EDR: 02/15/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 12

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 05/02/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Varies

RCRA NonGen / NLR: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 02/12/2013
Date Data Arrived at EDR: 02/15/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 12

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 05/02/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 03/14/2013
Date Data Arrived at EDR: 03/29/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 42

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/11/2013
Next Scheduled EDR Contact: 06/24/2013
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 03/14/2013
Date Data Arrived at EDR: 03/29/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 42

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/11/2013
Next Scheduled EDR Contact: 06/24/2013
Data Release Frequency: Varies

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/17/2013
Date Made Active in Reports: 02/15/2013
Number of Days to Update: 29

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 04/02/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Annually

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 55

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 04/02/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Annually

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 05/07/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Varies

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 03/04/2013
Date Data Arrived at EDR: 03/12/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 59

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/04/2013
Next Scheduled EDR Contact: 06/17/2013
Data Release Frequency: Quarterly

US BROWNFIELDS: A Listing of Brownfields Sites

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 12/10/2012
Date Data Arrived at EDR: 12/11/2012
Date Made Active in Reports: 12/20/2012
Number of Days to Update: 9

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/26/2013
Next Scheduled EDR Contact: 07/08/2013
Data Release Frequency: Semi-Annually

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/19/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 02/26/2013
Date Made Active in Reports: 03/13/2013
Number of Days to Update: 15

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 03/11/2013
Next Scheduled EDR Contact: 06/24/2013
Data Release Frequency: Varies

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/20/2013
Next Scheduled EDR Contact: 09/02/2013
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 01/15/2013
Date Made Active in Reports: 03/13/2013
Number of Days to Update: 57

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/01/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 12/18/2012
Date Data Arrived at EDR: 03/13/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 30

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/13/2013
Next Scheduled EDR Contact: 06/24/2013
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/28/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/05/2013
Date Data Arrived at EDR: 04/18/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 22

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 03/06/2013
Next Scheduled EDR Contact: 06/17/2013
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 09/01/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 131

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/29/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 64

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/28/2013
Next Scheduled EDR Contact: 07/08/2013
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 05/28/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 05/28/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 07/20/2011
Date Data Arrived at EDR: 11/10/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 61

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 04/15/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/01/2012
Date Data Arrived at EDR: 01/16/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 114

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/19/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 06/21/2011
Date Data Arrived at EDR: 07/15/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 60

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 03/11/2013
Next Scheduled EDR Contact: 06/24/2013
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 04/09/2013
Date Data Arrived at EDR: 04/11/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 29

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/11/2013
Next Scheduled EDR Contact: 07/22/2013
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 10/23/2011
Date Data Arrived at EDR: 12/13/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 79

Source: EPA
Telephone: (214) 665-2200
Last EDR Contact: 03/12/2013
Next Scheduled EDR Contact: 06/24/2013
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 05/08/2012
Date Data Arrived at EDR: 05/25/2012
Date Made Active in Reports: 07/10/2012
Number of Days to Update: 46

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 02/26/2013
Date Made Active in Reports: 04/19/2013
Number of Days to Update: 52

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 05/30/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Biennially

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/03/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

COAL ASH DOE: Sleam-Electric Plan Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 04/18/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Varies

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/18/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 08/17/2010
Date Data Arrived at EDR: 01/03/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 77
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/15/2013
Next Scheduled EDR Contact: 06/24/2013
Data Release Frequency: Varies

FEDERAL FACILITY: Federal Facility Site Information listing
A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 10/09/2012
Date Made Active in Reports: 12/20/2012
Number of Days to Update: 72
Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/10/2013
Next Scheduled EDR Contact: 07/22/2013
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites
A listing of former lead smelter site locations.

Date of Government Version: 01/29/2013
Date Data Arrived at EDR: 02/14/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 13
Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 04/08/2013
Next Scheduled EDR Contact: 07/22/2013
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites
A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 03/04/2013
Date Data Arrived at EDR: 03/15/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 56

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 05/20/2013
Next Scheduled EDR Contact: 09/02/2013
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 02/18/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 81

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 05/10/2013
Next Scheduled EDR Contact: 08/26/2013
Data Release Frequency: Quarterly

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 01/23/2013
Date Data Arrived at EDR: 01/30/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-5962
Last EDR Contact: 04/01/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Annually

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 01/23/2013
Date Data Arrived at EDR: 01/30/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-5962
Last EDR Contact: 04/01/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 05/06/2013
Next Scheduled EDR Contact: 08/05/2013
Data Release Frequency: Varies

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 12/02/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 03/13/2013
Number of Days to Update: 69

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 04/04/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List
The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 11/11/2011
Date Data Arrived at EDR: 05/18/2012
Date Made Active in Reports: 05/25/2012
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 05/17/2013
Next Scheduled EDR Contact: 08/26/2013
Data Release Frequency: Varies

STATE AND LOCAL RECORDS

SHWS: Voluntary Cleanup & Superfund Site Status Report
Land restoration projects carried out in several DEQ programs.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 05/28/2010
Date Made Active in Reports: 07/13/2010
Number of Days to Update: 46

Source: Department of Environmental Quality
Telephone: 405-702-5100
Last EDR Contact: 05/24/2013
Next Scheduled EDR Contact: 09/02/2013
Data Release Frequency: Varies

SWF/LF: Permitted Solid Waste Disposal & Processing Facilities
Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 08/15/2012
Date Data Arrived at EDR: 08/23/2012
Date Made Active in Reports: 09/28/2012
Number of Days to Update: 36

Source: Department of Environmental Quality
Telephone: 405-702-5184
Last EDR Contact: 05/06/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Semi-Annually

UIC: Underground Injection Wells Database Listing
Class I injection wells. CLASS I wells are used to inject liquid hazardous and non-hazardous wastes beneath the lower most Underground Sources of Drinking Water (USDW).

Date of Government Version: 02/01/2013
Date Data Arrived at EDR: 02/15/2013
Date Made Active in Reports: 04/02/2013
Number of Days to Update: 46

Source: Department of Environmental Quality
Telephone: 405-702-5188
Last EDR Contact: 04/26/2013
Next Scheduled EDR Contact: 08/05/2013
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

SWRCY: Recycling Facilities
A listing of recycling facility locations.

Date of Government Version: 04/10/2013
Date Data Arrived at EDR: 04/26/2013
Date Made Active in Reports: 05/23/2013
Number of Days to Update: 27

Source: Department of Environmental Quality
Telephone: 405-702-5100
Last EDR Contact: 04/24/2013
Next Scheduled EDR Contact: 08/05/2013
Data Release Frequency: Varies

LUST: Leaking Underground Storage Tank List
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 04/22/2013
Date Data Arrived at EDR: 04/23/2013
Date Made Active in Reports: 05/23/2013
Number of Days to Update: 30

Source: Oklahoma Corporation Commission
Telephone: 405-521-3107
Last EDR Contact: 04/15/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Varies

UST: Underground Storage Tank Listing
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 04/24/2013
Date Data Arrived at EDR: 04/25/2013
Date Made Active in Reports: 05/23/2013
Number of Days to Update: 28

Source: Oklahoma Corporation Commission
Telephone: 405-521-3107
Last EDR Contact: 04/15/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Varies

HIST UST: Underground Storage Tank List, List II Version
This underground storage tank listing includes tank information through March 2003. This listing is no longer updated by the Oklahoma Corporation Commission.

Date of Government Version: 03/21/2003
Date Data Arrived at EDR: 04/28/2003
Date Made Active in Reports: 05/27/2003
Number of Days to Update: 29

Source: Oklahoma Corporation Commission
Telephone: 405-521-3107
Last EDR Contact: 01/19/2009
Next Scheduled EDR Contact: 04/19/2009
Data Release Frequency: No Update Planned

LAST: Leaking Aboveground Storage Tanks List
Leaking aboveground storage tank site locations.

Date of Government Version: 04/22/2013
Date Data Arrived at EDR: 04/23/2013
Date Made Active in Reports: 05/23/2013
Number of Days to Update: 30

Source: Oklahoma Corporation Commission
Telephone: 405-522-4640
Last EDR Contact: 04/15/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Varies

AST: Aboveground Storage Tanks
Registered Aboveground Storage Tanks.

Date of Government Version: 04/24/2013
Date Data Arrived at EDR: 04/25/2013
Date Made Active in Reports: 05/23/2013
Number of Days to Update: 28

Source: Oklahoma Corporation Commission
Telephone: 405-521-3107
Last EDR Contact: 04/15/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Varies

INST CONTROL: Institutional Control Sites
Sites with institutional controls in place.

Date of Government Version: 02/07/2013
Date Data Arrived at EDR: 02/21/2013
Date Made Active in Reports: 04/02/2013
Number of Days to Update: 40

Source: Department of Environmental Quality
Telephone: 405-702-5100
Last EDR Contact: 05/22/2013
Next Scheduled EDR Contact: 09/02/2013
Data Release Frequency: Varies

VCP: Voluntary Cleanup Site Inventory

Investigations and cleanups by groups or individuals participating in the Voluntary Cleanup Program (VCP).

Date of Government Version: 02/07/2013
Date Data Arrived at EDR: 02/21/2013
Date Made Active in Reports: 04/02/2013
Number of Days to Update: 40

Source: Department of Environmental Quality
Telephone: 405-702-5100
Last EDR Contact: 05/22/2013
Next Scheduled EDR Contact: 09/02/2013
Data Release Frequency: Varies

DRYCLEANERS: Drycleaner Facilities

A listing of drycleaner facility locations.

Date of Government Version: 03/18/2013
Date Data Arrived at EDR: 03/20/2013
Date Made Active in Reports: 04/02/2013
Number of Days to Update: 13

Source: Department of Environmental Quality
Telephone: 405-702-9100
Last EDR Contact: 03/18/2013
Next Scheduled EDR Contact: 07/01/2013
Data Release Frequency: Varies

BROWNFIELDS: Brownfield Sites

Brownfields are defined by Oklahoma law as abandoned, idled or under used industrial or commercial facilities or other real property at which expansion or redevelopment of the real property is complicated by environmental contamination caused by regulated substances. This program provides a means for private parties and government entities to voluntarily investigate and if warranted, clean up properties that may be contaminated with hazardous wastes. The formal Brownfields Program provides specific state liability relief and protects the property from federal Superfund actions.

Date of Government Version: 09/07/2012
Date Data Arrived at EDR: 09/07/2012
Date Made Active in Reports: 10/10/2012
Number of Days to Update: 33

Source: Department of Environmental Quality
Telephone: 405-702-5100
Last EDR Contact: 05/20/2013
Next Scheduled EDR Contact: 09/02/2013
Data Release Frequency: No Update Planned

BROWNFIELDS 2: Brownfields Public Record Listing

The Brownfields program provides a means for private parties and government entities to voluntarily investigate and if warranted, clean up properties that may be contaminated with hazardous wastes. The formal Brownfields Program provides specific state liability relief and protects the property from federal Superfund actions.

Date of Government Version: 01/29/2013
Date Data Arrived at EDR: 02/21/2013
Date Made Active in Reports: 04/02/2013
Number of Days to Update: 40

Source: Department of Environmental Quality
Telephone: 405-702-5100
Last EDR Contact: 05/22/2013
Next Scheduled EDR Contact: 09/02/2013
Data Release Frequency: Varies

AIRS: Permitted AIRS Facility Listing

A listing of permitted AIRS facility locations.

Date of Government Version: 04/01/2013
Date Data Arrived at EDR: 04/03/2013
Date Made Active in Reports: 05/31/2013
Number of Days to Update: 58

Source: Department of Environmental Quality
Telephone: 405-702-4100
Last EDR Contact: 04/01/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Varies

OK COMPLAINT: Oklahoma Complaint System Database

Environmental complaints reported to the Oklahoma Corporation Commission.

Date of Government Version: 09/30/2012
Date Data Arrived at EDR: 04/04/2013
Date Made Active in Reports: 04/19/2013
Number of Days to Update: 15

Source: Oklahoma Corporation Commission
Telephone: 405-521-2384
Last EDR Contact: 04/08/2013
Next Scheduled EDR Contact: 07/22/2013
Data Release Frequency: Varies

TIER 2: Tier 2 Data Listing
A listing of facilities which store or manufacture hazardous materials and submit a chemical inventory report.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 06/29/2012
Date Made Active in Reports: 08/29/2012
Number of Days to Update: 61

Source: Department of Environmental Quality
Telephone: 405-702-1000
Last EDR Contact: 03/18/2013
Next Scheduled EDR Contact: 07/01/2013
Data Release Frequency: Varies

TRIBAL RECORDS

INDIAN RESERV: Indian Reservations
This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/19/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Semi-Annually

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 05/03/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 08/27/2012
Date Data Arrived at EDR: 08/28/2012
Date Made Active in Reports: 10/16/2012
Number of Days to Update: 49

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 02/28/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 43

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 02/06/2013
Date Data Arrived at EDR: 02/08/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 63

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Semi-Annually

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 09/28/2012
Date Data Arrived at EDR: 11/01/2012
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 162
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/01/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 03/01/2013
Date Data Arrived at EDR: 03/01/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 42
Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Quarterly

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/05/2013
Date Data Arrived at EDR: 02/06/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 65
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 09/12/2011
Date Data Arrived at EDR: 09/13/2011
Date Made Active in Reports: 11/11/2011
Number of Days to Update: 59
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 09/28/2012
Date Data Arrived at EDR: 11/07/2012
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 156
Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 02/06/2013
Date Data Arrived at EDR: 02/08/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 63
Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 08/02/2012
Date Data Arrived at EDR: 08/03/2012
Date Made Active in Reports: 11/05/2012
Number of Days to Update: 94

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 05/10/2011
Date Data Arrived at EDR: 05/11/2011
Date Made Active in Reports: 06/14/2011
Number of Days to Update: 34

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Semi-Annually

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 02/28/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 43

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 08/27/2012
Date Data Arrived at EDR: 08/28/2012
Date Made Active in Reports: 10/16/2012
Number of Days to Update: 49

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 02/21/2013
Date Data Arrived at EDR: 02/26/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 45

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 02/05/2013
Date Data Arrived at EDR: 02/06/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 65

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/28/2012
Date Data Arrived at EDR: 10/02/2012
Date Made Active in Reports: 10/16/2012
Number of Days to Update: 14

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 04/05/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

EDR PROPRIETARY RECORDS

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR US Hist Auto Stat: EDR Exclusive Historic Gas Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR US Hist Cleaners: EDR Exclusive Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR US Hist Cleaners: EDR Proprietary Historic Dry Cleaners - Cole

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: N/A
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR US Hist Auto Stat: EDR Proprietary Historic Gas Stations - Cole

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: N/A
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 02/18/2013
Date Data Arrived at EDR: 02/18/2013
Date Made Active in Reports: 03/21/2013
Number of Days to Update: 31

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/21/2013
Next Scheduled EDR Contact: 09/02/2013
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 02/01/2013
Date Data Arrived at EDR: 02/07/2013
Date Made Active in Reports: 03/15/2013
Number of Days to Update: 36

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 05/09/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Annually

WI MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 09/27/2012
Number of Days to Update: 70

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/18/2013
Next Scheduled EDR Contact: 07/01/2013
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:

Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Day Care Centers
Source: Department of Human Services
Telephone: 405-521-3561

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

STREET AND ADDRESS INFORMATION

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APPENDIX E– Agency and Public Correspondence

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Kathryn McKinney
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Arcadia, OK 73007

Kyle Swisher
7401 Cobalt Cove
Edmond, OK 73013

Deanna Hamilton
PO Box 979
Seminole, OK 74818

Kim Tkach
3450 Eagles Landing
Jones, OK 73049

Terri Folks
6525 Whispering Oak Drive
Edmond, OK 73034

Nancy Williams
3701Sea Ray Channel
Edmond, OK 73013

Alan Doerman
2808 N Ashecroft Drive
Edmond, OK 73034

Vicki Dubberstein
800 Scrub Oak Road
Edmond, OK 73034

Laree Reidenbaugh
6200 E. 15th Street
Edmond, OK 73013

Maggie Owens
6801 E 15th Street
Edmond, OK 73013

Suazanne Goodrich
20 S. Filly Lane
Edmond, OK 73034

Stephen Hull
5804 Wilson Drive
Edmond, OK 73034

Donna Burkey
PO Box 722
Edmond, OK 73083

David Murray
9130 NE 122nd Street
Jones, OK 73049

City of EDMOND

TO: Arcadia Lake property owners

FROM: Jan Ramseyer Fees
City Planner

DATE: July 23, 2012

RE: Arcadia Lake Multi-use trail

The City of Edmond is working on a joint private-public partnership to build a multi-use trail around Arcadia Lake. The proposed trail will be a paved asphalt trail with concrete borders, approximately 18- 20 miles long. Portions of the trail may have a separate trail for walkers/joggers and another trail for bicyclists. A non-profit foundation is being established for the funding of the construction of this trail which will be a wonderful community asset to Edmond.

This letter is to solicit public comment on the proposed project. In this packet of information about the project, you will find a concept map of the project, pictures of trails in Tulsa as examples of construction, and additional details on the trail in the "Arcadia Lake Trail Message".

Please contact Jan Fees at 405-359-4796 or jan.fees@edmondok.com or P.O. Box 2970 Edmond, OK 73083 with your comments. The initial 30-day public comment period for this project will end Friday, August 22 at 5:00 PM. We look forward to hearing from you regarding this project.

Community Connections Meeting
Arcadia Lake Multi-Use Trail
Thursday, September 27, 2012
6:00 - 7:00 P.M.

1. Welcome and introduction
2. Developer makes presentation
3. Questions, concerns, issues discussed
4. Meeting adjourns- 7:00 P.M.

Thank you for your citizen participation!

Upcoming public meetings – *Public Involvement Workshop – October 18, 2012*

Community Connections

Minutes: **Meeting to discuss Arcadia Lake Multi-Use Trail Project**
Date: **Thursday, September 27, 2012, at 6:00 P.M.**
Location: **Downtown Community Center Room 107**
Organizer: **Community Connections- Jan Ramseyer Fees**

Attendees: **First and Last Name**	Attendees: **First & Last Name**	Attendees: **First and Last Name**
Dan Hickman	Clare Woodside	Veta Roberts
Jo Rench	Steve Schlegel	Brent Thackerson
Russell Pace	Ryan West	Terry Jakubs
Brian Shellem	Susan Andrews	Bill Barker
Terri Folks	Tim Reid	Kathleen Ayers
Tammy Curtis	Jeanette Zeller	Donna Burkey
Terri Hickman	Kim Tkach	Lori Parmenter
Beau Lee	Dan Durocher	Diane Durocher
Micca Rasp	Tanya Davis	Daniel Reeder
Brent Wensauer	Kathy Wensauer	Caleb McCaleb
Nancy Williams	Allison Schneider	Vickie Dubberstein
Biff Stephens	Ann Benjamin	Wanda Christensen
Susan Lash	Mark Lash	Lance Duke
Roberta J. Smith	Brian Fairless	Stephen Hull
R. Sarkisian	John Green	Roger Welch
Sam Meek	Pete Woodward	Paula Sorenson
Carol Barker	Josh Moore	Henry Holasek
Tracey Brauer	John Harkess	John Fitch
Jeff Bennett	Alex Allen	Kevin Trout
Chrissa Elliott	Craig Cossey	Jason Waddell
Bruce DeFriese	Patty DeFriese	Emily Fees
Colton Fees	Jim Tapp	David Tew
Rand Phipps	Jan Ramseyer Fees, Community Connections	Steve Commons, Assistant City Manager
Larry Stevens, City Manager	Darrell Davis	Doug Klassen, MKEC
Robert Shears	Luke Jost, MKEC	

Topic	Discussion
How much money needed to break ground?	David said the trail will take approximately ten months to construct. He has a construction schedule but will work on phases and benchmarks needed for the trail as it progresses. Steve Commons noted that the Spring Creek portion of the trail is under design and planned for construction in early 2013. Steve said the funding is in place for that portion of the trail.
Concern about communication on trail with community.	Resident expressed concern about the complication of this project, with lots of moving parts, and requested a critical path be put together for the project in order to keep those interested in the project informed, with benchmarks and milestones.
Access to Equestrian Trail	Question asked if the access to the equestrian trail will be closed during construction. David said no and the coalition will be sensitive to the other users of the Corps of Engineer lands. He added that some of the trail will be closed during hunting season.
Army National Guard	Resident expressed concern about trail conflicting with the Army National Guard training that occurs monthly on the lake property.
Negotiations with Corps of Engineers	Resident expressed concern about the route negotiated with adjacent residents not being approved by the Corps of Engineers. David said we have worked hard to keep the elevation of the trail above the 1026' level, as the Corps requested. Steve Commons noted that the trail will be broken up into segments and some areas of the trail may flood at some times, but there will be no increase in flood rise with the construction of the trail.
Flooding causing debris and litter	Resident said during the last 2 floods, debris flooded in from the lake has come up in their yards. Steve noted that Arcadia Lake is first a flood-control facility and so this is not unusual since the water comes from OKC.

Topic	Discussion
Meth lab at Scissortail Campground	Resident expressed concern that the City can't take care of what is existing at the lake, such as allowing the meth lab at Scissortail Campground and campers to occupy camping sites on a permanent basis.
Natural Area	Resident expressed concern over losing the natural habitat and wildlife around the lake.
OKC MAPS and Sidewalks program	A member of the OKC MAPS and Sidewalks Trail Committee said they have not had problems with OKC trails and they actually enhance an area.
Lighting	Resident questioned what type of lighting is proposed. It was said that the trail would not be lit and only be used from dawn to dusk, which is the policy for all city parks.
Jurisdictional clarity	Resident requested jurisdictional clarity on the trail since some of it will be in Edmond and some in OKC, and some lands are under the jurisdiction of the Department of Wildlife Conservation.
Parking	Concern expressed over where to park to use the trail. It was noted there would be a trailhead/wellness park at the I-35 Frontage Road between 2nd and 15th Streets. Additional parking to use the trail would be available at the Arcadia Lake Parks and the Lake Project Office.

Action Items

Item	Person Responsible
Minutes of the meeting would be passed on to the City Council for their information when this item is discussed in the future.	Jan Ramseyer Fees

Meeting was adjourned at 7:45 p.m.

Minutes are taken to be an overview of the meeting, not verbatim transcript of the proceedings. The minutes do not have to go before any boards or commission for approval or denial. They are prepared for information purposes only.

~Announcing~

PUBLIC INVOLVEMENT WORKSHOP

as related to the

Arcadia Lake Multi-Use Trail, Edmond, OK
Environmental Assessment

in compliance with

National Environmental Policy Act

Workshop

The U.S. Army Corps of Engineers will host a public workshop to inform, receive comments and answer questions from the public about the initiation of the Environmental Assessment for the proposed Arcadia Lake Multi-Use Trail Project.

The workshop will be an open house format, with no set or formal presentation. Interested persons may arrive any time between 6:00 and 8:00 p.m., visit the information tables, discuss the study with Corps personnel and make comments. Comments gathered will be considered in the Environmental Assessment. The workshop will be held at the following location:

Open House Format
Edmond Downtown Community Center
28 E. Main Street, Room 107
Edmond, OK
Thursday, October 18, 2012
Any time between 6:00 and 8:00 p.m.

Scoping Process

This workshop is one way that agencies gather information and concerns about expected impacts from federal action. The purpose of the Environmental Assessment (EA) is to address alternatives and environmental impacts associated with the proposed Arcadia Lake Multi-Use Trail project, Edmond, Oklahoma. An EA will evaluate public and environmental concerns surrounding a proposed project. As part of the scoping process, the Corps of Engineers request that the public, interested parties, Federal, State and local agencies take part by identifying issues related to the update and providing input for the EA. The Corps will include this input as it evaluates impacts associated with this action. Comments and questions may be forwarded to:

Mr. Stephen Nolen
U.S. Army Corps of Engineers, Tulsa District
1645 S. 101st East Avenue ATTN: CESWT-PE-E
Tulsa, OK 74128 Phone: 918-669-7660
e-mail: Stephen.L.Nolen@usace.army.mil

Posted
Date: 2/1/2013
Time: 3:27 PM
By: Sheri Ritchey
City Clerk's Office

US Army Corps of Engineers.

Public Workshop Sign-in Sheet

Arcadia Lake- Multi-use Trail

Edmond, Oklahoma

6:00 – 8:00 p.m., Thursday, 18 October 2012

Please place your name, address, and affiliation in the space provided below. All information is voluntary and will only be used only for keeping you informed about this project. Please PRINT your information.

Name and Address	Affiliation	Email Address	Mailing List	
			Yes	No
Carol Barker 5300 Indian Hill Rd, Edmond, OK 73034	Equestrian	okienduroe yahoo com	✓	
Earl LONDON City Edmond		earl.o.London@edmondok.com	✓	
Phil Jones City of Edmond	City of Edmond	phil.jones@edmondok.com	✓	
Dennis Gleason 1321 Fox Lake Ln Edmond		drgleason@sbcglobal.net	✓	
Jeanette Keller 3701 NE 122 Jones OK 73049	Equestrian	jeanette@okiepups.com	✓	
Tim R. Reid 14600 S Douglas Blvd Guthrie OK 73044	Land owner	timrreid3@yahoo	✓	
Steve & Dana Theobald 13717 Plymouth Cross Rd Edmond, OK 73013			—	
David Tew		david-tew@wesley.net		

US Army Corps of Engineers.

Public Workshop Sign-in Sheet

Arcadia Lake- Multi-use Trail

Edmond, Oklahoma

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Please place your name, address, and affiliation in the space provided below. All information is voluntary and will only be used only for keeping you informed about this project. Please PRINT your information.

Name and Address	Affiliation	Email Address	Mailing List	
			Yes	No
Diana Baldwin P.O. Box 25125 OKC, OK 73125	Oklahoman	dbaldwin@opubco.com	X	
Laura Pollard	Citizen	blpollard@cox.net	X	

US Army Corps of Engineers.

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Arcadia Lake- Multi-use Trail

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6:00 – 8:00 p.m., Thursday, 18 October 2012

Please place your name, address, and affiliation in the space provided below. All information is voluntary and will only be used only for keeping you informed about this project. Please PRINT your information.

Name and Address	Affiliation	Email Address	Mailing List	
			Yes	No
Henry R. Holaseke	Al's Bicycles-Edmond	h.holaseke@sbcglobal.net	✓	
Emily Fees		efees@uco.edu	✓	✓
Jack Ramos		JackTRamos1222@gmail.com	✓	
Rusty Fees	Citizen	RFees153@cox.net		✓
Andrea C Sampley	Citizen	asunnydre@att.net	✓	
Kurt Sampley	citizen	sampleyandsons@att.net	✓	
Ben Pollard	citizen	blpollard@cox.net	x	

US Army Corps of Engineers.

Public Workshop Sign-in Sheet

Arcadia Lake- Multi-use Trail

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Please place your name, address, and affiliation in the space provided below. All information is voluntary and will only be used only for keeping you informed about this project. Please PRINT your information.

Name and Address	Affiliation	Email Address	Mailing List	
			Yes	No
ROGER WELCH RDWELCH@GMAIL.COM 14509 WATERFRONT EDMOND, OK 73013	OKM BICYCLE SOCIETY	RDWELCH@GMAIL.COM	✓	
DOUG KLASSEN	MKEC Engineering Consultants, Inc.	dklassen@mkec.com		✓
TRACEY BRAUER	FRIENDS OF ARCADIA LAKE EQUESTRIANS	t.brauer@att.net	✓	
BILL PARKERSON	CORPS OF ENG.		✓	
Jeff Bennett	E B C	Jeff.Bennett@oc.edu		
LARRY WARREN	citizen	llwarren@aol.com	✓	
KEN & GAE REES	CITIZEN	KRREES@SBCGLOBAL.NET	✓	
JANIE TIGERT	Homeowner	Jtwildcat@AOL	✓	

Steve Nolen

Tulsa District, US army Corps of Engineers

1645 S. 101st East Avenue

Tulsa, OK 74128

Dear Mr. Nolen

I have heard that a group has proposed a new trail system for walking and biking around Lake Arcadia and that that proposed trail would intersect in several places with the equestrian trails at Arcadia. I live close to Lake Arcadia and I have just started trail riding this fall. I am saddened by the news that the trails closest to me may not be good beginner trails in the near future. If there were other equestrian-only trails nearby it would be different—there are miles and miles of other places people can hike and bike. Though, I understand that the area around Lake Arcadia is pretty place to hike and bike. I request that the new trail system simply go beside or around the equestrian trails.

I am also concerned that bikers will not be aware of and therefore not follow proper trail etiquette. They may not know that they are supposed to stop for a crossing horse, resulting in some very dangerous situations and possibly bad accidents.

Thank you for taking in to consideration the many equestrians that use these trails.

Sincerely,

Morian Whaley

2604 Fairfield Dr.

Edmond, OK. 73012

Oklahoma Equestrian Trail Riders Association

MOriann@gmail.com

US Army Corps of Engineers.

Public Workshop
Comment Sheet

Arcadia Lake
Multi-Use Trail Proposal

Environmental Assessment

Edmond, Oklahoma
6:00 – 8:00 p.m., Thursday, October 18, 2012

Question, comments, or suggestions?

We want your input in this study. Your participation is key to our success! Please write your questions, comments, or suggestion in the space provided below. Feel free to use the back of this form or add additional pages if needed. Leave the form with us at the workshop or fill out the form at your convenience and return it to address below. Please provide comments by **9 November 2012**. Thank you!

Every two to three years, Edmond contracts to have a Customer Satisfaction survey. A question we ask in each of these surveys discuss the residents desires for more trails. Each year our citizens strongly support the need for additional trails. The page attached is from the 2008 survey and compares results with 2006 as it relates to bike trails. This survey indicated 92% of survey responses either strongly support or somewhat support additional bike trails. In the 2011 survey, when citizens were asked what park facilities most in need of improvement or additions, the highest requests went to walking trails and bike routes.
(Additional response on back and attached.)

Optional Information (used for mailing list to keep you informed and will not be used for any other purpose):

Name: Steve Commons Affiliation: City of Edmond

Address: 24E. 1st Street City: Edmond State: OK

Zip: 73083 Phone: 405-359-4769 E-mail: steve.commons@edmondok.com

Point of Contact:
Tulsa District, US Army Corps of Engineers
Steve Nolen (CESWT-PE)
1645 S. 101st East Avenue
Tulsa, OK 74128 918-669-7660
Stephen.L.Nolen@usace.army.mil

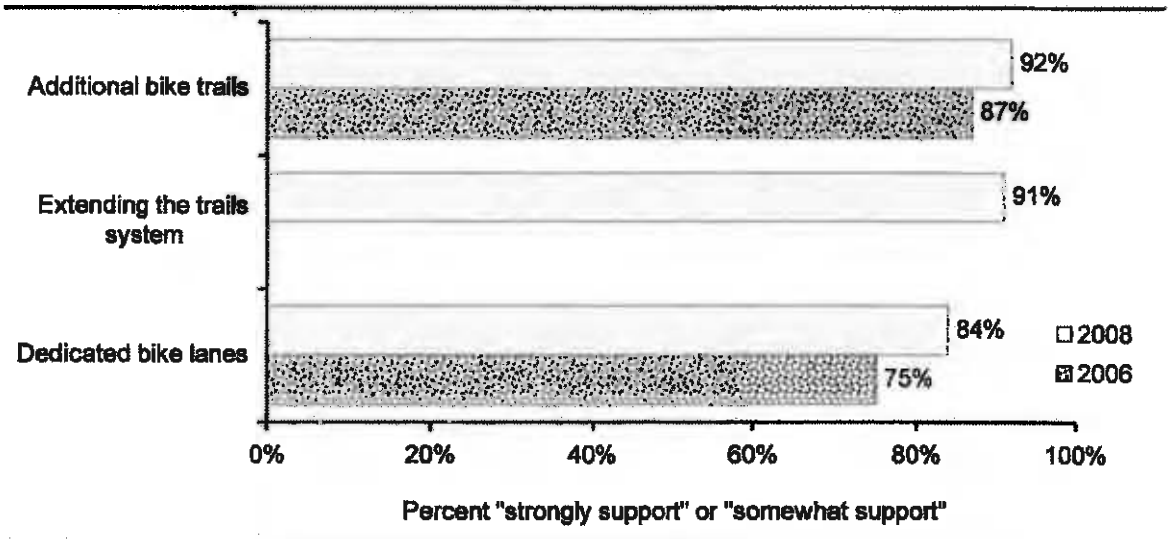
As in 2006, survey respondents were asked whether or not they would support or oppose additional bike trails and dedicated bike lanes. In 2008, Edmond also wanted to know about resident support for or opposition to extending the trails system in the city. Most participants at least "somewhat" supported each of the three items. More than half were "strongly" supportive of additional bike trails, dedicated bike lanes and extending the trails system (58%, 60% and 53%, respectively). Fewer than 1 in 10 residents "strongly" opposed each of these initiatives.

Table 13: Support for or Opposition to Bike Trails and Lanes and Trails System Extension

To what extent would you support or oppose the following in the City of Edmond?	Strongly support	Somewhat support	Somewhat oppose	Strongly oppose	Total
Additional bike trails	58%	34%	4%	4%	100%
Extending the trails system	60%	32%	5%	4%	100%
Dedicated bike lanes	53%	31%	9%	7%	100%

Support for additional bike trails (92% supported in 2008 versus 87% in 2006) and dedicated bike lanes (84% versus 75%) increased from 2006 to 2008.

Figure 15: Support for or Opposition to Bike Trails and Lanes and Trails System Extension by Year

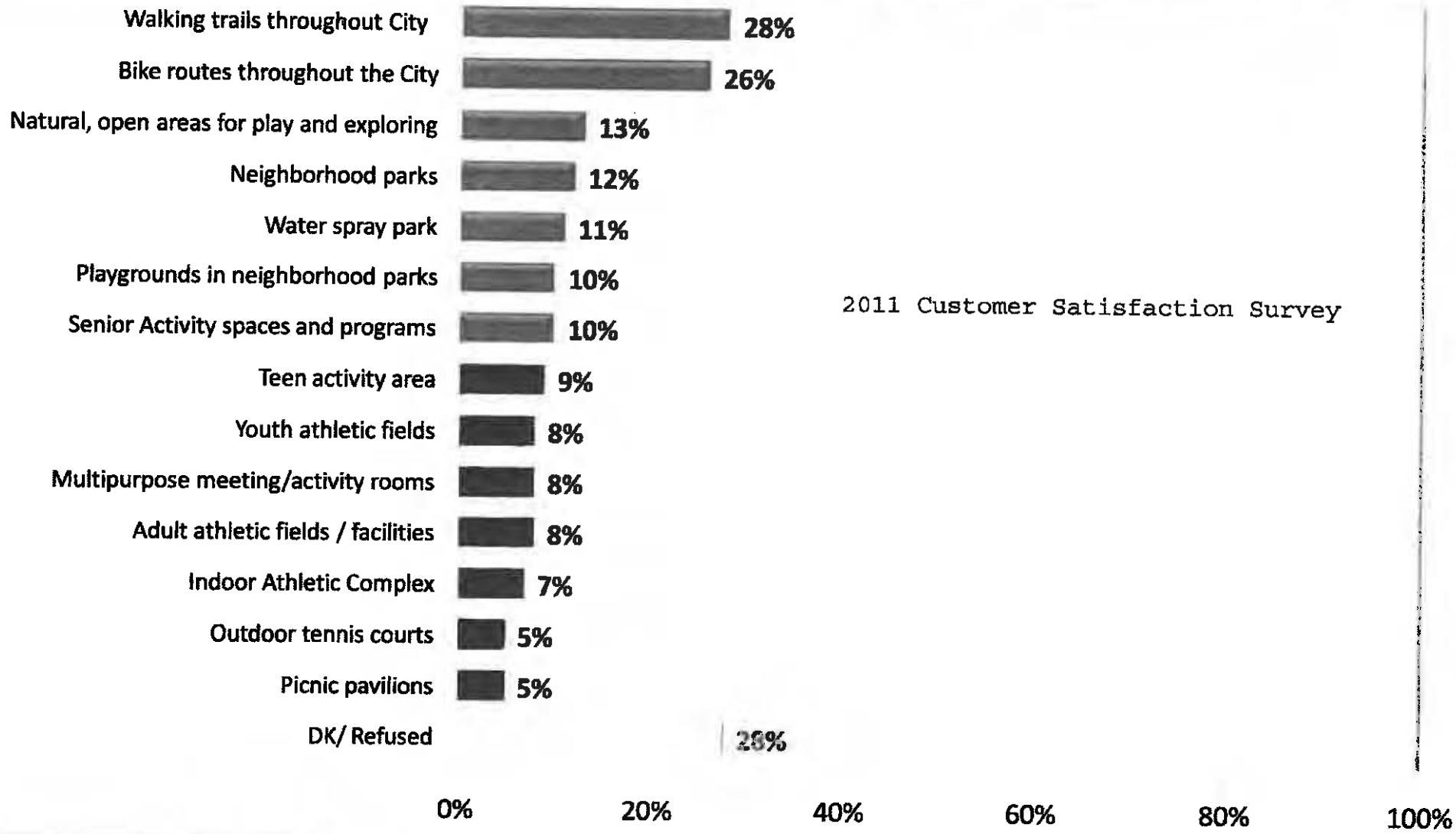


This question was not asked in 2000.

Younger residents were more likely to support each of the three initiatives than older residents. Respondents who lived in Edmond for 11 or more years were less likely to show signs of support than newer residents but, still, a majority of longer-term residents supported each improvement. See *Appendix C: Responses to Selected Survey Questions by Respondent Characteristics* for more information.

The park facilities most in need of improvement or additions are walking trails and bike routes.

48. Park facilities most in need of improvement



Residents are much more satisfied with their own neighborhoods, parks and recreation areas, and cultural opportunities than they were three years ago- three key factors that contribute to making Edmond a pleasant place to live.

Satisfaction Trend

2011 Customer Satisfaction Survey

Specific Aspects	2006	2008	2011
8. Arcadia Lake and the surrounding areas	50%	54%	**69%**
9. Your neighborhood.	78%	81%	**96%**
10. Retail and commercial property	78%	81%	**83%**
11. Parks and recreation areas	80%	82%	**94%**
12. Cultural opportunities	64%	64%	**86%**
13. Bike and pedestrian trails	-	-	**61%**
14. The value you're getting in return for your tax dollars	69%	74%	**82%**
15. City management	-	-	**83%**
16. Planning for future growth	63%	54%	**71%**

2006 and 2008 data ranked on scale of excellent to poor.
Total of excellent and good shown.
Planning for future growth asked as "planning for residential growth" in 2006 and 2008.

US Army Corps of Engineers.

Public Workshop
Comment Sheet

Arcadia Lake
Multi-Use Trail Proposal

Environmental Assessment

Edmond, Oklahoma
6:00 – 8:00 p.m., Thursday, October 18, 2012

Question, comments, or suggestions?

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See attached.

Optional Information (used for mailing list to keep you informed and will not be used for any other purpose):

Name: Carol Barker Affiliation: Equestrian

Address: 5300 Indian Hill Rd. City: Edmond State: OK

Zip: 73034 Phone: 405 / 802-2187 E-mail: okieenduro@yahoo.com

Point of Contact:
Tulsa District, US Army Corps of Engineers
Steve Nolen (CESWT-PE)
1645 S. 101st East Avenue
Tulsa, OK 74128 918-669-7660
Stephen.L.Nolen@usace.army.mil

Public Workshop
Comment Sheet

Arcadia Lake Multi-Use Trail Proposal
18 October 2012

Name: Carol Barker Affiliation: Edmond Citizen and Equestrian

Address: 5300 Indian Hill Rd, Edmond, OK 73034

Phone: 405-802-2187 E-mail: okieenduro@yahoo.com

1. This project also includes the construction of a Wellness Park, functioning as a trailhead, on the west side of I-35. Because it is not part of the USACE property, the City of Edmond and the Arcadia Lake Trail Coalition believed it would not have to be included in the Environmental Assessment (EA) and therefore could begin construction prior to completion of the EA process. However, due to cumulative effects, the City should probably include the Wellness Park in the EA, which may delay their planned construction.
2. Recommend the design minimize intersections between the proposed multi-use trail and the existing equestrian trail. Intersections should be designed in such a manner as to require bicyclists to slow down and stop before proceeding – perhaps rumble strips and stop signs. Road bikes often exceed 20 mph while horses walk an average of 3 mph and excess intersections could result in complacency in the biking community regarding equestrian right-of-way.
3. Recommend installation of surveillance cameras at trail intersections and access points.
4. Recommend the City of Edmond (as well as any other local jurisdictions) enact traffic ordinances regarding trail use such as speed limits, liability, right-of-way at intersections, etc.
5. Recommend the City of Edmond expand police bicycle routes to regularly include surveillance of this trail. If parts of the trail are outside City of Edmond jurisdiction, then the City may want to develop partnerships with those communities to develop similar ordinances and enforcement.
6. City of Edmond personnel have stated they expect maintenance costs of this paved trail to not exceed $20k per year. Given that the construction costs are estimated in the neighborhood of $16M, this doesn't seem like adequate long-term planning. They based this cost on the maintenance of their existing bike trails, but this trail runs through varied terrain with multiple water crossings.
7. The proposed trail route runs through areas that are closed from 1 October to 15 January each year for hunting. Recommend the impacts of this closure on trail usage be evaluated, since it may result in bicyclists utilizing the I-35 access road from 33rd St to Memorial Road and then east on Memorial until they can re-access the trail at some point. If this becomes the preferred route for 3-1/2 months of the year, perhaps a Proposed Alternative should include this as the permanent route.

