Appendix L

Draft Mitigation Plan

DRAFT MITIGATION PLAN

Part I: Project Information

Project Name:	**Lake Ralph Hall Reservoir Project**
SWF Permit Number:	**SWF-2003-00336**
Permittee:	**Upper Trinity Regional Water District**
Project Location:	**Southeast Fannin County, North of Ladonia, Texas**
Mitigation Site Location(s):	**On-site, downstream northeast of Ladonia, upstream west of Ladonia.**
Watersheds:	**Lake Ralph Hall and attendant reservoir features: Sulphur Headwaters (11140301);** **Raw Water Conveyance Pipeline: Sulphur Headwaters (11140301), Upper Sabine (12010001), East Fork Trinity (12030106)**
Counties:	**Lake Ralph Hall: Fannin;** **Raw Water Conveyance Pipeline: Fannin, Hunt, Collin**

The Permittee, Upper Trinity Regional Water District (Permittee, District or UTRWD), proposes to construct Lake Ralph Hall, a water supply reservoir in southeast Fannin County. The project consists of the impoundment of the North Sulphur River and tributaries, which will result in the creation of a 7,568-acre reservoir at conservation pool (elevation 551 feet mean sea level (msl)). Project components consist of the construction of an earthen dam (Charles L. (Leon) Hurse Dam), construction of spillway systems (service and emergency) associated with the dam, construction of an intake structure and raw water conveyance pump station, construction of an approximately 32 mile raw water conveyance pipeline, construction of an approximately 5-acre balancing reservoir, and realignments/modifications to State Highway (SH) 34, Farm to Market (FM) Road 1550, and County Roads (CR) 3380, 3395, 3443, 3444, and 3640.

Mitigation for the project includes permittee responsible mitigation (PRM) for impacts to aquatic resources as required by Section 404 of the Clean Water Act (CWA) and for impacts to terrestrial resources pursuant to the Lake Ralph Hall state water right, Water Use Permit Number 5821, within specified areas. Mitigation activities for impacts to aquatic resources will be conducted within the project boundary and within Mitigation Zones A, B and/or C, as shown in **Figure A-1 in Appendix A**. Mitigation activities for project impacts to terrestrial habitat, as required by Water Use Permit 5821, Special Condition M, will also be located within the project boundary. A general location map showing the project boundary, Mitigation Zones A, B and C and the emergent wetland mitigation area is included as **Figure A-1 in Appendix A**.

The approximately 32-mile raw water conveyance pipeline will be located within Fannin, Hunt, and Collin Counties. The proposed pipeline corridor is shown on **Figure A-2 in Appendix A**.

The Lake Ralph Hall project is being developed for water supply. The Permittee's need for additional water supplies was independently analyzed by the USACE through supply and demand evaluations in preparation of the Final Environmental Impact Statement (FEIS) in accordance with 40 CFR 1506.5(a). Detailed descriptions of the purpose and need for the project is included in Chapter 1 of the FEIS.

Part II: Avoidance & Minimization

Projects subject to Clean Water Act (CWA) regulations must comply with CWA Section 404(b)(1) Guidelines (40 CFR, Part 230) for the discharge of dredge and fill material into Waters of the U.S. (WOTUS). The Section 404(b)(1) Guidelines require that the United States Army Corps of Engineers (USACE) permit only the least environmentally damaging practicable alternative (LEDPA), unless the LEDPA has other significant adverse environmental consequences. In a Memorandum of Agreement (MOA) signed February 6, 1990 between the USACE and the Environmental Protection Agency (EPA), mitigation was defined as a sequential process of avoiding, minimizing, and compensating for adverse impacts to the aquatic ecosystem:

> *Avoid*: Take all appropriate and practicable measures to avoid adverse impacts to the aquatic ecosystem that are not necessary.
>
> *Minimize*: Take all appropriate and practicable measures to minimize adverse impacts to the aquatic ecosystem that cannot reasonably be avoided.
>
> *Compensate*: Implement appropriate and practicable measures to compensate for adverse project impacts to the aquatic ecosystem that cannot reasonably be avoided or further minimized. This step is also referred to as compensatory mitigation. The purpose of compensatory mitigation is to replace aquatic ecosystem functions that would be lost or impaired as a result of a USACE-authorized activity.

1. Avoidance

In the time period between now and 2030, the probability of an alternative solution to traditional surface water supply systems is remote. Local groundwater resources in the Dallas-Fort Worth area are inadequate.[1] As documented in the Final Environmental Impact Statement (FEIS), conservation alone cannot support the need for additional water supply. Avoidance then, on a macro scale, becomes a question of where the project would be located, not what other project could be substituted for a surface water supply project. Ultimately, the Permittee selected the upper headwaters of the North Sulphur River to site the dam for the reservoir project.

Multiple alignments for a pipeline to convey raw water from the reservoir to UTRWD owned or operated facilities were also evaluated to determine measures that could be taken to avoid adverse impacts to WOTUS. However, due to the length of the pipeline alternatives, complete avoidance of impacts to WOTUS was found to be unattainable. Minimization efforts related to the raw water pipeline are described in the following section.

A comprehensive discussion of the alternatives analysis and identification of the LEDPA is provided in Chapter 2 of the FEIS.

[1] Freese and Nichols, Inc., Alan Plummer Associates, Inc., CP&Y, Inc., and Cooksey Communications, Inc. *2016 Region C Water Plan* prepared for the Region C Water Planning Group, December 2015.

2. Minimization

The Permittee has identified practicable and appropriate measures in the siting, design, construction and operational plans for the Lake Ralph Hall project in order to minimize impacts to WOTUS. The location for the Lake Ralph Hall project was identified as the LEDPA.

Nine alternative pipeline routes were considered for the project. Of the nine alternatives, the selected alignment was one of the shortest and had the fewest stream crossings. Furthermore, the selected alignment did not cross the Caddo National Grasslands and therefore had fewest impacts to wooded areas.

Detailed information regarding the selection process for the reservoir site and pipeline alignment is included in Chapter 2 of the FEIS.

Multiple actions will be taken during construction to protect streams and aquatic resources. For the purpose of deciding whether to use horizontal directional drilling (HDD) or open trench construction methods for raw water pipeline installation, UTRWD considers significant stream crossings to have one or more of the following features:

- CWA Section 404 jurisdictional forested wetlands abutting one or both banks of the stream at the crossing location
- Confirmed presence of federally listed threatened or endangered species, or their designated critical habitat, within two times the top-of-bank width upstream and downstream of the pipeline crossing
- The presence of a National Register of Historic Places (NRHP) eligible cultural resources site on one or both banks of the stream at the crossing location.

If one or more of these features are present, then the Permittee proposes to either adjust the alignment to avoid the feature or use HDD for pipeline installation at the stream crossing in order to avoid and minimize impacts.

If none of these features are present, then the Permittee will construct the pipeline crossing using open trench construction methods. Upon completion, temporary fill for cofferdams or other construction materials will be removed from the stream, the bed and banks contours below the ordinary high water mark (OHWM) will be restored, and the stream will be stabilized using appropriate post-construction best management practices (BMPs) in accordance with the conditions of the USACE Section 404 permit, Texas Commission on Environmental Quality (TCEQ) Section 401 Water Quality Certification and TCEQ Stormwater Construction General Permit.

Any impacts associated with open trench crossings will be temporary in nature. Once construction activities are complete for each crossing, the areas will be returned to grade. Appropriate erosion control BMPs will be implemented and monitored in accordance with a Storm Water Pollution Prevention Plan and the TCEQ Section 401 Water Quality Certification conditions issued for the USACE Section 404 permit.

Part III: Compensatory Mitigation

1. Goals and Objectives

The goals of this Mitigation Plan include:

1. Avoid and minimize impacts to Waters of the U. S. (WOTUS) associated with the Lake Ralph Hall project to the maximum practicable extent.

2. Provide for the replacement of the chemical, physical and biological functions of the WOTUS that will be lost because of the project.

3. Restore and support self-sustaining stream systems that support functions appropriate for the landscape setting and watershed.

Objectives of this Mitigation Plan include those that are qualitative in nature, as well as those that are specific and measurable, i.e., "quantitative" objectives. Each are described in the following sections.

<u>*Qualitative Objectives*</u>

Table 1-1 provides a list of general, qualitative objectives which support the goals of this Mitigation Plan.

Table 1-1: General Objectives of the Mitigation Plan

Function	Project Objectives
Hydrologic	*Streams* - • Increase infiltration and water storage within the watershed by conversion of farm and pastureland areas to protected riparian corridors with native grasses, shrubs and trees. • Remove on-channel ponds and other blockages to restore hydrology and other functions to downstream reaches. *Wetlands* - • Increase infiltration and replenishment of groundwater, as well as surface water storage within the watershed by establishing depressional emergent wetlands
Hydraulic	*Streams* - • Reconnect stream flow to floodplains, restoring floodplain functions and channel stability. • Provide appropriate channel dimension to carry the bankfull discharge and provide sediment transport. *Wetlands* - • Reduce peak flows within the watershed by providing detention prior to discharge downstream

(Table 1-1 continued)

Function	Project Objectives
Geomorphologic	*Streams -* • Improve bed form diversity by incorporating appropriate riffle/run/pool sequences. • Increase channel sinuosity and channel roughness to reduce flow velocities and reduce shear stresses. • Exclude livestock from mitigation streams and associated riparian buffer areas to control bank erosion. • Restore riparian buffer vegetation to reduce potential for channel instability. *Wetlands -* • Convert existing pasture to emergent wetlands to develop a more diverse topography
Physiochemical	*Streams -* • Reduce water temperature by increasing channel bed form diversity and riparian tree canopy shading to enhance dissolved oxygen levels and improved assimilation of organic matter and nutrients. • Improve bank stability and provide grade control to reduce channel degradation. • Reduce nutrient loading from the watershed through establishment of contiguous, protected riparian buffer zones, and exclusion of livestock. *Wetlands -* • Reduce transport of sediment from the watershed through gravity settling and physical filtering • Reduce transport of nutrients from the watershed and improving downstream water quality by sequestering, transforming and cycling nutrient elements within the wetland
Biological	*Streams -* • Improve biodiversity with a mosaic of habitat features. • Establish multiple vegetative strata in riparian corridors. • Increase epifaunal substrate and available cover through establishment of riparian vegetation to provide sources of woody debris, leaf material and other natural structure. • Increase quality and variety of in-stream habitat. • Increase the number of pools and pool variability to improve retention of water within channels and provide refuge to aquatic organisms. • Improve vegetative protection of streambank surfaces. *Wetlands -* • Establishing wetland habitat and associated food-web supporting a diversity flora and fauna

<u>*Quantitative Objectives*</u>

Specific, measurable outcomes of this Mitigation Plan are based on functional uplift as determined by the Stream Watershed Assessment and Measurement Protocol Interaction Model (SWAMPIM), a functions-based assessment tool developed specifically for the project. Using the SWAMPIM, functional capacity units (FCU) are calculated and used as the medium to quantify the functional condition of any stream associated with the project. As such, SWAMPIM was used to establish the baseline functional condition of streams within the impact area as well as the mitigation areas. SWAMPIM will also be employed to assess and quantify the post-project FCUs with the mitigation activities implemented. Additional details on SWAMPIM are provided in **Part III, Section 4**. Full documentation of the SWAMPIM assessment protocol is provided in **Appendix C**.

Using SWAMPIM, permanent impacts to aquatic resources due to the Lake Ralph Hall project were identified to be 56.84 FCUs on intermittent streams and 382.74 FCUs on ephemeral streams (see **Part III, Section 4**).

Other impacts to aquatic resources include approximately 8 acres of lacustrine fringe wetlands associated with 33 on-channel impoundments that were identified within the footprint of the conservation pool, dam, and emergency spillway. Compensatory mitigation for lacustrine fringe wetlands will be made on a per-acre basis.

Quantitative objectives include the following measurable outcomes to achieve the goals of the mitigation plan:

1. Provide a minimum functional uplift of 56.84 FCUs for intermittent streams located within Mitigation Zone A (**Appendix A, Figure A-3**). The functional uplift will be generated by restoring degraded streams and improving the hydrologic, hydraulic, geomorphologic, physiochemical, and biological function of those streams.
2. Provide a minimum functional uplift of 382.74 FCUs for ephemeral streams in Mitigation Zones A, B and/or C (**Appendix A, Figures A-3, A-4 and A-5**, respectively). The functional uplift will be generated through enhancement, restoration and re-establishment of streams, improving the hydrologic, hydraulic, geomorphologic, physiochemical and biological function of those streams.
3. Establish a minimum of 8 acres of emergent wetland.

Additional details related to measurable criteria are provided in **Part III, Section 9, Performance Standards**.

The terms “enhancement”, “restoration”, “re-establishment”, and “establish” as referenced above and used in this Mitigation Plan are defined as follows:

<u>Enhancement</u> is the manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve specific aquatic resource function(s). Enhancement results in the net gain of aquatic resource function(s). Enhancement does not result in an increase of surface area or length of an aquatic resource. Some examples of enhancement methods include, but are not limited to: installation of instream structure to provide grade control; bank sloping; excavation of bankfull benches; and riparian buffer planting. Such practices are generally applied without significant modification of the pattern or location of the existing aquatic resource.

<u>Restoration</u> is the manipulation of the physical, chemical, or biological characteristics of a degraded site with the goal of restoring the stream’s functions (as noted in Table 1-1) to the highest practicable level. The restored stream network should allow for natural variability in stream dimension, facet slopes, and bed features that would form over time under the processes of

flooding, recolonization of vegetation, and watershed influences. Stream restoration typically involves the reconstruction of a channel with an appropriate cross-section, pattern and profile that will result in long-term dynamic equilibrium and functional improvements.

Re-establishment is the manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning the stream ecosystem as closely as possible to the natural/historic general structure, function, and dynamic – but self-sustaining – behavior of the stream. Re-establishment of streams in this Mitigation Plan will be located where no stream currently exists, but evidence indicates that a stream would have historically been present. This would include removal of an existing impoundment/pond and re-establishing the stream within the footprint of the pond and potentially upstream and/or downstream of the pond.

Establishment is the manipulation of the physical, chemical, or biological characteristics of a site with the goal developing a functional aquatic resource such as a stream or wetland where one does not currently exist. For example, establishment of a wetland could include localized grading to modify the hydrology and associated hydroperiod of a site such that it would perennially support a community of emergent macrophytes. Establishment of a stream could include filling a non-jurisdictional man-made ditch and constructing a functional stream in its place.

2. Site Selection

Project Area Background

The Lake Ralph Hall project site, along the North Sulphur River in Fannin County, is unique in Texas. Actions by the agricultural community in the 1920s, specifically channelization (straightening of the North Sulphur River thus steepening stream gradient), altered the flow regime for the North Sulphur River and numerous named tributaries to the North Sulphur River. These actions, completed in the late 1920's, resulted in exceptional erosion impacts along the North Sulphur River and its tributaries, thereby impairing and substantially degrading the hydrologic, biogeochemical, and both aquatic and terrestrial habitat functions within the project area. To date, the degradation continues and is projected to continue into the foreseeable future without corrective action.[1]

The channelized portion of the North Sulphur River, originally constructed to a depth of approximately 10 feet with a width of approximately 16 to 20 feet, is now more than 60 feet deep with a width of approximately 350 feet in places.[2] A majority of the terrestrial habitat that remained following clearing for agricultural cropland along the edge of the original channel has been lost to erosion. The remaining habitat along the abandoned meanders of the former North Sulphur River trace has been significantly impacted due to agricultural pursuits in the original floodplain. Currently, the eroded river channel has the hydraulic capacity to contain the 100-year flood wholly within the channel.[1] Thus, the original floodplain has been abandoned and the land adjacent to the North Sulphur River and for a considerable distance up its tributaries no longer experiences periodic overbanking or flooding.

Since the degree of erosion within this river system was unique, a stream geomorphology study[1] was commissioned for the following reasons:

1. to assess the past and current erosion of the North Sulphur River and its tributaries,
2. to develop certain predictive information about the value of the project with respect to stemming erosion, and
3. to predict the degree of future erosion in the absence of a project.

The report concluded that in the absence of the project, there would be continued erosion of the North Sulphur River and its tributaries. The geomorphology report further predicted a lateral rate of bank erosion at four inches per year (two inches on each bank). This rate was specifically applicable where shale (bedrock underlying the area) was encountered as the result of vertical erosion. Specific conclusions from the geomorphology report state:

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[1] Mussetter Engineering, Inc. *Geomorphic and Sedimentation Evaluation of North Sulphur River and Tributaries for the Lake Ralph Hall Project.* October 23, 2006.
[2] Taylor, Thomas E. *A Brief History of the Project to Channelize the North Sulphur River*. January 24, 2011.

> *"In the absence of the Lake Ralph Hall project, there will be continued erosion of the North Sulphur River and its tributaries. On average, where shale is exposed in the bed and banks of the channels, the channel depth will increase by about 16 feet over a 50-year period. Increased channel depths are also likely to cause further mass failure of the alluvial portions of the banks. Thereby increasing channel top widths, as well."*

The geomorphology report also concluded that tributaries to the North Sulphur River would experience a similar erosional fate, driven by the extreme slope gradient of the deeply incised North Sulphur River. Erosion, deepening and widening of the tributary channels, would continue upstream – well beyond their current termini. Currently, the boundary of the conservation pool somewhat defines the upslope extent to which the accelerated erosion has reached both within the North Sulphur River and its tributaries.

The geomorphology report determined that in the absence of the project, this head-ward incision and erosion would continue, with the attendant loss of riparian and terrestrial habitat and aquatic stream functions. With the lake in place, the base surface and ground water gradients of the North Sulphur River system would be raised to elevation 551 feet msl (approximately 90 feet higher than the existing condition) upstream of the dam. Raising the gradient of the North Sulphur River would significantly reduce future degradation of the tributary slopes.

Detailed descriptions of the general project area, including the U.S. Forest Service (USFS)'s National Grasslands (Ladonia Unit of the Caddo National Grassland Wildlife Management Area (WMA)), are provided in reports documenting the existing conditions of the project area which are summarized in Chapter 3 of the FEIS. Additional information regarding the Ladonia Unit of the Caddo National Grasslands is available in the Environmental Assessment – United States Department of Agriculture (USDA) USFS Ladonia Watershed Landscape Analysis, downloaded from the USDA USFS website[3] and the Management Plan – Caddo Wildlife Management Area[4] received from the Texas Parks and Wildlife Department (TPWD) via email on August 17, 2005.

Additional detailed descriptions of the project area are provided in reports documenting the various studies conducted for the project, which include the *Hydrologic and Hydraulic Studies of Lake Ralph Hall*[5] conducted by R.J. Brandes Company and dated April 27, 2004; the *Archaeology and Quaternary Geology at Lake Ralph Hall, Fannin County, Texas*[6] report prepared by AR Consultants, Inc. dated December 7, 2005; the *Summary of Alternative Dam Site Analysis for Lake Ralph Hall*[7] prepared by CH2M HILL dated September 2009; and the *Lake Ralph Hall Water*

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[3] http://www.fs.fed.us/r8/texas/planning/nepa_index.shtml downloaded August 17, 2005.

[4] TPWD Caddo Wildlife Management Area 2005 Strategic Plan via email correspondence August 17, 2005.

[5] R. J. Brandes Company. *Hydrologic and Hydraulic Studies of Lake Ralph Hall*. April 27, 2004.

[6] AR Consultants, Inc. *Archaeology and Quaternary Geology at Lake Ralph Hall, Fannin County, Texas. Texas Antiquities Permit 3693.* December 7, 2005.

[7] CH2M HILL *Summary of Alternative Dam Site Analysis for Lake Ralph Hall*. September 2009.

Pipeline Alignment Study[8] prepared by CP&Y and CH2M HILL dated March 2010. These reports are also summarized in the FEIS.

<u>Description of the Mitigation Areas</u>

Based on the scale and nature of the project, the Permittee will provide compensatory mitigation by permittee-responsible mitigation (PRM) under a watershed and ecosystem approach consistent with the 2002 Regulatory Guidance Letter (RGL-02-2) for compensatory mitigation projects associated with aquatic resource impacts. The compensatory mitigation measures and site selection consider the practicability and capability for offsetting impacts to aquatic resource functions in the vicinity of the project given the geologic and land use constraints. The mitigation sites were selected based on their hydrologic and ecological potential to maximize the likelihood of enhancing naturally, self-sustaining aquatic resources in the same watershed as the impacts.

Aquatic resource mitigation activities will take place within three general geographic areas identified as Mitigation Zones A, B, and/or C (see **Figure A-1, Appendix A**). These areas are all within the North Sulphur River watershed and near the project. Mitigation Zone A is located immediately downstream of the Leon Hurse Dam site between the dam (to the west) and FM 904 and Baker Creek (to the east). Mitigation Zone B is located approximately two miles west of Ladonia and south of the North Sulphur River. Mitigation Zone C is located approximately 6.5 miles west of Ladonia and south of the North Sulphur River. Emergent wetland mitigation will take place within the project boundary as shown in **Figure A-1, Appendix A.**

As noted above, Mitigation Zone A is located immediately downstream of the dam (see **Figure A-3 Appendix A**). Mitigation Zone A includes a 6,579 LF reach of the main channel North Sulphur River that begins at a point just below the dam and extends to its confluence with Baker Creek. As such, the North Sulphur River bifurcates Mitigation Zone A, creating an area to the north of the North Sulphur River and one to the south. The area north of the North Sulphur River includes a number of ephemeral streams that flow east into Baker Creek. Due to the erosion of Baker Creek resulting from effects of previous channelization of the North Sulphur River, portions of these tributaries have also been affected, leaving them deeply incised. The area also includes on-channel impoundments and a number of man-made ditches that have been used to drain agricultural fields. One of the main features in the area south of the North Sulphur River are remnants of the former North Sulphur River prior to its channelization. These traces show that the former North Sulphur River was highly sinuous and had a functioning floodplain. The former floodplain (now used as farm land) is geographically situated at an elevation well above (50 to 60 feet) the bottom of the present-day (i.e., "main channel") North Sulphur River. Today, the former North Sulphur River is discontinuous, with portions of it completely disconnected from its historical watershed. Two reaches of the former North Sulphur River now terminate in the main channel North Sulphur River. Due to the incised condition of the main channel North Sulphur River, these terminal reaches of the former North Sulphur River are also severely incised and continue to actively headcut upstream. Landowners have attempted to abate this erosion by installing large culverts as grade control. However, these actions have had limited success. The watershed of

[8] CP&Y and CH2M HILL *Lake Ralph Hall Water Pipeline Alignment Study*. March 2010.

the former North Sulphur River extends south to FM 64. Within this watershed are a number of ephemeral streams, man-made drainage ditches, and on-channel impoundments. The upper reaches of the watershed include some forested areas adjacent to the ephemeral streams. However, much of the area south of the main channel consists of pastureland and cultivated farmland.

Mitigation Zone B is located immediately south of the reservoir (see **Figure A-4, Appendix A**). This area includes a network of ephemeral streams leading north to the North Sulphur River. Similar to streams in Mitigation Zone A, portions of the streams within Mitigation Zone B are also in a degraded condition. Mitigation Zone B includes areas of pasture-land, some wooded riparian zones and multiple on-channel impoundments.

Mitigation Zone C (see **Figure A-5, Appendix A**) is located west of FM 68. This area features two ephemeral stream systems that flow northward to the North Sulphur River. Due to the influence of the North Sulphur River, extensive reaches of these streams are in a degraded condition. Mitigation Zone C contains many existing and former impoundments and the streams located within the area have narrower riparian areas than the streams in Mitigation Zone B. The majority of the area is used as an active cattle ranch, therefore cattle impacts to streams are more apparent. Uplands in Mitigation Zone C consist primarily of non-native improved pasture grasses.

As previously described, aquatic resources in the vicinity of the project have been degraded by agricultural practices and past channelization projects within the North Sulphur River watershed. These anthropogenic activities have continued to exacerbate erosion problems within the North Sulphur River watershed. As an example, downcutting and widening have resulted in a North Sulphur River channel with the capacity to contain the 100-year flood flow. Thus, the North Sulphur River and its tributary channels within the project boundary are disconnected from their historical floodplains, and this adverse effect of past actions is working its way upstream. The agricultural practice of clearing land for crops and pasture has fragmented many of the remaining habitat areas within the project boundary.

As shown in **Figure A-1, Appendix A**, Mitigation Zones B and C are located within the watershed of the reservoir. The mitigation activities within these areas will result in dynamic, yet stable stream systems. Sediment and nutrient transport from the watershed to the reservoir will be significantly reduced, increasing the useful life of the reservoir and improving the quality of water within the reservoir. Furthermore, Mitigation Zones B and C are located immediately east and west, respectively, of the Ladonia Unit of the Caddo National Grassland WMA. This will result in a large, near contiguous area with protected land that will create an extensive network of connected riparian habitat corridors. Given the watershed characteristics and potential for hydrologic restoration and ecosystem restoration at these mitigation sites, the selection of the mitigation sites is practicable for promoting successful, self-sustaining mitigation.

In addition to the aforementioned mitigation areas, an area for establishment of eight acres of palustrine emergent wetlands will be provided near the upper reaches of the reservoir (see **Figure A-1, Appendix A**). Topography and soils in this area are conducive for emergent wetlands establishment. Its proximity to the reservoir will also bolster establishment of wetland vegetation in fringe areas of the lake. To comply with the national policy for "no overall net loss" of wetlands, RGL 02-2 states that an acreage surrogate is an acceptable means for compensation for wetland impacts. Accordingly, the approximately eight acres of emergent wetland impacts associated with on-channel impoundments will be compensated by the establishment of the eight-acre wetland. Furthermore, in compliance with the Federal Aviation Administration Advisory Circular on *Hazardous Wildlife Attractants on or near Airports* (AC No: 150/5200-33, May 1, 1997), no existing or proposed airports are located within five miles of the emergent wetland mitigation area.

Consistent with Regulatory Guidance Letter (RGL) 02-2, the permittee-responsible mitigation utilizes a watershed and ecosystem approach, which is preferable since it provides in-kind, functional replacement for the impacted WOTUS. Utilizing a watershed and ecosystem approach, the resource needs for the North Sulphur River watershed are considered in this Mitigation Plan.

The use of private mitigation bank credits was considered as a means of compensatory mitigation for impacts to WOTUS. During this evaluation, the Brooks Creek Mitigation Bank (BCMB) was identified as having a tertiary service area that includes the Lake Ralph Hall project area. In reviewing the Final Mitigation Banking Instrument for the BCMB[9], the only credits available are associated with Forested Wetlands. Forested wetlands that would be considered WOTUS are not being impacted by Lake Ralph Hall. Further, the BCMB does not have stream credits available. Accordingly, the purchase of mitigation bank credits was determined to not be practicable due to the unavailability of stream and in-kind wetland credits at the BCMB. Based on the information provided herein, permittee-responsible mitigation is the only option available for the Lake Ralph Hall project.

[9] *Final Mitigation Banking Instrument – Brooks Creek Mitigation Bank Bowie County, Texas*. First Texas Resource LLC c/o Resource Environmental Solutions. July 2011.

3. Liens, Easements or Encumbrances

Liens, easements or encumbrances on the mitigation areas are not anticipated to impact achievement of the goals and objectives of this Mitigation Plan.

During the real-estate acquisition process, the Permittee will provide a copy of the title abstract, including a 100-year title search performed by a title company operating within the State of Texas, for all properties on which mitigation activities will take place. The Permittee will also provide a legal survey of the mitigation areas with all easements and encumbrances depicted. For any exceptions to title, the Permittee will provide an attorney's Opinion of Title prepared in accordance with Federal Title Standards, addressing each scheduled exception to title and either clear said exception or provide explanation as to its permissible use in the project.

The Permittee is acquiring mineral interests held by the current owner, including surface rights. However, there are some outstanding mineral interests that have been previously severed and the Permittee does not anticipate acquiring these outstanding mineral rights associated with properties selected for mitigation. There is no active oil or gas production or exploration activities occurring on properties selected for mitigation or on any of the adjacent properties.[1] Since the Permittee is not expected to own all subsurface mineral rights on lands being acquired for mitigation, the Permittee will not be able to control a mineral owner's access to the site for exploration or extraction of those minerals. Should the Permittee learn of any proposed oil/gas exploration in the future on or adjacent to any properties selected for mitigation, the Permittee will endeavor to work with the mineral rights holder(s) and lessee(s) to avoid and minimize to the greatest extent practicable all surface disturbances that would impact the mitigation project. Furthermore, since the mitigation areas are comprised of streams and associated riparian buffer corridors, future impacts, if any, would be limited to linear crossings.

No petroleum product collection or transmission pipelines or electrical transmission lines are presently located within the mitigation areas. Any electrical service lines crossing the mitigation areas will be removed along with the facilities they serve.

All existing roads or road right-of-ways have been excluded from the mitigation areas and thus do not contribute to mitigation crediting.

During the real estate acquisition process, the Permittee will provide information to the USACE on all liens, easements, and encumbrances associated with the mitigation properties identified during the real estate acquisition process. If additional easements are identified during the final property acquisition phase that encroach into areas selected for mitigation, those areas will be excluded from the mitigation buffers/site protection, and sufficient mitigation uplift (FCU credits)

[1] http://wwwgisp.rrc.texas.gov/GISViewer2/

will be provided through adaptive management activities (see **Part III, Section 12**). Currently, there are no known encumbrances that may affect the mitigation areas.

4. Baseline Information / Site History

A summary of baseline information related to ecological conditions for the proposed impact site and proposed mitigation areas within the mitigation zones is provided below. Information provided includes site hydrology; endangered species; cultural resources; soils; and vegetative communities. A summary of Waters of the United States (WOTUS) delineated within the impact and mitigation project areas is also provided. Additionally, a summary of the baseline functional condition of the streams within the impact and mitigation project areas is provided.

Hydrology

As previously described in **Section 2**, the proposed project is located within the North Sulphur River drainage basin in an area where the North Sulphur River was channelized in the early 1900's. Over time, the North Sulphur River has subsequently down-cut and widened to the point where the 100-year flood is contained within the channel's banks. Due to the down-cutting and widening of the North Sulphur River, tributaries contributing to the river have also experienced similar incision and degradation.

The exceptional erosion exhibited along the river channel and throughout the watershed as a result of the past channelization has resulted in significant degradation of the hydrologic, biogeochemical, and habitat functions within the area of the proposed project. Constant erosion leads to the continued loss of topsoil, riparian vegetation, stream properties, and stream functions in the North Sulphur River watershed.

The hydrology of the North Sulphur River and its tributaries is dominated by surface runoff following rain events. However, the North Sulphur River can experience inflow of groundwater for extended periods after rain events, supporting its classification as an intermittent stream. During prolonged periods of drought, substantial reaches of the North Sulphur River can be dry and non-flowing.

Within the proposed conservation pool of Lake Ralph Hall and in Mitigation Zone A are remnants of the native channel of the North Sulphur River. Due to past channelization, these sinuous remnants of the former channel were cut off from their original watersheds, resulting in loss of stream functions. Portions of the former North Sulphur River channel are connected to the present-day main channel, and as a result are also experiencing significant incision and degradation. Additionally, sections of the former North Sulphur River were either historically straightened or filled so that farming operations could take place in the fertile soils of the former floodplain, leaving isolated oxbow depressions that no longer function as streams.

Endangered Species

Table 3-22 of the Environmental Impact Statement (EIS) provides a comprehensive list of federally and state listed endangered and threatened species for Fannin County. The list includes two species federally listed as endangered: least tern (*Sternula antillarum athalassos*) and whooping crane (*Grus americana*), and two federally listed threatened species: piping plover (*Charadrius melodus*) and red knot (*Calidris canutus rufa*). Within Fannin County, Texas Parks and Wildlife Department (TPWD) lists as either threatened or endangered seven birds: bald eagle (*Haliaeetus leucocephalus*), Eskimo curlew (*Numenius borealis*), least tern (*Sternula *antillarum athalassos*), peregrine falcon (*Falco peregrinus*), piping plover (*Charadrius melodus*), whooping crane (*Grus americana*), and wood stork (*Mycteria americana*); five fish: blackside darter (*Percina maculata*), blue sucker (*Cycleptus elongatus*), creek chubsucker (*Erimyzon oblongus*), paddlefish (*Polyodon spathula*), and shovelnose sturgeon (*Scaphirhynchus platorynchus*); two mammals: black bear (*Ursus americanus*) and red wolf (*Canis rufus*); three mollusks: Louisiana pigtoe (*Pleurobema riddellii*), southern hickorynut (*Obovaria jacksoniana*), and Texas pigtoe (*Fusconaia askewi*); and three reptiles: alligator snapping turtle (*Macrochelys temminckii*), Texas horned lizard (*Phrynosoma cornutum*) and timber rattlesnake (*Crotalus horridus*). Based on species research and evaluations of preferred habitat for the federal and state listed species, the EIS states it is unlikely there would be impacts to any of the federal listed species for Fannin County as a result of the proposed project. The state listed timber rattlesnake as well as the three state listed mollusks are indicated as having the potential to be impacted by the construction of the proposed project. However, the EIS concludes overall impacts would be minor.

Cultural Resources

The Permittee has a Programmatic Agreement with the United States Army Corps of Engineers (USACE) and the Texas Historical Commission (THC) which will be followed to determine the National Register of Historic Places (NRHP) eligibility of all archeological and historical resources identified within the Area of Potential Effect (APE) in consultation with the State Historic Preservation Office (SHPO) and the Tribes historically associated with the area.

Soils

The Lake Ralph Hall project is entirely located within the Northern Blackland Prairie ecological region. This region is primarily underlain by interbedded chalks, marls, limestones, and shales. Soils found in this ecological region are mostly fine-textured, dark, calcareous, and productive vertisols[1]. In lowland areas with higher precipitation, soils with a higher clay content can be found. According to information obtained from the Soil Survey of Fannin County[2], a total of 11 mapped soil units are located within the three mitigation zones (A, B and C). These include Belkin silt loam; Crockett loam; Ferris clay; Heiden clay; Heiden-Ferris complex; Hopco silt loam; Houston black clay; Leson clay; Normangee clay loam; Tinn clay; and Wilson silt loam.

Vegetation

The project site includes a variety of vegetative communities including open pasture, fence row tree lines, patches of forested riparian areas, fallow and active agricultural fields, prairie grasslands, and patches of upland woods along slopes. Most pasturelands are dominated by "improved" grasses such as coastal bermudagrass (*Cynodon dactylon*) and tall fescue (*Festuca arundinacea*). Historical vegetation consisted of little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardi*), yellow Indiangrass (*Sorghastrum nutans*), and tall dropseed (*Sporobolus compositus*). Stream riparian communities within the mitigation zones harbor multiple species of canopy trees, shrubs, woody vines and herbaceous plants that are similar to

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[1] Griffith, G.E., Bryce, S.A., Omernik, J.M., Comstock, J.A., Rogers, A.C., Harrison, B., Hatch, S.L., and Bezanson, D., 2004, Ecoregions of Texas (color poster with map, descriptive text, and photographs): Reston, Virginia, U.S. Geological Survey (map scale 1:2,500,000).

[2] https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm

the communities documented for the impact site. Canopy trees include bur oak (*Quercus macrocarpa*), sugar hackberry (*Celtis laevigata*), American elm (*Ulmus americanus*), green ash (*Fraxinus pennsylvanica*), black willow (*Salix nigra*), Bois d' Arc (*Maclura pomifera*), box elder (*Acer negundo*), cedar elm (*Ulmus crassifolia*), honey locust (*Gleditsia triacanthos*), pecan (*Carya illinoinensis*), water oak (*Quercus nigra*) and willow oak (*Quercus phellos*). Shrubs include deciduous holly (*Ilex decidua*), redbud (*Cercis candensis*), rough-leaf dogwood (*Cornus drummondii*) and yaupon holly (*Ilex vomitoria*). Woody vines include greenbriar (*Smilax spp*.), mustang grape (*Vitis mustangensis*) and poison ivy (*Toxicodendron radicans*). Herbaceous species include annual sumpweed (*Iva annua*), butterfly-pea (*Clitoria ternatea*), frogfruit (*Phyla nodflora*), giant goldenrod (*Solidago gigantea*), giant ragweed (*Ambrosia trifida*), inland seaoats (*Chasmanthium latifolium*), Japanese honeysuckle (*Lonicera japonica*), poison ivy, nutgrass (*Cyperus rotundus*), Virginia creeper (*Parthenocissus quinquefolia*) and Virginia wildrye (*Elymus virginicus*). Canopy trees within upland communities include American elm (*Ulmus americanus*), black walnut (*Juglans nigra*), eastern red cedar (*Juniperus virginiana*) and sugar hackberry. Shrubs within upland communities include Mexican plum (*Prunus mexicana*), yaupon holly and redbud. Herbaceous species within upland areas include annual sumpweed, annual ragweed (*Ambrosia artemisiifolia*), balloonvine (*Cardiospermum halicacabum*), bermudagrass, coralberry (*Symphoricarpos orbiculatus*), cocklebur (*Xanthium strumarium*), common sunflower (*Helianthus annuus*), giant goldenrod, giant reed (*Arundo donax*), Illinois bundleflower (*Desmanthus illinoensis*), Japanese honeysuckle, Johnsongrass (*Sorghum halepense*), partridge pea (*Chamaecrista fasciculata*), poison ivy, greenbrier and garden dewberry (*Rubus aboriginum*).

Waters of the United States (WOTUS)

Initial documentation of WOTUS was provided in a Preliminary Jurisdictional Determination (PJD) report dated October 10, 2006[3]. The PJD report was updated June 21, 2017 and summarized in a Supplemental Jurisdictional Determination (SJD) report. The SJD report was submitted to the USACE with a request to approve the jurisdictional determination. On July 27, 2017, the UTRWD received confirmation of an Approved Jurisdictional Determination (AJD) from the USACE. The SJD report and copy of the correspondence confirming the AJD are included in **Appendix B**.

Within the 13,094-acre assessment area[4] documented in the SJD, approximately 501,058 linear feet (LF) of streams and 56.19 acres of water associated with 33 on-channel impoundments were identified within the footprint of the proposed conservation pool, dam and spillway. Lacustrine fringe wetland areas associated with the aforementioned 33 on-channel impoundments totaled approximately eight acres.

As the design of the dam and associated components progressed, streams were added to reflect changes to the overall impact area. Approximately 6,579 LF of the North Sulphur River downstream of the dam was added due to proposed fill within the channel. Additionally, an ephemeral tributary of Baker Creek was affected by relocation of the spillway and four

[3] Preliminary Jurisdictional Determination (PJD) report prepared by Alan Plummer Associates, Inc. for the Lake Ralph Hall project area dated October 10, 2006.

[4] The assessment area includes the project boundary and most, but not all, of Mitigation Zone A, and portions of Mitigation Zones B and C.

ephemeral tributaries were included due to realignments of County Road (CR) 3443 and CR 3444. After inclusion of these waters due to design refinements, a total of 509,292 LF of delineated streams are located within the impact area. A summary of the delineated streams within the impact area is included in Table 4-1. **Figure A-6** included in **Appendix A** shows the delineated aquatic resources within the impact area.

A total of 192,829 LF of existing streams were delineated within the three mitigation zones (A, B and C). A summary of the delineated streams by mitigation zone is shown in Table 4-2. Locations of these streams are shown in **Figures A-7, A-8 and A-9**, included in **Appendix A**.

Baseline Functional Capacity

Overview of SWAMPIM

The Lake Ralph Hall project was assigned USACE – Fort Worth District Project Number SWF-2003-00336. At the time of project initiation, an approved functions-based assessment protocol was not available within the Fort Worth District. The Permittee was charged with replacing stream functions associated with the impoundment of the North Sulphur River and its corresponding tributaries on a watershed basis in lieu of an areal or linear foot basis for mitigation. This charge is consistent with regulatory guidance applicable to this project, specifically Regulatory Guidance Letters 01-1[5] and 02-2[6]. Accordingly, the SWAMPIM protocol was developed and vetted by the cooperating agencies and ultimately accepted as the assessment protocol[7] to determine baseline conditions of aquatic resources within the Lake Ralph Hall project area. By 2006, SWAMPIM was being used to assess the functional condition of streams for the Lake Ralph Hall project and it will continue to be used through project monitoring, final acceptance, and close-out.

SWAMPIM is divided into three overarching functional categories: (1.) Hydrologic Functions; (2.) Water Quality / Biogeochemical Functions; and (3.) Habitat Functions. Within each overarching functional category, SWAMPIM provides individualized metrics to measure specific functions. The individualized metrics are scored on a scale of 0-10. Once rated within each functional category, the scores are tallied and divided by their maximum value for their corresponding functional category, which provides the "Functional Condition Index" or FCI for the specific functional category. The individual FCI values for each functional category are then summed to develop a total FCI for that stream reach or stream category.[8] Table 4-3 identifies the individual metrics considered and calculations used to develop the total FCI for a stream reach / stream category.

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[5] U.S. Army Corps of Engineers. Regulatory Guidance Letter No. 01-1. October 31, 2001.

[6] U.S. Army Corps of Engineers. Regulatory Guidance Letter No. 02-2. December 24, 2002.

[7] Letter dated March 24, 2015 from EPA to USACE concurring use of SWAMPIM as Functional Assessment Protocol for Lake Ralph Hall.

[8] Within the proposed impact area, streams were assessed and categorized by a stream width range. SWAMPIM values for an assessed width range were averaged and applied globally to the stream width category within the impact area due to the stream characteristics being very similar. Whereas within the proposed mitigation area, streams were assessed by individual stream reach.

TABLE 4-1: EXISTING FUNCTIONAL CAPACITY OF STREAMS IMPACTED BY RESERVOIR COMPONENTS[1,2]

Description		Stream Type	Stream Assessment Reach (SAR) Length (Linear Feet)	Total Stream Function Condition Index (FCI)[3]	Multiplication Factor[4]	Total Stream Function Capacity Units (FCU)[5]
Note 6	North Side, 0.5 - 2.0' wide	Ephemeral	26,835	0.70	0.00125	23.48
	North Side, 2.5 - 5.0' wide	Ephemeral	88,309	0.95	0.00125	104.87
	North Side, 6 - 15' wide	Ephemeral	55,023	0.45	0.00125	30.95
	North Side, >16' wide	Ephemeral	82,713	0.55	0.00125	56.87
	South Side, 0.5 - 2.0' wide	Ephemeral	19,769	0.62	0.00125	15.32
	South Side, 2.5 - 5.0' wide	Ephemeral	66,967	0.79	0.00125	66.13
	South Side, 6 - 15' wide	Ephemeral	92,155	0.65	0.00125	74.88
	South Side, >16' wide	Ephemeral	13,717	0.50	0.00125	8.57
	NSR (Dam and Inundation)	Intermittent	55,570	0.35	0.00250	48.62
Note 7	NSR-MC-PRE (Downstream of Dam)	Intermittent	6,579	0.50	0.00250	8.22
	T3-BAKER-TRIB2-(2)	Ephemeral	492	0.61	0.00125	0.38
Note 8	N1-TRIB6	Ephemeral	541	0.90	0.00125	0.61
	N1-TRIB6-A1	Ephemeral	369	0.92	0.00125	0.42
	N1-TRIB6-A2	Ephemeral	173	0.84	0.00125	0.18
	N1-TRIB9	Ephemeral	80	0.79	0.00125	0.08
Subtotal		***Intermittent***	***62,149***	**-**	**-**	***56.84***
Subtotal		***Ephemeral***	***447,143***	**-**	**-**	***382.74***
TOTAL		**-**	**509,292**	**-**	**-**	**439.58**

Notes for Table 4-1 provided on the following page.

Notes for Table 4-1

1. *Proposed reservoir components include conservation pool; dam; primary and auxiliary spillways; and main channel North Sulphur River (NSR) improvements.*
2. ***Appendix D** contains individual data sheets for reaches within the proposed reservoir components.*
3. *FCI average values from SWAMPIM assessment of multiple representative streams for each category as field reviewed by coordinating agencies and documented in technical memorandum dated Nov 10, 2009. NSR-MC-PRE and T3-BAKER-TRIB2-(2) were scored in May 2018 as part of the mitigation streams but were moved into the impact area as a result of changes made to the dam components in late 2018. FCI values shown rounded to the nearest hundredth.*
4. *Multiplication Factor for stream segment. Perennial = 0.00380; Intermittent with Perennial Pools = 0.00315; Intermittent = 0.00250; Ephemeral = 0.00125.*
5. *FCU = Reach Length (ft) * FCI * Multiplication Factor; Shown rounded to the nearest hundredth.*
6. *Previously presented values from the SJD report dated 6/21/2017. Rows show stream width range at ordinary high-water mark (OHWM). OHWM defined as the projected line of scour along a stream channel where the channel is typically devoid of vegetation. Stream OHWM used for stream classification. Detailed accounting of these rows is included on **Table D-1** in **Appendix D**.*
7. *Streams added to impact area after the SJD report dated 6/21/17, due to changes resulting from design progress on dam and associated components.*
8. *Streams added to impact area due to changes resulting from CR 3443 – CR 3444 realignments.*

TABLE 4-2: SUMMARY OF BASELINE FUNCTIONAL CAPACITY OF STREAMS WITHIN MITIGATION ZONES

Mitigation Work Zone	Stream Type	Baseline Total SAR Length (Linear Feet)	Baseline Total Functional Capacity Units (FCU)[1]
A	Ephemeral	88,823	81.51
B	Ephemeral	40,141	48.25
C	Ephemeral	63,865	53.16
TOTAL	**-**	**192,829**	**182.92**

Notes for Table 4-2:

1. *FCU = Reach Length (ft) * FCI * Multiplication Factor; Shown rounded to the nearest hundredth. Refer to **Appendix E** for data on individual SARs within each mitigation zone.*

Table 4-3: SWAMPIM Functional Condition Index Categories and Individual Metrics

Number	Hydrologic Functions	Water Quality / Biogeochemical Functions	Habitat Functions
1	Flow Regime	Sediment Transport / Deposition	Flow Regime
2	Channel Condition/Alteration	Channel Bottom Bank Stability or Channel Sediments or Substrate Composition	Epifaunal Substrate / Available Cover
3	Channel Capacity to Flow Frequency	Water Clarity	Stream Bottom Substrate
4	Channel Bank Stability	Nutrient Enrichment or Aquatic Vegetation	Pool Variability
5	Channel Sinuosity	Composition of Organic Matter	Sediment Deposition / Scouring
6	Bottom Substrate Composition	Land Use Pattern	Channel Flow Status
7	Instream Bottom Topography or Manning's N	Riparian Zone Width	Channel Alteration
8	Channel Incision	Riparian Zone Vegetation / Protection Completeness	Channel Sinuosity
9	Pools	--	Bank Stability
10	Channel Flow Status	--	Vegetation Protection
11	--	--	Riparian Zone
12	--	--	Riparian Habitat Condition
Total Metric Categories Scored	**10**	**8**	**12**
Maximum Score	**100 (10 categories x maximum score of 10)**	**80 (8 categories x maximum score of 10)**	**120 (12 categories x maximum score of 10)**
FCI Value (maximum individual FCI value is 1.0)	**Sum of the individual scored metrics / 100 (maximum score)**	**Sum of the individual scored metrics / 80 (maximum score)**	**Sum of the individual scored metrics / 120 (maximum score)**
Total FCI is the sum of Hydrologic, Water Quality/Biogeochemical, and Habitat tallied FCI values (Total FCI = Hydrologic FCI + Water Quality/Biogeochemical FCI + Habitat FCI)			

Functional Capacity Units (FCUs) for each stream assessment reach (SAR) are calculated using the following equation:

FCU = FCI x Stream Length x Multiplication Factor

Where:

FCU = Functional Capacity Unit
FCI = Total Functional Condition Index score for the SAR from Table 4-3 shown above
Stream Length = Length of SAR, in feet
Multiplication Factor determined by stream characterization as follows:

Ephemeral Streams = 0.00125
Intermittent Streams = 0.00250
Intermittent Streams with Perennial Pools = 0.00315
Perennial Streams = 0.00380

Once calculated, the individual FCU scores for all stream reaches / stream categories are summed to determine the ecological condition of the assessment area. Since the SWAMPIM FCU represents the ecological condition of the stream reaches / stream categories assessed, it will also be used as the means to measure the ecological condition after proposed mitigation measures have been implemented to ensure the mitigation areas will provide sufficient functional uplift to fully offset proposed impacts.

Full documentation of the SWAMPIM assessment protocol is provided as **Appendix C**.

Baseline Condition - Streams
On September 16, 2009, the cooperating agencies review team (CRT) performed a field review of numerous sites within the proposed impact area to review and comment on the collected data for aquatic and terrestrial resources.[9] The baseline functional capacity of streams within the impact area calculated using agency reviewed FCI scores[10] and stream lengths represented in the SJD (and affirmed by the AJD) was determined to be 429.69 FCUs. An additional 9.89 FCUs were documented for the steams added to the impact area due to the previously described design refinements, resulting in a total baseline functional capacity of 439.58 FCUs within the impact area. A summary of the baseline functional capacity of streams within the impact area is provided in Table 4-1.

SWAMPIM was also used to develop baseline functional conditions for the proposed mitigation streams within the three Mitigation Zones (A, B and C). Streams within the three Mitigation Zones were assessed in May/June 2018 and December 2018/January 2019. The baseline functional capacity of the mitigation streams was determined to be 182.92 FCUs. A summary of the baseline functional capacity of the mitigation streams is provided in Table 4-2.

Individual SWAMPIM datasheets for representative streams used to calculate the impacts associated with the conservation pool, dam, and spillway are included in **Appendix D**.

Appendix E includes a detailed table documenting the baseline condition of all SARs within Mitigation Zones A, B and C. Also provided in **Appendix E** are figures showing the location of each SAR within the three Mitigation Zones and accompanying SWAMPIM datasheets for each individual SAR.

Baseline Condition – Emergent Wetlands
Approximately 8-acres of lacustrine fringe wetlands were identified within the impact area. In accordance with Regulatory Guidance Letter 02-2, an acreage surrogate was selected for compensatory mitigation of the wetlands. As such, the baseline condition established for compensatory mitigation of lacustrine emergent wetlands is 8-acres.

[9] Attendees involved with the field review included representatives from the USACE, USFWS, USEPA, TPWD, TCEQ, UTRWD, CPYI, CH2M, and APAI.
[10] Technical memorandum to Mary Verwers, USACE dated November 10, 2009 – *Summary of SWAMPIM and WHAP Data Sets and Reports for the Proposed Lake Ralph Hall Project Site*

5. Mitigation Work Plan

The Permittee will mitigate unavoidable impacts to Waters of the U.S. (WOTUS) by using a watershed approach to implement mitigation measures within three designated mitigation zones and a wetland mitigation area adjacent to Lake Ralph Hall. The following mitigation work plan describes the overall design process and approach for stream (i.e. restoration, re-establishment and enhancement) and emergent wetland mitigation (i.e., creation), as well as the specific measures used to achieve the mitigation goals and objectives established in this Mitigation Plan.

Stream *restoration* practices (meaning the manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource[1]) will be the majority of the mitigation work that will be conducted on-site. Similar to restoration practices, *re-establishment* practices will be used in locations where a stream channel does not currently exist (such as an on-channel pond or impoundment) but will be recreated as a flowing stream system through the mitigation practices. Some stream reaches within the mitigation zones are partially stable and functioning and therefore do not warrant full restoration practices. These reaches will utilize *enhancement* practices to provide functional uplift and mitigation credit.

Emergent wetland mitigation will be provided through on-site establishment of an emergent wetland area adjacent to Lake Ralph Hall. Emergent wetland mitigation practices will involve grading to improve the contributing hydrology; grading to create topography within the wetland area that will hold water for extended periods of time at depths suitable for sustaining emergent wetland vegetation; planting of appropriate emergent wetland vegetation; and stabilizing soil areas disturbed during construction activities.

The specific mitigation activities outlined in the following sections will be used to provide functional replacement values for the aquatic resources adversely impacted by the construction of Lake Ralph Hall. Section 5.1 provides an overview of the design development and concepts for the overall project. Section 5.2 provides detailed information about the mitigation designs for stream channels, with the exception of the restoration of the main channel of the North Sulphur River (MC NSR). Section 5.3 specifically addresses the restoration of the MC NSR, while Section 5.4 describes the vegetation planting plan for the project. Section 5.5 addresses the emergent wetland designs for wetland mitigation of the project. Design plan sheets for the project are provided in **Appendix F**.

5.1 Overview of Design Development

Within each designated mitigation zone (Zone A, B, and C), the design team first conducted a detailed field investigation of current stream conditions to understand the baseline conditions of the streams (see **Part III, Section 4**). Field investigations included SWAMPIM scoring for functional assessment, bankfull area, bankfull width, bankfull depth, entrenchment ratio, bank height ratio, pool depths, pool-to-pool spacing, and bedform diversity. In addition to these data, notes were kept regarding the stressors affecting each reach and potential stabilization practices that would be appropriate for addressing instability and improving overall function. These data

[1] Department of the Army, Corps of Engineers (DOACOE), Environmental Protection Agency. April 10, 2008. Compensatory Mitigation for Losses of Aquatic Resources. Federal Register Vol. 73, No. 70.

and notes were used by the design team to determine the appropriate mitigation approaches (restoration, re-establishment, or enhancement) for each designated Stream Assessment Reach (SAR). Each of the three mitigation approaches are described below:

- Restoration – Restoration approaches are used on SARs that exhibited significant channel instability and a lack of floodplain connection. In order to restore stability and function, design and reconstruction of a new channel, and for some reaches a functional floodplain, are required to provide proper stream dimension, profile and pattern.
- Re-Establishment – Re-establishment approaches are similar to restoration approaches and involve the construction of a new channel designed; however, re-establishment is designated for reaches that do not currently function as stream channels. For example, re-establishment is designated for on-channel ponds and impoundments that will be removed and a new functional stream channel restored back through the footprint of the abandoned pond. Re-establishment approaches generally involve the reconstruction of a stable stream channel and functional floodplain.
- Enhancement – Enhancement approaches are used for SARs that are generally stable, such that complete channel reconstruction is not required to improve stream stability and function. Enhancement approaches may include some or all of the following, depending on the current condition of the stream: in-stream structure placement, bank grading, minor/localized channel realignment, and supplemental plantings.

An additional goal of the detailed field assessments was to identify stable or quasi-stable stream segments that could be assessed in greater detail as potential design channel analogs. This work was described in detail in EPR Technical Memorandum Number 2 (originally prepared October 2018; revised July 2019), included in **Appendix H**. In summary, four design channel analogs were identified and surveyed to inform the development of design criteria for the mitigation SARs. The surveyed reaches ranged in drainage area from 0.0032 to 0.84 square miles, which spans the range of many of the channels that are selected for mitigation. An additional stable reach was identified that exhibited a stable cross-section and bedform but exhibited a straight channel pattern that may have been manipulated in the past. This fifth reach (T2-BAKER-(1)) was surveyed only for bankfull dimension (i.e. cross sectional) data. Key geomorphological parameters are summarized in Table 5-1.

TABLE 5-1: Summary of Key Geomorphological Parameters for Surveyed Reaches

Reach	Drainage area (sq mi)	Channel Slope (ft/ft)	Sinuosity	Rosgen Stream Type	Riffle Bankfull Area (sq ft)	Riffle Width (ft)	Riffle Mean Depth (ft)	Width-to-Depth Ratio
T3-BAKER-TRIB1-B2-(1)	0.0032	0.03	1.13	Eb	1.0	2.4	0.42	5.8
S2-TRIB2-A3-(3)	0.014	0.018	1.20	C	1.7	4.6	0.37	12.4
T3-BAKER-TRIB1-(3)	0.0164	0.0089	1.21	Bc	1.4	3.6	0.39	9.3
T2-BAKER-(1)	0.0399	*not measured*	*not measured*	E	1.8	3.3	0.55	6.1
S2-TRIB3-(10)	0.838	0.00014	1.48	Cc-	14.7	15.5	0.95	16.3

For the five identified stable reaches that exhibited good bankfull indicators and access to an active floodplain, the collected geomorphological data were processed to estimate bankfull area, width, and mean depth for each reach as a function of drainage area, as described in *Regional Curve Analysis* section of EPR Technical Memorandum Number 2 (**Appendix H**). The analysis found meaningful correlation between the data collected for Lake Ralph Hall and published curves developed by others for the region. The curve developed for bankfull area as a function of drainage area is provided in Figure 5-1 below.

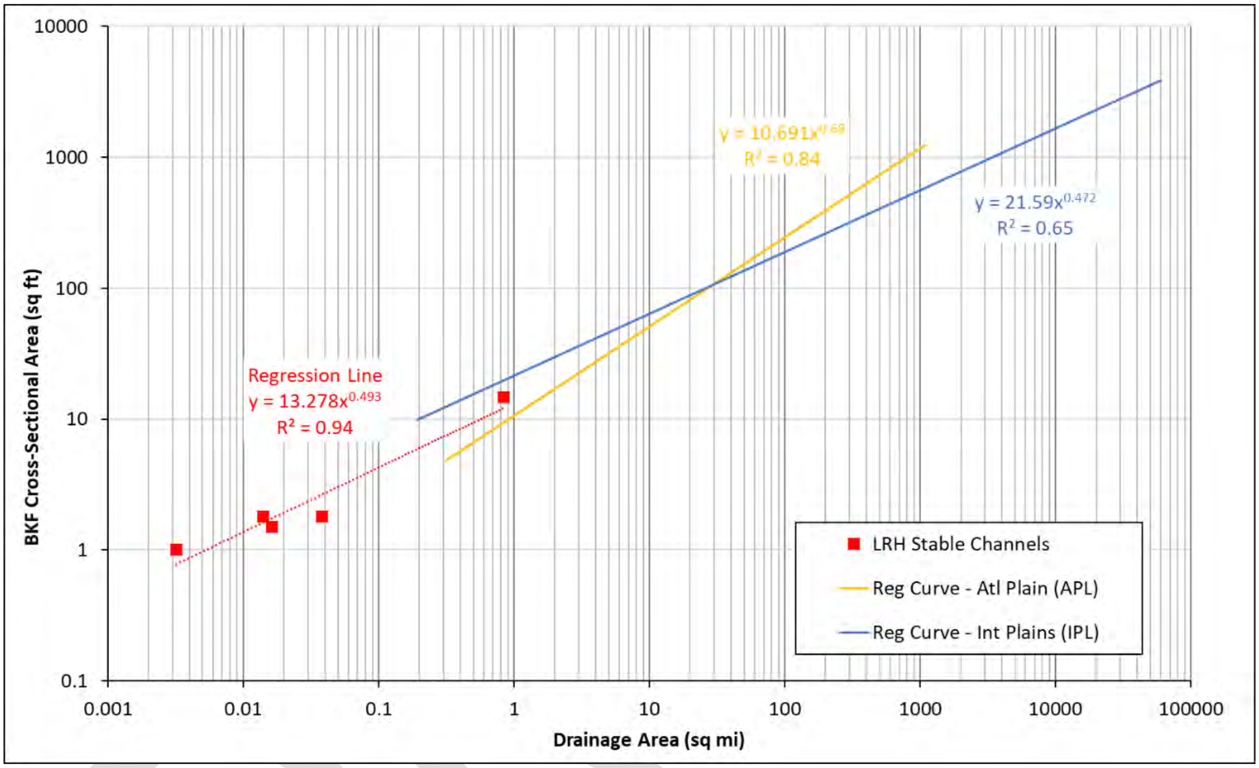


FIGURE 5-1: Bankfull Cross-sectional Area Relationships for Lake Ralph Hall Design Channel Analogs.

Site investigations also included the assessment of historic channel plan forms, as described in EPR Technical Memorandum Number 2 (**Appendix H**). Aerial photographs and photogrammetry survey data of the area were reviewed to identify stream segments that appeared to exhibit historic meander geometry. Data were reviewed in GIS; identified stream segments were digitized and measured to determine plan form geometry measurements and channel sinuosity. The results are summarized in Table 5-2.

Based on the information collected above, design criteria were developed for the project reaches and used to guide the development of specific designs for each designated stream reach. This process of design criteria development is discussed in detail by Freese & Nichols, Inc. (FNI) in the Basis of Design Report (June 2019, **Appendix H**) for the restored MC NSR, and EPR's Technical Memorandum Number 2 (July 2019, **Appendix H**) for all other stream channels on the mitigation site. Both technical memorandums are summarized in the sections below.

TABLE 5-2. Summary of Meander Pattern Geometry for Historic Stream Segment

Reach	Meander Length (ft)	Meander Width (ft)	Radius of Curvature (ft)	Riffle Width (ft)	Meander Length Ratio[1]	Meander Width Ratio[2]	Radius of Curvature Ratio[3]	Arc Angle (degrees)	Sinuosity
S2-TRIB3-(10)	121 - 243	52 - 106	22 - 53	15.5	7.8 – 15.7	3.4 – 6.8	1.4 – 3.4	69 - 150	2.18
NSR – Segment 1	238 - 704	218 - 395	103 - 229	59	4.0 – 11.9	3.7 – 6.7	1.7 – 3.9	83 - 143	2.62
NSR – Segment 2	324 - 578	272 - 383	97 – 180	59	5.5 – 9.8	4.6 – 6.5	1.6 – 3.1	47 - 135	1.84

Notes for Table 5-2

1. *Meander length ratio = meander length / riffle width*
2. *Meander width ratio = meander width / riffle width*
3. *Radius of curvature ratio = radius of curvature / riffle width*

5.2 Specific Design Approaches for Stream Mitigation Reaches (Excluding Main Channel of the North Sulphur River)

The design team used principles of Natural Channel Design (NCD) and geomorphology to develop design approaches for each SAR. The design philosophy involved the use of conservative values for the selected stream types and to allow natural variability in stream dimension, facet slopes, and bed features to form and stabilize over time under the processes of flooding, re-colonization of vegetation, and watershed influences. Data collected from design channel analogs were used to help inform the design process, but careful consideration was given to the differences between a newly constructed channel restoration and mature reference sites, and adjustments in design analog ratios were made accordingly[2].

Emphasis was placed on designing channels to carry the bankfull discharge and allowing larger flows to spill onto an active floodplain. For existing channels that are incised, reconnection with the stream's historic floodplain was the preference when practical (i.e. Priority 1 restoration approaches; see Figure 5-2). When reconnection with the historic floodplain was not practical, floodplain benches were designed at a lower elevation to provide floodplain access, generally with a target minimum floodplain width of three to five times the bankfull riffle width (i.e. Priority 2 restoration approach; see Figure 5-3). Pattern and profile designs were based on design channel analog information from the project watershed, design analog information from similar streams in other regions, and professional judgement gained from past restoration projects. The expectation is that the restored streams will be dominated by sand-size bed material or smaller for most project SARs. Stable riffle slopes were determined through sediment transport analyses, and when valley/stream gradient exceeded these predicted stable slopes, grade control structures, such as logs and rock riffles, were incorporated. Over the long term, grade control is expected to be provided by tree roots and debris jams.

[2] Harman, W., R. Starr. 2011. Natural Channel Design Review Checklist. US Fish and Wildlife Service, Chesapeake Bay Field Office, Annapolis, MD and US Environmental Protection Agency, Office of Wetlands, Oceans, and Watersheds, Wetlands Division. Washington, D.C. EPA 843-B-12-005.

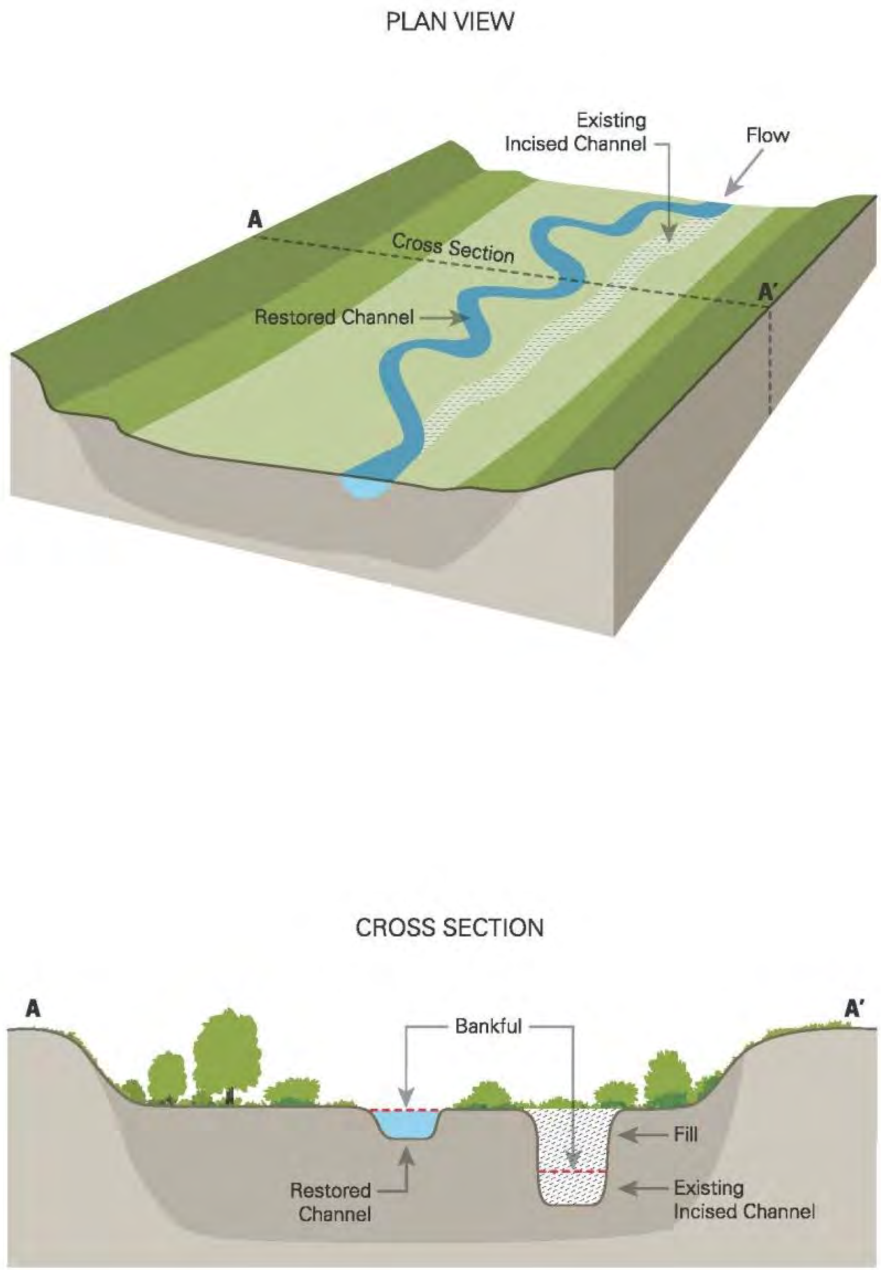


FIGURE 5-2: Priority 1 Stream Restoration Approach[3]

[3] Harman, W., R. Starr. 2011. Natural Channel Design Review Checklist. US Fish and Wildlife Service, Chesapeake Bay Field Office, Annapolis, MD and US Environmental Protection Agency, Office of Wetlands, Oceans, and Watersheds, Wetlands Division. Washington, D.C. EPA 843-B-12-005.

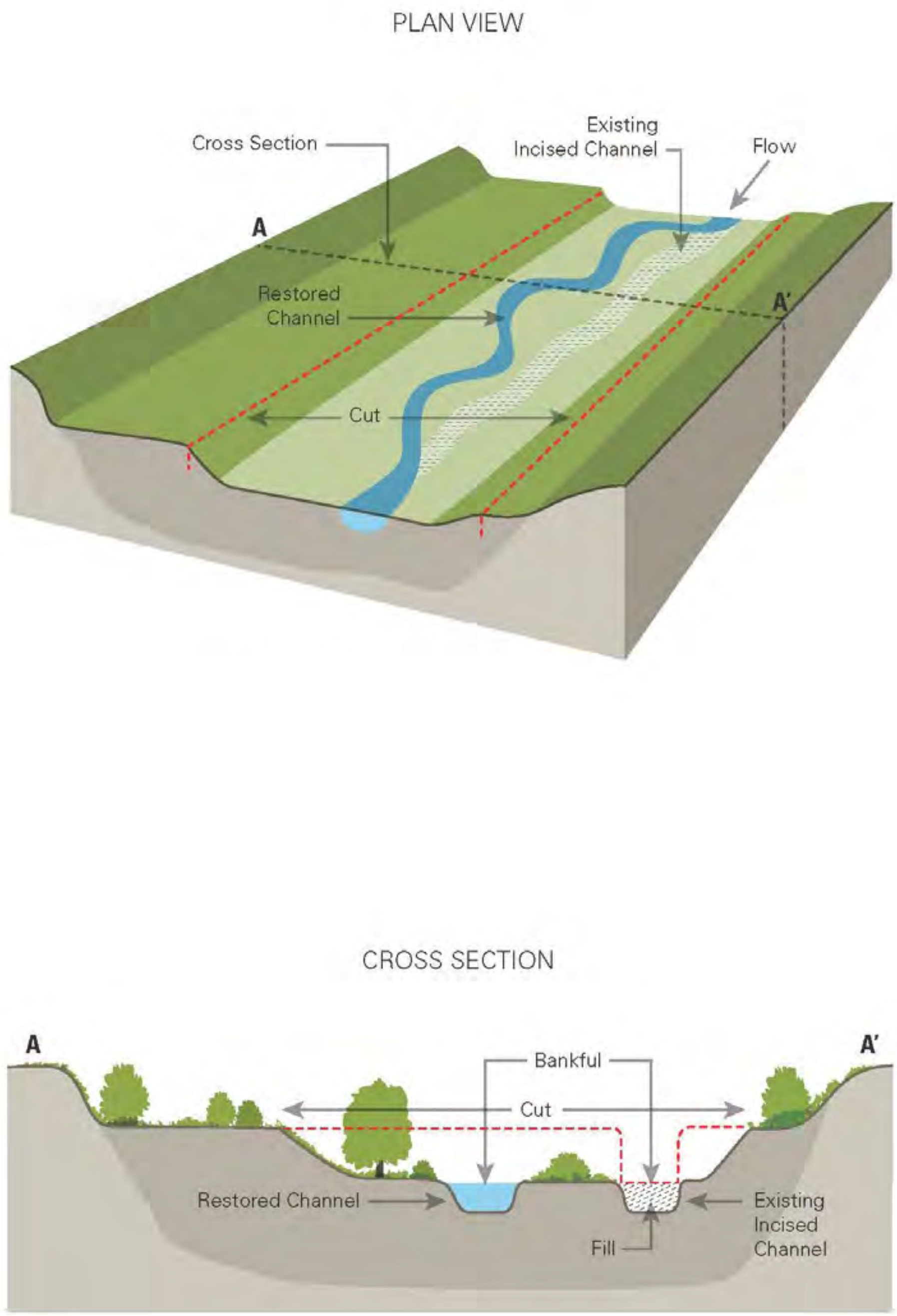


FIGURE 5-3: Priority 2 Stream Restoration Approach[4]

[4] Harman, W., R. Starr. 2011. Natural Channel Design Review Checklist. US Fish and Wildlife Service, Chesapeake Bay Field Office, Annapolis, MD and US Environmental Protection Agency, Office of Wetlands, Oceans, and Watersheds, Wetlands Division. Washington, D.C. EPA 843-B-12-005.