8. There is much concern with the proposed intersections of the paved multi-use trail and the existing equestrian trail. Recommend a Proposed Alternative look at re-locating the equestrian trail to the north side of Arcadia Lake, thereby removing this conflict. The new multi-use trail is planned to run alongside 2nd Street and there is much more available area in this area between the proposed trail and the lake. There are existing mountain bike and hiking trails, but that is a more compatible co-existence than road bikes, paved trails, and horses. As part of this re-location, recommend the City of Edmond evaluate changing their policies and have an 8 – 10 mile equestrian trail originate in one of the existing parks. Lake Carl Blackwell, managed by Oklahoma State University, has a yearly permit system that appears to work well with their multiple recreational usages and could be consulted as a model.

US Army Corps of Engineers.

Public Workshop
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Arcadia Lake
Multi-Use Trail Proposal

Environmental Assessment

Edmond, Oklahoma
6:00 – 8:00 p.m., Thursday, October 18, 2012

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GREAT IDEA FOR BIKE PATH TO ARCADIA LAKE (EDMOND) NEEDS THIS TO KEEP UP W/ TRAIL AMENITIES IN PEER CITIES & OKC. COST WILL LIKELY REQUIRE PROJECT TO BE STAGED - SUGGEST LEAVING SW SEGMENT FOR A LATER PHASE TO POSTPONE ISSUE OF EQUESTRIAN TRAIL. GOOD IDEA TO HAVE FAST ACCESS TO RIDERS & JOGGERS. BE CAREFUL IN SETTING DESIGN SPEEDS SINCE TOO WIDE A PATH WILL REQUIRE TOO MUCH TREE REMOVAL & GREATLY BOOST COST. MAY NOT NEED SEPARATE BIKE - PEDESTRIAN PATHS EVERYWHERE - NATURAL TRAILS DO NOT HAVE 2 PATHS ALL THE WAY.

Optional Information (used for mailing list to keep you informed and will not be used for any other purpose):

Name: KEN REES Affiliation: CITIZEN

Address: 2261 DEBORAH City: EDMOND State:

Zip: 73034 Phone: / E-mail: KREES@SBCGLOBAL.NET

Point of Contact:
Tulsa District, US Army Corps of Engineers
Steve Nolen (CESWT-PE)
1645 S. 101st East Avenue
Tulsa, OK 74128 918-669-7660
Stephen.L.Nolen@usace.army.mil

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Public Workshop
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I AM A RESIDENT NEAR THE LAKE & REALLY GET EXCITED TO THINK ABOUT THE TRAIL BECOMING A REALITY. IT WOULD PROVIDE A SAFER ALTERNATIVE TO RUNNING/BIKE RIDING THAN ON THE STREETS. THANKS!

Optional Information (used for mailing list to keep you informed and will not be used for any other purpose):

Name: JAY LEMON Affiliation: RESIDENT

Address: 12515 E. COFFEE CREEK RD City: ARCADIA State: OK

Zip: 73007 Phone: / E-mail: JLEMON@HASKELLLEMON.COM

Point of Contact:
Tulsa District, US Army Corps of Engineers
Steve Nolen (CESWT-PE)
1645 S. 101st East Avenue
Tulsa, OK 74128 918-669-7660
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I have been riding my bike in the Edmond area for the last 25 years and have ridden extensively on the roads for the last 12 years. I have had several close calls where I was nearly hit by vehicles in spite of always keeping close to the right shoulder and riding in daylight. There simply is not any good place to ride a road bike in the Edmond area that is free from vehicle traffic and thus safe for bicycle riders. Mitch Park is too narrow and filled with walkers and runners. The proposed trail at Arcadia would be a wonderful addition to the area giving bikers a safe and beautiful place to ride and I enthusiastically support the development of the trail and look forward to using it.

Optional Information (used for mailing list to keep you informed and will not be used for any other purpose):

Name: Ron Barrus Affiliation: trail user

Address: 1941 Oak Creek Ter City: Edmond State: OK

Zip: 73034 Phone: 405/740-5149 E-mail: ron@meierbarrus.com

Point of Contact:
Tulsa District, US Army Corps of Engineers
Steve Nolen (CESWT-PE)
1645 S. 101st East Avenue
Tulsa, OK 74128 918-669-7660
Stephen.L.Nolen@usace.army.mil

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I would prefer that the bike trail go from the Arcadia lake entrance - West on 15th St to Air Depot - south to 33rd - west to I-35 service rd. south to Memorial - this route would be so much safer for the equestrians - the bikers would have to cross driveways, but the drivers would mostly be going forward & rarely backing out - I'm sure the residents would prefer the bike trail to go in front of their property rather than behind it. The risk to the bikers is minimal compared to that of the equestrians. This route would also be easier to construct, maintain and easier on the environment.

Optional Information (used for mailing list to keep you informed and will not be used for any other purpose):

Name: Paula Sorenson Affiliation: _____

Address: 3090 Freeman Manor City: Edmond State: OK

Zip: 73049 Phone: 405/659-0352 E-mail: paulasorenson@aol.com

Point of Contact:
Tulsa District, US Army Corps of Engineers
Steve Nolen (CESWT-PE)
1645 S. 101st East Avenue
Tulsa, OK 74128 918-669-7660
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Environmental Assessment

Edmond, Oklahoma
6:00 – 8:00 p.m., Thursday, October 18, 2012

Question, comments, or suggestions?

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Boys Ranch Town is not in favor of this trail project for the following reasons: We ride on the equine trails and do not think the trails should be shared. (2) Building these trails will destroy the wildlife in habitant, (3) Creates a liability / Security concern for Boys Ranch Town. (4) Almost accidents will occur between the horses & bicycles (5) We are concerned about the users of the trails not be patrolled and not having supervision (6) Natural beauty of Lake Arcadia will be destroyed.

Optional Information (used for mailing list to keep you informed and will not be used for any other purpose):

Name: Brent Thakerson Affiliation: Boys Ranch Town

Address: 5100 S E33rd St City: Edmond State: OK

Zip: 73013 Phone: 405/341-3606 E-mail: thackerb@obhc.org

Point of Contact:
Tulsa District, US Army Corps of Engineers
Steve Nolen (CESWT-PE)
1645 S. 101st East Avenue
Tulsa, OK 74128 918-669-7660
Stephen.L.Nolen@usace.army.mil

US Army Corps of Engineers

Public Workshop
Comment Sheet

Arcadia Lake
Multi-Use Trail Proposal

Environmental Assessment

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I am a cyclist, runner + equestrian & use Arcadia equestrian trails + love having SO close to home. Ideally I would love to also have a safe place to run + cycle close to home. I am in favor of the new trails being proposed. Bike lanes & the side of the equestrian trails. I have a spirited horse & bikers + runners coming around corners tend to be deterrents for the riders. Any warnings or "slow" trails need to be straight + clear. Thank you.

Optional Information (used for mailing list to keep you informed and will not be used for any other purpose):

Name: Crystal Folsom Affiliation:

Address: 9 N. Cole Trail City: Edmond State: OK

Zip: 73034 Phone: 405 359 4999 E-mail: Cfolsom7@yahoo.com

Point of Contact:
Tulsa District, US Army Corps of Engineers
Steve Nolen (CESWT-PE)
1645 S. 101st East Avenue
Tulsa, OK 74128 918-669-7660
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I utilize the Arcadia Horse trails and have always appreciated how safe they are. There aren't too many places we can go and enjoy a natural surrounding. The addition of cyclists will greatly impact this. Horses will hear the fast moving bikes, even when the trails don't intersect. At intersections, cyclists will not "stop the trail" and stop. The noise and movement will scare most horses - causing them to bolt, panic, possibly dislodging their rider, and possibly running into oncoming traffic. Looking at the full map - the cyclists have many places to put their trail near the water & in the trees - but instead use existing roads. Yet near they don't?? It just doesn't make sense. and IS NOT SAFE The noise and activity will also chase off the entire wildlife. making Arcadia no different than a city park."

Optional information (used for mailing list to keep you informed and will not be used for any other purpose):

Name: Cindy Sorensen Affiliation: _____

Address: _____ City: _____ State: _____

Zip: _____ Phone: ___/_____ E-mail: _____

Point of Contact:
Tulsa District, US Army Corps of Engineers
Steve Nolen (CESWT-PE)
1645 S. 101st East Avenue
Tulsa, OK 74128 918-669-7660
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Please see attached letter. I was out of state last week

Optional Information (used for mailing list to keep you informed and will not be used for any other purpose):

Name: Daniel Drocher Affiliation: Local homeowner

Address: 5801 Whitetail Run City: Edmond State: OK

Zip: 73013 Phone: (405) 341-3524 E-mail: drocher13@gmail.com

Point of Contact:
Tulsa District, US Army Corps of Engineers
Steve Nolen (CESWT-PE)
1645 S. 101st East Avenue
Tulsa, OK 74128 918-669-7660
Stephen.L.Nolen@usace.army.mil

Daniel Durocher
5801 Whitetail Run
Edmond, OK 73013

17 Aug 2012

Ms Jan Ramseyer Fees
City Planner
City of Edmond

Re: Arcadia Lake Multi-Use Trail

Dear Ms Fees:

I would like to voice my objections and concerns to the above idea. I understand the proposed cost of the project is between 18 and 20 million dollars. Even if the initial cost of construction is from donated resources, the ultimate maintenance of this costly project will fall on Edmond taxpayers. In addition to the ultimate costs to be borne by Edmond taxpayers, Edmond taxpayers would have to provide police patrols, maintenance, sanitation, garbage pickup, etc. With the recent attacks on joggers in public parks, this trail would present a boon to would be attackers since it would be so isolated. Additionally, emergency response would not be able to react to a crisis since there is no reasonable access for emergency vehicles. There is no way that the taxpayers of Edmond will ever reap benefits in the above amount anywhere near the cost of the project.

Considering the recent wild fires that have hit Oklahoma, many of which have been set by arsonists, this trail would pose a significant threat to every homeowner in the area. This trail would significantly increase these areas to the threat of fire which once started would engulf everything in its wake since there is no way to reasonably fight a fire in this area or gain access for fire crews. Additionally, since the droughts are expected to continue or increase, the likelihood of fire will also increase. Putting a trail for arsonists to access would result in higher home insurance costs due to fire risks and that would essentially equal a taking of property rights of the resident homeowners. While eminent domain has its place, it is not without a cost to taxpayers. Additionally, potential crime rates from burglary, etc. in the area would increase due to greater access. This would also affect homeowner insurance rates.

One of the reasons why we live where we do was because of the natural foliage and wildlife in the area. This trail will not only affect the daily wildlife routines of deer, turkey, etc. but may also ruin the eagle watch at Arcadia.

The proposed trail is unreasonable as either a jogging path or walking path due to its extreme length. No reasonable individual is going to jog or walk 18 miles with no option but to go the whole way in order to return to their parked car. What kind of rest/bathroom facilities will be available? What type of emergency notification system will be provided? What type of litter control will be used? How will the

increased problem of litter, etc. affect the local wildlife? Just using the area along 2nd street would make far more sense and be far more reasonable in cost and taxpayer support. It would allow for parking whereby individuals could go east or west and return without having to transit an 18 mile pathway. It's that area that is the tie in for the proposed spring creek pathway anyway. It also avoids virtually all of the above problems and dramatically reduces the potential cost to Edmond taxpayers.

Finally, the equestrians have been riding in the lake area for years without a major problem. Having joggers or bike riders suddenly coming across someone on horseback will only lead to accidents and potentially deadly injuries which will have no reasonable way for emergency response medical personnel to be able to access or assist.

Sincerely

Daniel Durocher

US Army Corps of Engineers

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I Think its A Great Idea To increase the Trails around Arcadia Lake.

I Live near Spring Creek Park. We could definitely use a better more extensive Trail System.

Optional Information (used for mailing list to keep you informed and will not be used for any other purpose):

LAND RUNNERS

Name: Jane Nelson Affiliation: TRI-OKC

Address: 1701 S. Air Depot City: Edmond State: OK

Zip: 73013 Phone: / E-mail: jane@cpaokc.net

Point of Contact:
Tulsa District, US Army Corps of Engineers
Steve Nolen (CESWT-PE)
1645 S. 101st East Avenue
Tulsa, OK 74128 918-669-7660
Stephen.L.Nolen@usace.army.mil

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Thank you for considering our concerns and ideas in this process. I am a board member for the Friends of Arcadia Lake Equestrians. We have worked hard to keep and maintain our trails at Arcadia. We have hundreds of people in our group alone that use our trail on a regular basis. We appreciate the City of Edmond and the Corps of Engineers for working with us to improve our trail system. The main reason we are so concerned with the proposed multi-use trail system is safety for ourselves, our horses, bikers and walkers. A horse's first response when frightened is to turn around and run.

(over)

Optional Information (used for mailing list to keep you informed and will not be used for any other purpose):

Name: TRACEY BRAUER Affiliation: FRIEND of ARCADIA LAKE EQUESTRIANS

Address: 13450 STEVENS RD. City: EDMOND State: OK

Zip: 73034 Phone: 405 488-5141 E-mail: t.brauer@att.net

Point of Contact:
Tulsa District, US Army Corps of Engineers
Steve Nolen (CESWT-PE)
1645 S. 101st East Avenue
Tulsa, OK 74128 918-669-7660
Stephen.L.Nolen@usace.army.mil

I have seen a well traved trail turn around and take for something as simple as a fallen branch that was not there the last time they were there. If a biker comes around a corner and surprises a horse there will be a wreck.

I hate the thought of losing our beloved trail, but if the proposal goes through, I know many riders who will not feel safe riding there.

I ask you to continue to support the equestrians and keep the biking and walking trail away from our trail.

Our trail is an out and back trail. I would like to see the proposed bike/walking trail also be an out and back trail that completely by passes our trail for the bikers and walkers but I dont understand why their dream has to ruin ours. We have loved these trails for over 15 yrs. I ask you to help us save them.

Thanks for your consideration,

Tracy Bauer

US Army Corps of Engineers.

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The security of all who use it!! This is opening up alot of land to not only bikers + hikers but to others that won't use the trails for healthy reasons. #1 Security

#2 Maintenance – keeping mowed, trails maintained and poison ivy + oak away from the trail

#3 Using it during appropriate hours for appropriate reasons

Optional Information (used for mailing list to keep you informed and will not be used for any other purpose):

Name: Terri Hickman Affiliation: landowner/ biker/ horse rider

Address: 320 Hubbin Way City: Edmond State: OK

Zip: 73034 Phone: / E-mail: enrichteacher2@yahoo.com

Point of Contact:
Tulsa District, US Army Corps of Engineers
Steve Nolen (CESWT-PE)
1645 S. 101st East Avenue
Tulsa, OK 74128 918-669-7660
Stephen.L.Nolen@usace.army.mil

P.S. the Rt 66 trail – bikers & drive ways - the crossing points – how will the driver + biker keep from meeting?

US Army Corps of Engineers

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Please continue working on this project! OKC needs more trails and opportunities to be fit and healthy.

Optional Information (used for mailing list to keep you informed and will not be used for any other purpose):

Name: Amy Downs Affiliation: Oklahoma bicycle Society

Address: 1304 Kingsbury Ct City: Yukon State: OK

Zip: 73099 Phone: 405 642 2435 E-mail: amy.downs@allegiancecu.org

Point of Contact:
Tulsa District, US Army Corps of Engineers
Steve Nolen (CESWT-PE)
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The benefits for the trail will far outweigh the temporary yet potential impacts with proper precautions for emotional impacts such as noise can be mitigated. The few people who are against the trail either have long known about the property or believe that the property is for their use only. Expansion related. The will have an economic impact for the city, as it will attract development. It will give bicycle riders a place to ride safely, promote a healthy activity, and increase an appreciation for nature.

Optional Information (used for mailing list to keep you informed and will not be used for any other purpose):

Name:_____ Affiliation:_____

Address: 17300 Gold Dr City: Edmond State: OK

Zip: 73012 Phone: / E-mail: pjjhowe@gmail.com

Point of Contact:
Tulsa District, US Army Corps of Engineers
Steve Nolen (CESWT-PE)
1645 S. 101st East Avenue
Tulsa, OK 74128 918-669-7660
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As a former member of the Edmond Bicycle Committee I recognize that Edmond needs more trails for people to ride their bikes on. Streets in Edmond may not feel safe for some people to ride on.

Optional Information (used for mailing list to keep you informed and will not be used for any other purpose):

Name: Colton Fees Affiliation: _____

Address: 202 N Main #6 City: Stillwater State: Ok

Zip: 74075 Phone: / E-mail: cfees@me.com

Point of Contact:
Tulsa District, US Army Corps of Engineers
Steve Nolen (CESWT-PE)
1645 S. 101st East Avenue
Tulsa, OK 74128 918-669-7660
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The multi-use trail is a great thing for the City of Edmond.

Optional Information (used for mailing list to keep you informed and will not be used for any other purpose):

Name: Emily Fells Affiliation: _____

Address: _____ City: _____ State: _____

Zip: _____ Phone: ___/_____ E-mail: _____

Point of Contact:
Tulsa District, US Army Corps of Engineers
Steve Nolen (CESWT-PE)
1645 S. 101st East Avenue
Tulsa, OK 74128 918-669-7660
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We have lived in Edmond since 1984 and find Arcadia Lake to be an outstanding recreational resource. We have purchased the annual lake permit for the past five years and walk the trails and roads regularly. A multi use trail would be a great addition to Arcadia. We would appreciate the Corps partnering with the city of Edmond and the private sector to make the trail a reality.

Optional Information (used for mailing list to keep you informed and will not be used for any other purpose):

Name: Ben Pollard Affiliation: Okla. Conservation Commission / Edmond Land Conservancy

Address: 2805 Arrowhead Cir City: Edmond State: OK

Zip: 73013 Phone: 405/340 6214 E-mail: blpollard@cox.net

Point of Contact:
Tulsa District, US Army Corps of Engineers
Steve Nolen (CESWT-PE)
1645 S. 101st East Avenue
Tulsa, OK 74128 918-669-7660
Stephen.L.Nolen@usace.army.mil

From: Jo Rench
To: Nolen, Stephen L SWT
Subject: Arcadia Lake Equestrian Trails
Date: Tuesday, November 13, 2012 10:59:49 AM

Dear Sir:

I'm sorry that this is late, but I was away spending my money on other trails and camping, with several friends, and our horses.

I have lived Edmond since 1980. I have ridden the trails at Lake Arcadia for 30 years-- that was before there was a lake. Those trails are all under water now. When the "new trails" were cut, we were ecstatic. However, the trail was very short and just an "out and back." In 2009 we asked for a looping trail so that the erosion would be reduced from being overused. The Fish and Game people thought that it was a great idea, but nothing was ever done.

Now, we are in jeopardy of losing the use of our small trail, due to unsafe conditions, and encroachment by the proposed "biker and hiker" trail.

FACTS:

1. Arcadia Trails is the shortest trail with the fewest amenities.
2. It has miniscule, inadequate parking with only one "porta potty." It does not have any facilities for the handicapped--yes, we do have handiacpped
   people, who ride horses.
3. It has the highest usage fee.
4. It has a terrific location to attract visitors.
5. Horses bring in, and produce income.
6. Camping and/or better facilities have the potential of producing a large income.
7. Bikers and hikers provide little or no income.
8. Land and camping facilities are available for expansion.
9. Equestrian money is now being spent at other trails throughout the state.
10. Oklahoma is fortunate to have some of the best equestrian trails in this courntry.
11. Be aware of the clean-up and improvements that equestrian organizations have made to these trails.
12. Better facilities could attract group use, competitions, etc.

Please check out these other trails: Lake Carl Blackwell, Prague Lake, Bell Cow Lake, Robbers Cave, Cedar Lake, Kaw Lake, Draper Lake, etc.
These are just a few of the trails that are reaping benefits from horse people.

Yours truly,

Jo Rench
1421 Carol Clr., Edmond, Ok 73003
(405) 340-0759

From: Nolen, Stephen L SWT
To: "Pat Jakubs"
Subject: RE: Lake Arcadia Multi-Use Trail (UNCLASSIFIED)
Date: Tuesday, November 13, 2012 8:16:00 AM

Classification: UNCLASSIFIED
Caveats: NONE

Terry:

The environmental assessment (EA) would be prepared by the City of Edmond (the project proponent) and forwarded to us for review to ensure it meets our criteria. The EA would therefore not be prepared by our office but would be reviewed by us. The EA would not go to our headquarters but would be evaluated here locally in our district office. A draft EA would be provided for public review/comment to all interested parties and agencies (including all that attended our scoping meeting and submitted comments -- to include you). All comments would be considered and integrated into a final EA prior to a decision. Therefore, you would have an opportunity to review and comment on the draft EA once it is prepared. Timeline for its preparation would be up to the City of Edmond. Hope this answers your questions and thank you for your interest.

Steve Nolen

-----Original Message-----
From: Pat Jakubs [mailto:patjakubs@hotmail.com]
Sent: Friday, November 09, 2012 12:47 PM
To: Nolen, Stephen L SWT
Subject: Lake Arcadia Multi-Use Trail

Stephen,
I do not have a schedule of events regarding the Corps of Engineers proposal/assessment. Also, could you provide me any information on the format or criteria for the assessment. My understanding is that the assessment is being accomplished within your organization and forwarded to the Corps of Engineers Headquarters for final approval. Is it possible for me to obtain or have access to the Request for Proposal or the Statement of Work for this project? One example of the criteria to modify the shoreline and available water retention capability of Lake Arcadia would require mitigating water loss due to increased rate of silting. This indicates to me that to reclaim any loss would require extensive dredging.

Thank you for your reply to my e-mail on 10/22/12.

Terry Jakubs
8001 Falcon Crest
Jones, OK 73049
Phone: (405)396-8482
E-mail Patjakubs@hotmail.com

P.S. One of our best friends lives along the Potomac River in Virginia. Several years ago a bike and walking trail was approved by the Corps of Engineers. Shortly afterwards women quit using the trail due to lack of security. The women bikers solution was simple, they went back to the less dangerous roadway. In addition, young vandals used the trail to access neighborhoods carrying gasoline and setting cars on fire.
Unfortunately, one of the cars set on fire belonged to our friend who was Walt Disney's first International Ambassador and had been given the automobile as a memorable gift. Decisions have consequences.

Classification: UNCLASSIFIED
Caveats: NONE

From: Minnie Pack
To: Nolen, Stephen L SWT
Subject: Arcadia Lake Comment sheet
Date: Friday, November 09, 2012 2:04:28 PM

Sirs,

We are mailing our comment sheet from Boys Ranch Town in the mail. I would be glad to send you a scanned copy of it, if you'd like.

Thank you.

Minnie Pack

Boys Ranch Town

5100 E. 33rd

Edmond, OK 73013

405-341-3606

"Long as I can spell G-O-D, I got somebody along."

~ Alice Walker.

From: Pat Jakubs
To: Nolen, Stephen L SWT
Subject: Lake Arcadia Multi-Use Trail
Date: Friday, November 09, 2012 12:46:55 PM

Stephen,
I do not have a schedule of events regarding the Corps of Engineers proposal/assessment. Also, could you provide me any information on the format or criteria for the assessment. My understanding is that the assessment is being accomplished within your organization and forwarded to the Corps of Engineers Headquarters for final approval. Is it possible for me to obtain or have access to the Request for Proposal or the Statement of Work for this project? One example of the criteria to modify the shoreline and available water retention capability of Lake Arcadia would require mitigating water loss due to increased rate of silting. This indicates to me that to reclaim any loss would require extensive dredging.

Thank you for your reply to my e-mail on 10/22/12.

Terry Jakubs
8001 Falcon Crest
Jones, OK 73049
Phone: (405)396-8482
E-mail Patjakubs@hotmail.com

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Unfortunately, one of the cars set on fire belonged to our friend who was Walt Disney's first International Ambassador and had been given the automobile as a memorable gift. Decisions have consequences.

From: Janie Tigert
To: Nolen, Stephen L SWT
Subject: Arcadia Lake Multi-Use Trail Proposal - Environmental Assessment
Date: Friday, November 09, 2012 8:57:34 AM

Tulsa District, US Army Corps of Engineers
Steve Nolan(CESWT-PE)
1645 S. 101st East Avenue
Tulsa, OK 74128

Craig A. Tigert, D.V.M.
6000 Whitetail Run
Edmond, Ok 73013

November 9, 2012

Dear Mr. Nolan,

The following are my concerns regarding the Arcadia Lake Trail:

1. The Corps of Engineer land surrounding Arcadia Lake, south of 15th Street in Edmond, is the only publicly accessible, undeveloped property within the city limits of Edmond, and as such the ecological value of such property is immeasurable. Once this property is developed, the pristine state will be destroyed and it can never be regained. The trail system, or any other development in this area will decimate this natural state and it will be lost forever.

2. The ecological footprint, caused by the construction of a trail system that in some areas will be involving two trails 12 ft. wide, will be a minimum of 40-50 ft. wide, and the damage to the surrounding vegetation, due to construction of the trail with heavy equipment, will cause further damage to trees and vegetation outside of these boundaries. I have personally constructed a road through untouched timber, and to avoid as much as possible ecological damage, this construction was done primarily by hand. No one I have talked to associated with the City of Edmond or the Trails Committee has any personal knowledge, experience, or concept concerning the construction through a natural habitat and the damage that will be caused to such habitat.

3. The multiple soil types and variation of topography in the area when disturbed from a natural state will lend itself to constant

problems with drainage issues and erosion.

4. The limited ingress and egress points will discourage use of the proposed trail system.

5. Security and safety are an issue. The City of Edmond Police Department has acknowledged that there will be a potential
problem for the security of the property owners adjacent to the trail system and the safety of people using the trail due to
limited access by emergency equipment.

6. The City of Edmond currently does not have the funding or manpower to maintain the City parks and recreational areas
including Arcadia Lake. How can it expect to assume responsibility for maintenance and repair of the trail system?
This maintenance and repair will obviously include drainage and erosion issues associated with the trail. Another
associated concern is the increase of trash and refuse.

7. There currently exists a multiple use trail system on the Arcadia Lake property between 2nd and 15th St. This system
could be enhanced and expanded to satisfy the use needs of all concerned with minimal impact to the environment
and adjacent property owners.

8. The City of Edmond proposed to protect the Arcadia Lake environment with L-1 zoning which severely limited land use
and activity levels surrounding Arcadia Lake. One primary reason property owners adjacent to Arcadia Lake chose this area was
because of this limited activity and development protection by Edmond's L-1 zoning. Realizing that the Corps property is not
under the legal restrictions of the City of Edmond, L-1 zoning, I feel all would agree that it should be bound by the intention and
spirit of such zoning and as such, all lake development should fall within these guidelines.

9. It is my opinion that the primary concern of adjacent Arcadia Lake property owners is privacy, safety and security, which will
be compromised by the proposed trail system.

Thank you for your consideration and evaluation of my concerns.

Sincerely,

Craig A. Tigert, D.V.M.

From: Kathryn McKinney
To: Nolen, Stephen L SWT
Subject: Comment form
Date: Thursday, November 08, 2012 3:15:02 PM

Please see attached.

US Army Corps of Engineers.

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Edmond, Oklahoma
6:00 – 8:00 p.m., Thursday, October 18, 2012

Question, comments, or suggestions?

We want your input in this study. Your participation is key to our success! Please write your questions, comments, or suggestion in the space provided below. Feel free to use the back of this form or add additional pages if needed. Leave the form with us at the workshop or fill out the form at your convenience and return it to address below. Please provide comments by 9 November 2012. Thank you!

As an equestrian, biker, and a walker I am very excited about the new trails planned for Lake Arcadia. I am very concerned, though, about intersections that bring these 3 activities together. The bikers will not want to stop and get off their bikes to allow horses to pass, and walkers/runners may also not yield. There is a high probability of accidents unless such intersections are avoided or there is a huge education process to outline which activity must yield to another.

Optional Information (used for mailing list to keep you informed and will not be used for any other purpose):

Name: Kathryn V McKinney Affiliation: Arcadia Equestrian Friends of Lake

Address: 14800 Little Hickory City: Arcadia State: OK

Zip: 73007 Phone: 405 803 5078 E-mail: ladyfortd@gmail.com

Point of Contact:
Tulsa District, US Army Corps of Engineers
Steve Nolen (CESWT-PE)
1645 S. 101st East Avenue
Tulsa, OK 74128 918-669-7660
Stephen.L.Nolen@usace.army.mil

P.S. Please keep our equestrian trails!!!

From: Kyle Swisher
To: Nolen, Stephen L SWT
Subject: Arcadia Lake Trail Comment Sheet
Date: Thursday, November 08, 2012 1:41:29 PM
Attachments: Arcadia Lake Trail Corps Comment.pdf

Please see attached. Thank you.

US Army Corps of Engineers.

Public Workshop
Comment Sheet

Arcadia Lake
Multi-Use Trail Proposal

Environmental Assessment

Edmond, Oklahoma
6:00 – 8:00 p.m., Thursday, October 18, 2012

Question, comments, or suggestions?

We want your input in this study. Your participation is key to our success! Please write your questions, comments, or suggestion in the space provided below. Feel free to use the back of this form or add additional pages if needed. Leave the form with us at the workshop or fill out the form at your convenience and return it to address below. Please provide comments by 9 November 2012. Thank you!

I reside in South Lake, which is located near Midwest and Memorial in Edmond. My property abuts the Corps land. I am simply writing to advise you that I approve the current plan to place the Trail along Midwest to 33rd street. I do not approve of the previous plan to run the trail along the fireline which travels along the backyards of South Lake homeowners. If you need additional information, please contact me

Optional Information (used for mailing list to keep you informed and will not be used for any other purpose):

Name: Kyle Swisher Affiliation: Adjacent home owner

Address: 7401 Cobalt Cove City: Edmond State: OK

Zip: 73013 Phone: 405/396-3063 E-mail: OKSwisher@hotmail.com

Point of Contact:
Tulsa District, US Army Corps of Engineers
Steve Nolen (CESWT-PE)
1645 S. 101st East Avenue
Tulsa, OK 74128 918-669-7660
Stephen.L.Nolen@usace.army.mil

From: Deanna Hamilton
To: Nolen, Stephen L SWT
Subject: Arcadia Lake Multi-Use Trail Proposal
Date: Wednesday, November 07, 2012 9:52:27 AM

It is my understanding that bicycle use has been proposed on or very near the equestrian trail at Arcadia Lake.
As a volunteer who has helped pick up and bag trash which washed onto those trails, I would like to express my strong opposition.

If that were to be approved, it would have a very negative impact for equestrian users. Bicycles are considered by many to be the most frightening object our horses encounter on trails. The peaceful experience now enjoyed would vanish.

Please take into consideration that equestrians have very few places compared to cyclists to enjoy their activity.

Deanna Hamilton
P O Box 979
Seminole, OK 74818-0979
deannahamilton@ymail.com
Group affiliation: Oklahoma Equestrian Trail Riders Association (OETRA)

From: morian whaley
To: Nolen, Stephen L SWT
Subject: Arcadia Lake equestrian trails
Date: Tuesday, November 06, 2012 4:49:16 PM
Attachments: Arcadia Lake equestrian trails.docx

Steve Nolen

Tulsa District, US army Corps of Engineers

1645 S. 101st East Avenue

Tulsa, OK 74128

Dear Mr. Nolen

I have heard that a group has proposed a new trail system for walking and biking around Lake Arcadia and that that proposed trail would intersect in several places with the equestrian trails at Arcadia. I live close to Lake Arcadia and I have just started trail riding this fall. I am saddened by the news that the trails closest to me may not be good beginner trails in the near future. If there were other equestrian-only trails nearby it would be different—there are miles and miles of other places people can hike and bike. Though, I understand that the area around Lake Arcadia is pretty place to hike and bike. I request that the new trail system simply go beside or around the equestrian trails.

I am also concerned that bikers will not be aware of and therefore not follow proper trail etiquette. They may not know that they are supposed to stop for a crossing horse, resulting in some very dangerous situations and possibly bad accidents.

Thank you for taking in to consideration the many equestrians that use these trails.

Sincerely,

Morian Whaley

2604 Fairfield Dr.

Edmond, OK. 73012

Oklahoma Equestrian Trail Riders Association

MOriann@gmail.com

From: Jane Hresko
To: Nolen, Stephen L SWT
Subject: Public workshop comment sheet
Date: Tuesday, November 06, 2012 11:16:04 AM
Attachments: Arcadia Lake Multi Use Trail Proposal - YES.pdf

Attached is my comment sheet.

Jane Hresko

US Army Corps of Engineers

Public Workshop
Comment Sheet

Arcadia Lake
Multi-Use Trail Proposal

Environmental Assessment

Edmond, Oklahoma
6:00 – 8:00 p.m., Thursday, October 18, 2012

Questions, comments, or suggestions?

We want your input in this study. Your participation is key to our success! Please write your questions, comments, or suggestion in the space provided below. Feel free to use the back of this form or add additional pages if needed. Leave the form with us at the workshop or fill out the form at your convenience and return it to address below. Please provide comments by 9 November 2012. Thank you!

I Think its A Great Idea TO INCREASE The TRAILS AROUND Arcadia Lake.

I Live near Spring Creek Park. We could definitely use a better & more Extensive TRAIL System.

Optional Information (used for mailing list to keep you informed and will not be used for any other purpose):

Name: JANE KRESLO Affiliation: LAND RUNNERS TRI-OKC

Address 1701 S. Air Depot City: Edmond State: OK

Zip: 73013 Phone: / E-mail: jane@cpamc.net

Point of Contact:
Tulsa District, US Army Corps of Engineers
Steve Nolen (CESWT-PE)
1645 S. 101st East Avenue
Tulsa, OK 74128 918-669-7660
Stephen.L.Nolen@usace.army.mil

From: marylou gwozdek
To: Nolen, Stephen L SWT
Subject: Arcadia Lake Issues
Date: Monday, November 05, 2012 4:22:13 PM
Attachments: TRGltr.docx

Dear Mr. Nolen,

Attached is a word document with my thoughts on this issue at Lake Arcadia. Hopefully, we can come to a compromise to suit all of those concerned.

Thank you,

Marylou Gwozdek
Trail Riding Gals

November 5, 2012

US Army Corps of Engineers
Tulsa District
Steve Nolen (CESWT-PE)
1645 S. 101st East Avenue
Tulsa, OK 74128

Dear Mr. Nolen:

Oklahoma is proud of its agricultural status, and with that in mind, we need to maintain the equestrian trails at Arcadia Lake. Bikers can ride anyplace on any road, horses cannot go down 15th or other streets safely. We need to maintain the integrity of our riding areas for those of us who are getting older and cannot travel up to Lake Carl Blackwell or to Ardmore for other trail riding areas.

It is unbelievable how we can push things for the bike people, but horse people are pushed from parks without notice. It was the horse people who came and cleaned these trails, and continue to work and keep the Arcadia Lake area safe for all. We must team together and stand for our future rights as equestrians to ride Arcadia without having the bikes and other distractions. We are the slowest moving vehicles and bikes are able to move more freely in the citywide areas. It is interesting to note that once the horse people keep up the trails, others want to get in on the action and take over what we as a riding group started.

Just as in politics, money usually wins, it is time for the horse community to step out and have a stand on keeping our trails free for our private use since we are the group who took on this daunting task when the lake was low. The bike trails are numerous around the city, through parks, and now taking away Arcadia you are taking away a freedom. Rerouting this bike path is much easier than using Arcadia Lake as a backdrop and hurting the Boys Ranch which is such a community plus.

We ask for your support so the new trail will not run through Arcadia causing the city undue liability issues, and keep our Boys Ranch able to use this trail for the troubled boys who also need a place to unwind. With fuel costs as they are, this local area for our horses with the surrounding areas of Edmond, Guthrie, and Arcadia fit in the agricultural scheme of things. Thank you for listening, and may you have the presence to stand with us in our trail riding endeavors, and not exclude the group (Trail Riding Gals) who made this area what it is today!

Sincerely,

Marylou Gwozdek
Trail Riding Gals of Oklahoma

From: Janis Baldwin
To: Nolen, Stephen L SWT
Subject: Proposed new trail system at Arcadia Lak
Date: Monday, November 05, 2012 10:58:23 AM

Hi Mr. Nolen,

I want to echo the points raised in Terri Folks (Trail Riding Gals) email PLUS briefly add my experience with shared trails in Georgia.

In Georgia there are not nearly as many places to ride as Oklahoma. Consequently the trail systems are shared, particularly those in north Georgia mountains. Even though technically horses have the right-of-way, the mountain bike people (mostly from Atlanta) have become resentful and at times actually hostile to equestrians both in camp and on the trail. When I moved back to Oklahoma I was most impressed and pleased to find equestrian-only trails. Now I can take my 5 year old granddaughter on a ride without fear of encountering a speeding bike. I am not so concerned with hikers, they are slow-moving and accommodating. Sharing with bikers means that none but the most "bomb-proof" horses can be ridden there and that's no guarantee. You cannot imagine how dangerous the idea of "intersections" between bike and horse trails actually is! The obvious solution is to route a biking trail such that it does not intersect with or coincide with a horse trail.

I'm a member of Trail Riding Gals, Oklahoma Family Equestrians and OETRA. Thank you.

Janis Baldwin, IT
Aging Aircraft Consulting, LLC
www.agingaircraftconsulting.com <http://www.agingaircraftconsulting.com/>
(478) 923-8786

Personal: www.okgrassfed.com <http://www.okgrassfed.com/>
(478) 714-9121

From: colleen keizer
To: Nolen, Stephen L SWT
Subject: horse and bike trails
Date: Friday, October 26, 2012 2:10:14 PM

Hi,
I love to ride my horse in parks. It would be great and much safer if the bike and horse trials are not on top of each other. I used to ride at Turkey mountain were bikers share the trials with horses, but accidents have happened, people and horses hurt. Not good when they are on top of each other. Some folks dont realize that horses can get scared and run over people or owners by mistake in the flight instinct.
hope you develop trails for safety for all there.
thanks colleen

Colleen Keizer
918-321-5120
www.photosbycolleen.com

From: Cris Van Horn
To: Nolen, Stephen L SWT
Subject: Arcadia Lake Equestrian Trails
Date: Tuesday, October 23, 2012 12:30:15 PM

Mr. Nolan:

I understand that you are permitting bikers to pave trails at Arcadia Lake that are planned to cross equestrian trails and also run alongside equestrian trails.

Given that horses are animals of prey and can respond with an inherent flight instinct regardless of their training, it is important for the safety of all--the bikers, hikers and equestrians--that trail contact among the competing interests be minimized to the extent possible.

Please consider rerouting the bike trails to be farther away from the equestrian trails to limit the opportunity for an accident, yet accommodate all users in a safe environment.

Cris Van Horn
918-688-1898

From:	KIMBERLY TKACH
To:	Nolen, Stephen L SWT
Cc:	Nancy Williams
Subject:	Arcadia multi-use trail
Date:	Tuesday, October 23, 2012 12:19:44 PM

Dear Mr. Nolen,
A friend and fellow area neighbor sent me a newspaper article with reference to the meeting that took place by the corps concerning the Arcadia multi-use trail. My husband and I were also not informed of the meeting. Her name is Nancy Williams. She forwarded to us, the email that she sent you. I'm not sure if I could add anything more to her letter, as she was so precise regarding how my husband and I feel also. We live in the neighborhood east of the Southlake Subdivision called Eagles Cove. I am sure you have heard from one of neighbors, Terry Jakubs. Could you please add us to the mailing list concerning any future documents or upcoming meetings that may take place.
Thank you for your time in this matter,
Kim Tkach

Address:
Kim and Tom Tkach
3450 Eagles Landing
Jones, OK 73049
405-396-8488
ttkach@aol.com

From: Terri Folks
To: Nolen, Stephen J SWT
Subject: Arcadia Lake Trails Comments
Date: Tuesday, October 23, 2012 11:33:48 AM

October 23, 2012

Steve Nolen
Tulsa District, US army Corps of Engineers
1645 S. 101st East Avenue
Tulsa, OK 74128

Dear Mr. Nolen

As you are aware, a group has proposed a new trail system for walking and biking around Arcadia Lake. The walking and biking trail route is still in the planning phases. Equestrians have been invited to attend the planning meetings and we are very pleased to be part of this process. We appreciate your continued support of our equestrian trails at the Lake. Over the years, our Friends group has picked up hundreds of bags of trash, worked the trails by keeping them trimmed and passable, obtained grant money to add amenities such as picnic tables and hitching posts and currently we have grant funds waiting to pay for new trail signage. We are now raising money to add more amenities to the trails and starting to host fun events to attract even more people to the equestrian trails.

We are also well aware that many trails across the country are multi-use, passive-use (non-motorized vehicles only) and hikers, bikers and equestrians have learned to get along and share the trails.

However, in Oklahoma, our horse trails are almost all equestrian only. The thing that we love about our Arcadia trails system is that we can take our young horses, young riders, people who are new to riding to enjoy these trails without encountering anything other than deer. Because most equestrian trails in Oklahoma are single use trails, our horses are not accustomed to bicyclists or people hiking with backpacks. A horse's first response to fear is flight and having a 1,200 pound animal crashing through the woods could be a very dangerous situation for everyone.

In the immediate area, we only have this eight-mile trail system to ride on (for example, Lake Carl Blackwell in Stillwater has 60 miles of horse trails). Bikers have ALL the roads to ride on legally, anywhere. Walkers have sidewalks, roads, malls, and school tracks. This trail is All we have. According to established trail etiquette, bikers would have to stop and get off their bikes if a horse was crossing the trail. With the proposed six crossings of the equestrian trail we feel it would become unsafe for riding. We can't go to the mall, or ride through the neighborhoods; we have nowhere else to go other than our eight miles of trail which we have steadfastly maintained for years.

Even the Horse Manager at the Boys Ranch, also affected by this trail, recently said at one of our Friends meetings – if this trail is allowed, he will not be able to take their kids trail riding anymore. It will be too big of a liability risk.

We are humbly requesting, with your support, that the new trail be routed around the equestrian area and not run through it. If this comes to pass as currently proposed, it will forever change the dynamics of this family-friendly equestrian trail. Our suggestion is to run the trail down 33rd Street to the Service Road and then East on Memorial, it would end the problems.

Sincerely,

Terri R. Folks
6525 Whispering Oak Drive
Edmond, OK 73034
(405) 348-1397
Email trfolks@cox.net

President, Friends of Arcadia Lake Equestrian Trails
Lead Facilitator, Oklahoma Trail Riding Gals
Member, Oklahoma Equestrian Trail Riders Association, Bad Girls Trail Riding Club, Oklahoma Horse Industry Council

From: Nolen, Stephen L SWT
To: "NancyWilliamsISS@aol.com"
Subject: RE: Comments on the Proposed Lake Arcadia Multi-Use Trail (UNCLASSIFIED)
Date: Tuesday, October 23, 2012 8:31:00 AM

Classification: UNCLASSIFIED
Caveats: NONE

Ms. Williams:

I have received and very much appreciate your comments. Thank you for taking the time to express your thoughts/concerns. In order for this proposal to move forward, an environmental assessment under the National Environmental Policy Act will be prepared. The meeting last Thursday was to solicit input on what should be included in such an analysis. However, it certainly was not necessary to attend the meeting to provide input. We will take your comments below and make sure these issues are addressed. In addition, I will add your name and contact info to our mailing list so that you receive future documents or correspondence from the Corps when it becomes available. There will be plenty of opportunities for input. Again, I appreciate your feedback and look forward to your involvement in the future. Have a great day.

Steve Nolen

-----Original Message-----
From: NancyWilliamsISS@aol.com [mailto:NancyWilliamsISS@aol.com]
Sent: Monday, October 22, 2012 4:29 PM
To: Nolen, Stephen L SWT
Subject: Comments on the Proposed Lake Arcadia Multi-Use Trail

Dear Mr. Nolen---

I was dismayed to hear that I had missed a meeting held by the Corps to discuss the proposed Arcadia Lake Multi-Use Trail. I have tried to be at every, single meeting I could to discuss my concerns over the proposed Lake Arcadia Multi-Use Trail. I appreciate you letting me air my concerns in this email and hope that it is not too late to do so. Prior to this email I also put into writing my concerns and sent them to the City of Edmond. I have also attended and voiced my concerns at the publicly held Community Connection Meeting, in addition to, a Coalition Meeting. To my knowledge, at those meetings, there was not a USACE representative present to hear my concerns--so I would appreciate the opportunity to share my concerns here.

My concerns, I feel, are broad-minded and I do try to consider the entire community. I live in the SouthLake Subdivision. My property backs up to the USACE property on the South side of Arcadia Lake. Although I am an avid bike rider and walker, I am also an avid wildlife enthusiast, angler, and concerned citizen. My biggest concerns involve the preservation of the wildlife and vegetation, the preservation of the green space (the only undeveloped public land in the City of Edmond) and the preservation of the INTEGRITY of the property (pertaining to drainage issues, water tables and aquafirs)

I am not opposed to having a multi-use trail in Edmond, but I believe the best and most optimum situation would not involve utilizing the property on the USACE property on the south side. Possibly an alternative could be to utilize more fully the north side of the lake where there is already land that is designated and developed for public use for the type of activities that are being supported by the development of a multi-use trail (bikers, walkers, runners) The trail itself is monstrous in size and can not help but impact the land in all those areas (drainage, aquafirs and water tables, wildlife, vegetation). The trail includes bridges over standing lake water, 20 feet of asphalt, and drainage ditches. I feel that only one subset of our community is being served by the inputting of this trail (bikers, runners, walkers). There are other subsets of our community that utilize the land just as it is. My Eagle Scout uses this land as it is now. Our family uses the land to walk on as it is now. Anglers use the land as it is now. The Audubon groups use the land as it is to study the migrating pelicans and the Bald Eagles. The Army uses the land to train. The bow hunters use the land as well.

Part of the mission of the shoreline management programs of the Tulsa District (which includes Lake Arcadia) of the USACE as published on the website are as follows:

"Shoreline Management Plans help to ensure that the water area, shoreline and adjacent public land of Corps of Engineers projects are managed to protect the environment and scenic beauty of our lakes for future generations."

What I take note of in that statement on the webiste is the term "future generations." I believe that developing this trail on the south side of the lake, which has the only undeveloped native areas in the City of Edmond, will destroy vegetation and wildlife habitats for the future generations and may also impact the aquafirs that supply the well water to so many subdivisions East of I-35 for future geneerations. In my opinion we are trying to "retrofit" a trail around Lake Arcadia when this was never intended nor planned for by the USACE, the Wildlife Commission, nor the City of Edmond. Had this been the intended use to start, better planning and preparations could have been put into place to do the job right and to the benefit of the majority of community members, not simply walkers/runners and bikers.

Lastly, I would also raise the issue of safety and security. I am not sure of any expressed or implied liabilities the USACE would be setting itself up for, but I believe that it needs to be thoroughly investigated. Which organization is ultimately responsible for fire containment, flooding, intruders, and access to the trail after hours, or during hunting season. All pose serious concern or threats to the land, to bordering homeowners and their property, and to the person utilizing the trail.

If you would enjoy further comment or plan to host further meetings, please add me to your notification list. I would like to attend. Thank you for your time and attention in reading my email.

Respectfully yours,
Nancy Williams
3701 Sea Ray Channel
Edmond, OK 73013
(405) 818-2275 cell/text
nancywilliamsiss@aol.com

Classification: UNCLASSIFIED
Caveats: NONE

From: NancyWilliamsISS@aol.com
To: Nolen, Stephen L SWT
Subject: Comments on the Proposed Lake Arcadia Multi-Use Trail
Date: Monday, October 22, 2012 4:29:25 PM

Dear Mr. Nolen---

I was dismayed to hear that I had missed a meeting held by the Corps to discuss the proposed Arcadia Lake Multi-Use Trail. I have tried to be at every, single meeting I could to discuss my concerns over the proposed Lake Arcadia Multi-Use Trail. I appreciate you letting me air my concerns in this email and hope that it is not too late to do so. Prior to this email I also put into writing my concerns and sent them to the City of Edmond. I have also attended and voiced my concerns at the publicly held Community Connection Meeting, in addition to, a Coalition Meeting. To my knowledge, at those meetings, there was not a USACE representative present to hear my concerns--so I would appreciate the opportunity to share my concerns here.

My concerns, I feel, are broad-minded and I do try to consider the entire community. I live in the SouthLake Subdivision. My property backs up to the USACE property on the South side of Arcadia Lake. Although I am an avid bike rider and walker, I am also an avid wildlife enthusiast, angler, and concerned citizen. My biggest concerns involve the preservation of the wildlife and vegetation, the preservation of the green space (the only undeveloped public land in the City of Edmond) and the preservation of the INTEGRITY of the property (pertaining to drainage issues, water tables and aquafirs)

I am not opposed to having a multi-use trail in Edmond, but I believe the best and most optimum situation would not involve utilizing the property on the USACE property on the south side. Possibly an alternative could be to utilize more fully the north side of the lake where there is already land that is designated and developed for public use for the type of activities that are being supported by the development of a multi-use trail (bikers, walkers, runners) The trail itself is monstrous in size and can not help but impact the land in all those areas (drainage, aquafirs and water tables, wildlife, vegetation). The trail includes bridges over standing lake water, 20 feet of asphalt, and drainage ditches. I feel that only one subset of our community is being served by the inputting of this trail (bikers, runners, walkers). There are other subsets of our community that utilize the land just as it is. My Eagle Scout uses this land as it is now. Our family uses the land to walk on as it is now. Anglers use the land as it is now. The Audubon groups use the land as it is to study the migrating pelicans and the Bald Eagles. The Army uses the land to train. The bow hunters use the land as well.

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Lastly, I would also raise the issue of safety and security. I am not sure of any expressed or implied liabilities the USACE would be setting itself up for, but I believe that it needs to be thoroughly investigated. Which organization is ultimately responsible for fire containment, flooding, intruders, and access to the trail after hours, or during hunting season. All pose serious concern or threats to the land, to bordering homeowners and their property, and to the person utilizing the trail.

If you would enjoy further comment or plan to host further meetings, please add me to your notification list. I would like to attend. Thank you for your time and attention in reading my email.

Respectfully yours,
Nancy Williams
3701 Sea Ray Channel
Edmond, OK 73013
(405) 818-2275 cell/text
nancywilliamsiss@aol.com

From: Pat Jakubs
To: Nolen, Stephen L SWT; dbaldwin@opubco.com; Mike.Sanner@ev.com; CPaul16837@aol.com
Subject: Proposed trail at Arcadia Lake
Date: Saturday, October 20, 2012 11:16:29 AM
Attachments: Bike trail information.doc

Dear Mr. Nolen,

I have attached a draft concerning South Lake Arcadia Wilderness and Wildlife. I read the article in the Daily Oklahoman by Diana Baldwin, and this is to inform you that I was not invited to this meeting. I will be providing more information and questions about the trail in the near future. My home is located less than 100 feet from this proposed trail. My response will oppose the invasion of my privacy. The trail can be relocated as a real wilderness trail by moving it at least 150 yards north of my property line. As proposed the cyclists, joggers, and walkers will be looking into my bedroom, dining room, and kitchen!

I personally gave David Tew and our Eagle's Cove Homeowner's Association President a tour of the proposed trail that resulted in a major change to southeast corner of the project.
I am deeply disappointed that I was not part of this meeting and unable to provide comments for an environmental assessment to determine if the trail would be harmful to the lake, property owners, or the environment which is required by the National Environmental Policy Act.

Terry Jakubs
8001 Falcon Crest
Jones, OK 73049
Home phone: (405) 396-8482

SOUTH LAKE ARCADIA WILDERNESS AND WILDLIFE (draft)

Preserving the native habitat and vegetation

1. Animals
    a. Gophers
    b. Deer population, buck rut, does and fawns
    c. Turtles and armadillos
    d. Coyotes and cubs
    e. Foxes – three breeds
    f. Bobcats up to 40 plus pounds
    g. Skunks
    h. Raccoons
    i. Opossums
    j. Mountain lions
    k. Deer mice
    l. Wild dogs
    m. Wild hogs
2. Fowl
    a. American Bald Eagles
    b. Federally protected migrant bird population
    c. Scissor tail (the state bird)
    d. Owls
    e. Red tail hawk
    f. Mississippi hawk
    g. Wild turkeys
    h. Quail and nesting areas
    i. Blue birds and ongoing research
3. Insects
    a. Mosquitoes (West Nile Disease)
    b. Chiggers
    c. Deer tick
    d. Deer flies
    e. Bees and wasps
    f. Spiders, including tarantulas
    g. Swarms of gnats

h. Scorpions

4. Snakes (vipers)
    a. Rattlesnake (7 feet)
    b. Copperhead
    c. Moccasin
5. Medical assistance
    a. None in wilderness area
6. Fire fighters and other emergencies
    a. None on sight resources.
7. Police protection
    a. None in wilderness area
8. Game wardens
    a. On Call
9. Weather
    a. Sirens
    b. No shelters in wildlife/wilderness
    c. Black ice hazard/hail/lightning
10. Flooding
    a. Severe flooding destroys private dams and man-made structures.
    b. Park area is not protected from flooding
    c. months to repair flood damage if money available
11. Wilderness / Harmful vegetation
    a. All poisonous plants
12. Mixing deer archery hunting with non – hunters
    a. Three – four month hunting season
    b. will archery hunt be eliminated?
13. Enforcement of Rules for wilderness
    a. None planned for wildlife wilderness area
    b. Skate boards?
    c. Electric vehicles, including handicap?
    d. Food and garbage disposal –don't feed any wildlife!
    e. Juveniles without parents – age limit
    f. Drugs (DEA)
    g. Twice daily law enforcement sweeps start A.M. end

PM.

14. National guard training
    a. Will training be eliminated in south Lake Arcadia?

ISSUES

Residence on south side of wilderness and wildlife refuge of Lake Arcadia

a. Repair all fences destroyed by red cedar removal on south side.

b. Have City of Edmond calculate monetary assessment that addresses property losses due to path of unsecure roadway/trail next to our properties

c. Privacy: Participants of the trail will visually invade private property including: bedrooms, dining rooms, kitchens, backyards, and swimming pools.

d. No security is being provided to protect residential properties from trespassers, criminals, or home invasions day or night.

e. Our total property tax for these "Gated communities" is abundant and City of Edmond should protect them from loss and potential harm.
   Note: Need preliminary independent environmental assessment from? OSU,EPA and for Endangered Species

CONCLUSION

We, South Arcadia Lake property owners believe that the proposed project is not represented by the Tulsa Park images!

Arcadia's south side is not a recreational park. It is a wildlife and wilderness refuge for all its occupants. A reminder, this includes,

The American Bald Eagle, very dangerous snakes, bobcats, coyotes, mountain lions, and biting insects. In addition, the other dangers include poachers and unsupervised access to vandals.

Therefore, we are left with our only reasonable course to make our issues known through all available media, environmental organizations, and periodicals addressing wildlife/wilderness endangerment and protection.

Additionally. We intend to insure that the safety, value, and security of our communities will not be in jeopardy.

Provided by : Terry Jakubs
8001 Falcon Crest
Jones, OK 73049
Eagle's Cove Addition

From: Linda
To: Nolen, Stephen L SWT
Subject: 18 mile trail around lake Arcadia
Date: Saturday, October 20, 2012 8:45:53 AM

Dear Sir,

My wife and I retired from the USAF in 2006 and moved to Edmond.

We have lived in Panama City, San Antonio, Omaha, Biloxi, Albuquerque, Great Falls (MT) and Dunkirk Maryland – ALL had better walking/biking trails than Edmond.

Currently when we want to ride our bikes we put them on the car and drive to Lake Hefner.

We need this 18 mile trail around Lake Arcadia – we have biked and walked the unpaved 7.5 trail that currently runs beside the lake – it is nice but needs to be expanded.

I hope the new, longer trail includes the dam.

Are there other decision makers we need to contact with letters of support?

Thank you,

Alan and Linda Doerman

2808 N. Ashecroft Dr.

Edmond, OK 73034

From:	Barker, Carol B CIV USAF AFMC AFLCMC/WLVSB
To:	Nolen, Stephen L SWT
Subject:	Comments for Arcadia Lake Multi-Use Trail
Date:	Friday, October 19, 2012 3:45:38 PM
Attachments:	Cover Sheet.pdf Public Workshop 18 Oct 2012 PDF.pdf

Steve,

Attached are my comments for the Arcadia Lake Multi-Use Trail EA. I'm also snail mailing them.

Thanks very much for your discussions last night.

Regards,
Carol

Carol B. Barker, P.E.
RC-26 Program Engineer
AFLCMC/WLVSB
Tinker AFB
Comm: 405-734-1799
DSN: 884-1799

US Army Corps of Engineers

Public Workshop
Comment Sheet

Arcadia Lake
Multi-Use Trail Proposal

Environmental Assessment

Edmond, Oklahoma
6:00 – 8:00 p.m., Thursday, October 18, 2012

Question, comments, or suggestions?

We want your input in this study. Your participation is key to our success! Please write your questions, comments, or suggestion in the space provided below. Feel free to use the back of this form or add additional pages if needed. Leave the form with us at the workshop or fill out the form at your convenience and return it to address below. Please provide comments by **9 November 2012**. Thank you!

See attached.

Optional Information (used for mailing list to keep you informed and will not be used for any other purpose):

Name: Carol Barker Affiliation: Equestrian

Address: 5300 Indian Hill Rd. City: Edmond State: OK

Zip: 73034 Phone: 405 / 802-2187 E-mail: okieenduro@yahoo.com

Point of Contact:
Tulsa District, US Army Corps of Engineers
Steve Nolen (CESWT-PE)
1645 S. 101st East Avenue
Tulsa, OK 74128 918-669-7660
Stephen.L.Nolen@usace.army.mil

Public Workshop
Comment Sheet

Arcadia Lake Multi-Use Trail Proposal
18 October 2012

Name: Carol Barker Affiliation: Edmond Citizen and Equestrian

Address: 5300 Indian Hill Rd, Edmond, OK 73034

Phone: 405-802-2187 E-mail: okieenduro@yahoo.com

1. This project also includes the construction of a Wellness Park, functioning as a trailhead, on the west side of I-35. Because it is not part of the USACE property, the City of Edmond and the Arcadia Lake Trail Coalition believed it would not have to be included in the Environmental Assessment (EA) and therefore could begin construction prior to completion of the EA process. However, due to cumulative effects, the City should probably include the Wellness Park in the EA, which may delay their planned construction.
2. Recommend the design minimize intersections between the proposed multi-use trail and the existing equestrian trail. Intersections should be designed in such a manner as to require bicyclists to slow down and stop before proceeding – perhaps rumble strips and stop signs. Road bikes often exceed 20 mph while horses walk an average of 3 mph and excess intersections could result in complacency in the biking community regarding equestrian right-of-way.
3. Recommend installation of surveillance cameras at trail intersections and access points.
4. Recommend the City of Edmond (as well as any other local jurisdictions) enact traffic ordinances regarding trail use such as speed limits, liability, right-of-way at intersections, etc.
5. Recommend the City of Edmond expand police bicycle routes to regularly include surveillance of this trail. If parts of the trail are outside City of Edmond jurisdiction, then the City may want to develop partnerships with those communities to develop similar ordinances and enforcement.
6. City of Edmond personnel have stated they expect maintenance costs of this paved trail to not exceed $20k per year. Given that the construction costs are estimated in the neighborhood of $16M, this doesn't seem like adequate long-term planning. They based this cost on the maintenance of their existing bike trails, but this trail runs through varied terrain with multiple water crossings.
7. The proposed trail route runs through areas that are closed from 1 October to 15 January each year for hunting. Recommend the impacts of this closure on trail usage be evaluated, since it may result in bicyclists utilizing the I-35 access road from 33rd St to Memorial Road and then east on Memorial until they can re-access the trail at some point. If this becomes the preferred route for 3-1/2 months of the year, perhaps a Proposed Alternative should include this as the permanent route.

8. There is much concern with the proposed intersections of the paved multi-use trail and the existing equestrian trail. Recommend a Proposed Alternative look at re-locating the equestrian trail to the north side of Arcadia Lake, thereby removing this conflict. The new multi-use trail is planned to run alongside 2nd Street and there is much more available area in this area between the proposed trail and the lake. There are existing mountain bike and hiking trails, but that is a more compatible co-existence than road bikes, paved trails, and horses. As part of this re-location, recommend the City of Edmond evaluate changing their policies and have an 8 – 10 mile equestrian trail originate in one of the existing parks. Lake Carl Blackwell, managed by Oklahoma State University, has a yearly permit system that appears to work well with their multiple recreational usages and could be consulted as a model.

From: Janie Tigert
To: Nolen, Stephen L SWT
Subject: Arcadia Lake Trails/homeowner
Date: Wednesday, October 17, 2012 12:17:12 PM
Attachments: Comments on Arcadia Lake Trail.docx
Written comments on trail.pdf

Hello Mr. Nolan,

I believe you have spoken to my husband Craig Tigert, who is currently out of town, so I wanted to be sure you had the attached information in your hands before the meeting tomorrow night. We, along with many others have sent concerns about the trail to Jan Fees and have felt they were received with fingers in their ears! They have moved the trail on the map a little farther from our Corp fence behind our property, but what they don't realize is what the terrain is like where they moved it to. Everything looks flat on an airial map! Anyway I look forward to meeting you if you will be at the "Community Input Meeting" tomorrow night, if not, sometime later I'm sure.

We just hate to see the area we have loved for nearly 20 years so drastically changed, and the wildlife we all enjoy negatively affected. Also, I am alone a lot of the time, as Craig travels much of the year, and this time while he was gone I was thinking more about how safe would I feel with a path to my back door that had always been obscured in the past. I have to admit, I've never been afraid for one second out here alone, or with my granddaughters in the back yard, until I started realizing how the access to my home will change.

We had hoped that the trail could be restricted to the area north of 15th, and that, that might make everyone happy. We understand the difficulties the Corp has currently maintaining all that they are responsible for and can't imagine the burden of getting this piled on top. Please take a look at the attachments, as you can see, we are not the only ones concerned about this whole fiasco.

Thank you for your time and consideration.

Sincerely,

Janie Tigert

Comments on Arcadia Lake Trail

07-24-12	John Green	*on north or south *will trail be lit? *live first house in Arcadia Hills *good idea, endorses project
07-24-12	Lewis Moore	*received call from John Fitch *John had crime concerns from trail
07-24-12	Terry Jakubs 8001 Falcon Crest Jones, OK 73049 396-8482	*challenging *answered questions but he mainly wanted to talk * has pictures of rattlesnakes & copperheads *2 mountain lions *bobcats, deer, ticks *endangered species in area –have we talked to Sierra Club? *doesn't want to see cyclists from backyard *ask to move trail on the other side of tree line, at least 100 yards north *lived there 6 years-be careful-snake bites *concern over someone getting hurt
07-25-12	Tim Reid 627-6653	*what's possibility of happening? *highly against, likes isolation *lives on east side of lake *house built on west side of his property, closer to lake *shock to learn about trail *tree line border 100-200' between him & trail *intense slopes in some areas *concern over safety of people on trail *concern of security for his property *wants to see comments *asked if there was organized opposition
07-25-12	John Fitch	*stop it from being in backyard *will do whatever it takes to stop *coming in through gate on bikes *lived in Seattle so knows about trails *concept to be as close to lake would be better *go to 33rd Street-superior location *like trail idea *fire break-security concerns *gate across fire break on east side of MW Blvd *trail on west side Midwest Boulevard *not compromise security of residence
07-25-12	Kyle Swisher	*great idea, loves concept *likes trail on 33rd, not in fire break *must move trail to not be adjacent to homes in Southlake

07-25-12	Vicki Dubberstein 800 Scrub Oak Road 226-0071	*doesn't want trail next to property fence *keep respectful distance *does not want to see trail from house *problem dumping on private streets in their addition *cost
07-25-12	Kent Williams 396-8089	*adamantly opposed, no protection, fiasco *security risk, lower property value *talked to Damon Springer *compromise to live with on Midwest Boulevard & 33rd
07-25-12	Gene Johnson 396-8200	*heard about trail *wants packet *wanted map for jet skis so referred to Parks Dept.
07-26-12	Laree Reidenbaugh 6200 E. 15th Street Laree2speak@gmail.com	*love idea, excited *could protect properties from fire *major draw to Edmond *how to help *send email about next meeting *phenomenal, community asset
07-27-12	Erroll Russell ewrussell@cox.net send to Veta came in to office	* been there 9 years *don't want to see along fence line *preferred to go along waterline west of Midwest Boulevard
07-30-12	Craig Tigert 721-9277	*trail through woods, not same as River Parks Trail *not on property line *building road damages trees and other trees *elevations-trail close to shore *be receptive to changes and straighten out around property and Edgewater *some manipulation of trail (Dukes, Spencers)-why them? *Edgewater adjustment
07-31-12	Craig Tigert	*came in 4:00-5:30 *preferential political treatment *not be able to please everyone
08-02-12	Caleb McCaleb 823-8086	*called as asked to by Craig Tigert
08-06-12	Richard Steppe 412-8884 33rd & Air Depot	*loves idea *concern about parking *charge for trail use? *ordinance about parking in R-O-W at 33rd & Air Depot
08-03-12	Cathi Lynch Life Church TV Central offices I-35 216-7042	*full support *looking forward *excited for prospect

08-07-12	Steve Hull 550-3023	*strongly encourage *thinks there will be better security with trail *doesn't understand fear of trails *will write email of support
08-09-12	Mike Bosley	*called in response to email & answered questions
08-09-12	Josh Rasp 10005 Sunday Drive East of Post	*serious reservations-now 100% on board *access *concern about trespassers
08-09-12	Steve Hull	*bicycle racks at Life Church *politics against in neighborhood *make others aware of other trails & use *not something new but other asset *abutting homeowner *watering stations along trail? *get map *RR R-O-W for trails
08-13-12	John Temple JPTemple@cox.net	*looking to purchasing property in the area *how to access trail *be in favor
08-13-12	Craig Tigert 721-9276	*had meeting with Whitetail Run homeowners last night *possibly speak for a number of homeowners on trail *not trying to stir up trouble *will have coalition formed to oppose *will get letter from Whitetail Run summarizing that no one wants trail *#1 emphasis is to protect way of life (security) for reason of moving to Whitetail Run
08-13-12	Rick Marshall	*questions about trail and BMP *sent info *not fair
08-14-12	Mark Sieh 314-609-1681	*just south of Edmond City limits *100' buffer or more *has 80 acres *will there be connection to trail *annex in to Edmond?
08-15-12	Roy Copeland	*opposed to trail, vote against *will be quick & easy access to break in to rural home *concern over maintenance *didn't get letter but was given by brother & brother in-law *need to leave native area alone *need fee to use *he uses lake for hunting/camping but is OKC resident

08-15-12	Rob Lewis 210-5746	*been out of town *owns property on south side, 28 acres *likes idea of trail *mountain bikers & cyclists so appreciate *great thing, what can he do to help *off fence line some would be great *will be subdividing his property for residences
08-15-12	Barry Cox 232-2426 x118	*lived in Edmond since 1968 *shocked about trail *no maintenance on Corps things *coalition to destroy lake atmosphere *disingenuous as not same as Tulsa *drive wilderness away *at least 50' away from property line *will send email & contact City Council *how could this go so far without public notice
08-16-12	Jerry Southard 478-1944	*been out of town a while *concerned about cost & funding *lives on Memorial Road *dangerous on Memorial Road *lived there since 1982 *archery hunter, afraid trail will shut down archery hunt *COE took in over $8,000 for archery hunt yesterday *breaks his heart to think about trail *kids need to hunt & fish *prefer trail to just be on north side of the lake *loves trees, animals need trees & vegetation *loves to hunt & fish, does not want to see area destroyed
08-21-12	Skip Berkey	*brought in letter *concerned about additional access to area *fences down *increased debris
08-21-12	Maggie R. Owens 6801 E. 15th Street Edmond, OK 73013	*great idea, in favor *not right against property *beautiful, love to walk *east & north is Corps *will she see trail?

Jan Fees

From: dbsjef@gmail.com
Sent: Wednesday, July 25, 2012 3:10 PM
To: Jan Fees
Cc: Jane Fitch, MD
Subject: Arcadia Lake Trail

Jan,

I thank you for explaining the consensus process for this project. You are an excellent communicator, a good listener and I look forward to working with you and other people in our community.

As we discussed, security is a big concern at Southlake since we have had home invasions in the middle of the night. Locating the trail at the fire break at the edge of our property would create an unmanageable security situation. It would give criminals easy access to our backyards, endangering our lives. Locating the trail closer to the lake would make it less of a threat to our security. Also, if this trail should cross the fire break at Mid West Blvd, I believe a gate across the fire break on the east side of Mid West Blvd. would make it more difficult for criminals to gain access to our backyards.

It was a pleasure to speak with you and please keep me informed of all meetings. I'm willing to help.

Thanks for your service,
John Fitch
Southlake Homeowner
396-2191
dbsjef@gmail.com

Jan Fees

From: Suanne Goodrich [suanne000@yahoo.com]
Sent: Wednesday, July 25, 2012 11:39 AM
To: Jan Fees
Cc: Markham Thomas
Subject: Arcadia lake multi-use trail

Hello Ms. Fees,

I received your flyer re the proposed Arcadia lake trail. I am thrilled to hear of this plan, as I have been frustrated by the lack of walkable/bikeable areas in this area. I would absolutely use such a trail for walking and biking, as I live immediately north of lake Arcadia. I personally would be happy to pay some sort of tax or fee to help fund its construction and long-term maintenance. I am also very excited by the aggressive timeline: if this would really be ready for use by 2014, that would be amazing. It is hard to get excited about some of these types of projects (parts of MAPS, for example), when you know it will not be finished for 5 or 7 years!

The one question I have is about the part of the trail on 2nd street/route 66. I had read months ago that the governor passed a measure to create a walking/biking trail on route 66, but unfortunately there was no funding provided for it. So, I am wondering if that part of the trail will languish and not get finished for years??? Because of course if the entire route is one continuous loop, it will make it much easier to use. As I live just a block north of route 66, I know that road is too busy for me to be comfortable walking or biking there until an official lane is created.

Thank you for working on this! OK desperately needs more venues for people to be active!

Suanne Goodrich
20 S. Filly Lane
Edmond, OK 73034

Jan Fees

From: darrell Pickard [djpickard@msn.com]
Sent: Thursday, July 26, 2012 10:26 PM
To: Lewis Moore; Jan Fees
Cc: nancy williams; Veta Roberts; Victoria Woodward
Subject: RE: Representative Lewis Moore and the Arcadia Trail

Representative Lewis Moore,

Thanks for the call and work to inform constituents about the exercise trail. When we talked by phone, **you said the trail would not come directly behind our properties in South Lake,** but it would be closer to the shore. I was disappointed to see the proposed map of the trail which showed just the opposite near our neighborhood. I am all for the project in general, but opposed to it taking the current path along South Lake's north boundary. It would be more cost effective and appealing to our neighborhoold to follow the existing roads (Midwest Blvd) or a path closer to the lake shore in the area north of South Lake.

Sincerely,
Darrell & Gaylia Pickard

From: Lewis.Moore@okhouse.gov
To: djpickard@msn.com
Date: Sun, 15 Jul 2012 19:20:54 -0500
Subject: Re: Representative Lewis Moore and the Arcadia Trail

Thanks Darrell,

I'll come out in August w Jan Fees.

Call if you need anything,

Rep Lewis Moore
245-1217

Sent from my iPhone

On Jul 15, 2012, at 5:44 PM, "darrell Pickard" <djpickard@msn.com> wrote:

Neighbors,

I received a call today from our State Representative- Lewis Moore. He is calling property owners around the lake to inform them about a proposed project for an exercise trail around the shores of the lake. He would like to call more of us or get in front of us at our HOA meeting to provide information, answer questions and get input. He was having trouble calling many of us due to wrong phone numbers. I was going to email him a copy of our neighborhood phone directory, but I can not locate it in my emails. Could one of you provide that for him or at least one or more of the HOA officers contact him. His email is included above. The project sounds like a great way to provide a safer and more scenic alternative for walkers, runners and bikers.

Jan Fees

From: George Welch [gwelch7629@wildblue.net]
Sent: Saturday, July 28, 2012 4:13 PM
To: Jan Fees
Subject: Arcadia Lake Multi-use trail feedback

I think the type of trail Edmond is purposing will be great for the lake and its visitors. We need a nice place to walk/jog etc.
The only concern or question I would have is if the trail will be lighted for the night hours. If it isn't there will be all kinds of stuff going on
and some won't be good.

Thanks very much
appreciate the opportunity to comment on this project

Regards
George & Sue Welch

Jan Fees

From: Debbie Evers [debbiebevers@yahoo.com]
Sent: Sunday, July 29, 2012 2:48 PM
To: Jan Fees
Subject: Arcadia Lake Multi-use trail. (Southlake)

Jan,
Thank you for the information on the proposed Trail planned for behind our neighborhood. I was informed by a neighbor that the map sent was plan B and that there is a plan A. Would it be possible to get a copy of that map. Our property is at 3300 Scarab Inlet and backs up to Old 33rd. I am trying to get a visual of what my neighbor described.

As you can imagine safety is our primary concern and there is alot of uncertainty with this proposition. I must say that I was taken aback by the concern of the wildlife group. I would hope that the safety of Edmond residents would take presidence over the Wildlife Master Plan.

Several years ago we were avid bikeriders and enjoyed biking a trail that followed a river. I would think that those biking and walking the trail would enjoy the shoreline more than behind the neighborhood houses.

Thank you in advance for any information you can provide.

Dale and Debbie Evers

Jan Fees

From: travis.little25@gmail.com
Sent: Monday, July 30, 2012 4:23 PM
To: Jan Fees

RE: Arcadia lake multi purpose trail.

Although the idea is novel. Where is the funding coming from? With the economy in such an economical crunch is this really a financial feasible item for the community and the tax payers of this community. Is this to lure more business to the area along with more traffic? I am not in favor of spending the money for this project, i feel the money could be used else where. Also i don't and wouldn't like the added traffic that this would create for those of us who have established homes in this area, who have built our homes and who raise our families in the belief that we could live more quite lives.

Sent from my Verizon Wireless 4G LTE DROID

Called 8-9-12

Jan Fees

Mother is Jan

38 acres - 10 - 5

From:	Mike Bosley [MikeBosley@seatbelts.net]
Sent:	Thursday, August 02, 2012 5:40 PM
To:	Jan Fees
Subject:	Arcadia Trails - public comment period

Hi Jan,

First, let me express appreciation for the excellent letter, pictures and notification for the upcoming public trail system. The proposed trail will run precisely next to our property on the south side of the lake so indeed we are very interested in the project.

1. Will land owners be allowed access to the trail from our property?
2. Have public access points to the trail system been proposed yet?
3. Is it safe to assume that paying Lake Arcadia's access fees will not be required for the public trail system? How will the two boundaries be enforced? We are an annual Arcadia pass holders and understand the corps has been rather strict about only paid access to the lake.
4. The map legend shows dotted red/pink line labeled "linkage." What is that?

Thanks for your help, Jan. I've tried to make the response to these questions 'emailable' but if it is easier for us to talk by phone, I'd be happy to make time.

If there is anything our family can do to help or assist, please let me know.

I look forward to your response.

Kindest regards,

I'd thought just trees back there

-Mike

Ok

Mike Bosley, President
Beam's Seatbelts – Since 1955
Tel: (405)793-0505 Fax: (405)793-1901
mikebosley@seatbelts.net
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Jan Fees

From: Katrina Myers [katrina.myers@chk.com]
Sent: Tuesday, August 07, 2012 10:49 AM
To: Jan Fees
Cc: 'Brian MYERS'
Subject: Arcadia Lake Multi-Use Trail

Importance: High

I think the idea of a multi-use trail is good one, as long as it is moved further away from our neighborhood boundary (Timberlake Estates). We have constant issues with people coming thru our neighborhood thinking they can get lake access. They park at the cul-de-sac (Scrub Oak) and do fireworks and access the trail already nearby, many times leaving trash and dumping landscape debris.

Our neighborhood is private and our fear is that this will cause additional traffic thru our neighborhood if the trail's users are able to view back of the homes and into the cul-de-sac at Scrub Oak. If the trail is moved about 50 to 100 yards north of our property boundaries and the cul-de-sac is visually blocked somehow with trees or landscape, it might be easier for the residents of Timberlake Estates to accept.

According to the map provided in the mail, the border will be at the back of the property lines of several homes in our neighborhood. If ample distance and landscape is provided to block the view of our properties, we could possibly be happy with the multi-use trail.

Our HOA president, Brenda Wood, had not been contacted by your office the last time I spoke to her. Please contact her and the rest of our residents in the neighborhood with this information. (Brenda Wood – 341-2324 or 388-3118) I have spoken to many residents in Timberlake Estates and none have received information on this planned trail. As city planner, all property owners effected need to be made aware of this trail and its planned location.

Thank you,
Katrina Myers
Directional Systems Analyst
Chesapeake Energy Corporation
Office: (405) 935-7580
Mobile: (405) 761-7457
Fax: (405) 849-7580
E-mail: katrina.myers@chk.com

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Jan Fees

From: steve@timberlakefarms.net
Sent: Wednesday, August 08, 2012 8:06 AM
To: Jan Fees
Subject: Arcadia Lake Multi-use trail

Jan - please let me know you got this.

August 8, 2012
attention: Jan Ramseyer Fees, City Planner, City of Edmond
re: comments regarding Arcadia Lake Multi-use trail

My wife and I own a home immediately adjacent to the proposed trail and have carefully reviewed your proposal for the development. In summary, we are excited and enthusiastically support this multi-use trail concept.

We are twenty five + year Edmond residents. We moved "way out there" (5804 Wilson Drive) in 1991 to enjoy the wildlife, privacy and to experience the dense wooded wildlife conservation acres that abuts our property.

We have walked the woods, had a son release wild turkeys for a Boy Scout project and have enjoyed many of the wonders of the wildlife refuge - yet only minutes from downtown Edmond.

Kathy and I moved here from East Lansing Michigan, an area where bike trails abound and we certainly enjoyed them. We found them used by lots of people, were free of crime and often were patrolled by police or volunteer riders that were there to assist people if they broke down. I see much the same for your project.

There are those in our neighborhood that assert they moved there for the privacy and feel that the wildlife area is their buffer to the world.
We understand that perspective as we too moved there partly for the privacy. But the wildlife area is not just for adjacent landowners to assert as their own!

Edmond has an incredible jewel in the Arcadia Lake system and it is just a part "owned" by all of the citizens as we are being lucky enough to have property that abuts the wildlife area.

One of our neighbors has asserted that perverts and criminals will use the bike trails to peer in on us and to steal from us. I responded that there is already a horse trail there and I am unaware of any such "peeping Tom" situations in the many years the horse trail has been there. And it will be a wonderous bicyclist that steals flat screen TVs and computers and has to bike it away on the trail in front of other bikers.

We look forward to being able to bicycle around the Lake and to downtown Edmond and, with expansion, to other areas as well.

Our view is that the proposed multi-use trail is a superb idea and only wish it were present when we had younger children. Please put it in before we become grandparents!

One suggestion: some of the trails be moved slightly to allow a wooded privacy curtain to be present to minimimize those concerns of privacy.

Thank you for the opportunity to voice our opinions.

Drs. Stephen Hull and Kathryn Reilly

5804 Wilson Drive
Edmond, OK 73034

405 550-3023 (cell)

Jan Fees

From: Katrina Myers [katrina.myers@chk.com]
Sent: Wednesday, August 08, 2012 2:36 PM
To: 'dklassen@mkec.com'
Cc: Jan Fees; 'bwood@okheart.com'
Subject: FW: Spring Creek Bicycle Trail
Attachments: Arcadia Lake Multi-Use Trail

Please find attached the email that I sent to Jan Fees yesterday, before I received the email chain below. Jana and Steve Ratliff and Mrs. Koche own properties in Timberlake Estates that the proposed trail will fall directly behind their properties as well. Please be sure they are contacted regarding trail placement.