One of the most critical aspects of NCD is the sizing of the bankfull channel dimensions. For design purposes, the regression relationship between bankfull riffle area and drainage area presented in Figure 5-1 was used to estimate the appropriate bankfull riffle area (ABKF) for design stream reaches. Drainage areas for design reaches were determined by using site-specific topographic data to delineate reach watersheds. To establish appropriate reach lengths for design, one design reach ended and another reach began when a tributary stream entered the reach, thus increasing the drainage area significantly. Some design reaches were divided further by site conditions that required a change in design approach, such as a significant change in slope, floodplain width, channel condition, or other considerations.

Once the channel riffle dimension was sized, the shape of the channel was determined based on the procedures described in EPR Technical Memorandum Number 2 (**Appendix H**). This included design of both riffle and pool cross-sectional dimensions for each individual design reach. These design parameters are provided in the Representative Sections sheets (Design Plan Sheet Series 4.0 of the Design Plan Sheets, **Appendix F**) for each specific design reach.

The design channel analog data collected from the site indicate that channel sinuosity generally increases with decreased valley and channel slope. While sinuosity is influenced by other parameters in addition to slope, the design channel analog data collected for this site provided guidance for the range of appropriate sinuosities for given valley slopes. The valley slope of each design reach was determined from site-specific topographic data. Once the valley slope was determined for a reach, the design sinuosity was estimated. An estimate of design channel slope was then calculated by dividing the valley slope by the channel sinuosity.

Design parameters that define channel pattern (meander length, meander width, and radius of curvature ratios; arc angles) were estimated from design channel analog ratios provided in Table 5-2, using the process described in EPR Technical Memorandum Number 2. Pool-to-pool spacing was based primarily on meander geometry for streams with sinuosities greater than 1.4. For streams with sinuosities less than 1.2, pool spacing and placement was driven by the placement of in-stream structures that provide grade control and induce downstream scour pools. For streams with design sinuosities between 1.2 and 1.4, pool spacing and placement were driven by a combination of meander geometry and structure placement.

Instream structures for grade control and bank stabilization techniques used in the design reaches include the following:

- Log vane
- Log step
- Constructed riffle
- Constructed cascade
- Toe wood
- Debris jams
- Woody riffle

Design plan details for the aforementioned channel constructed features are featured in **Appendix F**, Design Plan Sheet Series 3.0.

Enhancement Reaches

There are numerous existing stream channels that are stable to partially stable that do not require full restoration practices. Enhancement practices will be used on these reaches and involve a combination of in-stream structure placement, localized grading and bank sloping, bend realignment, and supplemental plantings. Depending on the enhancement practices described, some or all of the design steps presented above may be used. For example, if a stream meander is cutting into a hillslope resulting in a highly eroding outer bend, an enhancement approach may be to realign the bend and create a floodplain bench along the outer bank to promote bank stability and decrease shear stresses on the bank, leaving the upstream and downstream reaches untouched. The elevation of the floodplain bench would be informed by the proper bankfull design dimensions for the stream reach, but detailed pattern and profile adjustments may not be required. Another example would be localized and minor bank erosion areas on relatively stable stream segments that simply require cattle exclusion, bank grading, soil stabilization, and/or planting. Design calculations and the criteria discussed above would not be required for simple enhancement approaches such as cattle exclusion and supplemental planting. Specific enhancement approaches, by stream reach, are shown in the Design Plan Sheets, included in **Appendix F**.

Sediment Transport Analysis

To assess the stability and sediment transport relationships for the channel designs described above, analyses of design shear stress and stream power were conducted, as fully discussed in EPR Technical Memorandum Number 2 (**Appendix H**). The purpose of a sediment transport analysis was to ensure that the stream restoration design creates a stable channel that does not aggrade or degrade over time. In small sand-bed systems like the majority of the mitigation stream reaches, the fine-textured bed material is mobile during bankfull flows; therefore, there is no need to determine the competency or maximum particle size that the stream can transport. Shear stress and stream power values were calculated for the surveyed Lake Ralph Hall design channel analog reaches and were plotted against channel slope to develop reference relationships. By calculating shear stress and stream power values for the mitigation design reaches and comparing them to the design channel analog relationships, an assessment was made for each design reach regarding its potential for stability after construction. If design shear stress and/or stream power values for a design reach were higher than the reference relationship, width-to-depth ratio (WDR) for the design channel was increased resulting in a wider, shallower channel design to reduce predicted shear stress, stream power, and reduce the potential for channel degradation. If shear stress and/or stream power values for a design reach were lower than the reference relationship, WDR was decreased resulting in a narrower, deeper channel design to increase shear stress and stream power to reduce the chances of sediment deposition and channel aggradation. Some design reaches still exhibited relatively high shear stress and/or stream power values after these adjustments. To account for high shear stress and/or stream power, in-stream structures were designed for each reach to provide the appropriate level of grade control to ensure channel stability.

Hydrologic Analysis of the Restored Former North Sulphur River

Previous studies[5] have evaluated the mitigation work and determined that the restored former North Sulphur River (FNSR) channel would maintain water in pools for prolonged periods of time, functioning as an intermittent stream with perennial pools. Since the previous studies were conducted, the mitigation designs have been further refined for the FNSR; therefore, a revised analysis was performed to evaluate the hydrology of the restored FNSR (referred to as design reach S2-3 in the mitigation design plans, **Appendix F**). EPR Technical Memorandum Number 3, provided in **Appendix H**, provides a detailed analysis of the hydrologic modeling that was conducted. The results of the modeling are summarized below.

As detailed in EPR Technical Memorandum Number 3 (**Appendix H**), the revised models resulted in similar results as the Brandes study - all restored reaches of the FNSR are predicted to retain water in the pools even during drought years. The major difference is the amount of water predicted. The Brandes study predicted pools approximately seven feet deep, whereas the current mitigation design plans for the FNSR have pool depths of approximately three to four feet. Regardless, the modeling effort confirms the results of the original Brandes study; that the restored FNSR should function as an intermittent stream channel with perennial pools.

5.3 Specific Design Approaches for the Main Channel of the North Sulphur River

The restoration design approach for the main channel of the North Sulphur River (MC NSR) had some significant differences from the design approaches used on other project reaches. Specifically, the MC NSR restoration consists of the following major components:

- Placement of fill on the existing riverbed, from the Leon Hurse Dam to Baker Creek, which serves to re-establish a floodplain for the restored channel
- Restoration of a stable (bankfull) channel-form to convey frequent low flows and sediment
- Construction of a floodplain step and step-pool to transition from fill to the downstream channel and provide hydrologic connectivity

A detailed design basis report has been prepared by FNI describing the design process for the MC NSR and is provided in **Appendix H**. The sections that follow briefly summarize the information in that report and the plans for the restoration of the MC NSR.

Due to the unstable nature of the MC NSR channel bed, a priority objective is to protect the dam from downcutting in the bed of the river. This objective is to be accomplished by placement of compacted fill, approximately 10 feet deep, over the bed of the current North Sulphur River, while at the same time stabilizing the existing MC NSR banks by “laying back” the valley walls at a flatter, more stable slope. After placement of fill, a new, stable channel for the North Sulphur River will be constructed through the valley fill using NCD and construction methods. Figure 5-4 below illustrates the MC NSR restoration components from a cross section view.

[5] Brandes, Bob. February 2017. Technical Memorandum: Preliminary Analysis of North Sulphur River Restored Channel as Perennial Stream. Prepared for Loretta Mokry and Tim Noack, Alan Plummer and Associates, Inc.

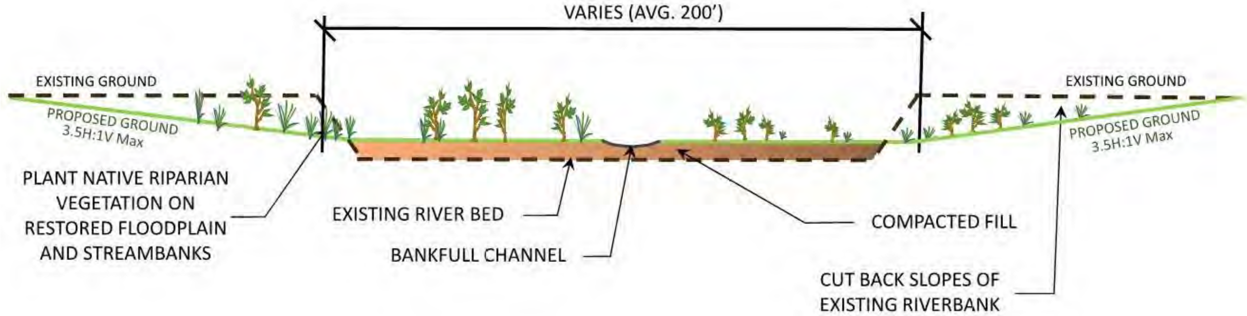


FIGURE 5-4: Section View of the Main Channel of the North Sulphur River Restoration Corridor

The primary design criterion for the restored MC NSR channel is to provide for the ability to convey the channel-forming (bankfull) discharge while neither aggrading nor degrading, i.e. to possess a stable-channel form. To provide a stable natural channel design, the following criteria will apply:

- Determination of the channel-forming (bankfull) discharge, which needs to account for hydrologic modifications from the dam, contributing discharges and sediment from the tributaries downstream of the dam, as well as discharge from the principal spillway
- Determination of the potential sediment regime or lack of sediment regime, given that the upstream dam will essentially cut-off most of the sediment delivery from the upstream watershed
- Analysis of design analog criteria derived from stable channels to inform design parameters

A downstream transition section, referred to as a Floodplain Step, will transition the new floodplain elevation to the existing floodplain elevation downstream. The primary purpose of the floodplain step is to provide a grade control that protects the restored floodplain and channel of the MC NSR from any future downcutting in the riverbed downstream of the dam. However, for ecological consideration and to maintain the hydrologic connectivity between the downstream and restored river reaches of the MC NSR, a step-pool structure, designed to convey low flows, will be built through the floodplain step. These types of structures have been used extensively throughout North America to provide hydrologic connectivity between reaches where there is an abrupt elevation change. In addition, step-pools emulate bedrock nick points found in natural channels.

The restoration of the MC NSR is to occur downstream of the dam to the confluence with Baker Creek. An increase in sinuosity (to approximately 1.2) based on natural design channel analog criteria, will result in a longer restored channel. In addition, three tributaries will be connected to the restored channel. One of these tributaries (T4) will connect approximately 1,600 feet from the start of the restoration reach, while the second (T1-BAKER) and third (S2-3, the restored FNSR) will connect immediately before the floodplain step structure at the end of the restoration reach.

Design Channel Characteristics

Restoration of the MC NSR will be designed as a Priority 2 stream restoration, meaning there will be construction of a new floodplain at a lower elevation than the historic floodplain of the river[6] (currently at the river top of banks) (Figure 5-3). The entrenchment ratio for the restored river will be greater than 15, demonstrating the substantial floodplain connectivity that is being restored and well above the threshold for entrenchment. Restoration of a floodplain is a critical component of stream restoration as it provides an area across which flows can be distributed to dissipate energy during high flow events and provides for greater ecological recovery of riparian flora and fauna.

Effective Discharge Determination/Hydrologic Analysis

A critical component in NCD is determining the stable channel-form. As a first step in determining this important design component, as well as the potential hydrologic regime of the restored channel, it was necessary to examine the effect of the dam and principal spillway on the hydrology of the restored MC NSR. FNI completed an analysis of the reservoir stage-storage frequency estimates based on the Water-Availability Model (WAM model) created as part of the Lake Ralph Hall project (FNI, 2019). The discharges expected to occur at different recurrence intervals (the 2-, 5-, 10-, 25-, 50-, and 100-year flow events) were analyzed for two situations: 1) when the reservoir is at conservation pool elevation of 551 feet and 2) based on the annual exceedance probability (AEP) of reservoir peak water surface elevation. In addition, FNI evaluated the estimated frequency and magnitude of discharge from the natural drainage areas of the MC NSR remaining after construction of the dam.

From a channel design perspective, the effective discharge or bankfull discharge can be defined as the discharge that does the most work in forming and shaping the channel over time and can be determined from evaluating the magnitude and frequency of sediment transport across a range of flows. The dam will effectively cut off sediment delivered upstream from the North Sulphur River watershed and reservoir overflows are not expected to contribute much if any flow into the channel during smaller events. This means that the effective discharge into the MC NSR will be informed by the sediment loads and the more frequent flows from the hillslope and channel processes of natural, contributing drainage areas downstream of the dam. However, the restored floodplain will still need to accommodate the higher flows expected from reservoir spills, including an estimated 2,000 cfs during a 100-year event. Based on this, the restored bankfull channel will be sized based on the bankfull discharge of the drainage area below the dam, while overflows/discharges from the reservoir will be carried in the restored floodplain. This concept mimics how stable channels can withstand high flow and high energy events by utilizing the conveyance of flow on the floodplain which has sufficient roughness to reduce velocity and energy.

Sediment Transport Considerations and Bed Material
Placement of immobile bed material on the restored bed of the MC NSR will help maintain vertical stability. Because the dam will cut-off sediment supply from upstream, existing cobble and gravel bed material will no longer be available to replace bedload that is mobilized downstream (i.e. a "sediment starved" condition) and the only sediment contributions will be from smaller tributaries

[6] Rosgen, D.L. 2006. Watershed Assessment of River Stability and Sediment Supply (WARSSS). Wildland Hydrology. Fort Collins, CO.

that join the MC NSR. As such, it is necessary to provide some stabilization of the riverbed, particularly the riffles, to resist the excess energy from the low frequency lake discharges that would otherwise be focused on transporting sediments (bedload and suspended) from upstream. This will be accomplished by using an immobile, cobble-sized bed material placed along the riffles of the channel. The bed material will be sized to be immobile during frequent flood events (1 to 10-year storm event) and will be compacted in a way that will resist higher shear stress during expected high flows (10 to 100-year storm event). The placement of this bed material will also help protect the compacted fill in which the bankfull channel will be formed. In this manner, the design will mimic upper valley, low sediment supply systems that have immobile beds while utilizing the energy reduction of the floodplain to carry high volume flows.

<u>Downstream Floodplain Step and Step-Pool Cascade</u>

As previously mentioned, to help maintain and protect the approximate 10 feet of fill placed over the existing riverbed, a downstream Floodplain Step is to be constructed to allow transition from the filled riverbed elevation to the existing riverbed elevation downstream (Figure 5-5). A structure consisting of a sloped face of soil cement at the confluence with Baker Creek, combined with vegetated areas above and upstream of the step. To maintain hydrologic connectivity through the Floodplain Step, the bankfull channel will be constructed as a step-pool structure. To protect this structure from potential vertical instability of the river channel downstream, a stone-lined stilling basin will be created at the confluence with Baker Creek. The stone-lined stilling basin will dissipate flows from the step-pool structure into the river channel downstream. The restored Former NSR and Tributary T-1 will be connected to the Floodplain Step at the beginning of the step-pool.

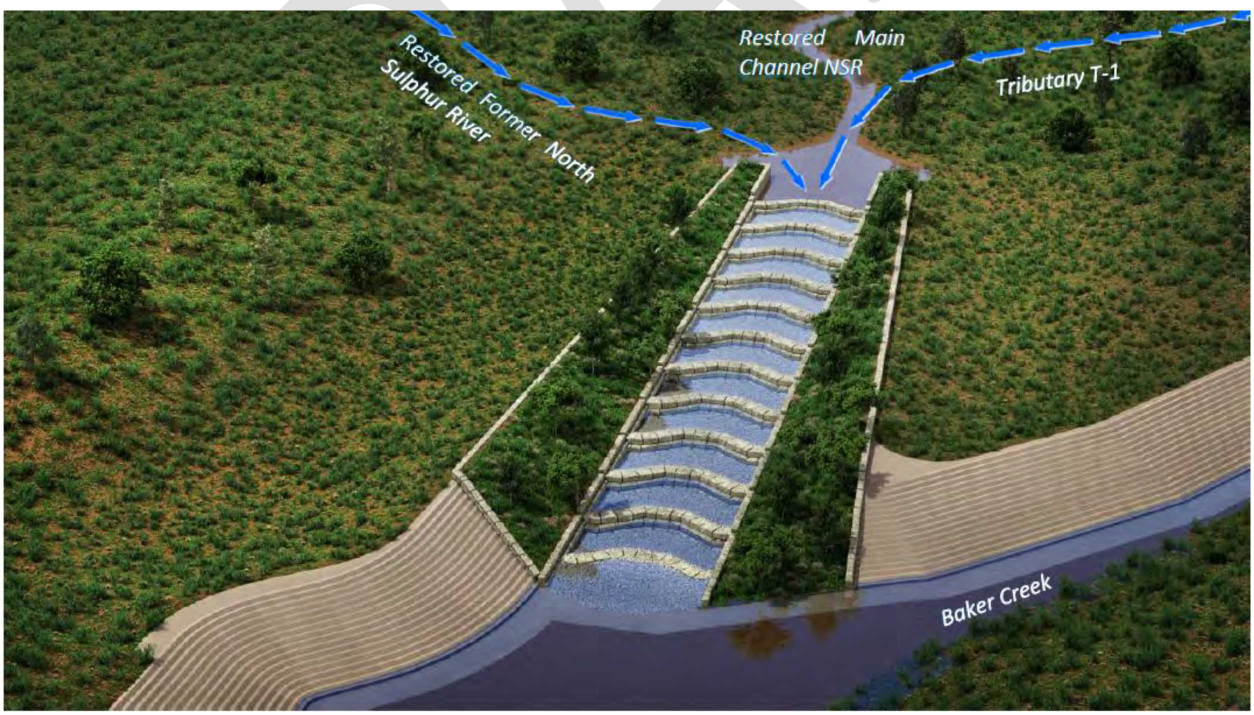


FIGURE 5-5: Illustrated Rendering of Floodplain Step Components and Design

In-Stream/Riparian Structures and Floodplain Blocks

In-stream structures will be used as part of the MC NSR at the end of riffles/head of pool features to help maintain grade, redirect flows away from outside meanders to give time for vegetation to take root, and to help maintain pools to provide habitat and refuge for aquatic organisms. Cross-vanes or vanes will be used on the meander bends of the restored MC NSR. These structures may be constructed using logs salvaged from on-site clearing operations, or potentially from boulders. Two tributaries (Tributary T1 and T4) and several smaller drainages which join into the MC NSR will have step pools or cascades placed to hold grade, particularly where they transition from a higher bed elevation to the lower, MC NSR elevation.

As an added protection against tendency for scour in the floodplain, floodplain blocks will extend from the end of cross-vane structures to the floodplain wall. Floodplain blocks consist of a trench dug perpendicular to the channel from the end of a structure across the floodplain and filled with stone. These structures can also be composed of a buried sheet pile wall. These act as a "fail-safe" measure to prevent any scour that might occur in the floodplain from continuing downstream or upstream. These will be an added stability measure for a floodplain that will consist of fill material. The means of stabilizing this fill material will be from vegetation but the floodplain blocks will add an additional measure of protection from expected higher flood events, particularly in the first several years before vegetation is fully established.

5.4 Vegetation Plan for Riparian and Protected Areas

The restoration and/or enhancement of native herbaceous and woody plant communities will be conducted within the areas designated for aquatic resources mitigation. The restoration and enhancement actions will vary depending on the extent of previous land use impacts, previous soil disturbance, slope, soil conditions, and existing vegetation. The stream mitigation areas will have two primary planting zones that will contribute to achieving the functional uplift goals for restored, re-established, and enhanced streams. Planting Zone 1, shown in Figure 5-6, is a multi-story, wooded riparian zone that will be located on each side of the mitigation stream. Planting Zone 2 will be located from the outside of the riparian zone (Planting Zone 1) to the Conservation Easement boundary. Planting Zone 2, shown in Figure 5-7, will primarily consist of a native prairie seed mix, along with all standing vegetation that is considered non-nuisance or non-invasive.

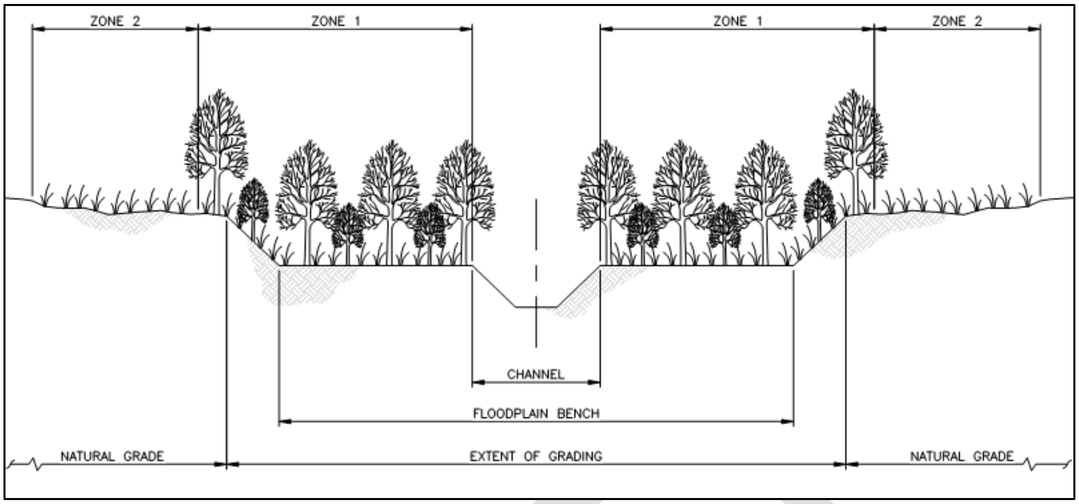


FIGURE 5-6: Planting Zones for Restored Stream With Floodplain Bench

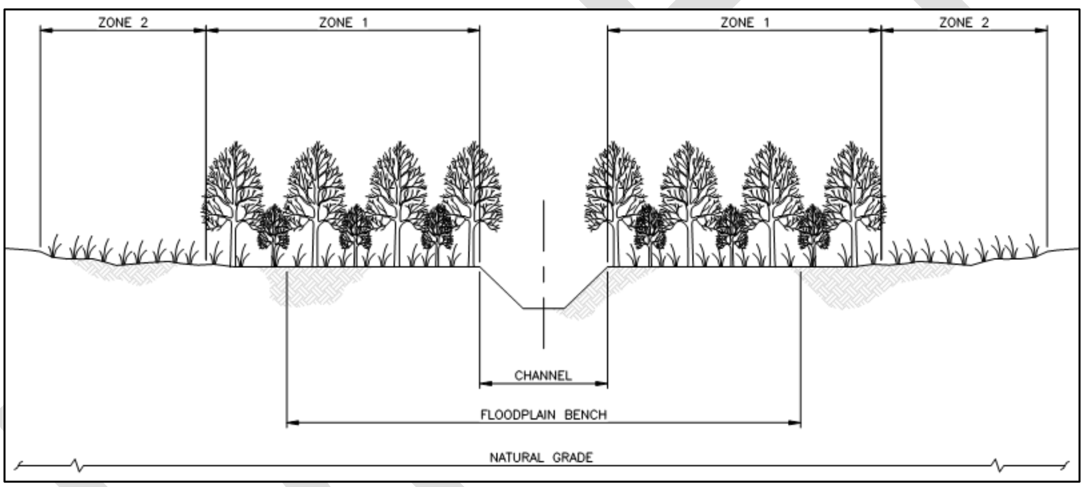


FIGURE 5-7: Planting Zones for Restored/Enhanced Stream With Natural Ground

Planting Zone 1 will consist of herbaceous and woody plantings along the streambank and within a riparian corridor adjacent to the stream that is over 18 meters wide (approximately 60 feet) on each side of the stream when measured from the top of bank to the outside of the planting zone. Woody plantings within Planting Zone 1 will include a mix of native shrub, understory and canopy trees as detailed in Table 5-3. Herbaceous plantings will include a mix of native grasses, legumes and forbs as shown in Table 5-4. The plant species mix and planting densities will be designed such that a minimum canopy coverage of 60% will be achieved at maturity. One single canopy tree species shall not occupy greater than 30% of the coverage within Planting Zone 1.

When soil disturbance occurs due to grading associated with stream restoration activities, the native herbaceous seed mix will be used to stabilize the disturbed areas immediately following construction. Native woody plantings will then occur during the next cool season planting period.

For enhancement reaches, all areas disturbed during the installation of instream structures and/or other mitigation measures will receive herbaceous and woody plantings as described above. In areas with existing vegetation, an assessment will be made as to the composition of the standing vegetation (age, species diversity; percent coverage; percent desirable vs. undesirable; etc.) and supplemental plantings of herbaceous and/or woody species will be made as needed to achieve the functional uplift goals for the project.

TABLE 5-3: Canopy and Understory Species for Streambank and Riparian Zones

Strata	Common Name	Scientific Name
Canopy Tree	American Elm	*Ulmus americana*
	Black Walnut	*Juglans nigra*
	Bois d'Arc	*Maclura pomifera*
	Bur Oak	*Quercus macrocarpa*
	Cedar Elm	*Ulmus crassifolia*
	Chinkapin Oak	*Quercus muehlenbergii*
	Pecan	*Carya illinoensis*
	Shumard Oak	*Quercus shumardii*
	Texas Ash	*Fraxinus texensis*
	Water Oak	*Quercus nigra*
	Willow Oak	*Quercus phellos*
Small Tree and Shrub	American Beautyberry	*Callicarpa americana*
	Buttonbush	*Cephalanthus occidentalis*
	Common or Texas Persimmon	*Diospyros virginianum or D. texana*
	Coralberry	*Symphoricarpos orbiculatus*
	Deciduous Holly	*Ilex decidua*
	Eastern Redbud	*Cercis canadensis*
	Eve's Necklace	*Sophora affinis*
	Mexican Plum	*Prunus mexicana*
	Rough-leaf Dogwood	*Cornus drummondii*
	Rusty Blackhaw	*Viburnum rufidulum*
	Swamp Privet	*Forestiera acuminata*

Planting Zone 2 is located immediately adjacent to and outside of the stream riparian zone (i.e., Planting Zone 1). It will be a minimum of 9 meters (30 feet) wide and will extend to the Conservation Easement boundary. Planting Zone 2 will be established with native herbaceous plantings from Table 5-4. The seeding rate and application methods will be designed such that an areal coverage of at least 80% will be established within this planting zone. Existing vegetation within Planting Zone 2 will be assessed and desirable herbaceous, understory, and canopy trees will remain. Nuisance and invasive plant species will be controlled prior to seeding. Once established, Planting Zone 2 will provide additional functional uplift of the restored and enhanced mitigation streams through diversification of habitat and by intercepting and filtering stormwater runoff prior to entering the stream riparian corridor.

In cases where existing depressions or ponds are located within Planting Zone 2 and are not filled as part of the stream restoration grading activities, a more appropriate planting mix of hydrophytic vegetation from Table 5-5 will be used to provide functional uplift within these areas. These specific areas are shown as “Planting Zone 3” within the design drawings provided in **Appendix F**.

TABLE 5-4: Herbaceous Seed Mixture for Riparian and Protected Natural Areas

Type	Common Name	Scientific Name
Grasses	Big Bluestem	*Andropogon gerardii*
	Bushy Bluestem	*Andropogon glomeratus*
	Cane Bluestem	*Bothriochloa barbinodis*
	Eastern Gamagrass	*Tripsacum dactyloides*
	Florida Paspalum	*Paspalum floridanum*
	Green Sprangletop	*Leptochloa dubia*
	Indiangrass	*Sorghastrum nutans*
	Inland Seaoats	*Chasmanthium latifolium*
	Plains Bristlegrass	*Setaria vulpiseta*
	Prairie Wildrye	*Elymus canadensis*
	Sand Dropseed	*Sporobolus cryptandrus*
	Sideoats Grama	*Bouteloua curtipendula*
	Switchgrass	*Panicum virgatum*
	Texas Cupgrass	*Eriochloa sericea*
	Texas Wintergrass	*Nassella leucotricha*
	Virginia Wildrye	*Elymus virginicus*
	White Tridens	*Tridens albescens*
Legumes	Illinois Bundleflower	*Desmanthus illinoensis*
	Partridge Pea	*Chamaecrista fasciculata*
Forbs	Black-eyed Susan	*Rudbeckia hirta*
	Buttonbush	*Cephalanthus occidentalis*
	Cardinal Flower	*Lobelia cardinalis*
	Clasping Coneflower	*Dracopis amplexicaulis*
	Cutleaf Daisy	*Engelmannia pinnatifida*
	Frostweed	*Verbesina virginica*
	Giant Goldenrod	*Solidago gigantea*
	Lemon Mint	*Monarda citridora*
	Maximilian Sunflower	*Helianthus maximiliani*
	Plains Coreopsis	*Coreopsis tinctoria*
	Pink Evening Primrose	*Oenothera speciosa*
	Redwhisker Clammyweed	*Polanisia dodecandra*
	Rose Milkweed	*Asclepias incarnata*
	Scarlet Sage	*Salvia coccinea*
	Swamp Sunflower	*Helianthus angustifolius*
	Tall Aster	*Symphyotrichum praealtum*
	Tall Goldenrod	*Solidago altissima*
	Turk’s Cap/Wax Malllow	*Malvaviscus arboreus*

TABLE 5-5: Hydrophytic Plantings for Riparian and Protected Natural Areas

Hydrologic Zone	Common Name	Scientific Name
Temporarily Flooded	Switchgrass	*Panicum virgatum*
	Eastern Gamagrass	*Tripsacum dactyloides*
	Inland Seaoats	*Chasmanthium latifolium*
	Green Sprangletop	*Leptochloa dubia*
	Prairie Wildrye	*Elymus canadensis*
	Illinois Bundleflower	*Desmanthus illinoensis*
	Partridge Pea	*Chamaecrista fasciculata*
	Swamp Sunflower	*Helianthus angustifolius*
	Plains Coreopsis	*Coreopsis tinctoria*
Seasonally Flooded	Swamp Smartweed	*Polygonum hydropiperoides*
	Spikerush	*Eleocharis spp.*
	Sedges	*Carex spp.*
	Squarestem Spikerush	*Eleocharis quadrangulata*
	Crowfoot Sedge	*Carex crus-corvi*
	Duck Potato Arrowhead	*Sagittaria latifolia*
	Soft Rush	*Juncus effusus*
	Three-square bulrush	*Schoenoplectus pungens*

Planting Zones 1 and 2 will be protected from encroachment and from other impacts that could negatively impact achievement of the objectives and goals of this Mitigation Plan. Figure 5-8 is a schematic depiction of the areas located within the stream conservation easement. This includes the stream channel and its riparian buffer (Planting Zone 1), as well as the adjacent protected land (Planting Zone 2). Over time, the native prairie established within Planting Zone 2 is anticipated to naturally transition to a condition that would include interspersed areas of forest, consistent with what is typically observed within undisturbed riparian systems associated within the Blackland Prairie Ecosystem.

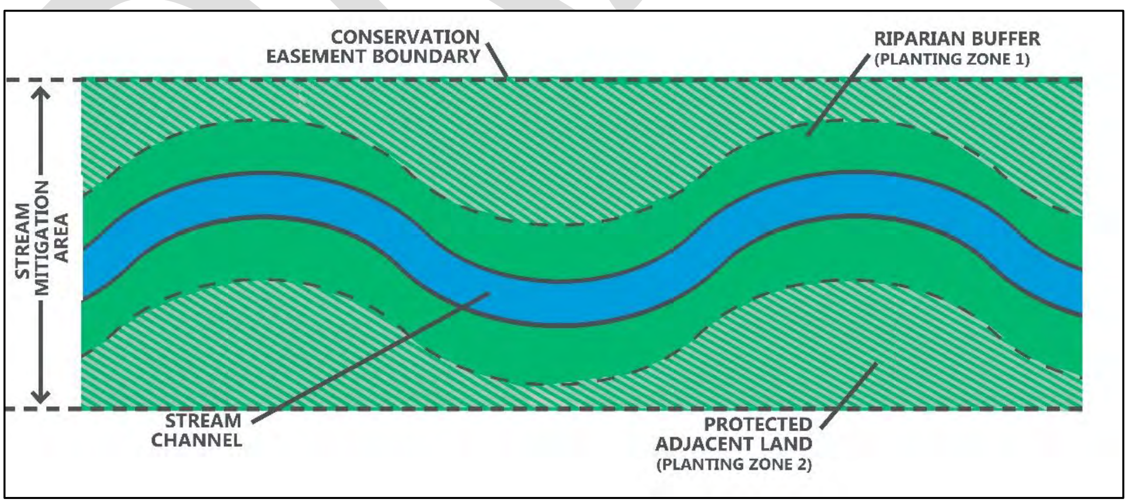


FIGURE 5-8: Schematic of Areas Defined within the Conservation Easement

Streambank, Riparian, and Protected Natural Area - Invasive Control

Although not anticipated to be a problem based on baseline surveys of the mitigation streams and design analog data, monitoring and control of non-native/invasive species will be performed as necessary. During the early phases of the mitigation activities, especially following planting of the more highly disturbed areas resulting from the restoration activities, monitoring for invasive species will be conducted to identify potential concerns or threats to the success of the mitigation and to determine if corrective actions are needed. Observation of any non-native, noxious or invasive species will trigger remedial management. Should the presence of non-native, noxious or invasive species be identified, management options (e.g., mechanical means and/or chemical treatment) will be implemented to address removal and elimination of the undesirable species. Following eradication of the undesirable species, the area will be re-seeded with the native herbaceous seed mix and supplemented with understory and canopy trees as warranted.

5.5 Emergent Wetland

Wetland Design Approach

Compensatory mitigation for the Lake Ralph Hall project will include the establishment of approximately eight acres of emergent wetlands. Five candidate sites were evaluated for the emergent wetlands, using the following general criteria as a guideline:

- Presence of Clay soils
- A least a 10:1 ratio of contributing watershed to emergent wetland area
- Relatively flat
- Void of woody vegetation
- Reasonable access
- UTRWD owned parcel(s) or located within the Project Boundary

Sites were narrowed and reduced to the selected site shown in Figure 5-9.

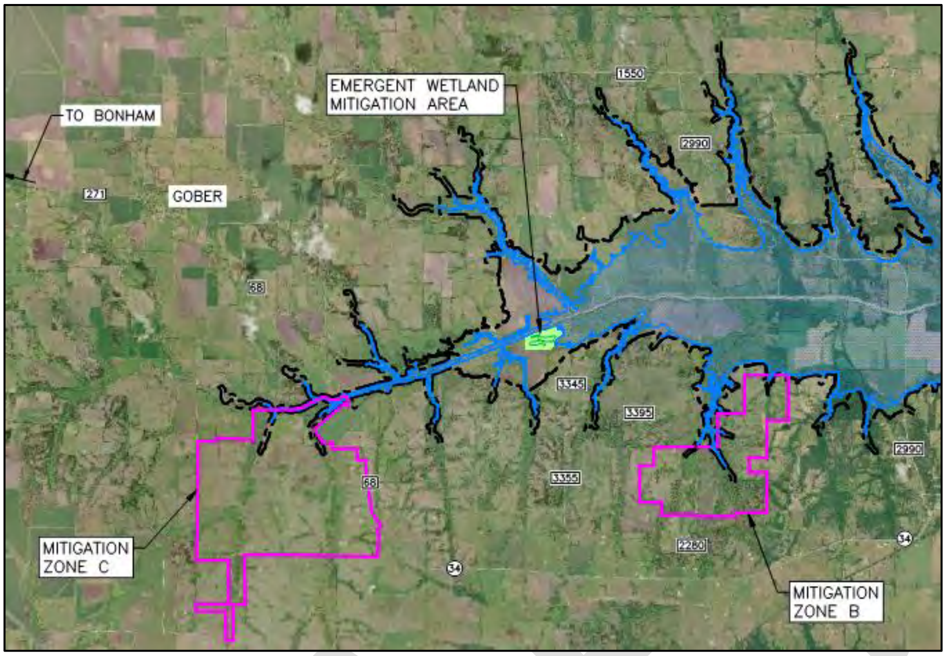


FIGURE 5-9: Emergent Wetland Location

The selected site chosen contains one soil type, Tinn clay, 0 to 1 percent slopes, occasionally flooded (Tc). Tinn clay is a deep clay (> 80 inches) and exhibits low hydraulic conductivity. This soil is ideal for development of ponded areas and emergent wetlands.

The emergent wetland will be constructed to include a low berm designed to direct runoff and hold the collected water within the area designated for the emergent wetland. A watershed of over 100 acres will provide sufficient hydrology to support the emergent wetland. The emergent wetland itself will include a mosaic of macro- and micro-depressions, which will be precision-graded to produce areas with varying water depths at its maximum capacity. The micro-depressions will be relatively small (200 to 300 ft^2) areas that will be excavated to a depth of approximately 0.5 to 1.5 feet. The micro-depressions are designed to hold water seasonally, supporting a community of hydrophytic vegetation. The micro-depressions will surround macro-depressions. These will be larger in size (2 to 3 acres each) and excavated deeper (1.0 to 2.5 feet) than the micro-depressions. The size and depth of the macro-depressions will result in extended hydroperiods, ensuring that at least eight acres of emergent wetland area will be maintained in the long-term.

During the initial site assessment, areas of hydrophytic vegetation were observed in the area selected for emergent wetland development. To enhance the existing vegetation and to provide plant stock suitable for the different water depths that will be created, the emergent wetland will be planted with a mixture of vegetation from Table 5-5. The macro-depressions will also include plantings from Table 5-6.

TABLE 5-6: Hydrophytic Plantings for Emergent Wetland

Hydrologic Zone	Common Name	Scientific Name
Semi-Permanently Flooded	Grassy Arrowhead	*Sagittaria graminea*
	Pickerelweed	*Pontederia cordata*
	Olney's Bulrush	*Schoenoplectus americanus*
	Softstem Bulrush	*Schoenoplectus tabernaemontani*
Permanently Flooded	Giant Bulrush	*Schoenoplectus californicus*
	Coontail	*Ceratophyllum demersum*
	American Wild Celery	*Vallisneria americana*
	American Pondweed	*Potomageton nodosus*

As the emergent wetland matures, it is expected to develop into a diverse community of emergent wetland vegetation that will produce a seedbank which will contribute to the annual regeneration of vegetation. Areas of open water within the macro-depressions, combined with the variety of vegetation within the macro-depressions and surrounding mosaic of micro-depressions will result in a high-quality habitat for a variety of fauna.

Design plan sheets for the emergent wetlands are provided in Volume 5 of **Appendix F.**

6. Determination of Credits

Mitigation activities described in **Part III, Section 5** are projected to provide the ecological uplift necessary to offset impacts to Waters of the United States (WOTUS) by the Lake Ralph Hall project. As previously described in **Part III, Section 4**, the Stream Watershed Assessment and Measurement Protocol Interaction Model (SWAMPIM), Functional Capacity Units (FCU) score is the measure used to determine the functional condition of streams within the Lake Ralph Hall project. Furthermore, consistent with Regulatory Guidance Letter 02-2, an acreage surrogate will be used to provide compensatory mitigation for impacts to lacustrine-fringe emergent wetlands by the Lake Ralph Hall project.

To confirm compensatory requirements will be met, SWAMPIM FCU scores were developed for each stream assessment reach (SAR) within the three mitigation zones (A, B and C) using projected Functional Condition Index (FCI) values specific to each SAR based on the mitigation measures as shown in the design plans (see **Appendix F**). The FCI values assigned for each SAR are considered to be achievable and what would be expected at the end of construction, at the end of a seven-year monitoring period, and at maturity, given typical climatic conditions. FCU scores for each SAR were then calculated using the individual FCI values, SAR length and stream classification multiplier, as previously described in **Part III**, **Section 4**. FCU scores for each SAR were then tabulated to confirm appropriate uplift will be generated through the mitigation measures identified in this Mitigation Plan. A detailed explanation of the determination of credits and the rationale for this determination are provided in **Appendix G**.

The mitigation credits shown in **Appendix G** are appropriate for the mitigation measures based on the following:

- Temporal losses[1] will be minimized by the following:
  - Upon permit issuance, the Permittee will begin implementing this Mitigation Plan by initiating acquisition proceedings for the remaining parcels of land not owned by the Permittee in Mitigation Zones A, B and/or C, as well as initiating cultural resource studies as specified in the Programmatic Agreement. These actions will result in expedition of mitigation activities within the mitigation stream corridors.
  - The Permittee anticipates that dam construction will be completed three to four years after commencement of construction, depending on weather and other considerations that impact the construction schedule. During the construction period, impacts due to the dam construction will be relatively minor in comparison to full inundation at conservation pool. The Permittee anticipates the reservoir will fill to the conservation pool elevation of 551 ft. msl. over a period of three to five years after completion of the dam construction. During the filling period, impacts to aquatic resources will occur incrementally. Concurrent with the dam construction and reservoir filling, the Permittee will implement construction of the aquatic mitigation measures in accordance with this Mitigation Plan. The Permittee will initiate the construction of the aquatic mitigation measures as the Permittee secures title to and cultural resource studies required by the Programmatic Agreement are completed on sufficient areas of land within each Mitigation Zone (A, B and/or C). The Permittee anticipates completing construction of the aquatic mitigation within five years after the start of dam

[1] Temporal losses are defined as the time lag between the loss of aquatic resource functions caused by the permitted action and replacement of the aquatic resource functions through the proposed mitigation measures.

construction, resulting in an FCU uplift at that milestone. Additional uplift will be realized through the monitoring and post-monitoring periods, as the project reaches maturity. FCU uplift values for end of construction, end of monitoring, and at maturity are provided in **Part III**, **Section 9** of this Mitigation Plan.

- Mitigation credits are based on projected functional conditions for the mitigation approaches (enhancement, restoration, or re-establishment) and are expected to be achievable.
- Mitigation has a high likelihood of success due to site characteristics and the measures presented in the mitigation work plan. The potential risk of failure for the mitigation measures is minimized due to appropriate design and planned construction oversight; monitoring; implementation of the success criteria; and the long-term management plan.

<u>Stream Mitigation Credit Summary</u>

Based on the activities described in this Mitigation Plan, loss of 56.84 intermittent stream FCUs and 382.74 ephemeral stream FCUs within the impact area will be offset by an uplift of 439.58 FCUs within Mitigation Zones A, B and/or C. Of the 439.58 FCUs, a minimum of 56.84 FCUs will result from intermittent stream mitigation activities.

Refer to **Table 6-1** for a summary of stream type and FCU generation by Mitigation Zone. Detailed information regarding mitigation credits for the mitigation activities are provided in **Appendix G**.

TABLE 6-1: SUMMARY OF FUNCTIONAL CAPACITY OF STREAMS WITHIN MITIGATION ZONES A, B, AND C AT MATURITY

Mitigation Zone	Stream Type	Proposed Total Stream Functional Capacity Units (FCU) at Maturity[1,2,4]
Mitigation Zone A Subtotal	***Intermittent / Perennial Pools***	***130.36[5]***
Mitigation Zones, A, B, & C Subtotal	***Ephemeral***	***510.59[6]***
TOTAL FCUs	-	**640.95[7]**
Less Baseline FCUs[3]	-	**182.92[8]**
Projected Uplift FCUs[4]	-	**458.03[9]**
Less Impacted FCUs	-	**439.58[10]**
Adaptive Management / Contingency FCUs	-	**18.45[11]**

Notes for Table 6-1 are provided on the following page.

Notes for Table 6-1

1. *The FCU values listed in this table are based on the mitigation measures shown in the design plans as provided in* ***Appendix F****.*
2. *FCU = Reach Length * FCI * Multiplication Factor; Shown rounded to the nearest hundredth. Refer to* ***Appendix G*** *for the data on individual SARs within each mitigation zone.*
3. *Baseline FCUs represent the existing functional capacity of the streams within Mitigation Zones A, B, and C.*
4. *The Permittee will implement the stream mitigation on a sufficient number of ephemeral and intermittent streams in the mitigation zones to achieve a minimum uplift of 439.58 FCUs within Mitigation Zones A, B, and/or C. Of the 439.58 FCUs, a minimum of 56.86 FCUs will result from intermittent stream mitigation activities. The value shown in Table 6-1 represents the potential uplift generated by all streams shown in the design plans provided in* ***Appendix F****.*
5. *Refer to* ***Table G-1*** *in* ***Appendix G*** *for the supporting data.*
6. *Refer to* ***Table G-1*** *in* ***Appendix G*** *for the supporting data.*
7. *Total FCUs = Mitigation Zone A intermittent subtotal + Mitigation Zones A, B, and C ephemeral subtotal.*
8. *Refer to* ***Table 4-2*** *in* ***Section 4*** *for the supporting data.*
9. *Projected Uplift FCUs = Total FCUs – Baseline FCUs.*
10. *Refer to* ***Table 4-1*** *in* ***Section 4*** *for the supporting data.*
11. *Adaptive Management / Contingency FCUs = Projected Uplift FCUs – Less Impacted FCUs.*

Lacustrine Fringe Wetland Mitigation

In addition, approximately 8-acres of emergent wetlands will be established to compensate for loss of lacustrine-fringe emergent wetlands within the impact area. Therefore, this Mitigation Plan will provide the required acre for acre compensation to offset unavoidable losses to emergent wetlands from the project.

7. Maintenance Plan

The Permittee will be responsible for the protection and maintenance of the aquatic resource mitigation during the monitoring period (after completion of construction and prior to acceptance of the completed aquatic mitigation by the USCAE), to secure the long-term viability and sustainability of this Mitigation Plan.

The Permittee will protect the areas where aquatic mitigation has been implemented for the duration of the monitoring period from encroachments and activities that are contrary to the requirements of this Mitigation Plan or otherwise detrimental to the purpose of the aquatic resource mitigation specified herein, including those listed prohibited activities listed in **Part III, Section 11** of this Mitigation Plan.

In addition, the Permittee will maintain the areas where aquatic mitigation has been implemented for the duration of the monitoring period. During the monitoring period, maintenance activities may include but not necessarily be limited to the following:

1. Maintaining boundary markings;
2. Maintaining necessary fence lines;
3. Maintaining access roads;
4. Conducting remedial plantings, as needed to meet the success criteria. (May include providing temporary irrigation for initial vegetation establishment during the first growing season after planting.)
5. Controlling invasive plant and animal species;
6. Conducting prescribed burns;
7. Repairing in-channel stream structures;
8. Repairing erosional features that are detrimental to site stability;
9. Repairing the flood-plain step on the restored main channel North Sulphur River;
10. Providing for compatible uses which do not interfere with achieving and maintaining mitigation goals and objectives and meeting the performance standards;
11. Taking such other actions, as may be necessary, under the Adaptive Management Plan (see **Part III, Section 12**).

Many of the above-listed maintenance activities will occur on an as-needed or identified need basis. It is anticipated that more frequent maintenance efforts may be required at the mitigation areas during the early phases of the mitigation project as vegetation becomes established. Maintenance activities should diminish over time as mitigation goals and objectives are achieved. The Permittee will continue to monitor and maintain the mitigation areas until the mitigation project has met the compensatory mitigation requirements of the Permit and accepted by the USACE.

8. Site Protection Instrument

The Permittee will own the specific areas designated for implementation of aquatic resource mitigation in fee simple title. Long-term protection for the areas where aquatic resource mitigation will be implemented will be provided through the Long-Term Management Plan for the project, as described in **Part III, Section 11** of this Mitigation Plan. In addition, long-term protection for the areas where aquatic resource mitigation will be implemented shall be provided through an USACE-approved conservation easement conveyed to a third-party charitable, not-for-profit, or educational corporation, or trust, qualified under Section 501(c)(3) and Section 170 (h) of the Internal Revenue Code of 1986, as amended (Grantee). The Permittee shall be responsible for implementation and long-term maintenance as specified in the Mitigation Plan. Once the requirements of this mitigation plan have been achieved and accepted by the USACE, the Grantee shall be responsible for the monitoring, protecting, and enforcing the designated aquatic mitigation areas as specified in the Mitigation Plan in perpetuity.

The Permittee shall convey the conservation easements to the Grantee and record the USACE-approved conservation easement instruments with the Fannin County Clerk and provide a copy of the recorded conservation easement instruments to the USACE Fort Worth District. In addition, the conservation easement shall contain a provision requiring 60-day advance notification to the USACE District Engineer before any action is taken that could void or modify the instrument, management plan, or long-term protection mechanism, including transfer of title to, or establishment of any other legal claims over, the area encumbered by the Conservation Easement. The Permittee shall also provide the USACE with a map showing the extent of the conservation easement boundaries upon completion of the construction of the proposed aquatic mitigation measures.

Consistent with USACE practices for site protection of aquatic resources mitigation areas, the conservation easements will require Grantee to monitor, protect and enforce the requirements of the Mitigation Plan, in perpetuity, in the areas encumbered by the conservation easements. The Grantee shall submit annual reports to the USACE Fort Worth District that describe (1) activities observed that are contrary to the requirements of this Mitigation Plan and (2) corrective actions taken to resolve any such conditions that contradict this Mitigation Plan.

9. Performance Standards

Performance standards for aquatic mitigation (restored, re-established, or enhanced) as part of this Mitigation Plan will ensure mitigation areas are functioning as intended and meeting the quantitative goals and objectives generally described in **Part III, Section 1**.

In accordance with 33 CFR 332.5, key design and ecological-based performance standards for mitigation streams and wetlands are defined below. These standards define the minimum level at which maintenance and/or adaptive management will be considered during the monitoring period. The Permittee may propose maintenance and/or adaptive management techniques for areas even if performance standards are being met, if the Permittee believes such action is necessary to ensure compliance with this approved Mitigation Plan. Such maintenance and/or adaptive management plans must be approved by the USACE prior to implementing.

Performance Standards for Stream Mitigation

1. **Functional Credits:** The Permittee will document FCU scores for the project in accordance with the monitoring schedule described in **Part III, Section 10**. The total FCU score for the project will be documented at the end of construction and at the end of the monitoring period. Using the baseline FCU score, the net uplift will be calculated at each of these milestones and compared to the scores shown in **Table 9-1.** This comparison will be used to determine if the project is on track to achieve the mitigation goals and the predicted FCU uplift at maturity. If the FCU uplift for the project does not meet the projections shown for the end of construction and at the end of monitoring, the Permittee will assess the project and determine appropriate actions needed, which may include adoption of adaptive management practices. In this assessment, the Permittee will consider the effects of construction sequencing as well as local climatic conditions in the determination of project trajectory.

Table 9-1: Minimum FCU Uplift to Achieve Performance Standards[1]

	FCU Uplift at end of Construction	FCU Uplift at end of Monitoring	FCU Uplift at Maturity
Total Stream FCU Uplift	303.00	371.88	439.58
Minimum Intermittent Stream FCU Uplift	48.12	52.66	56.84

[1] The minimum FCU uplift at maturity corresponds to the FCU impact as detailed in Table 4-1 which is the net FCU obligation resulting from construction of Lake Ralph Hall. The minimum FCU uplift at end of construction and at end of monitoring is calculated as a ratio of the total FCU uplift at maturity to the corresponding milestone. The FCU uplift at the end of monitoring and at the end of construction for intermittent streams is calculated as a ratio of FCU uplift at maturity to the corresponding intermittent stream milestone. The ratios were based on net uplifts calculated from the total projected FCUs for the respective milestones shown in Appendix G, Table G-1.

The minimum FCU scores adopted for the performance standards were based on SWAMPIM FCI scores documented while conducting SWAMPIM scoring to establish the baseline conditions of the existing streams. In particular, the SWAMPIM FCI scores documented within the reference reach streams were used to inform establishment of the minimum performance standards described above (see **Appendices E and G**).

2. In addition to meeting the target FCU uplift values listed in **Table 9-1**, the permittee will document that the minimum scores shown for the following individual SWAMPIM metrics will be achieved at the end of the monitoring period.

    a. **Stream Dimension and Channel Stability**: General maintenance of a stable cross-section and hydrologic access to floodplain features over the course of the monitoring period will represent success in dimensional stability. Minor changes in dimension are to be expected as the constructed/enhanced channels and sediment transport processes stabilize. SWAMPIM FCI scores within the following ranges for the specific parameters listed below will be considered successful in meeting performance standards:
        i. Channel Bank Stability (Hydrologic 2.c) – 4 or higher
        ii. Channel Bottom Bank Stability (Water Quality 1.b) – 4 or higher

    b. **Stream Pattern and Profile**: The profile should not demonstrate significant, prolonged trends toward degradation or aggradation over a significant portion of a reach. Functional parameters that are measured within SMAMPIM include sinuosity, entrenchment ratio, and bank height ratio. SWAMPIM FCI scores within the following ranges for the specific parameters listed below will be considered successful in meeting performance standards:

        i. Sinuosity (Hydrologic 3.a) – no reduction in sinuosity from the design sinuosity for restored streams or baseline sinuosity for enhanced streams
        ii. Channel Capacity Flow Frequency (Hydrologic 2.b) – 4 or higher
        iii. Channel Incision (Hydrologic 3.d) – 8 or higher for restoration streams; 3 or higher for enhancement streams

    c. **Riparian Buffers**: Riparian buffers with a width greater than 18 m (~60 feet) will be established within the protected conservation easement boundary for all mitigation stream channels, as illustrated in **Figure 9-1**. SWAMPIM FCI scores within the following ranges for the specific parameters listed below will be considered successful in meeting performance standards:

        i. Riparian Zone Width (Water Quality 6.a) – 6 or higher
        ii. Riparian Zone Vegetation Protection/Completeness (Water Quality 6.b) – 5 or higher
        iii. Riparian Habitat Condition (Habitat 12) – 4 or higher

    d. **Protected Adjacent Land:** Adjacent land use consisting of native prairie plantings will be established between the riparian buffer and the conservation easement boundary, as illustrated in **Figure 9-1**. The width of the protected adjacent land will be a minimum of 9 meters (30 feet) as measured from the outer edge of the riparian buffer. SWAMPIM FCI score for the following range listed below will be considered successful in meeting performance standards:

i. Land Use Pattern Beyond Immediate Riparian Zone (Water Quality 5) – 7 or higher

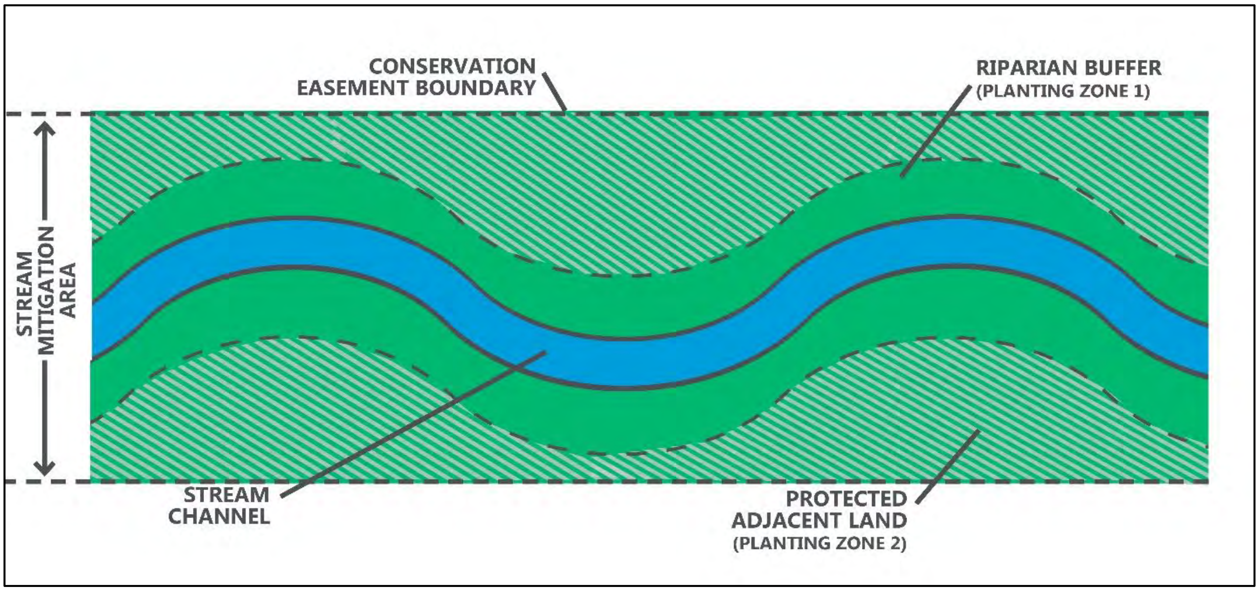


Figure 9-1– Stream Mitigation Area (Not to Scale)

Those stream reaches that do not meet the performance standards listed above may require additional monitoring and/or development of contingency plans to be reviewed by the USACE and implemented when approved (see **Part III, Section 12, Adaptive Management**). The Permittee will be responsible for maintaining and managing the stream mitigation areas to comply with performance standards until such time as the Permittee provides documentation to, and receives verification from, the USACE that aquatic resources in the mitigation areas are meeting the stated performance standards.

<u>Performance Standards for Emergent Wetlands</u>

1. **Wetland Acreage:** At least eight (8) acres of emergent wetlands will be created. If the total acreage of emergent wetlands created is less than eight (8) acres, the Permittee will assess the project and determine appropriate actions needed, which may include adoption of adaptive management practices.
2. **Wetland Determination**: The emergent wetland area shall be evaluated for consistency and applicability to the definition of a wetland as defined in the USACE's 1987 Wetland

Delineation Manual[2] (Manual) and the Regional Supplement to the Manual – Great Plains Region (Version 2.0)[3].

Variations to the above criteria may be necessary if justified by local conditions during the monitoring period. Plantings will be monitored and deficiencies rectified by measures such as replanting, controlling competing vegetation, guarding against herbivory, installing temporary erosion control or improving hydrology. The Permittee will be responsible for maintaining and managing mitigation areas to comply with performance standards until such time as the Permittee provides documentation to, and receives verification from, the USACE that aquatic resources in the mitigation areas are meeting the stated performance standards.

Performance Standards for Both Stream and Wetland Mitigation Areas

1. Monitoring for invasive and/or non-native vegetation will be conducted, particularly during the early stages of plant establishment, to discern areas where invasive and/or non-native vegetation pose a potential threat to the success of the stream mitigation area's riparian buffer zone, protected adjacent land, and emergent wetland areas. Non-native, invasive species will be controlled in the canopy/mid-story zone as well as within the protected adjacent land outside the riparian buffer up to the conservation easement boundary. Non-native/invasive species shall not comprise more than 2% of the woody vegetation and/or more than 5% of the herbaceous cover. Non-native woody stems will not be counted towards performance standards. Acceptable woody species will consist of at least four native species with one species not comprising more than 35% of the canopy cover.

[2] Corps of Engineers Wetland Delineation Manual. Wetlands Research Program Technical Report Y-87-1. U.S. Army Corps of Engineers Waterways Experiment Station Vicksburg, Mississippi. January 1987.

[3] Regional Supplement to the Corps of Engineers Wetland Delineation Manual (Y-87-1) – Great Plains Region (Version 2.0). U.S. Army Corps of Engineers Wetlands Regulatory Assistance Program U.S. Army Research and Development Center (ERDC/EL TR-10-1. Vicksburg, Mississippi. March 2010.

10. Monitoring Requirements

The Permittee will monitor the aquatic resource mitigation specified in this Mitigation Plan for the duration of the monitoring period (after completion of mitigation construction and prior to acceptance of the completed aquatic mitigation by the USACE) to verify the compensatory mitigation is proceeding on a trajectory to meet the performance standards outlined in Section 9 of this Mitigation Plan. The Permittee will be responsible for monitoring and reporting annually following completion of construction until the USACE issues acceptance of the mitigation based on demonstrated performance.

The Permittee will submit an Annual Report that includes, at a minimum, the following:

1. Designation, in writing, of a responsible party or position, who shall coordinate with the USACE on-site inspections and compliance with permit conditions.
2. Report on the Permittee's progress toward meeting the requirements of this Mitigation Plan and maintaining compliance with Section 404 of the Clean Water Act Permit and special conditions, and summarize activities that occurred during the reporting period. The report shall be submitted on or before January 31 of each year during the monitoring period and include, at a minimum:
    a. The approximate acreage, location, type, status, and completion date (actual or projected) of the ongoing mitigation that occurred during the reporting period;
    b. A description of the completed mitigation activities, including a map showing the location of Waters of the US (WOTUS) restored, re-established, or enhanced and supporting documentation including vegetative re-establishment;
    c. For restored stream segments, documentation of any evaluations performed for specific stream assessment reaches (SARs) completed during the previous year including SWAMPIM score sheets and supporting data as required by this section;
    d. For the emergent wetlands mitigation, documentation of any evaluations performed for the emergent wetlands mitigation completed during the previous year as required by this section;
    e. Representative photographs of the progress and success of mitigation work;
    f. An evaluation of progress towards meeting mitigation performance standards;
    g. Areas of concern, including a description of the concern, and proposed plans to address the concern, if warranted; and
    h. A summary of net uplift FCUs generated from implemented mitigation activities for comparison with required uplift FCUs to satisfy mitigation requirements.

As construction is completed on components of the aquatic resource mitigation, i.e., the emergent wetlands mitigation or stream segments included within a watershed, the Permittee will implement a monitoring plan to document the trajectory of the aquatic resource mitigation activities for those components that are progressing toward meeting the performance standards outlined in Section 9 of this Mitigation Plan. To validate the success of the mitigation activities, monitoring activities for stream and emergent wetlands will continue for a minimum of seven years or until the USACE verifies that the Permittee has successfully completed the aquatic resources mitigation as specified in this Mitigation Plan for each mitigation component.

10.1 Stream and Riparian Area Monitoring

Streams will be monitored in accordance with the SWAMPIM assessment protocol, included as **Appendix C**. Individual metrics associated with each of the three functional categories (hydrology, water quality and habitat) will be assessed and documented using SWAMPIM datasheets. During the monitoring events on stream reaches where enhancement activities were conducted, a team composed of qualified professionals will collect SWAMPIM data along the same stream assessment reaches (SARs) used to establish baseline SWAMPIM conditions for these stream reaches. New SWAMPIM SARs for restored and re-established stream reaches will be identified upon completion of construction activities, and data will be collected following SWAMPIM protocols. Monitoring reaches will be established and mapped in the official as-built drawings, which will be submitted to the USACE, and are expected to follow the reach designations in the design plans.

Instream structures will be inspected during each year of SWAMPIM monitoring (see **Table 10-1**) as part of the SWAMPIM metric scoring to determine if structures are performing as designed. If remedial actions are required, the steps established in the Maintenance Plan (**Section 7**) and the Adaptive Management Plan (**Section 12**) will be followed.

In addition to riparian area monitoring associated with scoring SWAMPIM metrics, riparian and protected natural areas will be visually monitored for invasive, noxious, or exotic species, as recognized by state and federal agencies.

10.2 Emergent Wetland Monitoring

Monitoring of the emergent wetland mitigation area will evaluate whether the emergent wetlands are meeting the hydrologic and hydrophytic vegetation criteria as outlined in the 1987 USACE Wetland Delineation Manual and Regional Supplement for the Great Plains Region.

The wetland mitigation area will also be monitored for the presence of non-native, noxious or invasive species. If remedial actions are required, the protocols established in the Maintenance Plan (**Section 7**) and the Adaptive Management Plan (**Section 12**) will be followed.

10.3 Monitoring Schedule

Table 10-1 shows the schedule of monitoring for streams, associated stream mitigation areas (riparian planting zone and protected natural areas), and emergent wetland area.

TABLE 10-1: MITIGATION MONITORING SCHEDULE

Monitoring Year	Resource	Protocol	Activities	
1,3,5,7	Streams	SWAMPIM	Field Investigation/Field Measurements	Photographs, datasheets
1,3,5,7	Stream Riparian Areas	SWAMPIM	Field Investigation/Field Measurements	Photographs, datasheets
1,3,5,7	Wetland Area	1987 USACE Wetland Delineation Manual	Field Investigation/Field Measurements (hydrology and hydrophytic vegetation)	Photographs, datasheets
2,4,6	Streams	Visual Inspection	Field Visit	Photographs
2,4,6	Stream Riparian Areas	Visual Inspection	Field Visit	Photographs
2,4,6	Wetland Area	Visual Inspection	Field Visit	Photographs

Submittal of Annual Reports will continue until the USACE has verified that all mitigation areas have met, or are satisfactorily progressing toward, the applicable standards associated with the permit conditions. This does not preclude some mitigation areas from satisfying the terms and conditions of the permit prior to or by the seven-year monitoring period, provided approval is granted by the USACE. Since the mitigation work is likely to take multiple years to construct and implement, monitoring activities may be initiated in phases on constructed portions of the mitigation work. Portions of the mitigation site may be approved as having satisfied compliance monitoring and released from further monitoring requirements if those portions of the site demonstrate that they are on a trajectory for long-term success and approved for release by the USACE. If acceptance of any part of the mitigation work is not achieved after seven years of monitoring, the Permittee may propose adaptive management activities, additional monitoring, modifications to the monitoring schedule, and/or other approaches that may be used to satisfy the mitigation requirements, per USACE approval.

11. Long Term Management Plan

Once the compensatory mitigation requirements for unavoidable impacts to aquatic resources have been fulfilled and approved by the USACE, long term protection of the mitigation sites will be provided through an USACE-approved conservation easement which will be conveyed to a third party, not-for-profit, educational corporation, or trust (previously defined in **Part III, Section 8** as the "Grantee"). The Grantee will be responsible for monitoring, protecting and enforcing the requirements of the Conservation Easement and will report to the Permittee any conditions or activities that would be detrimental to the long-term sustainability of the mitigation areas and would warrant corrective actions to be taken. The Permittee will be responsible for providing the maintenance and/or corrective actions necessary to sufficiently address the issues reported by the Grantee. The Conservation Easement will grant enforcement powers to the Grantee to enforce the provisions of and protect the area encumbered by the Conservation Easement.