Thank you,
Katrina Myers
Directional Systems Analyst
Chesapeake Energy Corporation
Office: (405) 935-7580
Mobile: (405) 761-7457
Fax: (405) 849-7580
E-mail: katrina.myers@chk.com

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From: Wood, Brenda [mailto:bwood@okheart.com]
Sent: Wednesday, August 08, 2012 8:16 AM
To: Katrina Myers
Subject: FW: Spring Creek Bicycle Trail

From: Doug Klassen [dklassen@Mkec.com]
Sent: Wednesday, August 08, 2012 8:11 AM
To: Wood, Brenda
Cc: gloriab@gbel323.com; Vickie Dubberstein
Subject: RE: Spring Creek Bicycle Trail

Brenda - I have been talking with Vickie and received her e-mail with additional questions and concerns last night. I will be getting back with all of you with answers to those questions, hopefully later today. I need to visit with the City to determine if they wish to be a part of the meeting, and then will be in touch to set something up.

Thanks.

From: Wood, Brenda [mailto:bwood@okheart.com]
Sent: Wednesday, August 08, 2012 7:58 AM
To: Doug Klassen
Cc: gloriab@gbel323.com
Subject: FW: Spring Creek Bicycle Trail

Mr. Klassen, my name is Brenda Wood and I am acting President for the Timberlake Estates Homeowners Association. I believe you have heard from a few of our homeowners so far, Katrina and Brian Myers and the Dubbersteins'. I am

writing you to concur with the concerns and questions brought forth so far to you and your committee. Please include me on your correspondences to Vicki Dubberstein and the Myers. I have also included Gloria Belair's email as she is our acting Treasurer. gloriab@gbel323.com

I would like to meet with you and will leave my phone number so we can set a time.
Thank you,
Brenda Wood
405-388-3118

From: Vickie Dubberstein [vdubberstein@sbcglobal.net]
Sent: Tuesday, August 07, 2012 8:23 PM
To: 'Doug Klassen'
Cc: jan.fees@edmondok.com; 'Jan Fees'
Subject: RE: Spring Creek Bicycle Trail

Mr. Klassen,

Thank you for looking into this. I sincerely appreciate you addressing my concerns. I do have some additional questions:

1. Do I correctly understand you that the center of the trail will now be located 95' to 105' north of my property line?
2. Will the trail be 95' to 105' north of my entire property line, or does it come closer at some point past the Scrub Oak cul-de-sac?
3. Is this new trail location a sure thing, or are there additional steps that we need to take to make sure the trail is moved to this location further north of my property line?
4. What are the constraints that prevent moving the trail even further north so that it would not be visible from the Scrub Oak cul-de-sac even in the winter months when the leaves are off of the trees?
5. Will the trail be a single 12'-14'-wide shared-use trail, or is this an area that will have two separate 10'-wide paths for pedestrians/joggers and cyclists?
6. Would you be available to meet with me and the board members of the Timberlake Estates Homeowner's Association to enter the corps property and walk-off the trail location?
7. When will construction of the trail begin, and what is the estimated completion date?
8. Will construction equipment be entering the corps property from the Scrub Oak cul-de-sac? Our roads are privately owned, and there is concern about heavy equipment driving on the asphalt.

Thank you very much for your help.

Vickie Dubberstein
800 Scrub Oak Road
Edmond, OK 73034
vdubberstein@sbcglobal.net
Cell 226-0071

From: Doug Klassen [mailto:dklassen@Mkec.com]
Sent: Monday, August 06, 2012 4:45 PM
To: Vickie Dubberstein
Cc: jan.fees@edmondok.com; 'Jan Fees'
Subject: RE: Spring Creek Bicycle Trail

Vickie - We have reviewed the trail alignment in the area adjacent to your property. Right now we show the center of the trail approx. 45' north of the property line. Given some required grading, most likely it would be visible from the end of the cul-de-sac. However, in order to address your concern, we can push the trail north an additional 50-60'. This will allow

some tree buffer to remain between the end of the cul-de-sac and the trail. It's possible that it may be visible through the winter months when the leaves are off of the trees. When the leaves are on the trees it most likely would not be visible.

Hopefully this addresses your concern. Let me know if you have further questions.

Doug Klassen

MKEC Engineering Consultants, Inc.
1000 W. Wilshire, Ste. 401
Oklahoma City, OK 73116
Ph. (405) 842-8558
Cell (405) 740-3996

From: Vickie Dubberstein [mailto:vdubberstein@sbcglobal.net]
Sent: Wednesday, July 25, 2012 5:33 PM
To: Doug Klassen
Cc: jan.fees@edmondok.com; 'Jan Fees'
Subject: Spring Creek Bicycle Trail

Mr. Klassen,

I spoke with Jan Fees with the City of Edmond today, and she gave me your contact information. In my e-mail to Jan on February 8th this year I expressed the following concerns about the Spring Creek trail:

"I would like to mention a concern I have about the Spring Creek Trail. I live at 800 Scrub Oak in the Timberlake Estates housing addition, and I'm at the end of a cul-de-sac that borders Arcadia Lake property. Our neighborhood streets are privately owned, and too frequently trespassers illegally enter the lake from my cul-de-sac. My hope would be that any paved bicycle trail not be visible from the cul-de-sac since a paved trail would only make illegal entry into the lake more attractive & much easier. It's spooky to come home and see strange cars parked in front of my house, and even worse to have strangers stalking through the woods nearby to avoid paying the lake entrance fee. Thanks for considering this in your plans."

Jan said she forwarded my February 8th e-mail to you, and she suggested I contact you to request more information on the distance the trail will be set back from the cul-de-sac and the north boundary of my property. The Arcadia Lake Trail conceptual map that the Edmond Planning Department mailed to Arcadia Lake property owners this week lacks sufficient detail to answer my questions. I am an avid cyclist and look forward to the trail, but I strongly feel it is important to keep the trail a respectful distance from private homes in the lake area. Maintaining a distance from private homes will enhance the outdoor experience for trail users and maintain the privacy of homeowners.

Jan also mentioned that MKEC Engineering Consultants was to hold public hearings on the trail. When are the hearings scheduled?

Thank you,
Vickie Dubberstein
800 Scrub Oak Road
Edmond, OK 73034
vdubberstein@sbcglobal.net
Cell 226-0071

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Doug Klassen

From: Doug Klassen
Sent: Wednesday, August 08, 2012 2:41 PM
To: 'Steve Commons'
Subject: FW: Spring Creek Bicycle Trail

Steve - See the questions below, along with my responses. Please take a look. I want to make sure we are on the same page before sending these back to the property owner.

From: Vickie Dubberstein [mailto:vdubberstein@sbcglobal.net]
Sent: Tuesday, August 07, 2012 8:24 PM
To: Doug Klassen
Cc: jan.fees@edmondok.com; 'Jan Fees'
Subject: RE: Spring Creek Bicycle Trail

Mr. Klassen,

Thank you for looking into this. I sincerely appreciate you addressing my concerns. I do have some additional questions:

1. Do I correctly understand you that the center of the trail will now be located 95' to 105' north of my property line? Yes
2. Will the trail be 95' to 105' north of my entire property line, or does it come closer at some point past the Scrub Oak cul-de-sac? It will essentially run parallel to the north line of Timberlake Estates at the 95'-105' distance.
3. Is this new trail location a sure thing, or are there additional steps that we need to take to make sure the trail is moved to this location further north of my property line? No further steps needed by you, we will make sure that it doesn't move any closer. If something were to come up and require it to change, we will let you know so it can be discussed.
4. What are the constraints that prevent moving the trail even further north so that it would not be visible from the Scrub Oak cul-de-sac even in the winter months when the leaves are off of the trees? As you go north from the property line the ground falls toward the lake. We are making our best efforts to keep the trail as high as possible in order to keep it from being inundated with water during heavy rains. Although we wouldn't expect cyclists to be using the trail during the storms, given the size of the basin it will take some time for the water to drop back down. In addition, mud and other debris will remain on the trail following submergence, and the life of the trail's surface will be shortened with repeated inundation. So the farther north we move it, the more difficult it is to keep it up out of the water during the large storm events.
5. Will the trail be a single 12'-14'-wide shared-use trail, or is this an area that will have two separate 10'-wide paths for pedestrians/joggers and cyclists? Actually through this area the City is considering a single 18' wide trail. This is still being finalized.
6. Would you be available to meet with me and the board members of the Timberlake Estates Homeowner's Association to enter the corps property and walk-off the trail location? I can be available, but need to check with the City on dates/times, as I would like for a representative with the City to also be present if they wish.
7. When will construction of the trail begin, and what is the estimated completion date? Construction will likely begin in early 2013.
8. Will construction equipment be entering the corps property from the Scrub Oak cul-de-sac? Our roads are privately owned, and there is concern about heavy equipment driving on the asphalt. I would like to get feedback from City staff about this, and will note your concern. I believe we can specify in the documents that no construction traffic is allowed through the neighborhood since they are private streets.

Thank you very much for your help.

Vickie Dubberstein
800 Scrub Oak Road
Edmond, OK 73034
vdubberstein@sbcglobal.net
Cell 226-0071

From: Doug Klassen [mailto:dklassen@Mkec.com]
Sent: Monday, August 06, 2012 4:45 PM
To: Vickie Dubberstein
Cc: jan.fees@edmondok.com; 'Jan Fees'
Subject: RE: Spring Creek Bicycle Trail

Vickie - We have reviewed the trail alignment in the area adjacent to your property. Right now we show the center of the trail approx. 45' north of the property line. Given some required grading, most likely it would be visible from the end of the cul-de-sac. However, in order to address your concern, we can push the trail north an additional 50-60'. This will allow some tree buffer to remain between the end of the cul-de-sac and the trail. It's possible that it may be visible through the winter months when the leaves are off of the trees. When the leaves are on the trees it most likely would not be visible.

Hopefully this addresses your concern. Let me know if you have further questions.

Doug Klassen

MKEC Engineering Consultants, Inc.
1000 W. Wilshire, Ste. 401
Oklahoma City, OK 73116
Ph. (405) 842-8558
Cell (405) 740-3996

From: Vickie Dubberstein [mailto:vdubberstein@sbcglobal.net]
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To: Doug Klassen
Cc: jan.fees@edmondok.com; 'Jan Fees'
Subject: Spring Creek Bicycle Trail

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"I would like to mention a concern I have about the Spring Creek Trail. I live at 800 Scrub Oak in the Timberlake Estates housing addition, and I'm at the end of a cul-de-sac that borders Arcadia Lake property. Our neighborhood streets are privately owned, and too frequently trespassers illegally enter the lake from my cul-de-sac. My hope would be that any paved bicycle trail not be visible from the cul-de-sac since a paved trail would only make illegal entry into the lake more attractive & much easier. It's spooky to come home and see strange cars parked in front of my house, and even worse to have strangers stalking through the woods nearby to avoid paying the lake entrance fee. Thanks for considering this in your plans."

Jan said she forwarded my February 8th e-mail to you, and she suggested I contact you to request more information on the distance the trail will be set back from the cul-de-sac and the north boundary of my property. The Arcadia Lake Trail conceptual map that the Edmond Planning

Department mailed to Arcadia Lake property owners this week lacks sufficient detail to answer my questions. I am an avid cyclist and look forward to the trail, but I strongly feel it is important to keep the trail a respectful distance from private homes in the lake area. Maintaining a distance from private homes will enhance the outdoor experience for trail users and maintain the privacy of homeowners.

Jan also mentioned that MKEC Engineering Consultants was to hold public hearings on the trail. When are the hearings scheduled?

Thank you,
Vickie Dubberstein
800 Scrub Oak Road
Edmond, OK 73034
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Jan Fees

From: Alexander Dobson [alex.p.dobson@gmail.com]
Sent: Friday, August 10, 2012 11:59 AM
To: Jan Fees
Subject: Multi-use Trail

Jan,

I wish to submit a comment regarding the multi-use trail plan. I am a resident of the Chimney Hill neighborhood and am saddened to hear that certain members of the neighborhood I live in have opposed the continuation of the trail along Spring Creek. I am very interested in seeing the trail system extend through Chimney Hill, and believe it will be a great asset to the residents of the neighborhood and city.

Best Regards,
Alex Dobson

Daniel Durocher
5801 Whitetail Run
Edmond, OK 73013

17 Aug 2012

Ms Jan Ramseyer Fees
City Planner
City of Edmond

Re: Arcadia Lake Multi-Use Trail

Dear Ms Fees:

I would like to voice my objections and concerns to the above idea. I understand the proposed cost of the project is between 18 and 20 million dollars. Even if the initial cost of construction is from donated resources, the ultimate maintenance of this costly project will fall on Edmond taxpayers. In addition to the ultimate costs to be borne by Edmond taxpayers, Edmond taxpayers would have to provide police patrols, maintenance, sanitation, garbage pickup, etc. With the recent attacks on joggers in public parks, this trail would present a boon to would be attackers since it would be so isolated. Additionally, emergency response would not be able to react to a crisis since there is no reasonable access for emergency vehicles. There is no way that the taxpayers of Edmond will ever reap benefits in the above amount anywhere near the cost of the project.

Considering the recent wild fires that have hit Oklahoma, many of which have been set by arsonists, this trail would pose a significant threat to every homeowner in the area. This trail would significantly increase these areas to the threat of fire which once started would engulf everything in its wake since there is no way to reasonably fight a fire in this area or gain access for fire crews. Additionally, since the droughts are expected to continue or increase, the likelihood of fire will also increase. Putting a trail for arsonists to access would result in higher home insurance costs due to fire risks and that would essentially equal a taking of property rights of the resident homeowners. While eminent domain has its place, it is not without a cost to taxpayers. Additionally, potential crime rates from burglary, etc. in the area would increase due to greater access. This would also affect homeowner insurance rates.

One of the reasons why we live where we do was because of the natural foliage and wildlife in the area. This trail will not only affect the daily wildlife routines of deer, turkey, etc. but may also ruin the eagle watch at Arcadia.

The proposed trail is unreasonable as either a jogging path or walking path due to its extreme length. No reasonable individual is going to jog or walk 18 miles with no option but to go the whole way in order to return to their parked car. What kind of rest/bathroom facilities will be available? What type of emergency notification system will be provided? What type of litter control will be used? How will the

increased problem of litter, etc. affect the local wildlife? Just using the area along 2nd street would make far more sense and be far more reasonable in cost and taxpayer support. It would allow for parking whereby individuals could go east or west and return without having to transit an 18 mile pathway. It's that area that is the tie in for the proposed spring creek pathway anyway. It also avoids virtually all of the above problems and dramatically reduces the potential cost to Edmond taxpayers.

Sincerely

Daniel Durocher

R. Kirk Whitman

100 Park Avenue, Suite 1020
Oklahoma City, Oklahoma 73102
(405) 236-1807 Phone
(405) 272-0633 Fax

August 17, 2012

City of Edmond
Attn: Jan Fees
P.O. Box 2970
Edmond, OK 73083

RE: Arcadia Lake Multi-Use Trail

Dear Gentlemen:

I am in receipt of your proposed trail around Lake Arcadia which has benefits to the public and is a concern to those of us that live on the lake. I basically have three concerns at this time.

1. The wildlife, coyotes, turkey, deer and owls could be pushed deeper into the refuge with constant foot and bike traffic.

2. I back up to the Corp land on my 40 acres and occasionally I discharge my guns at targets out back. This might be a concern as I shoot skeet also as there is no other house within 900' of my back porch.

3. We moved to the country to stay away from the criminal concerns of the city. In one regard and I am afraid this trail on the east side of the lake will expose the back yards of those of us who back up to the lake to thousands of people, some good and some not so good. Even with my fence there is that element that would love the opportunities to enter properties from the unpatrolled seclusion this trail would offer.

Keep the tail on the west side of the lake and you should have a nice, not overly expensive trail. Go around the entire lake and you have a very costly project.

Sincerely,

Kirk Whitman

Jan Ramseyer Fees
P.O. Box 2970
Edmond, OK 73083

Craig and Janie Tigert
6000 Whitetail Run
Edmond, OK 73013

August 19, 2012

Dear Jan,

The following are the personal concerns of Janie and I about the Arcadia Lake Multi-use Trail.

1. The trail will conflict with the "L-1" Lake Preservation zoning originally planned for this area.

2. The lake area has already been developed beyond the City of Edmond's capacity to maintain it, so increasing the maintenance burden will only cause greater problems.

3. The privacy and security of lake residents will be compromised.

4. Lake area habitat and wildlife will be negatively impacted. Almost 100% of the land and habitat in the lake area has been developed, and the only remaining semi-undeveloped land and habitat is the Corp. property around the lake. If this is developed, the only publicly accessible "wildlife preserve" area in the City of Edmond will be lost. I am particularly concerned over the area south of 15th Street.

5. No one I have talked to about this project has any first hand knowledge of the habitat loss and damage that will occur during the building of a trail such as is suggested. Arcadia Lake is not Lake Hefner or the edge of the Arkansas River in Tulsa, where the land was "open". The lake area is totally undisturbed, natural woodlands and wetlands. The damage to this natural area will be great, and I emphasize once again that this is all that is left in the City of Edmond that is publicly owned.

6. Multiple groups that use the Arcadia Lake area have no idea of the proposed trail and they have a right to be informed and express their opinions as well.

7. We moved to the Lake Arcadia area 20 years ago and have maintained the standard and founding considerations set by the Lake Preservation zoning. We want to see these same standards maintained by the City of Edmond.

8. We realize that there are many diversified groups, each having their own agendas. A possible compromise to satisfy most, might be to intensity and enlarge the trail system north of 15th Street and to try and preserve the land south of 15th Street in its natural state with access points for this area.

We are very concerned and serious about the lake area. This is our "home" and "backyard", not just a park to visit. Please be cautious in your thoughts for this area, because once the land is developed, it

Jan Ramseyer Fees
P.O. Box 2970
Edmond, OK 73083

August 19, 2012

Craig Tigert, President
Whiteail Run HOA
6000 Whitetail Run
Edmond, OK 73013

Re: Arcadia Lake Multi-use Trail

This letter is in response to your request for comments on the proposed Arcadia Lake Multi-Use Trail. Whitetail Run Homeowners Association held a meeting on August 12, 2012, and the following comments are a summary of the concerns of the homeowners in our Association.

1. Police security for the public using the trail system and for the homes that the trail allows access to will be inadequate. The police department is already understaffed in this area and surveillance will be impossible unless on foot or bike which would be very sporadic. Also, back up in a crisis would be a disaster.

2. The trail system will cause increased traffic on roads in the area that are already in poor condition. Increased traffic will cause safety hazards in a primarily residential street plan.

3. Homeowners bought homes in this area because of the "L-1" zoning which was to prevent overuse of the land and preserve the natural environment of the area.

4. The "L-1" was also supposed to restrict the public access and the trail will only increase this. Homeowners chose this area because of its restricted zoning.

5. We believed the planning commission when they told us the "L-1" district would be preserved.

6. The destruction of habitat will have a detrimental effect on the area wildlife. The only remaining undeveloped land is surrounding the lake and the construction of the trail will impact all native wildlife species plus migratory wildlife visitors, such as the Bald Eagle.

7. Who will pay for long term maintenance? The Arcadia Lake Maintenance Department cannot maintain the parks, fences, trash control that they are responsible for at this time with their budget and staff.

8. The trail is unrealistic in length except for a very limited minority of the public who would use a trail of this length for training purposes.

9. Response to an emergency health issue would be inadequate due to limited accessibility, who would be responsible for this "known" problem?

10. Increased fire hazard for the habitat and homes in the area causing increased insurance rates. Also control of fires in the area is already a problem because of limited access.

11. Why are we spending millions of dollars to accommodate a minimal number of bikers and walkers/joggers? The construction costs initially, even though they might come from other sources than the city of Edmond, and then the maintenance costs, which are proposed to be the City of Edmond's responsibility.

12. No one wants the trail, if constructed, to be near private property lines so as to interfere with residential privacy and security. Place the trail as far from the private property as possible. Just above the lake shore might be a solution.

13. Couldn't an adequate trail system be developed north of 15th Street and leave the area South of 15th Street as it is?

These are the concerns of the members of the Whitetail Run Homeowners Association. We moved to this area many years ago because of the habitat, restricted access, security, and privacy. We are very serious about these concerns because the proposed trail would have what we feel are very negative impacts on the area where we now reside.

Thank you for addressing our concerns at this time, but we feel the homeowners of Arcadia Lake should have been a part of this project from the conception, because we are the people who would be most impacted by the trail system. Pleae give this consideration.

Sincerely,

Janie and Craig Tigert, President, Whitetail Run Homeowners Association
Daniel and Diana Durocher
Clif and Glenita Schick
Bill and Christi Eischeid
Lynn and Sherri Bilodeau
Bonnie Wolf

cc: To be forwarded to various individuals and agencies.

Jan Fees

From: Jayesh Panchal [jpanchal@genesisokc.com]
Sent: Monday, August 20, 2012 3:58 PM
To: Jan Fees
Subject: FW:

FYI

Jayesh Panchal MD MBA
Plastic Surgeon
Genesis Plastic Surgery and Medical Spa
2505 S Kelly Ave, Edmond OK 73013
Tel: 405 340 9949
Fax: 405 3302132
www.genesisokc.com

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From: Jayesh Panchal [mailto:jpanchal@genesisokc.com]
Sent: Monday, August 20, 2012 3:58 PM
To: 'Chukolamb@aol.com'; 'Charles.Lamb@edmondok.com'; 'Victoria.caldwell@edmondok.com'; 'ebwaner@gmail.com'; 'Nick Massey'; 'Nick.massey@edmondok.com'; 'ddavis2564@aol.com'
Subject:

Dear Mayor and Council members,

On Sept 10 @ 5:30 PM City the council will be meeting for budget amendment for preliminary engineering design services for the Arcadia Lake Multi-use Trail Project

As a member of the Edmond Bicycle Committee we would like to endorse the plan for a multi use trail. We understand that the city has many projects that need approval and not all the projects can be financed. We believe that this private-public venture is unique and would serve as an example for many such projects in the future. Lake Arcadia is a unique setting for creating this opportunity that nearly every member of the Edmond community from children to senior adults can enjoy.

I hope you will consider this request and vote to support the preliminary engineering design services.

The state of OK has the one of the highest rate of obesity in the country and this would be a great opportunity to provide an environment for adults to exercise and lose weight.

I personally thank you for your support and time you spend to make Edmond a better place to live and enjoy.

Jayesh Panchal MD MBA
Plastic Surgeon

Genesis Plastic Surgery and Medical Spa
2505 S Kelly Ave, Edmond OK 73013
Tel: 405 340 9949
Fax: 405 3302132
www.genesisokc.com

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Jan Fees

From: Paul Munger [paul.munger@me.com]
Sent: Monday, August 20, 2012 7:13 PM
To: Jan Fees
Cc: ebwaner@gmail.com
Subject: Arcadia Lake multi-use trail

Jan,
Having lived on the southeast side of Lake Arcadia for sixteen years, we would have to oppose the trail for several reasons.

First, management of the lake property on this side has been poor at best. The land has become overgrown causing large populations of coyote and deer to become a nuisance.

Second, the proposed trail runs right next to private property lines rather than closer to the lake itself. This does not seem like the best location for rural property owners or trail users who might enjoy a lakeside trail.

Also, if past practice is an indicator of future performance, the City of Edmond would have trouble meeting the maintenance and safety requirements of such a project.

Sincerely,
Paul and Karen Munger

Sent from my iPad

August 20, 2012

City of Edmond
Planning Department
Ms. Jan Ramseyer Fees
P.O. Box 2970
Edmond, OK 73083-2970

Sent via email on 8/20/12 to jan.fees@edmondok.com

RE: Arcadia Lake Multi-use Trail

Dear Ms. Fees:

It was with much surprise that we received the letter in the mail outlining such a large project that will greatly impact the natural environment that now exists around Arcadia Lake. The enclosure titled "Key Message Points" indicates in the Feedback section that "Trail Coalition members are currently meeting with each neighborhood/property owner and organization....." but as of today, neither myself, my spouse nor our neighbors has been approached by anyone with this coalition.

This lack of any notice is especially concerning to us, since there appears to be a section of this trail that is moving ahead that is referred to as the Spring Creek Trail that directly adjoins our properties along 15th Street in the 6600 and 6700 block.

The Arcadia lake area is one of the largest areas in East Edmond that is not privately owned and subject to private development. The attempt to construct a trail around the lake, or portions of the lake, to provide more access to the area flies in the face of logic concerning the preservation of this vital area that should be preserved in its native state. There are already numerous trails for pedestrians, bicyclists and horseback riding that exist that have not had the impact that a defacto roadway is going to have. It seems that in order to "enjoy the natural beauty of the Arcadia Lake area" the coalition is proposing to just the opposite by destroying the inaccessibility that is in fact what keeps the natural beauty from being destroyed.

We have many concerns, comments and questions that are listed below concerning this proposed development and the impact it will have on the natural beauty of the area. People like to go to the wilderness because it is wilderness and putting a roadway through it to provide easy access is going to do nothing but decrease the viability of the area for many species that either live permanently, or stop over during their migration periods. How many Bald Eagles stay for the winter at either Lake Hefner or Lake Overholser? Is that what the coalition really wants for one of the only pristine and unspoiled areas that are not privately held in the City of Edmond?

How will bike and pedestrian access to the new trail be controlled? It would be very easy to join, or leave the trail at various points through private property or where the trail will be close to a public access point, without detection. Will people be able to access the trail system and thereby entire lake area for free?

Has an environmental impact study been undertaken and/or completed for this proposed project? In light of the presence of Bald Eagles, migratory waterfowl, horned lizards and other wildlife that utilize the lake on a permanent, or as a transitional stop over during migration, it would seem prudent to find out what impact on these, and other species, the trail system and increased human activity would have as a result of this project.

Has any estimated cost to maintain, and operate the trail system been projected and if so what information was used to develop this projection?

Why do all of the example photos presented show a trail systems in a more urban area with permanent lighting, commercial property visible in the background, etc. used as examples for this project when this project is planned for an area that is exclusively residential and has no current development present?

Are lights planned for the trail system and what will be done to shield residences from their glare?

Why does the trail come so close to some existing houses and future home sites (the drawing presented shows the trail directly adjacent to property lines with no setback shown) when it will negatively impact the value of those properties in the future? What will be the minimum set back from perimeter property lines for the trail(s)?

Are there any construction methods proposed, or plans that have been developed, that were used to predict the cost of the trail system? This area of Oklahoma has a "HES" highly erodible soil classification and with the project being next to the lake, what will be done to prevent long term erosion caused by the impermeable surfaces planned for the trail system? How much of the existing trees and native grasses will be destroyed to allow equipment access to construct and maintain the trails in the future?

What additional facilities will be required at the Lake to provide for the additional usage? More restrooms, water fountains, emergency phones, electrical service for any proposed lighting, etc. and who will bear the cost of these improvements?

Will additional police presence be provided with vehicles, or bikes, to patrol and respond to issues on the trails? In prior years, there have been vehicles that have entered the bike/horse trails and become stuck for days without the knowledge of Police, at least two instances directly adjacent to our property have occurred in the past 5 years.

What will be the policy on pets inside the property and how will it be enforced? There is currently no obvious enforcement as there are always lost dogs, dogs without any leashes with hikers, etc. People then enter private property seeking to retrieve their animals without any hesitation because they feel that they are in the "wilderness" when actually they are in a neighborhood with large lots. Loose dogs are seen frequently chasing deer and other animals inside the lake area already and this proposal is only going to increase the amount of harassment of native species.

In light of the recent meth lab explosion at the lake's campground in July, 2012 does the City plan to review its policy on long term camping and people effectively living at the lake? There are several semi permanent residents that are allowed to camp effectively year round at the lake taking advantage of the low rate for campers and the fact that the City has put no limitations on the amount of days per year any one person or persons can camp. Noboby wants to take their family camping where people are living year round and making dangerous chemical cocktails in their immediate vicinity.

Sincerely,

Barry A. Cox, Trustee of the Barry A. Cox Trust, 6603 E 15th Street, Edmond, OK 73013

Angela K. Cox, Trustee of the Angela K. Cox Trust, 6603 E 15th Street, Edmond, OK 73013

Jan Fees

From: jim [jimcorr@earthlink.net]
Sent: Tuesday, August 21, 2012 6:30 AM
To: Jan Fees
Cc: ecorr
Subject: proposed trail around Arcadia lake

Jan, my name is Jim Corr. I've CC'd Ambassador Ed Corr on this note as well. We are the Trustees for two parcels of land that would be affected if the City of Edmond moves forward with building a proposed paved trail around Lake Arcadia (which would include a section of paved trail that parallels highway 66). I'm assigned to the U.S. Embassy in Tokyo. Ambassador Corr (ret.) lives in Norman. As background, I just received the letter from the Edmond Planning Department today regarding the proposed trail..sometimes mail is slow getting overseas.

Before providing a final public comment, I have one question. I assume that the portion of the proposed trail that borders Highway 66 (2nd) would be built within the existing right-of-way and that no additional right-of-way is being requested along Highway 66?? Please let me know if that is correct. Also, please let me know what day the public hearing is on the proposed trail.

I look forward to staying in touch on this issue. Thank you! Jim Corr

Attention: Jan Ramseyer Fees

Reference: Arcadia lake trail

On July 23 my husband and I received a letter from you informing us about an asphalt trail that would come right next to our home. While you may think that this would be a wonderful community asset to Edmond, we do not. First, it would invade our privacy with strangers. It looks like your trail would come within 300 feet of our home. It would devalue our home and risk the security that we have.

Are you planning on building brick fences on the core land to protect the homeowners? We have a lot of money invested in our home. Has the planning commission thought of this?

Recently, there has been several articles in the newspaper about attacks on joggers in the metro area. This is a very remote area. I would not feel safe encouraging strangers that close to my home.

When a jogging trail was built behind Will Rogers Elementary school, a seven foot brick wall was constructed to protect the students. I hope you have thought of all of the concerns of people that would be affected by this decision to build a trail.

Sincerely,

Donna Burkey
13900 Deep Fork Pt.
Edmond, OK 73013

Mailing Address:
P.O. Box 722
Edmond, OK 73083

Skip Burkey
Cell 405-833-3933

From:	dlmurray3042@aol.com
To:	Nolen, Stephen L SWT
Subject:	Arcadia Lake Multi-Use Trail Proposal
Date:	Monday, November 05, 2012 9:31:43 PM

Steve Nolen,
All of the horse people are holding our breath hoping that the Multi-Use Trails do not destroy the Equestrain Trails we enjoy so much. I personally am not against the Multi-Use Trail as I might use it as well. We really believe there is an easy way to accomodate all of groups. I very much appreciate the opportunity to voice our concerns (comments attached).
Thanks
Dave Murray

US Army Corps of Engineers.

Public Workshop
Comment Sheet

Arcadia Lake
Multi-Use Trail Proposal

Environmental Assessment

Edmond, Oklahoma
6:00 – 8:00 p.m., Thursday, October 18, 2012

Question, comments, or suggestions?

We want your input in this study. Your participation is key to our success! Please write your questions, comments, or suggestion in the space provided below. Feel free to use the back of this form or add additional pages if needed. Leave the form with us at the workshop or fill out the form at your convenience and return it to address below. Please provide comments by **9 November 2012**. Thank you!

PLEASE PROTECT THE HORSE TRAILS AT LAKE ARCADIA. IT'S THE ONLY PLACE WE HAVE TO RIDE WITHOUT DRIVING A LONG DISTANCE. THE BIKERS, RUNNERS & WALKERS CAN GO ON ANY STREET, LAKE MEADER, ETC, ETC, ETC. YOU CAN INCREASE THE FEE'S IF NEEDED AS WE WILL PAY OUR SHARE. THE QUESTION IS, WILL THE OTHERS PAY THEIR FAIR SHARE. YOU CAN MAKE ALL USER GROUPS HAPPY BY JUST HAVING THE BIKER/RUNNERS & WALKERS USE ROAD AROUND EQUESTRIAN TRAILS

Optional Information (used for mailing list to keep you informed and will not be used for any other purpose):

Name: DAVID MURRAY Affiliation: RETIRED TRAIL RIDER

Address: 9130 N.E. 122ND ST. City: JONES State: OK

Zip 73049 Phone: 405 399-2193 E-mail: djmurray3042@aol.com

Point of Contact:
Tulsa District, US Army Corps of Engineers
Steve Nolen (CESWT-PE)
1645 S. 101st East Avenue
Tulsa, OK 74128 918-669-7660
Stephen.L.Nolen@usace.army.mil

Update # 11

From November 15, 2012

Arcadia Lake Trail Collaborative

Objective:

Establish a multi-use paved bike and jogging trail around Arcadia Lake by Thanksgiving 2014.

Goals for 2012:

- Develop a community collaborative engaging interested groups and stakeholders in the development of the plan.
- Identify route and develop a plan to receive necessary approvals.
- Partner with City of Edmond and Oklahoma City to determine how Arcadia Lake Trail can tie into trail master plans in the area.
- Establish a coalition to define construction cost of Arcadia Lake Trail and identify funding sources to finance the project.

A. **Welcome and Overview of Fitness Center-** Alex Allen welcomed all to the UCO Wellness Center and spoke about the facility.
Those in Attendance at November 15, 2012 meeting;
David Tew, Mercy; Alex Allen, UCO; Paula Sorenson; Terri Folks; Janie Tigert; Diane Durocher; Nancy Williams; Pete Woodward; Caleb McCaleb; Chris Palmer; Henry Holasek, Al's Bicycles-Edmond; and Harry Fenton and Jan Fees from the City of Edmond.

B. **Introductions and Invocation- David Tew and Caleb McCaleb**

C. **Review of Agreements reached during November 15, 2012:**

1. **Jan Fees, David Tew and other city staff met with the Equestrian Group Nov. 5 to identify options for reducing the number of trail crossings of the Arcadia Lake Trail with the Equestrian Trail. Jan showed the revised alignment on the map. The trail route has been changed to reduce intersections the Equestrian Trail from 7 to 2. Terry Folks supports these changes.**
2. **Jan Fees, Steve Commons and David Tew met with the Boys Ranch Farm on Nov. 5 to discuss route and fence issues.**
3. **Rand Phipps, the ELC, David Tew and Jim Tapp will outline next steps for fund raising. With Rand and Jim not in attendance at the meeting, David said they are working to raise $750,000 by early February, 2013, to begin the survey and engineering of the trail.**

The first phase of the trail, from I-35 to Spring Creek Park, is scheduled to be completed by August of 2013.

4. **Finalization of the remaining Trail route will be targeted by the end of November so marketing materials and fund raising can begin. The trail route is close to being finalized, which will depend on the Environmental Assessment and the final engineering.**

D. Environmental Assessment coordination with Corps of Engineers

Jan said the work towards the EA is progressing, under the guidance of Assistant City Manager Steve Commons. Pete Woodward asked how long the engineering will take for this project. David Tew said 90-120 days with the actual construction taking 8-9 months.

E. Update on trail route modifications since last meeting-

Jan noted that the equestrian and Boys Ranch group had recently met with the City of Edmond and changes had been made to accommodate concerns they both have.

F. Other-

Question asked about fixing the Corps Fence. Jan said that the City of Edmond is responsible for repairing the fence unless it is a specific fence that a neighborhood wanted and then, it is their responsibility.

Comment suggested for the trail to go west on 33rd Street to the I-35 Frontage Roads and then down to Memorial rather than going in the equestrian trail areas. David said the vision for this project is an off-road trail, not an on-road trail.

Question asked regarding what is David Tew' s long-term plan is in Edmond. David responded the trail project has been embraced by the community. It is no longer just his personal vision. Caleb commented that the trail will be a benefit to not just those that live around Arcadia Lake, but to the entire community. He said he doesn't think it will change the resident's lifestyle, but provide more opportunities of use for the US Army Corps of Engineer lands.

G. Review of Agreements Reached and Next Steps:

A. **Cooper Ross will provide an update at the next meeting of the Arcadia Lake Trail website and video, which includes the relationship the ELC has with the Trail initiative.**
B. **Rand Phipps will make a presentation about the ELC.**
C. **David Tew will work to get letters of support from UCO and from the Edmond Public Schools.**

D. **David Tew will set up a time to meet with Oklahoma City Mayor Mick Cornett.**
E. **David Tew and Jim Tapp will meet and discuss the trail with Gov. Mary Fallin.**
F. **Future meetings to be about fundraising not trail alignment.**

Next Meeting: Thursday, December 13, 4:30-5:30 pm, at the UCO Outdoor Adventure Recreational Facility at Edmond at Edmond Park at Arcadia Lake.

Arcadia Lake Trail Collaborative

Objective:

Establish a multi-use paved bike and jogging trail around Arcadia Lake by Thanksgiving 2014.

Goals for 2012:

- Develop a community collaborative engaging interested groups and stakeholders in the development of the plan.
- Identify route and develop a plan to receive necessary approvals.
- Partner with City of Edmond and Oklahoma City to determine how Arcadia Lake Trail can tie into trail master plans in the area.
- Establish a coalition to define construction cost of Arcadia Lake Trail and identify funding sources to finance the project.

A. Welcome, Introductions, Invocation and Orientation of UCO OAR Facility- Alex Allen welcomed all to the UCO Outdoor Adventure Recreation Facility and gave a brief tour of the facility.

Those in Attendance at December 13, 2012 meeting;

David Tew, Mercy; Jim Tapp; Cooper Ross and Kaci Eckel, Insight Media; Daniel Griffith, ODWC; Barrett Matthews, ELC; Alex Allen, UCO; Chris Morris, McCaleb Homes; Henry Holasek, Al's Bicycles-Edmond; Rusty and Emily Fees; Paula Sorenson; Russell Pace; David Lewis; Tim Reid; Joe Javadzadeh; John Sharp, ACOG; Tom Bauckham, Terracon; Steve Commons, Craig Dishman, Harry Fenton and Jan Fees from the City of Edmond.

B. Review of Agreements reached during November 15, 2012:

1. **Cooper Ross** will provide an update at the next meeting of the Arcadia Lake Trail website and video, which includes the relationship the ELC has with the Trail initiative.
2. **Rand Phipps** will make a presentation about the ELC- Rand was not able to attend the meeting but Barrett Matthews talked about the partnership with the ELC and the coalition. He said that the ELC is a non-profit land trust and can accept tax deductible donations.
3. **David Tew** will work to get letter of support from UCO and from the Edmond Public Schools – David said he met with Charlie Johnson from UCO who is working on getting a letter of endorsement from President Betz. David said he has also met with Edmond Public Schools and will be getting a letter of support from them also.
4. **Caleb McCaleb** will set up a time for David Tew to meet with Oklahoma City Mayor Mick Cornett – Caleb was not able to attend the

meeting but David will continue to coordinate with Caleb for a meeting with OKC mayor.

5. **David Tew and Jim Tapp** will meet and discuss the trail with Gov. Mary Fallin – Jim and David met with the Governor and her chief of staff and they are in support of the project and working on letter of support. Jim said they gave directions on applying for the tobacco settlement fund monies.
6. **David Tew** said future meetings to be about fundraising not trail alignment – David noted there is growing momentum for this project which will now be moving to the fundraising stage.

C. Corps of Engineers meeting and Environmental Assessment Update

Steve Commons said the City of Edmond visited the Tulsa office of the US Army Corps of Engineers on November 30, at their request, to review the public comments for the environmental assessment and cultural survey for the project. Steve said the Spring Creek Trail, which will serve as Phase One of the overall Arcadia Lake Trail is continuing to move forward and will hopefully be completed and open by Fall 2013.

D. Arcadia Lake Trail website and video update – Cooper Ross

Cooper showed the pages on the website for the Arcadia Lake Trail and Edmond Land Conservancy, but had difficulties showing the new video. John Sharp questioned if information about this project is on Facebook yet and Cooper replied not yet.

E. Status of Edmond Land Conservancy(ELC) and fund raising –

ELC is moving forward with the establishing a separate account for the Arcadia Lake Trail initiative. It has also established the ability to receive donations and provide donors with documentation of their contributions for tax purposes.

F. Press Release and fundraising next steps and community involvement – David Tew/Jim Tapp- David and Jim had met with the ELC and identified 5 categories of donors for the project:

- Individuals
- Organizations/Special Interest Groups
- Family Trusts/Foundations
- Grants/Governmental
- Corporate Sponsorship

David said he anticipates future meetings of the coalition will focus on providing updates on the fund raising activities and progress for each of the categories mentioned above. There will also be periodic updates on the progress with the future route survey and engineering efforts. This will help the project move forward toward the goal of trail completion by the end of 2014.