<u>Prohibited Activities</u>

Any activity on, or use of, the areas encumbered by the Site Protection Instrument (Conservation Easement), described in **Part III, Section 8** of this Mitigation Plan, that is inconsistent with the objectives of this Mitigation Plan is prohibited. The area within the Conservation Easement shall be preserved in the conditions outlined in this Mitigation Plan and restricted from any development that would impair or interfere with the requirements of the Mitigation Plan. Without limiting the generality of the foregoing, the following activities and uses are expressly prohibited, restricted, or reserved as indicated below:

a) <u>Vegetation:</u> There shall be no removing, destroying, cutting, trimming, mowing, shredding, burning (except for prescribed burns), harming, or altering of any vegetation, or disturbing or changing in any way the habitat within the Conservation Easement except as expressly allowed in this Mitigation Plan in order to fulfill the objectives and standards of the plan. Diseased, invasive or non-native trees, shrubs, or plants may be removed; firebreaks and existing road rights-of-way may be maintained, cut and mowed; and trees, shrubs, or plants may be removed to accommodate maintenance of permitted improvements or other uses expressly permitted under the terms of this Mitigation Plan. Potentially invasive plants may be removed from the Conservation Easement for habitat management purposes consistent with the provisions of this Mitigation Plan. Except as necessary for activities expressly permitted in this Mitigation Plan, there shall be no farming, tilling, or destruction and/or removal of native vegetation within the Conservation Easement. There shall be no planting of invasive or potentially invasive non-native plant species anywhere within the Conservation Easement. There shall be no use of pesticides, including but not limited to insecticides, fungicides, rodenticides, and herbicides, except as expressly allowed in this Mitigation Plan, except herbicides may be used for treatment to control invasive species.

b) Uses: No agricultural, residential or industrial activity shall be conducted within the Conservation Easement. There shall be no storing or dumping of soil, trash, ashes, garbage, waste, abandoned vehicles, appliances, machinery, or hazardous substances, or toxic or hazardous waste, or any placement of underground or aboveground storage tanks or other materials on the Conservation Easement that may negatively impact or be detrimental to the intent of this Mitigation Plan or to the surface or subsurface waters of the Conservation Easement. Livestock animals shall be excluded from the Conservation Easement by fencing or other positive methods. Any right-of-passage across the Conservation Easement for any activity or use set forth in this paragraph is also prohibited, except in areas designated in the Mitigation Plan.

c) Topography: There shall be no change in the topography within the Conservation Easement except as expressly provided in this Mitigation Plan. There shall be no surface mining, filling, excavating, grading, dredging, mining or drilling within the Conservation Easement, and there shall be no removing of topsoil, peat, sand, gravel, rock, minerals or other materials from the area within the Conservation Easement except to restore natural topography or drainage patterns.

d) Soil or Water Degradation: There shall be no use of, or the conducting of any activity within the Conservation Easement that causes or is likely to cause soil degradation, erosion, depletion or pollution of, or siltation on, any surface or subsurface waters within the Conservation Easement. There shall be no diking, draining, dredging, channeling, filling, leveling, pumping, impounding, or related activities, or altering or tampering with water control structures or devices, or disruption or alteration of the restored, enhanced, or created drainage patterns within the Conservation Easement. Except as provided in this Mitigation Plan, diverting, causing or permitting the diversion of surface or underground water into, within or out of the Conservation Easement by any means, removal of wetlands, polluting or discharging into waters, springs, seeps, or wetlands, or use of pesticide or biocides is prohibited, except as provided in Paragraph 11(a) above.

e) Construction: There shall be no constructing or placing of any building, mobile home, asphalt or concrete pavement, billboard or other advertising display, antenna, utility pole, tower, conduit, line, pier, landing, dock, or any other temporary or permanent structure or facility or any other man-made structures within the Conservation Easement except in connection with the repair, maintenance, or replacement (but not expansion) of any structures and other improvements located within the Conservation Easement as of the Effective Date of the Conservation Easement. Existing buildings, structures, fences, pens, wells, dams and reservoirs, utilities, soft-surface roads, and other improvements may be maintained, renovated, and repaired, and in the event of their destruction, any such existing improvement may be reconstructed with another of similar size, function, capacity, location, and material.

f) Roads: There shall be no construction of roads, trails, or walkways within the Conservation Easement; nor any enlargement, widening, improvement or modification to any existing roads, trails, or walkways or other rights of way within the Conservation Easement except as provided in this Mitigation Plan. Maintenance of existing roads, trails, walkways or other right of ways shall be limited to those activities allowed in the Mitigation Plan.

g) Waters: Except as provided in this Mitigation Plan, there shall be no polluting, altering, manipulating, depleting or extracting of surface or subsurface water (including, but not limited to, ponds, creeks or other water courses) or any other water bodies within the Conservation Easement, and except as provided in this Mitigation Plan there shall be no conducting of activities within the Conservation Easement that would be detrimental to water purity or that alter the natural water level or flow in or over the Conservation Easement (including, but not limited to, damming, dredging or construction in any free flowing water body, nor any manipulation or alteration of natural water courses, fresh water lake and pond shores, marshes or other water bodies.

h) Vehicles: Except as provided elsewhere in this Mitigation Plan, the use of vehicles shall be limited to access to the site for monitoring, maintenance, fire protection/emergency action, or other approved activities. Off road vehicular access is expressly prohibited except in areas specifically designated in the Mitigation Plan.

i) Easements: Unless approved in writing by the USACE, there shall be no granting or conveying of any easements on, over, under, across, along or through the Property, including, but not limited to, access easements and utility easements. However, the Permittee shall grant the Grantee and the USACE access to the Conservation Easement to take such actions which are consistent with the Conservation Easement, this Mitigation Plan, and the Permit.

j) Signage: Construction or placement of any signs, billboards, or other advertising displays within the Conservation Easement is not permitted, except that signs whose placement, number, and design do not significantly diminish the scenic character of the Conservation Easement may be placed to state the name and address of the Property, to advertise or regulate permitted on-site activities, to post the Conservation Easement to control unauthorized entry or use, or to identify the property as being protected by the Conservation Easement.

k) Development Rights: No development rights that have been encumbered or extinguished by the Conservation Easement granted herein shall be transferred pursuant to a transferable development rights scheme or cluster development arrangement or otherwise.

l) Dumping: There shall be no dumping or storing of any material, such as trash, wastes, ashes, sewage, garbage, scrap material, sediment discharges, oil and petroleum by-products, leached compounds, toxic materials or fumes, or any “hazardous substances" (as hereinafter defined). For the purposes of this paragraph, the phrase "hazardous substances" shall be defined as in the federal Comprehensive Environmental Response, Compensation and Liability Act (42 U.S.C. 9601 et seq.) and/or a substance whose manufacture, processing, distribution in commerce, use, possession, or disposal is banned, prohibited, or limited pursuant to the federal Toxic Substances Control Act (15 U.S.C. 2601 et seq.).

m) Other Prohibitions: Any other use of, or activity on, the Property which is or may become inconsistent with the purposes of the Conservation Easement granted herein, and this Mitigation Plan is prohibited.

Activities Allowed. The Permittee will retain fee simple title to the land encumbered by the Conservation Easement and as specified in this **Section 11** will be responsible for the preservation and long-term maintenance of the Conservation Easement and the aquatic resource mitigation specified in this Mitigation Plan. As the fee simple title owner of the estate encumbered by the Conservation Easement, the Permittee shall retain and expressly reserves for itself, its successors and assigns, the right of access to and the right of continued use of the area encumbered by Conservation Easement for all purposes consistent with the terms of the Conservation Easement and this Mitigation Plan. Without limiting the generality of the foregoing, the following activities and uses are expressly allowed as indicated hereunder, including, but not limited to:

a) The right to quiet enjoyment of the Conservation Easement, the rights of ingress and egress with respect to the Conservation Easement, the right to fence the Conservation Easement and to prohibit public access thereto, and the right to sell, transfer, gift or otherwise convey the Conservation Easement, in whole or in part, provided such sale, transfer, or gift conveyance is subject to the terms of, and shall specifically reference, the Conservation Easement.

b) Access: The right to allow others to access the area encumbered by the Conservation Easement for the purposes of enjoying any passive activities by pedestrians on foot that do not jeopardize the performance standards specified in this Mitigation Plan or integrity of the site, including the quiet enjoyment, education, research, fishing, hunting and wildlife observation will be permitted at the discretion of and with prior authorization by the Permittee. Access is permitted to the USACE and the Grantee for the purpose of inspection and to take actions including but not limited to scientific or education observations and studies, and collection of samples.

c) Subdivision: As owner, in fee simple title, to the estate encumbered by the Conservation Easement the Permittee shall retain the right to divide, subdivide, or partition the estate provided that such division, subdivision, or partitioning does not contradict the requirements of, or otherwise interfere with, the implementation of this Mitigation Pan.

d) Hunting: Permittee and Permittee's lessees and guests may conduct hunting, fishing or trapping activities in accordance with appropriate federal, state and local laws and restrictions that conform to terms of the Conservation Easement and this Mitigation Plan. Permittee may expressly construct hunting blinds, the size, design, location, and number of which shall be subject to Grantee's prior written approval. No non-native animal species may be introduced to the Conservation Easement.

e) Predator and Nuisance Species Control: Permittee shall retain the right to control, through hunting, destruction, or trapping of predatory, exotic, invasive, and problem animals that pose a material threat to people, livestock, other animals, or habitat conditions shall be allowed provided those actions are conducted in accordance with applicable state and federal laws and requirements.

12. Adaptive Management Plan

An adaptive management plan for a compensatory mitigation project is generally described as a management strategy to address unforeseen changes in site conditions or other mitigation components of the mitigation project that may occur during the performance monitoring period (after construction is complete and prior to attainment of performance standards and acceptance by the USACE) . Adaptive management plans facilitate the decision-making process for revising mitigation plans and instituting measures to address both foreseeable and unforeseeable circumstances that adversely affect mitigation success. Occurrence of acts of nature such as wildfires, floods, climatic instability, wildlife activities, and disease as well as unauthorized human activities may affect the mitigation areas. If these acts occur, it may cause mitigation areas to become non-compliant with the success criteria in the mitigation plan during the monitoring period. Depending upon the circumstances, however, it may be appropriate to allow natural processes to continue, particularly when vegetation is expected to reestablish due to continued existence of seed sources, hydrology, and restrictions on incompatible land uses. Should foreseeable or unforeseen changes in site conditions jeopardize aquatic resources mitigation success during the monitoring period, an adaptive management plan would be initiated to provide the necessary corrective measures to meet the mitigation goals, objectives, and performance standards. The plan, at a minimum, would include the following information:

- Identify mitigation concerns;
- Identify solutions;
- Submit draft plan to the USACE for approval;
- Implement the plan upon attaining USACE approval;
- Measure and report progress.

The Permittee would be responsible for developing, operating and maintaining the mitigation areas in a manner that meets the goals and objectives of the mitigation plan. In general, mitigation measures and activities were developed to minimize risk of failure and to facilitate self-sustaining streams, their associated riparian buffers, and emergent wetlands. In the event remedial measures are necessary, the Permittee would be the responsible party for the implementation of an adaptive management plan. Remedial measures that involve revision to the approved mitigation plan would be coordinated with the USACE for approval prior to implementation.

13. Short-term and Long-term Financial Assurances

The Permittee is currently evaluating potential candidates for the holder of the mitigation area conservation easement. Once the conservation easement holder has been identified, the Permittee will provide long-term financial assurances, acceptable to the USACE, to ensure with a high-level of confidence that the mitigation project will be successfully completed.

APPENDIX A

OVERVIEW FIGURES AND MAPS

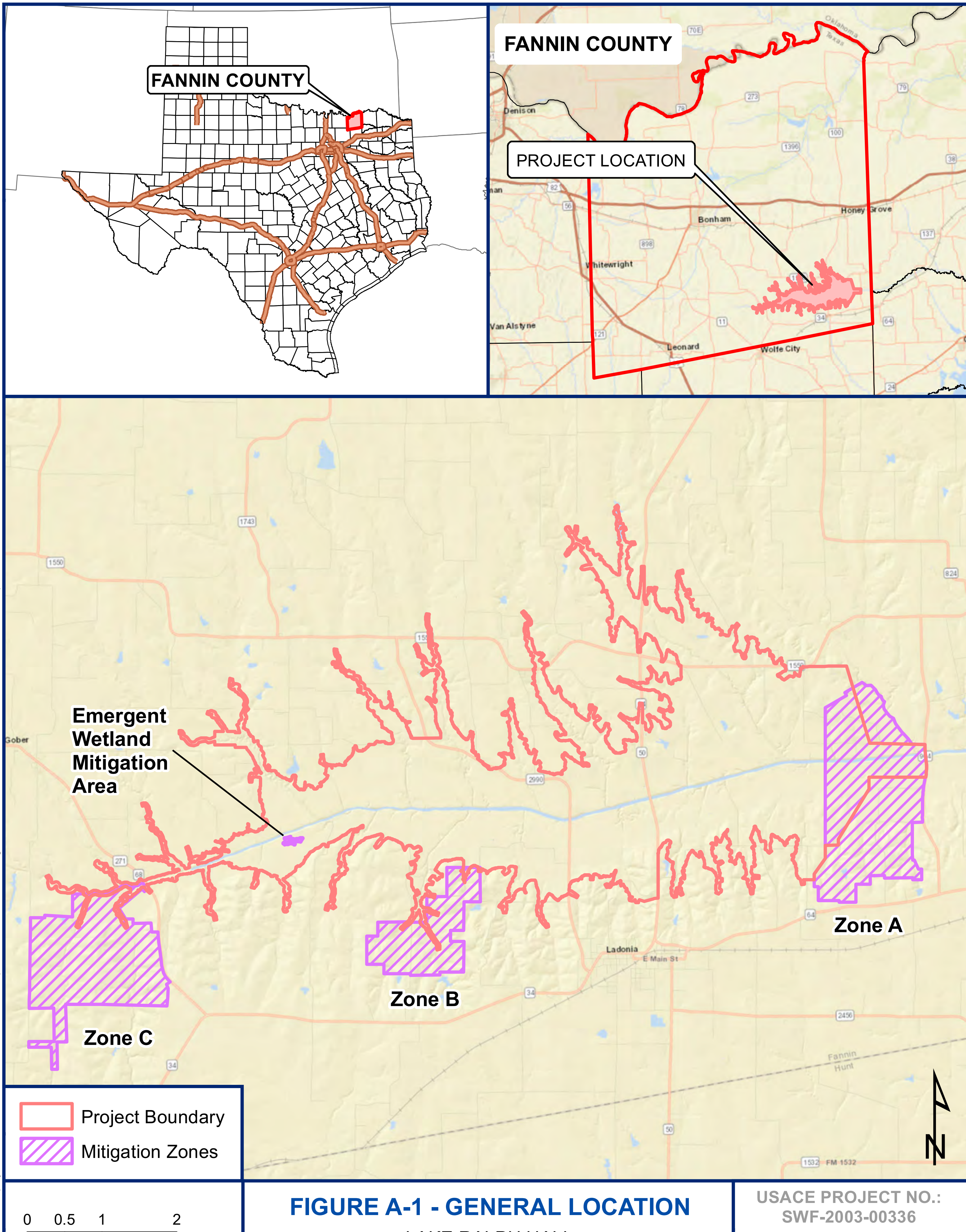


FIGURE A-1 - GENERAL LOCATION

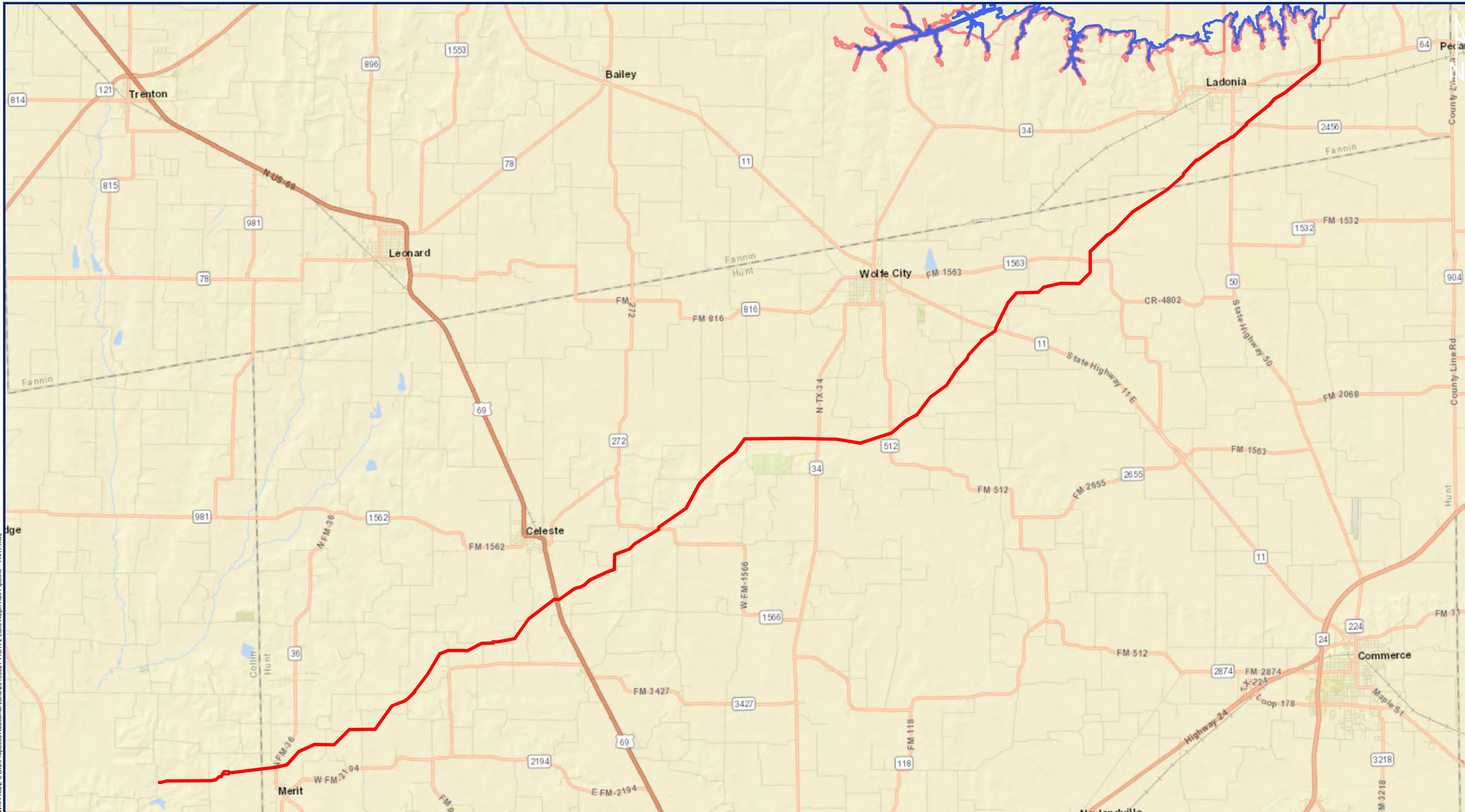
LAKE RALPH HALL
GENERAL LOCATION MAP

DRAFT

USACE PROJECT NO.:
SWF-2003-00336

JUNE 2019
FANNIN COUNTY, TX

Document Path: F:\projects\0449\083-012-0 Wrk Prod\2-9 GIS\Proposed Additional Land\Mitigation Plan MXDs\20190627 FIG A-1 General Location Map.mxd



0 1 2 4 Miles

FANNIN COUNTY, TX **JUNE 2019**

FIGURE A-2:
PROPOSED RAW WATER CONVEYANCE PIPELINE RIGHT OF WAY

USACE PROJECT NO.: SWF-2003-00336

DRAFT

UPPER TRINITY REGIONAL WATER DISTRICT

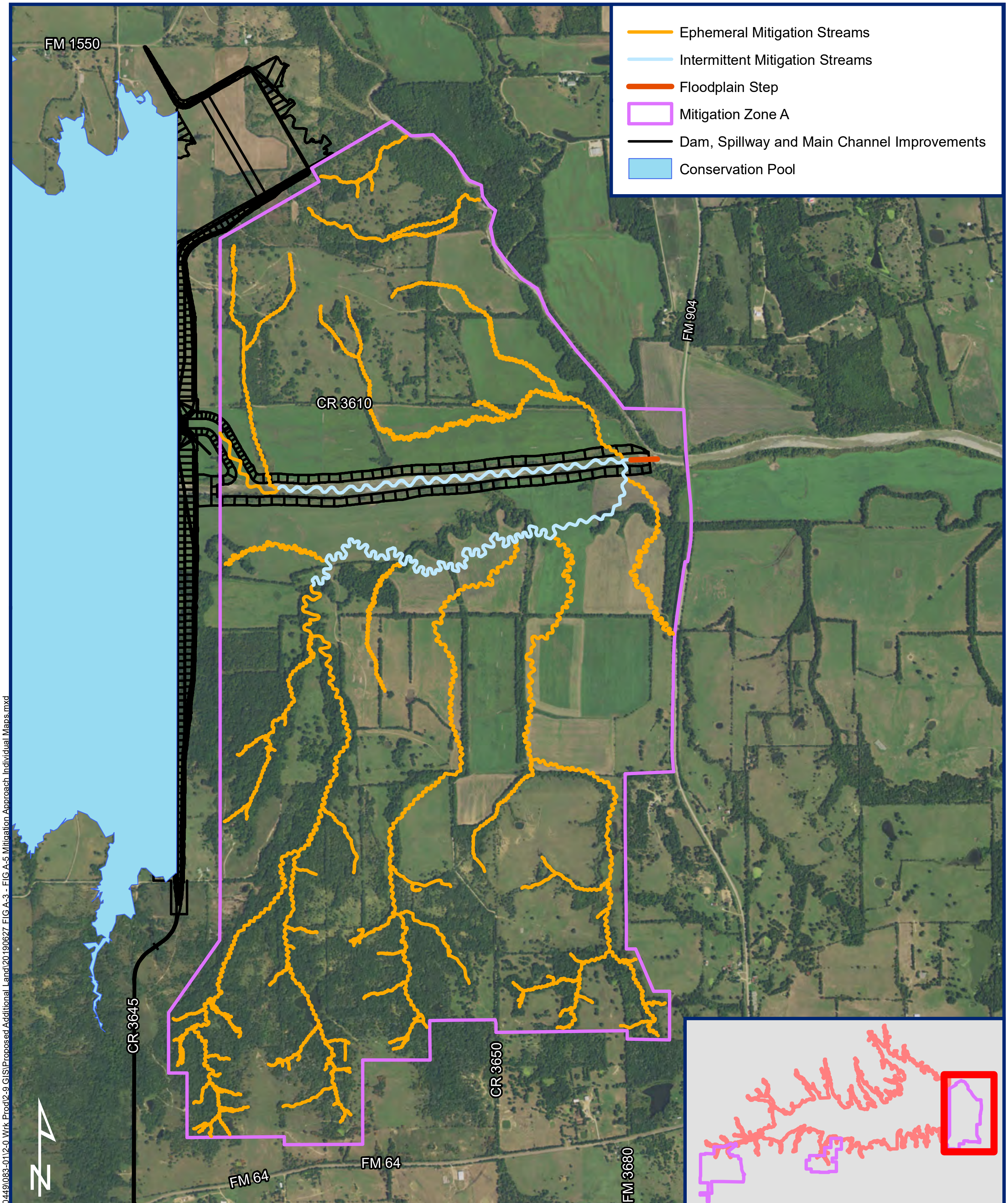
ECOSYSTEM PLANNING & RESTORATION

ALAN PLUMMER ASSOCIATES, INC.

FREESE NICHOLS

Propsed Raw Water Pipeline ROW
Conservation Pool
Lake Ralph Hall Project Boundary

Document Path: F:\projects\0449\083-01\2-0 Wrk Prod\2-9 GIS\Proposed Additional Land\20190627 FIG A-2 Lake Ralph Hall Pipeline - 11x17.mxd



0 625 1,250 2,500
Feet

FIGURE A-3: MITIGATION ZONE A

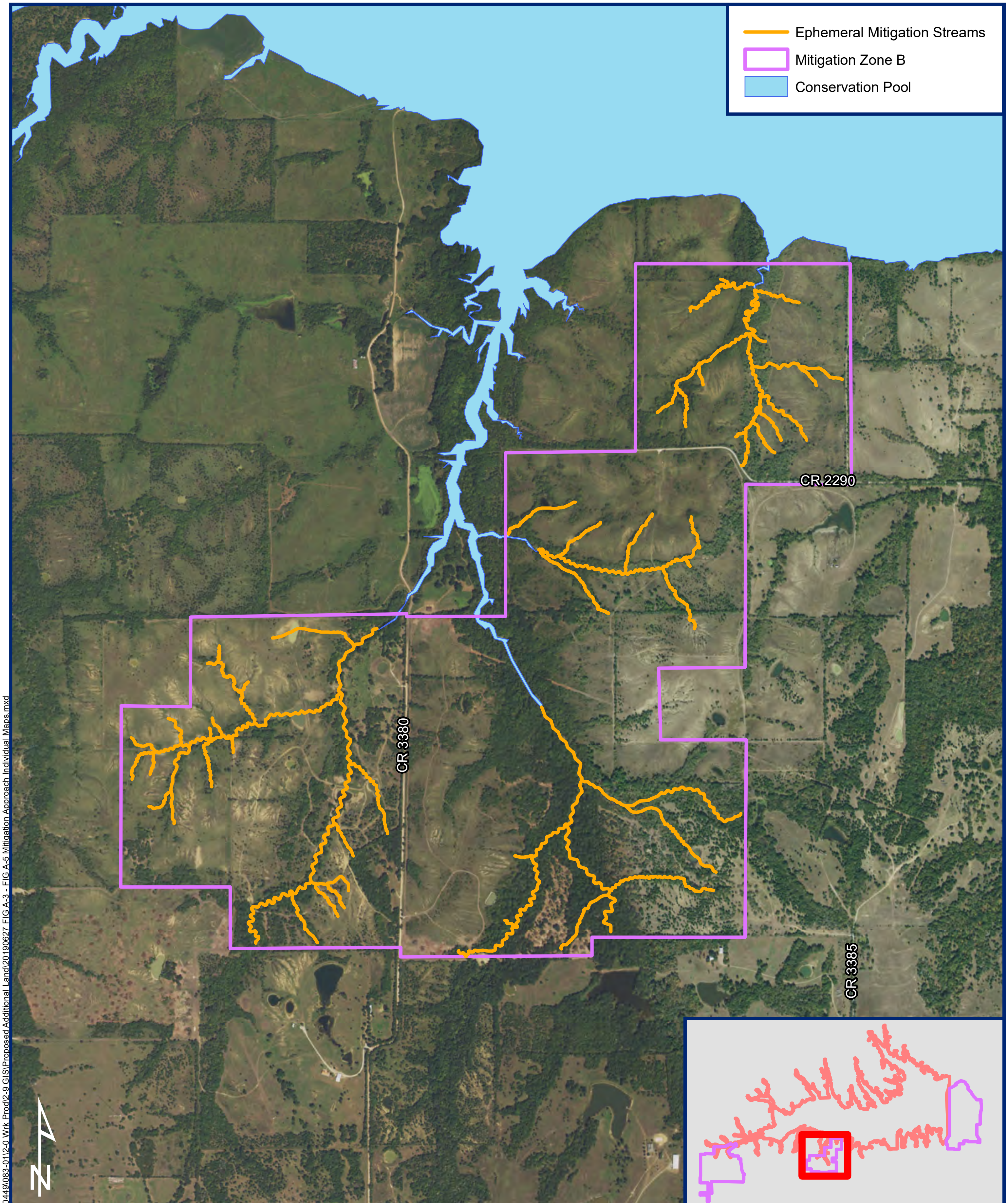
LAKE RALPH HALL
MITIGATION STREAM LOCATIONS

DRAFT

USACE PROJECT NO.:
SWF-2003-00336

JUNE 2019
FANNIN COUNTY, TX

Document Path: F:\projects\0449\083-0112-0 Wrk Prod\2-9 GIS\Proposed Additional Land\20190627 FIG A-3 - FIG A-5 Mitigation Approach Individual Maps.mxd



Document Path: F:\projects\0449\083-0112-0 Wrk Prod\2-9 GIS\Proposed Additional Land\20190627 FIG A-3 - FIG A-5 Mitigation Approach Individual Maps.mxd

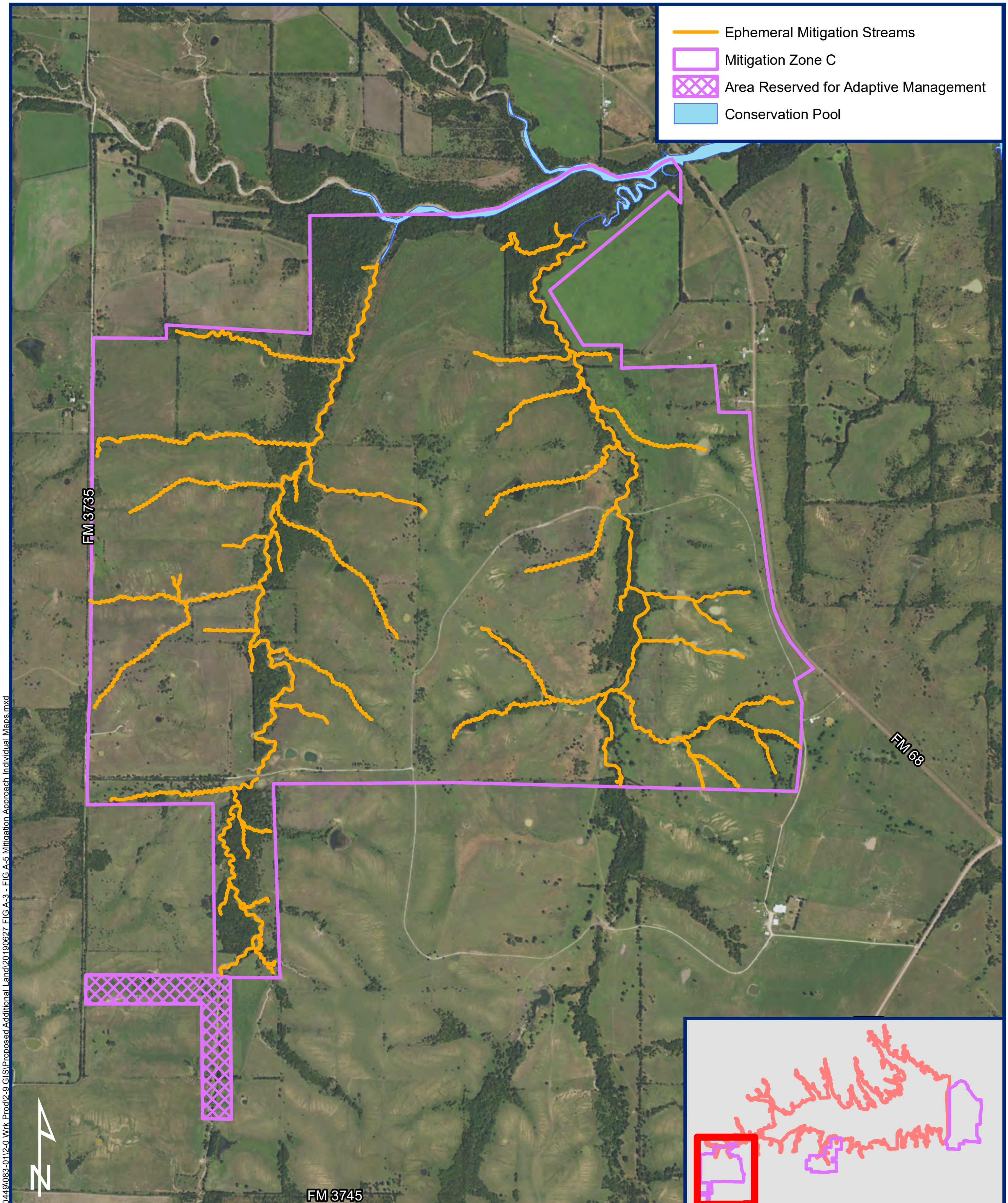
FIGURE A-4: MITIGATION ZONE B

LAKE RALPH HALL
MITIGATION STREAM LOCATIONS

DRAFT

USACE PROJECT NO.:
SWF-2003-00336

JUNE 2019
FANNIN COUNTY, TX



Document Path: F:\projects\0449\083-0112-0 Wrk Prod\2-9 GIS\Proposed Additional Land\20190627 FIG A-3 - FIG A-5 Mitigation Approach Individual Maps.mxd

FIGURE A-5: MITIGATION ZONE C

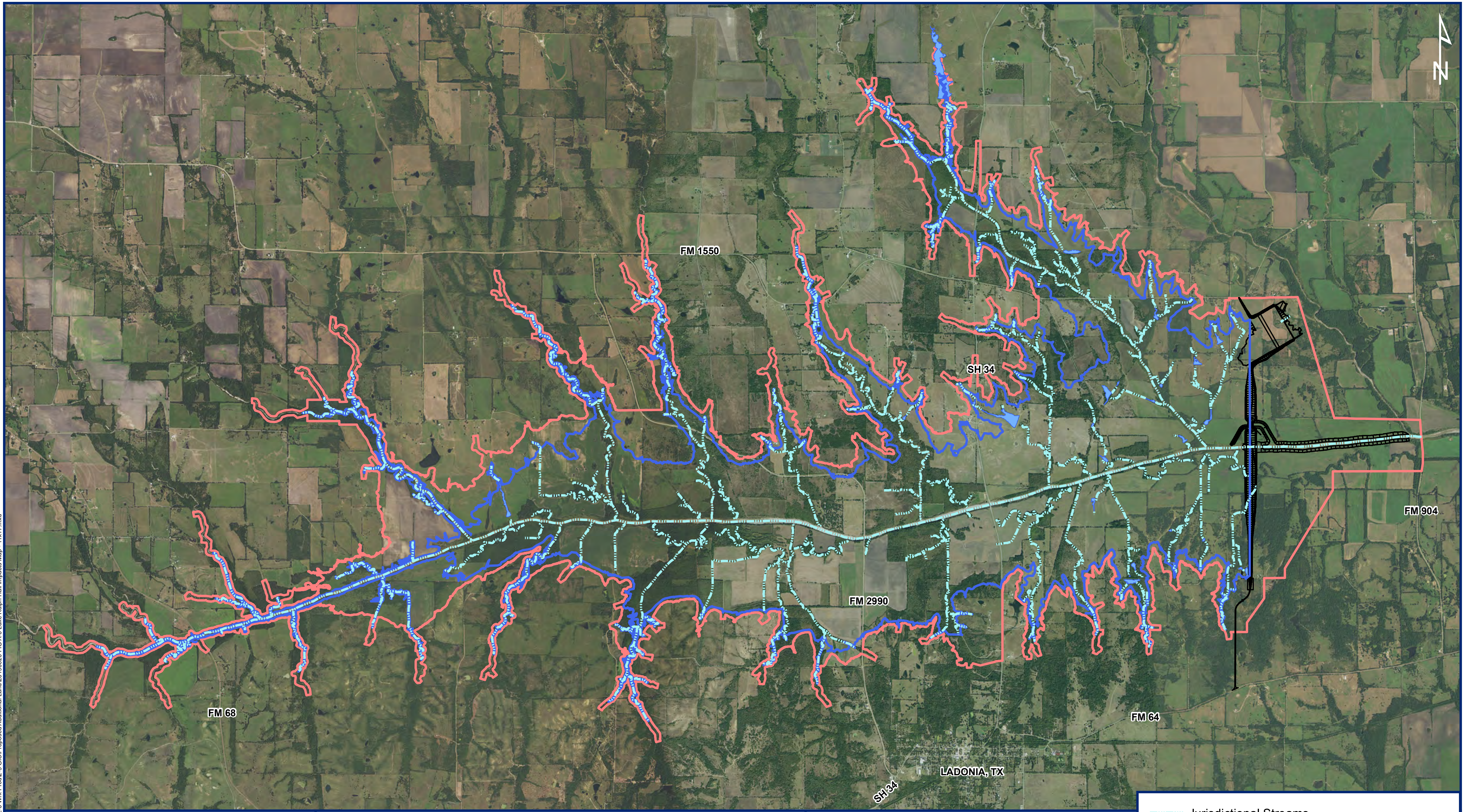
LAKE RALPH HALL
MITIGATION STREAM LOCATIONS

DRAFT

USACE PROJECT NO.: SWF-2003-00336

JUNE 2019

FANNIN COUNTY, TX



0 0.5 1 2 Miles

Jurisdictional Streams
On-Channel Impoundments
Dam, Spillway, and Main Channel Improvement
Conservation Pool
Lake Ralph Hall Project Boundary

FANNIN COUNTY, TX **JUNE 2019**

FIGURE A-6: JURISDICTIONAL STREAMS WITHIN LAKE RALPH HALL IMPACT AREA

USACE PROJECT NO.: SWF-2003-00336

DRAFT

UPPER TRINITY REGIONAL WATER DISTRICT

ECOSYSTEM PLANNING & RESTORATION

ALAN PLUMMER ASSOCIATES, INC.

FREESE NICHOLS

Document Path: F:\projects\0449\083-0112-0 Wrk Prod\2-9 GIS\Proposed Additional Land\20190620 FIG A-6 Lake Ralph Hall Impacts Map - 11x17.mxd

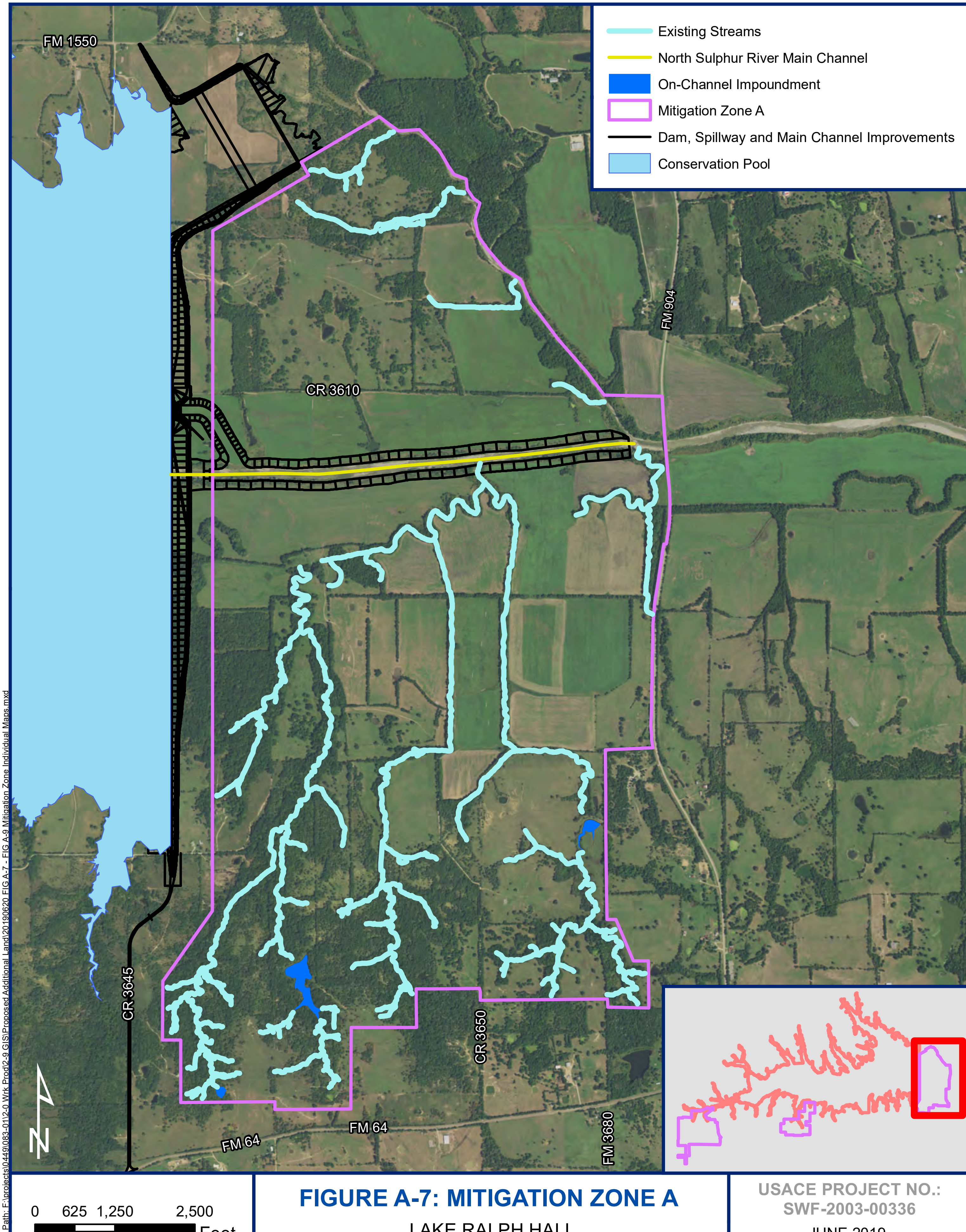


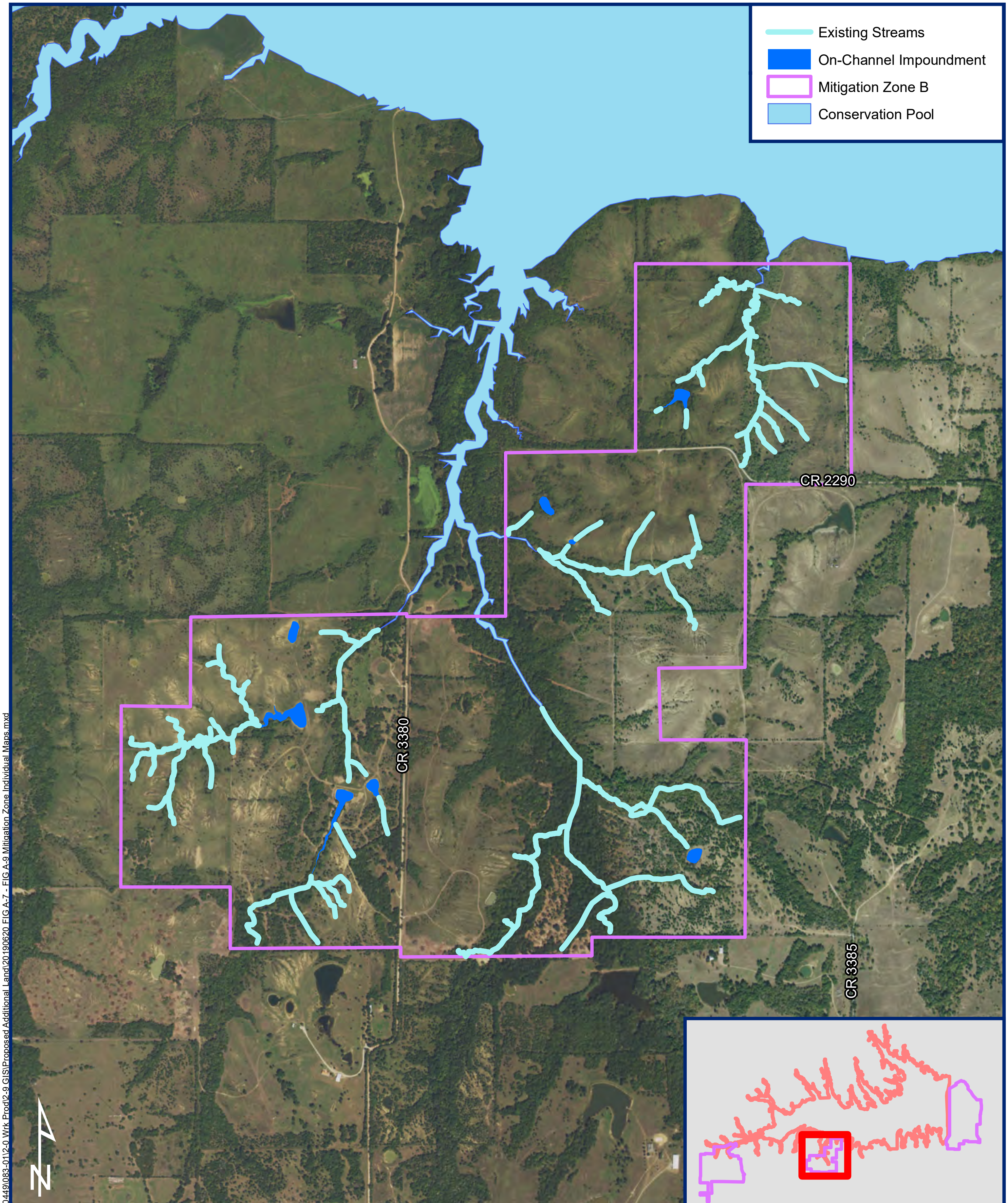
FIGURE A-7: MITIGATION ZONE A

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

DRAFT

USACE PROJECT NO.:
SWF-2003-00336

JUNE 2019
FANNIN COUNTY, TX



0 500 1,000 2,000 Feet

FIGURE A-8: MITIGATION ZONE B

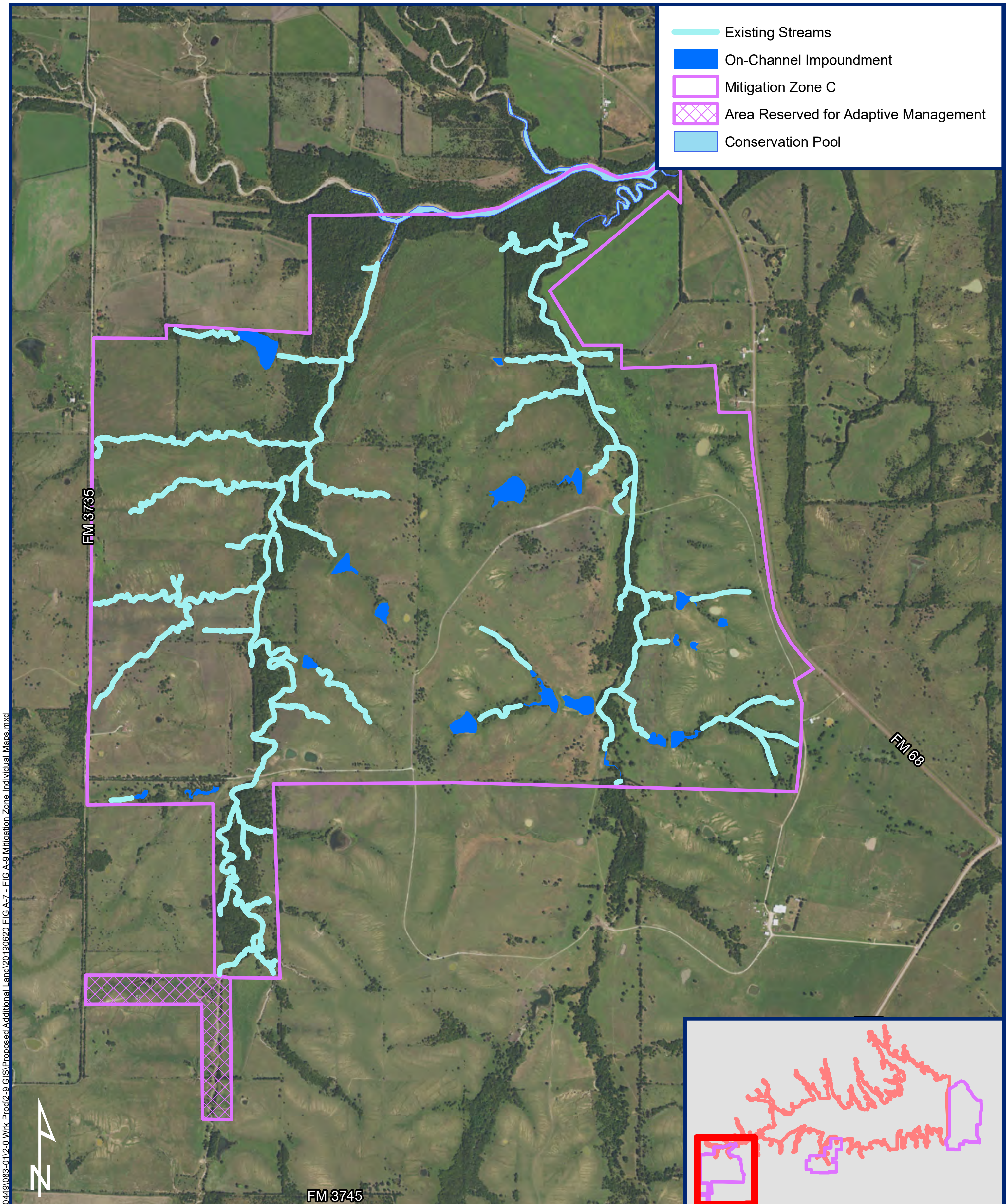
LAKE RALPH HALL
EXISTING STREAM LOCATIONS

DRAFT

USACE PROJECT NO.:
SWF-2003-00336

JUNE 2019
FANNIN COUNTY, TX

Document Path: F:\projects\0449\083-0112-0 Wrk Prod\2-9 GIS\Proposed Additional Land\20190620 FIG A-7 - FIG A-9 Mitigation Zone Individual Maps.mxd



0 625 1,250 2,500 Feet

FIGURE A-9: MITIGATION ZONE C

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

DRAFT

USACE PROJECT NO.:
SWF-2003-00336

JUNE 2019
FANNIN COUNTY, TX

Document Path: F:\projects\0449\083-0112-0 Wrk Prod\2-9 GIS\Proposed Additional Land\20190620 FIG A-7 - FIG A-9 Mitigation Zone Individual Maps.mxd

APPENDIX B

SUPPLEMENTAL JURISDICTIONAL DETERMINATION REPORT DATED JUNE 21, 2017;

APPROVED JURISDICTIONAL DETERMINATION LETTER FROM USACE DATED JULY 27, 2017

SUPPLEMENTAL REPORT IN SUPPORT OF REQUEST FOR APPROVED JURISDICTIONAL DETERMINATION OF WATERS OF THE UNITED STATES

Proposed Lake Ralph Hall

Fannin County, Texas

USACE Project No.: SWF-2003-00336

APPLICANT:

Upper Trinity Regional Water District

UPPER TRINITY REGIONAL WATER DISTRICT

June 21, 2017

Prepared by:

ALAN PLUMMER ASSOCIATES, INC.
ENVIRONMENTAL ENGINEERS • DESIGNERS • SCIENTISTS

Supplemental Report in Support of Request
for Approved Jurisdictional Determination of Waters of the United States
for the Proposed Lake Ralph Hall, Fannin County, Texas
US Army Corps of Engineers Project No.: SWF-2003-00336

1. Purpose

A letter, dated March 29, 2017, requesting an approved jurisdictional determination (AJD) for the portion of the proposed Lake Ralph Hall project site located in Fannin County, Texas was submitted by the Upper Trinity Regional Water District (UTRWD) to the U.S. Army Corps of Engineers (USACE). The purpose of this Supplemental Report is to respond to the USACE's request for additional information in support of UTRWD's request and to update and document the current conditions of aquatic resources within the proposed Lake Ralph Hall project area as well as to document aquatic resources within areas identified for potential mitigation. The previous documentation of aquatic resources was published in a Preliminary Jurisdictional Determination (PJD) report dated October 26, 2006.

Since the 2006 PJD report, the assessment area has experienced physical and administrative changes. These modifications include land use alterations by current land-owners; continued erosion and degradation of area streams; U.S. Army Corps of Engineer's guidance documents (subsequent to 2006); and design refinements associated with the dam/embankment structure, spillway system, intake structure and pump station, recent LIDAR data, and the addition of the mitigation assessment area.

The approximately 13,094-acre assessment area documented in this Supplemental Report includes:

- The 7,568-acre reservoir with a conservation pool set at elevation 551 feet above mean sea level;
- Embankment structure (dam);
- Spillway system;
- Intake structure and pump station;
- Project boundary representing +/- 560-feet elevation; and
- Area(s) identified as potential mitigation lands located downstream of dam to FM 904.

2. Methods

The 2006 PJD report utilized the following datasets:

- Aerial photographs flown 2003-2005
- US Geological Survey (USGS) topographic maps
  - o Farmersville, Greenville NW, Celeste, Pike, Wolfe City, Gober, Ladonia, Honey Grove and Dodd city quadrangles
- Soil Survey Fannin County
- National Wetlands Inventory maps

- National Hydrography Dataset
- Field investigations conducted in 2005

For this Supplemental Report, the following datasets were utilized to identify and address modifications to the 2006 PJD report:

- Aerial photographs from 2014, 2015, and 2016
  - o 2014 and 2016 Aerial photographs from the USDA Farm Service Agency's National Agricultural Inventory Program (1-meter resolution)
  - o 2015 Texas Orthoimagery Project (0.5-meter resolution)
- Google Earth™ imagery from 1995, 2008, 2010, 2011, 2012, 2014, and 2015
  - o Aquatic resource data converted to KMZ file structure for review in Google Earth

The higher resolution aerial photographs from 2014-2016 compared to those used in the 2006 PJD report facilitated in refinements of the previously identified (delineated) aquatic resources as well as identification in modifications to aquatic resources within the project area (erosional features, impoundments, etc.). These refinements to the delineated aquatic resources were performed as a "desktop" evaluation.

To ground-truth observations from the desktop evaluation, field investigations were performed May 30 through June 2, 2017 to assess a representative sample area of portions of the 13,094-acre assessment area. These "on the ground" assessments aided in verification of identified aquatic resources from the desktop evaluation as well as to map the limits of potential waters of the U.S.[1] identified both from the desktop evaluation and in the field. As an example, 14 of the 47 mapped on-channel ponds within the assessment area representing approximately 29.7 percent were investigated in the field. Lacustrine "fringe" wetland areas associated with the 14 on-channel ponds assessed in the field were observed and recorded in the field. The lacustrine wetlands, predominantly herbaceous emergent wetlands, represented approximately 3.4 acres of the 23.8 acres of the 14 on-channel ponds assessed or approximately 14.3 percent of the assessed on-channel pond acreage. This percentage of fringe wetlands was used to estimate the lacustrine wetland area associated with the total delineated area of on-channel impoundments within the assessment area that would be considered as hydraulically and hydrologically connected to waters of the U.S.

To refine mapping, waypoints recorded during the 2017 field investigation were cross-referenced with topographic maps (both LIDAR generated and USGS topographic maps) and aerial photographs to accurately determine the limits of waters of the U.S. within specific areas assessed for this Supplemental Report. In order to quantify the entire footprint for the proposed reservoir, Geographic Information System (GIS) technologies, specifically ESRI's ARCGIS 10.2, were used to identify various spectral signatures associated with the 2014, 2015, and 2016 aerial photographs. The signatures from the verified aquatic resources were then crossed-reference to comparable resources within inaccessible tracts to determine the limits of the

[1] Aquatic resources were recorded using a Garmin GPSMAP 78s with sub-3 meter accuracy; field tested to 5 feet accuracy.

aquatic resources for the entirety of the 13,094-acre assessment area; thereby, delineating the limits of aquatic resources for the entire Supplemental Report assessment area.

3. Results

As documented in the 2006 PJD report, historical channelization of the North Sulphur River and major tributaries has resulted in excessive erosion within the entirety of the North Sulphur River watershed. The consequence of this channelization is greatly enlarged channels with capacities to contain and convey greater than the 100-year flood flows. Accordingly, the stream channels within the 13,094 assessment area, to include the North Sulphur River, do not exhibit a floodplain – the stream channels do not overbank even in the most severe rain events. Therefore, wetland areas identified within the 13,094-acre assessment area, except for fringe lacustrine wetlands associated with on-channel impoundments, are not hydraulically or hydrologically connected to any stream channels. Approximately 3.8 acres of isolated forested wetlands were identified within the Supplemental Report assessment area. However, these wetlands do not contribute to the chemical, physical, and biological integrity of waters of the U.S. Consequently, the wetlands identified within the 13,094-acre assessment area, aside from those associated with on-channel lacustrine fringe wetlands, should be considered "isolated" and not subject to Section 404 of the Clean Water Act. The following tables summarize the delineated aquatic resources observed within the 13,094-acre assessment area.

Table 1: Summary of Delineated Stream Channels Within Assessment Area

Within Conservation Pool, Embankment, Spillway of Lake Ralph Hall		
Category	**Description**	**Linear Feet**
Stream Channel	Ephemeral 0.5 - 2.0' wide North Side	26,835
Stream Channel	Ephemeral 2.5 - 5.0' wide - North Side	88,309
Stream Channel	Ephemeral 6 - 15' wide - North Side	55,023
Stream Channel	Ephemeral 16 - 25' wide - North Side	3,949
Stream Channel	Ephemeral >25' wide - North Side	78,764
Stream Channel	Ephemeral 0.5 - 2.0' wide South Side	19,769
Stream Channel	Ephemeral 2.5 - 5.0' wide - South Side	66,967
Stream Channel	Ephemeral 6 - 15' wide - South Side	92,155
Stream Channel	Ephemeral 16 - 25' wide - South Side	5,321
Stream Channel	Ephemeral >25' wide - South Side	8,396
Stream Channel	Intermittent - North Sulphur River @ SH34	55,570
Sub-Total Channels		**501,058**

Outside Conservation Pool, Embankment, Spillway but within Assessment Area		
Category	**Description**	**Linear Feet**
Stream Channel	Ephemeral 0.5 - 2.0' wide North Side	11,513
Stream Channel	Ephemeral 0.5 - 2.0' wide North Side - Baker Creek Tribs	2,639
Stream Channel	Ephemeral 2.5 - 5.0' wide - North Side	22,872
Stream Channel	Ephemeral 2.5 - 5.0' wide - North side - Baker Creek Tribs	5,171
Stream Channel	Ephemeral 6 - 15' wide - North Side	13,037
Stream Channel	Ephemeral 16 - 25' wide - North Side	2,463
Stream Channel	Ephemeral >25' wide - North Side	11,897
Stream Channel	Ephemeral 0.5 - 2.0' wide South Side	22,690
Stream Channel	Ephemeral 2.5 - 5.0' wide - South Side	49,968
Stream Channel	Ephemeral 6 - 15' wide - South Side	37,535
Stream Channel	Ephemeral 16 - 25' wide - South Side	0
Stream Channel	Ephemeral >25' wide - South Side	0
Stream Channel	Intermittent - North Sulphur River - downstream of dam (FM 904)	6,387
Stream Channel	Intermittent - North Sulphur River - upstream of pool (FM 38)	3,689
Sub-Total Channels		**189,860**

Total Channels		**690,918**

TABLE 2: ON-CHANNEL PONDS (OCPs) SUMMARY

	ACRES	NUMBER	LOCATION
SUBTOTAL	56.19	33	CONSERVATION POOL (CP), DAM, SPILLWAY
SUBTOTAL	13.69	14	OUTSIDE CP, DAM, SPILLWAY
TOTAL	69.89	47	WITHIN ASSESSMENT AREA

Range in size from 0.04 acre to 23.8 acres

SIZE BREAKDOWN	
Small Ponds (≤ 1 acre):	32
Ponds (>1 acre but ≤ 5 acres):	13
Lakes (>5 acres but ≤500 acres):	2

Total # Within Assessment Area	Total # Assessed	Percentage of Total Assessed	Total Acreage of OCPs within Assessment Area	Total Acreage Assessed	Percentage of Total Acreage Assessed
47	14	29.7	69.9	23.8	34.0
Total # Within Conservation Pool/Dam/Spill way Area	# Assessed	Percentage of # Within Conservation Pool/Dam/Spill way Area Assessed	Total Acreage of OCPs within Conservation Pool/Dam/Spill way Area	Acreage of OCPs Assessed within Conservation Pool/Dam/Spill way Area	Percentage of Acreage within Conservation Pool/Dam/Spill way Area Assessed
33	13	39.4	56.2	21.4	38.1

Calculated Area of Lacustrine Fringe Wetlands

3.4 acres identified for 23.8 acres of 14 on-channel ponds field assessed = 14.3 percent
14.3 percent of 69.9 acres of 47 on-channel ponds within assessment area = 10 acres

TABLE 3: UPLAND PONDS (UPs) SUMMARY

	ACRES	NUMBER	LOCATION
SUBTOTAL	52.37	115	CONSERVATION POOL/DAM/SPILLWAY
SUBTOTAL	30.63	97	OUTSIDE CP/DAM/SPILLWAY
TOTAL	83.00	212	WITHIN ASSESSSMENT AREA

Range in size from 0.02 acre to 3.26 acres

SIZE BREAKDOWN	
Small Ponds (< 1 acre):	194
Ponds (>1 acre but < 5 acres):	18
Lakes (>5 acres but <500 acres):	0

TABLE 3: UPLAND PONDS SUMMARY (CONT.)

Total # Within Assessment Area	Total # Assessed	Percentage of Total Assessed	Total Acreage of UPs within Assessment Area	Total Acreage Assessed	Percentage of Total Acreage Assessed
212	20	9.4	83.0	23.2	28

Total # Within Conservation Pool/Dam/Spillway Area	# Assessed	Percentage of # Within Conservation Pool/Dam/Spillway Area Assessed	Total Acreage of UPs within Conservation Pool/Dam/Spillway Area	Acreage of UPs Assessed within Conservation Pool/Dam/Spillway Area	Percentage of Acreage within Conservation Pool/Dam/Spillway Area Assessed
115	10	8.7	52.4	13.2	25.2

A comprehensive summary of all delineated aquatic resources within the 13,094-acre assessment area is provided in Appendix A. Within Appendix A, summary tables detail the following aquatic resources:

- Streams
- Open waters
  - On-channel impoundments
  - Upland, isolated ponds[2]
- Isolated forested wetlands

Mapbooks of the delineated aquatic resources are included in Appendix B. The mapbooks detail the following aquatic resources delineated within the 13,094-acre assessment area:

- Overall Aquatic Resources Delineated
- Delineated Streams
- Delineated Open Waters
  - On-channel impoundments
  - Upland, isolated ponds
- Delineated Isolated Forested Wetlands

Wetland determination data forms for delineated but isolated aquatic resources are included in Appendix C with a mapbook showing the location of the wetland determination sampling points. Photographs of the resources recorded along the numerous sampling locations are included with the data forms. Finally, additional photographs from the 2017 on-site investigation of the open water aquatic resources within the 13,094-acre assessment area are provided in Appendix D.

[2] Ponds or open waters typically used for livestock.