The following mentioned interest, or were thought might be good participants in the donor categories:

- **Individuals**- Henry Holasek and Chris Morris/ Caleb McCaleb
- **Organizations/Special Interest Groups** - Rusty Fees and Jan Fees
- **Grants/Governmental** – Steve Commons, Craig Dishman, Jan, Jim Tapp, David Tew
- **Family Trusts/Foundations** – David Tew, Russell Pace
- **Corporate** – Jim Tapp

G. Review of Agreements Reached and Next Steps:

A. **Cooper Ross-** will provide an update at the next meeting of the Arcadia Lake Trail website and video. All were to contact Cooper with testimonials from riders.
B. **All-** work on Frequently Asked Questions for the project, which would eventually be available on the website. Send ideas to Jan.
C. **All-** work to find articles on property values and security as associated with trail development to also go on the website.
D. **Jim Tapp-** will work towards an event/kick-off and press release with Cooper, Ashley and David.
E. **David Tew** will get letters of support from UCO and from the Edmond Public Schools.
F. **Caleb McCaleb** will set up a time to meet for David and Caleb to meet with Oklahoma City Mayor Mick Cornett about the Arcadia Lake Trail.
G. **David Tew-** will contact other coalition members not in attendance to see what fundraising group they would like to work with.

Next Meeting: Thursday, January 10, 2013, 3:30-4:30 pm, at the UCO Outdoor Adventure Recreational Facility at Edmond Park at Arcadia Lake.

DEPARTMENT OF THE ARMY
UNITED STATES ARMY CORPS OF ENGINEERS, TULSA DISTRICT
1645 SOUTH 101 EAST AVENUE
TULSA OK 74128-4609

August 16, 2013

REPLY TO
ATTENTION OF

Planning and Environmental Division
Environmental Analysis and Compliance Branch

Dr. Bob Blackburn
State Historic Preservation Officer
State Historic Preservation Office
Oklahoma Historical Society
800 Nazih Zuhdi Drive
Oklahoma City, OK 73105

RE: File #1599-13; City of Edmond Proposed Pedestrian Trail Around Arcadia Lake, Oklahoma County.

Dear Dr. Blackburn:

This letter is to continue consultation in accordance with Section 106 of the National Historic Preservation Act of 1966 (as amended) (NHPA) and implementing regulations 36 CFR Part 800. Please find enclosed the updated reports by Open Range Archaeology (ORA) for the above referenced project. The comments previously received from Catharine M. Wood have been addressed by ORA. It is our finding that sufficient information regarding the work performed is presented to enable review of the proposed undertaking.

The proposed action is defined as a Federal undertaking for Section 106 purposes because it is proposed to occur on Federally owned property administered bv the U.S. Army Corps of Engineers, Tulsa District (Tulsa District). However, because it is not a Tulsa District-funded or a Tulsa District-planned activity, the project proponent (City of Edmond) has conducted the appropriate archaeological investigations. Tulsa District supplied the project proponent with Standards and Guidelines and can compel the proponent to ensure that archaeological investigations are technically sufficient and based on sound methodology. However, Tulsa District cannot compel proponents or their agents to produce investigation reports that address issues beyond technical sufficiency unless they are under contract with the District.

We request any comments you may have on our current finding of ***no historic properties affected*** as it applies to the proposed Federal undertaking described in the enclosed reports, and in previous correspondence. If you have any questions, please contact Ms. Holly Smith at Holly.C.Smith@usace.army.mil.

Sincerely,

Michelle Horn
Acting Chief, Environmental
Analysis and Compliance Branch

Enclosure

Oklahoma Archeological Survey

THE UNIVERSITY OF OKLAHOMA

May 29, 2013

Jeff Knack
Acting Chief, Environmental
Analysis and Compliance Branch
Depart of the Army
Corps of Engineers, Tulsa District
1645 South 101 East Avenue
Tulsa, OK 74128-4609

Re: Proposed Lake Arcadia Pedestrian Trail, City of Edmond.
Legal Description: Sections 1-3, 9-10 T13N R2W; Sections 32-36 T14N R2W, Oklahoma County, Oklahoma.

Dear Mr. Knack:

I have received a report documenting the results of a cultural resource inventory for the above referenced action. Open Range Archaeology performed this work on February 7, 2013. The survey of some 260 acres representing the area of potential effect resulted in the documentation of five previously unrecorded historic archaeological sites (34OK229-34OK333). Four additional sites within the APE (34OK42, 34OK45, 34OK207, and 34OK209) have either been determined not eligible or their artifactual content was not relocated. **I defer opinion on the potential eligibility of 34OK229-34OK233 and project effect to the Historic Archaeologist with the State Historic Preservation Office.**

This review has been conducted in cooperation with the State Historic Preservation Office, Oklahoma Historical Society.

Sincerely,

Robert L. Brooks
State Archaeologist

Cc: SHPO

111 E. Chesapeake, Room 102, Norman, Oklahoma 73019-5111 PHONE: (405) 325-7211 FAX: (405) 325-7604
A UNIT OF ARTS AND SCIENCES SERVING THE PEOPLE OF OKLAHOMA

Oklahoma Historical Society *Founded May 27, 1893*
State Historic Preservation Office
Oklahoma History Center • 800 Nazih Zuhdi Drive • Oklahoma City, OK 73105-7917
(405) 521-6249 • Fax (405) 522-0816 • www.okhistory.org/shpo/shpom.htm

June 14, 2013

Mr. Jeff Knack, Acting Chief
Environmental Analysis & Compliance
Tulsa District Corps of Engineers
1645 South 101st East Avenue
Tulsa, OK 74128

RE: File #1599-13; City of Edmond Proposed Pedestrian Trail around Arcadia Lake, Oklahoma County

Dear Mr. Knack:

We have reviewed the documentation submitted on the referenced project. We find that we are unable to complete the review of your project without the following additional information:

(1) Provide updated archaeological site forms for 34OK207 and 34OK209.

(2) Provide the search radius used for the background research in order to explain why 30 previously recorded archaeological sites were included and summarized within the report.

(3) Provide a summary of previous studies that were conducted within the project area. As was noted in the bibliography of the report, there are four studies listed (see below) but they are not summarized within Section 2.0 of the Pre-field Investigation section on Page 8. This summary of previous work is important to the understanding of the history of the project area and of the archaeological sites that have been previously identified and thus aids in the current evaluation of the new sites identified and the project as a whole. Also, it is inappropriate to include bibliographic references that have not been mentioned within the text of the report.

Gruber, Thomas E. and Janna L. Gruber
2012 Open Range Archaeology 2012-008: Archaeological Survey Report: Arcadia Lake Proposed Boating/Fishing Access, Oklahoma County, OK.

Hartley, John D.
1976 A Resource Survey and Assessment of the Prehistoric Resources of Arcadia Lake, Oklahoma County, OK. Oklahoma River Basin Survey Project.

Neal, Larry
1973 An Assessment of the Prehistoric Cultural Resources of the Proposed Arcadia Reservoir Oklahoma County, OK.

Rickers, J.
2008 JCR Cultural Resources Report 2008-2: An Archaeological Survey of Approximately 500 Acres Along the South Shore of Lake Arcadia, Oklahoma County, OK.

RE: File #1599-13; City of Edmond Proposed Pedestrian Trail around Arcadia Lake, Oklahoma County

(4) Page 17, Section 4.0 Environmental Description, introduce the fact that Arcadia Lake is manmade and describe any other water resources within the project area.

(5) Page 18, Section 5.0 Cultural Background, the description jumps from statehood to 1987 and the development of Arcadia Lake. Provide a transition that discusses the development of Edmond. The discussion of the Deep Fork River would be more appropriate in the third paragraph on Page 18.

(6) There is a noted absence of references in the Cultural Background Section. Please revise to prove where this information was taken from to write this section. This also refers back to the previous comment #3 on including bibliographic references that are missing in the text of the report.

If you should have any questions concerning this request, please contact me at 405/521-6381.

Thank you for the opportunity to review this project. Please reference the above underlined file number when responding.

Sincerely,

Catharine M. Wood
Historical Archaeologist

CMW:pm

TRIBAL HISTORIC PRESERVATION OFFICE

Date: **August 7, 2013** **File: 1213-1408OK-08**

RE: **USACE: Tulsa District Arcadia Lake Multi-use Project, City of Edmond, Oklahoma County**

USACE: Tulsa District
Jeff Knack
1645 South 101 East Avenue
Tulsa, OK 74128-4609

Dear Mr. Knack,

The Osage Nation Historic Preservation Office has evaluated your submission and concurs that the proposed USACE: Tulsa District Arcadia Lake Multi-use Project, City of Edmond, Oklahoma County most likely will **not adversely affect properties of cultural or sacred significance to the Osage Nation.** The findings of this NHPA Section 106 review have resulted in a determination of **"No Effect," as no NRHP-eligible properties will be impacted by this project.**

In accordance with the National Historic Preservation Act, (NHPA) [16 U.S.C. 470 §§ 470-470w-6] 1966, undertakings subject to the review process are referred to in S101 (d) (6) (A), which clarifies that historic properties may have religious and cultural significance to Indian tribes. Additionally, Section 106 of NHPA requires Federal agencies to consider the effects of their actions on historic properties (36 CFR Part 800) as does the National Environmental Policy Act (43 U.S.C. 4321 and 4331-35 and 40 CFR 1501.7(a) of 1969). **As a part of the scoping process the USACE: Tulsa District has fulfilled NHPA and NEPA compliance by consulting with the Osage Nation Historic Preservation Office in regard to the proposed USACE: Tulsa District Arcadia Lake Multi-use Project, City of Edmond, Oklahoma County.**

The Osage Nation has a vital interest in protecting its historic and ancestral cultural resources. With the recommended avoidance measures, we do not anticipate that this project will adversely impact any cultural resources or human remains protected under the NHPA, NEPA, the Native American Graves Protection and Repatriation Act, or Osage law. **If artifacts or human remains are discovered during project construction, we ask that work cease immediately and the Osage Nation Historic Preservation Office be contacted.**

Should you have any questions or need any additional information please feel free to contact me at the number and/or email address listed below. Thank you for consulting with the Osage Nation on this matter.

Dr. Andrea A. Hunter
Tribal Historic Preservation Officer

Barker Fariss, Ph.D.
Archaeologist

627 Grandview, Pawhuska, OK 74056, (918) 287-5328, Fax (918) 287-5376

Oklahoma Historical Society *Founded May 27, 1893*
State Historic Preservation Office
Oklahoma History Center • 800 Nazih Zuhdi Drive • Oklahoma City, OK 73105-7917
(405) 521-6249 • Fax (405) 522-0816 • www.okhistory.org/shpo/shpom.htm

September 10, 2013

Ms. Michelle Horn
Dept. of the Army
Corps of Engineers, Tulsa District
1645 South 101st East Avenue
Tulsa, Ok 74128-4609

RE: File #1599-13; Edmond Proposed Pedestrian Trail Around Arcadia Lake (Attachment)

Dear Ms. Horn:

We have received and reviewed the documentation concerning the referenced project in Oklahoma County. Additionally, we have examined the information contained in the Oklahoma Landmarks Inventory (OLI) files and other materials on historic resources available in our office. We find that there are no historic properties affected by the referenced project.

Thank you for the opportunity to comment on this project. We look forward to working with you in the future.

If you have any questions, please contact Catharine M. Wood, Historical Archaeologist, at 405/521-6381.

Should further correspondence pertaining to this project be necessary, please reference the above underlined file number. Thank you.

Sincerely,

Melvena Heisch
Deputy State Historic
Preservation Officer

MH:jr

Attachment

FILE # LIST OF PROPERTIES

1599-13 EDMOND PROPOSED PEDESTRIAN TRAIL
AROUND ARCADIA LAKE,
OKLAHOMA COUNTY

1. 18-20 MILES AROUND ARCADIA LAKE, SECS 1,2,3,9,10 T13N R2W, SECS 32,33,34,35,36 T14N R2W
2. 34OK229
3. 34OK230
4. 34OK231
5. 34OK232
6. 34OK233

APPENDIX F – Notice of Availability

APPENDIX G –Functional Assessment Report for the Spring Creek Trail Segment

OVERVIEW

This Functional Assessment Report was prepared by Terracon Consultants, Inc. for MKEC Engineering Consultants to assist MKEC with their 404 Permit for the Spring Creek Trail Segment on February 14, 2014.

The objective of this report is to characterize the current quality of the wetlands and streams that will be impacted ty the multi-use trail for the 3.1 mile Spring Creek Segment from just west of the I-35 overpass to Spring Creek Park.

Functional Assessment Report

Arcadia Lake Trails

Spring Creek Trail Project

Edmond, Oklahoma County, OK

February 14, 2014

Terracon Project No. 03137017

Prepared for:

MKEC Engineering Consultants, Inc.
Oklahoma City, Oklahoma

Prepared by:

Terracon Consultants, Inc.
Oklahoma City, Oklahoma

terracon.com

Terracon

Environmental ■ Facilities ■ Geotechnical ■ Materials

February 14, 2014

Terracon

Doug Klassen, P.E.
MKEC Engineering Consultants, Inc.
1001 W. Wilshire, Suite 401
Oklahoma City, OK 73116

Attn: Mr. Doug Klassen
P: 405.842.8558
M: 405.740.3996
E: dklassen@mkec.com

Re: Functional Assessment Report
Arcadia Lake Trails Project
Edmond, Oklahoma
Terracon Project No. 03137017

Dear Mr. Klassen:

Terracon Consultants, Inc. (Terracon) is pleased to submit this report regarding the functional assessment of wetlands and streams found along the 3.1 mile long section of the proposed Arcadia Lake Trail known as the Spring Creek Trail. It is Terracon's understanding that this functional assessment will provide information to MKEC Engineering Consultants to assist in the application for a Section 404 permit.

In a previously submitted report, "Preliminary Waters of the U. S. Delineation for Arcadia Lake Trail Project, 3.1 Mile Section", five areas requiring functional wetland assessment were identified. The first two areas are located along Spring Creek as it passes underneath the Interstate 35 (I-35) overpass just south of 2nd Avenue in Edmond, Oklahoma. The first wetland assessment area just west of the I-35 overpass has been identified as WAA1 and is classified as riverine emergent. The second wetland assessment area just east of I-35 has been identified as WAA2 and is also riverine emergent. Three additional riverine forested wetland areas are near intermittent tributaries and are identified as WAA3, WAA4, and WAA5.

The proposed trail will impact approximately 0.45 acres of wetlands along Spring Creek near the I-35 overpass. The quality of this section of the Creek is detailed in later sections of this functional assessment report. The proposed trail will cross three intermittent streams that have been assessed using the Galveston District Army Corps of Engineers (ACE) stream assessment method. The combined area of impact from the proposed trail for these three intermittent steams is less than 0.35 acre.

The objective of the report is to characterize the current quality of the wetlands and streams that will be impacted by the multiuse proposed trail for the 3.1 mile section from just west of the I-35 overpass to Spring Creek Park.

If you have any questions regarding the content of this report, please contact Tom Bauckham at 405.525.0453.

Sincerely,
Terracon Consultants, Inc.

Thomas Bauckham
Project Manager

Ginger Horn
Senior Project Manager

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Table 2 Functional Capacity Units for Forested Wetlands

Table 3 Functional Capacity Units for Trail Along Spring Creek

Table 4 Functional Capacity Units for Intermittent Tributary Near WAA3 and S-13

Table 5 Functional Capacity Units for Intermittent Tributary Near WAA4 and S-11

Table 6 Functional Capacity Units for Intermittent Tributary Near WAA5 and S-10

APPENDICES

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FUNCTIONAL ASSESSMENT REPORT
ARCADIA LAKE TRAIL
SPRING CREEK TRAIL PROJECT
EDMOND, OKLAHOMA COUNTY, OKLAHOMA
Terracon Project No. 03137017
February 14, 2014

1.0 INTRODUCTION

Terracon Consultants, Inc. (Terracon) is presenting this Functional Assessment Report to assist MKEC in their preparation of a Section 404 Permit application for the 3.1 mile section of the proposed multi-use Arcadia Lake Trail, also known as the Spring Creek Trail. The proposed trail begins west of the I-35 overpass south of 2nd Avenue in Edmond, Oklahoma and proceeds approximately 650 linear feet along the south bank of Spring Creek (approximately 0.45 acre of stream impact). The proposed trail moves into the upland wooded area above the Creek as it proceeds to Spring Creek Park. The proposed trail crosses three intermittent tributaries that were identified in a Terracon document issued to the United States Army Corps of Engineers Tulsa District (USACE) in July, 2013. This report entitled *"Preliminary Waters of the US Delineation, Arcadia Lake Trail Project, 3.1 Mile Section"* (see Appendix A) describes five areas of suspect wetlands. The first two wetland areas are along Spring Creek near the I-35 overpass. One area is on the west side of the overpass and the second area is on the east side of the overpass. It is the opinion of Terracon that the wetlands adjacent to Spring Creek near the I-35 overpass are classified as "riverine emergent". The wetlands associated with the three intermittent tributaries are classified as "riverine forested wetlands". Four "streams" are assessed where the proposed trail will have impact: the stream assessment reach (SAR) on the south bank of Spring Creek near the I-35 overpass, and the SARs associated the intermittent tributaries near sampling points S-13, S-11, and S-10 (see Exhibit 2 in the *"Preliminary Waters of the U.S. Delineation"* report that is provided in Appendix A).

2.0 PROPERTY LOCATION

The functional assessment area includes approximately 3.1 miles of public land, mostly owned by the USACE, that is anticipated to be impacted from the proposed trail project. More specifically, the site is located in the following 7.5 minutes series topographic quadrangle map locations: Sections 32-34, Township 14 N North, Range 2 West, Edmond, Oklahoma, 1966, photo-revised 1983. Please reference Exhibits 1 and 2 in Appendix A for further project location information.

3.0 METHODOLOGY

3.1 Wetland Credits

This functional assessment was prepared in accordance with the USACE requirements for functional assessment and reporting. Specific objectives were to conduct a functional assessment of wetlands for the site area using the *1987 Corps of Engineers Wetland Delineation Manual* (Manual), along with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0)* (March 2010). As suggested by the USACE Tulsa District, the interim hydrogeomorphic (iHGM) approach was used to assess the function of the impacted wetlands. Specifically the "Riverine Forested HGM Interim Model" and the "Riverine Emergent Interim Model" deployed by the USACE Tulsa District were used. These models use several variables to assess three main functions that best describe and measure wetland health in the region:

1. Physical - Temporary Storage and Attention of Surface Water (TSDS)
2. Biological - Maintenance of Plant and Animal Communities (MPAC)
3. Chemical - Removal and Sequestration of Elements and Compounds (RSEC)

Within each of the three functions, variables are scored to determine the value of each function's Functional Capacity Index (FCI). Table 1 (below) shows the breakdown of the calculated Functional Capacity Units (FCU) for the two Riverine Emergent Wetlands near the I-35 overpass. The FCU is a product of the FCI times the acreage impacted. Table 2 (next page) shows the calculated FCU for the three Riverine Forested Wetlands along the 3.1 mile proposed Spring Creek trail. Engineering diagrams showing the five wetland assessment areas (WAA) are included in Appendix B in Exhibits A1, A2, A3, and A4. WAA#1 is associated with the west side of the I-35 overpass, WAA#2 is associated with the east side of the I-35 overpass, WAA #3 is associated with sampling location S-13; WAA #4 is associated with sampling location S-11; WAA #5 is associated with sampling point S-10 (see Exhibit 2 in Appendix A). The complete iHGM worksheets where the impacted areas and associated formulas can be found is located in Appendix C.

Table 1: Functional Capacity Units for Emergent Wetlands

Functional Capacity Units	WAA #1	WAA #2
TSDS	0.03	0.11
MPAC	0.05	0.17
RSEC	0.02	0.09

Table 2: Functional Capacity Units for Forested Wetlands

Functional Capacity Units	WAA #3	WAA #4	WAA #5
TSDS	0.01	0.01	0.10
MPAC	0.03	0.02	0.16
RSEC	0.02	0.01	0.14

3.2 Stream Credits

The method used to assess the impact of the proposed trail to Spring Creek near the I-35 overpass and the three intermittent tributaries along the proposed trail was the "Level I Stream Condition Assessment Procedure" adopted by the USACE Galveston District. This method was used since it is an accepted method for assessing steams by a USACE district and a specific model has not been established by the USACE Tulsa District. A routine stream assessment was performed for areas upstream and downstream of the impacted area. The parameters sampled under Level I include:

1. Visual Channel Assessment
2. Riparian Buffer Assessment
3. Visual In Stream Habitat Assessment
4. Visual Channel Alteration Assessment

The fundamental unit for evaluating stream impacts is the stream assessment reach (SAR). All streams assessed under Level I with proposed impacts used three fixed distance SARs of 350 linear feet. For the proposed Spring Creek trail an assessment was initiated upstream of the proposed trail (SAR1). The area directly impacted by the trail was designated SAR2. The area downstream of the proposed trail was designated SAR3. These SARs are visually shown in Exhibit 5 in Appendix B. The total distance covered by SARs 1, 2 and 3 was in excess of 1000 linear feet. The impact of the proposed Spring Creek trail (SAR2) is approximately 650 feet and this is illustrated in the engineering diagram shown in Exhibit A1 in Appendix B. The impact area along Spring Creek constitutes approximately 0.45 acre.

Table 3 (next page) shows the breakdown of functions, variables, site scores, and criteria for impacted and non-impacted areas of Spring Creek within the proposed trail area. The complete stream assessment data forms for the impacted and non-impacted areas of Spring Creek and associated formulas can be found in Appendix C.

Table 3: Functional Capacity Units for Trail Along Spring Creek

Assessment	SAR 1 – Upstream of Impact	SAR 2 – Impacted Area	SAR 3 – Downstream of Impact
Channel Condition	3.0	1.0	2.0
Riparian Buffer	3.0	1.0	3.0
Aquatic Use	2.0	1.0	2.0
Channel Alteration	3.0	1.0	3.0
Reach Condition Index	**2.75**	**1.00**	**2.50**

Tables 4 - 6 (below) show the breakdown of functions, variables, site scores, and criteria for impacted and non-impacted areas of the intermittent tributaries along the 3.1 mile proposed trail associated with WAA3, WAA4, and WAA5. The complete stream assessment data forms for the impacted and non-impacted areas of intermittent tributaries and associated formulas can be found in Appendix C.

Table 4: Functional Capacity Units for Intermittent Tributary Near WAA3 and S-13

Assessment	SAR 1 – Upstream of Impact	SAR 2 – Impacted Area	SAR 3 – Downstream of Impact
Channel Condition	3.0	5.0	5.0
Riparian Buffer	4.0	4.5	4.5
Aquatic Use	1.0	1.0	1.0
Channel Alteration	4.0	4.0	5.0
Reach Condition Index	**3.00**	**3.63**	**3.88**

Table 5: Functional Capacity Units for Intermittent Tributary Near WAA4 and S-11

Assessment	SAR 1 – Upstream of Impact	SAR 2 – Impacted Area	SAR 3 – Downstream of Impact
Channel Condition	5.0	4.0	4.0
Riparian Buffer	4.0	4.5	4.5
Aquatic Use	1.0	1.0	1.0
Channel Alteration	4.0	4.0	4.0
Reach Condition Index	**3.50**	**3.38**	**3.38**

Table 6: Functional Capacity Units for Intermittent Tributary Near WAA5 and S-10

Assessment	SAR 1 – Upstream of Impact	SAR 2 – Impacted Area	SAR 3 – Downstream of Impact
Channel Condition	4.0	4.0	4.0
Riparian Buffer	2.0	4.5	4.0
Aquatic Use	1.0	1.0	1.0
Channel Alteration	4.0	4.0	4.0
Reach Condition Index	**2.75**	**3.38**	**3.25**

4.0 RESULTS AND CONCLUSIONS

- FCUs for the five wetlands in the the 3.1 miles of the proposed trail are provided in Tables 1 and 2 above. The complete iHGM worksheets for these areas are provided in Appendix C
- The Reach Condition Index (RCI) for Spring Creek along the trail on the south bank near the I-35 overpass has been determined to be severe (1.0); the RCI for the intermittent tributary near WAA#3 is 3.63; the RCI for the intermittent tributary near WAA#4 is 3.38; the RCI for the intermittent tributary near WAA#5 is 3.38.

APPENDIX H – Compensatory Mitigation Plan for Spring Creek Trail

OVERVIEW

This document was prepared on February 24, 2014 and describes the affected wetlands within the 3.1 mile Spring Creek Trail segment corridor. The City of Edmond has reviewed the options available for mitigation of 0.45-acres of riverine emergent wetlands, and 0.35-acres of riverine forested wetlands. After careful consideration of the options, this City has chosen to pursue purchasing credits from the Excel Mitigation Center in Lincoln County, Oklahoma.

Februrary 14, 2014

COMPENSATORY MITIGATION PLAN FOR:
SPRING CREEK TRAIL
FROM I-35 TO SPRING CREEK PARK
EDMOND, OK

The proposed Spring Creek Trail is an approximately 3.1-mile long multi-purpose paved trail. The proposed trail will begin just west of the existing I-35 bridges on the south bank of Spring Creek in Edmond, OK. The trail will extend to Spring Creek Park within the Arcadia Lake recreational area. The planned trail will typically be 18' wide with a paved asphalt surface.

Five wetland locations have been identified along the trail alignment. In addition to the initial wetland delineation, Terracon has also completed a functional assessment of the five wetland locations, which is attached hereto.

The following section describes the wetland areas, along with a description of the Avoidance and Minimization efforts put forth through the design process.

WETLAND AREA 1 & 2

AREA DESCRIPTION: Per the wetland delineation performed by Terracon, wetlands were identified adjacent to the three bridges where I-35 crosses Spring Creek. WAA-1 lies west of the bridges. WAA-2 lies east of the bridges. The trail is planned along the south bank of the creek and will pass under the bridges. Total wetland area disturbed is anticipated to be 0.45-acres including both sites.

DISCHARGED MATERIAL:

Concrete – 130 CY
Rip-Rap – 693 CY
Aggregate Base – 69 CY

These two areas have been classified as "riverine emergent wetlands". Based on the Functional Capacity Units determined by Terracon in the attached Functional Classification Report, the wetland areas are in poor condition.

AVOIDANCE & MINIMIZATION

The following Avoidance and Minimization strategies were used on these sites:

1. The conceptual and final designs of this project require a crossing of I-35 in the area of Spring Creek. Conceptual plans looked at solutions to bridge over these wetland areas with a pier supported trail under I-35 and in wetland areas, however, due to hydraulic and budget restraints, this solution is not feasible. Vertical Clearance under the existing bridges is also a limiting factor.

2. The trail width was reduced under the I-35 bridges and within adjacent wetland areas from the 18' typical width to 12' in order to minimize the footprint of disturbed area as well as reduce the hydraulic impact on Spring Creek. The trail is effectively 8' wide with 2' shoulder on each side. This is the minimum trail width allowed by AASHTO.

3. As the proposed trail comes out from under the bridge, the alignment turns south away from these wetland areas to minimize the disturbed footprint.

4. The proposed design utilizes a low water crossing where the drainage ditch along the northbound frontage road empties into spring creek. The low-water crossing is designed to lower the trail profile and limit the disturbed area in this location.

By reducing the trail width, installing a low-water crossing, and turning the trail alignment just east of the I-35 bridges, the affect on the existing wetland has been minimized.

WETLAND AREA 3

AREA DESCRIPTION: Per the wetland delineation performed by Terracon, wetlands were identified along an intermittent tributary approximately 2,600 feet east of I-35.

DISCHARGED MATERIAL:

Asphalt – 5 CY
Concrete – 4 CY
Embankment – 1.6 CY
Rip-Rap – 18 CY
Aggregate Base – 10 CY

WETLAND AREA DISTURBED: 1,413 sq. ft. or 0.032 Acres

This wetland area has been classified as "riverine forested wetland". Based on the Functional Capacity Units determined by Terracon in the attached Functional Classification Report, the wetland areas are in medium condition.

AVOIDANCE & MINIMIZATION

The following Avoidance and Minimization strategies were used on this project:

1. Avoidance is not possible in this location as the trail extends east to west, intersecting with the intermittent tributary and identified wetland area.

2. As the trail crosses the wetland area, the proposed design keeps the proposed grade as close to existing ground as possible in order to minimize the disturbed area. In

order to facilitate drainage, a low water flume crossing was used to convey lesser storm events. Runoff from larger storm events will pass over the surface of the trail.

3. In addition, the plans will require the use of temporary fencing to limit the area disturbed during construction. All disturbed areas outside of the paving and rip-rap will be seeded with a native grass seed mix, further minimizing the impact to the surrounding environment.

WETLAND AREA 4

AREA DESCRIPTION: Per the wetland delineation performed by Terracon, wetlands were identified along an intermittent tributary approximately 6,000 feet east of I-35.

DISCHARGED MATERIAL:

Asphalt – 5 CY
Concrete – 3 CY
Embankment – 3 CY
Rip-Rap – 18 CY
Aggregate Base – 10 CY

WETLAND AREA DISTURBED: 1,581 sq. ft. or 0.036 Acres

This wetland area has been classified as "riverine forested wetland". Based on the Functional Capacity Units determined by Terracon in the attached Functional Classification Report, the wetland areas are in medium condition.

AVOIDANCE & MINIMIZATION

The following Avoidance and Minimization strategies were used on this project:

1. Complete avoidance is not possible in this location as the trail extends east to west, intersecting with the intermittent tributary and identified wetland area. The trail alignment in this location was adjusted to avoid a section of the tributary that turns parallel to the trail. This adjustment minimized the disturbed area.

2. As the trail crosses the wetland area, the proposed design keeps the proposed grade as close to existing ground as possible in order to minimize the disturbed area. In order to facilitate drainage, a 24" RCP was used within the existing channel.

3. Plans will require temporary fencing to limit the disturbed area through the construction progress. All disturbed areas outside of the paving and rip-rap will be seeded with a native grass seed mix, further minimizing the impact to the surrounding environment.

SPRING CREEK TRAIL
EDMOND, OKLAHOMA
February 24, 2014

WETLAND AREA 5

AREA DESCRIPTION: Per the wetland delineation performed by Terracon, wetlands were identified along an intermittent tributary approximately 7,350 feet east of I-35.

DISCHARGED MATERIAL:

- Asphalt – 50 CY
- Concrete – 19 CY
- Embankment – 110 CY
- Rip-Rap – 321 CY
- Aggregate Base – 99 CY

WETLAND AREA DISTURBED: 12,700 sq. ft. or 0.28 Acres

This wetland area has been classified as "riverine forested wetland". Based on the Functional Capacity Units determined by Terracon in the attached Functional Classification Report, the wetland areas are in medium condition.

AVOIDANCE & MINIMIZATION

The following Avoidance and Minimization strategies were used on this project:

1. Avoidance is not possible in this location as the trail extends east to west, intersecting with the intermittent tributary and identified wetland area.

2. As the trail crosses the wetland area, the proposed design keeps the proposed grade as close to existing ground as possible in order to minimize the disturbed area. In order to facilitate drainage, 6-24" RCPs were used under the trail and rip rap along the trail fill slopes is designed to protect against wave action in high water situations.

3. The plans will require the use of temporary fencing to limit the disturbed area during construction. All disturbed areas outside of the paving and rip-rap will be seeded with a native grass seed mix, further minimizing the impact to the surrounding environment.

MITIGATION PLAN

The City of Edmond has reviewed the options available for mitigation of 0.45-acres of riverine emergent wetlands, and 0.35-acres of riverine forested wetlands. After careful consideration of the options, this City has chosen to pursue purchasing credits from the Excel Mitigation Center in Lincoln County, Oklahoma.

SPRING CREEK TRAIL
EDMOND, OKLAHOMA
February 24, 2014

BASELINE INFORMATION

The baseline information for each of the 5 wetland areas included within this project is included in the report prepared by Terracon entitled "Preliminary Waters of the US Delineation, Arcadia Lake Trail Project, 3.1 Mile Section" dated July, 2013. Additional baseline information is provided in the report by Terracon entitled "Functional Assessment Report Arcadia Lake Trail Spring Creek Trail Project, Edmond, Oklahoma County, OK" dated February, 2014. These reports are provided herewith.

DETERMINATION OF CREDITS

The required credits were determined in conjunction with discussions with the Excel Mitigation Center as follows:

WAA 1 & 2: 0.45-acres of Riverine Emergent Wetlands w/ poor quality @ 3.5:1 = 1.58 credits (2 credits required)

WAA 3, 4, & 5: 0.35-acres of Riverine Forested Wetlands w/ medium quality @ 6.5:1 = 2.28 credits (3 credits required).

The City's intent is to purchase 2 Riverine Emergent Wetland credits and 3 Riverine Forested Wetland credits from the Excel Mitigation Center in order to meet the compensatory mitigation requirements for this project.

APPENDIX I – WoUS Report Arcadia Lake Multi-use Trail Future 17 mile Segment (Does not include Spring Creek Trail Segment)

OVERVIEW

This WoUS report was prepared April, 2014 by CH2M HILL for LandPlan Consultants, Inc. for the future 17 mile segment of the Arcadia Lake Multi-Use Trail. This document does not include any the WoUS report prepared by Terracon Consultants, Inc. July 13, 2013 for the first phase 3.1 mile Spring Creek Trail Segment.

This WoUS report identifies a potential alignment taking into account important alignment design issues such as wetlands avoidance, cost of excavation and blasting, American with Disabilities Act provisions for trails, equestrian trail issues and other safety issues. This alignment varies is some locations from the corridor identified in the Draft EA report submitted in October 2013 due to these important alignment design issues.

If this potential alignment is defined as the 'final trail alignment' by the City of Edmond for future unfunded portion of the Arcadia Lake Multi-use Trail, all NEPA requirements will be met by the City of Edmond. This EA document will be supplemented in the future and public comment will be solicited as part of the NEPA process.

Waters of the United States Survey

Arcadia Lake Multi-use Trail Project Edmond, Oklahoma Document

Prepared for

LandPlan Consultants, Inc

April 2014

CH2MHILL®

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Introduction

On behalf of LandPlan Consultants, Inc., Tulsa, CH2M HILL conducted a survey of the project area for Waters of the United States, including wetlands and streams, associated with the Arcadia Lake Multi-Use Trail Project in Edmond, Oklahoma. It is expected that this information will be used for a Clean Water Act (CWA) Section 404 permit application submitted to the U.S. Army Corps of Engineers, Tulsa District. Consultation with the USACE Tulsa District included two meetings: A pre-field meeting to present the project and the proposed field survey methodologies (February 21, 2014); and a preliminary application meeting (March 18, 2014) to review the proposed project elements, present preliminary survey findings, as well as the approach for permitting and potential mitigation for impacts to Waters of the United States.

This report presents the findings of a Waters of the United States survey conducted by CH2M HILL biologist Steven Eakin from February 17 - 20, 2014. The report is intended to be used to obtain a permit for the construction of the Arcadia Lake Multi-Use Trail (the Trail) and will serve to assist the trail designers (LandPlan) in further minimizing impacts to jurisdictional waters to the extent possible as a result of the project.

Project Description and Background

The City of Edmond, Oklahoma, is proposing to implement the Arcadia Lake Multi-use Trail Project, which includes construction of a roughly 20-mile long, paved, multi-use trail around Arcadia Lake. The purpose of is to provide outdoor recreation adjacent to Arcadia Lake for walkers, joggers, equestrians, and cyclists while preserving native habitat and vegetation around the trail. Most of the trail will be located within the City of Edmond. A small part will be within Oklahoma City. The entire trail will be on public land, with most owned by the Corps of Engineers and a small part (along Oklahoma Highway 66) within an Oklahoma Department of Transportation right-of-way.

The City of Edmond has submitted an environmental assessment to the Corps of Engineers for the proposed 20-miles of trail alignment. A preliminary route was selected after discussion with other governmental agencies and after considering public comments. The City has prepared and submitted a Clean Water Act Section 404 permit application and Section 401 water quality certification request for a 3.1-mile section of the project referred to as the Spring Creek Trail. A Section 404 permit application for the remainder of the trail has not yet been prepared.

Site Description

The proposed project is located around the perimeter of Arcadia Lake within the City of Edmond, a suburb of Oklahoma City. Sheet 1 (Appendix A) shows the location map for the proposed project. The study area (also referred to as the project area) consists of public lands surrounding Arcadia Lake owned by the Corps of Engineers and partly by Oklahoma Department of Transportation.

Lake Arcadia is a Corps of Engineers lake congressionally authorized for Flood Control with flood control, water supply, and recreation as project purposes. Arcadia Lake was created by impounding the Deep Fork arm of the Canadian River. The construction started in October 1980 and the project became operational for flood control in November of 1987. The conservation pool was filled on May 28th, 1987. The lake is a 1,725-acre reservoir at the top of the conservation pool elevation of 1006 feet NGVD and maximum pool elevation of 1054 feet (Tulsa District Pertinent Data Book, March 2004). Arcadia Lake has roughly 26 miles of shoreline and a watershed area of 105 square miles. The lake is within the Deep Fork Watershed (HUC 11100303). It serves as a source of recreation for Edmond, Oklahoma City, and surrounding communities. Popular recreational activities in the area include boating, fishing, swimming, skiing, camping, hunting, picnicking, mountain biking, horseback riding, and group meetings.

Land uses within the public lands surrounding Arcadia Lake are primarily recreational on nondeveloped uplands. Many of the upland areas were cleared and used for farming before construction of the lake. The

open farm fields are now fallow and in various states of successional regeneration from upland forbs, such as invasive Johnsongrass (*Sorghum halepense*), shrubs, and tree species, particularly eastern red cedar (*Juniperus virginiana*). Other uplands on the surrounding public lands include forests dominated by post oak (*Quercus stellata*) and blackjack oak (*Quercus marilandica*) forests, along with forests dominated by eastern cottonwood (*Populus deltoids*), American elm (*Ulmus americana*), and sycamore (*Plantanus occidentalis*). Several parks around the lake have recreation buildings and structures.

Outside the public lands surrounding the lake, the predominant land use is single family residential homes and farms. Many land uses within the watershed have altered the historic hydrology near Arcadia Lake. Alterations include several small farm ponds with earthen impoundments along streams and increases in impervious surfaces associated with the growth and residential development of City of Edmond. The alterations have led to some streams being cut off from upstream watersheds and some receiving increased input from stormwater runoff and sediment transport.

The creation of Arcadia Lake altered the hydrology within the surrounding watershed. In areas where streams and surface drainages enter the lake, the impounded waters have created backwater wetland features associated with the lake's stage and have changed habitats in those locations from lotic to lentic. Those areas readily receive sediment deposition from stormwater runoff and erosion, smothering some habitats with alluvial sand.

Soils within the project area are dominated by the Stephenville-Darsil-Newalla complex and Harrah fine sandy loam soil series. These soils are primarily characterized as deep, well-drained fine sandy loams to sandy clay loams 18 to 80 inches deep occurring on hillslopes. The principle components of neither soil series are listed as hydric (USDA, 2014). Many of the soils observed during the field survey were moderately disturbed by historical land uses and recent changes in the surrounding watershed since the creation of the lake. Disturbances included poor soil horizon development within the upper 12 inches of the soil profile and recent alluvial sand deposits near surface drainage features.

Methodology

Regulatory Setting

USACE is directed by Congress under Section 404 of the CWA (33 USC 1344) to regulate the discharge of dredged and fill material into all Waters of the United States, defined in 33 Code of Federal Regulations Part 328 of the Clean Water Act, include "intrastate lakes, rivers, streams (including intermittent streams), mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds" (USACE, 1987). The Corps of Engineers also maintains jurisdiction over manmade impoundments, when those impoundments occur within drainages that meet the definition of jurisdictional waters. The project occurs within the jurisdiction of the Corps of Engineers, Tulsa District. Guidance in regards to determination of potential Waters of the United States occurring within the project area was referenced to materials available through the Corps of Engineers Tulsa District website (www.swt.usace.army.mil) and through direct correspondence with District's Regulatory Branch staff.

Desktop Review

A desktop analysis of Waters of the United States and the jurisdictional status of these features was performed by reviewing National Wetlands Inventory online maps, National Resource Conservation Commission online soil maps, and United States Geological Survey 7.5-minute quadrangle maps to investigate the potential connection to traditional navigable waters and the boundaries of potentially jurisdictional Waters of the United States. National Wetlands Inventory maps and the United States Geological Survey soil survey maps of the project area were deemed inaccurate, out-of-date and likely represent conditions before the creation of Arcadia Lake. The presence of potential Waters of the United States was confirmed by a field survey, during which the boundaries of these features were defined more accurately.

Before the field survey was conducted, the trail corridor and segments of alternative trail corridor were overlaid on aerial maps and handheld geographic positioning system (GPS) units. The proposed trail corridor, including the alternative trail corridor segments, is referred to as the survey corridor. The survey corridor consists of a centerline and 20 feet of additional width (40 feet wide total) on either side of the trail. The aerial maps and GPS units were used to navigate and map potential Waters of the United States features within the survey corridor while in the field.

Waters of the United States Delineation

For the purpose of this evaluation, Waters of the United States were identified within the total area of potential impacts (survey corridor) as a result of the project. The survey corridor area consisted of a width greater than the actual design width of the constructed trail (12 to 18 feet). The additional surveyed area was included to allow for avoidance and minimization to Waters of the United States identified in the field. Boundaries of features identified within the survey corridor were investigated and defined. Boundaries beyond the survey corridor were not typically investigated further or defined. .

A CH2M HILL biologist conducted a field delineation of Waters of the United States within the survey corridor on February 17–20, 2014. Field delineations for wetland features were conducted following procedures set forth in the *Corps of Engineers Wetland Delineation Manual* (USACE, 1987) and the *Regional Supplement of the Corps of Engineers Wetlands Delineation Manual: Great Plains Region (Version 2.0)* (USACE, 2010). The manual defines wetlands as areas that have positive indicators for hydrophytic vegetation, wetland hydrology, and hydric soils, or as:

> "Areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. "

The Routine Onsite Determination Method (USACE, 1987) includes the following steps:

- Locate the project area.
- Identify community types.
- Select representative observation points.
- Characterize each plant community type.
- Record the indicator status of dominant species.
- Determine whether hydrophytic vegetation is present and dominant.
- Determine whether wetland hydrology is present.
- Determine whether hydric soils are present.

Under this method, areas exhibiting wetland hydrology, hydric soils, and a dominance of hydrophytic vegetation are defined as wetlands. The method requires that additional consideration be given to sites with "atypical conditions" (evidence of sufficient natural or human-induced alterations that significantly alter the soils, vegetation, or hydrology) and sites where normal environmental conditions are not present during the wetland delineation (no hydrophytic vegetation due to annual or seasonal fluctuations in precipitation or groundwater levels).

Stream channel determinations were made using guidance provided in the Corps of Engineers *Regulatory Guidance Letter for Ordinary High Water Mark Identification* (USACE, 2005) and the North Carolina Department of Natural Resources *Methodology for Identification of Intermittent and Perennial Streams and Their Origins* (2010). The methodology provides geomorphic, hydrologic, and biological attributes useful for evaluating stream classifications. For the purpose of this report, streams are classified as follows:

- A *perennial stream* has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow, and runoff from rainfall is a supplemental source.

- An *intermittent stream* has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for streamflow.
- An *ephemeral stream* has flowing water only during and for a short duration after precipitation events in a typical year. Ephemeral stream beds are above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for streamflow.

All stream channels within the project area mapped as intermittent or perennial on United States Geological Survey 7.5-minute quadrangle maps initially were considered jurisdictional before the field survey as per guidance from Corps of Engineers District staff provided on 02/17/2014. The classification of those channels and all others identified during the survey were then verified, and only those channels considered to be intermittent or perennial were considered jurisdictional Waters of the United States.

Field Documentation

Wetland and stream boundaries within or near the alignment of the preferred alternative trail were recorded during the field survey using a mapping-grade Trimble GeoXH GPS receiver. The units were in US survey feet. All spatial data were recorded using WGS 1984. All data were recorded in accordance with the *SWG Standard Operating Procedures; Recording Jurisdictional Delineations using Global Positioning Systems*. Each point collected was stored within a rover file unique to that day. All spatial data were post-processed by differential correction using GPS Pathfinder Office to achieve sub-meter accuracy. The locations of the features recorded along with the survey corridor were plotted on plan sheets using ESRI ArcGIS.

Wetland data forms for Corps of Engineers Central Plains Region were completed for each identified wetland at a representative location. Several data forms were completed at upland locations that represented typical vegetation communities and land use types found within the Project area. Each identified feature was classified based on the United States Fish and Wildlife Service classification system (Cowardin et al., 1979). Dominant vegetation was noted according to stratum: tree, shrub/sapling, woody vine, or herb. The wetland indicator status for each species was identified using the *National Wetlands Inventory List of Plants That Occur in Wetlands* (Reed, 1988) and subsequent approved modifications to this list. Plants were identified using current taxonomic references, such as *Aquatic and Wetland Plants of the Southeastern United States* (Godfrey and Wooten, 1980; 1981). Where recent taxonomic changes resulted in plant names not on the *National Wetlands Inventory List of Plants that Occur in Wetlands*, appropriate synonymy was used to reference the national list.

Within each area investigated, the soil profile was inspected to a minimum depth of 12 inches for hydric soil indicators, as provided for on the wetland data forms. Using *Munsell Soil Color Charts* (1994), the value and chroma of soil samples were recorded along with soil texture and any observations of redoximorphic features. Observations of wetland hydrology including soil saturation, evidence of any standing or ponded water, the presence of drainage patterns or drift lines, and any additional primary or secondary hydrology indicators were recorded.

Results

Appendix A shows the locations of the potential Waters of the United States features identified during the field work. Field data forms are presented in Appendix B and representative photographs of each feature identified are located in Appendix C. Table 1 lists the potential Waters of the United States features within the proposed project area.

Instream flows observed during the stream delineation survey were considered below normal for winter conditions. Precipitation was well below the long-term average normal for January (0.08 inches) and February 2014 (0.28 inches) according to the Mesonet Oklahoma City North gage (The Oklahoma Mesonet, 2014). The lower precipitation likely had minimal effect on wetland stream baseflow and did not affect the ability to determine WOUS.

Wetlands

Nine jurisdictional wetland features were identified during the field survey. Eight of the features occur within the survey corridor, and one is immediately adjacent to survey corridor. A total of 1.05 acres of wetlands were identified within the survey corridor. All wetland features identified extended beyond the survey corridor and had direct connections to a traditional navigable water, Arcadia Lake. Wetland classifications included Palustrine systems and included Forested, Scrub-Shrub, and Emergent classes. Vegetation was dominated by broad-leaved deciduous species, and water regimes included intermittently, seasonally, semi-permanently, and permanently flooded.

Wetland features identified had vegetation, hydrology, and hydric soil indicators consistent with the requirements for jurisdictional determination provided in the Corps of Engineers manual and the *Great Plains Regional Supplement.* Vegetation generally is dominated by Facultative (FAC) and Facultative Wet (FACW) species, including black willow (*Salix nigra*), American elm (*Ulmus americana*), eastern cottonwood (*Populus deltoids*), sugarberry (*Celtis laevigata*), sedges (*Carex spp*.), and horsetail (*Equisetum arvense*). Indicators of hydrology observed during the field survey included standing water, saturated soils, sediment deposits, drift deposits, iron deposits, water-stained leaves, oxidized rhizospheres, and drainage patterns. Hydric soil indicators included sandy mucky mineral, loamy gleyed matrix, sandy redox, loamy mucky mineral, and loamy gleyed matrix. Each wetland feature identified is described below.

TABLE 1
Potential Waters of the United States Identified within the Proposed Project Area

Feature ID	Footprint within Survey Corridor	Classification[a]	Description
Wetlands			
WET-1	0.08 acres	PSS1F/PFO1F	Palustrine scrub-shrub, broad-leaved deciduous, semi-permanently flooded / palustrine forested, broad-leaved deciduous, semi-permanently flooded
WET-2	0.32 acres	PSS1F	Palustrine scrub-shrub, broad-leaved deciduous, semi-permanently flooded
WET-3	0.28 acres	PFO1J	Palustrine forested, broad-leaved deciduous, intermittently flooded
WET-4	0.0 acres	PFO1Cb	Palustrine forested, broad-leaved deciduous, seasonally flooded, beaver
WET-5	0.01 acres	PSS1J/PEM1J	Palustrine scrub-shrub, broad-leaved deciduous, semi-permanently flooded / palustrine emergent, persistent, intermittently flooded
WET-6	0.05 acres	PFO1F	Palustrine forested, broad-leaved deciduous, semi-permanently flooded
WET-7	0.20 acres	PFO1J	Palustrine forested, broad-leaved deciduous, intermittently flooded
WET-8	0.07 acres	PFO1H	Palustrine forested, broad-leaved deciduous, permanently flooded
WET-9	0.04 acres	PSS1J	Palustrine scrub-shrub, broad-leaved deciduous, semi-permanently flooded
Streams			
PS-1	80 linear feet	R3UB2	Riverine upper perennial, unconsolidated bottom, sand
PS-2	82 linear feet	R3UB2	Riverine upper perennial, unconsolidated bottom, sand
PS-3	123 linear feet	R3UB2	Riverine upper perennial, unconsolidated bottom, sand
IS-1	155 linear feet	R4UB1	Riverine intermittent, unconsolidated bottom, cobble-gravel
IS-2	41 linear feet	R4UB1	Riverine intermittent, unconsolidated bottom, cobble-gravel
IS-3	22 linear feet	R4UB1	Riverine intermittent, unconsolidated bottom, cobble-gravel
IS-4	25 linear feet	R4UB1	Riverine intermittent, unconsolidated bottom, cobble-gravel
IS-5	75 linear feet	R4UB1	Riverine intermittent, unconsolidated bottom, cobble-gravel
IS-6	84 linear feet	R4UB1	Riverine intermittent, unconsolidated bottom, cobble-gravel
IS-7	99 linear feet	R4UB1	Riverine intermittent, unconsolidated bottom, cobble-gravel

[a] Classifications follow Cowardin et al. (1979) for wetlands.

WET-1

Wetland feature WET-1 is classified as Palustrine Scrub-Shrub, Broad-Leaved Deciduous, Semi-permanently Flooded/Palustrine Forested, Broad-Leaved Deciduous, Semi-permanently Flooded (PSS1F/PFO1F). A total of 0.08 acres of WET-1 occur within the survey corridor near original trail segment station 794+81 to 796+89 (Appendix A, Sheets 3 and 3a). The wetland is a relatively flat drainage feature associated with a minor channel. No flowing water was present during the field survey, but soils were saturated. Drift deposits and water marks were observed on vegetation within the wetland. The vegetation is dominated by rough-leaved dogwood (*Cornus drumondii*), black willow, eastern cottonwood, woodoats (*Chasmanthium latifolium*), and sedges (*Carex spp.*). Appendix B, Sheet B-1, presents the wetland determination data form. Appendix C, Image C-1 is a photo of the wetland.

WET-2

Wetland feature WET-2 is classified as Palustrine Scrub-Shrub, Broad-Leaved Deciduous, Semi-permanently Flooded (PSS1F). A total of 0.32 acres of WET-2 occur within the survey corridor near original trail segment station 797+88 to 798+32 (Appendix A, Sheets 3 and 3a). WET-2 originates from the box culvert beneath Highway 66 that allows water to flow from north to south; then it becomes a shallow depressional feature. No flowing water was present during the field survey, but surface water was present at a depth of 2 inches within the wetland interior and the perimeter soils were saturated. Drift deposits and water marks were observed on the vegetation. The vegetation is dominated by shrubs including smooth sumac (*Rhus glabra*), rough-leaved dogwood, and small eastern red cedar. Sparse canopy species include eastern cottonwood, black willow, eastern red cedar, and Osage orange (*Maclura pomifera*). Appendix B, Sheet B-2, presents the wetland determination data form. Appendix C, Image C-2, is a photo of the wetland.

WET-3

Wetland feature WET-3 is classified as Palustrine Forested, Broad-Leaved Deciduous, Intermittently Flooded (PFO1J). A total of 0.28 acres of WET-3 occur within the survey corridor near original trail segment station 108+88 to 110+66 and 116+47 to 118+24 (Appendix A, Sheets 5 and 5a). WET-3 is a bottomland hardwood wetland extending slightly upslope from a cove of Arcadia Lake. Two surface water features historically entered this wetland from the west and northwest. The western surface water feature is impounded off USACE property by an earthen dam creating a small pond. Intermittent stream IS-1 enters WET-3 from the northwest, draining a single family residential neighborhood. No surface water or saturated soils were observed during the field survey. Alluvial sand deposits were observed near the place where IS-1 enters WET-3. Water marks were observed on vegetation within the wetland. The vegetation is dominated by canopy species black willow, American elm, silver maple (*Acer saccharinum*), sugarberry, and sycamore. The dominant shrub species is button bush (*Cephalanthus occidentalis*). Appendix B, Sheet B-3, presents the wetland determination data form. Appendix C, Image C-3, is a photo of the wetland.

WET-4

Wetland feature WET-4 is classified as Palustrine Forested, Broad-Leaved Deciduous, Seasonally Flooded, Beaver (PFO1Cb). No part of WET-4 occurs within the survey corridor near original trail segment station 249+77 to 251+57 (Appendix A, Sheets 7 and 7a). WET-4 is a bottomland hardwood wetland extending slightly upslope from a cove of Arcadia Lake. A small ephemeral drainage feature enters the wetland from the northwest. Evidence of an incomplete beaver dam and associated clearing of vegetation by beavers was observed within the wetland. Surface water roughly 1 to 2 inches deep was present within the wetland's interior, and saturated soils extend towards the wetlands perimeter. Heavy alluvial sand deposits were observed throughout WET-4 along with drift deposits. The vegetation is dominated by canopy species American elm, sycamore, and sugarberry. Some eastern red cedar is present in the wetland. The dominant shrub species is button bush (*Cephalanthus occidentalis*). Appendix B, Sheet B-4, presents the wetland determination data form. Appendix C, Image C-4 is a photo of the wetland

WET-5

Wetland feature WET-5 is classified as Palustrine Scrub-Shrub, Broad-Leaved Deciduous, Semi-permanently Flooded / Palustrine Emergent, Persistent, Intermittently Flooded (PSS1J/PEM1J). A total of 0.01 acres of WET-3 occur within the survey corridor near the original trail segment station 260+71 to 265+09 (Appendix A, Sheets 7 and 7a). WET-5 is a mix of scrub-shrub and persistent emergent wetland habitats. It is part of a larger wetland complex extending slightly upslope from a cove of Arcadia Lake. The southernmost edge of the wetland is bound by the large cobble riprap and earthen fill material from the East Memorial Road causeway, which crosses Arcadia Lake from east to west. Evidence of flood water drift deposits along the causeway were observed. At the time of the field survey, the water table within WET-5 was observed to be 7 inches below ground. Sandy redox features were observed within the soil profile just above the water table. Large stream gravel was present throughout the soil profile, indicating that the wetland likely was a lotic (stream) feature before the creation of the lake. The vegetation is dominated by Johnsongrass, particularly

along the causeway, buttonbush, and sparse canopy species such as American elm and black walnut (*Juglans nigra*). Several other species of forbs were present during the field survey but had senesced during the winter and could not be identified. Appendix B, Sheet B-5, presents the wetland determination data form. Appendix C, Image C-5, is a photo of the wetland.

WET-6

Wetland feature WET-6 is classified as Palustrine Forested, Broad-Leaved Deciduous, Semi-permanently Flooded (PFO1F). A total of 0.05 acres of WET-6 occur within the survey corridor near original trail segment station 344+44 to 345+06, Appendix A, Sheets 8 and 8a. WET-6 is a bottomland hardwood wetland extending slightly upslope from a cove of Arcadia Lake. A small excavated area was observed within WET-6 with surface water present about 2 to 3 inches deep. Soils were saturated to the surface throughout WET-6 during the field survey. The vegetation was dominated by canopy species eastern cottonwood, black willow, American elm, and sugarberry. The dominant subcanopy species was white ash (*Fraxinus americana*). Appendix B, Sheet B-6, presents the wetland determination data form. Appendix C, Image C-6 is a photo of the wetland

WET-7

Wetland feature WET-7 is classified as Palustrine Forested, Broad-Leaved Deciduous, Intermittently Flooded (PFO1J). A total of 0.20 acres of WET-7 occur within the survey corridor near original trail segment station 464+30 to 465+41 and 468+82 to 470+33, Appendix A, Sheets 9 and 9a. WET-7 is the forested littoral wetland fringe of Arcadia Lake around Eagle Cove occurring on both sides of Eagle Cove. It is readily inundated when lake stages are above the normal pool elevation and is dominated by vegetation capable of withstanding floodwater inundation. Water marks were readily observed on persistent vegetation. Surface water in Arcadia Lake was roughly 1 to 2 feet below ground at the time of the field survey. The vegetation is dominated by subcanopy size black willow, eastern cottonwood, American elm, and sugarberry. The dominant shrub species is button bush. Johnsongrass had invaded some areas of the wetland. Appendix B, Sheet B-7, presents the wetland determination data form. Appendix C, Image C-7, is a photo of the wetland.

WET-8

Wetland feature WET-8 is classified as Palustrine Forested, Broad-Leaved Deciduous, Permanently Flooded (PFO1H). A total of 0.07 acres of WE-8 occur within the survey corridor near original trail segment station 539+89 to 540+82 (Appendix A, Sheets 10 and 10a). WET-8 is predominantly a forested wetland with areas of emergent habitat. The area where WET-8 was identified historically was a surface water drainage feature, but the surface water is impounded by an earthen dike creating a farm pond upstream off the USACE property. Constant seepage from the dike and the occasional discharge of impounded waters provide the wetland's hydrology. Surface water was present in parts of the wetland at a depth of 1 to 2 inches. Soils were saturated to the surface throughout the rest of the wetland. The vegetation is dominated by canopy species white ash, eastern cottonwood, and black willow. Emergent herbaceous species included sedges (*Carex spp.*), horsetail, and various grasses (*Panicum spp*.). Appendix B, Sheet B-8, presents the wetland determination data form. Appendix C, Image C-8, is a photo of the wetland.

WET-9

Wetland feature WET-9 is classified as Palustrine Scrub-Shrub, Broad-Leaved Deciduous, Semi-permanently Flooded (PSS1J). A total of 0.04 acres of WET-9 occur within the survey corridor near original and alternative trail segment station 762+27 to 763+46 (Appendix A, Sheets 15 and 15a). WET-9 is a scrub-shrub depressional wetland that has developed in a roadside swale along Highway 66 and connects directly to intermittent stream IS-6. No surface water was present and no saturated soils were observed. The water table was more than 12 inches below ground during the field survey. The sparse vegetation is dominated by canopy species black willow, eastern cottonwood, white ash, honey locust (*Gleditsia triacanthos*). Herbaceous species are dominated by Johnsongrass. Appendix B, Sheet B-9, presents the wetland determination data form. Appendix C, Image C-9, is a photo of the wetland.

Streams

Ten jurisdictional stream channels were identified during the field survey. Part of each stream channel occurs within and extends beyond the survey corridor, and has downstream connections to Arcadia Lake, a traditional navigable water. A total of 786 linear feet of jurisdictional stream channel was identified within the survey corridor. The ordinary high water mark was considered to be the top of the stream bank for each stream channel identified. Jurisdictional stream channels included those classified as Perennial and Intermittent during the preliminary desktop review and verified during subsequent field surveys. Stream channels classified as Ephemeral were not considered jurisdictional. Stream channel classifications included Riverine systems, Upper Perennial and Intermittent subsystems, Unconsolidated Bottom class, and either Cobble-Gravel or Sand subclasses.

Perennial Streams

Perennial stream channels PS-1, PS-2, and PS-3 were identified during the field study. A total of 285 linear feet of perennial stream channel was identified within the survey corridor. The only named perennial stream that crosses the original trail segment near station 885+33 (Appendix A, Sheets 3 and 3a) is Spring Creek (PS-1), just east of I-35 and the associated frontage road. Spring Creek connects directly downstream to Arcadia Lake. Perennial stream channels PS-2 and PS-3 enter wetland features before connecting with the lake. PS-2 crosses the alternative trail segment near station 803+25 (Appendix A, Sheets 3 and 3a). PS-3 crosses the original and alternative trail segments near station 239+48 (Appendix A, Sheets 7 and 7a). Each stream channel identified had flowing water during the field survey. The substrate in the stream channels is sand. Indicators of perennial hydrology observed in each streams included continuous channel bed and banks, strongly developed in-channel structures (riffles and pools), presence of depositional bars and benches, presence of recent alluvial deposits, presence of baseflow, and absence of leaf litter accumulations within the channel. Appendix C, Images C-10, C-11, and C-12, are photos of the perennial stream channels.

Intermittent Streams

Intermittent stream channels IS-1 through IS-7 were identified during the field study. A total of 501 linear feet of intermittent stream channels were identified within the survey corridor. Appendix A, Sheets 2 through 15a show the locations of the intermittent stream locations crossing the original and alternative trail segments. No flowing water was observed in any intermittent stream channel during the field survey, but some isolated pools were present in some stream channels. Substrate in each stream channel comprises small cobbles and gravel. Indicators of intermittent hydrology observed in each stream included continuous channel bed and banks, moderately developed in-channel structures (riffles and pools), the presence of recent alluvial deposits, some drift lines, and the near absence of leaf litter accumulations within the channel. Appendix C, Images C-13 through C-19, are photos of the intermittent stream channels.

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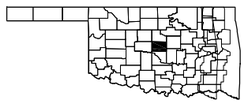
Appendix A
Figures

LOCATION MAP

OKLAHOMA COUNTY



SCALES

TRAIL LAYOUT PLANS: 1"=50' (22"X34" SHEET)

SCALES MAY VARY FOR SOME PLANS. REFER TO THE GRAPHIC SCALE INCLUDED WITH EACH SHEET (TYP.)

CITY OF EDMOND

PLAN OF THE PROPOSED

ARCADIA LAKE TRAIL

WETLAND AND STREAM DELINEATION

LPCI PROJECT NUMBER 532.00

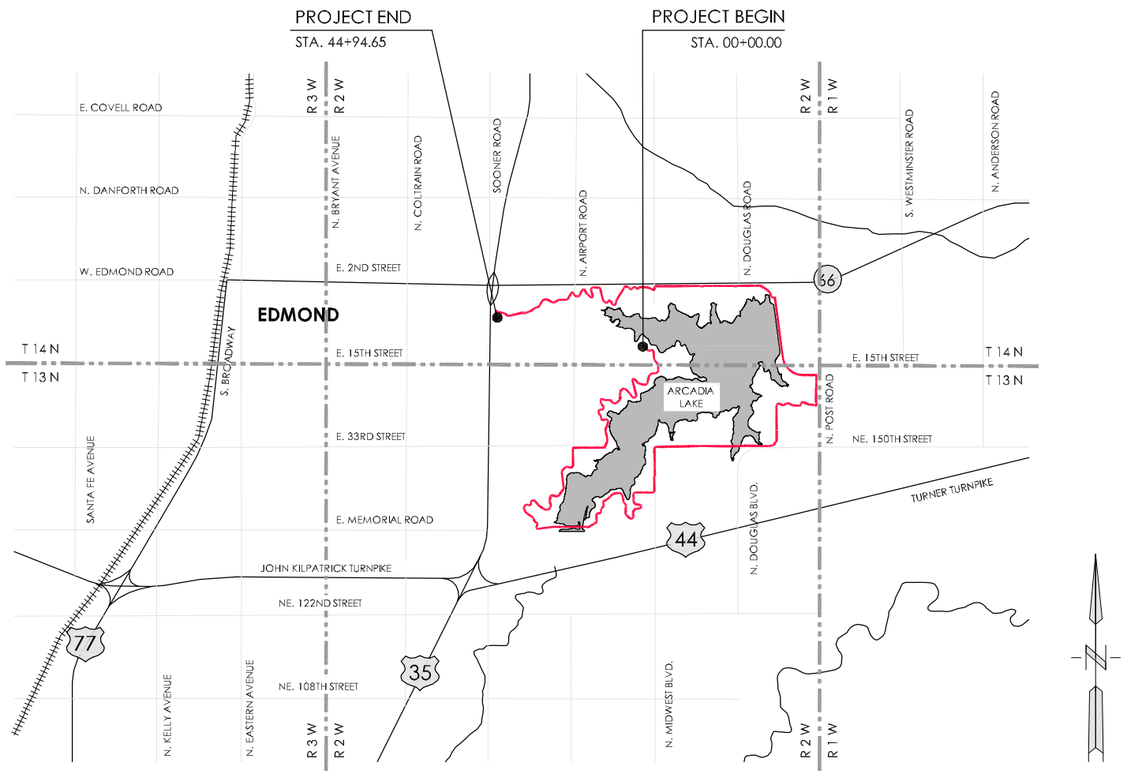
SURVEY DATUM

HORIZONTAL CONTROL: BASED ON NAD 83 (93)
BASIS OF BEARING: STATE PLANE COORDINATES - OK NORTH ZONE, U.S. FEET

VERTICAL CONTROL: NAVD 88 FORMULA

SITE LOCATION:

SECTION 34	TOWNSHIP 14N	RANGE 2W
SECTION 35	TOWNSHIP 14N	RANGE 2W
SECTION 36	TOWNSHIP 14N	RANGE 2W
SECTION 1	TOWNSHIP 13N	RANGE 2W
SECTION 12	TOWNSHIP 13N	RANGE 2W
SECTION 11	TOWNSHIP 13N	RANGE 2W
SECTION 2	TOWNSHIP 13N	RANGE 2W
SECTION 10	TOWNSHIP 13N	RANGE 2W
SECTION 15	TOWNSHIP 13N	RANGE 2W
SECTION 16	TOWNSHIP 13N	RANGE 2W
SECTION 9	TOWNSHIP 13N	RANGE 2W
SECTION 4	TOWNSHIP 13N	RANGE 2W
SECTION 3	TOWNSHIP 13N	RANGE 2W



BEFORE YOU DIG CALL OKIE

GENERAL NOTES:

This Design is specifically prepared for use at the location shown. Use in any other manner exceeds the intended purpose of these drawings and any accompanying specifications.

All construction shall be in strict accordance with current City of Edmond Codes, Standards and Specifications. Back fill in buried conduit trenches shall be compacted to 95% proctor density.

Contractor shall be responsible for damage to near by structures, paving, utilities, and all other items located within the work area. All damage outside the work area shall be repaired at contractor expense.

Contractors will coordinate with identified maintenance operations personnel for application and removal of utilities.

1992 Edmond Standard Specifications for Construction Govern.

VICINITY MAP

SCALE: 1" = 500'

CITY OF EDMOND

POPULATION 81,405

ENTIRE PROJECT IS WITHIN THE CORPORATE

LandPlan Consultants, Inc. 1110 West 23rd Street
Tulsa, OK 74107 (918) 584-6464

PRELIMINARY FOR REVIEW
4-2-14

The City of EDMOND

VICTORIA CALDWELL, Council Member
CHARLES LAMB, Mayor
LARRY STEVENS, City Manager
STEVE MURDOCK, City Attorney
DARRELL DAVIS, Council Member
ELIZABETH WANER, Council Member
NICK MASSEY, Council Member

CITY OF EDMOND CONTACTS

- Craig Dishman, Director of Parks and Recreation (405)359-4630
- Steve Lawrence, Public Works Engineer (405) 359-4798

SHEET INDEX

SHEET		TITLE
1	--	TITLE SHEET
2	--	WETLANDS KEYMAP
3	--	REVISED TRAIL LAYOUT AND WETLAND MITIGATION (1)
3a	--	REVISED TRAIL LAYOUT AND WETLAND MITIGATION (1) ENLARGED
4	--	REVISED TRAIL LAYOUT AND WETLAND MITIGATION (2)
5	--	REVISED TRAIL LAYOUT AND WETLAND MITIGATION (3)
5a	--	REVISED TRAIL LAYOUT AND WETLAND MITIGATION (3) ENLARGED
6	--	REVISED TRAIL LAYOUT AND WETLAND MITIGATION (4)
7	--	REVISED TRAIL LAYOUT AND WETLAND MITIGATION (5)
7a	--	REVISED TRAIL LAYOUT AND WETLAND MITIGATION (5) ENLARGED
8	--	REVISED TRAIL LAYOUT AND WETLAND MITIGATION (6)
8a	--	REVISED TRAIL LAYOUT AND WETLAND MITIGATION (6) ENLARGED
9	--	REVISED TRAIL LAYOUT AND WETLAND MITIGATION (7)
9a	--	REVISED TRAIL LAYOUT AND WETLAND MITIGATION (7) ENLARGED
10	--	REVISED TRAIL LAYOUT AND WETLAND MITIGATION (8)
10a	--	REVISED TRAIL LAYOUT AND WETLAND MITIGATION (8) ENLARGED
11	--	REVISED TRAIL LAYOUT AND WETLAND MITIGATION (9)
12	--	REVISED TRAIL LAYOUT AND WETLAND MITIGATION (10)
13	--	REVISED TRAIL LAYOUT AND WETLAND MITIGATION (11)
13a	--	REVISED TRAIL LAYOUT AND WETLAND MITIGATION (11) ENLARGED
14	--	REVISED TRAIL LAYOUT AND WETLAND MITIGATION (12)
14a	--	REVISED TRAIL LAYOUT AND WETLAND MITIGATION (12) ENLARGED
15	--	REVISED TRAIL LAYOUT AND WETLAND MITIGATION (13)
15a	--	REVISED TRAIL LAYOUT AND WETLAND MITIGATION (13) ENLARGED

EDMOND STANDARD DETAIL SHEETS

ODOT STANDARD DETAIL SHEETS

UTILITY OWNERS

EDMOND ELECTRIC	(405) 216-7660
OG&E	(405) 272-9595
OKLAHOMA NATURAL GAS	(800) 458-4251
SOUTHWESTERN BELL TELEPHONE (SBC)	(580) 767-9206
EDMOND WATER & SEWER LINES	(405) 359-4541
COX CABLE	(405) 600-7676

ONE CALL UTILITY LOCATION NUMBER
(405) 840-5032
(800) 522-6543

THIS NUMBER IS TO BE USED FOR INFORMATION ON THE LOCATION OF ALL UNDERGROUND UTILITIES. CONTACT THIS NUMBER AND OTHER SPECIFIED NUMBERS IN THE PLANS PRIOR TO ANY EXCAVATION.

PREPARED BY:

KEITH R. FRANKLIN, ASLA DATE
LANDPLAN CONSULTANTS, INC.

PREPARED BY:

STEVE EAKINS DATE
CH2MHILL

ARCADIA LAKE TRAIL

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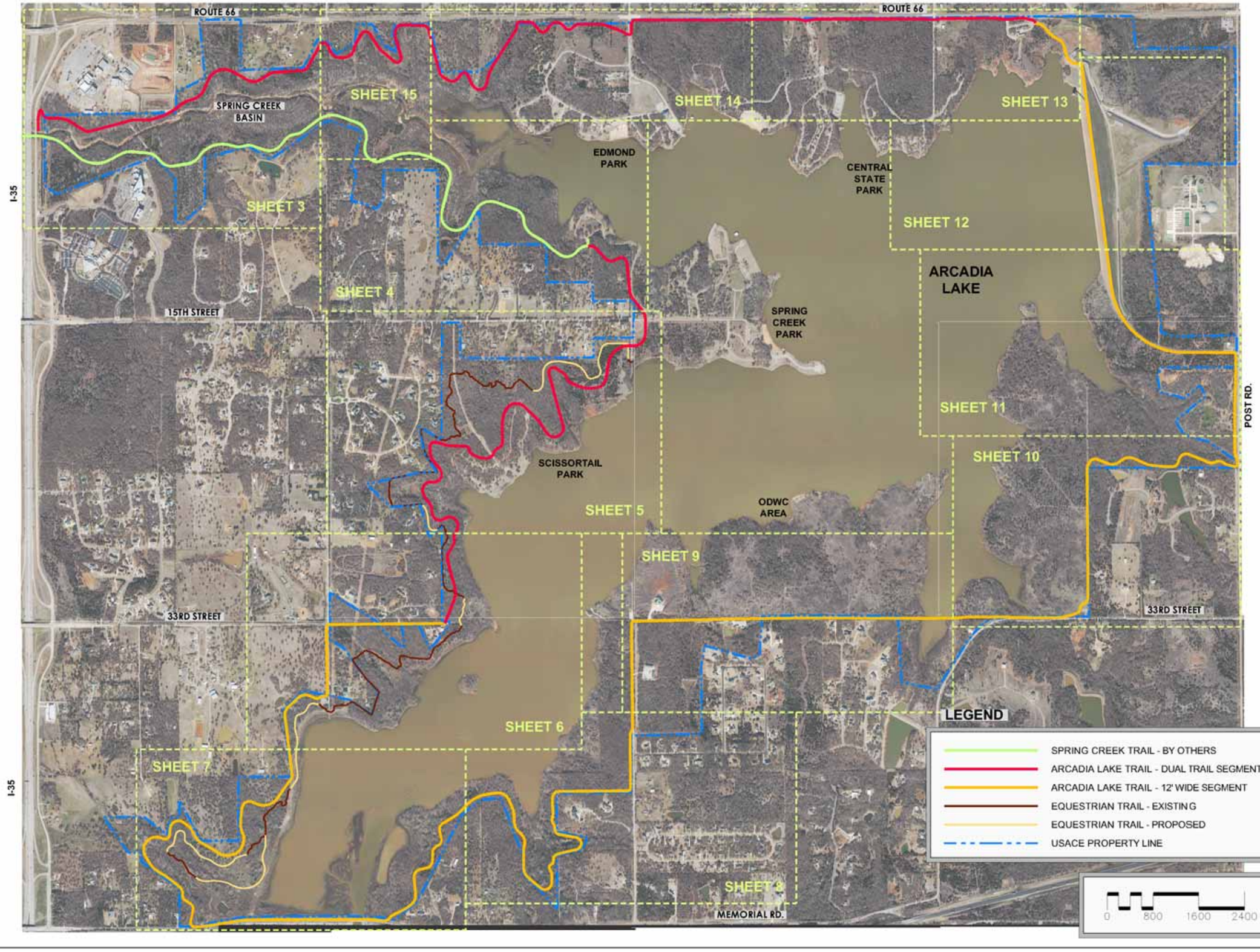


LANDPLAN CONSULTANTS INCORPORATED
1110 West 23rd
Tulsa, OK 74107
(918) 584-6464

Seal:

Arcadia Lake Trail

Edmond, Oklahoma

Wetlands Keymap

Revisions:

North

Design		
Drawn		
Checked		
Approved		

BEFORE YOU DIG 1-800-522-6543 CALL OKIE

Sheet: 2 of 15

F:\532-Lake Arcadia Trail\File Transfer\Incoming\Phil Jones-Arcadia Lake\Crafton Tull\CAD\2014 BASE ACT\532-ArcadiaBase\MPTrail.dwg, KeyMap, 4/2/2014 9:42:44 AM

LEGEND

- SPRING CREEK TRAIL - BY OTHERS
- PROPOSED ORIGINAL TRAIL ALIGNMENT
- REVISED ALIGNMENT - 12' WIDE TRAIL
- REVISED ALIGNMENT - DUAL TRAIL
- EQUESTRIAN TRAIL - EXISTING
- EQUESTRIAN TRAIL -PROPOSED
- USACE PROPERTY LINE
- ELEVATION 1023 - HIGH POOL
- FEMA 100 YEAR FLOODPLAIN
- ORIGINAL TRAIL CORRIDOR - 40' EACH SIDE OF TRAIL CENTERLINE
- ALTERNATE TRAIL CORRIDOR - 40' EACH SIDE OF ALTERNATE TRAIL CENTERLINE
- WETLAND DELINEATION AREA
- STREAM DELINEATION AREA

ROUTE 66

WET-2 (PSS1F)

WET-1 (PSS1F / PFO1F)

PS-2 (R3UB2)

LIFECHURCH.tv

SPRING CREEK BASIN

SPRING CREEK

PS-1 (R3UB2)

I-35

E. FRONTAGE RD.

INTEGRIS HEALTH EDMOND

0 200 400 600

LANDPLAN CONSULTANTS INCORPORATED

1110 West 23rd
Tulsa, OK 74107
(918) 584-6464

Seal:

Arcadia Lake Trail

Edmond, Oklahoma

Revised Trail Layout and Wetland Mitigation (1)

Revisions:

North

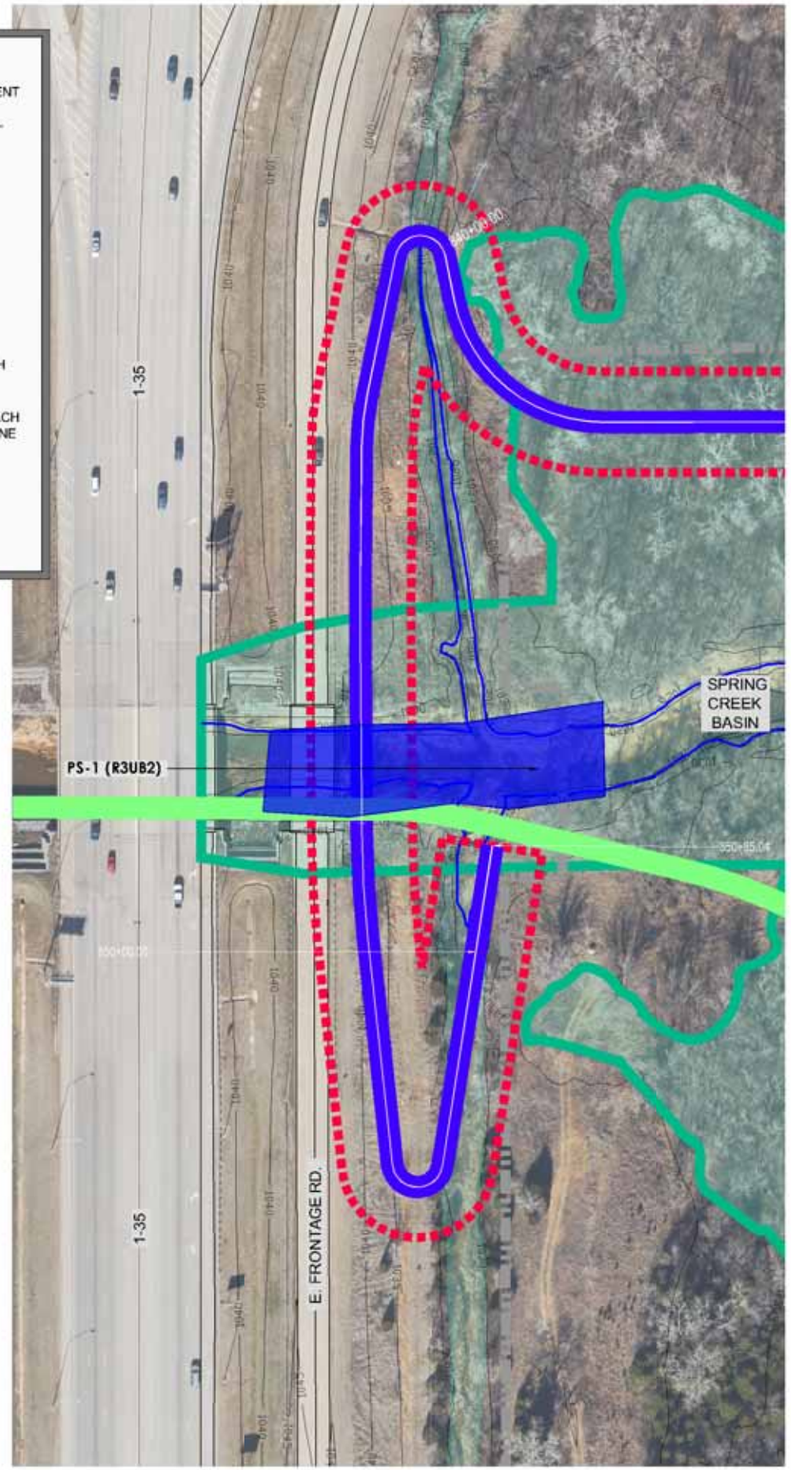
Design		
Drawn		
Checked		
Approved		

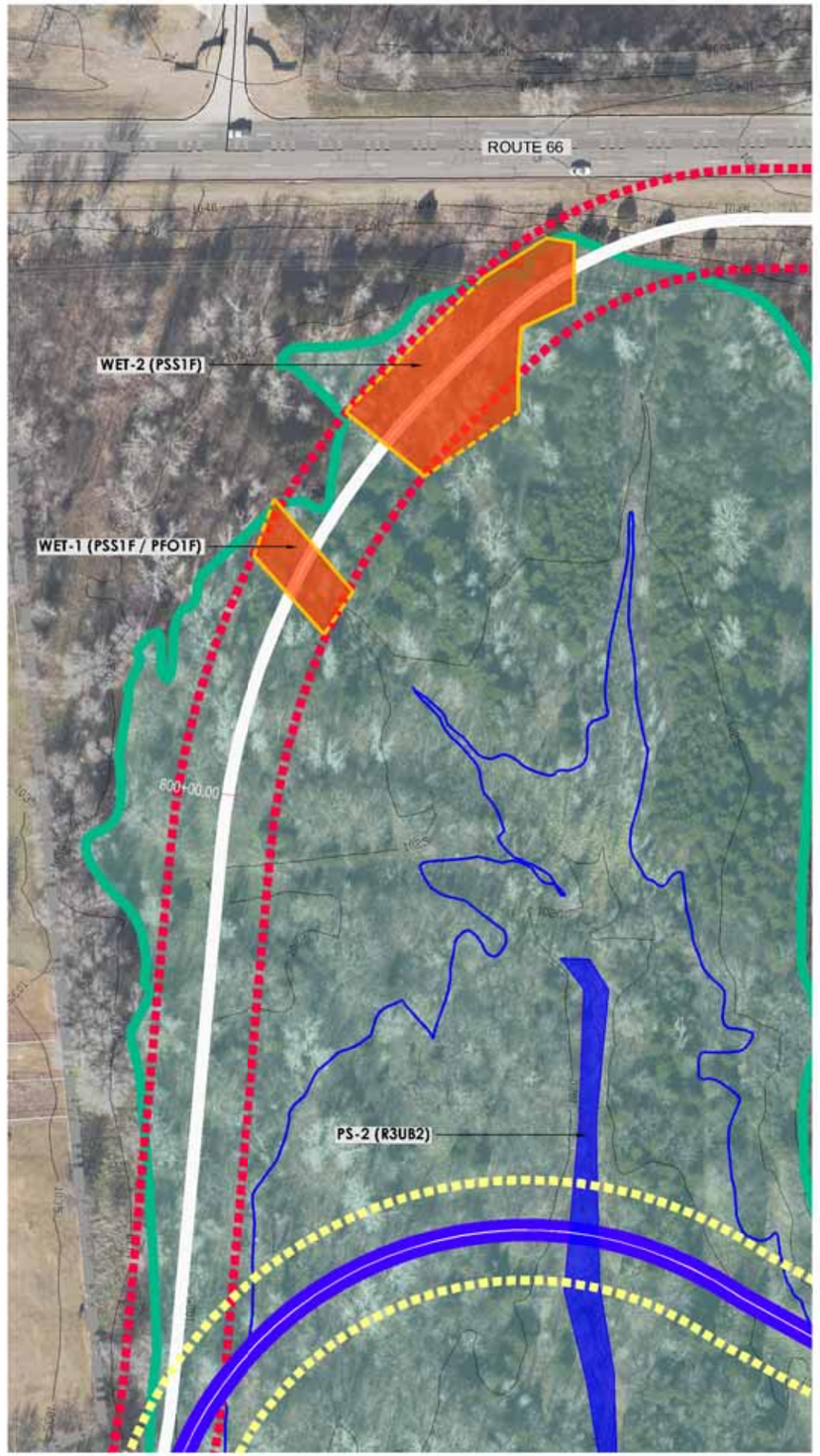
BEFORE YOU DIG 1-800-522-6543 CALL OKIE

Sheet: 3 of 15

LEGEND

- SPRING CREEK TRAIL - BY OTHERS
- PROPOSED ORIGINAL TRAIL ALIGNMENT
- REVISED ALIGNMENT - 12' WIDE TRAIL
- REVISED ALIGNMENT - DUAL TRAIL
- EQUESTRIAN TRAIL - EXISTING
- EQUESTRIAN TRAIL -PROPOSED
- USACE PROPERTY LINE
- ELEVATION 1023 - HIGH POOL
- FEMA 100 YEAR FLOODPLAIN
- ORIGINAL TRAIL CORRIDOR - 40' EACH SIDE OF TRAIL CENTERLINE
- ALTERNATE TRAIL CORRIDOR - 40' EACH SIDE OF ALTERNATE TRAIL CENTERLINE
- WETLAND DELINEATION AREA
- STREAM DELINEATION AREA