APPENDIX A

AQUATIC RESOURCE SUMMARY TABLES

TABLE A-1: COMPREHENSIVE LISTING OF STREAM CHANNELS FOR PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION ASSESSMENT AREA

ID_NAME	Width at OHWM (feet)	AQUATIC_RESOURCE	Category	Classification	LOCATION	Length (L.F.)
NSR	135.0	NORTH SULPHUR RIVER	>25'	Intermittent	CONSERVATION POOL, DAM, SPILLWAY	12,727
NSR	65.0	NORTH SULPHUR RIVER	>25'	Intermittent	OUTSIDE CP, DAM, SPILLWAY	3,689
NSR	150.0	NORTH SULPHUR RIVER	>25'	Intermittent	OUTSIDE CP, DAM, SPILLWAY	6,387
NSR	150.0	NORTH SULPHUR RIVER	>25'	Intermittent	CONSERVATION POOL, DAM, SPILLWAY	692
NSR	65.0	NORTH SULPHUR RIVER	>25'	Intermittent	CONSERVATION POOL, DAM, SPILLWAY	5,089
NSR	85.0	NORTH SULPHUR RIVER	>25'	Intermittent	CONSERVATION POOL, DAM, SPILLWAY	7,330
NSR	85.0	NORTH SULPHUR RIVER	>25'	Intermittent	CONSERVATION POOL, DAM, SPILLWAY	14,183
NSR	100.0	NORTH SULPHUR RIVER	>25'	Intermittent	CONSERVATION POOL, DAM, SPILLWAY	12,880
NSR	150.0	NORTH SULPHUR RIVER	>25'	Intermittent	CONSERVATION POOL, DAM, SPILLWAY	2,668
N1	85.0	STREAM N1 - MERRILL CREEK	>25'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	24,057
N1	50.0	STREAM N1 - MERRILL CREEK	>25'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	521
N1-TRIB1	4.0	TRIBUTARY 1 TO MERRILL CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	3,171
N1-TRIB1	4.0	TRIBUTARY 1 TO MERRILL CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	514
N1-TRIB1	4.0	TRIBUTARY 1 TO MERRILL CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	878
N1-TRIB10	2.0	TRIBUTARY 10 TO MERRILL CREEK	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	782
N1-TRIB10	1.0	TRIBUTARY 10 TO MERRILL CREEK	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	171
N1-TRIB11	5.0	TRIBUTARY 11 TO MERRILL CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	3,020
N1-TRIB11-A1	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	850
N1-TRIB12	3.5	TRIBUTARY 12 TO MERRILL CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,503
N1-TRIB12	2.0	TRIBUTARY 12 TO MERRILL CREEK	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	103
N1-TRIB13	2.0	TRIBUTARY 13 TO MERRILL CREEK	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,826
N1-TRIB13	2.0	TRIBUTARY 13 TO MERRILL CREEK	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	85
N1-TRIB13	5.0	TRIBUTARY 13 TO MERRILL CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	758
N1-TRIB14	5.0	TRIBUTARY 14 TO MERRILL CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,797
N1-TRIB14	3.0	TRIBUTARY 14 TO MERRILL CREEK	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	362
N1-TRIB14-A1	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	202
N1-TRIB14-A1	1.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	246
N1-TRIB15	15.0	TRIBUTARY 15 TO MERRILL CREEK	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	3,412
N1-TRIB15	11.0	TRIBUTARY 15 TO MERRILL CREEK	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	919
N1-TRIB15-A1	8.0	SECONDARY TRIBUTARY	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	909
N1-TRIB15-A2	5.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	437
N1-TRIB15-A3	5.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	215
N1-TRIB15-A4	4.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	172

TABLE A-1: COMPREHENSIVE LISTING OF STREAM CHANNELS FOR PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION ASSESSMENT AREA

ID_NAME	Width at OHWM (feet)	AQUATIC_RESOURCE	Category	Classification	LOCATION	Length (L.F.)
N1-TRIB15-A5	5.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	294
N1-TRIB15-A6	6.0	SECONDARY TRIBUTARY	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	507
N1-TRIB15-A6	5.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	137
N1-TRIB16	15.0	TRIBUTARY 15 TO MERRILL CREEK	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	3,380
N1-TRIB16-A1	4.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	173
N1-TRIB16-A1	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	556
N1-TRIB16-A2	4.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	541
N1-TRIB16-A2	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	209
N1-TRIB16-A3	6.0	SECONDARY TRIBUTARY	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	572
N1-TRIB16-A3	4.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	756
N1-TRIB17	4.0	TRIBUTARY 17 TO MERRILL CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	906
N1-TRIB17	3.0	TRIBUTARY 17 TO MERRILL CREEK	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,325
N1-TRIB17-A1	4.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	273
N1-TRIB18	4.0	TRIBUTARY 18 TO MERRILL CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	242
N1-TRIB19	6.0	TRIBUTARY 19 TO MERRILL CREEK	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	518
N1-TRIB19	5.0	TRIBUTARY 19 TO MERRILL CREEK	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,379
N1-TRIB19-A1	5.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	281
N1-TRIB1-A1	4.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	2,519
N1-TRIB1-A1	4.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	629
N1-TRIB1-A2	2.5	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	346
N1-TRIB1-A4	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	126
N1-TRIB2	1.5	TRIBUTARY 2 TO MERRILL CREEK	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	793
N1-TRIB20	4.0	TRIBUTARY 20 TO MERRILL CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	56
N1-TRIB20	2.0	TRIBUTARY 20 TO MERRILL CREEK	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	144
N1-TRIB21	10.0	TRIBUTARY 21 TO MERRILL CREEK	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	207
N1-TRIB21	8.0	TRIBUTARY 21 TO MERRILL CREEK	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	698
N1-TRIB3	5.0	TRIBUTARY 3 TO MERRILL CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,965
N1-TRIB3	5.0	TRIBUTARY 3 TO MERRILL CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	521
N1-TRIB3	1.0	TRIBUTARY 3 TO MERRILL CREEK	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	390
N1-TRIB4	1.5	TRIBUTARY 4 TO MERRILL CREEK	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,361
N1-TRIB4	1.5	TRIBUTARY 4 TO MERRILL CREEK	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	639
N1-TRIB5	1.0	TRIBUTARY 5 TO MERRILL CREEK	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	667
N1-TRIB6	4.0	TRIBUTARY 6 TO MERRILL CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	2,393

TABLE A-1: COMPREHENSIVE LISTING OF STREAM CHANNELS FOR PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION ASSESSMENT AREA

ID_NAME	Width at OHWM (feet)	AQUATIC_RESOURCE	Category	Classification	LOCATION	Length (L.F.)
N1-TRIB6	6.0	TRIBUTARY 6 TO MERRILL CREEK	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	2,365
N1-TRIB6	2.0	TRIBUTARY 6 TO MERRILL CREEK	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	367
N1-TRIB6	2.0	TRIBUTARY 9 TO MERRILL CREEK	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	86
N1-TRIB6-A1	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	443
N1-TRIB6-A1	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	487
N1-TRIB6-A2	5.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,999
N1-TRIB6-A3	3.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	866
N1-TRIB7	4.0	TRIBUTARY 7 TO MERRILL CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,532
N1-TRIB7-A1	3.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,059
N1-TRIB8	1.0	TRIBUTARY 8 TO MERRILL CREEK	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	356
N1-TRIB9	11.0	TRIBUTARY 9 TO MERRILL CREEK	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	2,053
N1-TRIB9	3.0	TRIBUTARY 9 TO MERRILL CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	4,486
N1-TRIB9	3.0	TRIBUTARY 9 TO MERRILL CREEK	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,253
N1-TRIB9-A1	5.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,250
N1-TRIB9-A1	5.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	415
N1-TRIB9-A2	4.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	973
N1-TRIB9-A3	3.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	502
N1-TRIB9-A4	3.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	462
N1-TRIB9-A5	1.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	304
N1-TRIB9-A6	1.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	289
N1-TRIB9-A6	1.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	264
N2	4.0	STREAM N2 - UNNAMED	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	199
N2	4.0	STREAM N2 - UNNAMED	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	442
N3	6.0	STREAM N3 - FMR NSR	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	924
N4	2.5	STREAM N4 - UNNAMED	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,676
N4	2.5	STREAM N4 - UNNAMED	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,030
N4	2.5	STREAM N4 - UNNAMED	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,207
N5	2.5	STREAM N5 - FMR NSR	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	2,840
N6	3.0	STREAM N6 - UNNAMED	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	939
N6	8.0	STREAM N6 - UNNAMED	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	5,427
N6	3.0	STREAM N6 - UNNAMED	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,851
N6	15.0	STREAM N6 - UNNAMED	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,255
N6	15.0	STREAM N6 - UNNAMED	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	2,021

TABLE A-1: COMPREHENSIVE LISTING OF STREAM CHANNELS FOR PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION ASSESSMENT AREA

ID_NAME	Width at OHWM (feet)	AQUATIC_RESOURCE	Category	Classification	LOCATION	Length (L.F.)
N6	5.0	STREAM N6 - UNNAMED	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,152
N6-TRIB1	4.0	TRIBUTARY 1 TO STREAM N6	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,594
N6-TRIB1	2.0	TRIBUTARY 1 TO STREAM N6	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,180
N6-TRIB1	2.0	TRIBUTARY 1 TO STREAM N6	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	481
N6-TRIB1	2.0	TRIBUTARY 1 TO STREAM N6	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	945
N6-TRIB1	8.0	TRIBUTARY 1 TO STREAM N6	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,356
N6-TRIB1-A1	2.0	TRIB A1 TO TRIB 1 OF N6	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	137
N6-TRIB1-A3	4.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	3,015
N6-TRIB2	2.0	TRIBUTARY 2 TO STREAM N6	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	2,188
N6-TRIB2	2.0	TRIBUTARY 2 TO STREAM N6	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	441
N6-TRIB3	2.0	TRIBUTARY 3 TO STREAM N6	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	891
N6-TRIB4	1.0	TRIBUTARY 4 TO STREAM N6	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	581
N6-TRIB4	1.0	TRIBUTARY 4 TO STREAM N6	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	519
N6-TRIB5	2.0	TRIBUTARY 5 TO STREAM N6	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	550
N6-TRIB5	2.5	TRIBUTARY 5 TO STREAM N6	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	358
N6-TRIB5-A1	1.0	TRIB A1 TO TRIB 5 OF S-N6	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	205
N7	6.0	STREAM N7 - FMR BRALLEY POOL	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	3,859
N7-TRIB1	1.5	TRIBUTARY 1 TO STREAM N7	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	512
N8	80.0	STREAM N8 - BRALLEY POOL	>25'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	18,514
N8	50.0	STREAM N8 - BRALLEY POOL	>25'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	2,250
N8-TRIB1	2.0	TRIBUTARY 1 TO BRALLEY POOL	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	485
N8-TRIB1	8.0	TRIBUTARY 1 TO BRALLEY POOL	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	448
N8-TRIB1	5.0	TRIBUTARY 1 TO BRALLEY POOL	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	446
N8-TRIB10	2.0	TRIBUTARY 10 TO BRALLEY POOL	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	454
N8-TRIB10	2.0	TRIBUTARY 10 TO BRALLEY POOL	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	650
N8-TRIB10-A1	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	396
N8-TRIB11	2.0	TRIBUTARY 11 TO BRALLEY POOL	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	123
N8-TRIB2	6.0	TRIBUTARY 2 TO BRALLEY POOL	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,043
N8-TRIB2	3.0	TRIBUTARY 2 TO BRALLEY POOL	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	812
N8-TRIB3	5.0	TRIBUTARY 3 TO BRALLEY POOL	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,450
N8-TRIB3	5.0	TRIBUTARY 3 TO BRALLEY POOL	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	137
N8-TRIB3	5.0	TRIBUTARY 3 TO BRALLEY POOL	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	189
N8-TRIB4	5.0	TRIBUTARY 8 TO BRALLEY POOL	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	351

TABLE A-1: COMPREHENSIVE LISTING OF STREAM CHANNELS FOR PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION ASSESSMENT AREA

ID_NAME	Width at OHWM (feet)	AQUATIC_RESOURCE	Category	Classification	LOCATION	Length (L.F.)
N8-TRIB5	4.0	TRIBUTARY 5 TO BRALLEY POOL	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,659
N8-TRIB5	4.0	TRIBUTARY 5 TO BRALLEY POOL	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	812
N8-TRIB5	4.0	TRIBUTARY 5 TO BRALLEY POOL	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	753
N8-TRIB5-A1	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	423
N8-TRIB6	5.0	TRIBUTARY 6 TO BRALLEY POOL	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,509
N8-TRIB6	3.0	TRIBUTARY 6 TO BRALLEY POOL	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	269
N8-TRIB7	2.0	TRIBUTARY 7 TO BRALLEY POOL	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	557
N8-TRIB8	5.0	TRIBUTARY 8 TO BRALLEY POOL	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	297
N8-TRIB8	5.0	TRIBUTARY 8 TO BRALLEY POOL	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	140
N8-TRIB9	4.0	TRIBUTARY 9 TO BRALLEY POOL	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	935
N10	5.0	STREAM N10 - LEGGETS BRANCH	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	5,632
N10	5.0	STREAM N10 - LEGGETS BRANCH	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	2,754
N10	12.0	STREAM N10 - LEGGETS BRANCH	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	2,797
N10-TRIB1	3.0	TRIBUTARY 1 TO LEGGETS BRANCH	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,100
N10-TRIB1	3.0	TRIBUTARY 1 TO LEGGETS BRANCH	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	535
N10-TRIB2	5.0	TRIBUTARY 2 TO LEGGETS BRANCH	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,545
N10-TRIB2	5.0	TRIBUTARY 2 TO LEGGETS BRANCH	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	431
N10-TRIB3	3.0	TIRBUTARY 3 TO LEGGETS BRANCH	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	934
N11	5.0	STREAM N11 - FMR DAVIS CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	3,470
N12	15.0	STREAM N12 - DAVIS CREEK	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	10,152
N12	15.0	STREAM N12 - DAVIS CREEK	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	2,079
N12	65.0	STREAM N12 - DAVIS CREEK	>25'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	5,435
N12-TRIB1	3.0	TRIBUTARY 1 TO DAVIS CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	680
N12-TRIB2	3.0	TRIBUTARY 2 TO DAVIS CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,403
N12-TRIB2	2.0	TRIBUTARY 2 TO DAVIS CREEK	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	992
N12-TRIB3	3.0	TRIBUTARY 3 TO DAVIS CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	599
N12-TRIB3	1.5	TRIBUTARY 3 TO DAVIS CREEK	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	759
N12-TRIB4	2.0	TRIBUTARY 4 TO DAVIS CREEK	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	717
N12-TRIB5	3.0	TRIBUTARY 5 TO DAVIS CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	206
N12-TRIB5	5.0	TRIBUTARY 5 TO DAVIS CREEK	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	612
N12-TRIB6	1.0	TRIBUTARY 6 TO DAVIS CREEK	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	165
N12-TRIB7	3.0	TRIBUTARY 7 TO DAVIS CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	457
N12-TRIB7	3.0	TRIBUTARY 7 TO DAVIS CREEK	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	139

TABLE A-1: COMPREHENSIVE LISTING OF STREAM CHANNELS FOR PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION ASSESSMENT AREA

ID_NAME	Width at OHWM (feet)	AQUATIC_RESOURCE	Category	Classification	LOCATION	Length (L.F.)
N12-TRIB8	15.0	TRIBUTARY 8 TO DAVIS CREEK	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,350
N12-TRIB8	15.0	TRIBUTARY 8 TO DAVIS CREEK	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,575
N12-TRIB8-A1	5.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	169
N12-TRIB8-A1	5.0	TRIBUTARY 8 TO DAVIS CREEK	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	506
N12-TRIB9	5.0	TRIBUTARY 9 TO DAVIS CREEK	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	193
N13	5.0	STREAM N13 - UNNAMED	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,840
N13-TRIB1	0.5	TRIBUTARY 1 TO STREAM 13	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	456
N14	5.0	STREAM N14 - UNNAMED	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,578
N15	40.0	STREAM N15 - PICKLE CREEK	>25'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	12,176
N15	15.0	STREAM N15 - PICKLE CREEK	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,925
N15	25.0	STREAM N15 - PICKLE CREEK	>25'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	2,324
N15-TRIB1	5.0	TRIBUTARY 1 TO PICKLE CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	3,861
N15-TRIB1	2.0	TRIBUTARY 1 TO PICKLE CREEK	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,007
N15-TRIB1	4.0	TRIBUTARY 1 TO PICKLE CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,154
N15-TRIB1	2.0	TRIBUTARY 1 TO PICKLE CREEK	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	2,689
N15-TRIB1-A1	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,623
N15-TRIB1-A2	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,244
N15-TRIB2	3.0	TRIBUTARY 2 TO PICKLE CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	849
N15-TRIB2	3.0	TRIBUTARY 2 TO PICKLE CREEK	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	594
N15-TRIB3	2.0	TRIBUTARY 3 TO PICKLE CREEK	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	46
N15-TRIB3	2.0	TRIBUTARY 3 TO PICKLE CREEK	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,304
N15-TRIB4	6.0	TRIBUTARY 4 TO PICKLE CREEK	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	769
N15-TRIB4-A1	4.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	390
N16	9.0	STREAM N16 - FMR NSR	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,408
N17	5.0	STREAM N17 - UNNAMED	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	176
N17	5.0	STREAM N17 - UNNAMED	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	915
N17	5.0	STREAM N17 - UNNAMED	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,037
N17-TRIB1	1.0	TRIBUTARY 1 TO N17	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	226
N18-TRIB3	2.0	TRIBUTARY 3 TO BRUSHY CREEK	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	298
N18	95.0	STREAM N18 - BRUSHY CREEK	>25'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	9,474
N18	35.0	STREAM N18 - BRUSHY CREEK	>25'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	3,574
N18	40.0	STREAM N18 - BRUSHY CREEK	>25'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	2,612
N18-TRIB1	0.5	TRIBUTARY 1 TO BRUSHY CREEK	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	452

TABLE A-1: COMPREHENSIVE LISTING OF STREAM CHANNELS FOR PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION ASSESSMENT AREA

ID_NAME	Width at OHWM (feet)	AQUATIC_RESOURCE	Category	Classification	LOCATION	Length (L.F.)
N18-TRIB2	1.0	TRIBUTARY 2 TO BRUSHY CREEK	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,501
N18-TRIB2-A1	0.5	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	272
N18-TRIB4	3.0	TRIBUTARY 4 TO BRUSHY CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,222
N18-TRIB5	55.0	N18-TRIB5 - POT CREEK	>25'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	2,614
N18-TRIB5	40.0	N18-TRIB5 - POT CREEK	>25'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	2,855
N18-TRIB5-A1	5.0	TRIBUTARY 1 TO POT CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,146
N18-TRIB5-A1	6.0	TRIBUTARY 1 TO POT CREEK	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	2,280
N18-TRIB6	2.0	TRIBUTARY 6 TO POT CREEK	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	272
N18-TRIB7	4.0	TRIBUTARY 7 TO POT CREEK	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	97
N19	3.5	STREAM N19 - UNNAMED	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	918
N20	15.0	STREAM N20 - FMR NSR	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	3,042
N20	5.0	STREAM N20 - FMR NSR	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,830
N20	8.0	STREAM N20 - FMR NSR	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	3,042
N20-TRIB1	3.0	TRIBUTARY 1 TO STREAM N20	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,288
N20-TRIB1	5.0	TRIBUTARY 1 TO STREAM N20	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	2,182
N20-TRIB1-A1	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	166
N21	8.0	STREAM N21 - FMR NSR	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,300
N21	8.0	STREAM N21 - FMR NSR	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	801
N22	25.0	STREAM N22 - BEAR CREEK	16-25'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	3,949
N22	25.0	STREAM N22 - BEAR CREEK	16-25'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	2,463
N22-TRIB1	3.0	TRIBUTARY 1 TO BEAR CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	182
N22-TRIB1	2.0	TRIBUTARY 1 TO BEAR CREEK	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	608
N22-TRIB2	7.0	TRIBUTARY 2 TO BEAR CREEK	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,676
N22-TRIB2	6.0	TRIBUTARY 2 TO BEAR CREEK	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,726
N22-TRIB3	5.0	TRIBUTARY 3 TO BEAR CREEK	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	226
N23	45.0	STREAM N23 - ALLEN CREEK	>25'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,557
N23	45.0	STREAM N23 - ALLEN CREEK	>25'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	2,697
N24	10.0	STREAM N24 - UNNAMED	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	266
S1	15.0	STREAM S1 - FMR NSR	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,483
S1	15.0	STREAM S1 - FMR BAKER CREEK	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,448
S1-TRIB1	4.0	TRIBUTARY 1 TO STREAM S1	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,768
S2	15.0	STREAM S2 - FRM NSR	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,166
S2	15.0	STREAM S2 - FRM NSR	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	3,955

TABLE A-1: COMPREHENSIVE LISTING OF STREAM CHANNELS FOR PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION ASSESSMENT AREA

ID_NAME	Width at OHWM (feet)	AQUATIC_RESOURCE	Category	Classification	LOCATION	Length (L.F.)
S2-TRIB1	6.0	TRIBUTARY 1 TO S2	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	5,676
S2-TRIB1	6.0	TRIBUTARY 1 TO S2	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,642
S2-TRIB1	15.0	TRIBUTARY 1 TO S2 (FMR NSR)	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,163
S2-TRIB1-A1	5.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,833
S2-TRIB1-A2	5.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,261
S2-TRIB1-A3	5.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,848
S2-TRIB1-A4	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	967
S2-TRIB1-A5	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	384
S2-TRIB1-A6	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	158
S2-TRIB2	5.0	TRIBUTARY 2 TO S2	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	8,398
S2-TRIB2-A1	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	702
S2-TRIB2-A2	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	671
S2-TRIB2-A3	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,574
S2-TRIB2-A4	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	747
S2-TRIB3	10.0	TRIBUTARY 3 TO S2	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	10,645
S2-TRIB3	10.0	TRIBUTARY 3 TO S2	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	172
S2-TRIB3-A1	8.0	SECONDARY TRIB (FMR NSR)	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	247
S2-TRIB3-A10	2.5	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	10,645
S2-TRIB3-A2	6.0	SECONDARY TRIB (FMR NSR)	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	598
S2-TRIB3-A3	8.0	SECONDARY TRIB (FMR NSR)	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	210
S2-TRIB3-A4	10.0	HEDRICK BRANCH- S2-TRIB3-A4	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	7,884
S2-TRIB3-A4	6.0	HEDRICK BRANCH- S2-TRIB3-A4	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	532
S2-TRIB3-A4	2.0	HEDRICK BRANCH	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,163
S2-TRIB3-A4	2.0	HEDRICK BRANCH	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	461
S2-TRIB3-A4-TribA	2.0	TRIBUTARY TO HEDRICK BRANCH	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,202
S2-TRIB3-A4-TribA	1.0	TRIBUTARY TO HEDRICK BRANCH	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	99
S2-TRIB3-A4-TribB	2.0	TRIBUTARY TO HEDRICK BRANCH	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	355
S2-TRIB3-A4-TribB	1.0	TRIBUTARY TO HEDRICK BRANCH	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	210
S2-TRIB3-A4-TribB	1.0	TRIBUTARY TO HEDRICK BRANCH	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	334
S2-TRIB3-A4-TribC	3.0	TRIBUTARY TO HEDRICK BRANCH	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	446
S2-TRIB3-A4-TribC	2.0	TRIBUTARY TO HEDRICK BRANCH	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	240
S2-TRIB3-A4-TribD	2.0	TRIBUTARY TO HEDRICK BRANCH	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	116
S2-TRIB3-A4-TribD	2.0	TRIBUTARY TO HEDRICK BRANCH	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	292

TABLE A-1: COMPREHENSIVE LISTING OF STREAM CHANNELS FOR PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION ASSESSMENT AREA

ID_NAME	Width at OHWM (feet)	AQUATIC_RESOURCE	Category	Classification	LOCATION	Length (L.F.)
S2-TRIB3-A4-TribE	2.0	TRIBUTARY TO HEDRICK BRANCH	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	401
S2-TRIB3-A4-TribE	2.0	TRIBUTARY TO HEDRICK BRANCH	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	112
S2-TRIB3-A5	5.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	4,152
S2-TRIB3-A5-TribA	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	574
S2-TRIB3-A5-TribB	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	697
S2-TRIB3-a6	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,209
S2-TRIB3-A7	5.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	2,280
S2-TRIB3-A8	3.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	762
S2-TRIB3-A9	0.5	TRIBUTARY TO HEDRICK BRANCH	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	58
S2-TRIB3-A9	2.5	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	367
S4	5.0	STREAM S4 - UNNAMED	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	5,497
S4	2.5	STREAM S4 - UNNAMED	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	326
S4	2.0	STREAM S4 - UNNAMED	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	589
S4	10.0	STREAM S4 - FRM NSR	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	2,665
S4-TRIB1	10.0	TRIBUTARY 1 TO S4 (FMR NSR)	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,853
S4-TRIB2	6.0	TRIBUTARY 2 TO S4	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,403
S4-TRIB3	4.0	TRIBUTARY 3 TO S4	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	2,078
S4-TRIB3	3.0	TRIBUTARY 3 TO S4	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,496
S4-TRIB3	2.0	TRIBUTARY 3 TO S4	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	359
S4-TRIB4	2.0	TRIBUTARY 4 TO S4	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	601
S5	2.0	STREAM S5 - FMR NSR	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	864
S6	6.0	STREAM S6 - FMR NSR	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	2,262
S7	6.0	STREAM S7 - FMR NSR	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	656
S8	15.0	STREAM S8 - UNNAMED	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	2,970
S8	3.0	STREAM S8 - UNNAMED	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	3,457
S8	2.0	STREAM S8 - UNNAMED	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	515
S8	5.0	STREAM S8 - UNNAMED	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	2,139
S8-TRIB1	2.5	TRIBUTARY 1 TO S8	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,106
S8-TRIB1	2.5	TRIBUTARY 1 TO S8	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	121
S8-TRIB2	2.0	TRIBUTARY 2 TO S8	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	602
S8-TRIB3	2.0	TRIBUTARY 3 TO S8	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	170
S8-TRIB3	2.0	TRIBUTARY 3 TO S8	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	501
S8-TRIB4	2.0	TRIBUTARY 4 TO S8	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	830

TABLE A-1: COMPREHENSIVE LISTING OF STREAM CHANNELS FOR PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION ASSESSMENT AREA

ID_NAME	Width at OHWM (feet)	AQUATIC_RESOURCE	Category	Classification	LOCATION	Length (L.F.)
S8-TRIB4	2.0	TRIBUTARY 4 TO S8	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	307
S8-TRIB4-A1	1.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	161
S8-TRIB4-A1	1.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	123
S8-TRIB4-A2	1.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	288
S8-TRIB5	2.0	TRIBUTARY 5 TO S8	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	922
S8-TRIB6	0.5	TRIBUTARY 6 TO S8	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	214
S8-TRIB6	0.5	TRIBUTARY 6 TO S8	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	132
S8-TRIB7	2.0	TRIBUTARY 8 TO S8	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	348
S8-TRIB7	2.0	TRIBUTARY 8 TO S8	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	356
S9	15.0	STREAM 9 - UNNAMED	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	5,197
S9	5.0	STREAM 9 - UNNAMED	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,085
S9	5.0	STREAM 9 - UNNAMED	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	3,034
S9-TRIB1	2.0	TRIBUTARY 1 TO S9	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	309
S10	11.0	STREAM S10 - FMR NSR	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	6,658
S10-TRIB1	5.0	TRIBUTARY 1 TO S10	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	7,271
S10-TRIB1	5.0	TRIBUTARY 1 TO S10	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	899
S10-TRIB1-A1	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	890
S10-TRIB1-A1	0.5	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	421
S10-TRIB1-A2	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	359
S10-TRIB1-A2	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,150
S10-TRIB2	1.5	TRIBUTARY 2 TO S10	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,705
S11	6.0	STREAM S11 - FMR BRALLEY POOL	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	345
S12	11.0	STREAM S12 - UNNAMED	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	6,304
S12	5.0	STREAM S12 - UNNAMED	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,801
S12	5.0	STREAM S12 - UNNAMED	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	6,304
S12	8.0	STREAM S12 - UNNAMED	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	6,304
S12-TRIB1	6.0	TRIBUTARY 1 TO S12	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	599
S12-TRIB2	11.0	TRIBUTARY 2 TO S12- FMR NSR	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	919
S12-TRIB3	3.0	TRIBUTARY 3 TO S12	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	2,285
S12-TRIB3-A1	1.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	388
S12-TRIB3-A2	0.5	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	249
S12-TRIB4	5.0	TRIBUTARY 4 TO S12	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,698
S12-TRIB4	2.0	TRIBUTARY 4 TO S12	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	540

TABLE A-1: COMPREHENSIVE LISTING OF STREAM CHANNELS FOR PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION ASSESSMENT AREA

ID_NAME	Width at OHWM (feet)	AQUATIC_RESOURCE	Category	Classification	LOCATION	Length (L.F.)
S12-TRIB5	0.5	TRIBUTARY 5 TO S12	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	920
S12-TRIB5	0.5	TRIBUTARY 5 TO S12	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	780
S12-TRIB5-A1	0.5	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	213
S12-TRIB6	0.5	TRIBUTARY 6 TO S12	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	415
S12-TRIB6	0.5	TRIBUTARY 6 TO S12	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	619
S12-TRIB7	2.5	TRIBUTARY 7 TO S12	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	938
S12-TRIB7-A1	0.5	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,042
S12-TRIB7-A2	1.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	253
S12-TRIB7-A3	0.5	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	156
S13	5.0	STREAM S13 - UNNAMED	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	750
S14	10.0	STREAM S14 - FMR NSR	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	3,629
S14-TRIB1	8.0	TRIB 1 TO S14- FMR LEGGETS BR	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,336
S15	10.0	STREAM S15 - FMR NSR	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	7,294
S15-TRIB1	5.0	TRIBUTARY 1 TO S15	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	5,502
S15-TRIB1	2.0	TRIBUTARY 1 TO S15	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	175
S15-TRIB1	2.0	TRIBUTARY 1 TO S15	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	83
S15-TRIB1	2.0	TRIBUTARY 1 TO S15	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	676
S15-TRIB1-A1	4.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	2,790
S15-TRIB1-A1	2.5	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,346
S15-TRIB2	4.0	TRIBUTARY 2 TO S15	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	2,010
S15-TRIB2	6.0	TRIBUTARY 2 TO S15	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	896
S15-TRIB2-A1	6.0	SECONDARY TRIBUTARY	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	6,660
S15-TRIB2-A1	5.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,391
S15-TRIB2-A2	4.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	367
S15-TRIB2-A2	4.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	790
S15-TRIB2-A3	2.5	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	408
S15-TRIB3	2.0	TRIBUTARY 3 TO S15	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	5,257
S15-TRIB3	2.0	TRIBUTARY 3 TO S15	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	942
S15-TRIB3-A1	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	190
S15-TRIB4	5.0	TRIB 4 TO S15- FMR DAVIS CREEK	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,037
S16	40.0	STREAM S16 - UNNAMED	>25'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	7,810
S16	10.0	STREAM S16 - UNNAMED	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	2,310
S16	8.0	STREAM S16 - UNNAMED	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,071

TABLE A-1: COMPREHENSIVE LISTING OF STREAM CHANNELS FOR PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION ASSESSMENT AREA

ID_NAME	Width at OHWM (feet)	AQUATIC_RESOURCE	Category	Classification	LOCATION	Length (L.F.)
S16	25.0	STREAM S16 - UNNAMED	16-25'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,151
S16-TRIB1	8.0	TRIB 1 TO S16 - FMR NSR	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,619
S16-TRIB2	8.0	TRIB 2 TO S16 - FMR NSR	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	2,832
S16-TRIB3	3.0	TRIBUTARY 3 TO S16	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,177
S16-TRIB3	5.0	TRIBUTARY 3 TO S16	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	316
S16-TRIB3-A1	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	165
S16-TRIB3-A1	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	345
S16-TRIB3-A2	1.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	128
S16-TRIB4	5.0	TRIBUTARY 4 TO S16	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,423
S16-TRIB4	5.0	TRIBUTARY 4 TO S16	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	112
S16-TRIB4-A1	5.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	140
S16-TRIB5	2.0	TRIBUTARY 5 TO S16	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	224
S16-TRIB5	2.0	TRIBUTARY 5 TO S16	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	562
S16-TRIB6	5.0	TRIBUTARY 6 TO S16	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	883
S16-TRIB6	5.0	TRIBUTARY 6 TO S16	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	435
S16-TRIB6-A1	3.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	117
S16-TRIB6-A1	3.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	47
S16-TRIB7	5.0	TRIBUTARY 7 TO S16	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,592
S16-TRIB7	5.0	TRIBUTARY 7 TO S16	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	523
S16-TRIB7-A1	3.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	211
S16-TRIB7-A1	3.0	SECONDARY TRIBUTARY	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	154
S16-TRIB8	10.0	TRIBUTARY 8 TO S16	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	847
S16-TRIB8	10.0	TRIBUTARY 8 TO S16	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	520
S16-TRIB8-A1	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	161
S16-TRIB9	4.0	TRIBUTARY 9 TO S16	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	144
S17	5.0	STREAM S17 - UNNAMED	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	2,507
S18	5.0	STREAM S18 - UNNAMED	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	2,764
S18	5.0	STREAM S18 - UNNAMED	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	927
S18-TRIB1	2.0	TRIBUTARY 1 TO S18	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	160
S19	12.0	STREAM S19 - UNNAMED	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	8,197
S19	12.0	STREAM S19 - UNNAMED	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	884
S19	12.0	STREAM S19 - UNNAMED	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,221
S19	4.0	STREAM S19 - UNNAMED	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	631

TABLE A-1: COMPREHENSIVE LISTING OF STREAM CHANNELS FOR PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION ASSESSMENT AREA

ID_NAME	Width at OHWM (feet)	AQUATIC_RESOURCE	Category	Classification	LOCATION	Length (L.F.)
S19-TRIB1	4.0	TRIBUTARY 1 TO S19	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	108
S19-TRIB1	4.0	TRIBUTARY 1 TO S19	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	498
S19-TRIB1-A1	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	63
S19-TRIB2	4.0	TRIBUTARY 2 TO S19	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	249
S19-TRIB2	2.5	TRIBUTARY 2 TO S19	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	93
S19-TRIB2-A1	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	143
S19-TRIB3	4.0	TRIBUTARY 3 TO S19	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	282
S19-TRIB4	5.0	TRIBUTARY 4 TO S19	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	255
S19-TRIB5	10.0	TRIBUTARY 5 TO S19	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	663
S20	12.0	STREAM S20 - FMR NSR	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	4,451
S20-TRIB1	8.0	TRIB 1 TO S20 - FMR NSR	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	967
S21	5.0	STREAM S21 - UNNAMED	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	3,683
S21	5.0	STREAM S21 - UNNAMED	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,727
S21	15.0	STREAM S21 - UNNAMED	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	897
S21	40.0	STREAM S21 - UNNAMED	>25'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	586
S21	25.0	STREAM S21 - UNNAMED	16-25'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	440
S21-TRIB1	4.0	TRIBUTARY 1 TO S21	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,469
S21-TRIB1	2.0	TRIBUTARY 1 TO S21	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,022
S21-TRIB1	8.0	TRIBUTARY 1 TO S21	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	226
S21-TRIB1	2.0	TRIBUTARY 1 TO S21	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	420
S21-TRIB1-A1	2.0	SECONDARY TRIBUTARY	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	275
S21-TRIB2	4.0	TRIBUTARY 2 TO S21	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	518
S22	8.0	STREAM S22 - UNNAMED	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	1,551
S22	5.0	STREAM S22 - UNNAMED	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,366
S22	22.0	STREAM S22 - UNNAMED	16-25'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	958
S22	15.0	STREAM S22 - UNNAMED	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	904
S22-TRIB1	5.0	TRIBUTARY 1 TO S22	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	144
S22-TRIB2	3.0	TRIBUTARY 2 TO S22	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	263
S23	4.0	STREAM S23 - UNNAMED	2.5-5'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	298
S24	2.0	STREAM S24 - UNNAMED	0.5-2'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	130
S24	2.0	STREAM S24 - UNNAMED	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	143
S25	22.0	STREAM S25 - LONG CREEK	16-25'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	2,772
S25	15.0	STREAM S25 - LONG CREEK	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	3,092

TABLE A-1: COMPREHENSIVE LISTING OF STREAM CHANNELS FOR PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION ASSESSMENT AREA

ID_NAME	Width at OHWM (feet)	AQUATIC_RESOURCE	Category	Classification	LOCATION	Length (L.F.)
S25-TRIB1	5.0	TRIBUTARY 1 TO S25	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	194
S26	15.0	STREAM S26 - UNNAMED	6-15'	Ephemeral	CONSERVATION POOL, DAM, SPILLWAY	633
S26	15.0	STREAM S26 - UNNAMED	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,922
S26-TRIB1	12.0	TRIBUTARY 1 TO S26	6-15'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	110
S27	2.0	STREAM S27 - UNNAMED	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	176
T1-BAKER	2.0	TRIBUTARY 1 TO BAKER CREEK	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	888
T2-BAKER	5.0	TRIBUTARY 2 TO BAKER CREEK	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	2,455
T2-BAKER	5.0	TRIBUTARY 2 TO BAKER CREEK	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	541
T3-BAKER	5.0	TRIBUTARY 3 TO BAKER CREEK	2.5-5'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	2,175
T3-TRIB1	2.0	TRIBUTARY 1 TO T3 (BAKER)	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	1,422
T3-TRIB2	2.0	TRIBUTARY 2 TO T3 (BAKER)	0.5-2'	Ephemeral	OUTSIDE CP, DAM, SPILLWAY	330

Notes:

1. Secondary Tributaries are headwater streams; all tributaries to the North Sulphur River are ephemeral.
2. Category refers to the categorical breakdown used for the functional assessment.
3. Streams identified as location "CONSERVATION POOL, DAM, SPILLWAY" are those that will be impacted by the proposed reservoir; those identified as "OUTSIDE CP, DAM, SPILL are located outside the direct impact or proposed inundation zone.

TABLE A-2: COMPREHENSIVE LISTING OF ON-CHANNEL PONDS FOR PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION ASSESSMENT AREA

ID_NAME	ACRES	CLASSIFICATION	LOCATION	FIELD ASSESSED
OCP-1	0.23	ON-CHANNEL	OUTSIDE CP, DAM, SPILLWAY	
OCP-2	1.39	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	YES
OCP-3	1.25	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	YES
OCP-4	1.34	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	YES
OCP-5	0.92	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	YES
OCP-6	0.43	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	
OCP-7	0.30	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	
OCP-8	0.89	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	YES
OCP-9	0.29	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	
OCP-10	2.89	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	YES
OCP-11	0.26	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	YES
OCP-12	1.08	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	
OCP-13	2.02	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	YES
OCP-14	0.66	ON-CHANNEL	OUTSIDE CP, DAM, SPILLWAY	
OCP-15	0.04	ON-CHANNEL	OUTSIDE CP, DAM, SPILLWAY	
OCP-16	23.80	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	
OCP-17	7.98	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	YES
OCP-18	0.28	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	
OCP-19	0.35	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	YES
OCP-20	0.36	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	
OCP-21	0.77	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	
OCP-22	0.04	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	
OCP-23	2.44	ON-CHANNEL	OUTSIDE CP, DAM, SPILLWAY	YES
OCP-24	2.73	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	
OCP-25	0.09	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	
OCP-26	1.44	ON-CHANNEL	OUTSIDE CP, DAM, SPILLWAY	
OCP-27	0.67	ON-CHANNEL	OUTSIDE CP, DAM, SPILLWAY	

OCP-28	0.04	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	
OCP-29	0.35	ON-CHANNEL	OUTSIDE CP, DAM, SPILLWAY	
OCP-30	0.49	ON-CHANNEL	OUTSIDE CP, DAM, SPILLWAY	
OCP-31	0.12	ON-CHANNEL	OUTSIDE CP, DAM, SPILLWAY	
OCP-32	0.91	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	YES
OCP-33	0.87	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	YES
OCP-34	0.05	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	
OCP-35	2.10	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	
OCP-36	0.82	ON-CHANNEL	OUTSIDE CP, DAM, SPILLWAY	
OCP-37	0.17	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	
OCP-38	0.23	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	
OCP-39	0.20	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	
OCP-40	0.25	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	
OCP-41	0.06	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	
OCP-42	0.29	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	
OCP-43	1.57	ON-CHANNEL	CONSERVATION POOL, DAM, SPILLWAY	
OCP-44	0.40	ON-CHANNEL	OUTSIDE CP, DAM, SPILLWAY	
OCP-45	4.23	ON-CHANNEL	OUTSIDE CP, DAM, SPILLWAY	
OCP-46	0.07	ON-CHANNEL	OUTSIDE CP, DAM, SPILLWAY	
OCP-47	1.73	ON-CHANNEL	OUTSIDE CP, DAM, SPILLWAY	

TABLE A-3: COMPREHENSIVE LISTING OF UPLAND PONDS FOR PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION ASSESSMENT AREA

ID_NAME	Area	ACRES	CLASSIFICATION	LOCATION	FIELD ASSESSED
UP-1	5749.93289366662	0.13	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-2	14776.10593564570	0.34	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-3	6084.60531711844	0.14	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-4	7667.42748722571	0.18	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-5	5445.17498596262	0.13	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-6	44374.52643744630	1.02	UPLAND	OUTSIDE CP, DAM, SPILLWAY	YES
UP-7	44067.57979549830	1.01	UPLAND	OUTSIDE CP, DAM, SPILLWAY	YES
UP-8	65287.76828248820	1.50	UPLAND	OUTSIDE CP, DAM, SPILLWAY	YES
UP-9	5363.57710456971	0.12	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-10	7795.15740680175	0.18	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-11	2643.19015284152	0.06	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-12	5226.20293474051	0.12	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-13	41168.29833695940	0.95	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-14	5477.45276976329	0.13	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-15	12659.92091193530	0.29	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-16	7330.57549689765	0.17	UPLAND	OUTSIDE CP, DAM, SPILLWAY	YES
UP-17	24395.24800907620	0.56	UPLAND	OUTSIDE CP, DAM, SPILLWAY	YES
UP-18	27391.15975638290	0.63	UPLAND	OUTSIDE CP, DAM, SPILLWAY	YES
UP-19	52907.92946536180	1.21	UPLAND	OUTSIDE CP, DAM, SPILLWAY	YES
UP-20	9902.35635071872	0.23	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-21	15111.06680104190	0.35	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-22	46527.35755966390	1.07	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-23	797.58196692705	0.02	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-24	8495.21629000281	0.20	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-25	6549.82883570092	0.15	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-26	4559.62026730517	0.10	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-27	3521.52381836461	0.08	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	

TABLE A-3: COMPREHENSIVE LISTING OF UPLAND PONDS FOR PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION ASSESSMENT AREA

ID_NAME	Area	ACRES	CLASSIFICATION	LOCATION	FIELD ASSESSED
UP-28	2166.55304437921	0.05	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-29	3035.48077934727	0.07	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-30	61766.50101570330	1.42	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	YES
UP-31	10336.68453382850	0.24	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-32	12104.72091771350	0.28	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-33	5710.68774594861	0.13	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-34	12279.67661202560	0.28	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-35	14643.16593454710	0.34	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-36	14385.73938026280	0.33	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP37	55021.50954727790	1.26	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-38	20590.62828086940	0.47	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-39	19561.69056842070	0.45	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-40	6455.81216071296	0.15	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-41	17048.07932788080	0.39	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-42	14969.51168506640	0.34	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-43	36354.11922479710	0.83	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-44	21445.17359571030	0.49	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-45	9180.99893449469	0.21	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-46	1103.39855550765	0.03	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-47	19170.67856177910	0.44	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-48	2299.15519237406	0.05	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-49	85001.84472518930	1.95	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-50	4137.24645104530	0.09	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-51	6348.52350473545	0.15	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-52	3863.23936248110	0.09	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-53	9630.02998032100	0.22	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-54	4658.89157283163	0.11	UPLAND	OUTSIDE CP, DAM, SPILLWAY	

TABLE A-3: COMPREHENSIVE LISTING OF UPLAND PONDS FOR PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION ASSESSMENT AREA

ID_NAME	Area	ACRES	CLASSIFICATION	LOCATION	FIELD ASSESSED
UP-55	3936.40216217252	0.09	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-56	8199.42546201255	0.19	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-57	6845.73533303709	0.16	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-58	20274.16587430800	0.47	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-59	3183.47904889830	0.07	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-60	10623.76889474000	0.24	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-61	2653.67452166423	0.06	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-62	5787.51623979779	0.13	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-63	11898.73175653820	0.27	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-64	18118.49831442040	0.42	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-65	75580.65070826670	1.74	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	YES
UP-66	12613.58579890770	0.29	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	YES
UP-67	139318.06422272500	3.20	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	YES
UP-68	30755.94007771960	0.71	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-69	118404.81492646900	2.72	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-70	141835.79253150500	3.26	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	YES
UP-71	21789.36291595860	0.50	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-72	30024.69678235630	0.69	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-73	17143.04601182540	0.39	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-74	20834.37788618280	0.48	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-75	16576.56575557130	0.38	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-76	9010.26669794560	0.21	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-77	8454.17375371381	0.19	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-78	18478.28610318230	0.42	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-79	55001.29285508770	1.26	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	YES
UP-80	40401.63517133800	0.93	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	YES
UP-81	24265.07158389500	0.56	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	

TABLE A-3: COMPREHENSIVE LISTING OF UPLAND PONDS FOR PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION ASSESSMENT AREA

ID_NAME	Area	ACRES	CLASSIFICATION	LOCATION	FIELD ASSESSED
UP-82	18550.96426231230	0.43	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-83	18478.47302847120	0.42	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-84	5844.00883298352	0.13	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-85	10355.89554570770	0.24	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-86	5170.39830100300	0.12	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-87	5401.63816966830	0.12	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-88	15936.36359196550	0.37	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-89	45857.66978273610	1.05	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-90	10965.39600756480	0.25	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-91	36241.31267953610	0.83	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-92	3786.61994385967	0.09	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-93	17185.08394543650	0.39	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-94	11604.22947008530	0.27	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-95	11891.00590485030	0.27	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-96	17665.12722604030	0.41	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-97	10728.32036732410	0.25	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-98	8289.64952167681	0.19	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-99	39083.10400375720	0.90	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-100	8347.63399821775	0.19	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-101	5266.05464633046	0.12	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-102	4354.98639745040	0.10	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-103	4021.79587792762	0.09	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-104	4798.10881939080	0.11	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-105	3459.42001635279	0.08	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-106	11768.16047437200	0.27	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-107	6105.62331010071	0.14	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-108	2832.77661245773	0.07	UPLAND	OUTSIDE CP, DAM, SPILLWAY	

TABLE A-3: COMPREHENSIVE LISTING OF UPLAND PONDS FOR PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION ASSESSMENT AREA

ID_NAME	Area	ACRES	CLASSIFICATION	LOCATION	FIELD ASSESSED
UP-109	7052.05191829185	0.16	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-110	8194.71238320045	0.19	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-111	4110.84931272125	0.09	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-112	4810.11951610585	0.11	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-113	7424.49241898459	0.17	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-114	6283.01295944616	0.14	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-115	5345.78404822542	0.12	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-116	23374.28116171110	0.54	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-117	111064.03917599500	2.55	UPLAND	OUTSIDE CP, DAM, SPILLWAY	YES
UP-118	6343.53955999261	0.15	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-119	1397.41525163971	0.03	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-120	3897.22299127545	0.09	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-121	5807.40017322037	0.13	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-122	15656.61709553440	0.36	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-123	20356.44269192610	0.47	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-124	16667.22191647740	0.38	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-125	12752.32958181670	0.29	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-126	7957.79173974480	0.18	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-127	12810.60518978430	0.29	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-128	17230.78086344470	0.40	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-129	10874.46351666530	0.25	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-130	113763.45818804600	2.61	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-131	3247.51574886974	0.07	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-132	37105.84872792770	0.85	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-133	4862.23489564972	0.11	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-134	7698.36699848759	0.18	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-135	20985.62569117680	0.48	UPLAND	OUTSIDE CP, DAM, SPILLWAY	

TABLE A-3: COMPREHENSIVE LISTING OF UPLAND PONDS FOR PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION ASSESSMENT AREA

ID_NAME	Area	ACRES	CLASSIFICATION	LOCATION	FIELD ASSESSED
UP-136	17021.25520376360	0.39	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-137	6550.40534372715	0.15	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-138	10047.14439513660	0.23	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-139	9039.54669314232	0.21	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-140	13637.30271152800	0.31	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-141	22417.53855222470	0.51	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-142	10207.16536974260	0.23	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-143	7439.02116688766	0.17	UPLAND	OUTSIDE CP, DAM, SPILLWAY	YES
UP-144	5119.84231584078	0.12	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-145	16469.97398403580	0.38	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-146	14736.25650770240	0.34	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-147	6047.08084001727	0.14	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-148	2668.79230187115	0.06	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-149	8437.40580385029	0.19	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-150	6289.61301144133	0.14	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-151	4888.92101482900	0.11	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-152	35600.09409247170	0.82	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	YES
UP-153	27720.25236598170	0.64	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-154	7160.29294855238	0.16	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-155	53881.45848935600	1.24	UPLAND	OUTSIDE CP, DAM, SPILLWAY	YES
UP-156	3939.21043664444	0.09	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-157	20751.92739753650	0.48	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-158	9985.24540552999	0.23	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-159	3736.21591783283	0.09	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-160	29329.89575577390	0.67	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-161	3073.94361451410	0.07	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-162	8281.96735182690	0.19	UPLAND	OUTSIDE CP, DAM, SPILLWAY	

TABLE A-3: COMPREHENSIVE LISTING OF UPLAND PONDS FOR PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION ASSESSMENT AREA

ID_NAME	Area	ACRES	CLASSIFICATION	LOCATION	FIELD ASSESSED
UP-163	9835.77990840870	0.23	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-164	19545.81027028590	0.45	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-165	6542.04904715384	0.15	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-166	21269.03972328630	0.49	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-167	10652.93861573870	0.24	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-168	9642.29917074536	0.22	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	YES
UP-169	8663.92643204764	0.20	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-170	9964.32312719102	0.23	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-171	19247.05821770120	0.44	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-172	2044.50787395755	0.05	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-173	6372.06907281436	0.15	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-174	6909.98575295682	0.16	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-175	3134.09413745102	0.07	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-176	21212.67650165310	0.49	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-177	26594.00323073780	0.61	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-178	14828.91422201880	0.34	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-179	15976.15008071030	0.37	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-180	84402.45109275030	1.94	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-181	6217.56364225019	0.14	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-182	7702.00377304686	0.18	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-183	3914.01837309213	0.09	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-184	3606.38512229550	0.08	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-185	7021.77707892329	0.16	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-186	8201.61545048703	0.19	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-187	7947.64568713224	0.18	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-188	13104.04289911410	0.30	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-189	8160.57438649750	0.19	UPLAND	OUTSIDE CP, DAM, SPILLWAY	

TABLE A-3: COMPREHENSIVE LISTING OF UPLAND PONDS FOR PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION ASSESSMENT AREA

ID_NAME	Area	ACRES	CLASSIFICATION	LOCATION	FIELD ASSESSED
UP-190	10198.50191368740	0.23	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-191	3824.14907030134	0.09	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-192	1337.50624657386	0.03	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-193	11815.25335188270	0.27	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-194	4410.15219154655	0.10	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-195	8515.65792981320	0.20	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-196	6223.09084206837	0.14	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-197	4378.14482794999	0.10	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-198	13909.68330520210	0.32	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-199	10582.61482636130	0.24	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-200	11184.30844984010	0.26	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-201	25508.96048843180	0.59	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-202	7357.88909610137	0.17	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-203	7969.55461077115	0.18	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-204	15773.49419408670	0.36	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-205	8418.02173846706	0.19	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-206	11038.13115218060	0.25	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-207	2069.01868681123	0.05	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	YES
UP-208	13112.45451321330	0.30	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-209	851.00082011049	0.02	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-210	12970.03148441680	0.30	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	
UP-211	11123.23078719850	0.26	UPLAND	OUTSIDE CP, DAM, SPILLWAY	
UP-212	18086.88422204470	0.42	UPLAND	CONSERVATION POOL, DAM, SPILLWAY	

TABLE A-4: NON-JURISDICTIONAL FORESTED WETLANDS

NAME	Acres	Location
FW-1	0.85	Embankment/Assessment Area
FW-2	0.09	Conservation Pool
FW-3	0.06	Conservation Pool
FW-4	0.06	Conservation Pool
FW-5	0.02	Conservation Pool
FW-6	0.05	Conservation Pool
FW-7	0.10	Conservation Pool
FW-8	0.01	Conservation Pool
FW-9	0.09	Conservation Pool
FW-10	0.38	Conservation Pool
FW-11	0.04	Conservation Pool
FW-12	0.39	Conservation Pool
FW-13	1.17	Conservation Pool
FW-14	0.01	Conservation Pool
FW-15	0.01	Conservation Pool
FW-16	0.03	Conservation Pool
FW-17	0.02	Conservation Pool
FW-18	0.11	Conservation Pool
FW-19	0.01	Conservation Pool
FW-20	0.03	Conservation Pool
FW-21	0.01	Conservation Pool
FW-22	0.01	Conservation Pool
FW-23	0.05	Conservation Pool
FW-24	0.04	Conservation Pool
FW-25	0.14	Conservation Pool
FW-26	0.03	Conservation Pool
TOTAL	3.80	

MAPBOOK

OVERALL AQUATIC RESOURCES

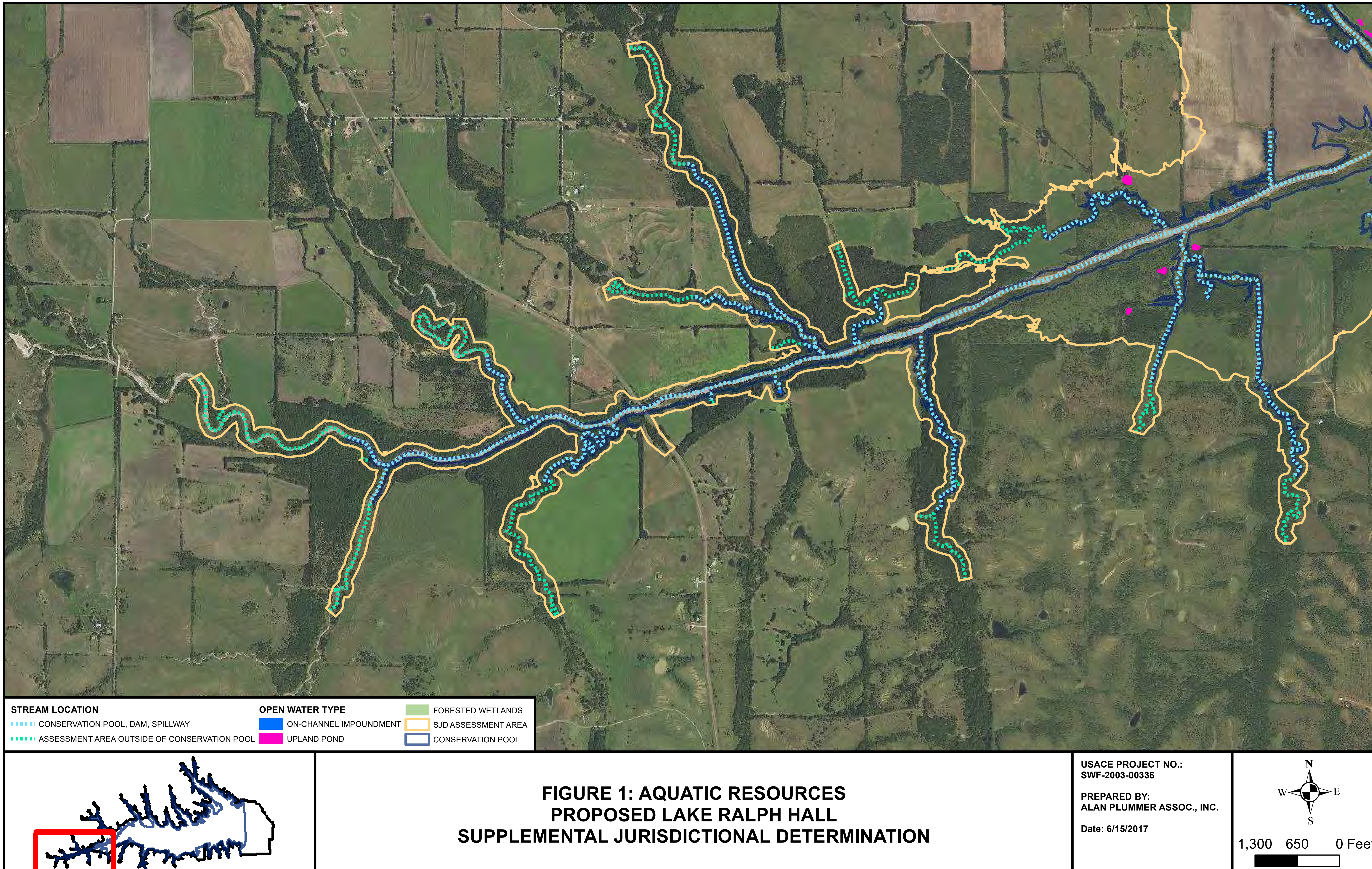
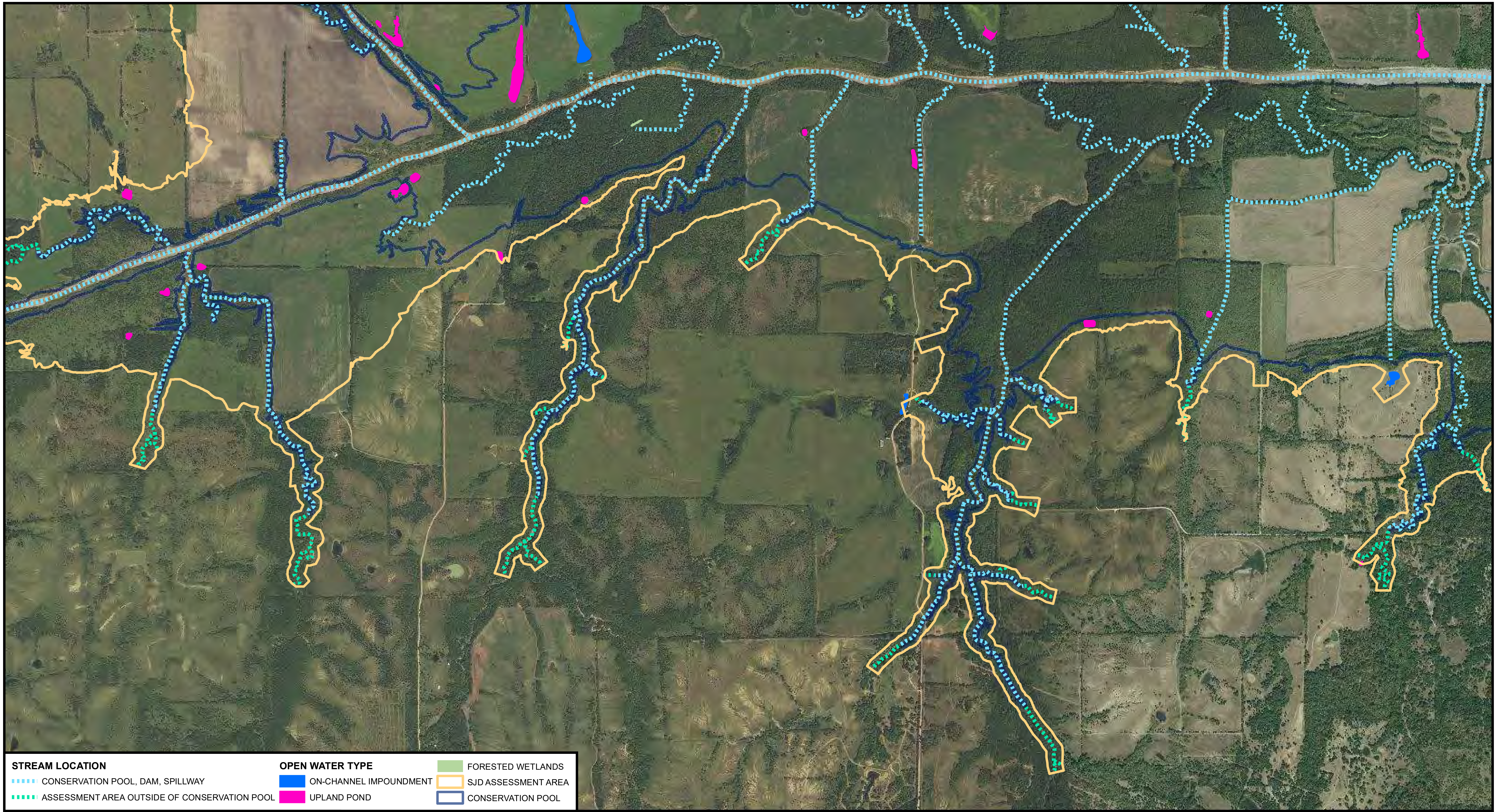


FIGURE 1: AQUATIC RESOURCES
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017



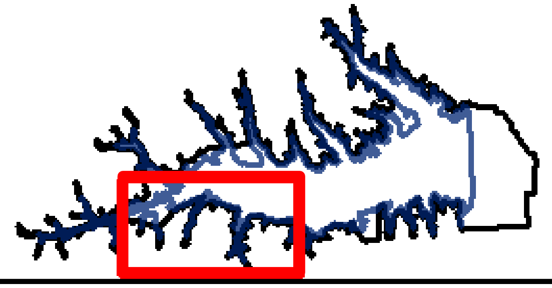


FIGURE 2: AQUATIC RESOURCES
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017

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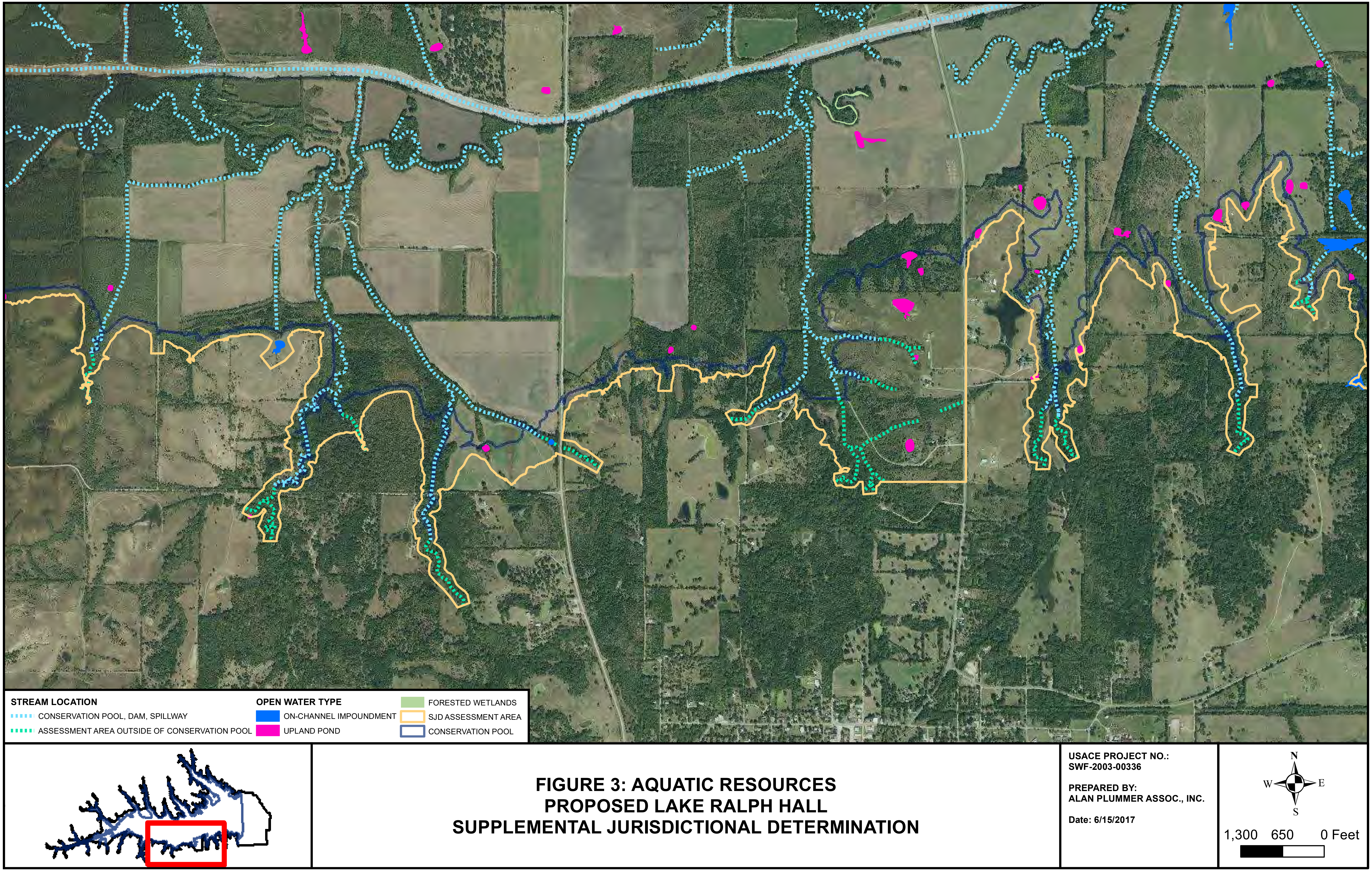

FIGURE 3: AQUATIC RESOURCES
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.: SWF-2003-00336

PREPARED BY:
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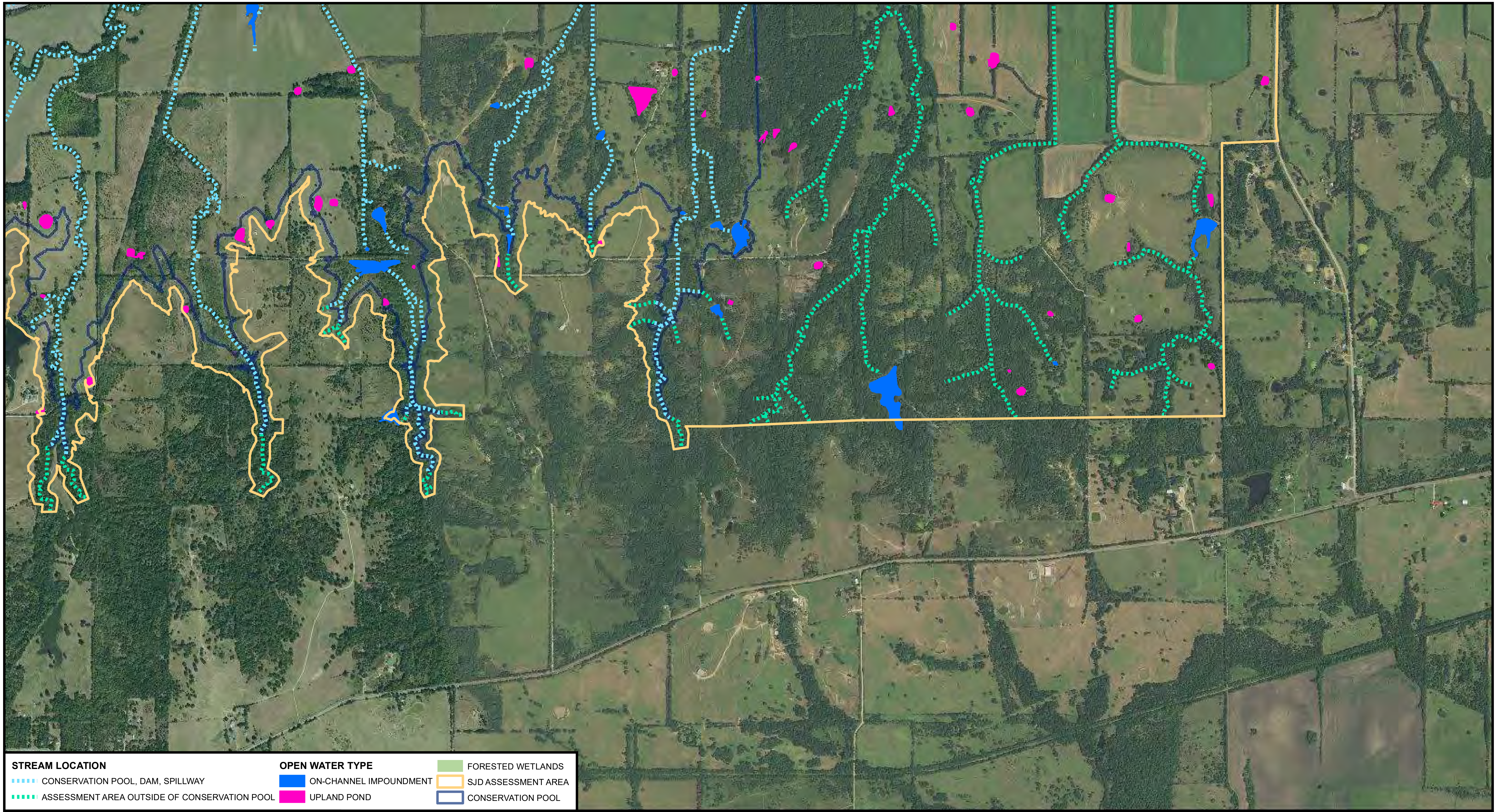
Date: 6/15/2017



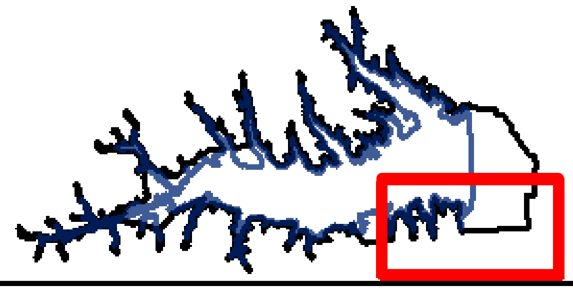


FIGURE 4: AQUATIC RESOURCES
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017

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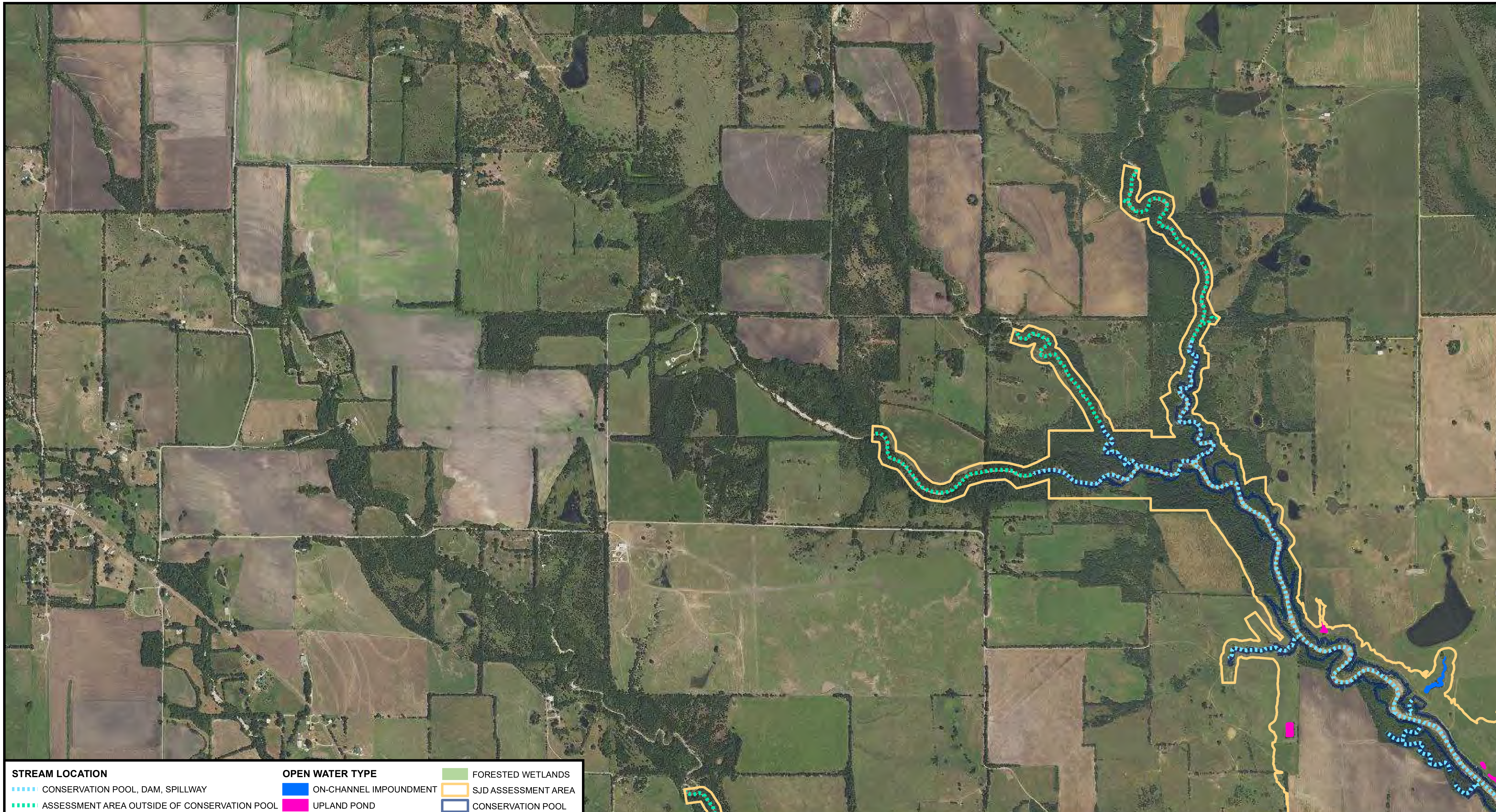

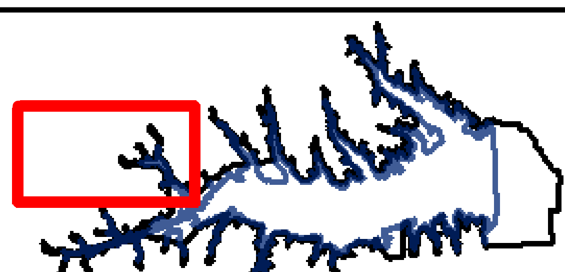

FIGURE 5: AQUATIC RESOURCES
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
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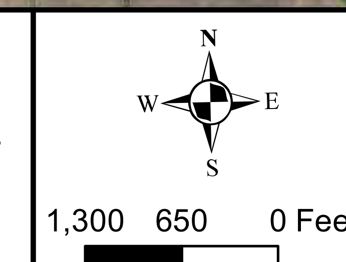
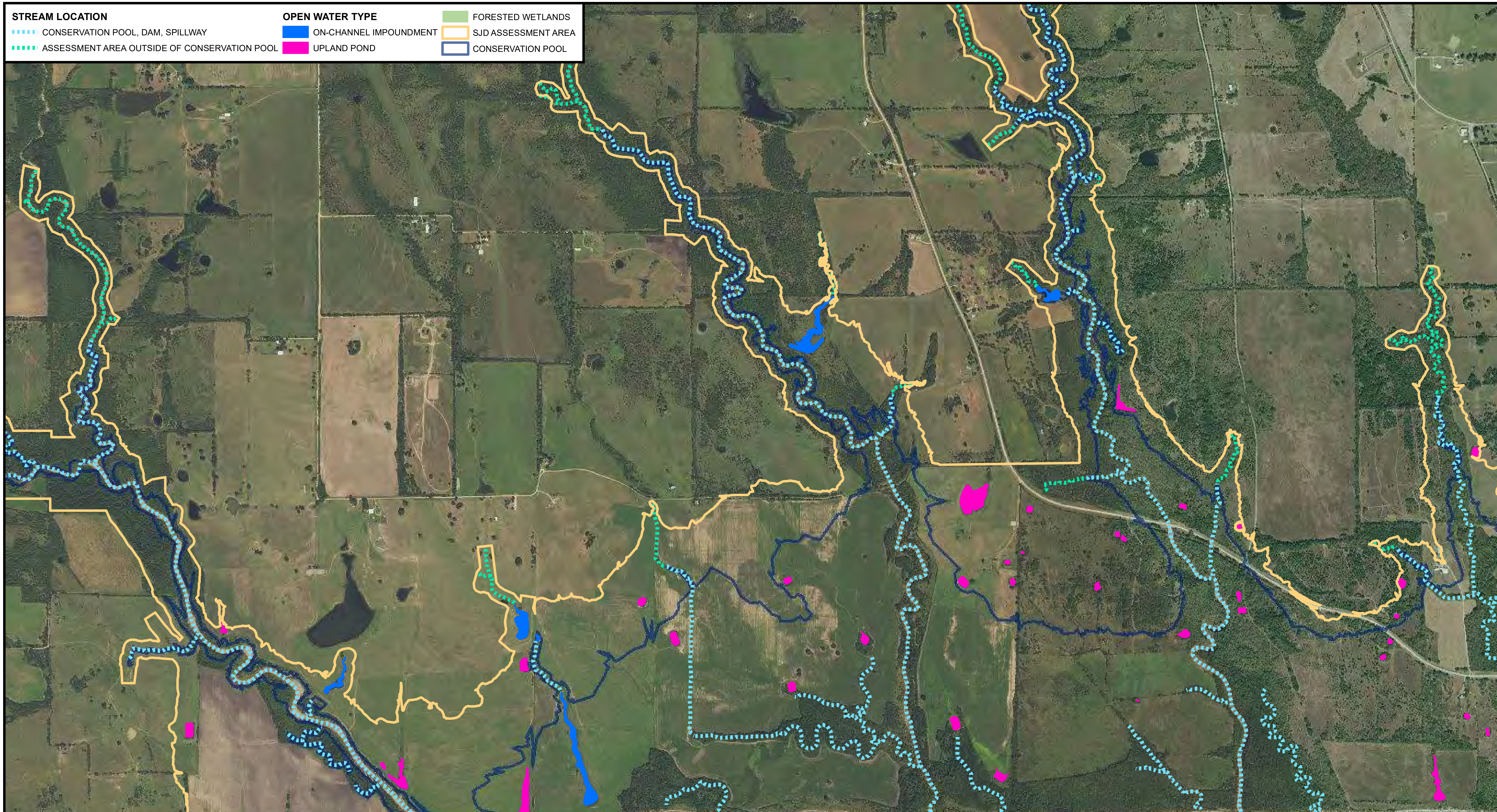
Date: 6/15/2017