0 60 120 180

LANDPLAN CONSULTANTS INCORPORATED
1110 West 23rd
Tulsa, OK 74107
(918) 584-6464

Seal:

Arcadia Lake Trail
Edmond, Oklahoma
Revised Trail Layout and Wetland Mitigation (1)

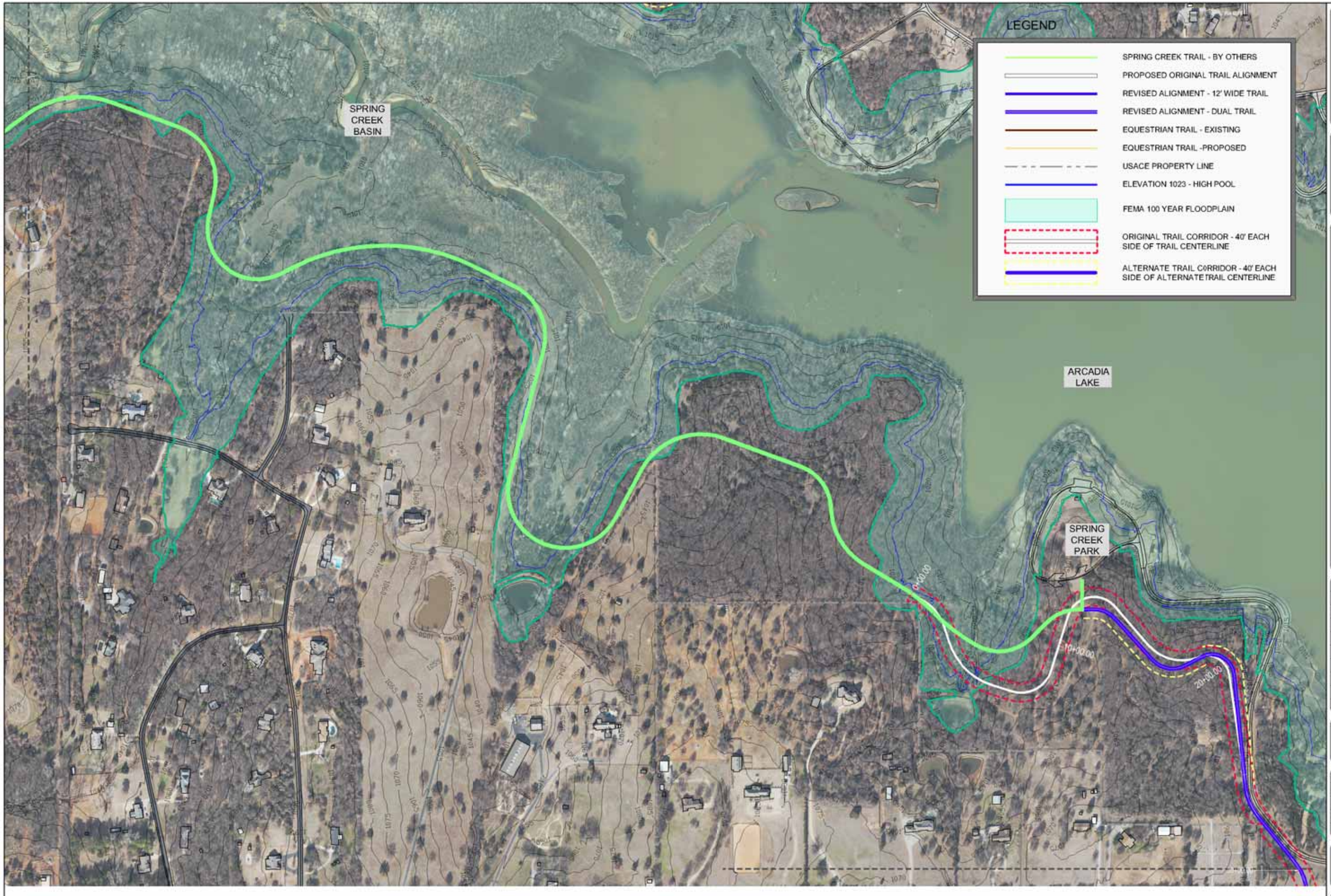
Revisions:

North

Design		
Drawn		
Checked		
Approved		

BEFORE YOU DIG — 1-800-522-6543 CALL OKIE

Sheet: 3a of 15



LEGEND

- SPRING CREEK TRAIL - BY OTHERS
- PROPOSED ORIGINAL TRAIL ALIGNMENT
- REVISED ALIGNMENT - 12' WIDE TRAIL
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Tulsa, OK 74107
(918) 584-6464

Seal:

Arcadia Lake Trail

Edmond, Oklahoma

Revised Trail Layout and Wetland Mitigation (2)

Revisions:

North

Design		
Drawn		
Checked		
Approved		

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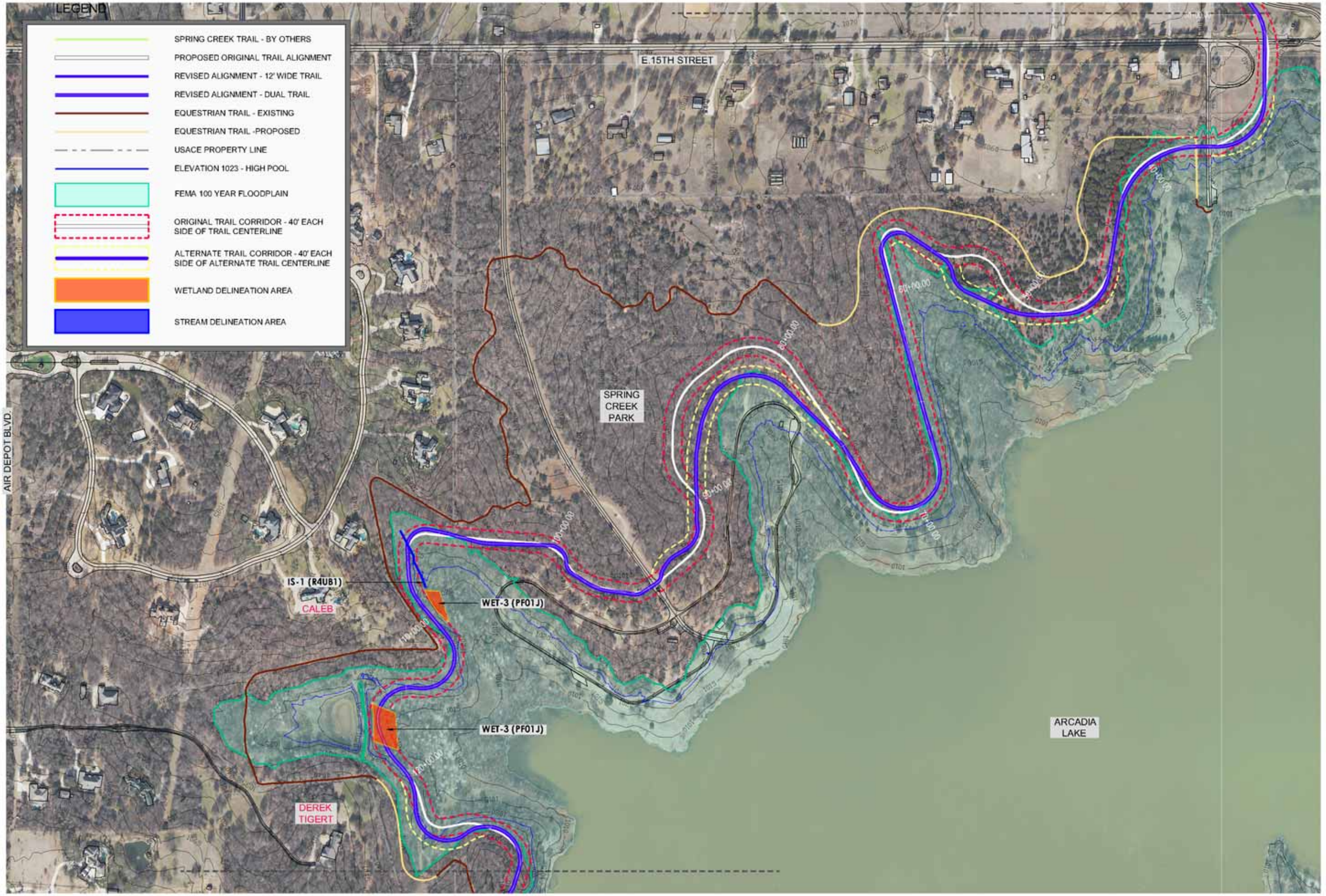
Sheet: 4 of 15



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1110 West 23rd
Tulsa, OK 74107
(918) 584-6464

Seal:

Arcadia Lake Trail

Edmond, Oklahoma

Revised Trail Layout and Wetland Mitigation (3)

Revisions:

North

Design		
Drawn		
Checked		
Approved		

BEFORE YOU DIG — CALL OKIE

Sheet: 5 of 15

LEGEND

- SPRING CREEK TRAIL - BY OTHERS
- PROPOSED ORIGINAL TRAIL ALIGNMENT
- REVISED ALIGNMENT - 12' WIDE TRAIL
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- WETLAND DELINEATION AREA
- STREAM DELINEATION AREA

AIR DEPOT BLVD.

IS-1 (R4UB1)

WET-3 (PF01J)

WET-3 (PF01J)

ARCADIA LAKE

0 60 120 180

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(918) 584-6464

Seal:

Arcadia Lake Trail

Edmond, Oklahoma

Revised Trail Layout and Wetland Mitigation (3)

Revisions:

North

Design		
Drawn		
Checked		
Approved		

BEFORE YOU DIG ... 1-800-522-6543 CALL OKIE

Sheet: 5a of 15

LEGEND

- SPRING CREEK TRAIL - BY OTHERS
- PROPOSED ORIGINAL TRAIL ALIGNMENT
- REVISED ALIGNMENT - 12' WIDE TRAIL
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- ORIGINAL TRAIL CORRIDOR - 40' EACH SIDE OF TRAIL CENTERLINE

ARCADIA LAKE

LAKEWOOD RIDGE RD.

E. 33RD STREET

AIR DEPOT BLVD.

TERRY SPENCER

SHANNON EDWARDS

LANCE DUKE

130+00.00

150+00.00

160+00.00

170+00.00

190+00.00

0 200 400 600

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Seal:

Arcadia Lake Trail

Edmond, Oklahoma

Revised Trail Layout and Wetland Mitigation (4)

Revisions:

North

Design		
Drawn		
Checked		
Approved		

BEFORE YOU DIG — 1-800-522-6543 CALL OKIE

Sheet: 6 of 15

LEGEND

- SPRING CREEK TRAIL - BY OTHERS
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- ALTERNATE TRAIL CORRIDOR - 40' EACH SIDE OF ALTERNATE TRAIL CENTERLINE
- WETLAND DELINEATION AREA
- STREAM DELINEATION AREA

ARCADIA LAKE

PS-3 (R3UB2)

WET-4 (PFO1Cb)

WET-5 (PSS1J / PEM1J)

E. MEMORIAL RD.

DEEP FORK PT.

0 200 400 600

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Tulsa, OK 74107
(918) 584-6464

Seal:

Arcadia Lake Trail

Edmond, Oklahoma

Revised Trail Layout and Wetland Mitigation (5)

Revisions:

North

Design		
Drawn		
Checked		
Approved		

BEFORE YOU DIG 1-800-522-6543 CALL OKIE

Sheet: 7 of 15

LEGEND

- SPRING CREEK TRAIL - BY OTHERS
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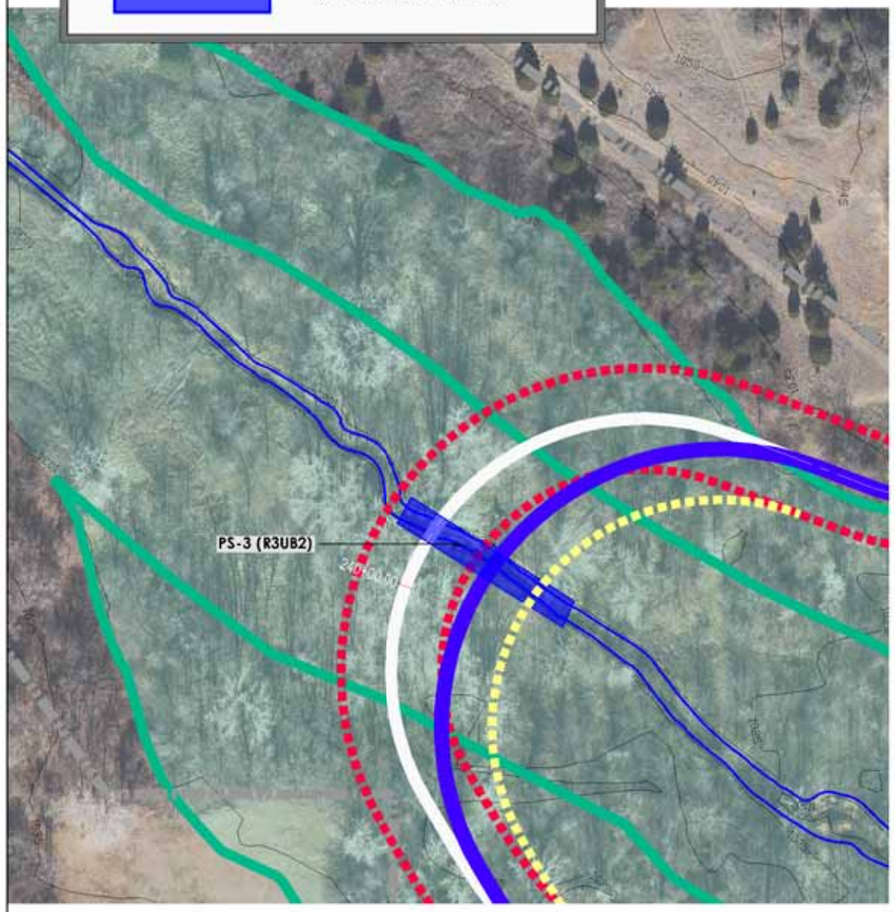
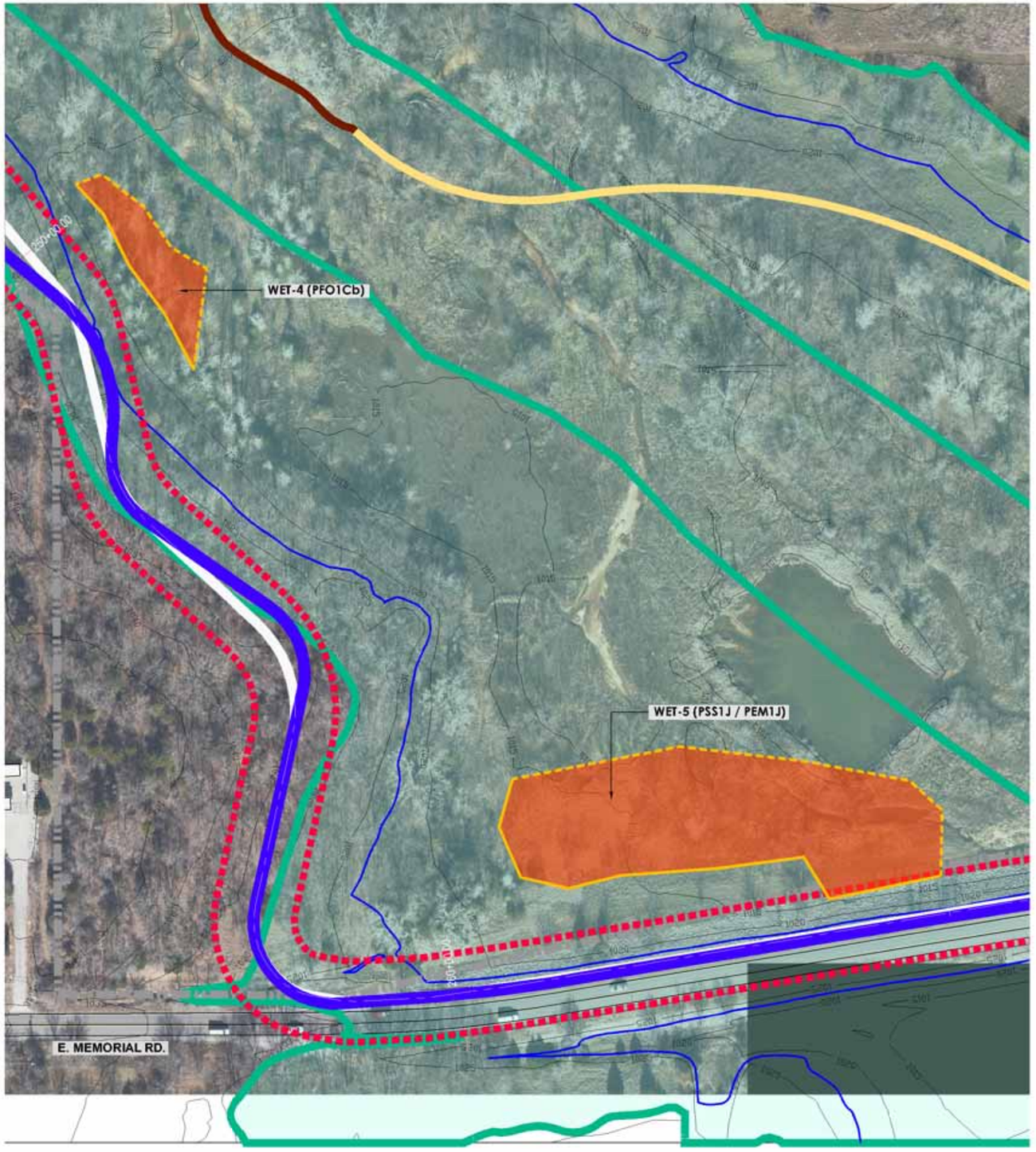
- STREAM DELINEATION AREA





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Seal:

Arcadia Lake Trail
Edmond, Oklahoma
Revised Trail Layout and Wetland Mitigation (5)

Revisions:

North

Design			
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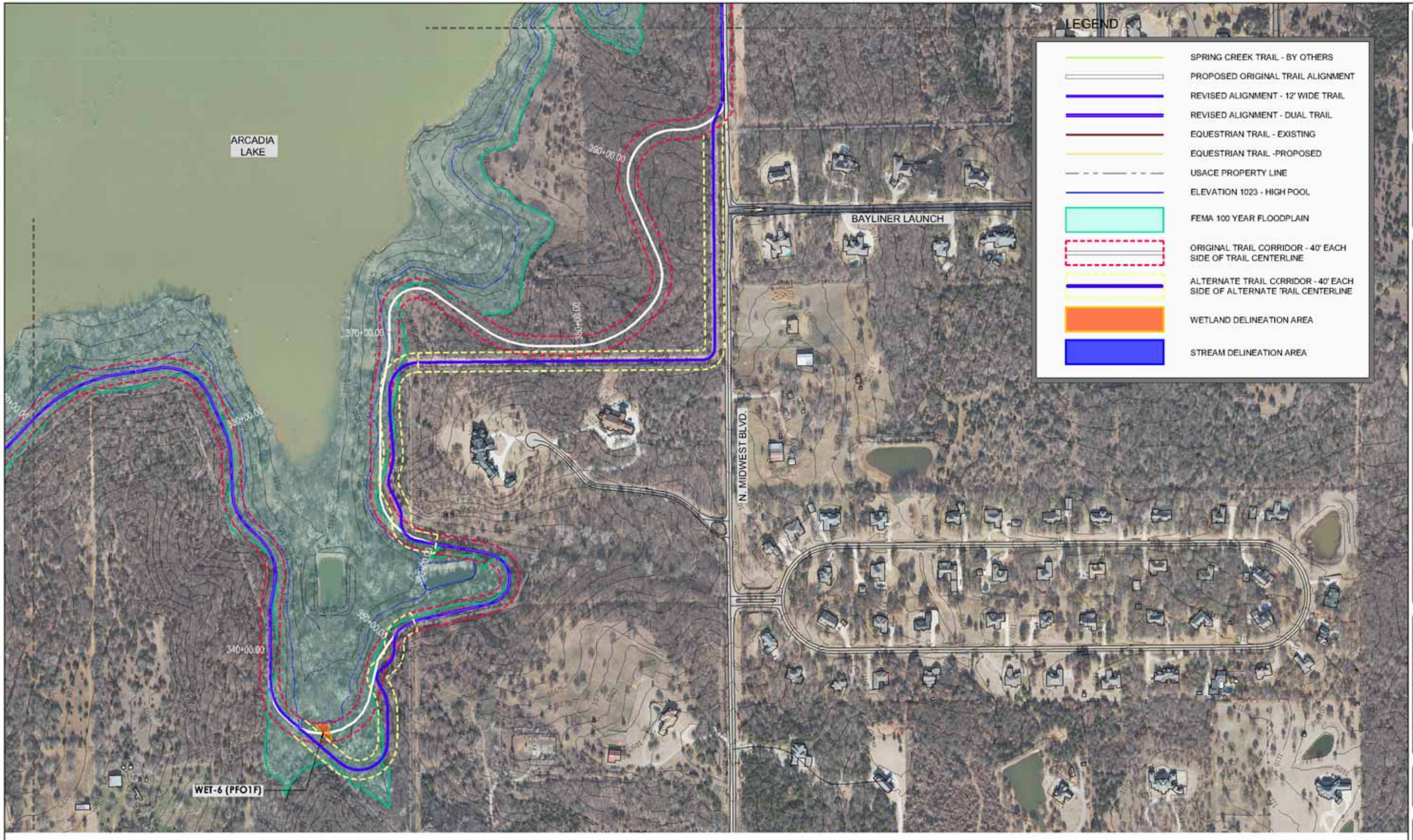
Sheet: 7a of 15



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(918) 584-6464

Seal:

Arcadia Lake Trail

Edmond, Oklahoma

Revised Trail Layout and Wetland Mitigation (6)

Revisions:

North

Design		
Drawn		
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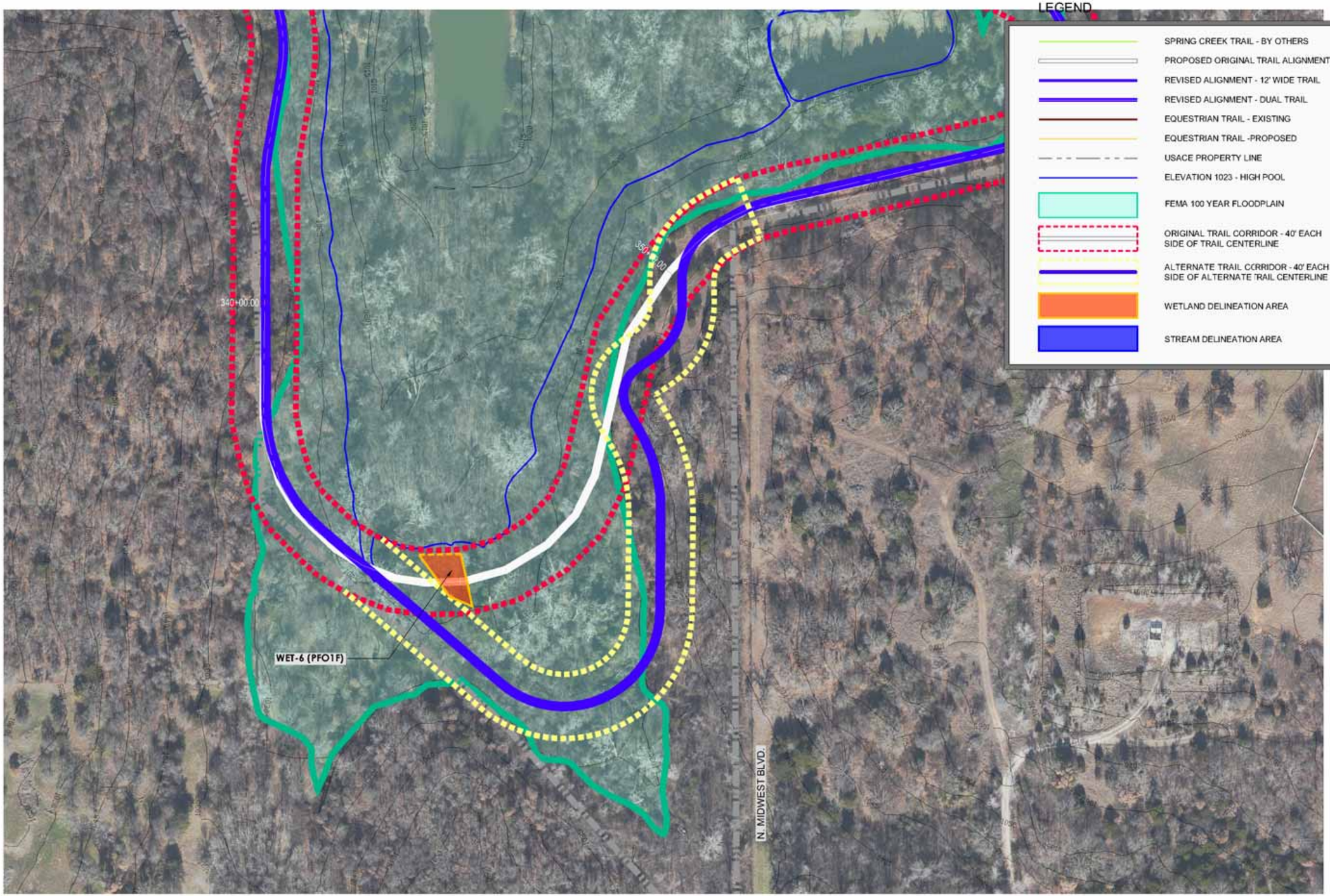
Sheet: 8 of 15



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Tulsa, OK 74107
(918) 584-6464

Seal:

Arcadia Lake Trail

Edmond, Oklahoma

Revised Trail Layout and Wetland Mitigation (6)

Revisions:

North

Design		
Drawn		
Checked		
Approved		

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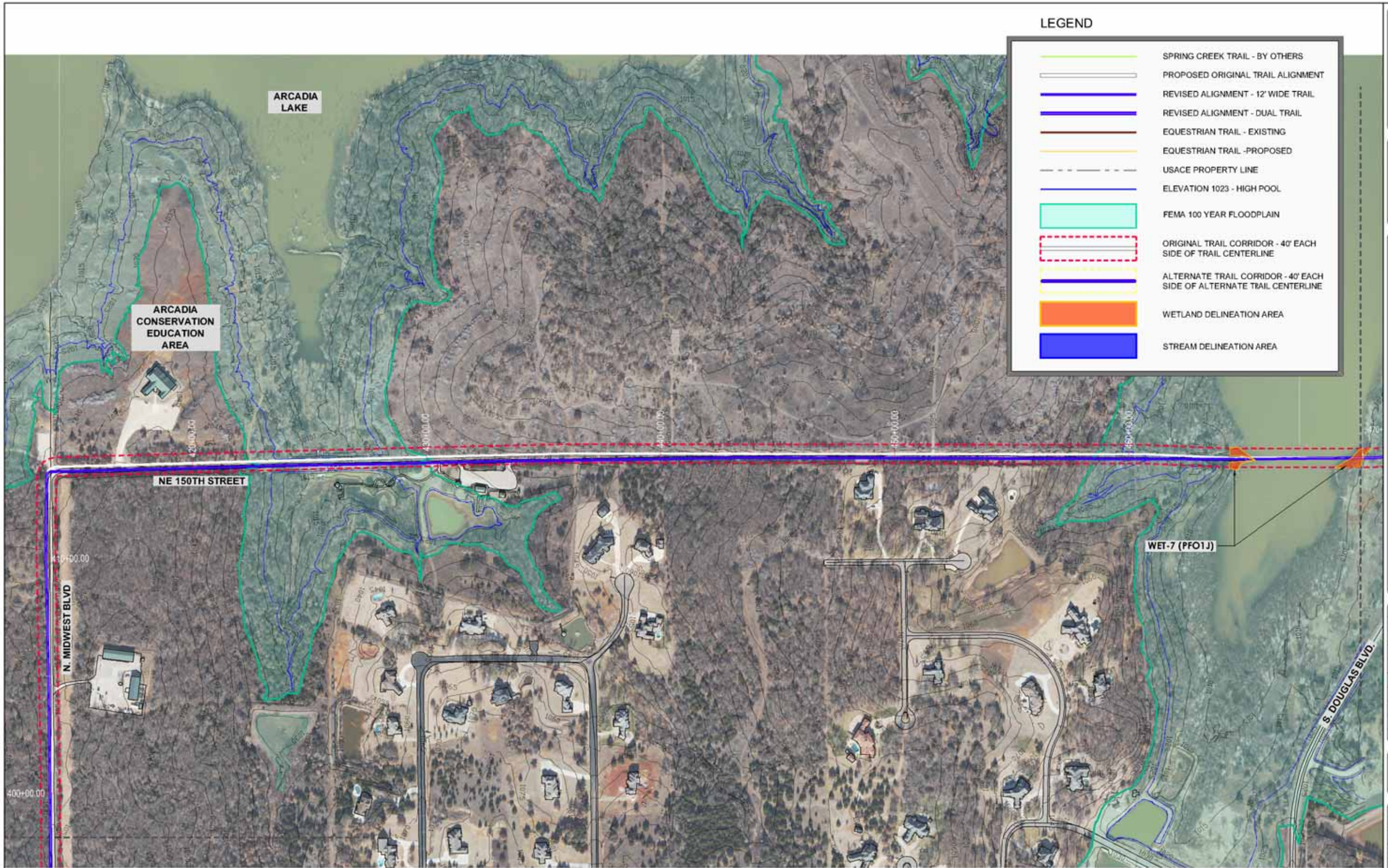
Sheet: 8a of 15



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Seal:

Arcadia Lake Trail

Edmond, Oklahoma

Revised Trail Layout and Wetland Mitigation (7)

Revisions:

North

Design		
Drawn		
Checked		
Approved		

BEFORE YOU DIG 1-800-522-6543 CALL OKIE

Sheet: 9 of 15

LEGEND

- SPRING CREEK TRAIL - BY OTHERS
- PROPOSED ORIGINAL TRAIL ALIGNMENT
- REVISED ALIGNMENT - 12' WIDE TRAIL
- REVISED ALIGNMENT - DUAL TRAIL
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- ELEVATION 1023 - HIGH POOL
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- ORIGINAL TRAIL CORRIDOR - 40' EACH SIDE OF TRAIL CENTERLINE
- ALTERNATE TRAIL CORRIDOR - 40' EACH SIDE OF ALTERNATE TRAIL CENTERLINE
- WETLAND DELINEATION AREA
- STREAM DELINEATION AREA

ARCADIA LAKE

WET-7 (PFO1J)

S. DOUGLAS BLVD.

0 60 120 180

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Tulsa, OK 74107
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Seal:

Arcadia Lake Trail

Edmond, Oklahoma

Revised Trail Layout and Wetland Mitigation (7)

Revisions:

North

Design		
Drawn		
Checked		
Approved		

BEFORE YOU DIG ... 1-800-522-6543 CALL OKIE

LEGEND

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- STREAM DELINEATION AREA

WET-8 (PFO1H)

IS-2 (R4UB1)

520+00.00

540+00.00

560+00.00

520+00.00

510+00.00

ARCADIA LAKE

TINKER CREEK PARK

N. POST ROAD

NE 150TH STREET

490+00.00

500+00.00

480+00.00

470+00.00

0 200 400 600

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Seal:

Arcadia Lake Trail

Edmond, Oklahoma

Revised Trail Layout and Wetland Mitigation (8)

Revisions:

North

Design		
Drawn		
Checked		
Approved		

BEFORE YOU DIG ... 1-800-522-6543 CALL OKIE

Sheet: 10 of 15

LEGEND

- SPRING CREEK TRAIL - BY OTHERS
- PROPOSED ORIGINAL TRAIL ALIGNMENT
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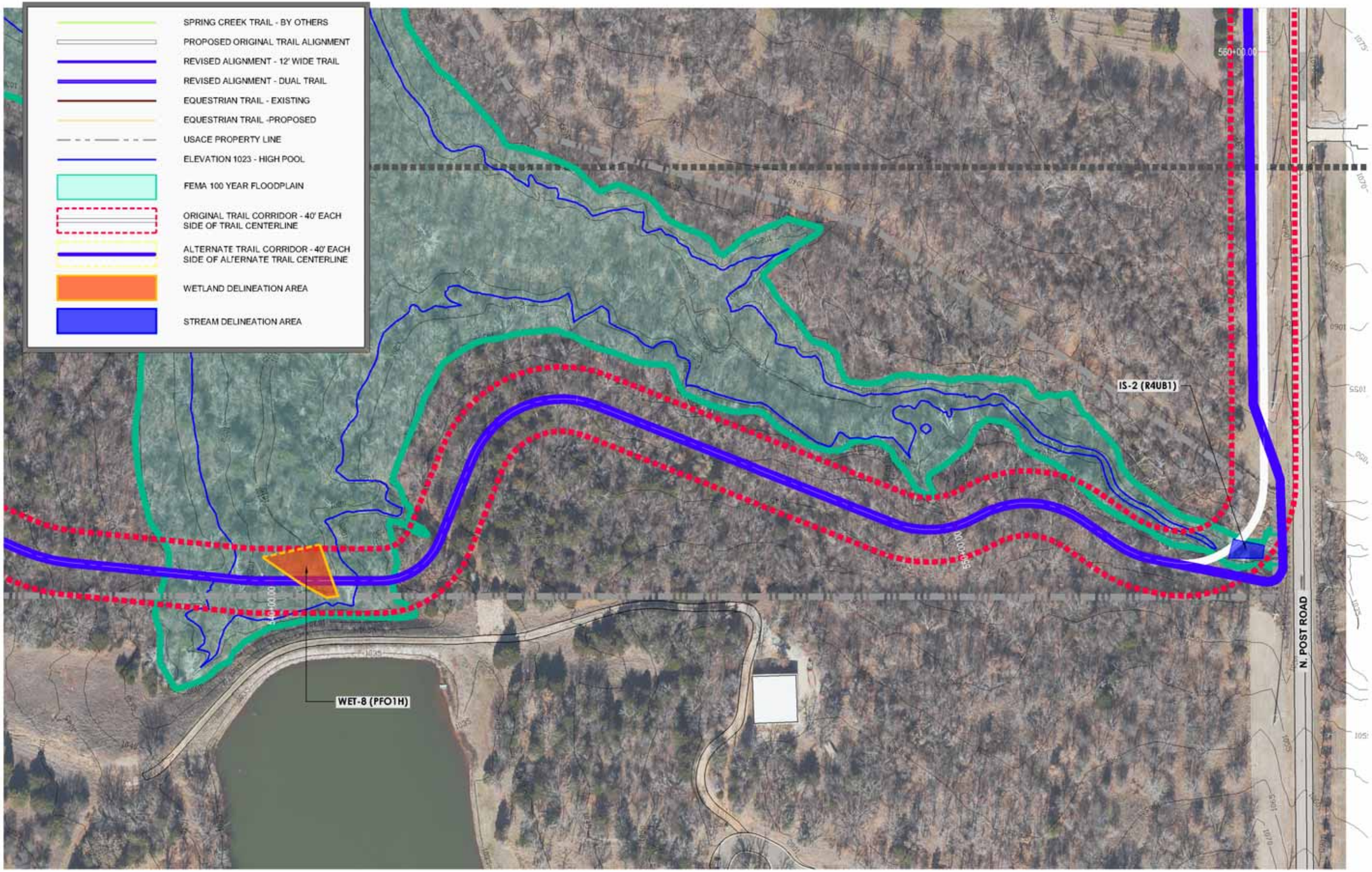
- STREAM DELINEATION AREA



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LANDPLAN CONSULTANTS INCORPORATED
1110 West 23rd
Tulsa, OK 74107
(918) 584-6464

Seal:

Arcadia Lake Trail
Edmond, Oklahoma
Revised Trail Layout and Wetland Mitigation (8)

Revisions:

North

Design		
Drawn		
Checked		
Approved		

BEFORE YOU DIG 1-800-652-6942 CALL OKIE

Sheet: 10a of 15

LEGEND

- SPRING CREEK TRAIL - BY OTHERS
- PROPOSED ORIGINAL TRAIL ALIGNMENT
- REVISED ALIGNMENT - 12' WIDE TRAIL
- REVISED ALIGNMENT - DUAL TRAIL
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- EQUESTRIAN TRAIL -PROPOSED
- USACE PROPERTY LINE
- ELEVATION 1023 - HIGH POOL
- FEMA 100 YEAR FLOODPLAIN
- ORIGINAL TRAIL CORRIDOR - 40' EACH SIDE OF TRAIL CENTERLINE
- ALTERNATE TRAIL CORRIDOR - 40' EACH SIDE OF ALTERNATE TRAIL CENTERLINE

ARCADIA LAKE

400+00.00

560+00.00

E. 15TH STREET

N. POST RD.

S. POST RD.

570+00.00

560+00.00

0 200 400 600

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Tulsa, OK 74107
(918) 584-6464

Seal:

Arcadia Lake Trail

Edmond, Oklahoma

Revised Trail Layout and Wetland Mitigation (9)

Revisions:

North

Design		
Drawn		
Checked		
Approved		

BEFORE YOU DIG 1-800-522-6543 CALL OKIE

LEGEND

- SPRING CREEK TRAIL - BY OTHERS
- PROPOSED ORIGINAL TRAIL ALIGNMENT
- REVISED ALIGNMENT - 12' WIDE TRAIL
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- ALTERNATE TRAIL CORRIDOR - 40' EACH SIDE OF ALTERNATE TRAIL CENTERLINE