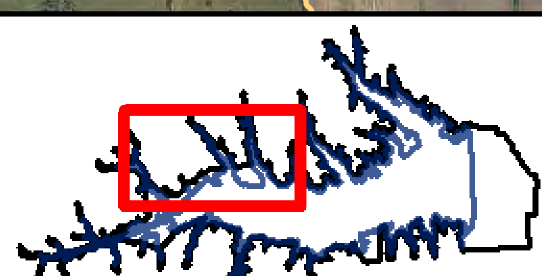


FIGURE 6: AQUATIC RESOURCES
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
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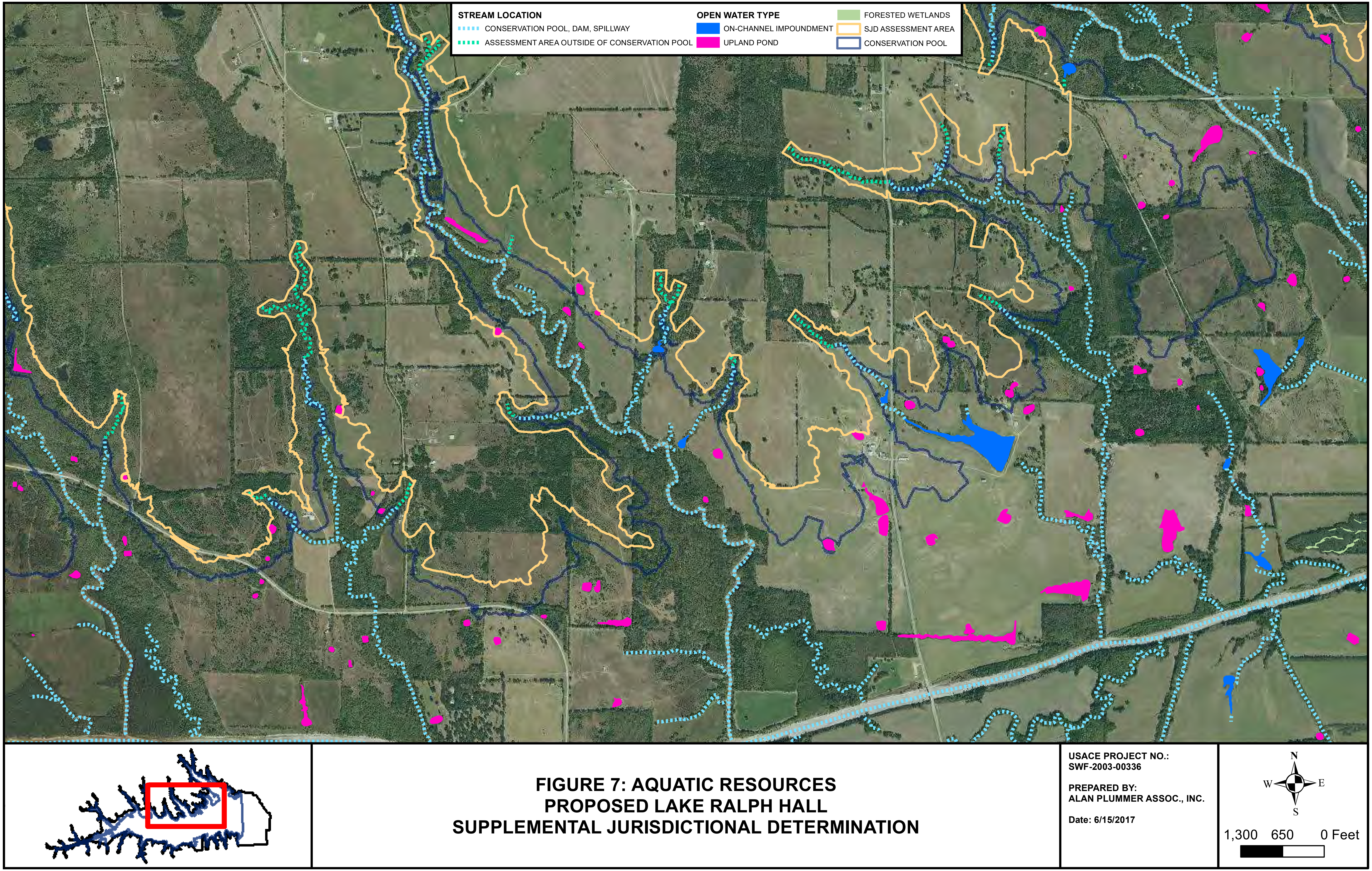

FIGURE 7: AQUATIC RESOURCES
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
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Date: 6/15/2017

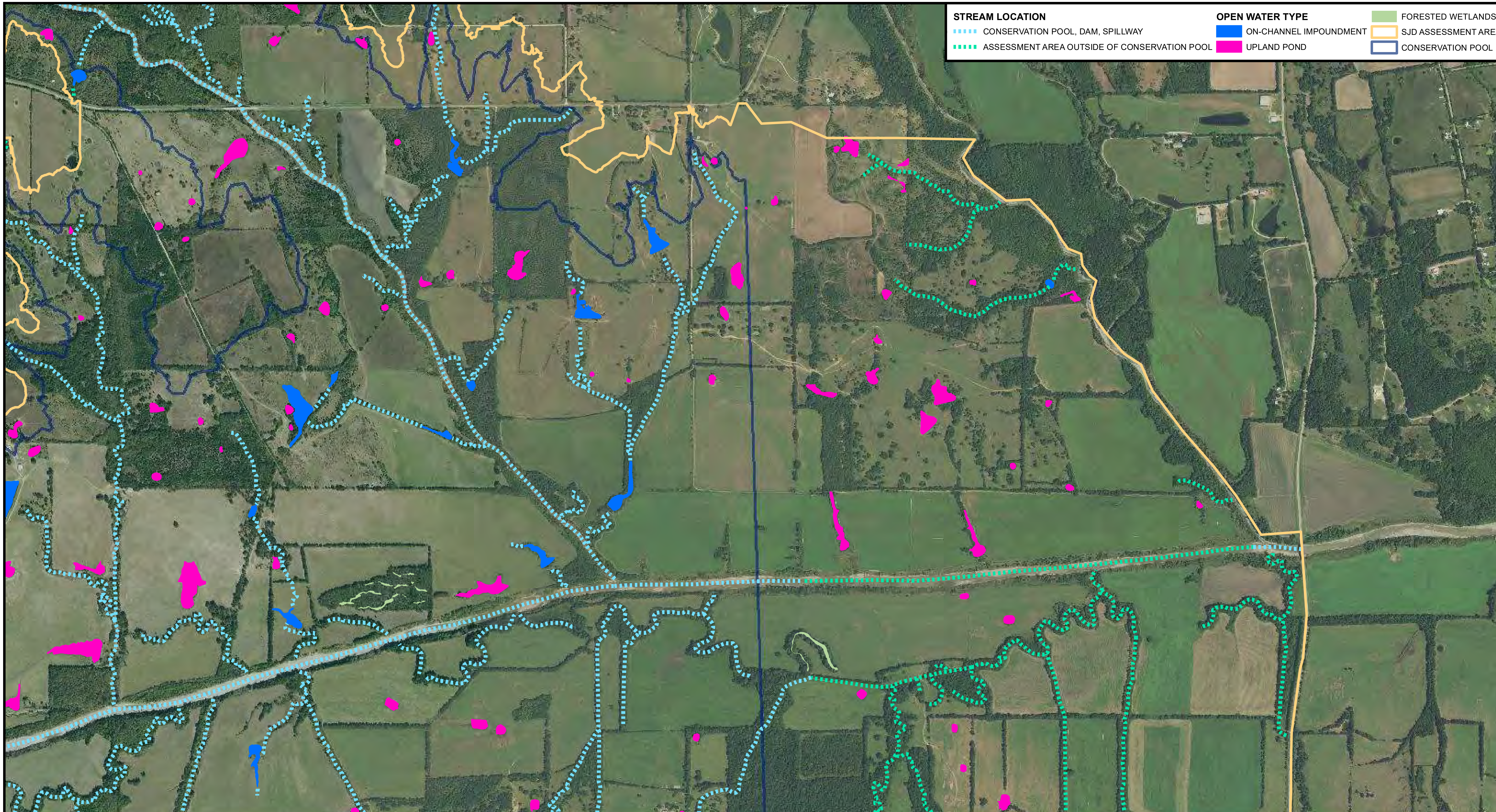

FIGURE 8: AQUATIC RESOURCES
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

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Date: 6/15/2017

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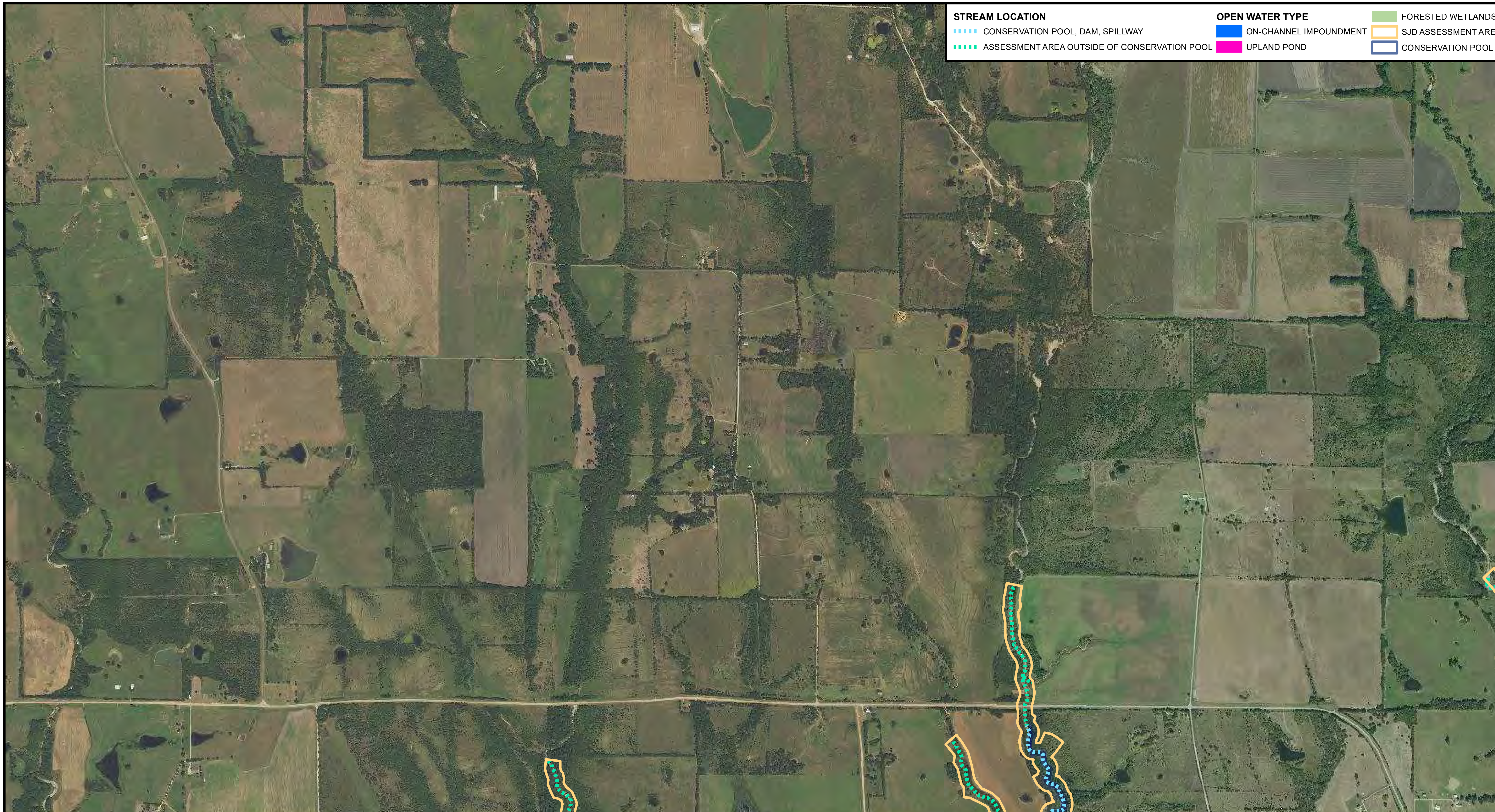

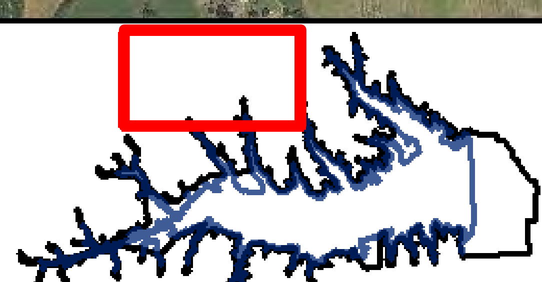

FIGURE 9: AQUATIC RESOURCES
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
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Date: 6/15/2017

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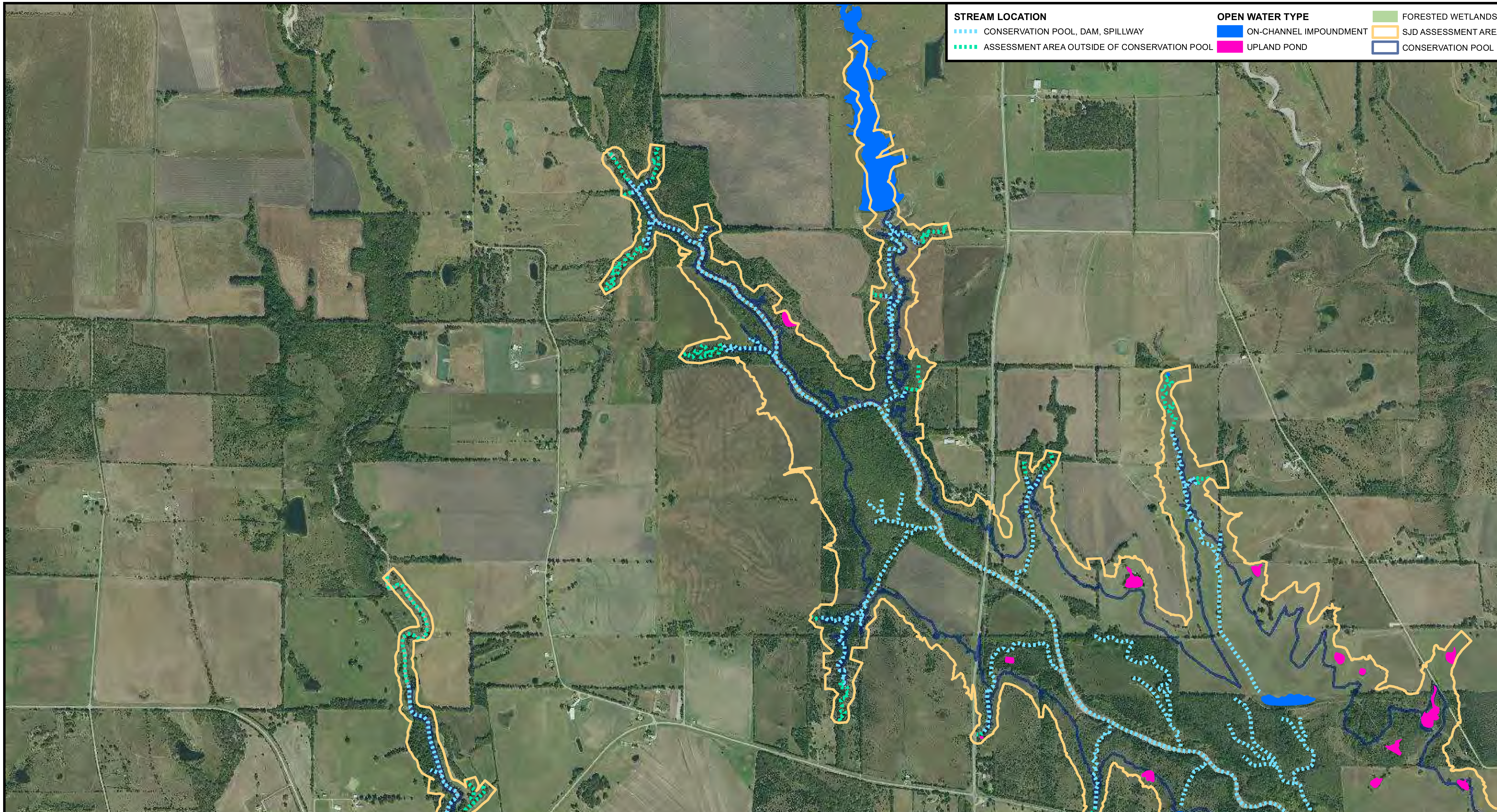

FIGURE 10: AQUATIC RESOURCES
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
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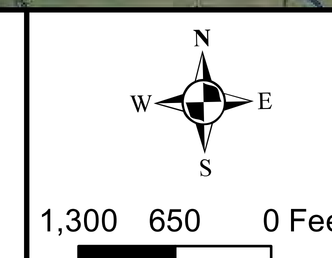

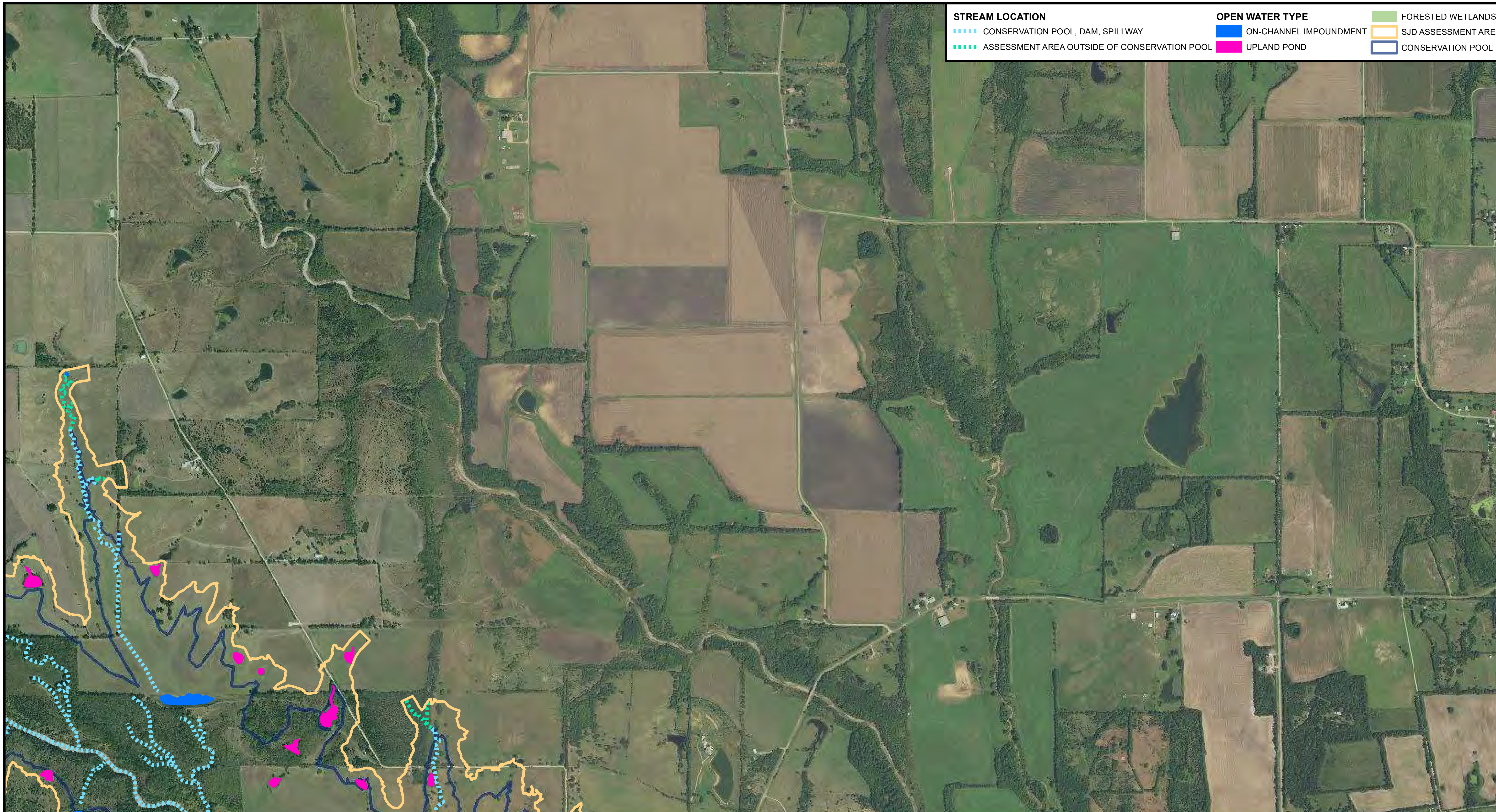

FIGURE 11: AQUATIC RESOURCES
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

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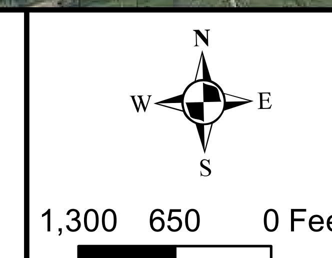
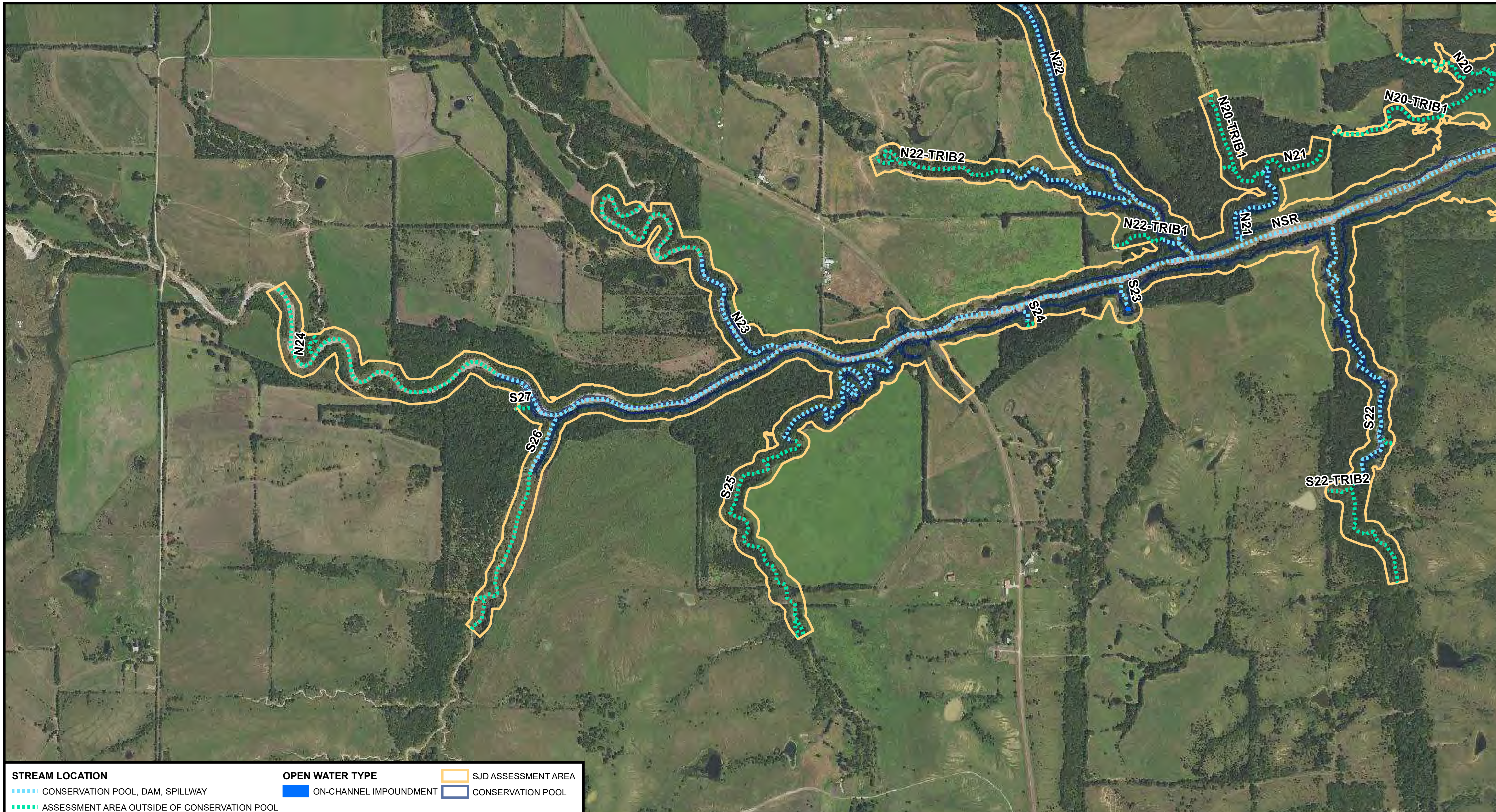


MAPBOOK

DELINEATED STREAMS



STREAM LOCATION
- CONSERVATION POOL, DAM, SPILLWAY
- ASSESSMENT AREA OUTSIDE OF CONSERVATION POOL

OPEN WATER TYPE
- ON-CHANNEL IMPOUNDMENT
- SJD ASSESSMENT AREA
- CONSERVATION POOL

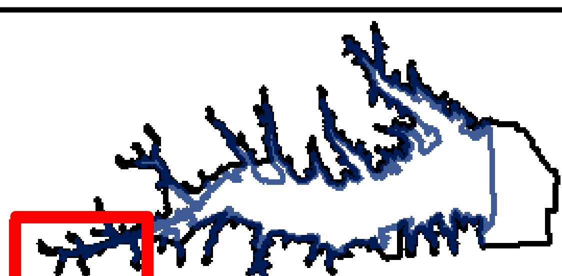


FIGURE 1: DELINEATED STREAMS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
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Date: 6/15/2017

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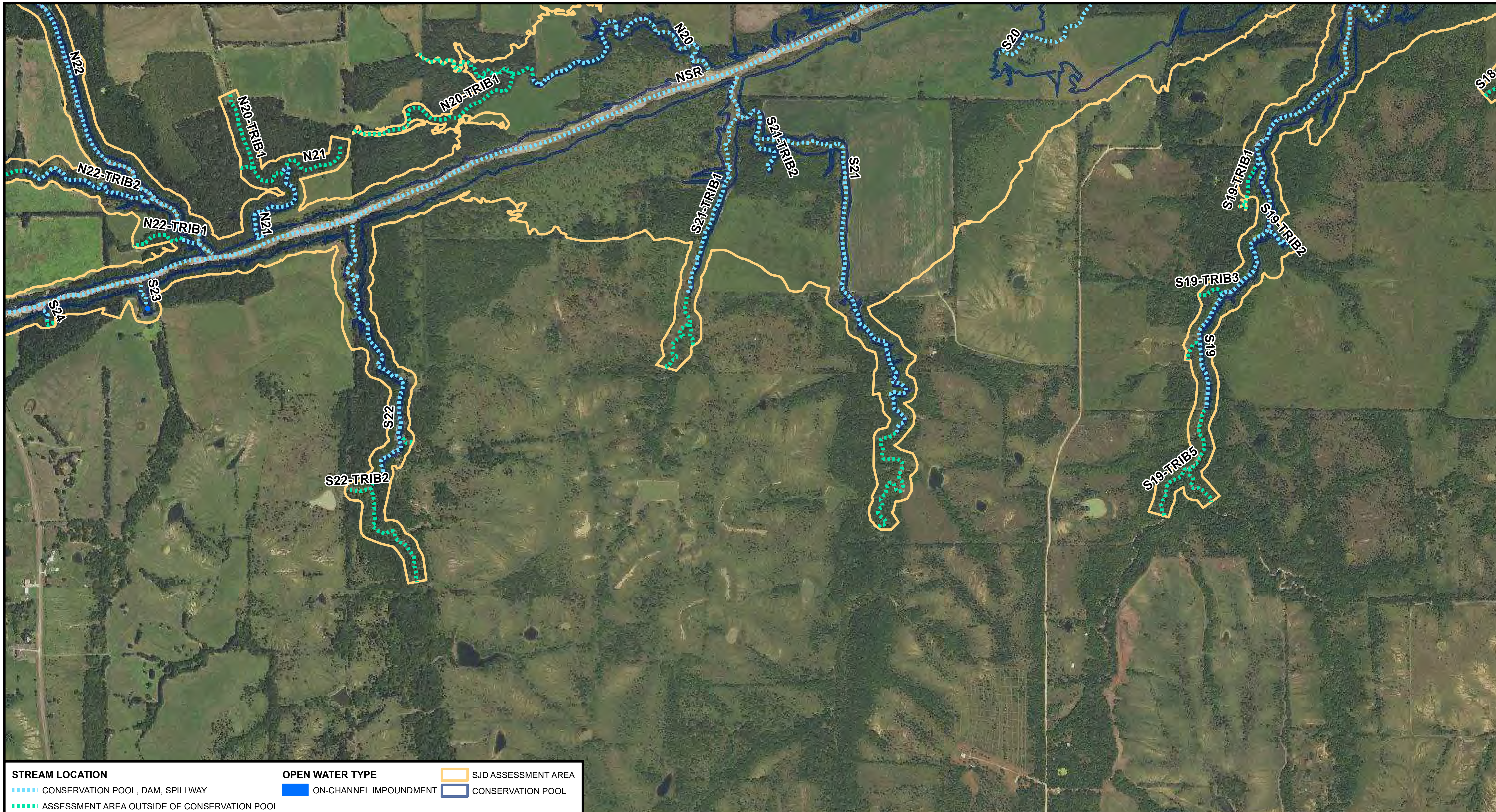

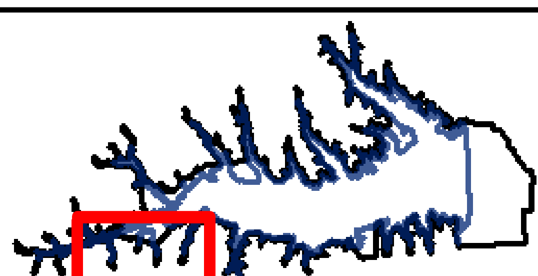

FIGURE 2: DELINEATED STREAMS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
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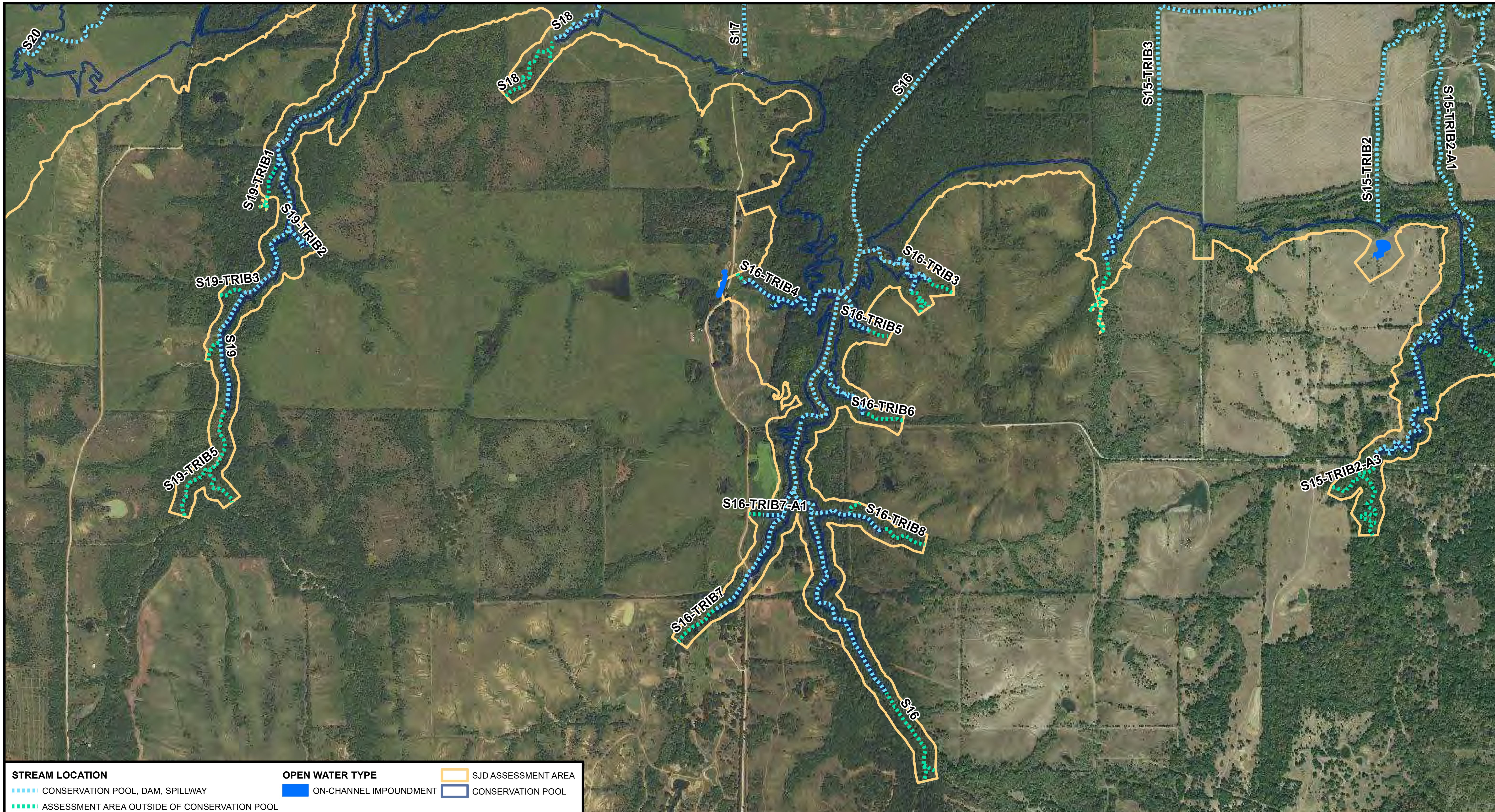

FIGURE 3: DELINEATED STREAMS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
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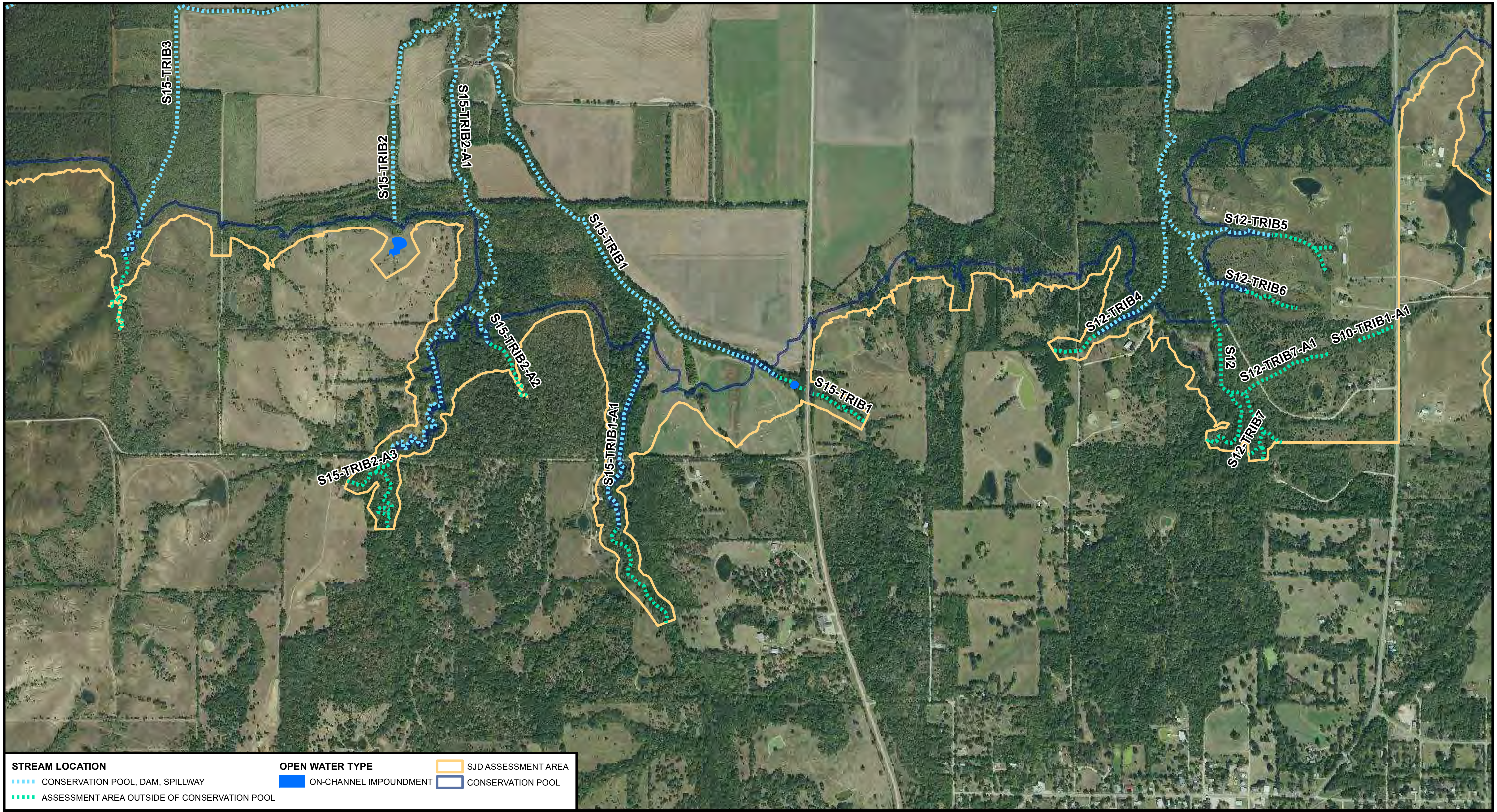

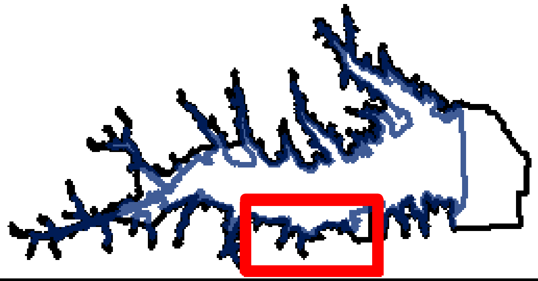

FIGURE 4: DELINEATED STREAMS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

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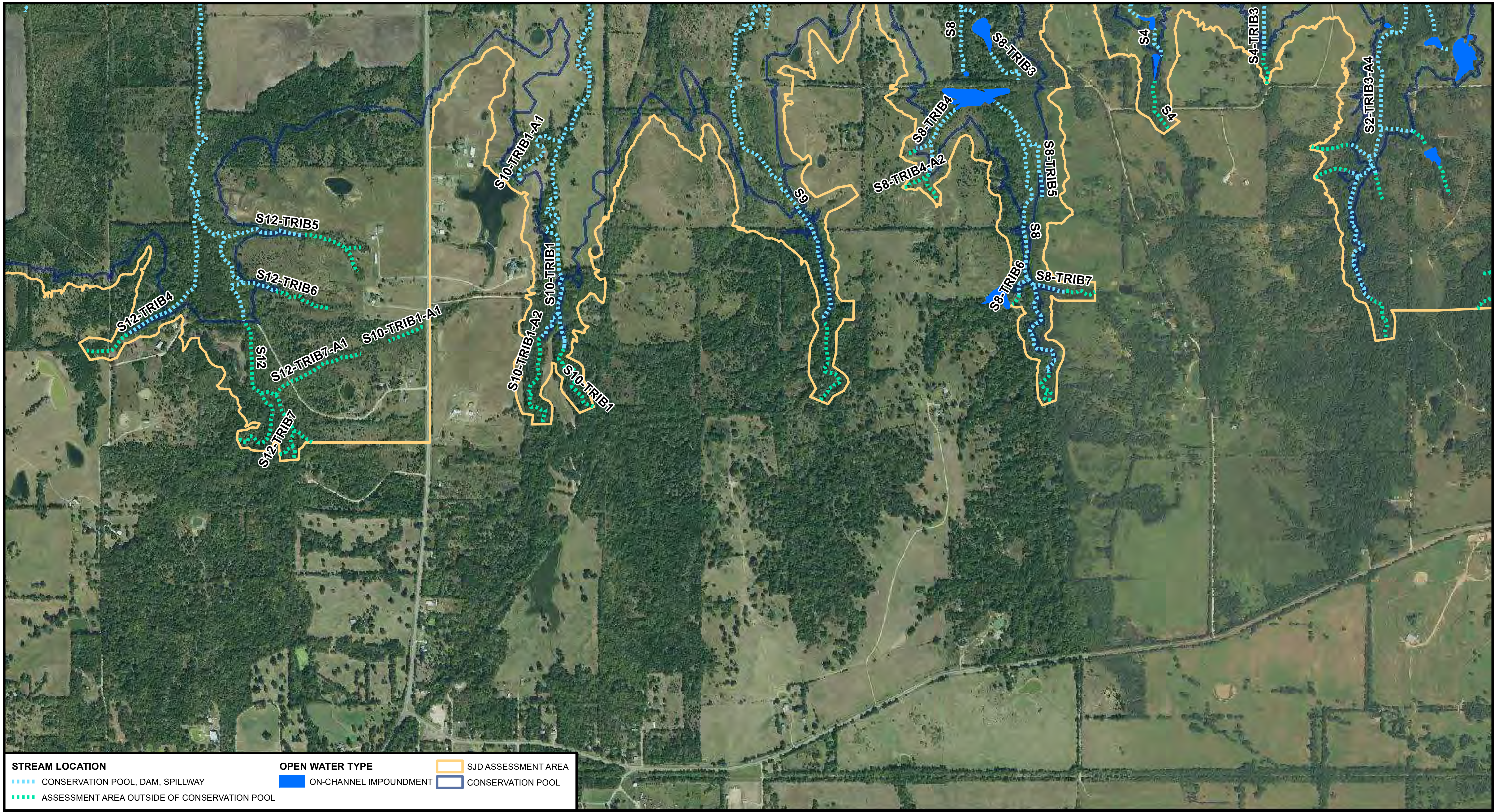

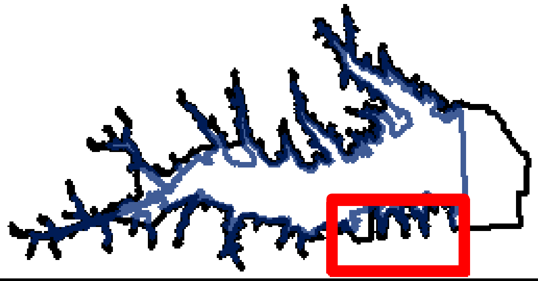

FIGURE 5: DELINEATED STREAMS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
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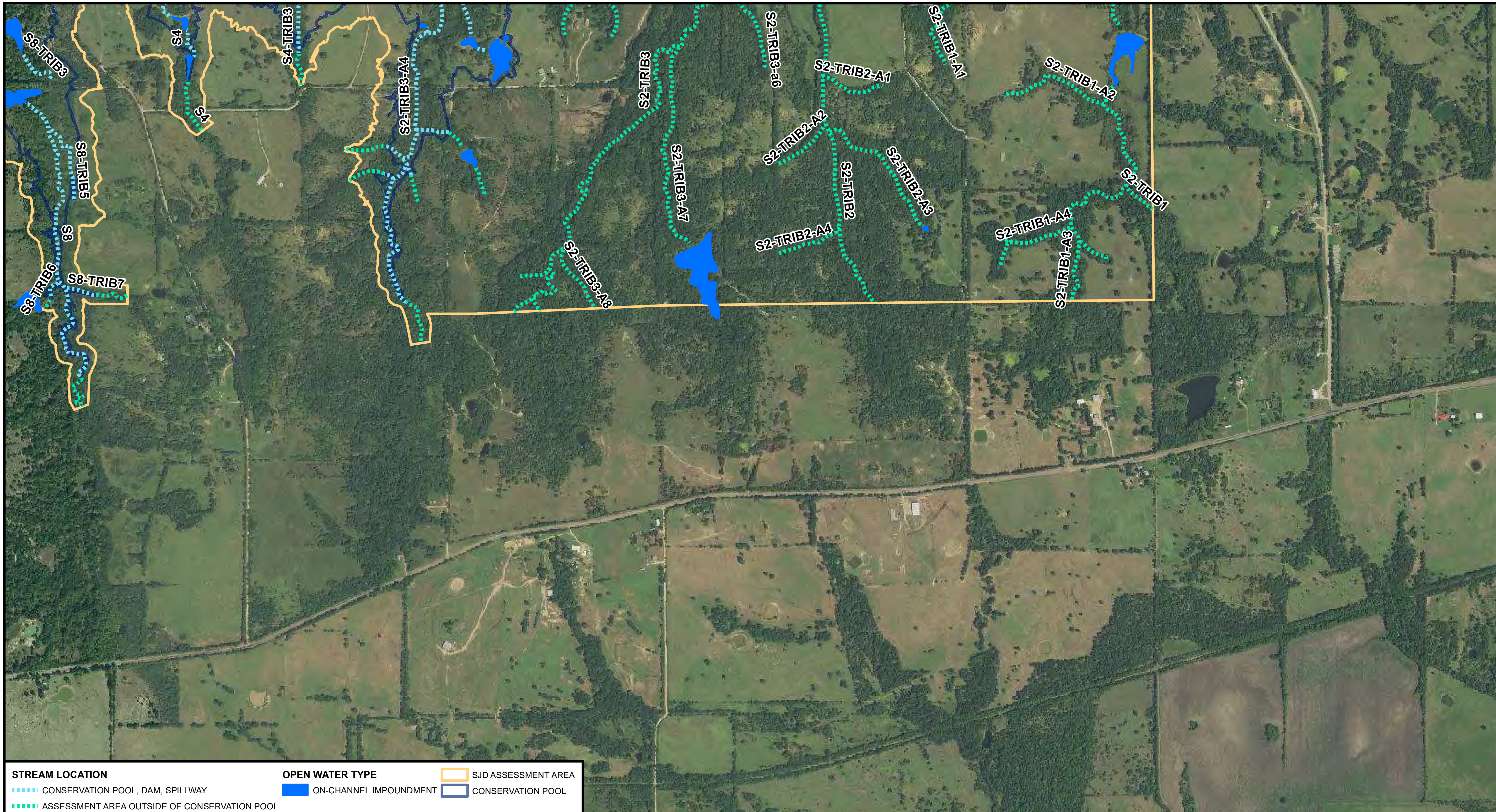

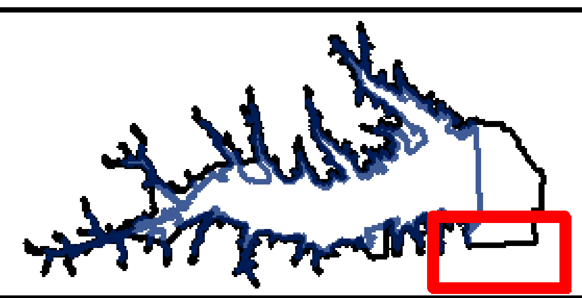

FIGURE 6: DELINEATED STREAMS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
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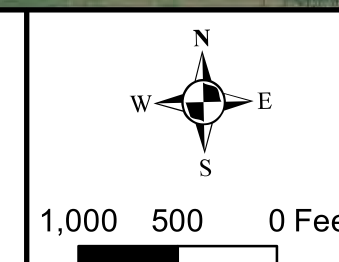
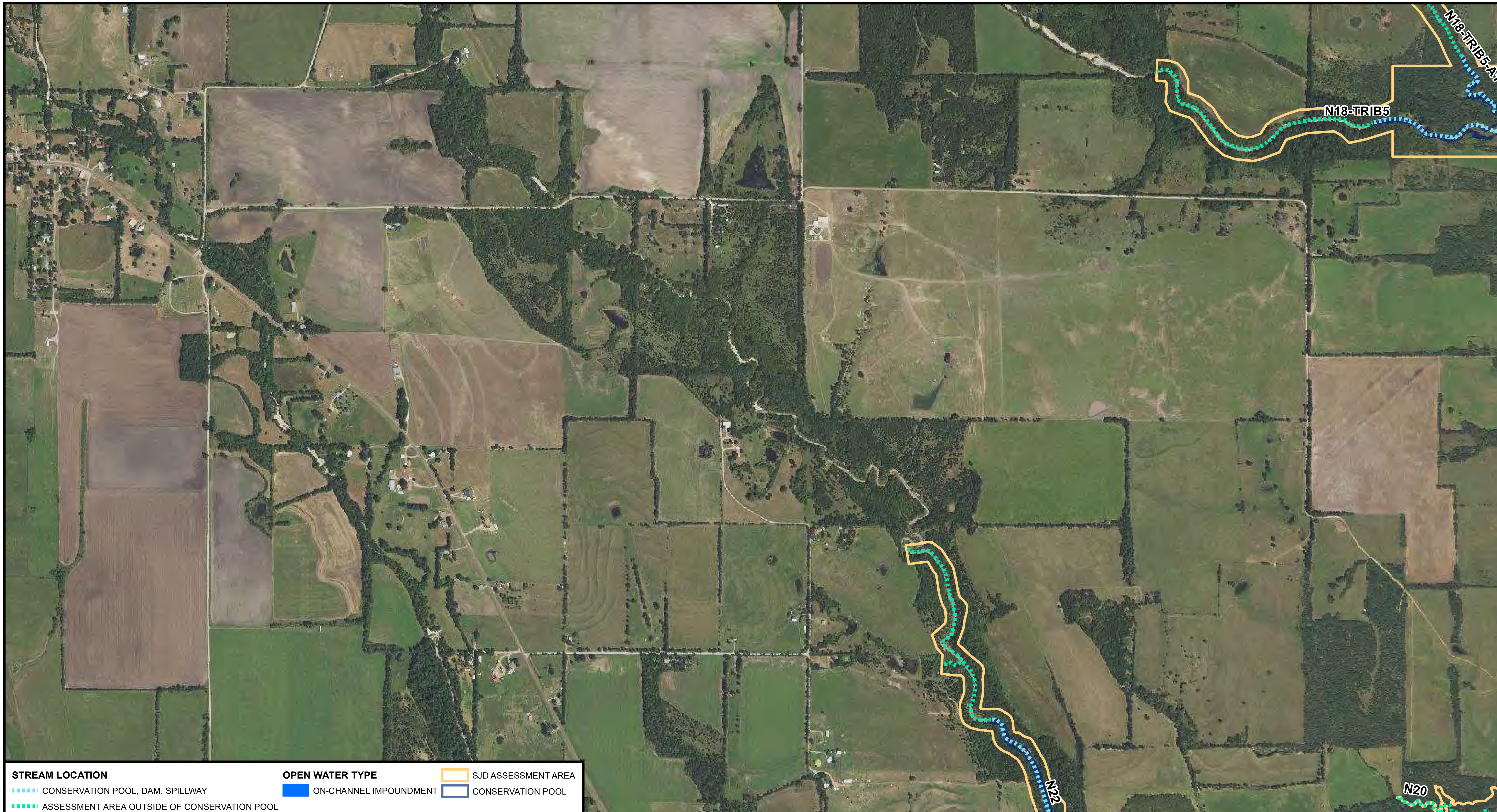
Date: 6/15/2017





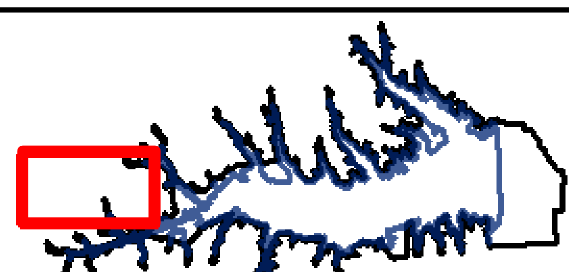


FIGURE 7: DELINEATED STREAMS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

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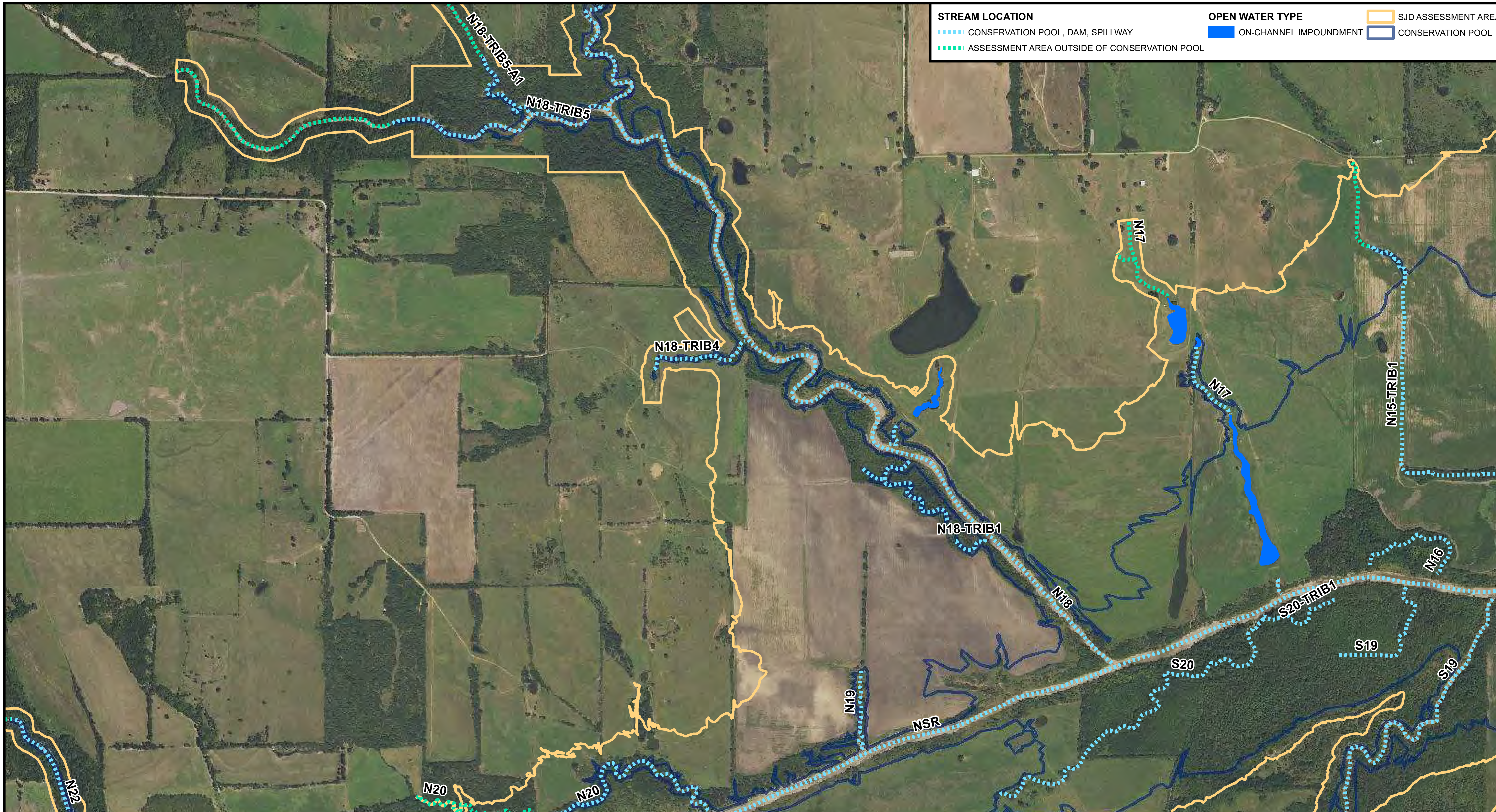

FIGURE 8: DELINEATED STREAMS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
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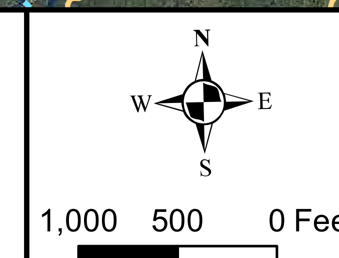

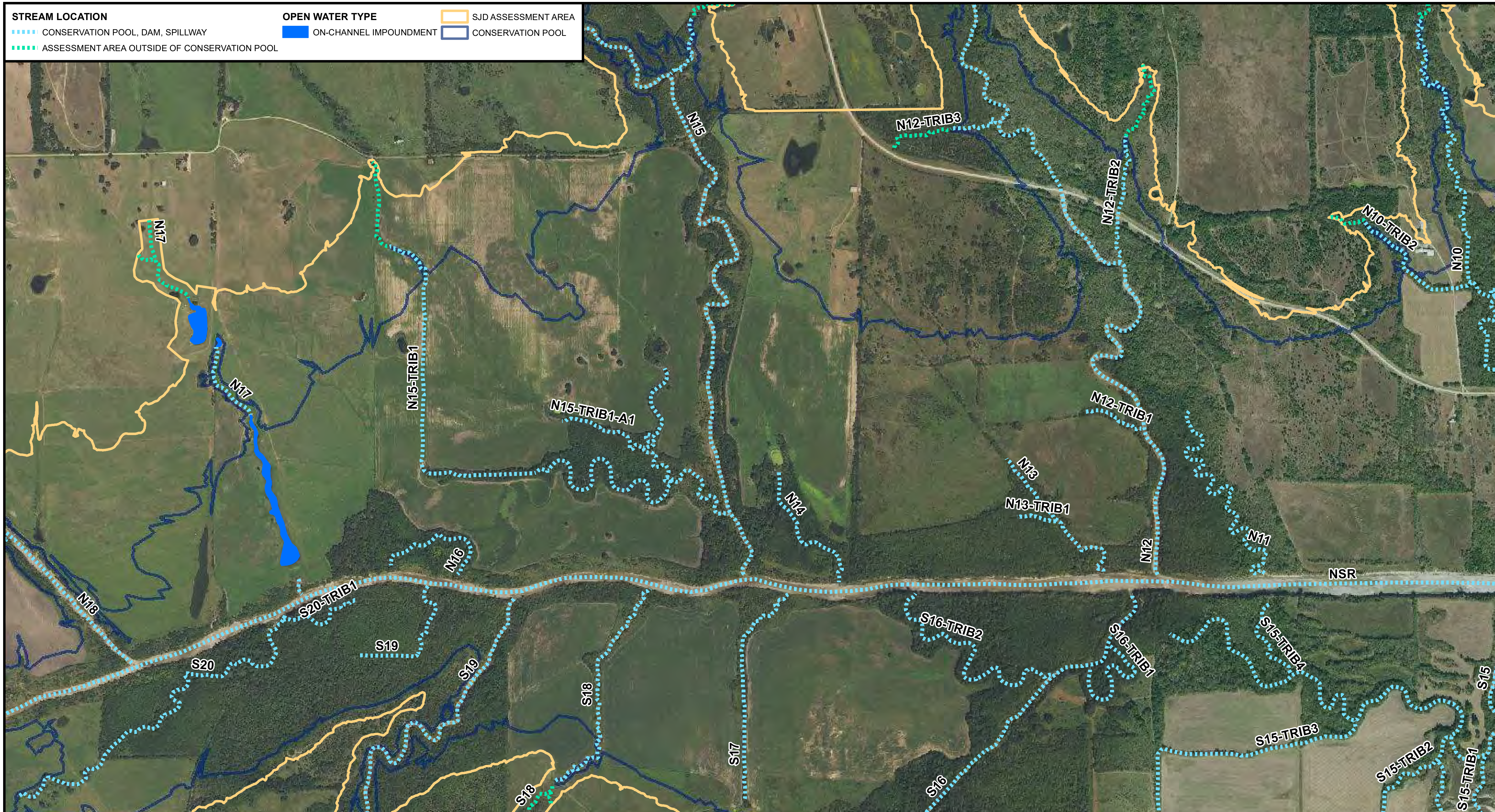

FIGURE 9: DELINEATED STREAMS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
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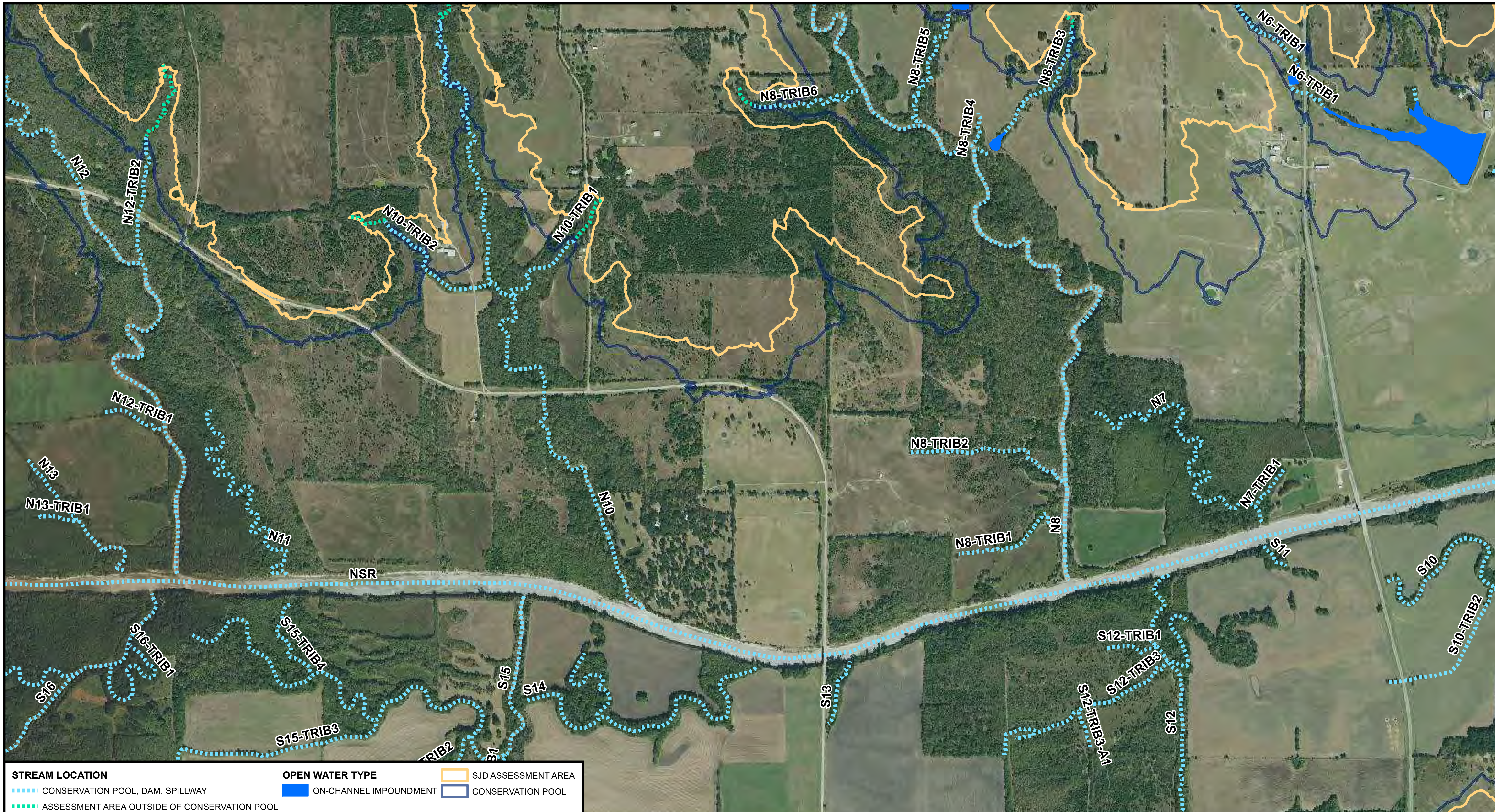

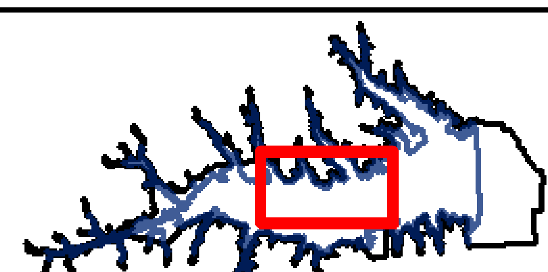

FIGURE 10: DELINEATED STREAMS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017

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FIGURE 11: DELINEATED STREAMS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

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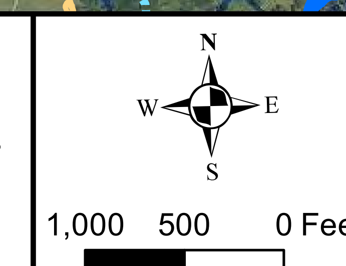

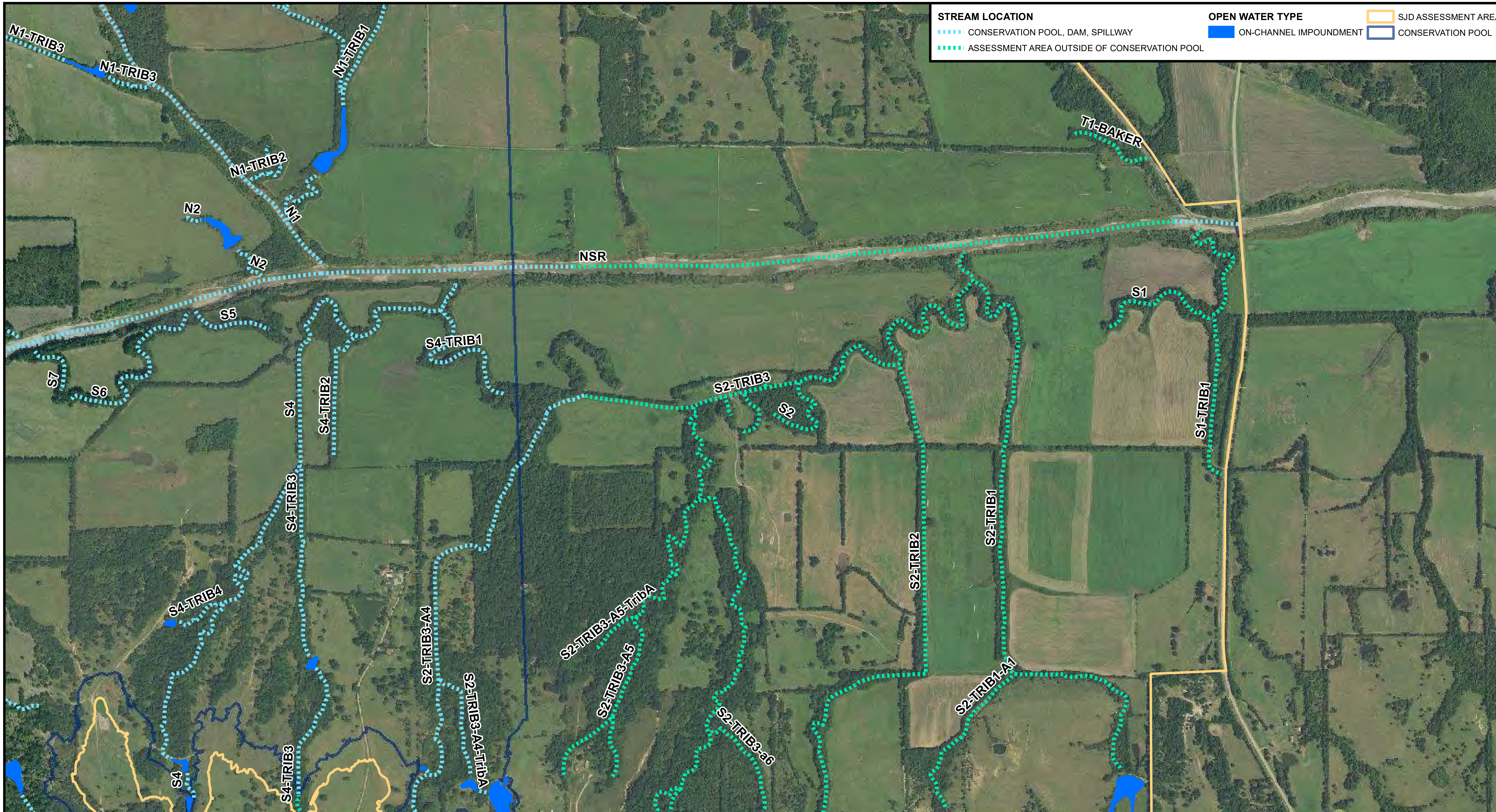

FIGURE 12: DELINEATED STREAMS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
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Date: 6/15/2017

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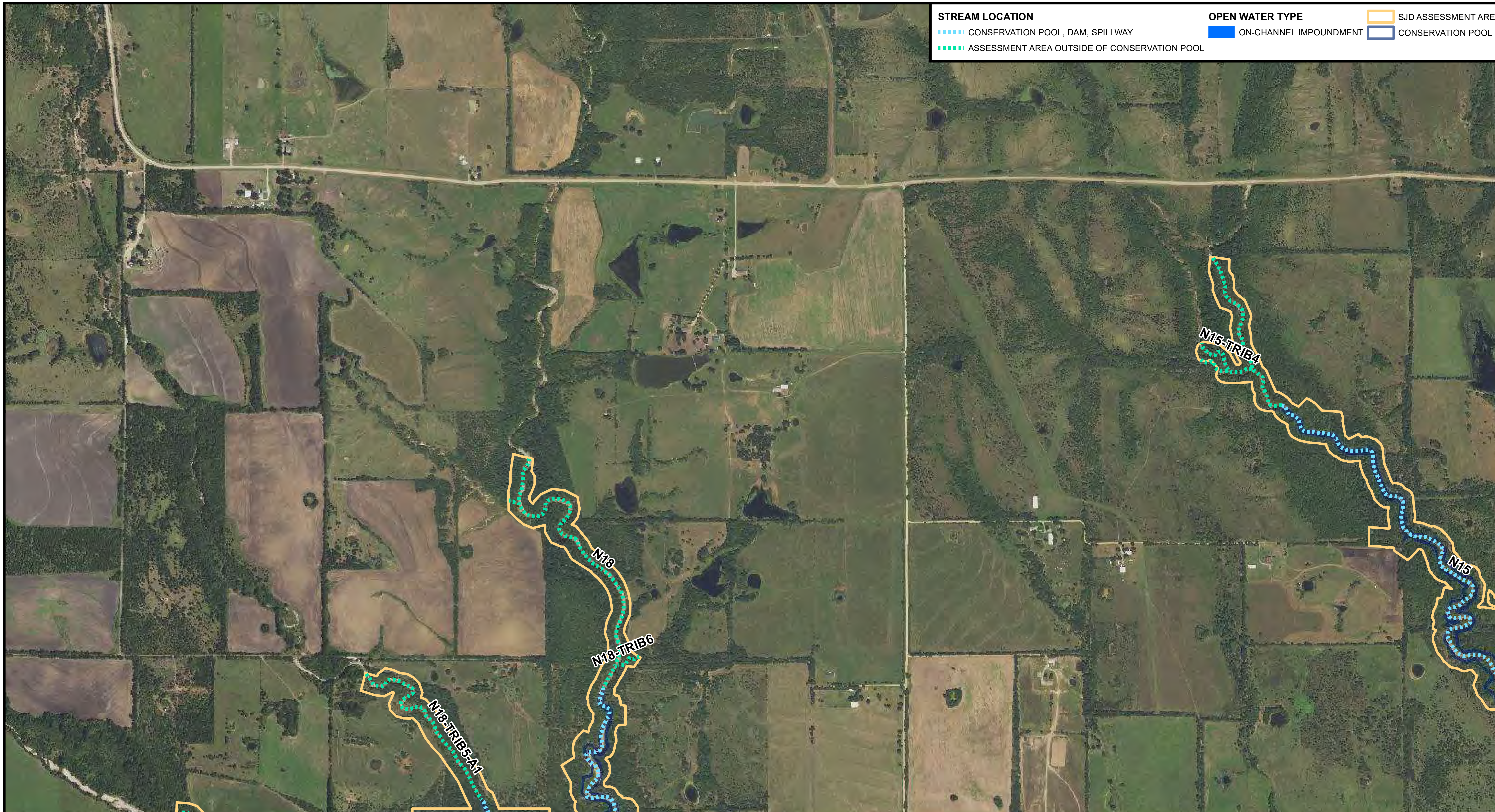

FIGURE 13: DELINEATED STREAMS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
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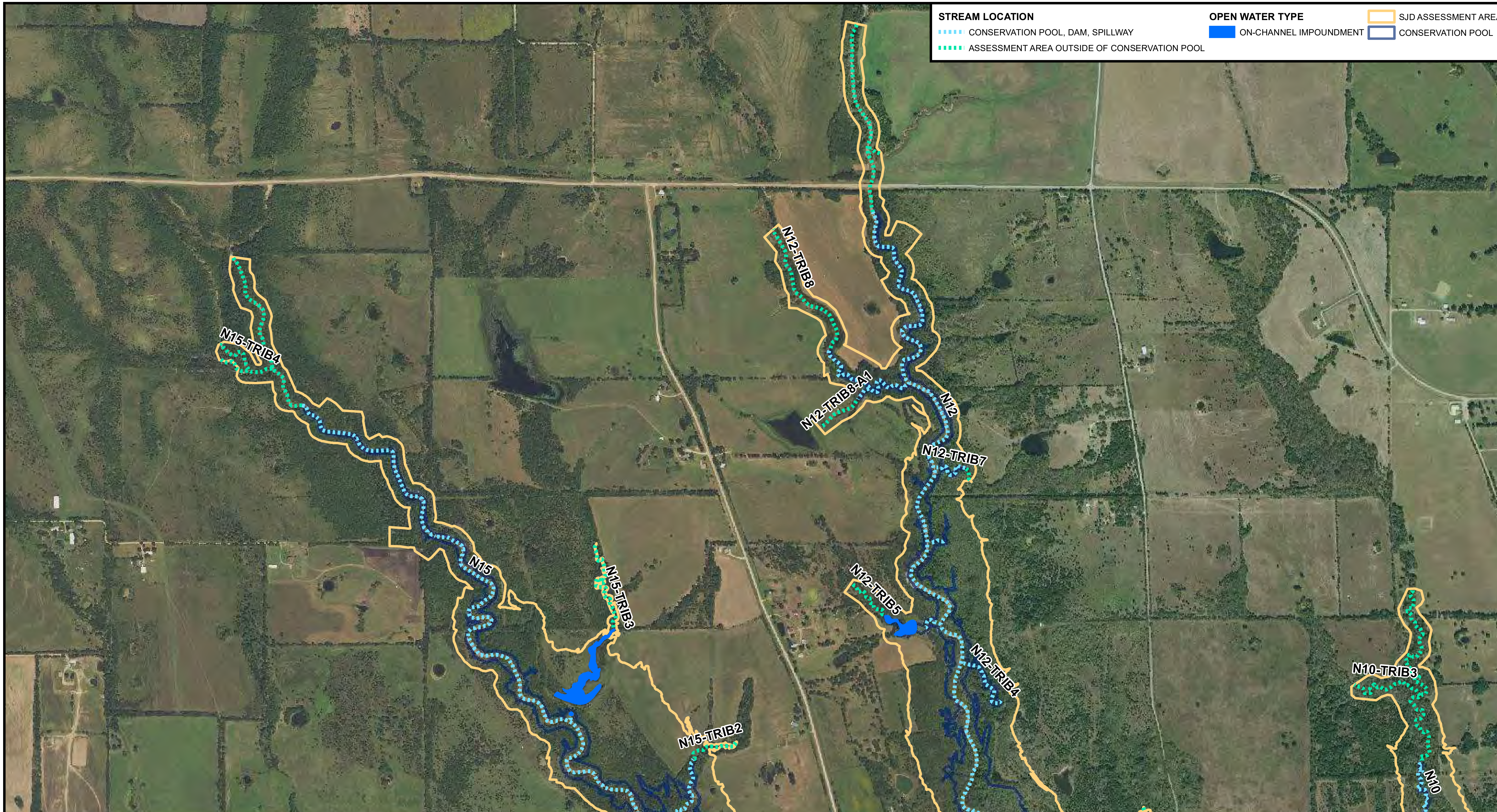

FIGURE 14: DELINEATED STREAMS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
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Date: 6/15/2017

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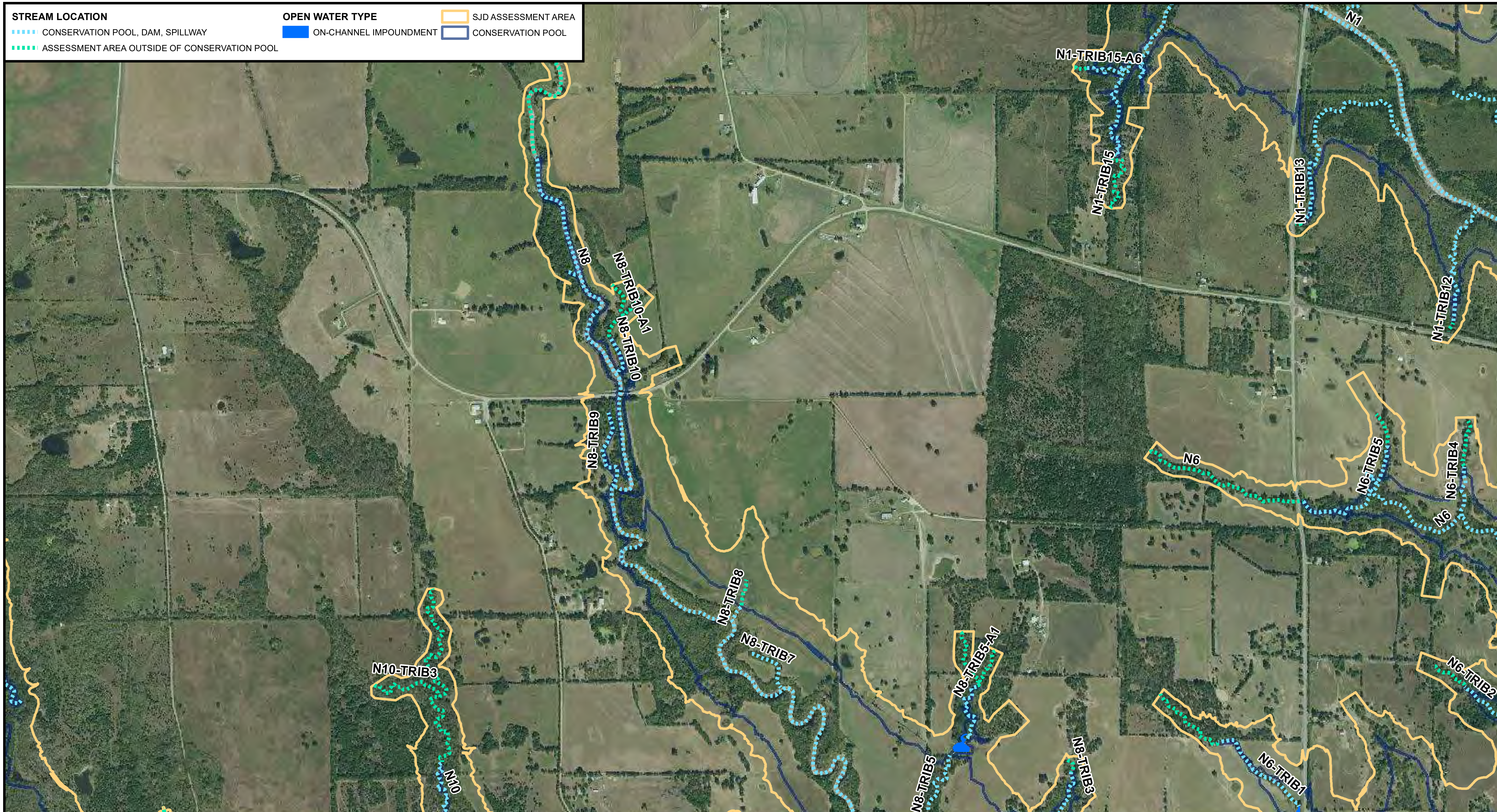

FIGURE 15: DELINEATED STREAMS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

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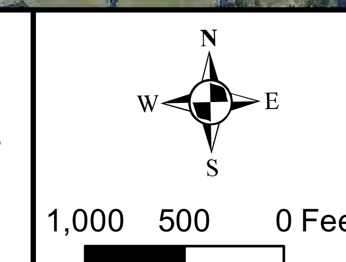

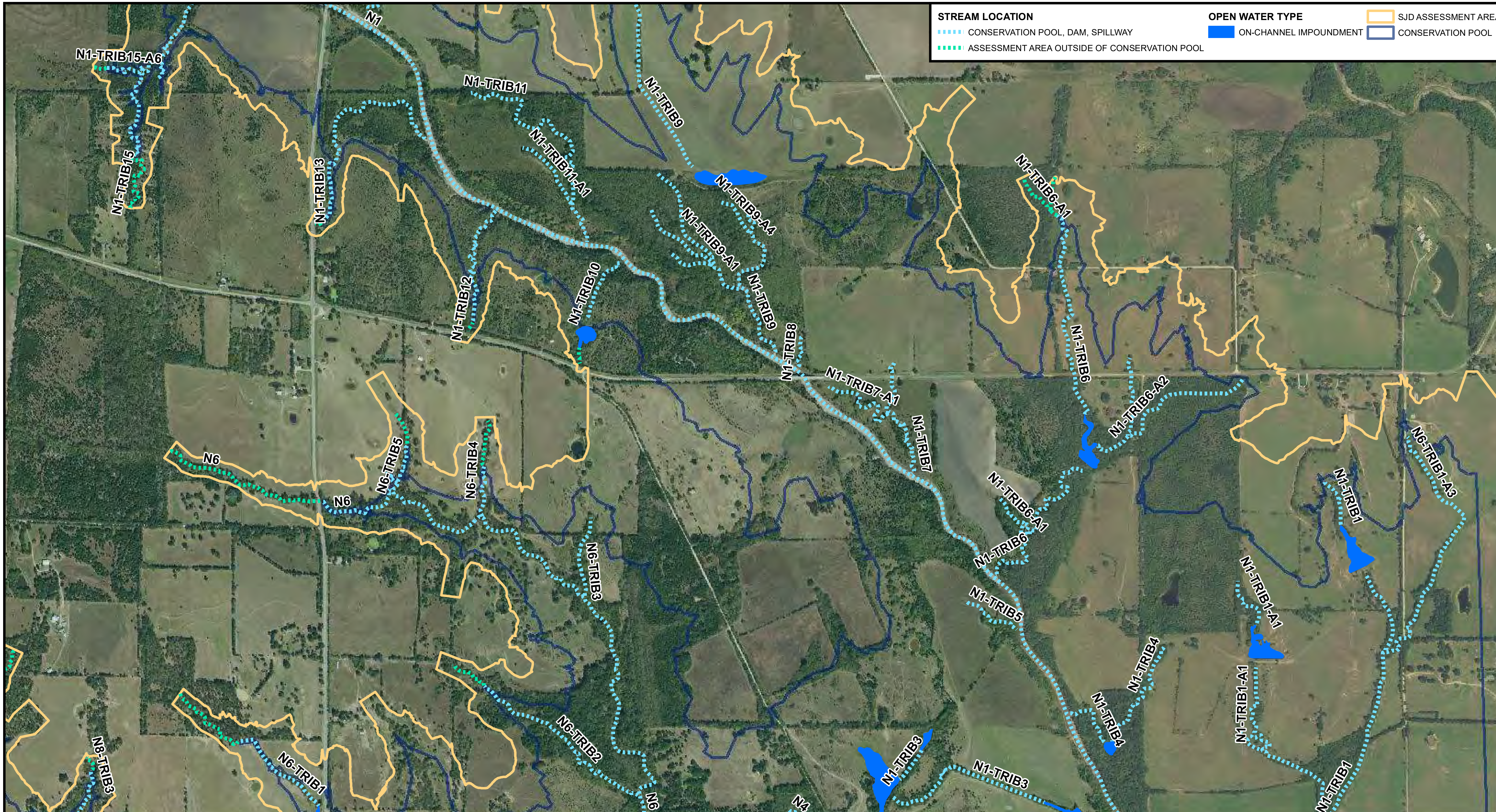

FIGURE 16: DELINEATED STREAMS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

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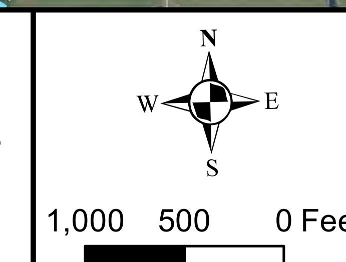
Date: 6/15/2017



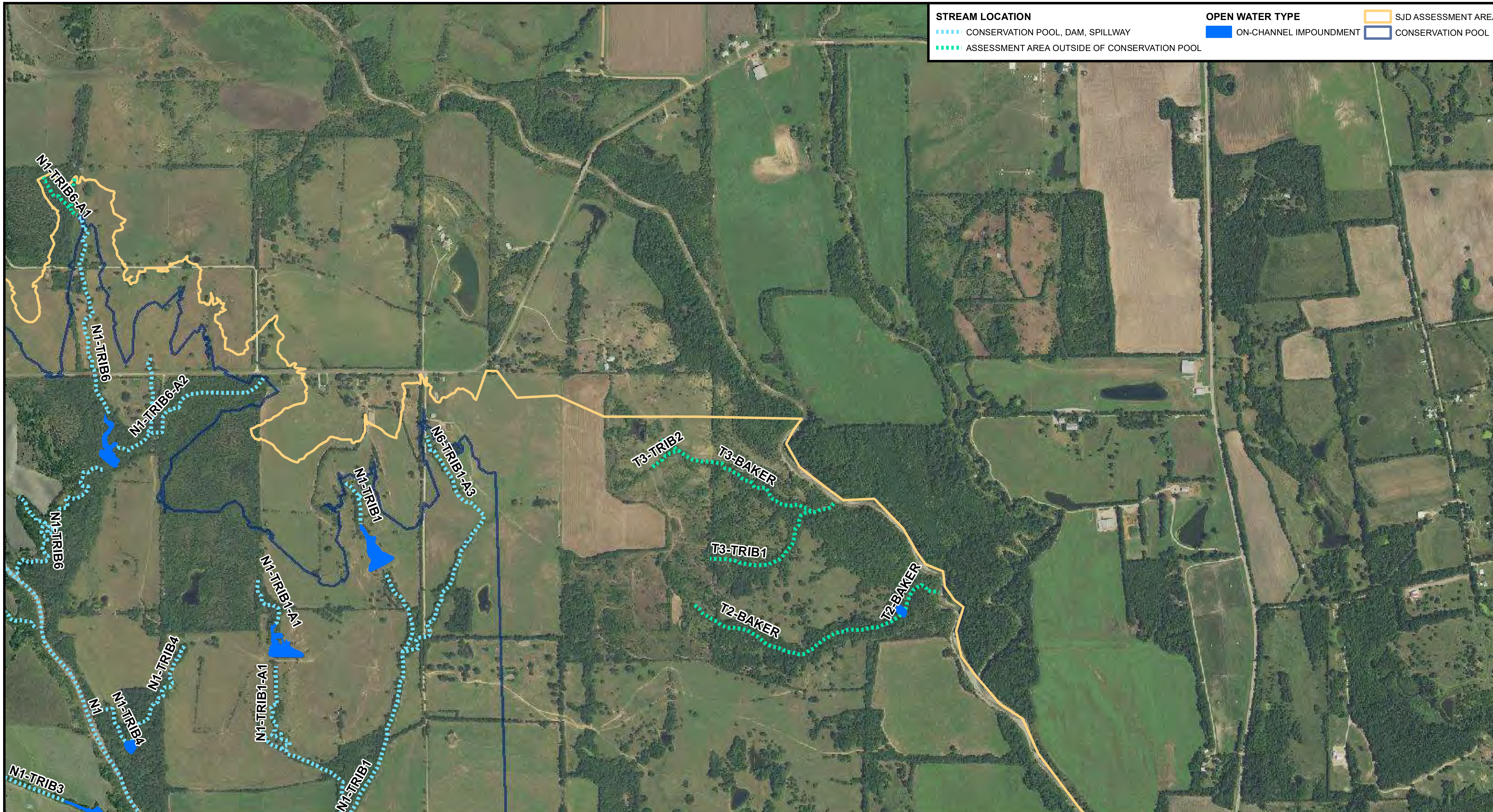


FIGURE 17: DELINEATED STREAMS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

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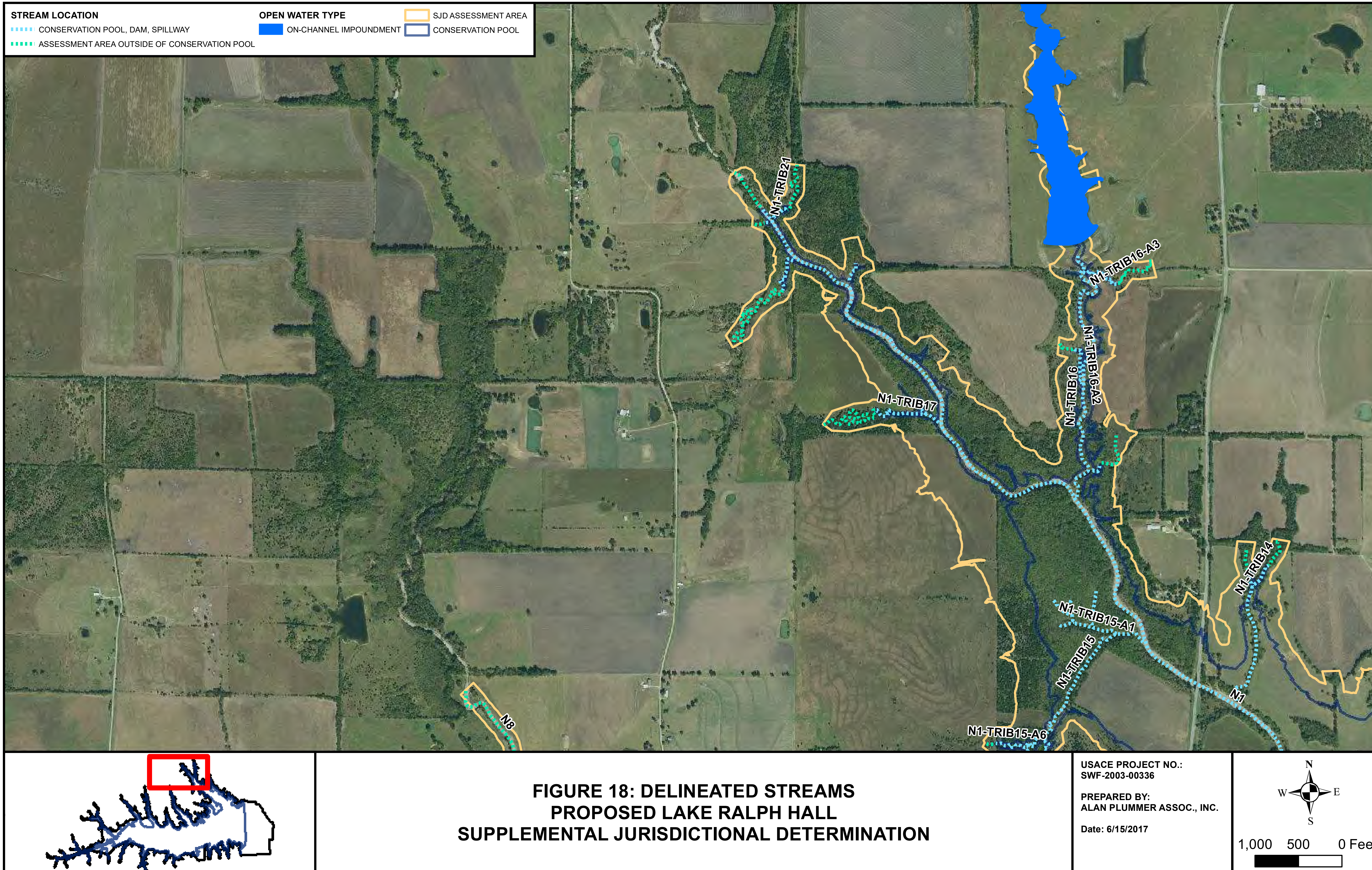

FIGURE 18: DELINEATED STREAMS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.: SWF-2003-00336

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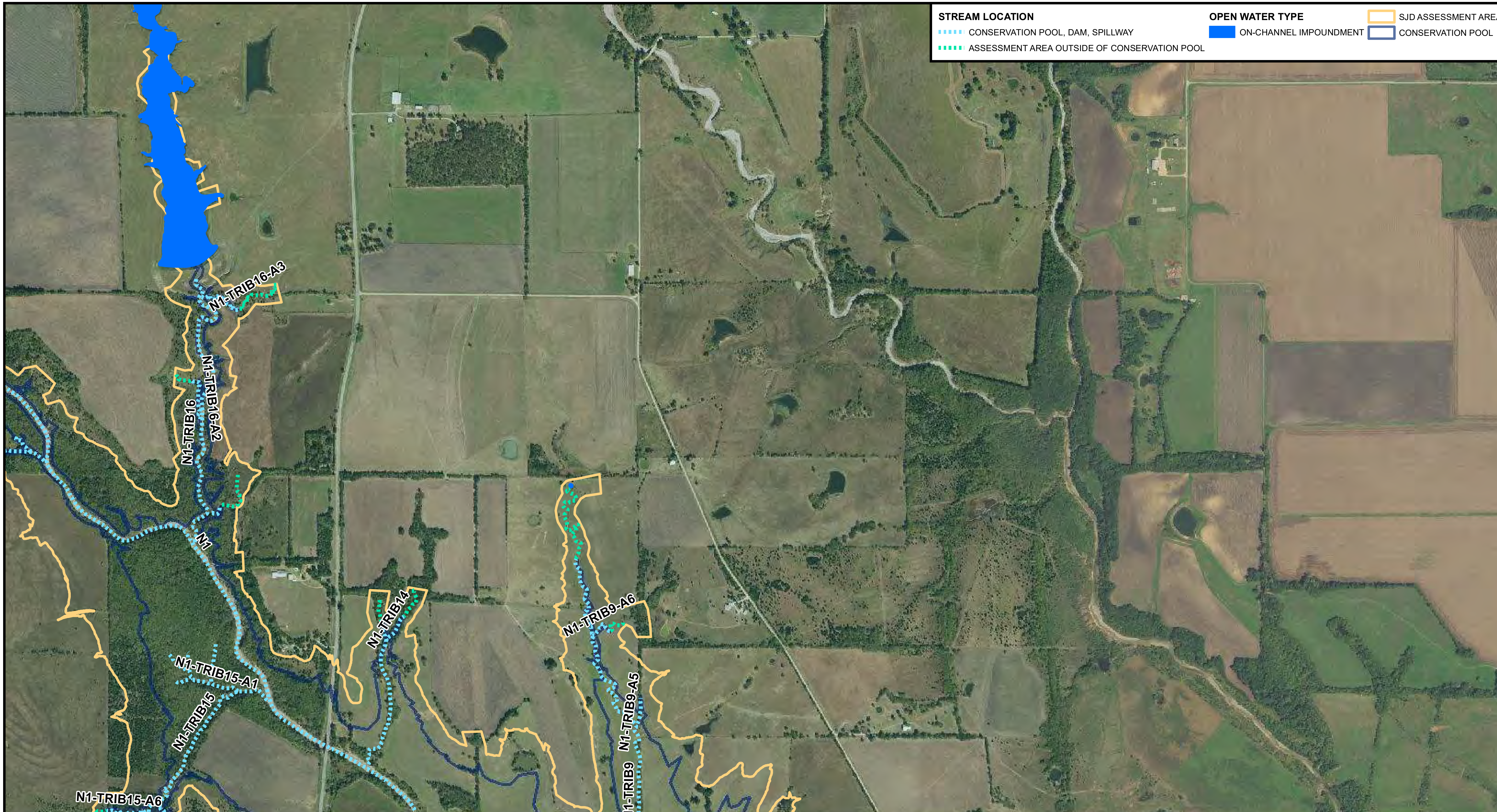

FIGURE 19: DELINEATED STREAMS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

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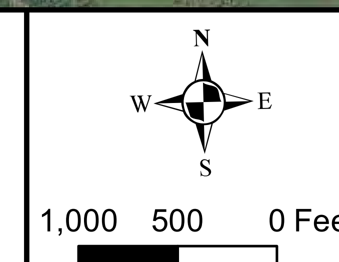
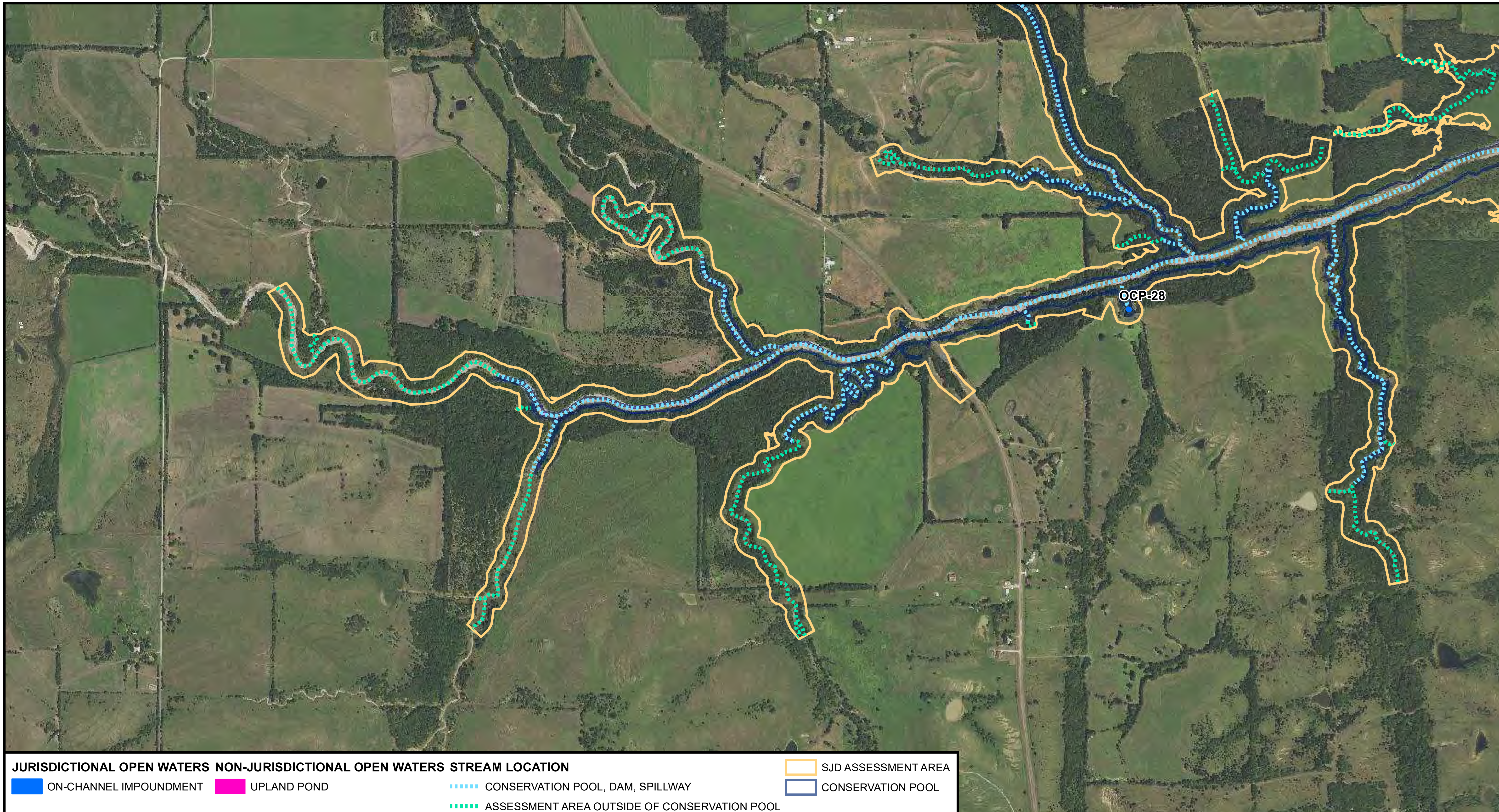
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017



MAPBOOK

DELINEATED OPEN WATERS



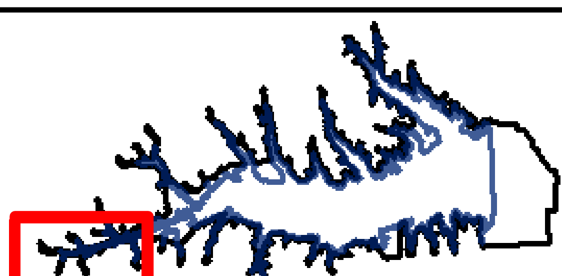


FIGURE 1: DELINEATED OPEN WATERS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017

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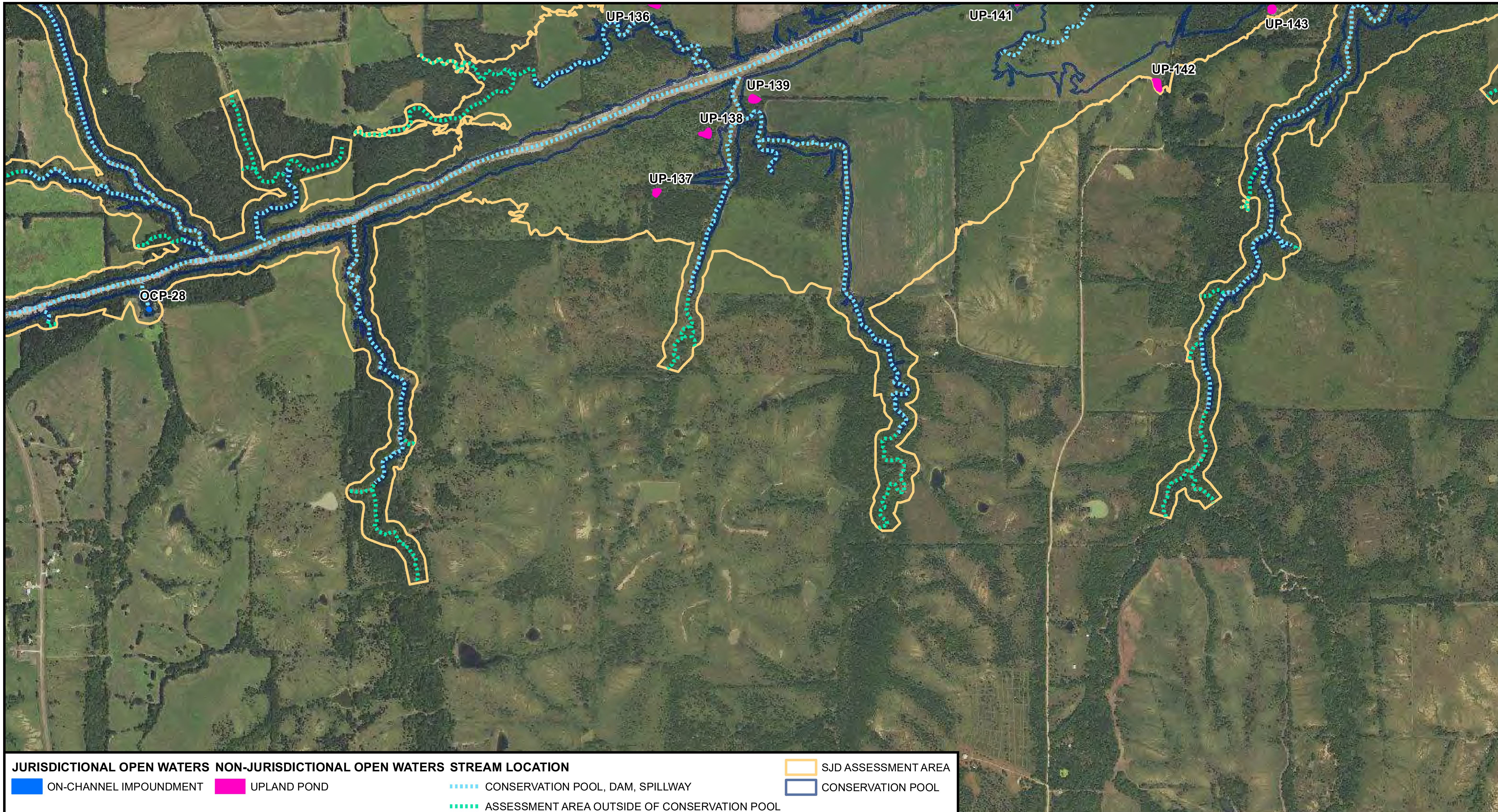
1,000 500 0 Feet



JURISDICTIONAL OPEN WATERS
ON-CHANNEL IMPOUNDMENT

NON-JURISDICTIONAL OPEN WATERS
UPLAND POND

STREAM LOCATION
CONSERVATION POOL, DAM, SPILLWAY
ASSESSMENT AREA OUTSIDE OF CONSERVATION POOL

SJD ASSESSMENT AREA
CONSERVATION POOL

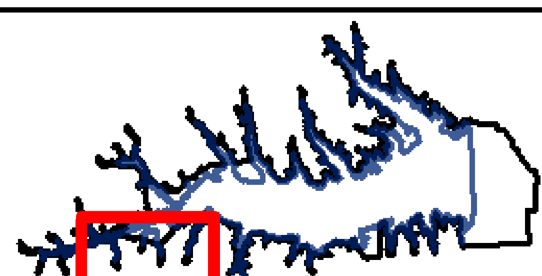


FIGURE 2: DELINEATED OPEN WATERS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017

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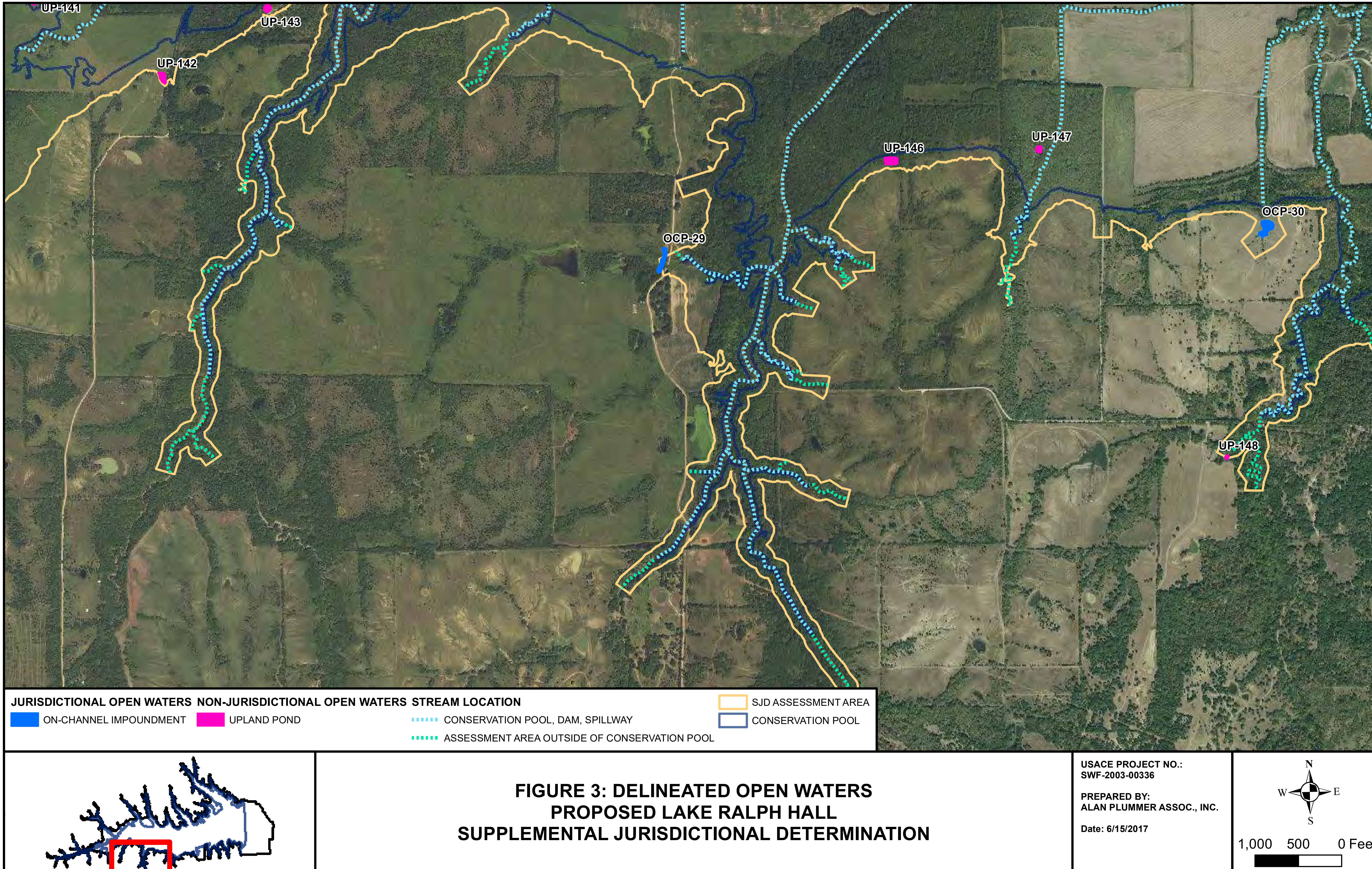


FIGURE 3: DELINEATED OPEN WATERS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017

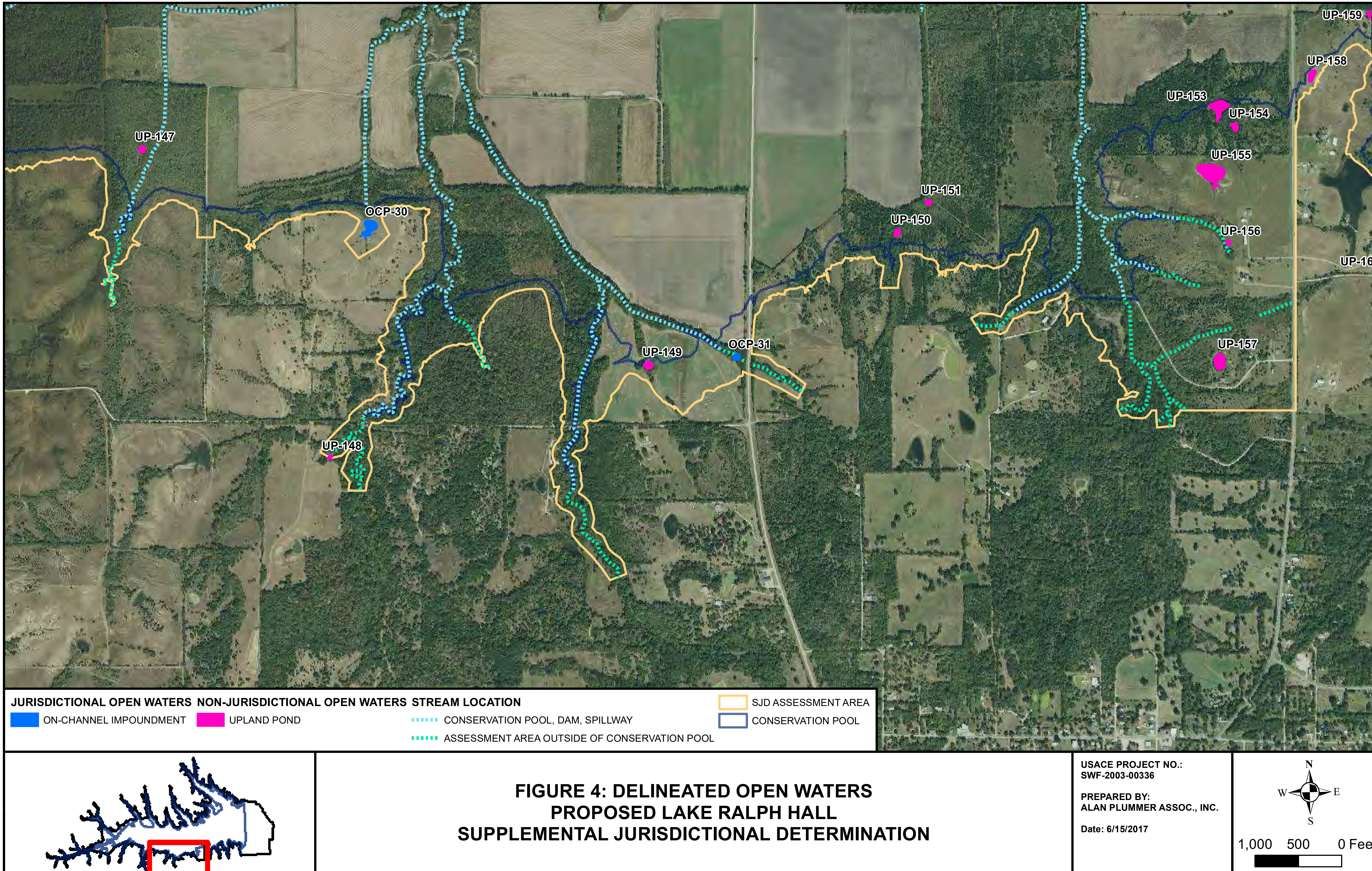
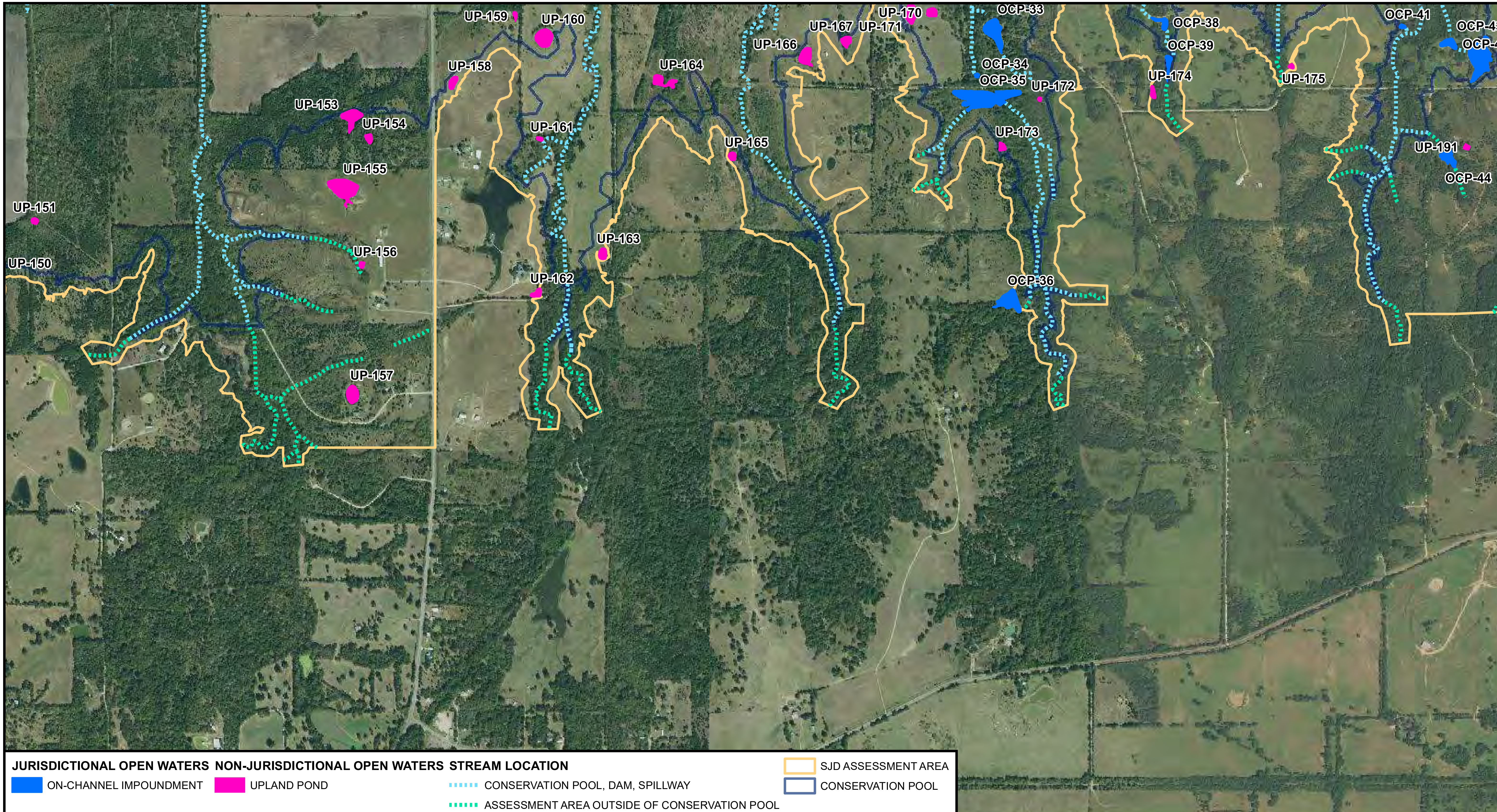


FIGURE 4: DELINEATED OPEN WATERS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017



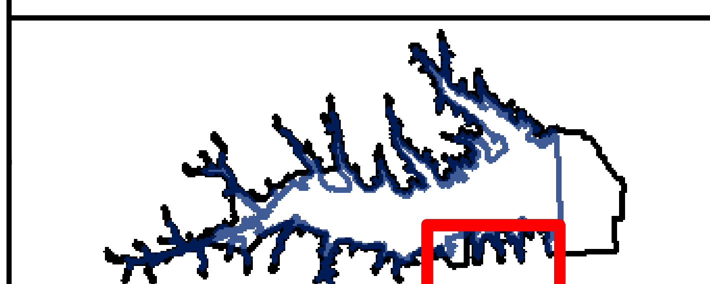


FIGURE 5: DELINEATED OPEN WATERS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017

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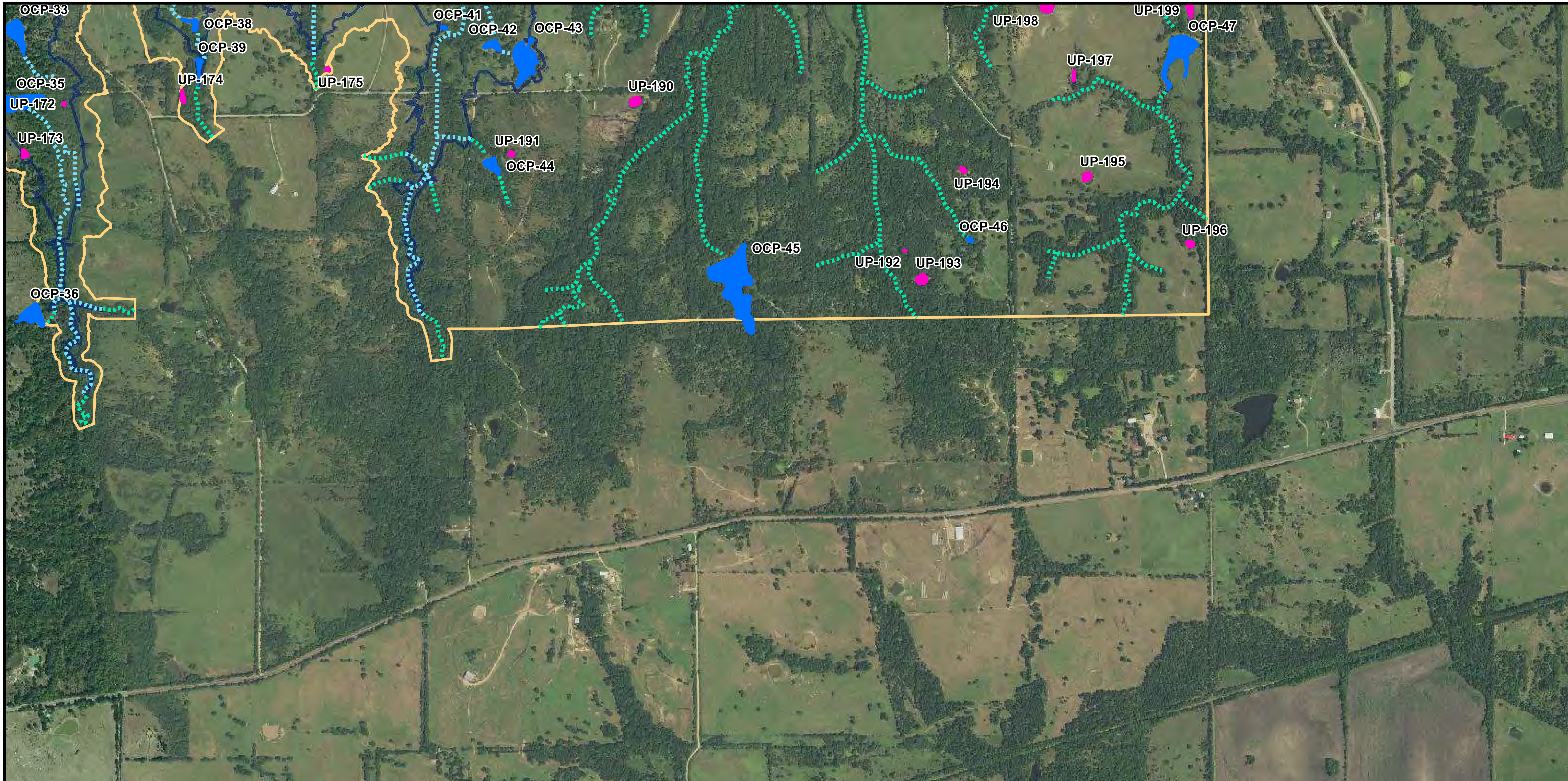

JURISDICTIONAL OPEN WATERS	NON-JURISDICTIONAL OPEN WATERS	STREAM LOCATION	
ON-CHANNEL IMPOUNDMENT	UPLAND POND	CONSERVATION POOL, DAM, SPILLWAY	SJD ASSESSMENT AREA
		ASSESSMENT AREA OUTSIDE OF CONSERVATION POOL	CONSERVATION POOL

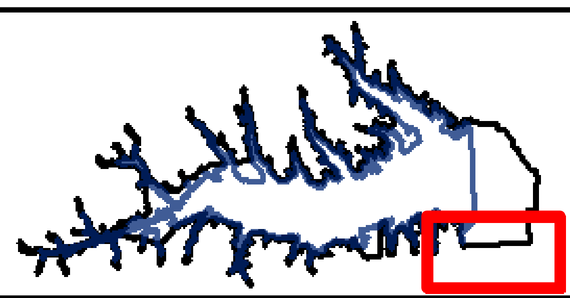

FIGURE 6: DELINEATED OPEN WATERS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017

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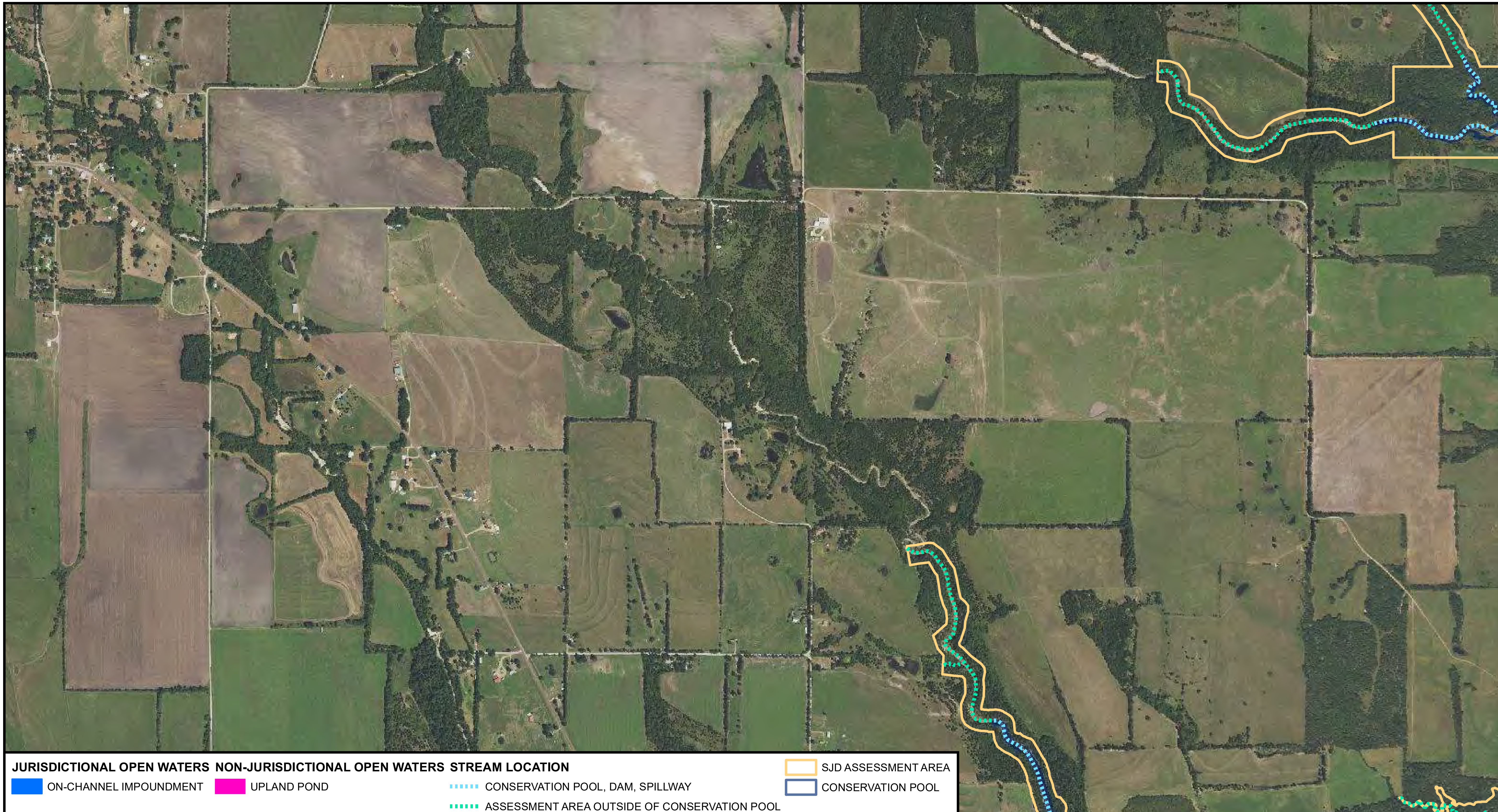

JURISDICTIONAL OPEN WATERS	NON-JURISDICTIONAL OPEN WATERS	STREAM LOCATION	
ON-CHANNEL IMPOUNDMENT	UPLAND POND	CONSERVATION POOL, DAM, SPILLWAY	SJD ASSESSMENT AREA
		ASSESSMENT AREA OUTSIDE OF CONSERVATION POOL	CONSERVATION POOL

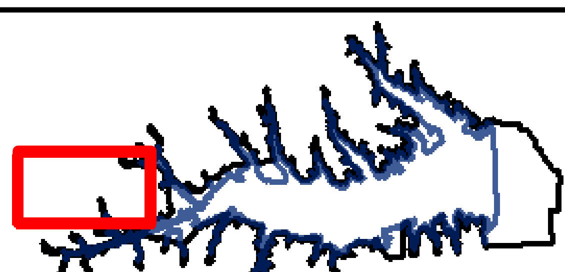

FIGURE 7: DELINEATED OPEN WATERS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017

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1,000 500 0 Feet

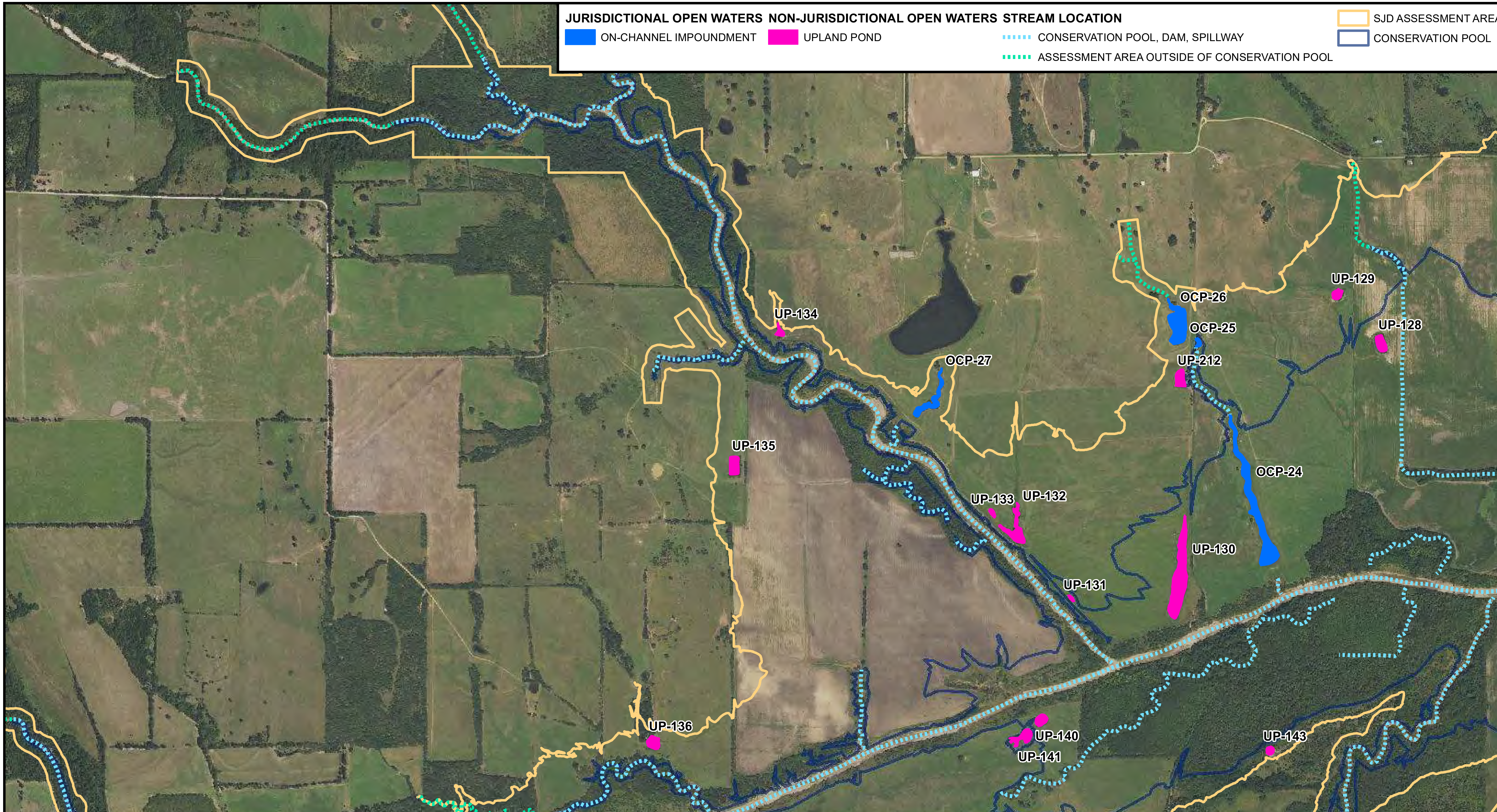
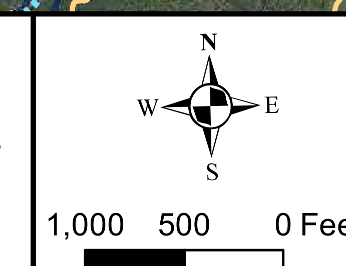


FIGURE 8: DELINEATED OPEN WATERS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017



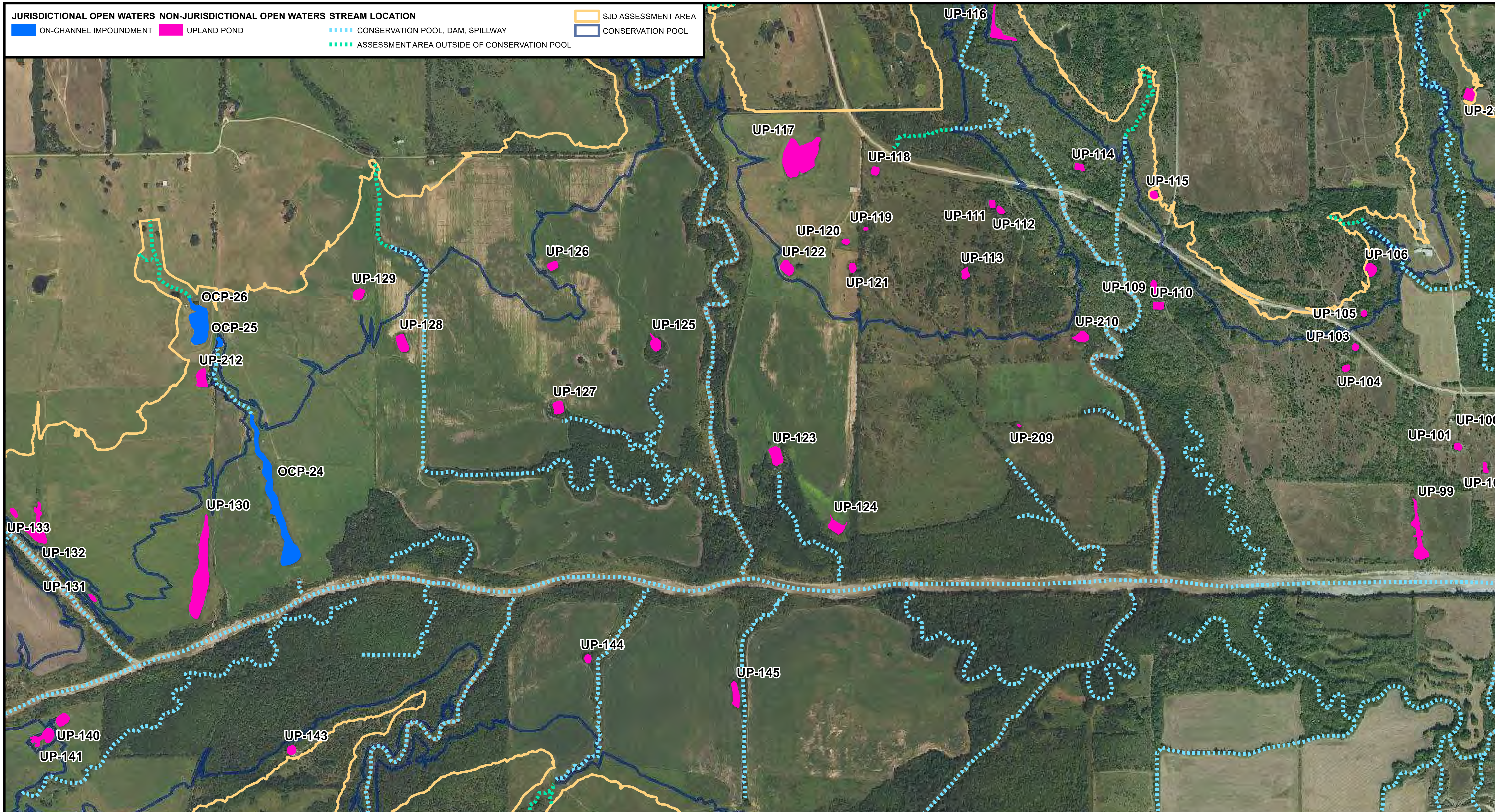
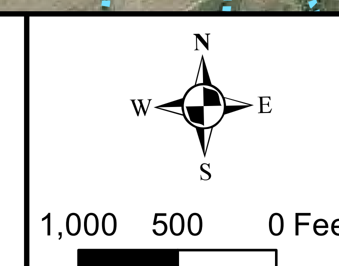


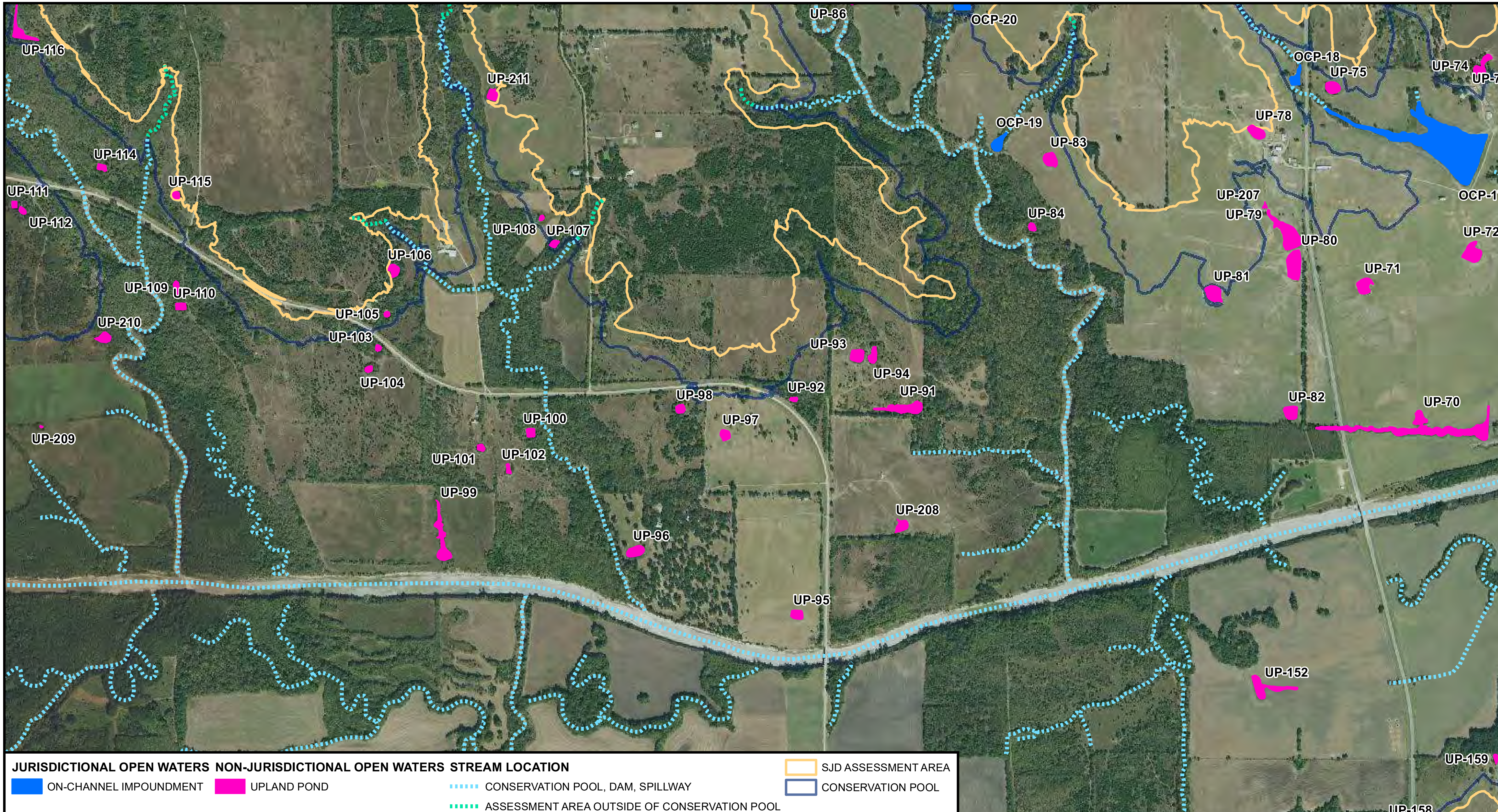
FIGURE 9: DELINEATED OPEN WATERS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017