ARCADIA LAKE

640+00.00

630+00.00

620+00.00

610+00.00

0 200 400 600

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1110 West 23rd
Tulsa, OK 74107
(918) 584-6464

Seal:

Arcadia Lake Trail

Edmond, Oklahoma

Revised Trail Layout and Wetland Mitigation (10)

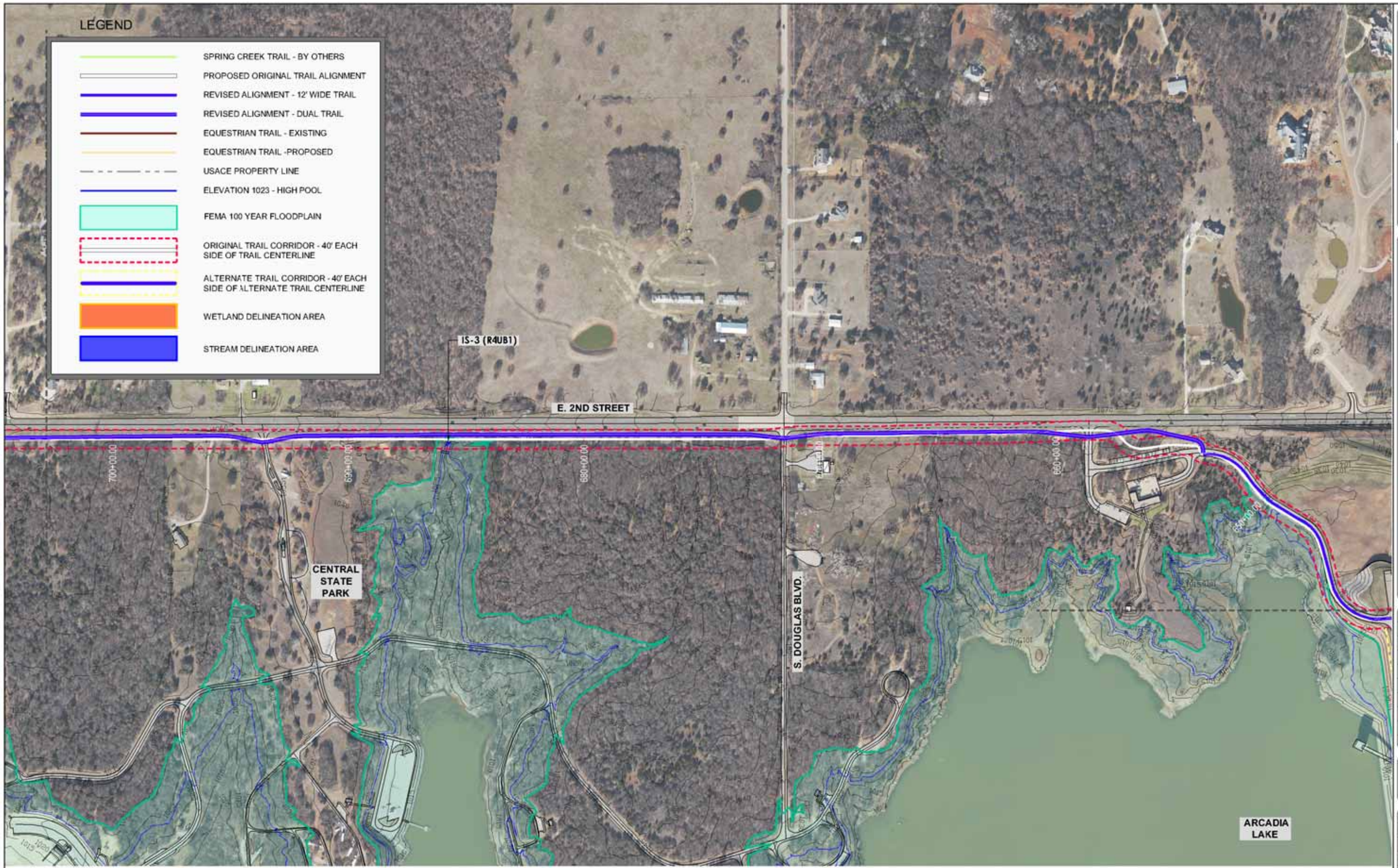
Revisions:

North

Design		
Drawn		
Checked		
Approved		

BEFORE YOU DIG 1-800-522-6543 CALL OKIE

Sheet: 12 of 15



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1110 West 23rd
Tulsa, OK 74107
(918) 584-6464

Seal:

Arcadia Lake Trail

Edmond, Oklahoma

Revised Trail Layout and Wetland Mitigation (11)

Revisions:

North

Design		
Drawn		
Checked		
Approved		

BEFORE YOU DIG — 1-800-522-6543 CALL OKIE

Sheet: 13 of 15

LEGEND

- SPRING CREEK TRAIL - BY OTHERS
- PROPOSED ORIGINAL TRAIL ALIGNMENT
- REVISED ALIGNMENT - 12' WIDE TRAIL
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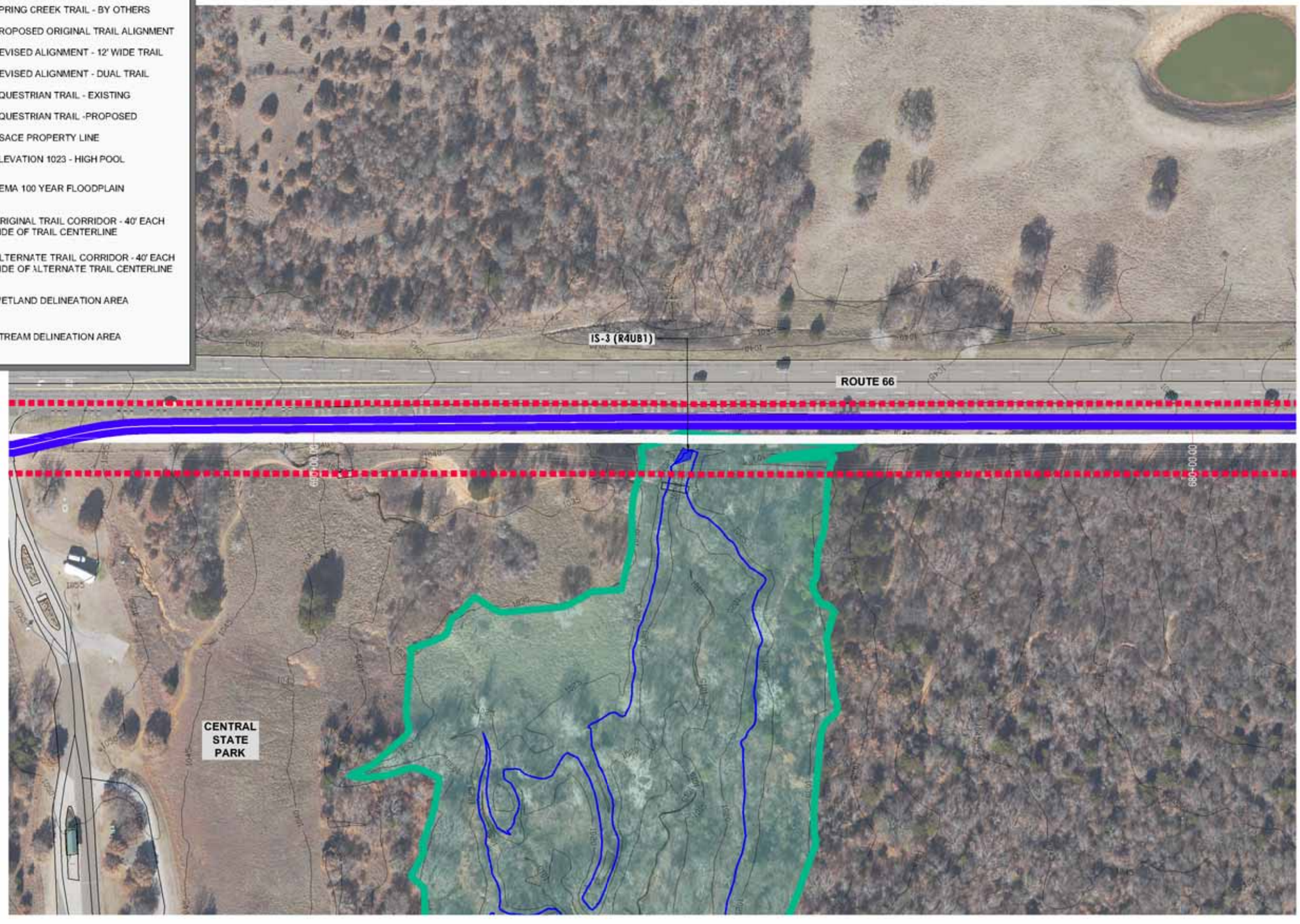
- WETLAND DELINEATION AREA
- STREAM DELINEATION AREA



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Tulsa, OK 74107
(918) 584-6464

Seal:

Arcadia Lake Trail
Edmond, Oklahoma
Revised Trail Layout and Wetland Mitigation (11)

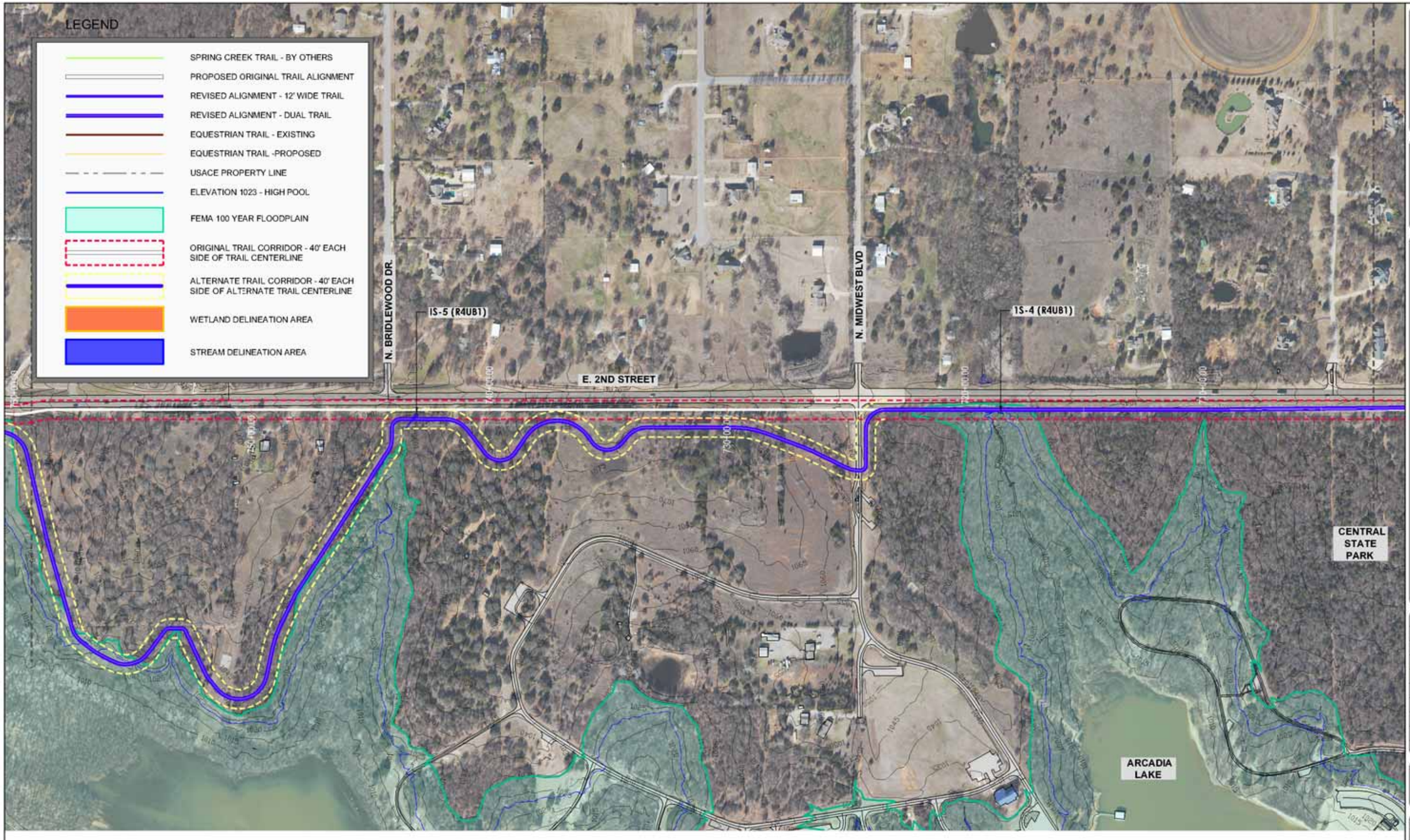
Revisions:

North

Design		
Drawn		
Checked		
Approved		

BEFORE YOU DIG — 1-800-522-6543 — CALL OKIE

Sheet: 13a of 15



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1110 West 23rd
Tulsa, OK 74107
(918) 584-6464

Seal:

Arcadia Lake Trail
Edmond, Oklahoma
Revised Trail Layout and Wetland Mitigation (12)

Revisions:

North

Design		
Drawn		
Checked		
Approved		

BEFORE YOU DIG 1-800-522-6543 CALL OKIE

Sheet: 14 of 15

LEGEND

- SPRING CREEK TRAIL - BY OTHERS
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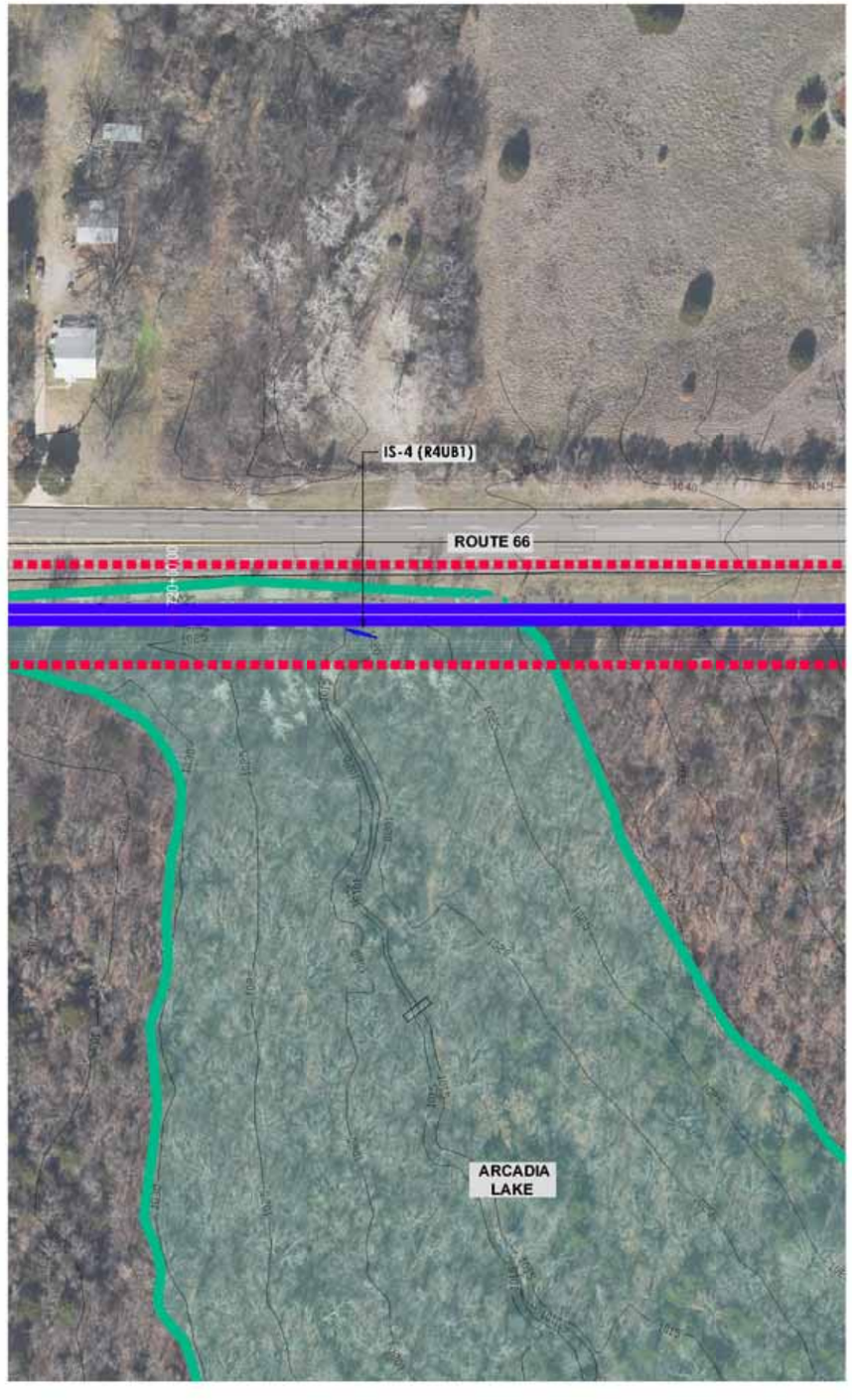

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Tulsa, OK 74107
(918) 584-6464

Seal:

Arcadia Lake Trail
Edmond, Oklahoma
Revised Trail Layout and Wetland Mitigation (12)

Revisions:

North

Design		
Drawn		
Checked		
Approved		

BEFORE YOU DIG — 1-800-522-6543 CALL OKIE

Sheet: 14a of 15

LEGEND

- SPRING CREEK TRAIL - BY OTHERS
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- WETLAND DELINEATION AREA
- STREAM DELINEATION AREA

DESIGNATED WETLAND
SEE SHEET 3

N. AIR DEPOT BLVD

E. 2ND STREET

IS-6 (R4UB1)

WET-9 (PSS1J)

IS-7 (R4UB1)

PERENNIAL STREAM
SEE SHEET 3

SPRING
CREEK

0 200 400 600

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Arcadia Lake Trail

Edmond, Oklahoma

Revised Trail Layout and Wetland Mitigation (13)

Revisions:

North

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Sheet: 15 of 13

LEGEND

- SPRING CREEK TRAIL - BY OTHERS
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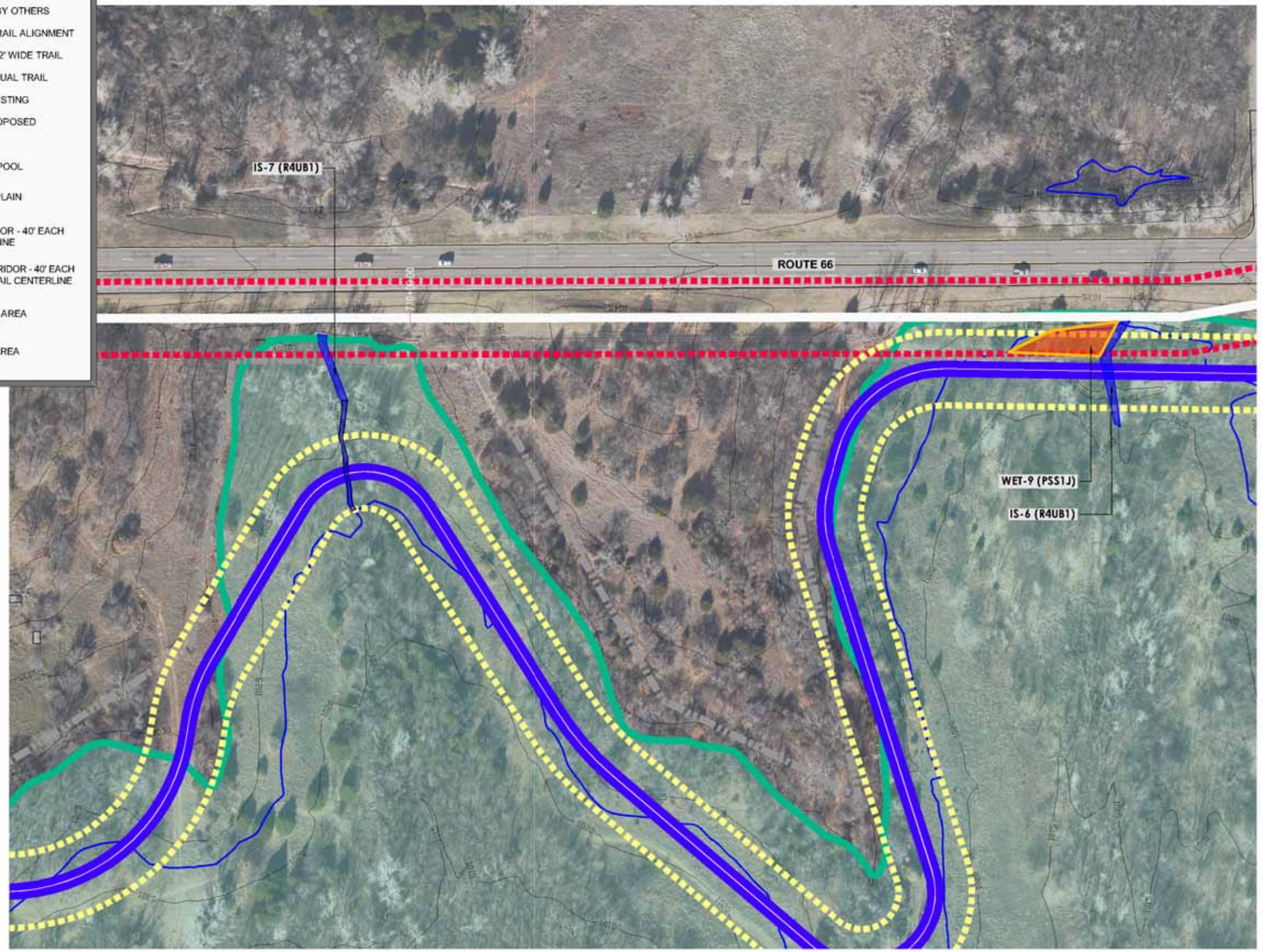

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Seal:

Arcadia Lake Trail
Edmond, Oklahoma
Revised Trail Layout and Wetland Mitigation (13)

Revisions:

North

Design		
Drawn		
Checked		
Approved		

BEFORE YOU DIG 1-800-522-6543 CALL OKIE

Sheet: 15a of 15

Appendix B
Data Sheets

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake Multi-Use Trail City/County: Oklahoma Sampling Date: Feb 21, 2014

Applicant/Owner: City of Edmond State: Oklahoma Sampling Point: WET-1

Investigator(s): Steven Eakin Section, Township, Range:

Landform (hillslope, terrace, etc.) bottomland Local relief (concave, convex, none): none Slope (%):

Subregion (LRR): LRR H (Excluding MLRA 72, 73) Lat: 35°39'6.7" N Long: 97°24'49.6" W Datum:

Soil Map Unit Name: Tribbey Fine Sandy Loam NWI Classification: PSS1F/PFO1F

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix nigra (Willow,black)	35	Y	OBL
2. Populus deltoides (Cotton-wood,eastern)	25	Y	FAC
3. Cornus drummondii (Dogwood,rough-leaf)	20	Y	FAC
4.			
	80	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: ____)			
1. Chasmanthium latifolium (Sea-oats,indian)	5	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. Gelsemium sempervirens (Jessamine,yellow)			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 10

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	X 2 = ____
FAC species ____	X 3 = ____
FACU species ____	X 4 = ____
UPL species ____	X 5 = ____
Column Totals: ____	(A) ____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is > 50%
- ____ 3 - Prevalence Test is ≤ 3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No ____**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WET-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR3/2	100			N/A	N/A	Clay Loam	
6-12	5YR4/6	100			N/A	N/A	Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- X Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of Hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ___
Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Fauna (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes X	No ___	Depth (inches): 11
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 7

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake Multi-Use Trail City/County: Oklahoma Sampling Date: Feb 21, 2014

Applicant/Owner: City of Edmond State: Oklahoma Sampling Point: WET-2

Investigator(s): Steven Eakin Section, Township, Range:

Landform (hillslope, terrace, etc.) Depression Local relief (concave, convex, none): none Slope (%):

Subregion (LRR): LRR H (Excluding MLRA 72, 73) Lat: 35°39'8.7" N Long: 97°44'27.4" W Datum:

Soil Map Unit Name: Tribbey Fine Sand Loam NWI Classification: PF01J

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix nigra (Willow,black)	30	Y	OBL
2. Populus deltoides (Cotton-wood,eastern)	15	Y	FAC
3. Juniperus virginiana (Cedar,eastern red)	5		FACU
4. Maclura pomifera (Osage-orange)	2		UPL
	52	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1. Cornus drummondii (Dogwood,rough-leaf)	35	Y	FAC
2. Rhus trilobata (Sumac,smooth)	10	Y	NI
3. Juniperus virginiana (Cedar,eastern red)	5		FACU
4.			
5.			
	50	= Total Cover	
Herb Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. Gelsemium sempervirens (Jessamine,yellow)	1	Y	
2.			
	1	= Total Cover	

% Bare Ground in Herb Stratum 10

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	X 2 = ____
FAC species ____	X 3 = ____
FACU species ____	X 4 = ____
UPL species ____	X 5 = ____
Column Totals: ____	(A) ____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is > 50%
- ____ 3 - Prevalence Test is ≤ 3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WET-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR3/2	100			N/A	N/A	Clay Loam	
6-12	5YR4/6	100			N/A	N/A	Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- X Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of Hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ___
Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Fauna (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): 2

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake Multi-Use Trail City/County: Oklahoma Sampling Date: Feb 19, 2014

Applicant/Owner: City of Edmond State: Oklahoma Sampling Point: WET-3

Investigator(s): Steven Eakin Section, Township, Range:

Landform (hillslope, terrace, etc.) Bottomland Local relief (concave, convex, none): none Slope (%):

Subregion (LRR): LRR H (Excluding MLRA 72, 73) Lat: 35°37'54" N Long: 97°24'2.2" W Datum:

Soil Map Unit Name: Harrah fine sandy loam NWI Classification: PF01J

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ulmus americana (Elm,american)	40	Y	FAC
2. Salix nigra (Willow,black)	20	Y	OBL
3. Celtis laevigata (Sugar-berry)	15		FACW
4. Platanus occidentalis (Sycamore,american)	10		FAC
	88	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1. Cephalanthus occidentalis (Buttonbush,common)	100	Y	OBL
2.			
3.			
4.			
5.			
	100	= Total Cover	
Herb Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	X 2 = ____
FAC species ____	X 3 = ____
FACU species ____	X 4 = ____
UPL species ____	X 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is > 50%
- ____ 3 - Prevalence Test is ≤ 3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No ____**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WET-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR2/2	100			N/A	N/A	Sandy	mucky sand
2-12	10YR3/2	70	10YR2/2	30	C	M	Muck	muck concretions

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of Hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ___
Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- X Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Fauna (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake Multi-Use Trail City/County: Oklahoma Sampling Date: Feb 20, 2014

Applicant/Owner: City of Edmond State: Oklahoma Sampling Point: WET-4

Investigator(s): Steven Eakin Section, Township, Range:

Landform (hillslope, terrace, etc.) Bottomland Local relief (concave, convex, none): none Slope (%):

Subregion (LRR): LRR H (Excluding MLRA 72, 73) Lat: 35°36'43.5" N Long: 97°25'0.5" W Datum:

Soil Map Unit Name: Pulaski fine sand loam NWI Classification: PFO1Cb

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ulmus americana (Elm,american)	30	Y	FAC
2. Celtis laevigata (Sugar-berry)	15	Y	FACW
3. Platanus occidentalis (Sycamore,american)	15	Y	FAC
4. Juniperus virginiana (Cedar,eastern red)	3		FACU
	63	= Total Cover	
Sapling/Shrub Stratum (Plot size:____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size:____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0	= Total Cover	
Woody Vine Stratum (Plot size:____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	X 2 = ____
FAC species ____	X 3 = ____
FACU species ____	X 4 = ____
UPL species ____	X 5 = ____
Column Totals: ____	(A) ____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is > 50%
- ____ 3 - Prevalence Test is ≤ 3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No ____**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WET-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR5/6	100			N/A	N/A	Sandy	alluvial sand
2-5	10YR3/2	100			N/A	N/A	Sandy	mucky
5-12	5YR5/2	100			N/A	N/A	Sandy Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of Hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ___
Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- X Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Fauna (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 2

Water Table Present? Yes X No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake Multi-Use Trail City/County: Oklahoma Sampling Date: Feb 19, 2014

Applicant/Owner: City of Edmond State: Oklahoma Sampling Point: WET-5

Investigator(s): Steven Eakin Section, Township, Range:

Landform (hillslope, terrace, etc.) Bottomland Local relief (concave, convex, none): none Slope (%):

Subregion (LRR): LRR H (Excluding MLRA 72, 73) Lat: 35°36'35.1" N Long: 97°24'51.4" W Datum:

Soil Map Unit Name: Pulaski fine sand NWI Classification: PSS1J/PEM1J

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix nigra (Willow,black)	10	Y	OBL
2. Ulmus americana (Elm,american)	8	Y	FAC
3. Juglans nigra (Walnut,black)	2		FACU
4.			
	20	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1. Cephalanthus occidentalis (Buttonbush,common)	15	Y	OBL
2.			
3.			
4.			
5.			
	15	= Total Cover	
Herb Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	X 2 = ____
FAC species ____	X 3 = ____
FACU species ____	X 4 = ____
UPL species ____	X 5 = ____
Column Totals: ____	(A) ____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is > 50%
- ____ 3 - Prevalence Test is ≤ 3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)
Emergent vegetation dominated by sedges (Carex spp.). However they were unidentifiable due to senescense and decay.

SOIL

Sampling Point: WET-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR3/3	100			N/A	N/A	Loam	
4-7	10YR4/2	80	7YR5/1	20	C	M	Sandy	Sandy redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of Hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ___
Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Fauna (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): 7

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake Multi-Use Trail City/County: Oklahoma Sampling Date: Feb 23, 2014

Applicant/Owner: City of Edmond State: Oklahoma Sampling Point: WET-6

Investigator(s): Steven Eakin Section, Township, Range:

Landform (hillslope, terrace, etc.) Bottomland Local relief (concave, convex, none): none Slope (%):

Subregion (LRR): LRR H (Excluding MLRA 72, 73) Lat: 35°36'41.2" N Long: 97°23'42.6" W Datum:

Soil Map Unit Name: Tribbey fine sand loam NWI Classification: PF01F

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus deltoides (Cotton-wood,eastern)	40	Y	FAC
2. Ulmus americana (Elm,american)	15	Y	FAC
3. Salix nigra (Willow,black)	8		OBL
4. Celtis laevigata (Sugar-berry)	5		FACW
	68	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1. Fraxinus americana (Ash,white)	5	Y	FACU
2.			
3.			
4.			
5.			
	5	= Total Cover	
Herb Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 20

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	X 2 = ____
FAC species ____	X 3 = ____
FACU species ____	X 4 = ____
UPL species ____	X 5 = ____
Column Totals: ____	(A) ____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is > 50%
- ____ 3 - Prevalence Test is ≤ 3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WET-6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR4/3	90	10YR2/1	10	C	M	Sandy loam	mucky concretions

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- X Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of Hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ___
Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Fauna (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 3

Water Table Present? Yes X No ___ Depth (inches): Surface

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): Surface

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake Multi-Use Trail City/County: Oklahoma Sampling Date: Feb 21, 2014

Applicant/Owner: City of Edmond State: Oklahoma Sampling Point: WET-7

Investigator(s): Steven Eakin Section, Township, Range:

Landform (hillslope, terrace, etc.) Bottomland Local relief (concave, convex, none): none Slope (%):

Subregion (LRR): LRR H (Excluding MLRA 72, 73) Lat: 35°37'26" N Long: 97°22'20.9" W Datum:

Soil Map Unit Name: Harrah fine loam sand NWI Classification: PF01J

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix nigra (Willow,black)	60	Y	OBL
2. Populus deltoides (Cotton-wood,eastern)	20	Y	FAC
3. Acer saccharinum (Maple,silver)	5		FACW
4.			
	85	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1. Cephalanthus occidentalis (Buttonbush,common)	30	Y	OBL
2.			
3.			
4.			
5.			
	30	= Total Cover	
Herb Stratum (Plot size: ____)			
1. Sorghum halepense (Grass,johnson)	10	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	10	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	X 2 = ____
FAC species ____	X 3 = ____
FACU species ____	X 4 = ____
UPL species ____	X 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is > 50%
- ___ 3 - Prevalence Test is ≤ 3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No ____**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WET-7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	2.5YR3/4	100			N/A	N/A	Sandy	
5-9	2.5YR4/6	60	5YR4/1	40	C	M	Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- X Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of Hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ___
Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Aquatic Fauna (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake Multi-Use Trail City/County: Oklahoma Sampling Date: Feb 21, 2014

Applicant/Owner: City of Edmond State: Oklahoma Sampling Point: WET-8

Investigator(s): Steven Eakin Section, Township, Range:

Landform (hillslope, terrace, etc.) Depression Local relief (concave, convex, none): none Slope (%):

Subregion (LRR): LRR H (Excluding MLRA 72, 73) Lat: 35°37'51.9" N Long: 97°21'28.6" W Datum:

Soil Map Unit Name: Harrah fine sandy loam NWI Classification: PFO1H

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus americana (Ash,white)	25	Y	FACU
2. Populus deltoides (Cotton-wood,eastern)	25	Y	FAC
3. Salix nigra (Willow,black)	15	Y	OBL
4.			
	65	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: ____)			
1. Equisetum fluviatile (Horsetail,water)	80	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	80	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	X 2 = ____
FAC species ____	X 3 = ____
FACU species ____	X 4 = ____
UPL species ____	X 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is > 50%
- ____ 3 - Prevalence Test is ≤ 3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No ____**

Remarks: (Include photo numbers here or on a separate sheet.)
Sedges (Carex spp.) and grasses (Panicum spp.) were also presence in minor abundance but were not identified due to seasonal senescence.

SOIL

Sampling Point: WET-8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR3/2	100			N/A	N/A	Sandy	mucky mineral

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of Hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ___
Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Fauna (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): 2

Water Table Present? Yes X No ___ Depth (inches): surface

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): Surface

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Source hydrology from leaking earthen dike adjacent offsite creating impoundment of historical stream.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake Multi-Use Trail City/County: Oklahoma Sampling Date: Feb 20, 2014

Applicant/Owner: City of Edmond State: Oklahoma Sampling Point: WET-9

Investigator(s): Steven Eakin Section, Township, Range:

Landform (hillslope, terrace, etc.) Depression Local relief (concave, convex, none): none Slope (%):

Subregion (LRR): LRR H (Excluding MLRA 72, 73) Lat: 35°39'8.9" N Long: 97°24'8.6" W Datum:

Soil Map Unit Name: Tribbey fine sand loam NWI Classification: PSS1J

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:
Shallow depression created by roadside swale near intermittent stream.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus deltoides (Cotton-wood,eastern)	30	Y	FAC
2. Salix nigra (Willow,black)	30	Y	OBL
3. Fraxinus americana (Ash,white)	5		FACU
4. Gleditsia triacanthos (Honey-locust)	5		FAC
	70	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: ____)			
1. Sorghum halepense (Grass,johnson)	40	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	40	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	X 2 = ____
FAC species ____	X 3 = ____
FACU species ____	X 4 = ____
UPL species ____	X 5 = ____
Column Totals: ____	(A) ____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is > 50%
- ____ 3 - Prevalence Test is ≤ 3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WET-9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR4/3	100			N/A	N/A	Sandy	
5-12	10YR3/2	70	7.5YR4/4	30	C	PL/M	Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of Hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ___
Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Fauna (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake Multi-Use Trail City/County: Oklahoma Sampling Date: Feb 18, 2014

Applicant/Owner: City of Edmond State: Oklahoma Sampling Point: UP-1

Investigator(s): Steven Eakin Section, Township, Range:

Landform (hillslope, terrace, etc.) hillslope Local relief (concave, convex, none): none Slope (%):

Subregion (LRR): LRR H (Excluding MLRA 72, 73) Lat: 35°37'12.7" N Long: 97°24'31.1" W Datum:

Soil Map Unit Name: Harrah fine sandy loam NWI Classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Celtis laevigata (Sugar-berry)	40	Y	FACW
2. Ulmus americana (Elm,american)	35	Y	FAC
3.			
4.			
	75	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 20

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	X 2 = ____
FAC species ____	X 3 = ____
FACU species ____	X 4 = ____
UPL species ____	X 5 = ____
Column Totals: ____	(A) ____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is > 50%
- ____ 3 - Prevalence Test is ≤ 3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: UP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	2.5YR2/2	100			N/A	N/A	Sandy	
4-12	5YR4/4	100			N/A	N/A	Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of Hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ___
Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Fauna (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake Multi-Use Trail City/County: Oklahoma Sampling Date: Feb 19, 2014

Applicant/Owner: City of Edmond State: Oklahoma Sampling Point: UP-2

Investigator(s): Steven Eakin Section, Township, Range:

Landform (hillslope, terrace, etc.) Terrace Local relief (concave, convex, none): none Slope (%):

Subregion (LRR): LRR H (Excluding MLRA 72, 73) Lat: 35°38'52.5" N Long: 97°25'2.1" W Datum:

Soil Map Unit Name: Pulaski fine sandy loam NWI Classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Flat above Spring Creek

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus deltoides (Cotton-wood,eastern)	55	Y	FAC
2. Juniperus virginiana (Cedar,eastern red)	25	Y	FACU
3. Ulmus americana (Elm,american)	20	Y	FAC
4.			
	100	= Total Cover	

Sapling/Shrub Stratum (Plot size:____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	

Herb Stratum (Plot size:____)			
1. Chasmanthium latifolium (Sea-oats,indian)	60	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	60	= Total Cover	

Woody Vine Stratum (Plot size:____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	X 2 = ____
FAC species ____	X 3 = ____
FACU species ____	X 4 = ____
UPL species ____	X 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is > 50%
- ____ 3 - Prevalence Test is ≤ 3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No ____**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: UP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	5YR4/4	100			N/A	N/A	Sandy	
3-12	5YR3/4	100			N/A	N/A	Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of Hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ___
Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Fauna (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Arcadia Lake Multi-Use Trail City/County: Oklahoma Sampling Date: Feb 20, 2014

Applicant/Owner: City of Edmond State: Oklahoma Sampling Point: UP-3

Investigator(s): Steven Eakin Section, Township, Range:

Landform (hillslope, terrace, etc.) hillslope Local relief (concave, convex, none): none Slope (%):

Subregion (LRR): LRR H (Excluding MLRA 72, 73) Lat: 35°37'26.2" N Long: 97°22'21.9" W Datum:

Soil Map Unit Name: Harrah fine sandy loam NWI Classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Just upslope of WET-7

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus virginiana (Cedar,eastern red)	30	Y	FACU
2. Ulmus americana (Elm,american)	15	Y	FAC
3. Celtis laevigata (Sugar-berry)	5		FACW
4. Populus deltoides (Cotton-wood,eastern)	5		FAC
	55	= Total Cover	
Sapling/Shrub Stratum (Plot size:____)			
1. Rhus trilobata (Sumac,smooth)			NI
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size:____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0	= Total Cover	
Woody Vine Stratum (Plot size:____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	X 2 =	10
FAC species	20	X 3 =	60
FACU species	30	X 4 =	120
UPL species	0	X 5 =	0
Column Totals:	55	(A)	190 (B)

Prevalence Index = B/A = 3.45

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is > 50%

____ 3 - Prevalence Test is ≤ 3.0[1]

____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: UP-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	2.5Y3/6	100			N/A	N/A	Sandy	
6-10	2.5YR4/6	100			N/A	N/A	Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of Hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: sandstone
Depth (inches): begins at 10"

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Fauna (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix C
Photo Log

APPENDIX C

Photo Log

Image C-1: WET-1
Date Taken: February 19, 2014

Image C-2: WET-2
Date Taken: February 19, 2014

Image C-3: WET-3
Date Taken: February 18, 2014

Image C-4: WET-4
Date Taken: February 18, 2014

Image C-5: WET-5
Date Taken: February 17, 2014

Image C-6: WET-6
Date Taken: February 19, 2014

Image C-7: WET-7
Date Taken: February 19, 2014

Image C-8: WET-8
Date Taken: February 19, 2014

Image C-9: WET-9
Date Taken: February 20, 2014

Image C-10: PS-1 (Spring Creek)
Date Taken: February 19, 2014

Image C-11: PS-2
Date Taken: February 20, 2014

Image C-12: PS-3
Date Taken: February 18, 2014

Image C-23: IS-1
Date Taken: February 18, 2014

Image C-14: IS-2
Date Taken: February 19, 2014

Image C-15: IS-3
Date Taken: February 19, 2014

Image C-16: IS-4
Date Taken: February 19, 2014

Image C-37: IS-5
Date Taken: February 19, 2014

Image C-18: IS-6
Date Taken: February 19, 2014

Image C-19: IS-7
Date Taken: February 19, 2014