JURISDICTIONAL OPEN WATERS: ON-CHANNEL IMPOUNDMENT

NON-JURISDICTIONAL OPEN WATERS: UPLAND POND

STREAM LOCATION: CONSERVATION POOL, DAM, SPILLWAY; ASSESSMENT AREA OUTSIDE OF CONSERVATION POOL

SJD ASSESSMENT AREA

CONSERVATION POOL

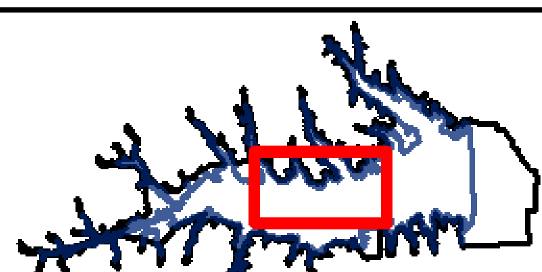


FIGURE 10: DELINEATED OPEN WATERS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.: SWF-2003-00336

PREPARED BY: ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017

N W E S

1,000 500 0 Feet

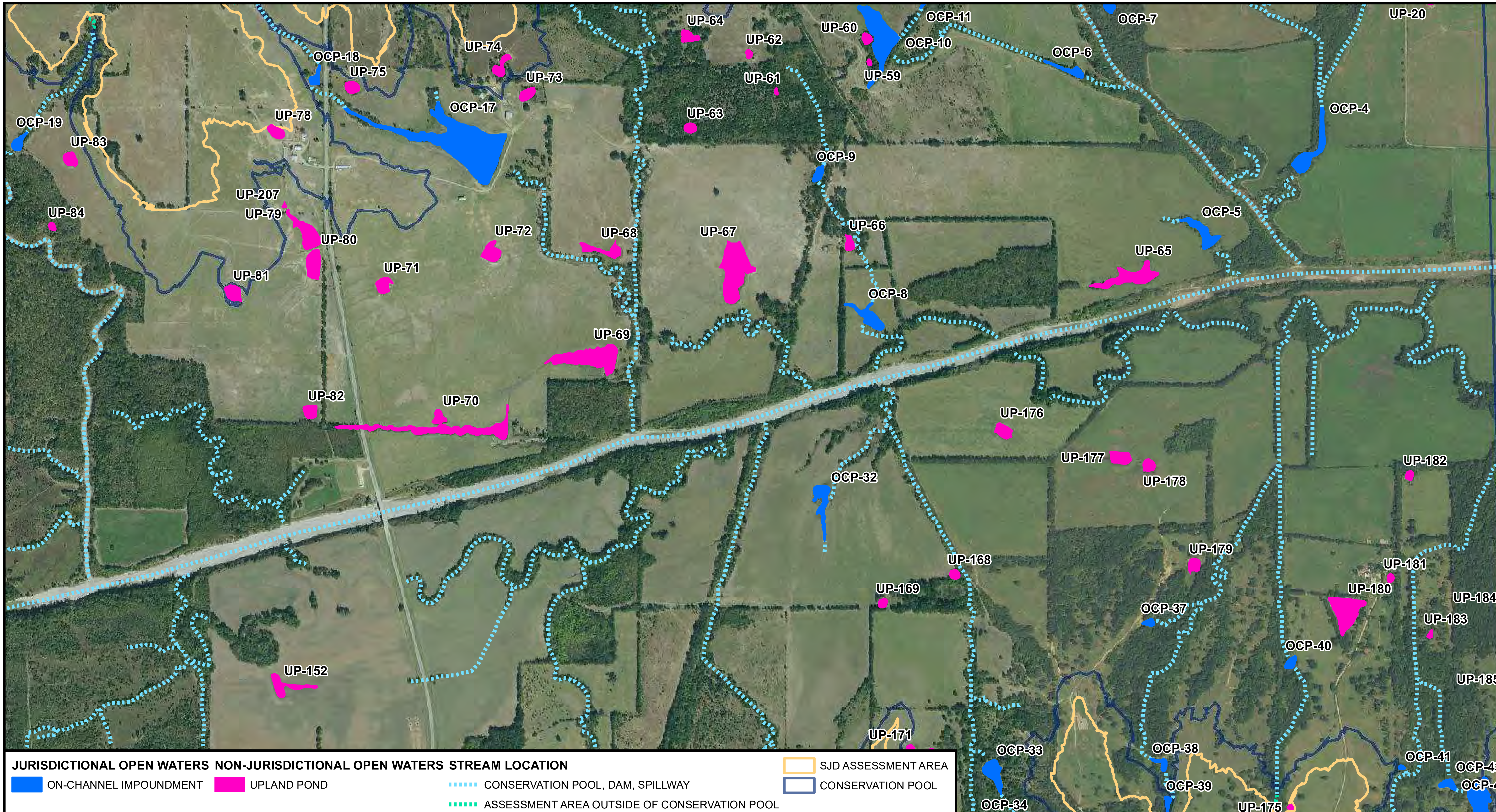
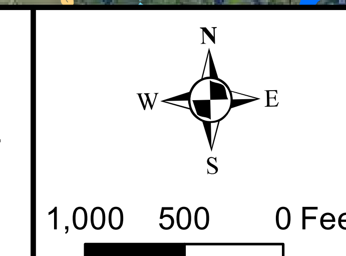


FIGURE 11: DELINEATED OPEN WATERS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017



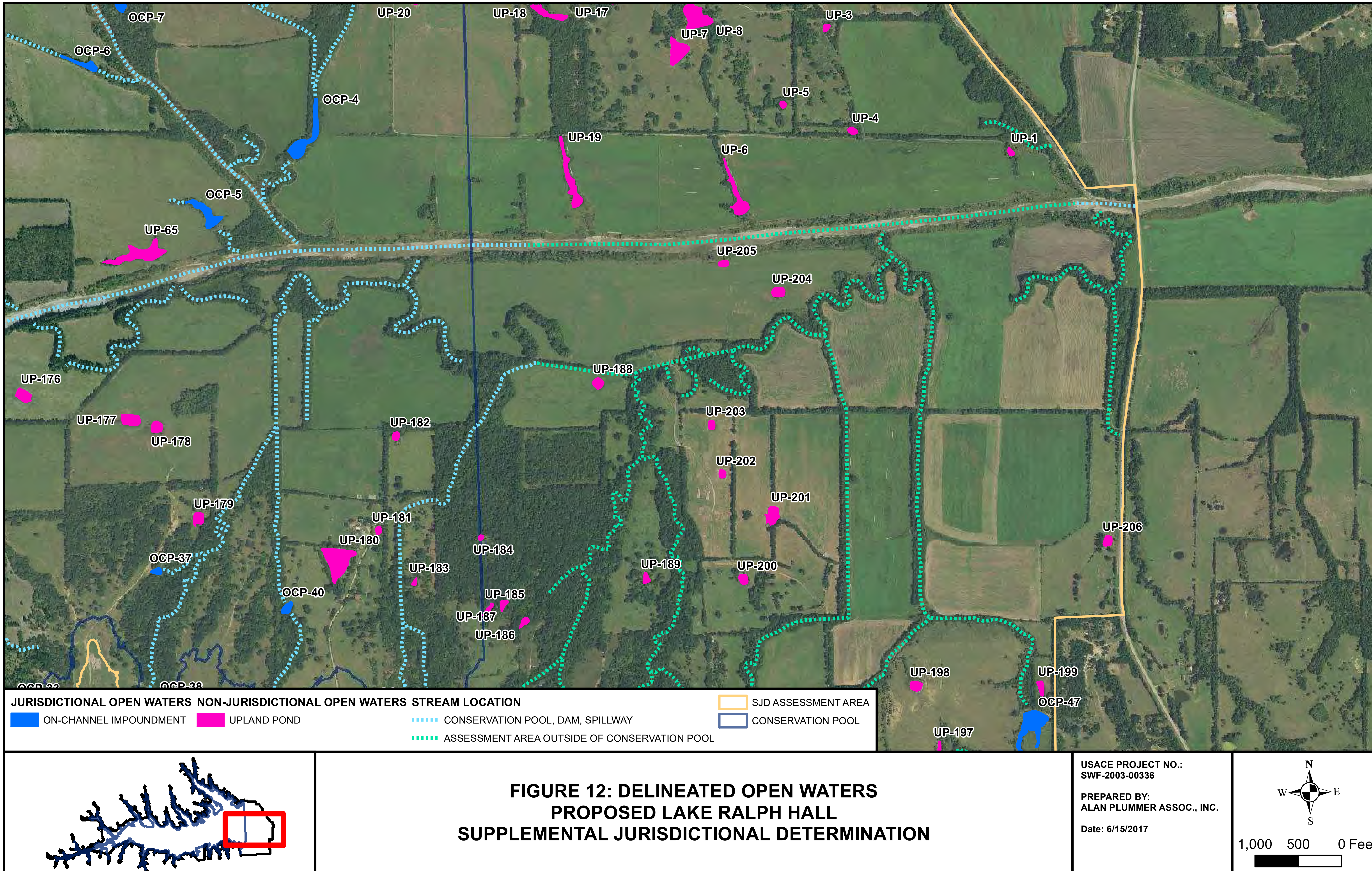


FIGURE 12: DELINEATED OPEN WATERS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017

JURISDICTIONAL OPEN WATERS
ON-CHANNEL IMPOUNDMENT

NON-JURISDICTIONAL OPEN WATERS
UPLAND POND

STREAM LOCATION
CONSERVATION POOL, DAM, SPILLWAY
ASSESSMENT AREA OUTSIDE OF CONSERVATION POOL

SJD ASSESSMENT AREA
CONSERVATION POOL

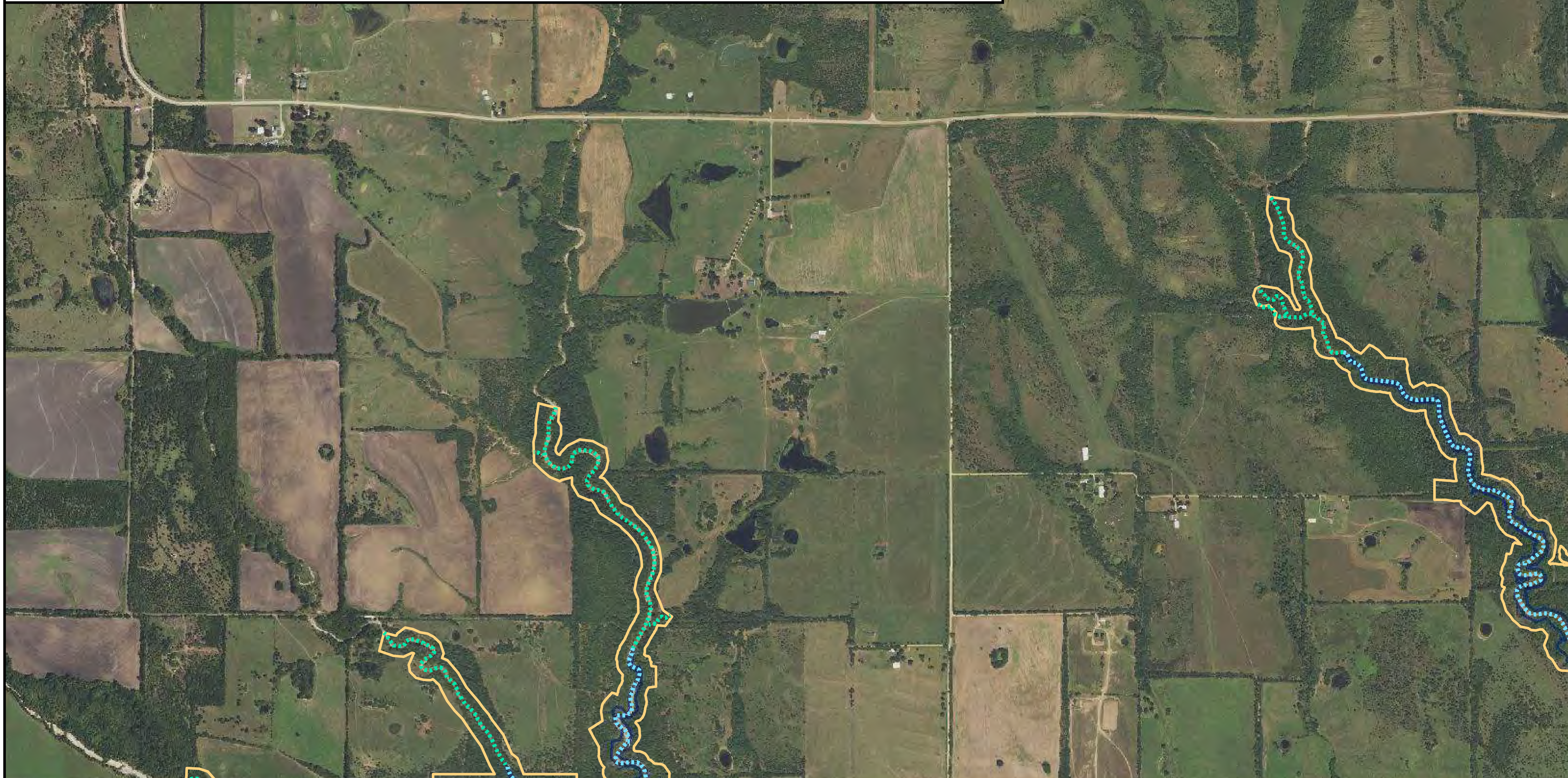
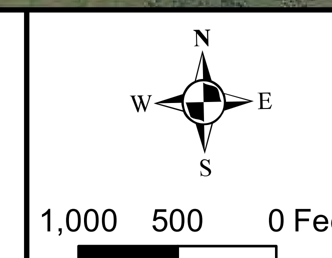


FIGURE 13: DELINEATED OPEN WATERS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017



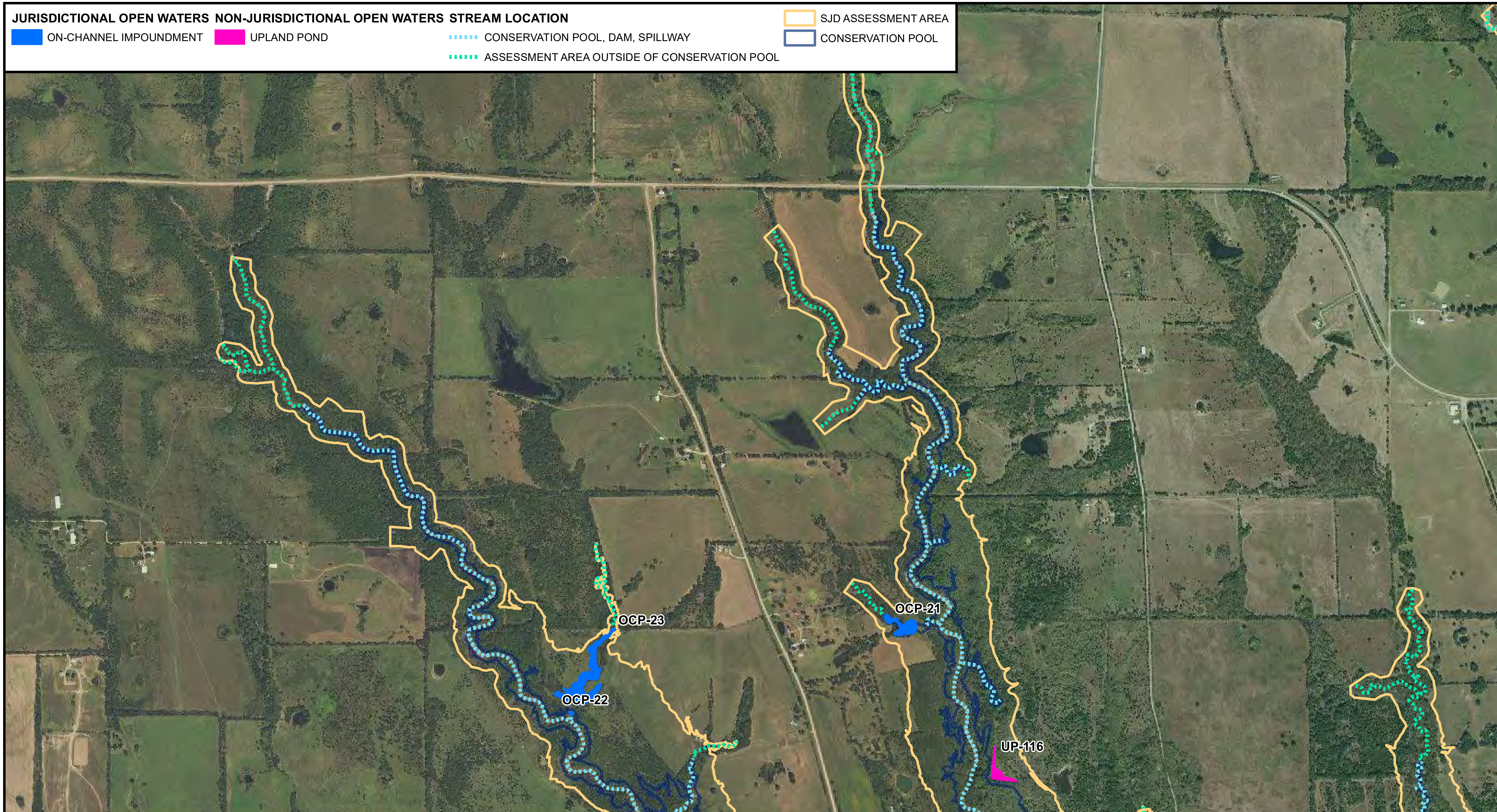


FIGURE 14: DELINEATED OPEN WATERS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017

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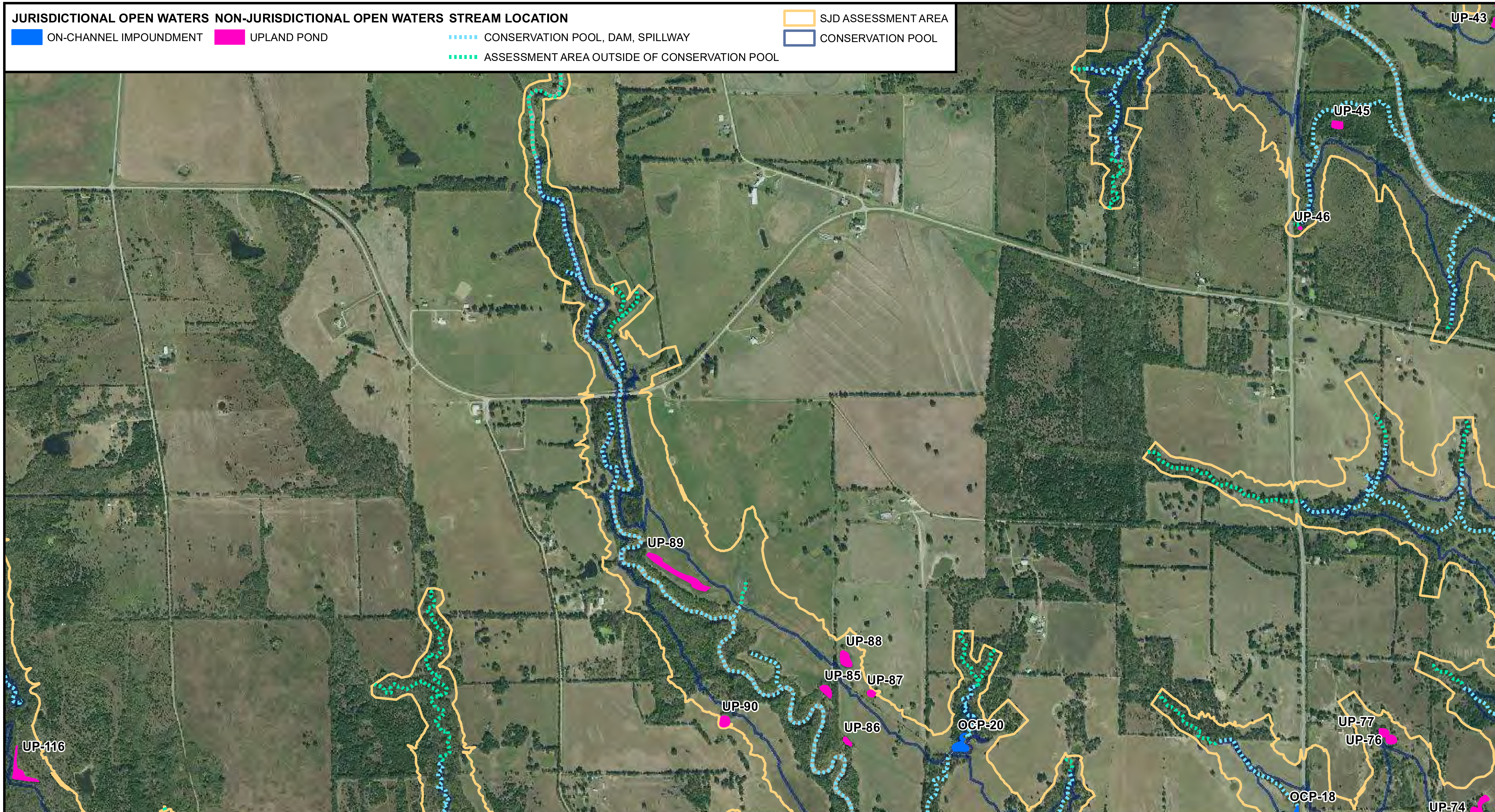

FIGURE 15: DELINEATED OPEN WATERS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017

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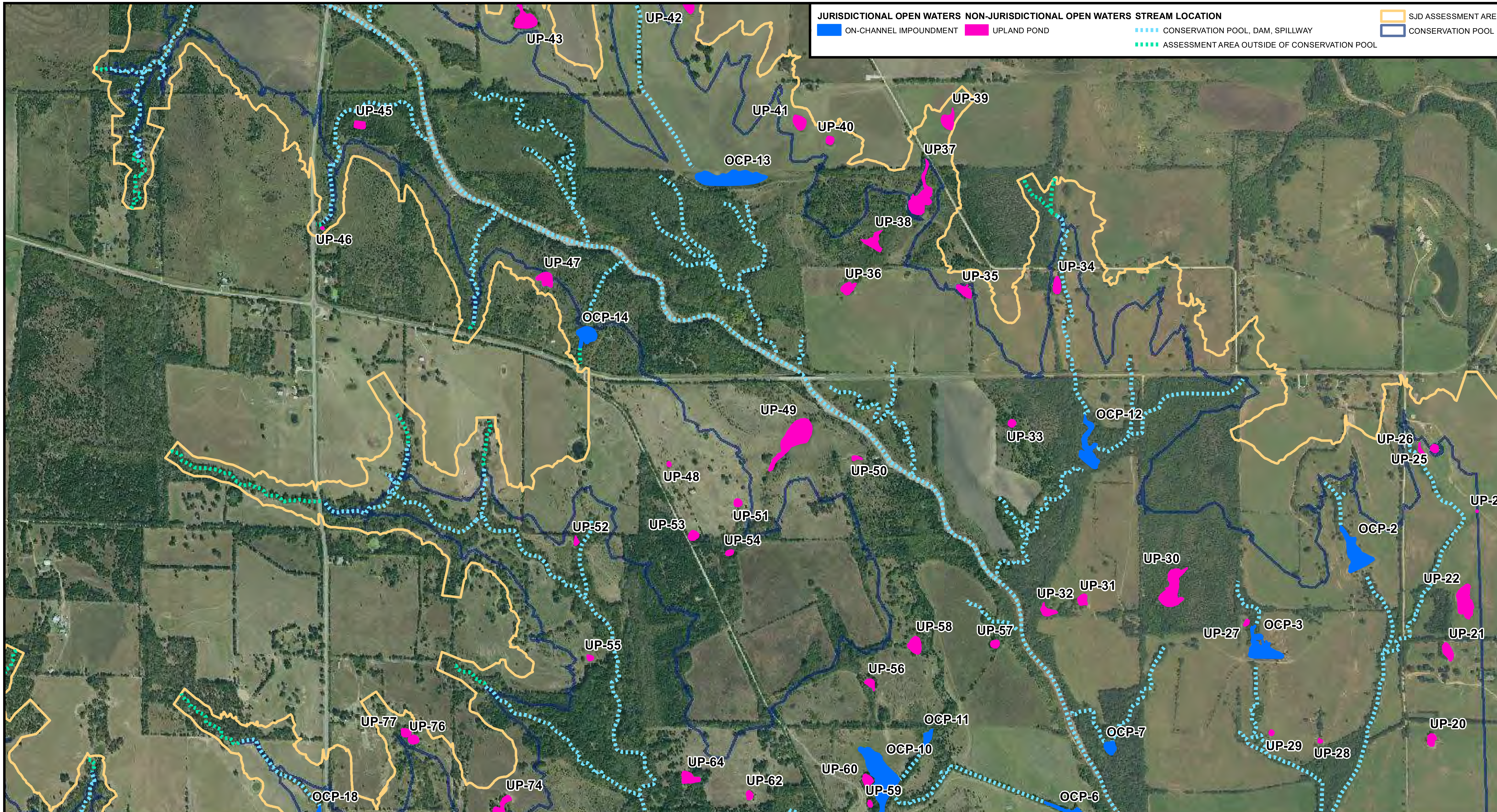

FIGURE 16: DELINEATED OPEN WATERS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017

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1,000 500 0 Feet

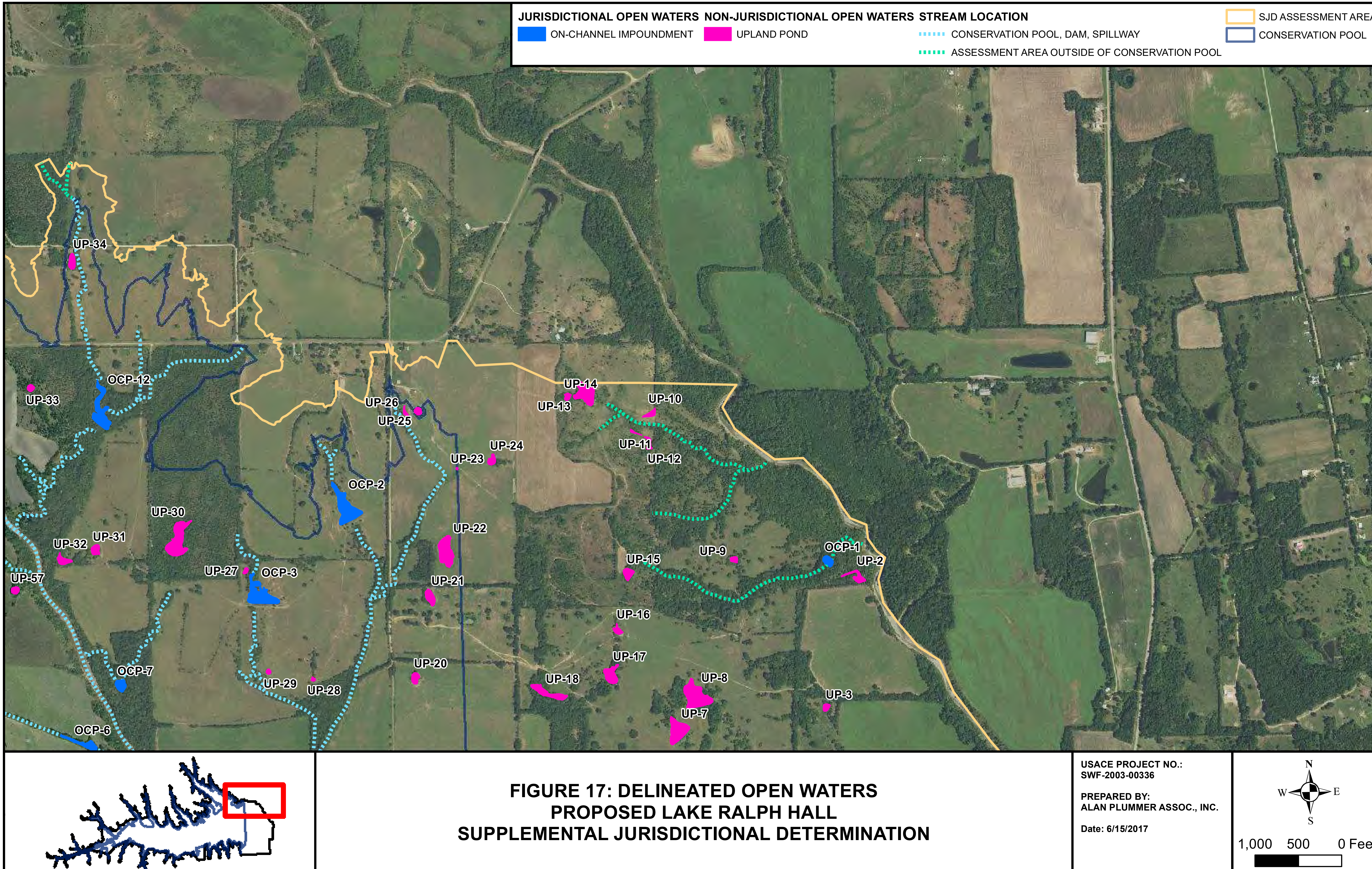

FIGURE 17: DELINEATED OPEN WATERS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017

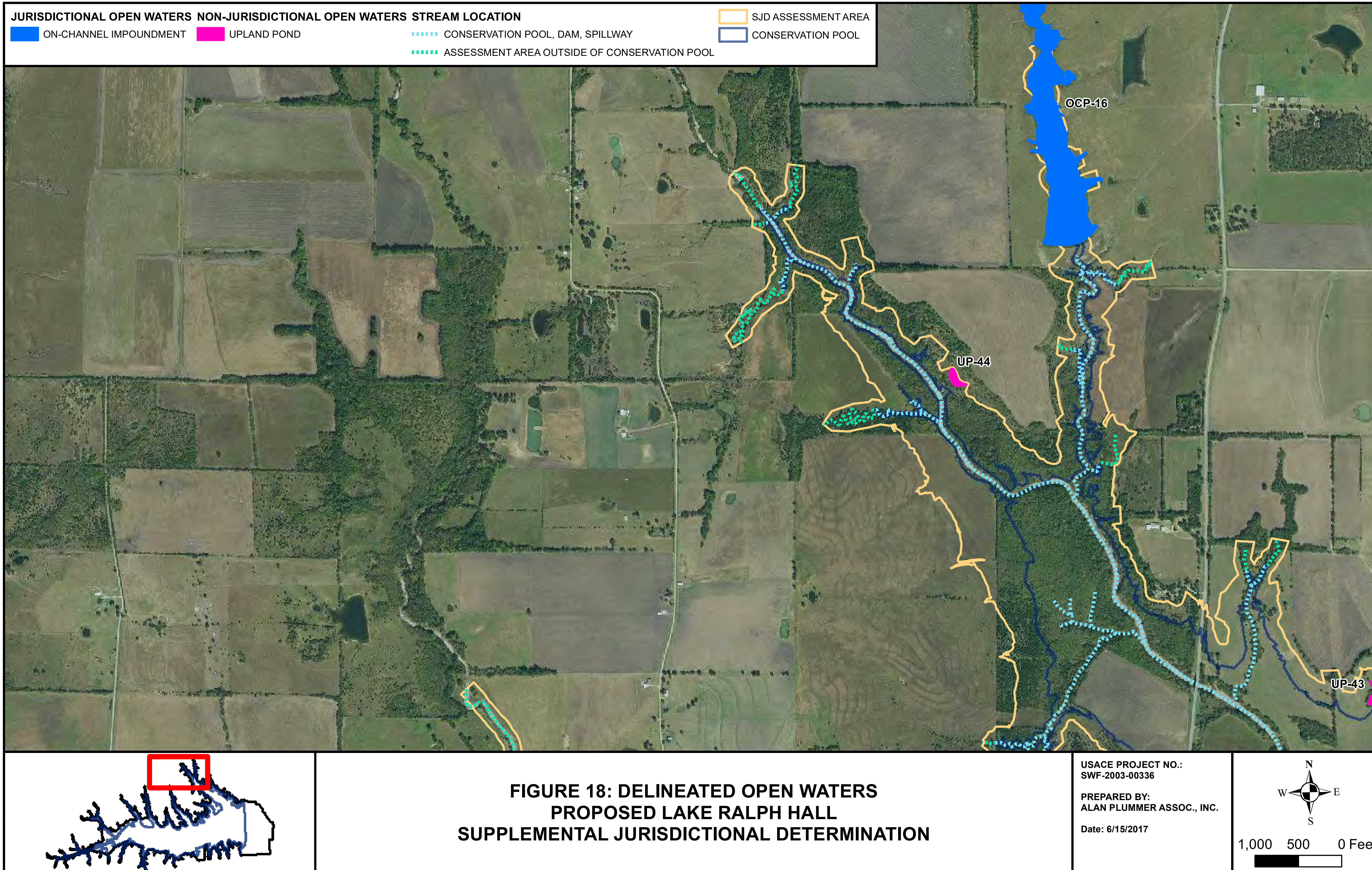

FIGURE 18: DELINEATED OPEN WATERS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017

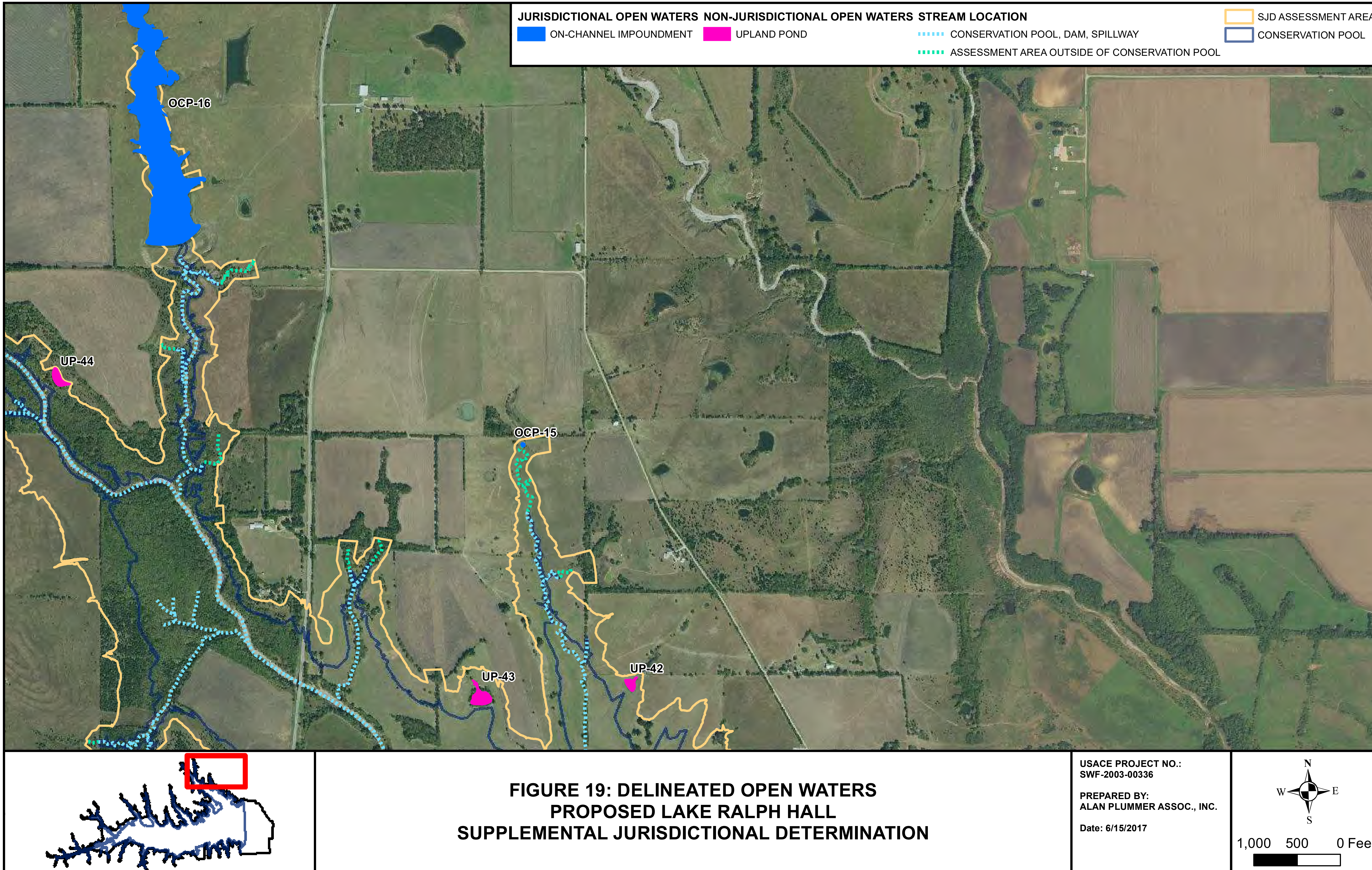

FIGURE 19: DELINEATED OPEN WATERS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017

MAPBOOK

DELINEATED ISOLATED FORESTED WETLANDS

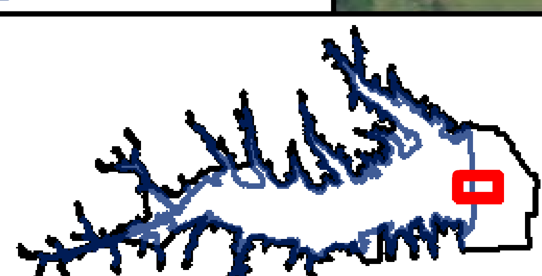

FIGURE 1: FORESTED WETLANDS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017

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290 145 0 Feet

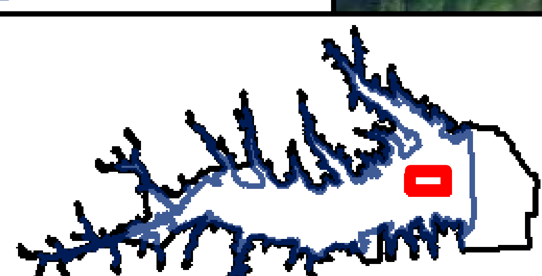

FIGURE 2: FORESTED WETLANDS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017

N
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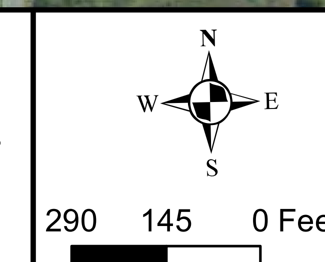
260 130 0 Feet

FIGURE 3: FORESTED WETLANDS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017



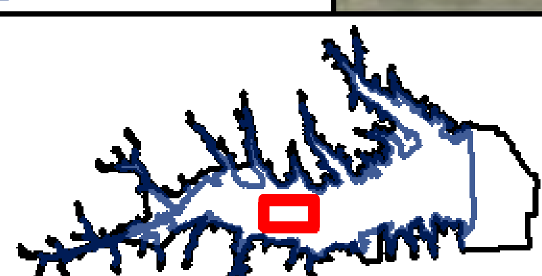


FIGURE 4: FORESTED WETLANDS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017

N
W E
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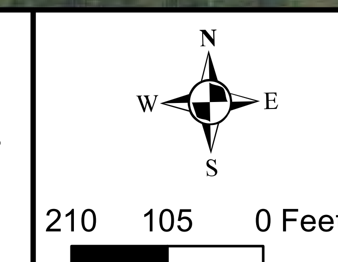
370 185 0 Feet

FIGURE 5: FORESTED WETLANDS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017



APPENDIX C

WETLAND DETERMINATION DATA FORMS

MAPBOOK

WETLAND DETERMINATION SAMPLING LOCATIONS

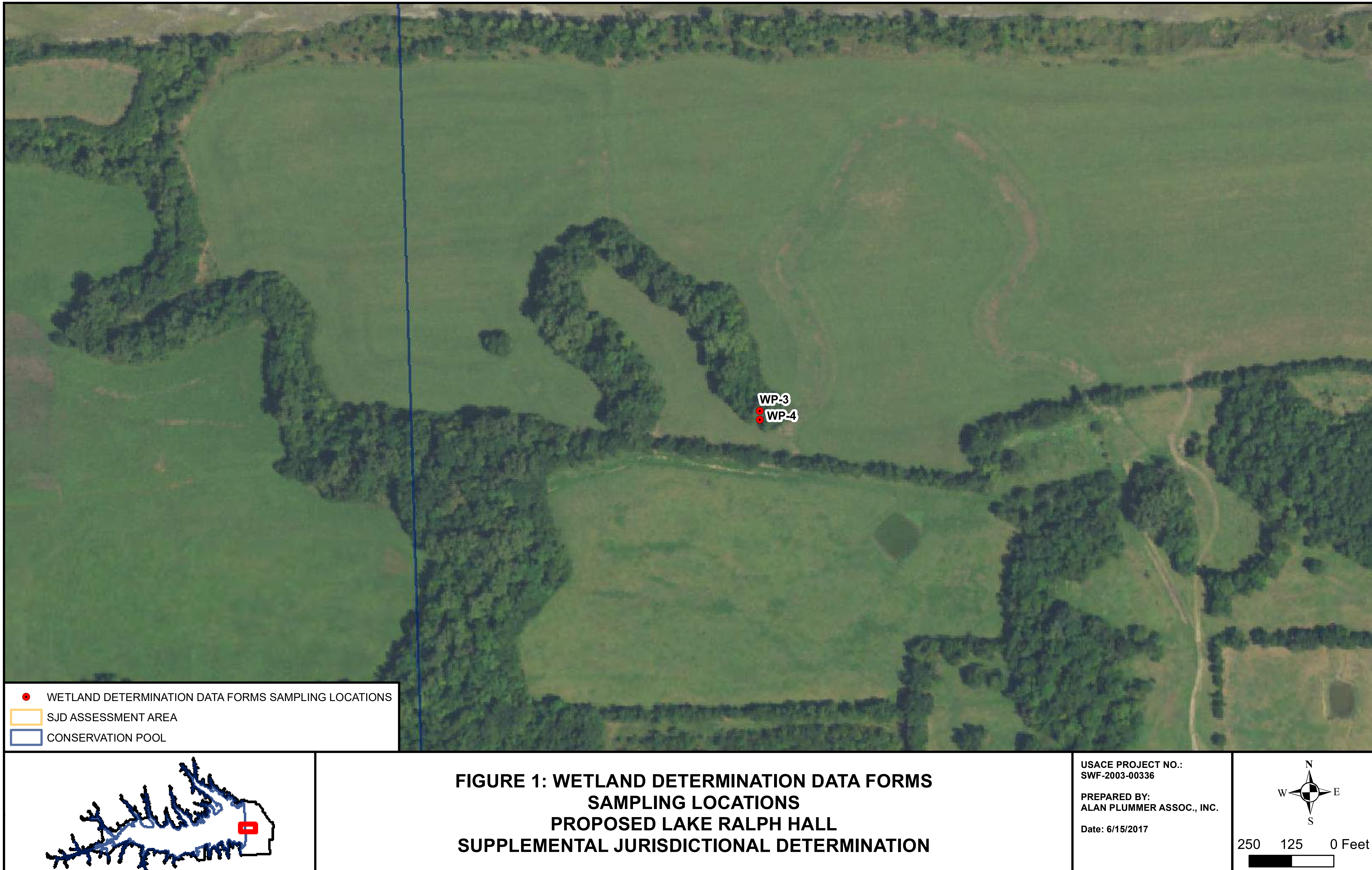


FIGURE 1: WETLAND DETERMINATION DATA FORMS SAMPLING LOCATIONS PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.: SWF-2003-00336

PREPARED BY: ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017

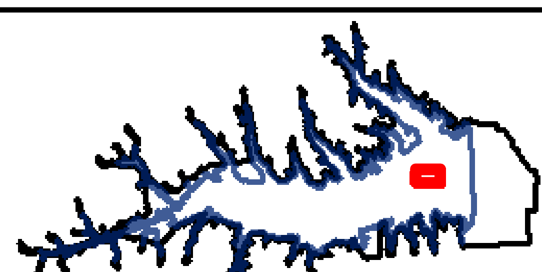


FIGURE 2: WETLAND DETERMINATION DATA FORMS SAMPLING LOCATIONS PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017

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W E
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180 90 0 Feet

WETLAND DETERMINATION DATA FORMS SAMPLING LOCATIONS
SJD ASSESSMENT AREA
CONSERVATION POOL

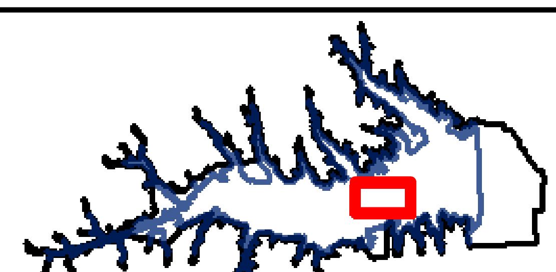


FIGURE 3: WETLAND DETERMINATION DATA FORMS SAMPLING LOCATIONS PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION

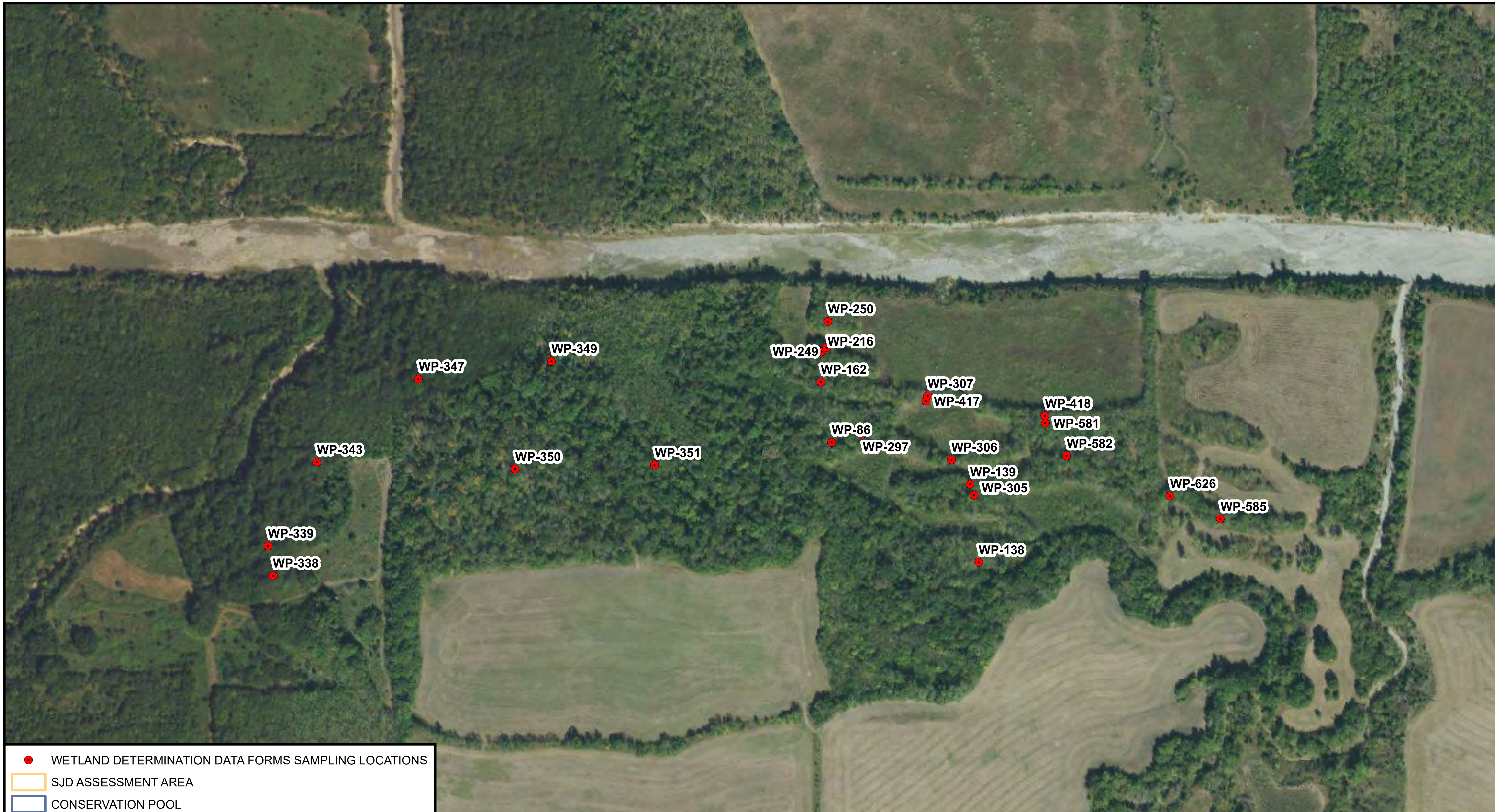
USACE PROJECT NO.: SWF-2003-00336

PREPARED BY: ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017

N W E S

410 205 0 Feet



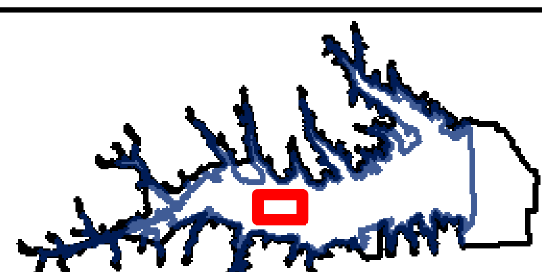


FIGURE 4: WETLAND DETERMINATION DATA FORMS SAMPLING LOCATIONS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017

N
W E
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330 165 0 Feet

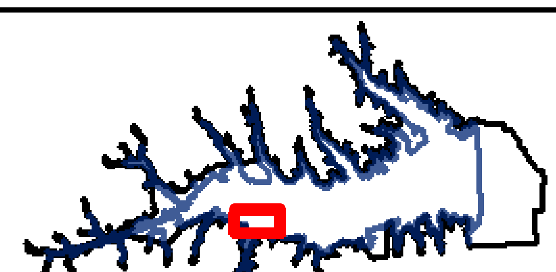
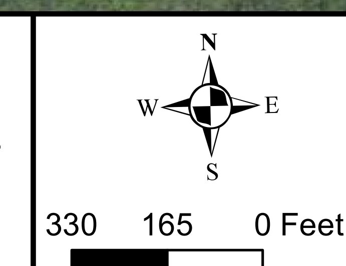


FIGURE 5: WETLAND DETERMINATION DATA FORMS SAMPLING LOCATIONS PROPOSED LAKE RALPH HALL SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.: SWF-2003-00336

PREPARED BY: ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017



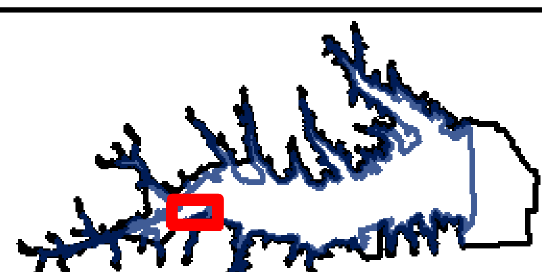


FIGURE 6: WETLAND DETERMINATION DATA FORMS SAMPLING LOCATIONS
PROPOSED LAKE RALPH HALL
SUPPLEMENTAL JURISDICTIONAL DETERMINATION

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 6/15/2017

N
W E
S

330 165 0 Feet

WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Lake Ralph Hall City/County: Ladonia/Fannin Sampling Date: 6/2/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP2

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45226 Long: -96.01460 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: none

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 X, 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:

Heavy storms the previous day; wooded area near North Sulphur River channel

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	20	Yes	FAC
2. Ulmus crassifolia	25	Yes	FAC
3. Celtis laevigata	45	Yes	FAC
4. Malcura pomifera	5	No	FACU
	95	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	5	No	FAC
2. Celtis laevigata	10	No	FAC
3. Ulmus crassifolia	5	No	FACU
4. Juniperus virginiana	3	No	UPL
5. Symphoricarpos orbiculatus	5	No	FACU
	28	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Elymus virginicus	50	Yes	FAC
2. Toxicodendron radicans	15	No	FACU
3. Torillis arvensis	10	No	UPL
4. Carex planostachys	25	Yes	UPL
5.			
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1. Toxicodendron radicans	5	No	FACU
2. Smilax sp.	2	No	FAC
	7	= Total Cover	
% Bare Ground in Herb Stratum 0			

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 X No ___

Remarks:

SOIL

Sampling Point: WP2

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/2	100					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** X

Remarks:

No redox features; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 5/30/17

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP3

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45907 Long: -95.89972 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: R4SBC

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 X, 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:

Forested wetland, part of the remnant North Sulphur River channel; not hyraulically or hydrologically connected to any stream channel

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	90	Yes	FAC
2. Populus deltoides	5	No	FAC
3.			
4.			
	95 = Total Cover		
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	5	No	FAC
2. Celtis laevigata	2	No	FAC
3. Carya ovata	1	No	FACU
4.			
5.			
	8 = Total Cover		
Herb Stratum (Plot size: 450 sq ft)			
1. Lolium multiflorum	5	No	UPL
2. Ranunculus hispidus	1	No	FACW
3. Torillis arvensis	1	No	UPL
4. Ambrosia trifida	1	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
	8 = Total Cover		
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	0 = Total Cover		
% Bare Ground in Herb Stratum 92			

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: 1 (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
- ☑ 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 X No ____

Remarks:

SOIL

Sampling Point: WP3

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
0-18	10 YR 3/1	90	10 YR 4/6	10	C	M	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** X **No** ______

Remarks:

Redox features observed; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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:

	Yes	No	Depth (inches)
Surface Water Present?		X	
Water Table Present?		X	
Saturation Present? (includes capillary fringe)		X	

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: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 5/30/17

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP4

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45900 Long: -95.89973 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: none

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 X, 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
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:

Outside of forested wetland from sampling point WP3

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	35	Yes	FAC
2. Ulmus americana	15	No	FAC
3.			
4.			
	50 = Total Cover		
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	5	No	FAC
2. Celtis laevigata	2	No	FAC
3. Carya ovata	1	No	FACU
4.			
5.			
	8 = Total Cover		
Herb Stratum (Plot size: 450sq ft)			
1. Lolium multiflorum	95	Yes	UPL
2. Setaria italica	2	No	FACU
3. Torillis arvensis	2	No	UPL
4. Amaranthus sp,	1	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

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: 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	0	x 2 = 0
FAC species	57	x 3 = 171
FACU species	4	x 4 = 16
UPL species	97	x 5 = 485
Column Totals:	158 (A)	672 (B)

Prevalence Index = B/A = 4.25

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** X

Remarks:

SOIL

Sampling Point: WP4

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/1	100					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 X

Remarks:

No redox features; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 6/2/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP5

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45254 Long: -96.01153 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: none

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 X, 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.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica / Ulmus americana	5/5	No/No	FAC/FAC
2. Ulmus crassifolia	15	Yes	FAC
3. Celtis laevigata	30	Yes	FAC
4. Maclura pomifera	15	Yes	FACU
	70	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Celtis laevigata	5	No	FAC
2. Maclura pomifera	10	No	FACU
3. Ulmus crassifolia	5	No	FAC
4.			
5.			
	20	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Elymus virginicus	10	No	FAC
2. Ptilimnium nutalli	15	Yes	FACW
3. Amaranthus tuberculatus	20	Yes	FAC
4. Viola missouriensis	5	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
	50	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1. Parthenocissus quinquefolia	5	No	FACU
2.			
	5	= Total Cover	
% Bare Ground in Herb Stratum 50			

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** X **No** ___

Remarks:

SOIL

Sampling Point: WP5

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
0-18	10 YR 3/1	100					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 X

Remarks:

No redox features; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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: Lake Ralph HallSupplemental JD City/County: Ladonia/Fannin Sampling Date: 6/2/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP6

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45295 Long: -96.01133 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: none

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 X, 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:

Heavy storms the previous day; forested wetland in wooded area near North Sulphur River channel

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	45	Yes	FAC
2. Ulmus crassifolia	15	Yes	FAC
3. Celtis laevigata	5	No	FAC
4.			
	65	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Cercis canadensis	10	No	UPL
2. Fraxinus pennsyvanica	20	Yes	FAC
3. Ulmus crassifolia	10	No	FAC
4.			
5.			
	40	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Elymus virginicus	5	No	FAC
2. Carex blanda	2	No	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	7	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1. Parthenocissus quinquefolia	5		FACU
2.			FAC
	5	= Total Cover	
% Bare Ground in Herb Stratum 93			

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: 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
- ☑ 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 X No ___

Remarks:

SOIL

Sampling Point: WP6

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 %	Type[1]	Loc[2]	Texture	Remarks
0-2	10 YR 3/1	100					Clay	
2-18	10 YR 3/1	95	10 YR 5/4	5	C	M	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** X **No** ______

Remarks:

Redox features present; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 X No ______ Depth (inches): <2

Water Table Present? Yes X No ______ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes X No ______ Depth (inches): 0

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: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 5/31/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP 11

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ____

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45325 Long: -95.94321 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: none

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 x, 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:

Remnant former North Sulphur River channel located within field west of SH 34; has been previously filled but still depressionally feature; not hydraulically or hydrologically connected to existing North Sulphur River channel

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Salix nigra	50	Yes	FACW
2.			
3.			
4.			
	50 = Total Cover		
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 450 sq ft)			
1. Lolium multiflorum	50	Yes	UPL
2. Rumex altissimus	10	No	FAC
3. Helianthus annuus	10	No	FACU
4. Setaria parviflora	10	No	FAC
5. Rudbeckia hirta	10	No	FACU
6.			
7.			
8.			
9.			
10.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	0 = Total Cover		
% Bare Ground in Herb Stratum 10			

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: 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	50	x 2 = 100
FAC species	20	x 3 = 60
FACU species	20	x 4 = 80
UPL species	50	x 5 = 250
Column Totals:	140 (A)	490 (B)

Prevalence Index = B/A = 3.5

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 x

Remarks:

Remnant channel located within field recently tilled

SOIL

Sampling Point: WP 11

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
0-18	10 YR 2/1	90					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 x

Remarks:

No redox features observed; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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:

Remnant former North Sulphur River channel west of SH 34; previously filled but still depressional

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 5/31/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP 12

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45361 Long: -95.94423 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: none

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 x, 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:

Remnant former North Sulphur River channel located within field west of SH 34; has been previously filled but still depressional feature; not hydraulically or hydrologically connected to existing North Sulphur River channel

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Salix nigra	40	Yes	FACW
2. Celtis laevigata	20	Yes	FAC
3.			
4.			
	60	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Lolium multiflorum	15	Yes	UPL
2. Sorghum halepense	15	Yes	FACU
3. Eleocharis palustris	15	Yes	OBL
4. Rumex altissimus	15	Yes	FAC
5. Xanthium strumarium	15	Yes	FAC
6.			
7.			
8.			
9.			
10.			
	75	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1. Nekemias arborea	5	No	FAC
2.			
	5	= Total Cover	
% Bare Ground in Herb Stratum 25			

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: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 71% (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 x No ____

Remarks:

Remnant channel located within field recently tilled.

SOIL

Sampling Point: WP 12

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 2/1	90					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** x

Remarks:

No redox features observed; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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:

	Yes	No	Depth (inches)
Surface Water Present?		x	
Water Table Present?		x	
Saturation Present? (includes capillary fringe)		x	

Wetland Hydrology Present? **Yes** ______ **No** x

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

Remarks:

Remnant former North Sulphur River channel west of SH 34; previously filled but still depressional

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Lake Ralph Hall Supplemental JD   City/County: Ladonia/Fannin   Sampling Date: 5/31/2017

Applicant/Owner: Upper Trinity Regional Water District   State: TX   Sampling Point: WP 13

Investigator(s): Jason Voight, Andrew Sample   Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley   Local relief (concave, convex, none): Concave   Slope (%): 0-1%

Subregion (LRR): Southwest Prairies   Lat: 33.45447   Long: -95.94407   Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded   NWI classification: none

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 x, 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 x	No ___	

Remarks:

Remnant former North Sulphur River channel located within field west of SH 34; has been previously filled but still depressionally feature; not hydraulically or hydrologically connected to existing North Sulphur River channel

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix nigra	50	Yes	FACW
2. Ulmus americana	30	Yes	FAC
3.			
4.			
	80	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Ulmus americana	10	No	FAC
2. Celtis laevigata	5	No	FAC
3.			
4.			
5.			
	15	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Lolium multiflorum	10	No	UPL
2. Rumex altissimus	5	No	FAC
3. Carex cros-corvi	15	Yes	OBL
4. Sorghum halepense	2	No	FACU
5. Toxicodendron radicans	3	No	FACU
6.			
7.			
8.			
9.			
10.			
	35	= Total Cover	
Woody Vine Stratum (Plot size: 450 ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 65

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: 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
- ☑ 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 x No ___

Remarks:

Remnant channel located within field where recent tillage occurred

SOIL

Sampling Point: WP 13

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 2/1	90					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 X

Remarks:

No redox features observed; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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:

Remnant former North Sulphur River channel west of SH 34; previously filled but still depressional

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 5/31/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP 14

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.4532 Long: -95.9451 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: none

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 x, 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 ___
Hydric Soil Present?	Yes ___	No x
Wetland Hydrology Present?	Yes ___	No x

Is the Sampled Area within a Wetland? **Yes** ___ **No** x

Remarks:

Outside edge of forested wetland within remnant former North Sulphur River channel; former channel not hydraulically or hydrologically connected to existing North Sulphur River channel

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Carya illinoinensis	90	Yes	FAC
2. Celtis laevigata	5	No	FAC
3. Ulmus americana	5	No	FAC
4.			
	100 = Total Cover		
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Celtis laevigata	10	Yes	FAC
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 450 sq ft)			
1. Lolium multiflorum	5	No	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5 = Total Cover		
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	0 = Total Cover		
% Bare Ground in Herb Stratum 95			

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: 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
- ☑ 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** x **No** ___

Remarks:

Outside edge of forested wetland within remnant former channel of North Sulphur River located within field west of SH 34

SOIL

Sampling Point: WP 14

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
0-18	10 YR 2/1	99	10 YR 4/6	1	C	M	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** x

Remarks:

Insufficient redox features observed; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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:

Outside edge of forested wetland within remnant former North Sulphur River channel west of SH 34

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 6/2/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP57

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45353 Long: -96.01078 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: none

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 X, 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:

Heavy storms the previous day; forested wetland in wooded area near North Sulphur River channel

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	85	Yes	FAC
2.			
3.			
4.			
	85 = Total Cover		
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsyvanica	10	No	FAC
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 450 sq ft)			
1. Ptilimnium nutalli	85	Yes	FACW
2. Carex blanda	5	No	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	0 = Total Cover		
% Bare Ground in Herb Stratum 10			

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: 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
- ☑ 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 X No ___

Remarks:

SOIL

Sampling Point: WP57

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 %	Type[1]	Loc[2]	Texture	Remarks
0-2	10 YR 3/2	100	10 YR 5/4	15	C	M	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 X No ______

Remarks:

Redox features present; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 X	No ____	Depth (inches): 3
Water Table Present?	Yes X	No ____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

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: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 6/2/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP58

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45353 Long: -96.01074 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: none

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 X, 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:

Outside of the forested wetland delineated in wp57

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	20	Yes	FAC
2. Celtis laevigata	60	Yes	FAC
3.			
4.			
	80 = Total Cover		
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsyvanica	10	No	FAC
2. Celtis laevigata	15	No	FAC
3.			
4.			
5.			
	25 = Total Cover		
Herb Stratum (Plot size: 450 sq ft)			
1. Amaranthus tuberculatus	70	Yes	FAC
2. Ptilimnium nutalli	5	No	FACW
3. Elymus virginicus	5	No	FAC
4. Carex blanda	5	No	FAC
5. Viola missouriensis	5	No	FACW
6.			
7.			
8.			
9.			
10.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	0 = Total Cover		
% Bare Ground in Herb Stratum 10			

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: 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
- ☑ 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 X No ___

Remarks:

SOIL

Sampling Point: WP58

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 %	Type[1]	Loc[2]	Texture	Remarks
0-2	10 YR 3/2	100					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 X

Remarks:

No redox features present; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 6/1/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP86

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45293 Long: -95.97781 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: PFO1A

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 X, 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 X No ____	

Remarks:

depressional area associated with former channel scar; not hydraulically connected to any existing stream channel

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	5	No	FAC
2. Celtis laevigata	30	Yes	FAC
3. Ulmus crassifolia/Ulmus americana	10/30	No/Yes	FAC/FAC
4. Quercus shumardii/Quercus macrocarpa	5/5	No/No	FAC/FACU
	85 = Total Cover		
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Quercus shumardii	10	No	FAC
2. Quercus macrocarpa	10	No	FACU
3. Celtis laevigata	15	No	FAC
4.			
5.			
	35 = Total Cover		
Herb Stratum (Plot size: 450 sq ft)			
1. Elymus virginicus	2	No	FAC
2. Viola missouriensis	2	No	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	4 = Total Cover		
Woody Vine Stratum (Plot size: 450 sq ft)			
1. Toxicodendron radicans	3	No	FACU
2. Smilax bona-nox/Campsis radicans	3	No	FAC/UFACU
	6 = Total Cover		
% Bare Ground in Herb Stratum 96			

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: 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
- ☑ 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 X No ____

Remarks:

SOIL

Sampling Point: WP86

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
0-1	10 YR 2/1	100					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** X

Remarks:

No redox features; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 6/2/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP133

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45045 Long: -96.01480 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: none

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 X, 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 ____
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:

Heavy storms the previous day; wooded area near North Sulphur River channel

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	20	Yes	FAC
2. Celtis laevigata	50	Yes	FAC
3. Maclura pomifera	15	No	FACU
4.			
	85	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Cornus drummondi	5	No	FAC
2. Celtis laevigata	15	No	FAC
3.			
4.			
5.			
	20	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Toxicodendron radicans	15	No	FACU
2. Carex planostachys	40	Yes	UPL
3. Elymus virginicus	40	Yes	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	95	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1. Lonicera japonica	5	No	FACU
2.			
	5	= Total Cover	
% Bare Ground in Herb Stratum 5			

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: 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
- ☑ 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** X **No** ____

Remarks:

SOIL

Sampling Point: WP133

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 %	Type[1]	Loc[2]	Texture	Remarks
0-2	10 YR 3/2	100					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** X

Remarks:

No redox features present; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 6/2/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP134

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ____

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.4464 Long: -95.99635 Datum: NAD83

Soil Map Unit Name: Normangee Clay Loam, 2 to 5 percent slopes, eroded NWI classification: none

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
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:

Heavy storms the previous day; wooded area near North Sulphur River channel

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus stellata	80	Yes	FACU
2.			
3.			
4.			
	80 = Total Cover		
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Quercus stellata	20	No	FAC
2. Celtis laevigata	15	No	FAC
3. Symphoricarpos orbiculatus	35	Yes	FACU
4. Ulmus crassifolia	10	No	
5.			
	80 = Total Cover		
Herb Stratum (Plot size: 450 sq ft)			
1. Toxicodendron radicans	15	No	FACU
2. Carex planostachys	40	Yes	UPL
3. Elymus virginicus	30	Yes	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	0 = Total Cover		
% Bare Ground in Herb Stratum 15			

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: 4 (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	____	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 X

Remarks:

SOIL

Sampling Point: WP134

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
0-18	10 YR 3/2	100					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** X

Remarks:

No redox features present

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 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: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 6/2/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP136

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45081 Long: -95.98882 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally flooded NWI classification: PFO1A

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 X, 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.

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

Remarks:

Heavy storms the day before; wooded area near North Sulphur River channel

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	30	Yes	FAC
2. Celtis laevigata/Quercus muehlenbergii	20/20	Yes/Yes	FAC/FAC
3. Ulmus crassifolia	10	Yes	FAC
4. Maclura pomifera	10	No	FACU
	90	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Celtis laevigata/Quercus muehlenbergii	15/10	No/No	FAC/FAC
2. Quercus stellata/Cercis canadensis	10/5	No/No	FACU/UPL
3. Juniperus virginiana	5	No	UPL
4. Ulmus crassifolia	10	No	FAC
5. Fraxinus pennsylvanica	20	No	FAC
	75	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Toxicodendron radicans	20	Yes	FACU
2. Viola missouriensis	5	No	FACW
3. Elymus virginicus	30	Yes	FAC
4. Daucus carota	10	No	UPL
5. Erigeron annuus	5	No	FAC
6.			
7.			
8.			
9.			
10.			
	70	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1. Parthenocissus quinquefolia	5	No	FACU
2.			
		= Total Cover	
% Bare Ground in Herb Stratum 30			

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: 83.3 (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 X No ___

Remarks:

SOIL

Sampling Point: WP136

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
0-18	10 YR 3/2	100					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** X

Remarks:

No redox features present; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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: Lake Ralph Hall Supplemental JD   City/County: Ladonia/Fannin   Sampling Date: 6/2/2017

Applicant/Owner: Upper Trinity Regional Water District   State: TX   Sampling Point: WP138

Investigator(s): Jason Voight, Andrew Sample   Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley   Local relief (concave, convex, none): Concave   Slope (%): 0-1%

Subregion (LRR): Southwest Prairies   Lat: 33.45169   Long: -95.9761   Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally flooded   NWI classification: none

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 X, 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:

Heavy storms the previous day; wooded area with channel scars; between remnant North Sulphur River channel and current North Sulphur River channel

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	30	Yes	FAC
2. Celtis laevigata	25	Yes	FAC
3. Ulmus americana	15	No	FAC
4. Morus rubra	10	No	FACU
	80 = Total Cover		
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Celtis laevigata	15	No	FAC
2. Fraxinus pennsylvanica	10	No	FAC
3. Ulmus americana	10	No	FAC
4.			
5.			
	35 = Total Cover		
Herb Stratum (Plot size: 450 sq ft)			
1. Carex planostachys	15	No	UPL
2. Ambrosia trifida	5	No	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	20 = Total Cover		
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	0 = Total Cover		
% Bare Ground in Herb Stratum 80			

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: 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
- ☑ 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 X No ___

Remarks:

SOIL

Sampling Point: WP138

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/2	100					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 X

Remarks:

Earthworms present; No redox features present; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 6/2/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP139

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45247 Long: -95.97617 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally flooded NWI classification: none

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 X, 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 ____
Hydric Soil Present?	Yes X	No ____
Wetland Hydrology Present?	Yes X	No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks:

Heavy storms the previous day; depressional area associated with former channel scar; not hydraulically connected to any existing stream channel

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	30	Yes	FAC
2. Celtis laevigata	10	No	FAC
3. Ulmus americana	20	Yes	FAC
4.			
	60	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Celtis laevigata	10	No	FAC
2. Fraxinus pennsylvanica	15	No	FAC
3. Ulmus americana	10	No	FAC
4.			
5.			
	35	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Carex blanda	5	No	FAC
2. Ambrosia trifida	10	No	FAC
3. Torilis arvensis	5	No	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	20	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	0	= Total Cover	
% Bare Ground in Herb Stratum 80			

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: 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
- ☑ 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 X No ____

Remarks:

SOIL

Sampling Point: WP139

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 %	Type[1]	Loc[2]	Texture	Remarks
0-1								Organic Matter
1-18	10 YR 2/1	95	10 YR 4/6	5	C	M	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 X No ______

Remarks:

Redox features present; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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: Lake Ralph Hall City/County: Ladonia/Fannin Sampling Date: 6/1/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP162

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45353 Long: -95.97792 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: none

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 X, 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 X	No ____	

Remarks:

depressional area associated with former channel scar; not hydraulically connected to any existing stream channel

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	10	No	FAC
2. Celtis laevigata	20	Yes	FAC
3. Ulmus crassifolia	50	Yes	FAC
4.			
	70	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Celtis laevigata	10	No	FAC
2. Ulmus crassifolia	10	No	FAC
3. Ilex decidua	10	No	FAC
4.			
5.			
	35	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Elymus virginicus	3	No	FAC
2. Viola missouriensis	5	No	FACW
3. Torilis arvensis	5	No	UPL
4. Ambrosia trifida	2	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
	15	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1. Toxicodendron radicans	3	No	FACU
2. Smilax bona-nox/Campsis radicans	3	No	FAC/UFACU
	6	= Total Cover	

% Bare Ground in Herb Stratum 85

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: 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
- ☑ 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 X No ____

Remarks:

SOIL

Sampling Point: WP162

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								Organic Matter
4-18	10 YR 2/1	100					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 X

Remarks:

No redox features; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark soil

HYDROLOGY

Wetland Hydrology Indicators:

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

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [x] 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)
- [x] 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: Lake Ralph Hall City/County: Ladonia/Fannin Sampling Date: 6/1/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP216

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45383 Long: -95.9779 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: none

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 X, 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 ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? **Yes** X **No** ___

Remarks:

depressional area associated with former channel scar; not hydraulically connected to any existing stream channel

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	20	Yes	FAC
2. Celtis laevigata	35	Yes	FAC
3. Ulmus crassifolia	20	Yes	FAC
4.			
	75	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Celtis laevigata	10	No	FAC
2. Ulmus crassifolia	5	No	FAC
3. Fraxinus pennsylvanica	10	No	FAC
4. Styphnolobium affine	5	No	UPL
5.			
	30	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Elymus virginicus	3	No	FAC
2. Toxicodendron radicans	5	No	FACU
3. Lolium perenne	2	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	10	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1. Toxicodendron radicans	5	No	FACU
2. Parthenocissus quinquefolia	5	No	FACU
	10	= Total Cover	

% Bare Ground in Herb Stratum 90

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: 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
- ☑ 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** X **No** ___

Remarks:

SOIL

Sampling Point: WP216

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 %	Type[1]	Loc[2]	Texture	Remarks
0-1								Organic Matter
1-3	10 YR 2/1	95	10 YR 4/6	5	C	M	Clay	Redox in upper portions
3-18	10 YR 2/1	100						

[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 X No ______

Remarks:

Redox features present ; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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: Lake Ralph Hall City/County: Ladonia/Fannin Sampling Date: 6/1/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP249

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45387 Long: -95.97784 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: none

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 X, 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.

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks:

depressional area associated with former channel scar; not hydraulically connected to any existing stream channel

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	10	No	FAC
2. Celtis laevigata	45	Yes	FAC
3. Ulmus crassifolia	40	Yes	FAC
4.			
	95	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Styphnolobium affine	10	No	UPL
2. Celtis laevigata	5	No	FAC
3.			
4.			
5.			
	15	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Elymus virginicus	80	Yes	FAC
2. Toxicodendron radicans	5	No	FACU
3. Parthenocissus quinquefolia	10	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	95	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1. Toxicodendron radicans	5	No	FACU
2. Parthenocissus quinquefolia	5	No	FACU
	10	= Total Cover	

% Bare Ground in Herb Stratum 5

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: 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
- ☑ 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 X No ___

Remarks:

SOIL

Sampling Point: WP249

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/1	100					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 X

Remarks:

No redox features; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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: Lake Ralph Hall City/County: Ladonia/Fannin Sampling Date: 6/1/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP250

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45413 Long: -95.97782 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: none

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 X, 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:

depressional area associated with former channel scar; not hydraulically connected to any existing stream channel

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	45	Yes	FAC
2. Celtis laevigata	25	Yes	FAC
3. Ulmus crassifolia	20	Yes	FAC
4.			
	90	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Celtis laevigata	5	No	FAC
2. Ulmus crassifolia	5	No	FAC
3. Fraxinus pennsylvanica	15	No	FAC
4. Ulmus americana	10	No	FAC
5.			
	35	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Ambrosia trifida	1	No	FAC
2. Styphnolobium affine	1	No	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	2	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
		= Total Cover	
% Bare Ground in Herb Stratum 98			

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: 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
- ☑ 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 X No ___

Remarks:

SOIL

Sampling Point: WP250

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
0-1								Organic Matter
1-3	10 YR 2/1	95	10 YR 4/6	5	C	M	Clay	Redox in upper portions
3-18	10 YR 2/1	100						

[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 X No ______

Remarks:

Redox features present; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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: Lake Ralph Hall City/County: Ladonia/Fannin Sampling Date: 6/1/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP297

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR): Southwest Prairies Lat: 33.453 Long: -95.97744 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: PFO1A

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 X, 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:

delineated during heavy storm; similar to wp86. depressional area associated with former channel scar; not hydraulically connected to any existing stream channel

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	45	Yes	FAC
2. Celtis laevigata	25	Yes	FAC
3. Ulmus crassifolia	20	Yes	FAC
4.			
	90	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Celtis laevigata	5	No	FAC
2. Ulmus crassifolia	5	No	FAC
3. Fraxinus pennsylvanica	15	No	FAC
4. Ulmus americana	10	No	FAC
5.			
	35	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Ambrosia trifida	1	No	FAC
2. Styphnolobium affine	1	No	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	2	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
		= Total Cover	
% Bare Ground in Herb Stratum 98			

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:	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
- ☑ 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 X No ______

Remarks:

SOIL

Sampling Point: WP297

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 2/1	95	10 YR 4/6	5	C	M	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 X No ___

Remarks:

Redox features present; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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: Lake Ralph Hall Supplemental JD　City/County: Ladonia/Fannin　Sampling Date: 6/2/2017

Applicant/Owner: Upper Trinity Regional Water District　State: TX　Sampling Point: WP305

Investigator(s): Jason Voight, Andrew Sample　Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley　Local relief (concave, convex, none): Concave　Slope (%): 0-1%

Subregion (LRR): Southwest Prairies　Lat: 33.45236　Long: -95.97613　Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally flooded　NWI classification: PFO1A

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 X, 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 ___
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes ___	No X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

Remarks:

Heavy storms the previous day; depressional area associated with former channel scar; not hydraulically connected to any existing stream channel

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	10	No	FAC
2. Celtis laevigata	35	Yes	FAC
3. Ulmus americana	50	Yes	FAC
4.			
	95	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Celtis laevigata	90	Yes	FAC
2. Quercus stellata	5	No	FACU
3.			
4.			
5.			
	95	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Toxicodendron radicans	5	No	FACU
2. Elymus virginicus	50	Yes	FAC
3. Viola missouriensis	5	No	FACW
4. Parthenocissus quinquefolia	5	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	65	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	0	= Total Cover	
% Bare Ground in Herb Stratum 35			

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:	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
- ☑ 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** X **No** ___

Remarks:

SOIL

Sampling Point: WP305

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 2/1	100					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 X

Remarks:

No redox features; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 6/2/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP306

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45272 Long: -95.97639 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally flooded NWI classification: none

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 X, 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 ____
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:

Heavy storms the previous day; depressional area associated with former channel scar; not hydraulically connected to any existing stream channel

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Acer negundo	35	Yes	FAC
2. Fraxinus pennsylvanica	35	Yes	FAC
3. Gleditsia triacanthos	10	No	FACU
4.			
5.			
	80 = Total Cover		
Herb Stratum (Plot size: 450 sq ft)			
1. Torilis arvensis	5	No	FAC
2. Elymus virginicus	20	Yes	FAC
3. Ambrosia trifida	40	Yes	FAC
4. Bignonia capreolata	5	No	FACU
5. Amaranthus tuberculatus	30	Yes	FAC
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	0 = Total Cover		
% Bare Ground in Herb Stratum 0			

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: 5 (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
- ☑ 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 X No ____

Remarks:

SOIL

Sampling Point: WP306

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/2	100					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 X

Remarks:

No redox features; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 6/2/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP307

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45337 Long: -95.97666 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally flooded NWI classification: none

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 X, 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:

Heavy storms the previous day; depressional area associated with former channel scar; not hydraulically connected to any existing stream channel

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	30	Yes	FAC
2. Celtis laevigata	15	Yes	FAC
3. Ulmus americana	30	Yes	FAC
4.			
	75	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Celtis laevigata	10	No	FAC
2. Fraxinus pennsylvanica	10	No	FAC
3. Ulmus americana	5	No	FAC
4. Juniperus virginiana	5	No	UPL
5.			
	30	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Toxicodendron radicans	3	No	FACU
2. Bignonia capreolata	2	No	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	0	= Total Cover	
% Bare Ground in Herb Stratum 95			

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: 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
- ☑ 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** X **No** ___

Remarks:

SOIL

Sampling Point: WP307

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
0-18	10 YR 3/1	95	10 YR 4/6	5	C	M	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 X No ______

Remarks:

Redox features present; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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: Lake Ralph Hall City/County: Ladonia/Fannin Sampling Date: 6/1/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP338

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45173 Long: -95.9845 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: none

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 X, 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 ____
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:

Delineated during heavy rainfall, former channel scar

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ulmus americana	20	Yes	FAC
2. Celtis laevigata	40	Yes	FAC
3. Fraxinus pennsylvanica	20	Yes	FAC
4.			
	80	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Celtis laevigata	15	No	FAC
2. Fraxinus pennsylvanica	5	No	FAC
3.			
4.			
5.			
	20	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Viola missouriensis	10	No	FACW
2. Elymus virginica	20	Yes	FAC
3. Toxicodendron radicans	5	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	35	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1. Toxicodendron radicans	5	No	FACU
2. Parthenocissus quinquefolia	5	No	FACU
	10	= Total Cover	

% Bare Ground in Herb Stratum 65

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: 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
- ☑ 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 X No ____

Remarks:

SOIL

Sampling Point: WP338

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/2	100					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** X

Remarks:

No redox. Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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: Lake Ralph Hall City/County: Ladonia/Fannin Sampling Date: 6/1/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP339

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45203 Long: -95.98456 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: none

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 X, 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 ___
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes ___	No X

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks:

Delineated during heavy rainfall; former channel scar

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Morus rubra	25	Yes	FACU
2. Fraxinus pennsylvanica	45	Yes	FAC
3.			
4.			
	70	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700sq ft)			
1. Celtis laevigata	10	No	FAC
2. Fraxinus pennsylvanica	20	Yes	FAC
3. Morus rubra	10	No	FACU
4.			
5.			
	40	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Elymus virginica	10	No	FAC
2. Toxicodendron radicans	5	No	FACU
3. Ambrosia trifida	20	Yes	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	35	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1. Toxicodendron radicans	5	No	FACU
2. Parthenocissus quinquefolia	5	No	FACU
	10	= Total Cover	

% Bare Ground in Herb Stratum 65

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: 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
- ☑ 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 X No ___

Remarks:

Buttressed tree trunks

SOIL

Sampling Point: WP339

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
0-12	10 YR 2/1	100					Clay	
12-18	10 YR 2/1	80	10 YR 5/2	20	C	M	Clay	depletions below 12 inches

[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 X

Remarks:

Does not fit any of the hydric soil indicators. Tinn Clay, occasionally flooded, is a nationally listed hydric soil. Naturally dark soils

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 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: Lake Ralph Hall   City/County: Ladonia/Fannin   Sampling Date: 6/1/2017

Applicant/Owner: Upper Trinity Regional Water District   State: TX   Sampling Point: WP343

Investigator(s): Jason Voight, Andrew Sample   Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley   Local relief (concave, convex, none): Concave   Slope (%): 0-1%

Subregion (LRR): Southwest Prairies   Lat: 33.45285   Long: -95.98395   Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded   NWI classification: PFO1A

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 X, 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.

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

Remarks:

Delineated during heavy rainfall. Old tributary to former N. Sulphur channel. Channel full of grass, no OHWM

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Celtis laevigata	30	Yes	FAC
2. Fraxinus pennsylvanica	40	Yes	FAC
3.			
4.			
= Total Cover	70		
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Celtis laevigata	5	No	FAC
2. Fraxinus pennsylvanica	20	Yes	FAC
3. Ulmus americana	1	No	FAC
4.			
5.			
= Total Cover	35		
Herb Stratum (Plot size: 450 sq ft)			
1. Elymus virginica	60	Yes	FAC
2. Carex blanda	5	No	FAC
3. Ambrosia trifida	15	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover	80		
Woody Vine Stratum (Plot size: 450 sq ft)			
1. Smilax bona-nox	5	No	FACU
2. Parthenocissus quinquefolia	5	No	FACU
= Total Cover	10		

% Bare Ground in Herb Stratum 20

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: 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
- ☑ 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 X No ___

Remarks:

SOIL

Sampling Point: WP343

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/2	100					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 X

Remarks:

No redox. Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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: Lake Ralph Hall City/County: Ladonia/Fannin Sampling Date: 6/1/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP347

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45366 Long: -95.98271 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: PFO1A

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 X, 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.

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

Remarks:

Delineated during heavy rainfall. Old tributary to former N. Sulphur channel. Channel full of grass, no OHWM

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Celtis laevigata	15	No	FAC
2. Fraxinus pennsylvanica	20	Yes	FAC
3. Ulmus americana	45	Yes	FAC
4.			
	80	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Celtis laevigata	5	No	FAC
2. Fraxinus pennsylvanica	10	No	FAC
3. Ulmus americana	25	Yes	FAC
4. Ulmus crassifolia	5	No	FAC
5.			
	45	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Ampelopsis arborea	15	No	FAC
2. Chasmanthium latifolium	70	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	85	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1. Smilax bona-nox	5	No	FACU
2. Parthenocissus quinquefolia	5	No	FACU
	10	= Total Cover	
% Bare Ground in Herb Stratum 15			

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: 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
- ☑ 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 X No ___

Remarks:

SOIL

Sampling Point: WP347

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/2	100					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** X

Remarks:

No redox. Tinn Clay, occasionally flooded, is a nationally listed 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 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: Lake Ralph Hall City/County: Ladonia/Fannin Sampling Date: 6/1/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP349

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.4538 Long: -95.98113 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: PFO1A

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 X, 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.

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?		X
Wetland Hydrology Present?	X	

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:

Delineated during heavy rainfall. Former N. Sulphur channel.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Celtis laevigata	40	Yes	FAC
2. Fraxinus pennsylvanica	30	Yes	FAC
3. Ulmus americana	20	Yes	FAC
4.			
	90	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Celtis laevigata	20	Yes	FAC
2.			
3.			
4.			
5.			
	20	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Viola missouriensis	5	No	FACW
2. Chasmanthium latifolium	30	Yes	FACU
3. Elymus virginicus	15	Yes	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	50	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1. Smilax bona-nox	5	No	FACU
2. Parthenocissus quinquefolia	5	No	FACU
	10	= Total Cover	

% Bare Ground in Herb Stratum 50

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 X No ____

Remarks:

SOIL

Sampling Point: WP349

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 %	Type[1]	Loc[2]	Texture	Remarks
0-8	10 YR 3/2	100					Clay	
8-18	10 YR 5/2	80					Clay	20 % Mottles of 10 YR 3/2

[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 X

Remarks:

Does not match any hydric soil indicators. Tinn Clay, occasionally flooded, is a nationally listed hydric soil. naturally dark soil; Earthworms and grubs present in soil core.

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 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: Lake Ralph Hall City/County: Ladonia/Fannin Sampling Date: 6/1/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP350

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45273 Long: -95.98159 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: PFO1A

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 X, 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 X	No ___	

Remarks:

Delineated during heavy rainfall.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Celtis laevigata	5	No	FAC
2. Fraxinus pennsylvanica	10	No	FAC
3. Ulmus americana	10	No	FAC
4. Ulmus crassifolia	35	Yes	FAC
	60	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Celtis laevigata	20	Yes	FAC
2. Fraxinus pennsylvanica	15	Yes	FAC
3. Symphoricarpos orbiculatus	15	Yes	FACU
4.			
5.			
	50	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Amaranthus tuberculatus	25	Yes	FAC
2. Torilis arvensis	5	No	UPL
3. Elymus virginicus	15	Yes	FAC
4. Ambrosia trifida	5	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
	50	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 50

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 X No ___

Remarks:

SOIL

Sampling Point: WP350

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/1	100					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 X

Remarks:

No redox. Tinn Clay, occasionally flooded, is a nationally listed hydric soil; naturally dark 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 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: Lake Ralph Hall City/County: Ladonia/Fannin Sampling Date: 6/1/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP351

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45274 Long: -95.97993 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: PFO1A

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 X, 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 ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? **Yes** X **No** ___

Remarks:

Former North Sulphur channel acting as an active channel

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	15	No	FAC
2. Acer negundo	75	Yes	FAC
3.			
4.			
	90 = Total Cover		
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Acer negundo	15	No	FAC
2. Ulmus americana	5	No	FAC
3.			
4.			
5.			
	20 = Total Cover		
Herb Stratum (Plot size: 450 sq ft)			
1. Carex blanda	2	No	FAC
2. Elymus virginica	5	No	FAC
3. Toxicodendron radicans	2	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	9 = Total Cover		
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	___ = Total Cover		
% Bare Ground in Herb Stratum 91			

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: 1 (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
- ☑ 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** X **No** ___

Remarks:

SOIL

Sampling Point: WP351

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 %	Type[1]	Loc[2]	Texture	Remarks
0-8	10 YR 3/1	100						
8-18	10 YR 4/2	95	10 YR 4/6	5	C	M	Clay	Redox past 8 inches

[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 X No ____

Remarks:

Redox features present; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 5/31/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP 404

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.46224 Long: -95.91757 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: PFO1A

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 X, 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
Hydric Soil Present?	Yes ___	No x
Wetland Hydrology Present?	Yes x	No ___

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	95	Yes	FAC
2. Maclura pomifera	2	No	FACU
3. Celtis laevigata	2	No	FAC
4.			
	99 = Total Cover		
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	5	No	FAC
2. Celtis laevigata	5	No	FAC
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 450 sq ft)			
1. Lolium multiflorum	50	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	50 = Total Cover		
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	0 = Total Cover		
% Bare Ground in Herb Stratum 50			

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: 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	0	x 2 = 0
FAC species	107	x 3 = 321
FACU species	2	x 4 = 8
UPL species	50	x 5 = 250
Column Totals:	159 (A)	579 (B)

Prevalence Index = B/A = 3.64

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 X

Remarks:

SOIL

Sampling Point: WP 404

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/1	90					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** X

Remarks:

No redox features; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark soils

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 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:

outside edge of former channel scar

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 5/31/17

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP 405

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.46255 Long: -95.91884 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: PFO1A

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 x, 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:

depressional area associated with former channel scar; not hydraulically connected to any existing stream channel

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	65	Yes	FAC
2. Celtis laevigata	5	No	FAC
3.			
4.			
	70	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	5	No	FAC
2. Maclura pomifera	2	No	FACU
3.			
4.			
5.			
	7	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Carex crus-corvi	70	Yes	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	70	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	0	= Total Cover	
% Bare Ground in Herb Stratum 30			

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: 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
- ☐ 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** X **No** ___

Remarks:

SOIL

Sampling Point: WP405

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
0-18	10 YR 3/1	90	10 YR 4/6	10	C	M	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 X No ____

Remarks:

Redox features present; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 X Depth (inches): ____

Water Table Present? Yes ____ No x 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:

Former channel scar forms isolated depression.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 5/31/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP 406

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.46259 Long: -95.91885 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: PFO1A

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 X, 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 ___
Hydric Soil Present?	Yes ___	No x
Wetland Hydrology Present?	Yes ___	No x

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	40	Yes	FAC
2. Celtis laevigata	20	Yes	FAC
3. Maclura pomifera	5	No	FACU
4. Ulmus crassifolia	5	No	FAC
	70	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Maclura pomifera	5	No	FACU
2.			
3.			
4.			
5.			
	5	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Viola missouriensis	5	No	FACW
2. Carex planostachys	90	Yes	UPL
3. Elymus virginicus	5	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1. Parthenocissus quinquefolia	2	No	FACU
2. Smilax bona-nox	2	No	FACU
	4	= Total Cover	

% Bare Ground in Herb Stratum 0%

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: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	5	x 2 = 10
FAC species	70	x 3 = 210
FACU species	14	x 4 = 56
UPL species	90	x 5 = 450
Column Totals:	179 (A)	726 (B)

Prevalence Index = B/A = 4.06

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** x **No** ___

Remarks:

SOIL

Sampling Point: WP406

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/1	100					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 X

Remarks:

No redox features; isolated former channel scar forms closed depression; naturally dark 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 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:

No hydrologic indicators observed

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 6/2/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP417

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45331 Long: -95.97668 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally flooded NWI classification: none

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 X, 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.

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

Remarks:

Heavy storms the previous day; outside of forested wetland delineated at wp307

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	10	No	FAC
2. Ulmus americana	5	No	FAC
3.			
4.			
	15 = Total Cover		
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Ulmus americana	5	No	FAC
2. Juniperus virginiana	5	No	FAC
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 450 sq ft)			
1. Toxicodendron radicans	5	No	FACU
2. Bignonia capreolata	5	No	FAC
3. Ambrosia trifida	30	Yes	FAC
4. Amaranthus tuberculatus	10	No	FAC
5. Torilis arvensis	10	No	FAC
6. Elymus virginicus	20	Yes	FAC
7. Erigeron annuus	10	No	FACU
8.			
9.			
10.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 10

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: 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
- ☑ 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** X **No** ___

Remarks:

SOIL

Sampling Point: WP417

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
0-18	10 YR 3/1	100					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** X

Remarks:

No redox features

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 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: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 6/2/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP418

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45314 Long: -95.97526 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally flooded NWI classification: none

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 X, 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:

Heavy storms the previous day; depressional area associated with former channel scar; not hydraulically connected to any existing stream channel

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	65	Yes	FAC
2. Ulmus americana	20	Yes	FAC
3. Celtis laevigata	10	No	FAC
4.			
	95	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Ulmus americana	5	No	FAC
2. Celtis laevigata	5	No	FAC
3. Fraxinus pennsylvanica			
4.			
5.			
	10	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Elymus virginicus	1	No	FAC
2. Bignonia capreolata	2	No	FAC
3. Ambrosia trifida	5	No	FAC
4. Torilis arvensis	2	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
	10	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	0	= Total Cover	
% Bare Ground in Herb Stratum 90			

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: 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
- ☑ 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 X No ___

Remarks:

SOIL

Sampling Point: WP418

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/1	95	10 YR 4/6	5	C	M	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 X No ______

Remarks:

Redox features present; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 5/31/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP 474

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45216 Long: -95.94622 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: PFO1A

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 x , 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 ___
Hydric Soil Present?	Yes ___	No x
Wetland Hydrology Present?	Yes x	No ___

Is the Sampled Area within a Wetland? **Yes** ___ **No** x

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer negundo	50	Yes	FAC
2. Ulmus americana	45	Yes	FAC
3.			
4.			
	95 = Total Cover		
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Acer negundo	10	Yes	FAC
2. Morus rubra	10	Yes	FACU
3.			
4.			
5.			
	20 = Total Cover		
Herb Stratum (Plot size: 450 sq ft)			
1. Lolium multiflorum	2	No	UPL
2. Carex crus-corvi	2	No	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	4 = Total Cover		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
	___ = Total Cover		

% Bare Ground in Herb Stratum 96

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: 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
- ☑ 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** x **No** ___

Remarks:

Up between remnant channels of former North Sulphur River; not hydraulically or hydrologically connected to existing main channel.

SOIL

Sampling Point: WP 474

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 2/1	99					Clay	
12-18			10 YR 4/6	1	C	M	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 X

Remarks:

Insufficient redox features observed; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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:

between meander bends of impounded section of remnant former North Sulphur River channel

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 5/31/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP 482

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.46276 Long: -95.91907 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: PFO1A

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 x, 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 ___
Hydric Soil Present?	Yes x	No ___
Wetland Hydrology Present?	Yes ___	No x

Is the Sampled Area within a Wetland? Yes ___ No x

Remarks:

depressional area associated with former channel scar; not hydraulically connected to any existing stream channel

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Celtis laevigata	10	No	FAC
2. Ulmus crassifolia	50	Yes	FAC
3. Fraxinus pennsylvanica	20	Yes	FAC
4. Maclura pomifera	10	No	FACU
	90	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	5	No	FAC
2. Gleditsia triacanthos	5	No	FAC
3. Ulmus crassifolia	5	No	FAC
4. Celtis laevigata	5	No	FAC
5.			
	20	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Carex cherokeensis	15	Yes	FACW
2. Ptilimnium nuttallii	5	No	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	20	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 80%

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: 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
- ☑ 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 X No ___

Remarks:

SOIL

Sampling Point: WP 482

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 %	Type[1]	Loc[2]	Texture	Remarks
0-4	10 YR 3/1	100						
4-18	10 YR 3/1	98	10 YR 4/6	2	C	M	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** x **No** ______

Remarks:

Redox features present; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark soils

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 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:

insufficient hydrological indicators observed

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 5/31/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP 512

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.46313 Long: -95.91921 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: PFO1A

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 x, 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:

depressional area associated with former channel scar; not hydraulically connected to any stream channel

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Quercus macrocarpa	10	No	FACU
2. Ulmus crassifolia	60	Yes	FAC
3. Fraxinus pennsylvanica	10	No	FAC
4.			
	80 = Total Cover		
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Ulmus crassifolia	5	No	FAC
2.			
3.			
4.			
5.			
	5 = Total Cover		
Herb Stratum (Plot size: 450 sq ft)			
1. Carex crus-corvi	8	No	OBL
2. Ptilimnium nuttallii	5	No	FACW
3. Amaranthus tuberculatus	5	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	18 = Total Cover		
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	0 = Total Cover		
% Bare Ground in Herb Stratum 82			

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: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	8	x 1 = 8
FACW species	5	x 2 = 10
FAC species	80	x 3 = 240
FACU species	10	x 4 = 40
UPL species		x 5 =
Column Totals:	103 (A)	298 (B)

Prevalence Index = B/A = 2.89

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** X **No** ___

Remarks:

SOIL

Sampling Point: WP512

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/1	98					Clay	
4-18			10YR 4/6	2	C	M	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** X **No** ______

Remarks:

Redox features observed; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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:

depressional area associated with former channel scar

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 6/2/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP581

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45307 Long: -95.97526 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally flooded NWI classification: none

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 X, 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:

Heavy storms the previous day; outside the forested wetland delineated at wp418

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	10	No	FAC
2. Ulmus americana	35	Yes	FAC
3. Celtis laevigata	35	Yes	FAC
4.			
	80	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Ulmus americana	5	No	FAC
2. Celtis laevigata	10	No	FAC
3. Fraxinus pennsylvanica	20	Yes	FAC
4. Quercus muehlenbergii	5	No	FAC
5. Acer negundo	5	No	FAC
	45	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Elymus virginicus	35	Yes	FAC
2. Torilis arvensis	10	No	UPL
3. Ambrosia trifida	10	No	FAC
4. Parthenocissus quinquefolia	10	No	FACU
5. Toxicodendron radicans	30	Yes	FACU
6.			
7.			
8.			
9.			
10.			
	95	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1. Parthenocissus quinquefolia	5	No	FACU
2.	5	No	FAC
	10	= Total Cover	

% Bare Ground in Herb Stratum 5

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 X No ___

Remarks:

SOIL

Sampling Point: WP581

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/1	100					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 X

Remarks:

No redox features; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 6/2/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP582

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45273 Long: -95.97502 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally flooded NWI classification: PFO1A

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 X, 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:

Heavy storms the previous day; depressional area associated with former channel scar; not hydraulically connected to any existing stream channel

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	10	No	FAC
2. Celtis laevigata	60	Yes	FAC
3.			
4.			
	70	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Celtis laevigata	5	No	FAC
2.			
3.			
4.			
5.			
	5	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Elymus virginicus	5	No	FAC
2. Amaranthus tuberculatus	8	No	FAC
3. Ambrosia trifida	10	No	FAC
4. Campsis radicans	20	Yes	FACU
5. Toxicodendron radicans	20	Yes	FACU
6. Erigeron annuus	2	No	FACU
7.			
8.			
9.			
10.			
	65	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1. Parthenocissus quinquefolia	5	No	FACU
2.	5	No	FAC
	10	= Total Cover	
% Bare Ground in Herb Stratum 35			

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: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	0	x 2 = 0
FAC species	105	x 3 = 315
FACU species	45	x 4 = 180
UPL species	0	x 5 = 0
Column Totals:	150 (A)	495 (B)

Prevalence Index = B/A = 3.3

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 X

Remarks:

SOIL

Sampling Point: WP582

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 2/1	100					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 X

Remarks:

No redox features; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 6/2/2017
Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP585
Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______
Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%
Subregion (LRR): Southwest Prairies Lat: 33.45207 Long: -95.9732 Datum: NAD83
Soil Map Unit Name: Tinn Clay, Occasionally flooded NWI classification: none
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 X, 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:
Heavy storms the previous day; depressional area associated with former channel scar; not hydraulically connected to any existing stream channel

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	50	Yes	FAC
2. Celtis laevigata	15	Yes	FAC
3. Ulmus crassifolia	5	No	FAC
4.			
	70 = Total Cover		
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Celtis laevigata	5	No	FAC
2. Fraxinus pennsylvanica			
3. Ulmus crassifolia			
4.			
5.			
	5 = Total Cover		
Herb Stratum (Plot size: 450 sq ft)			
1. Toxicodendron radicans	5	No	FACU
2. Viola missouriensis	2	No	FACW
3. Ambrosia trifida	8	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	15 = Total Cover		
Woody Vine Stratum (Plot size: 450 sq ft)			
1. Toxicodendron radicans/Campsis radicans	5/5	No	FACU/FACU
2. Smilax bona-nox	5	No	FACU
	15 = Total Cover		
% Bare Ground in Herb Stratum 85			

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: 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
- ☑ 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 X No ___

Remarks:

SOIL

Sampling Point: WP585

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 2/1	95	10 YR 4/6	5	C	M	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 X No ______

Remarks:

Redox features present; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 5/31/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP 624

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.46309 Long: -95.91971 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: PFO1A

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 x, 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:

depressional area associated with former channel scar; not hydraulically connected to any existing stream channel

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	65	Yes	FAC
2. Celtis laevigata	5	No	FAC
3. Ulmus crassifolia	10	No	FAC
4.			
	80	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Ulmus crassifolia	5	No	FAC
2. Celtis laevigata	5	No	FAC
3.			
4.			
5.			
	10	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Carex crus-corvi	12	No	OBL
2. Ptilimnium nuttallii	8	No	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	20	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	0	= Total Cover	
% Bare Ground in Herb Stratum 80			

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: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	12	x 1 = 12
FACW species	8	x 2 = 16
FAC species	90	x 3 = 270
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	110 (A)	298 (B)

Prevalence Index = B/A = 2.71

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 x No ___

Remarks:

SOIL

Sampling Point: WP 624

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 %	Type[1]	Loc[2]	Texture	Remarks
0-1							Organic	surface layer of organic material
1-4	10 YR 3/1	100					Clay	
4-18	10 YR 3/1	98	10 YR 4/6	2	C	M	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** X **No** ____

Remarks:

Redox features observed; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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:

depressional area associated with former channel scar

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 6/2/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP626

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45231 Long: -95.9738 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally flooded NWI classification: none

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 X, 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 ____
Hydric Soil Present?	Yes X	No ____
Wetland Hydrology Present?	Yes X	No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks:

Heavy storms the previous day; depressional area associated with former channel scar; not hydraulically connected to any existing stream channel

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	45	Yes	FAC
2. Celtis laevigata	20	Yes	FAC
3. Ulmus crassifolia	5	No	FAC
4.			
	70 = Total Cover		
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Celtis laevigata	5	No	FAC
2. Fraxinus pennsylvanica	5	No	FAC
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 450 sq ft)			
1. Toxicodendron radicans	5	No	FACU
2. Viola missouriensis	10	No	FACW
3. Ambrosia trifida	3	No	FAC
4. Elymus virginicus	2	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
	20 = Total Cover		
Woody Vine Stratum (Plot size: 450 sq ft)			
1. Toxicodendron radicans	5	No	FACU
2. Smilax bona-nox	5	No	FACU
	10 = Total Cover		
% Bare Ground in Herb Stratum 80			

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: 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
- ☑ 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 X No ____

Remarks:

SOIL

Sampling Point: WP626

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 2/1	95	10 YR 4/6	5	C	M	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 X No ______

Remarks:

Redox features present; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 5/31/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP 709

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.46273 Long: -95.91951 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: PFO1A

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 x, 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 ___
Hydric Soil Present?	Yes x	No ___
Wetland Hydrology Present?	Yes x	No ___

Is the Sampled Area within a Wetland? **Yes** x **No** ___

Remarks:

depressional area associated with former channel scar; not hydraulically connected to any existing stream channel

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	30	Yes	FAC
2. Ulmus crassifolia	25	Yes	FAC
3. Celtis laevigata	15	No	FAC
4. Maclura pomifera	10	No	FACU
	80	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	2	No	FAC
2. Maclura pomifera	5	No	FACU
3.			
4.			
5.			
	7	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Carex crus-corvi	10	No	OBL
2. Viola missouriensis	2	No	FACW
3. Ptilimnium nuttallii	3	No	FACW
4. Amaranthus tuberculatus	5	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
	20	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 80%

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: 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	10	x 1 = 10
FACW species	5	x 2 = 10
FAC species	77	x 3 = 231
FACU species	15	x 4 = 60
UPL species		x 5 =
Column Totals:	107 (A)	311 (B)

Prevalence Index = B/A = 2.91

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** x **No** ___

Remarks:

SOIL

Sampling Point: WP 709

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/1	80	10 YR 4/6	20	C	M	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 x No ____

Remarks:
Redox features prominent; Tinn clay, occasionally flooded is nationally listed hydric soil, naturally dark 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 x No ____ Depth (inches): 2 inches
Water Table Present? Yes ____ No x 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:
depressional area associated with former channel scar

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 5/31/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP 801

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.4627 Long: -95.92014 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: PFO1A

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 x, 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 ___
Hydric Soil Present?	Yes x	No ___
Wetland Hydrology Present?	Yes x	No ___

Is the Sampled Area within a Wetland? **Yes** x **No** ___

Remarks:

depressional area associated with former channel scar; not hydraulically connected to any existing stream channel

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ulmus crassifolia	60	Yes	FAC
2. Fraxinus pennsylvanica	5	No	FAC
3. Maclura pomifera	5	No	FACU
4. Celtis laevigata	2	No	FAC
	72	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	2	No	FAC
2. Ulmus crassifolia	2	No	FAC
3. Gleditsia triacanthos	2	No	FAC
4. Maclura pomifera	2	No	FACU
5.			
	8	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Carex crus-corvi	70	Yes	OBL
2. Ptilimnium nuttalli	10	No	FACW
3. Amaranthus tuberculatus	5	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	85	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1. Campsis radicans	2	No	FACU
2.			
	2	= Total Cover	

% Bare Ground in Herb Stratum 15

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: 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	70	x 1 =	70
FACW species	10	x 2 =	20
FAC species	78	x 3 =	234
FACU species	9	x 4 =	36
UPL species		x 5 =	
Column Totals:	167 (A)		360 (B)

Prevalence Index = B/A = 2.16

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** x **No** ___

Remarks:

SOIL

Sampling Point: WP 801

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/1	98	10 YR 4/6	2	C	M	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 X No ____

Remarks:

Redox features observed; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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:

depressional area associated with former channel scar

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 5/31/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP 857

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.46282 Long: -95.92099 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: PFO1A

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 x, 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:

depressional area associated with former channel scar; not hydraulically connected to any existing stream channel

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	50	Yes	FAC
2. Ulmus crassifolia	10	No	FAC
3. Celtis laevigata	10	No	FAC
4. Maclura pomifera	5	No	FACU
	75	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	5	No	FAC
2.			
3.			
4.			
5.			
	5	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Carex crus-corvi	5	No	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1. Campsis radicans	2	No	FACU
2.			
	2	= Total Cover	

% Bare Ground in Herb Stratum 95

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:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	5	x 1 = 5
FACW species	0	x 2 = 0
FAC species	75	x 3 = 225
FACU species	7	x 4 = 28
UPL species	0	x 5 = 0
Column Totals:	87 (A)	258 (B)

Prevalence Index = B/A = 2.97

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 x No ___

Remarks:

SOIL

Sampling Point: WP 857

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
0-18	10 YR 3/1	90	10 YR 4/6	10	C	M	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** x **No** ______

Remarks:

Redox features observed; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 x	No ______	Depth (inches): 2
Water Table Present?	Yes ______	No x	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:

depressional area associated with former channel scar

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 5/31/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP 1146

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.4625 Long: -95.92113 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: PFO1A

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 X, 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 ___
Hydric Soil Present?	Yes x	No ___
Wetland Hydrology Present?	Yes x	No ___

Is the Sampled Area within a Wetland? **Yes** x **No** ___

Remarks:

depressional area associated with former channel scar; not hydraulically connected to any existing stream channel

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	60	Yes	FAC
2. Maclura pomifera	10	No	FACU
3. Ulmus crassifolia	15	No	FAC
4. Celtis laevigata	5	No	FAC
	90	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	5	No	FAC
2. Celtis laevigata	2	No	FAC
3.			
4.			
5.			
	7	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Carex crus-corvi	10	No	OBL
2. Amaranthus tuberculatus	5	No	FAC
3. Chasmanthium latifolium	2	No	FACU
4. Viola missouriensis	2	No	FACW
5. Lemna minor	15	Yes	OBL
6.			
7.			
8.			
9.			
10.			
	34	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	0	= Total Cover	
% Bare Ground in Herb Stratum 66%			

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: 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	25	x 1 = 25
FACW species	2	x 2 = 4
FAC species	92	x 3 = 276
FACU species	12	x 4 = 48
UPL species	0	x 5 = 0
Column Totals:	131 (A)	353 (B)

Prevalence Index = B/A = 2.69

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** X **No** ___

Remarks:

SOIL

Sampling Point: WP 1146

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
0-18	10 YR 3/1	80	10 YR 4/6	20	C	M	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 x No ______

Remarks:

Redox features observed; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 x No ______ Depth (inches): 2 inches

Water Table Present? Yes ______ No x 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:

depressional area associated with former channel scar

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 5/31/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP 1334

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.4619 Long: -95.92107 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: PFO1A

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 X, 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 ___
Hydric Soil Present?	Yes x	No ___
Wetland Hydrology Present?	Yes x	No ___

Is the Sampled Area within a Wetland? Yes x No ___

Remarks:

depressional area associated with former channel scar; not hydraulically connected to any existing stream channel

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	30	Yes	FAC
2. Celtis laevigata	25	Yes	FAC
3. Ulmus crassifolia	20	Yes	FAC
4. Maclura pomifera	5	No	FACU
	80	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Celtis laevigata	10	No	FAC
2. Fraxinus pennsylvanica	10	No	FAC
3. Ulmus crassifolia	10	No	FAC
4.			
5.			
	30	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Carex crus-corvi	15	No	OBL
2. Amaranthus tuberculatus	5	No	FAC
3. Viola missouriensis	2	No	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	22	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 78

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: 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	15	x 1 =	15
FACW species	2	x 2 =	4
FAC species	110	x 3 =	330
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	132 (A)		369 (B)

Prevalence Index = B/A = 2.8

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 x No ___

Remarks:

SOIL

Sampling Point: WP 1334

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/1	85	10 YR 4/6	15	C	M	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 x No ______

Remarks:

Redox features observed; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 x	No ______	Depth (inches): 2 inches
Water Table Present?	Yes ______	No x	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:

depressional area associated with former channel scar

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 5/31/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP 1409

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.46231 Long: -95.91948 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: PFO1A

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 x, 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:

depressional area associated with former channel scar; not hydraulically connected to any existing stream channel

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	45	Yes	FAC
2. Ulmus crassifolia	40	Yes	FAC
3.			
4.			
	85	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	5	No	FAC
2. Ulmus crassifolia	5	No	FAC
3.			
4.			
5.			
	10	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Carex crus-corvi	65	Yes	OBL
2. Amaranthus tuberculatus	5	No	FAC
3. Viola missouriensis	2	No	FACW
4. Ptilimnium nuttallii	5	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
	77	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	0	= Total Cover	
% Bare Ground in Herb Stratum 23			

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: 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
- ☑ 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 X No ___

Remarks:

SOIL

Sampling Point: WP 1409

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	10 YR 3/1	100					Clay	
4-18	10 YR 3/1	95	10 YR 4/6	5	C	M	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 X No ____

Remarks:

Redox features observed; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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:

Depressional area associated with former channel scar

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 5/31/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP 1410

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ____

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.46214 Long: -95.91925 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: PFO1A

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 x, 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 x	No ____	

Remarks:

depressional area associated with former channel scar; not hydraulically connected to any existing stream channel

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Quercus macrocarpa	25	Yes	FACU
2. Maclura pomifera	25	Yes	FACU
3. Celtis laevigata	10	No	FAC
4. Ulmus crassifolia	25	Yes	FAC
	85	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Fraxinus pennsylvanica	5	No	FAC
2. Celtis laevigata	5	No	FAC
3. Gleditsia triacanthos	1	No	FAC
4.			
5.			
	11	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Carex crus-corvi	15	Yes	OBL
2. Lolium multiflorum	20	Yes	UPL
3. Elymus virginicus	20	Yes	FAC
4. Ptilimnium nuttalli	5	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
	60	= Total Cover	
Woody Vine Stratum (Plot size: 450)			
1.			
2.			
	0	= Total Cover	
% Bare Ground in Herb Stratum 40 %			

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	15	x 1 =	15
FACW species	5	x 2 =	10
FAC species	66	x 3 =	198
FACU species	50	x 4 =	200
UPL species	20	x 5 =	100
Column Totals:	156 (A)		523 (B)

Prevalence Index = B/A = 3.35

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 x

Remarks:

SOIL

Sampling Point: WP 1410

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/1	100					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 X

Remarks:

No redox features observed; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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:

depressional area associated with former channel scar

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 5/31/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP 1471

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.46202 deg Long: -95.91898 deg Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: PFO1A

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 x, 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.

	Yes	No
Hydrophytic Vegetation Present?		x
Hydric Soil Present?	x	
Wetland Hydrology Present?	x	

Is the Sampled Area within a Wetland? Yes ___ No x

Remarks:

Depressional area associated with former channel scar; comparable area to WP 1410

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 700- sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus macrocarpa	25	Yes	FACU
2. Fraxinus pennsylvanica	25	Yes	FAC
3.			
4.			
	50 = Total Cover		
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Ulmus crassifolia	2	No	FAC
2.			
3.			
4.			
5.			
	2 = Total Cover		
Herb Stratum (Plot size: 450 sq ft)			
1. Carex crus-corvi	10	Yes	OBL
2. Viola missouriensis	5	No	FACW
3. Lolium multiflorum	10	Yes	UPL
4. Ptilimnium nuttalli	5	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
	30 = Total Cover		
Woody Vine Stratum (Plot size: 450)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 70

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: 4 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	10	x 1 = 10
FACW species	10	x 2 = 20
FAC species	27	x 3 = 81
FACU species	25	x 4 = 100
UPL species	10	x 5 = 50
Column Totals:	82 (A)	261 (B)

Prevalence Index = B/A = 3.18

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 X

Remarks:

SOIL

Sampling Point: WP 1471

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/1	95					Clay	
4-18			10 YR 4/6	5	C	M	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 X No ______

Remarks:

Redox features observed; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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:

Depressional area associated with former channel scar

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Lake Ralph Hall Supplemental JD City/County: Ladonia/Fannin Sampling Date: 5/31/2017

Applicant/Owner: Upper Trinity Regional Water District State: TX Sampling Point: WP 1504

Investigator(s): Jason Voight, Andrew Sample Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): Southwest Prairies Lat: 33.45929 Long: -95.93517 Datum: NAD83

Soil Map Unit Name: Tinn Clay, Occasionally Flooded NWI classification: PFO1A

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 x, 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.

	Yes	No
Hydrophytic Vegetation Present?	x	
Hydric Soil Present?		x
Wetland Hydrology Present?		x

Is the Sampled Area within a Wetland? **Yes** ___ **No** x

Remarks:

Wooded area bordering the north side of the North Sulphur river channel.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 700 sq ft)			
1. Ulmus crassifolia	40	Yes	FAC
2. Celtis laevigata	40	Yes	FAC
3. Fraxinus pennsylvanica	5	No	FAC
4. Maclura pomifera	5	No	FACU
	90	= Total Cover	
Sapling/Shrub Stratum (Plot size: 700 sq ft)			
1. Ulmus crassifolia	10	No	FAC
2. Celtis laevigata	50	Yes	FAC
3. Fraxinus pennsylvanica	2	No	FAC
4.			
5.			
	62	= Total Cover	
Herb Stratum (Plot size: 450 sq ft)			
1. Elymus virginicus	50	Yes	FAC
2. Viola missouriensis	10	No	FACW
3. Carex planostachys	40	Yes	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 450 sq ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0

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** x **No** ___

Remarks:

SOIL

Sampling Point: WP 1504

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 2/1	90					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)
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- ☐ 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 x

Remarks:

No redox features observed; Tinn clay, occasionally flooded is nationally listed hydric soil; naturally dark 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 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 D

PHOTOGRAPHS

PHOTOGRAPHS

ON-CHANNEL OPEN WATERS


OCP2. WP235 Pond with 3 foot wetland fringe. 5/30/2017.


OCP2. WP235 Pond with 3 foot wetland fringe. 5/30/2017.


OCP3. WP236 Pond with 3-15 foot wetland fringe. 5/30/2017.


OCP3. WP236 Pond with 3-15 foot wetland fringe. 5/30/2017.

OCP3. WP238 Larger part of the 3-15 foot wetland fringe of on-channel pond 3. 5/30/2017.

OCP4. WP240 Pond with no wetland fringe. 5/30/2017.

OCP4. WP240 Pond with no wetland fringe. 5/30/2017.

OCP5. WP401 Pond with 1 foot wetland fringe. 5/31/2017.

OCP5. WP401 Pond with 1 foot wetland fringe. 5/31/2017.

OCP7. WP320 Small pond with no wetland fringe before transition to channel. 5/30/2017.


OCP8. WP1472 Pond with partial 1 foot wetland fringe. 5/31/2017.


OCP8. WP1472 Pond with partial 1 foot wetland fringe. 5/31/2017.


OCP10. WP326 Pond with 6 foot wetland fringe and submerged vegetation. 5/30/2017.


OCP10. WP326 Pond with 6 foot wetland fringe and submerged vegetation. 5/30/2017.


OCP11. WP400 Pond with partial 1 foot wetland fringe, submerged and floating vegetation. 5/30/2017.


OCP11. WP400 Pond with partial 1 foot wetland fringe, submerged and floating vegetation. 5/30/2017.


OCP13. WP1 Pond with partial 1-6 foot wetland fringe. 6/1/2017.


OCP13. WP2 Pond with 1-6 foot partial wetland fringe. 6/1/2017.


OCP17. WP1500 Large pond with wetland fringe ranging from 1-20 feet and algae. 5/31/2017.


OCP17. WP1501 Large pond with wetland fringe ranging from 1-20 feet and algae. 5/31/2017.

OCP17. WP1502 Large pond with wetland fringe ranging from 1-20 feet and algae. 5/31/2017.

OCP17. WP1502 Large pond with wetland fringe ranging from 1-20 feet and algae. 5/31/2017.

OCP17. WP1503 Large pond with wetland fringe ranging from 1-20 feet and algae. 5/31/2017.

OCP19. WP715 Pond with partial 1-3 foot wetland fringe. 5/31/2017.

OCP19. WP715 Pond with partial 1-3 foot wetland fringe. 5/31/2017.

OCP23. WP336 Large pond with partial 1 foot wetland fringe. 6/1/2017.


OCP32. WP4 Pond with no wetland fringe. 5/31/2017.


OCP32. WP4 Pond with no wetland fringe. 5/31/2017.


OCP32. WP4 Pond with no wetland fringe. 5/31/2017.


OCP33. WP10 Pond with partial 3 foot wetland fringe and submerged vegetation. 5/31/2017.

OCP33. WP10 Pond with partial 3 foot wetland fringe and submerged vegetation. 5/31/2017.

PHOTOGRAPHS

UPLAND OPEN WATERS


UP6. WP226 Upland Pond. 5/30/2017.


UP7. WP228 Upland Pond. 5/30/2017.


UP7. WP228 Upland Pond. 5/30/2017.


UP8. WP227 Upland Pond. 5/30/2017.

UP8. WP227 Upland Pond. 5/30/2017.

UP16. WP234 Upland Pond. 5/30/2017.


UP17. WP231 Upland Pond. 5/30/2017.


UP18. WP233 Upland Pond. 5/30/2017.


UP19. WP225 Upland Pond. 5/30/2017.


UP30. WP322 Upland Pond. 5/30/2017.


UP65. WP402 Upland Pond. 5/31/2017.


UP65. WP402 Upland Pond. 5/31/2017.


UP67. WP1473 Upland Pond. 5/31/2017.


UP79. WP713 Upland Pond below UP207. 5/31/2017.


UP79/80. WP714 Berm between ponds below UP207. 5/31/2017.


UP80. WP714 Upland Pond. 5/31/2017.


UP117. WP334 Upland Pond. 6/1/2017.


UP117. WP335 Upland Pond. 6/1/2017.

UP143. WP4 Upland Pond. 6/2/2017.

UP143. WP4 Upland Pond. 6/2/2017.


UP152. WP711 Upland Pond. 5/31/2017.


UP155. WP711 Upland Pond. 5/31/2017.

UP168. WP6 Upland Pond. 5/31/2017.

UP207. WP713 Upland. 5/31/2017.

DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

July 27, 2017

Regulatory Division

SUBJECT: SWF-2003-00336, Lake Ralph Hall, Upper Trinity Regional Water District

Mr. Larry Patterson
Upper Trinity Regional Water District
900 N. Kealy
P.O. Drawer 305
Lewisville, Texas 75067

Dear Mr. Patterson:

This letter is in regard to your request for an approved jurisdictional determination information received March 29, 2017, and additional information received June 22 and July 5, 2017, concerning the proposed Lake Ralph Hall Reservoir project located in Fannin County, Texas. The study area for the approved jurisdictional determination encompasses approximately 13,100 acres.

We have reviewed the site in question in accordance with Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899. Under Section 404, the USACE regulates the discharge of dredged and fill material into waters of the United States, including wetlands. Our responsibility under Section 10 is to regulate any work in, or affecting, navigable waters of the United States.

Based on the Supplemental Report in Support for AJD for proposed Lake Ralph Hall project, dated June 21, 2017, multiple previous site visits associated with the ongoing development of the Environmental Impact Statement associated with the permit application, and other information available to us, waters of the United States under Section 404 do exist in the study area. We concur with the delineation of waters of the United States as shown on the 11 maps sheets included in the referenced report identified as Aquatic Resources Proposed Lake Ralph Hall Supplemental Jurisdictional Determination. This approved jurisdictional determination (JD) is valid for a period of no more than five (5) years from the date of this letter unless new information warrants revision of the delineation before the expiration date. A copy of the Approved Jurisdictional Determination form supporting this determination is enclosed for your information.

This determination does not convey any property rights, either in real estate or material or any exclusive privileges, nor does it authorize any injury to property or invasion of rights or Federal, State, or local laws or regulations. This determination does not eliminate the requirements to obtain State or local permits or approvals as needed.

Department of the Army authorization would be required for the discharge of dredged or fill material into any areas identified as waters of the United States, unless otherwise exempted. If you anticipate a discharge, please provide us with a detailed description of the proposed project, a suitable map of the proposed project area showing the location of proposed discharges, the type and amount of material (temporary or permanent), if any, to be discharged, and plan and cross-section views of the proposed project. Please note that it is unlawful to start work without a Department of the Army permit if one is required.

The Applicant may accept or appeal this approved JD or provide new information in accordance with the enclosed Notification of Administration Appeal Options and Process and Request for Appeal (NAAOP-RFA). If the Applicant elects to appeal this approved JD, the Applicant must complete Section II (Request for Appeal or Objections to an Initial Proffered Permit) of the enclosure and return it to the Division Engineer, ATTN: CESWD-PD-O Appeals Review Officer, U.S. Army Corps of Engineers, 1100 Commerce Street, Dallas, Suite 831, Texas 75242-0216 within 60 days of the date of this notice. Failure to notify the USACE within 60 days of the date of this notice means you accept the approved JD in its entirety and waive all rights to appeal the approved JD.

Thank you for your interest in our nation's water resources. If you have any questions concerning this matter please contact Mr. Chandler Peter at (817) 886-1736. Other information concern our regulatory program is at http://www.swf.usace.army.mil/Missions/Regulatory.

Please help the regulatory program improve its service by completing the survey on the following website: http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey

Sincerely,

Stephen Brooks
Chief, Regulatory Division

Enclosures:

Appeals Form
Approved Jurisdictional Determination Form

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Upper Trinity Regional Water District		File Number: 2003-00336	Date: 7/24/2017
Attached is:			See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)		A
	PROFFERED PERMIT (Standard Permit or Letter of permission)		B
	PERMIT DENIAL		C
X	APPROVED JURISDICTIONAL DETERMINATION		D
	PRELIMINARY JURISDICTIONAL DETERMINATION		E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/appeals.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:	If you only have questions regarding the appeal process you may also contact: Mr. Elliott Carman Administrative Appeals Review Officer (CESWD-PD-O) U.S. Army Corps of Engineers 1100 Commerce Street, Suite 831 Dallas , Texas 75242-1317 469-487-7061

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent.	Date:	Telephone number:

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 26 June 2017

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Fort Worth District, Lake Ralph Hall, SWF-2003-00336

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: Texas County/parish/borough: Fannin City: Ladonia
Center coordinates of site (lat/long in degree decimal format): Lat. 33.46302° **N**, Long. 95.90102° **W.**
Universal Transverse Mercator:
Name of nearest waterbody: North Sulphur River
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Sulphur River
Name of watershed or Hydrologic Unit Code (HUC): 8 - 11140301

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☒ Office (Desk) Determination. Date: June 26, 2017
☒ Field Determination. Date(s): Specific field investigation to develop data to produce PJD dated October 26, 2006 were conducted by applicant August-September, 2005. USACE and cooperating agencies conducted numerous site visits to portions of project area from 2002 through 2015 associated with jurisdictional determination and resource assessments associated with development of Environmental Impact Statement for proposed project.

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☒ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☒ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☒ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Stream (non-wetland) waters: linear feet: 690,918 acreage: 387.14 (streams)
      Other open waters: acres: 59.89 (on channel ponds)
      Wetlands: 10.0 acres (PEM lacustrine fringe around on-channel ponds).

   c. **Limits (boundaries) of jurisdiction** based on: **1987 Delineation Manual and Great Plains Delineation Supplement**
      Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: **212 open water stock tanks constructed in uplands occur within the study area totaling 83 acres (Table A-3 of Appendix A). Additionally, there are 3.8 acres (comprised of 26 features – Table A-4 of Appendix A) of forested wetlands associated with remnant channels of the North Sulphur River. Due to historic channelization and significant channel degradation, the 100 year flood of the North Sulphur River is contained in its existing channel banks. No hydrologic connection/significant nexus exists between the remnant channels and the North Sulphur River.**

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: No TNWs are in assessment area. The nearest USACE designated navigable water is the segment of the Sulphur River downstream of Wright Patman Dam to the Texas/Arkansas state border. See section B.1.ii below for distance.

Summarize rationale supporting determination:

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": N/A.

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: 100 square miles
Drainage area: 467 square miles
Average annual rainfall: 33 inches
Average annual snowfall: 3 inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☒ Ephemeral tributaries flow through 2 and the North Sulphur River flows through 1 tributary before entering TNW.

Project waters are more than 100 river miles from TNW.

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

Project waters are more than 30 river miles from RPW.
Project waters are 105 aerial (straight) miles from TNW.
Project waters are 37 aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW[5]: Named (see item b below) and unnamed tributaries flow into North Sulphur River which flows into to Sulphur River (starting at confluence with South Sulphur River which becomes navigable approximately 105 miles downstream.
Tributary stream order, if known: Varies.

(b) General Tributary Characteristics (check all that apply):
Tributary is: ☐ Natural. Explain:
☐ Artificial (man-made). Explain:
☒ Manipulated (man-altered). Explain: North Sulphur River and named (Merrill, Bralley Pool, Leggets Branch, Davis, Pickle, Pot, Brushy, Bear, Allen, Long and Headrick Branch Creeks) and unnamed tributries to it are natural channels but modified due to headcuts. North Sulphur River channelized in 1930s. Unique soil properties continue to erode and channel as well as tributaries continue to degrade. Headcuts occur to all tributaries in the study area.

Tributary properties with respect to top of bank (estimate):
Average width: 150 feet
Average depth: 45 feet
Average side slopes: **2:1.**

Primary tributary substrate composition (check all that apply):

☒ Silts	☐ Sands	☐ Concrete
☐ Cobbles	☐ Gravel	☐ Muck
☒ Bedrock	☐ Vegetation. Type/% cover:	

☐ Other. Explain: Bedrock is decomposing soft shale.

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: highly eroding, sloughing banks with channel eroded into underlying shale bedrock; delamination of the shale results in average channel down-cutting at a rate of 2 inches/year and channel widening of 4 inches/year as side slopes are destabilized and slough.

Presence of run/riffle/pool complexes. Explain: No riffle pool complexes exist.
Tributary geometry: **Relatively straight**
Tributary gradient (approximate average slope): Dependent on tributary. North Sulphur River is 0.1 %

(c) Flow:
Tributary provides for: **Intermittent but not seasonal flow Other tributaries are epemeral.**
Estimate average number of flow events in review area/year: **6-10**
Describe flow regime: Channel flow is extremely flashy with high flows immediately following significant rain events rapidly reducing to a trickle unless subsequent rainfall experienced in the watershed. Channel is frequently dry in most locations with variable to non-existent pooling.
Other information on duration and volume: Stage discharge and rating curves are provided in the geomorphological evaluation and hydraulic and hydrologic analyses.

Surface flow is: **Discrete and confined.** Characteristics: Flashy – immediate peak with rapidly diminishing flows.

Subsurface flow: **Unknown**. Explain findings: No groundwater discharges documented in hydrologic analysis.
☐ Dye (or other) test performed: .

Tributary has (check all that apply):
☒ Bed and banks
☒ OHWM[6] (check all indicators that apply):

☐ clear, natural line impressed on the bank	☐ the presence of litter and debris
☐ changes in the character of soil	☒ destruction of terrestrial vegetation
☐ shelving	☐ the presence of wrack line
☐ vegetation matted down, bent, or absent	☐ sediment sorting
☐ leaf litter disturbed or washed away	☒ scour
☐ sediment deposition	☒ multiple observed or predicted flow events
☐ water staining	☐ abrupt change in plant community

[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.
[6] A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

☐ other (list):
☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐ High Tide Line indicated by:	☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects	☐ survey to available datum;
☐ fine shell or debris deposits (foreshore)	☐ physical markings;
☐ physical markings/characteristics	☐ vegetation lines/changes in vegetation types.
☐ tidal gauges	
☐ other (list):	

(iii) **Chemical Characteristics:**
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: Turbid during flow events but clearer during lower flows
Identify specific pollutants, if known: Suspended solids.

(iv) **Biological Characteristics. Channel supports (check all that apply):**
☐ Riparian corridor. Characteristics (type, average width): .
☒ Wetland fringe. Characteristics: Emergent wetland occurs on fringes of on-channel stock tanks.
☐ Habitat for:
☐ Federally Listed species. Explain findings: .
☐ Fish/spawn areas. Explain findings: .
☐ Other environmentally-sensitive species. Explain findings: .
☒ Aquatic/wildlife diversity. Explain findings: Limited invertebrate and songbird utilization.

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) **Physical Characteristics:**
(a) General Wetland Characteristics:
Properties: PEM fringes associated with on channel ponds
Wetland size: 10 acres
Wetland type. Explain: Wetlands confined to on channel ponds
Wetland quality. Explain: Detailed functional assessment of the wetlands not accomplished. Vegetation in wetland areas are typically desirable and include Typha, Eleocharis, Polyuganum, Carex, Juncus, Sagittaria, Ludwigia, Potamigeton and Ranunculus species. Hydrilla was also documented in some assessed areas. Wetlands are expected to rate as low to average quality based on geomorphic and vegetation type, density as well as agricultural activities and grazing adjacent and in the wetland areas. Wetlands provide soil rentention and protection at pond edges.

Project wetlands cross or serve as state boundaries. N/A

(b) General Flow Relationship with Non-TNW:
Flow is: **Ephemeral flow**. Explain: Wetlands are associated with on-channel pond construction. Outlets exist and/or spills occur during precipitation events from ponds into connecting named and unnamed tributaries to the North Sulphur River.

Surface flow is: **Confined**
Characteristics: .

Subsurface flow: **Unknown**. Explain findings: .
☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:
☒ Directly abutting – wetlands are created by and connected to pond pool elevations.
☐ Not directly abutting
☐ Discrete wetland hydrologic connection. Explain:
☐ Ecological connection. Explain: .
☐ Separated by berm/barrier. Explain: There is an earthen berm east of the wetland.

(d) Proximity (Relationship) to TNW
Project wetlands are **30 (or more)** river miles from TNW.
Project waters are **30 (or more)** aerial (straight) miles from TNW.
Flow is from: **Wetland to navigable waters.**
Estimate approximate location of wetland as within the **2-year or less** floodplain.

(ii) **Chemical Characteristics:**

[7] Ibid.

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: Herbaceous fringe varying in widths from 1 to more than 20 feet as part of 27 on-channel ponds. Wetlands perform water quality functions from overland flow to waters via filtration and sediment trapping, retention and nutrient transformation. Nutrient transformation from stream flow into ponds also accomplished.
Identify specific pollutants, if known: unknown.

(iii) Biological Characteristics. Wetland supports (check all that apply):

☐ Riparian buffer. Characteristics (type, average width): .

☒ Vegetation type/percent cover. Explain: Eleocharis, Typha,

☐ Habitat for:

- ☐ Federally Listed species. Explain findings: .
- ☐ Fish/spawn areas. Explain findings: .
- ☐ Other environmentally-sensitive species. Explain findings: .
- ☒ Aquatic/wildlife diversity. Explain findings: Variation in vegetation communities compared to upland vegetation can provide minor habitat for occasional use of wetland and water dependent species.

3. Characteristics of all wetlands adjacent to tributaries (if any)

All wetland(s) being considered in the cumulative analysis: **25-30**

Approximately 10 acres in total are being considered in the cumulative analysis as identified in the delineation report at 27 on-channel ponds. Off-site desk top estimation was used to identify wetland fringes occurring with on-channel ponds. The higher resolution aerial photographs from 2014-2016 compared to those used in the 2006 PJD report facilitated in refinements of the previously identified (delineated) aquatic resources as well as identification in modifications to aquatic resources within the project area (erosional features, impoundments, etc.). These refinements to the delineated aquatic resources were performed as a "desktop" evaluation. To ground-truth observations from the desktop evaluation, field investigations were performed May 30 through June 2, 2017 to assess a representative sample area of portions of the 13,094-acre assessment area. These "on the ground" assessments aided in verification of identified aquatic resources from the desktop evaluation as well as to map the limits of potential waters of the U.S. identified both from the desktop evaluation and in the field. As an example, 14 of the 47 mapped on-channel ponds within the assessment area representing approximately 29.7 percent were investigated in the field. Lacustrine "fringe" wetland areas associated with the 14 on-channel ponds assessed in the field were observed and recorded in the field. The lacustrine wetlands, predominantly herbaceous emergent wetlands, represented approximately 3.4 acres of the 23.8 acres of the 14 on-channel ponds assessed or approximately 14.3 percent of the assessed on-channel pond acreage. This percentage of fringe wetlands was used to estimate the lacustrine wetland area associated with the total delineated area of on-channel impoundments within the assessment area that would be considered as hydraulically and hydrologically connected to waters of the U.S. Calculation of area of Lacustrine Fringe Wetlands (emergent) totaled 3.4 acres identified for 23.8 acres of 14 on-channel ponds that were field assessed. This equated to 14.3 percent of 69.9 acres of 47 on-channel ponds within assessment area resulting in the determination that slightly less than10 acres of on-channel fringe wetlands exist.

Summarize overall biological, chemical and physical functions being performed: See descriptions above.

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: The North Sulphur River totals 65,646 linear feet in the study area and is intermittent. Additionally, numerous ephemeral tributaries totaling 625,272 lineal feet have continuous ordinary high water marks that feed into the North Sulphur River. On said tributaries are 47 on channel ponds totaling 59.89 acres of open water. Wetland fringes associated with the ponds total 10 acres. All streams flow during and shortly after precipitation events allowing for biological and chemical contributions to the North Sulphur River which flows into Relatively Permanent Flow portions of the channel and eventually into the Sulphur River which is a TNW. Sediment, biota (including fish from on channel stock tanks) and organic matter are contributed to the North Sulphur River. Tributaries can also act as refugia during high flow events in the North Sulphur River. The tributaries and on channel wetlands also contribute as well as carry pollutants and flood waters to TNWs, can reduce amount of pollutants or flood water reaching a TNW, and transfer nutrients and organic carbon downstream.

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:.

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   ☐ TNWs: linear feet width (ft), Or, acres.
   ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

   Provide estimates for jurisdictional waters in the review area (check all that apply):
   ☐ Tributary waters: linear feet width (ft).
   ☐ Other non-wetland waters: acres.
   Identify type(s) of waters: .

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
   ☒ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide estimates for jurisdictional waters within the review area (check all that apply):
   ☒ Tributary waters: **690,918** linear feet and up to **45** width (ft).
   ☒ Other non-wetland waters: **59.89** acres of on channel ponds.
   Identify type(s) of waters: On channel ponds.

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
   ☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
   ☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

   ☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

   Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
   ☒ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

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[8]See Footnote # 3.

Provide acreage estimates for jurisdictional wetlands in the review area: **10** acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
   ☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.**[9]
   As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
   ☒ Demonstrate that impoundment was created from "waters of the U.S.," (see **69.89** acres of on-channel ponds and associated fringe wetlands as detailed in this form), or
   ☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
   ☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☒ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and Great Plains Regional Supplement.
☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
  ☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☒ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: Numerous stock tanks constructed in uplands exist as well as stock tanks that are not connected to tributaries to the North Sulphur River. Isolated forested wetlands also exist which are not adjacent due to significant channel degradation of North Sulphur River and are no longer connected to or have interaction with the river.
☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
☒ Lakes/ponds: 83 acres upland ponds/stock tanks.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☒ Wetlands: 3.8 acres.

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[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] **Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.***

SECTION IV: DATA SOURCES.

A. **SUPPORTING DATA. Data reviewed for JD (check all that apply** - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  ☒ Office concurs with data sheets/delineation report.
  ☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☒ U.S. Geological Survey Hydrologic Atlas: .
  ☐ USGS NHD data.
  ☒ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name: Greenville NW, Celeste, Pike, Wolfe City, Gober, Ladonia, Honey Grove and Dodd City.
☒ USDA Natural Resources Conservation Service Soil Survey. Citation: Fannin.
☒ National wetlands inventory map(s). Cite name: See USGS quad map names.
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): 2003-2005 and 2014-2016 FSA NAIP and 2015 Texas Ortho-imagery Project.
  or ☒ Other (Name & Date): On site photos from 2006 delineation report and 2017 supplment.
☐ Previous determination(s). File no. and date of response letter: .
☐ Applicable/supporting case law: .
☐ Applicable/supporting scientific literature: .
☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: .