Oak Hill Parkway Water Resources Technical Report

ADDENDUM

OAK HILL PARKWAY

U.S. Highway 290 (US 290) / State Highway (SH) 71 West from State Loop 1 (Mopac) to West of Ranch-to-Market (RM) 1826 and US 290 to Silvermine Drive

Travis County, Texas

CSJ # 0113-08-060 and 0700-03-077

May 2019

Texas Department of Transportation

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT.

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1. INTRODUCTION AND PURPOSE

In December 2018 the Texas Department of Transportation (TxDOT) approved a Final Environmental Impact Statement (EIS) and Record of Decision (ROD) for mobility improvements to U.S. Highway (US) 290/State Highway (SH) 71 West from State Loop 1 (MoPac) to west of Ranch-to-Market Road (RM) 1826 and from US 290 to Silvermine Drive (see **Figure 1**). The proposed project, known as the Oak Hill Parkway (OHP) Project, is located in Travis County, Texas, and is shown on the USGS 7.5' quadrangle maps for *Bee Cave*, *Oak Hill*, and *Signal Hill*, *Texas* (see **Figure 2**).

The proposed OHP Project and previous environmental analyses are described in detail in the Final EIS and ROD (available online at https://www.oakhillparkway.com/environmental/final-impact.php).

1.1 2019 Reevaluation

As a result of project design changes following the 2018 ROD, TxDOT is conducting a documented reevaluation to determine whether previous environmental decision remain valid under circumstances listed in 43 TAC 2.85 and 23 CFR 771.129. The proposed design changes would require additional right-of-way for utility relocations, water quality features, and schematic refinements and would lengthen and realign the shared-use path to minimize impacts to protected trees. There would be no change to project limits. A detailed list of design revisions is included in the Documented Reevaluation Checklist and displayed on the revised schematics (available for review at the TxDOT Austin District Office). This *Water Resources Technical Addendum* has been prepared to document resource impacts resulting from the 2019 design changes. Additionally, this addendum includes the results of field investigations conducted along portions of the proposed right-of-way where access to previously unsurveyed parcels has been granted.

The purpose of this technical report is to identify and describe all water resources located within the proposed project area in order to assist in avoidance of impacts and minimization of effects as a result of the construction of the proposed project. Conclusions contained in this report are the opinion of the professionals conducting the study and are subject to confirmation by the appropriate regulatory agencies. In addition, this report covers regulatory issues related to water resources that are relevant to the requirements for a Documented Reevaluation Checklist for a TxDOT Project.

2. METHODS

This *Water Resources Technical Report Addendum* includes a summary of waters of the United States (WOUS), including wetlands, delineated within the project area by HDR, inc. in March 2019, as well as a compilation of published data related to water quality, floodplains, and groundwater.

2.1 Data Review

Qualified wetland ecologists reviewed several published data resources prior to the field visit to identify potentially jurisdictional crossings, floodplains, impaired stream segments, and other sensitive surface and groundwater resources. Sources consulted included U.S. Fish and Wildlife Service National Wetland Inventory (NWI) maps, the National Hydrography Dataset, the Natural Resources Conservation Service (NRCS) Soil Survey for Travis County, U.S. Geological Survey (USGS) 7.5-minute quadrangle sheets (*Oak Hill*, *Signal Hill*, and *Bee Cave*, Texas), Geologic Atlas of Texas maps (Austin sheet), Federal Emergency Management Agency (FEMA) floodplain maps, and recent and historic aerial photography.

2.2 Field Delineation

Qualified wetland ecologists conducted field investigations in March 2019 within the project area. The routine method of wetland delineation outlined in the Field Guide for Wetland Delineation: 1987 Corps of Engineers Manual (WTI, 1991) and updated in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region, Version 2.0 (USACE, 2010) was utilized for wetland determinations within the project area. Field activities focused on wetlands and waters of the U.S. delineation and description.

The Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory, 1987) defines wetlands based on three criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. In general, all three criteria must be present for an area to qualify as a wetland. Some exceptions can occur in disturbed areas or in newly formed wetlands where one indicator (such as hydric soils) might be lacking. These areas would be dealt with on an individual basis as outlined in the Field Guide for Wetland Delineation (WTI, 1991) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region, Version 2.0 (USACE, 2010).

In addition to the jurisdictional wetlands defined above, the Clean Water Act regulates impacts to other WOUS. The term “waters of the United States” has broad meaning and incorporates both deepwater aquatic habitats and special aquatic sites, including wetlands, as listed below:

- The territorial seas with respect to the discharge of fill material;

- Coastal and inland waters, lakes, rivers, and streams that are navigable waters of the United States, including their adjacent wetlands;
- Tributaries to navigable waters of the United States, including adjacent wetlands;
- Interstate waters and their tributaries, including adjacent wetlands;

On August 28, 2015, the US Environmental Protection Agency (EPA) finalized the Clean Water Rule: Definition of "Waters of the United States" (EPA, 2015a). However, on October 9, 2015, the U.S. Court of Appeals for the Sixth Circuit issued a stay of the rule (EPA, 2015b). On July 27, 2017, the EPA and the Department of the Army issued a supplemental notice of proposed rulemaking to repeal the 2015 rule and recodify the pre-2015 regulations. On August 16, 2018, U.S. District Judge David Norton for the District of South Carolina issued a nationwide injunction that reinstated the 2015 rule in 26 states including Texas. However, on September 12, 2018, Judge George Hanks Jr. of the U.S. District Court for the Southern District of Texas ruled to freeze the 2015 rule in Louisiana, Mississippi, and Texas.

For linear WOUS, the Ordinary High Water Mark (OHWM) was determined by assessing a combination of factors at each site. In accordance with Sec. 328.3(e) of the Clean Water Act (CWA) and Regulatory Guidance Letter 05-05 (USACE December 5, 2005), the following factors were considered in determining the jurisdictional boundary:

- Natural line impressed on the bank
- Shelving
- Changes in the character of soil
- Destruction of terrestrial vegetation
- Presence of litter and debris
- Wracking
- Vegetation matted down, bent, or absent
- Sediment sorting
- Leaf litter disturbed or washed away
- Scour
- Deposition
- Multiple observed flow events
- Bed and banks
- Water staining
- Change in plant community
- Other appropriate means that consider the characteristics of the surrounding areas

Following the completion of preliminary data gathering and synthesis, the routine method of wetland determination was used to identify potentially jurisdictional areas within the project area. Descriptions of the crossings are provided in **Section 3.5** below, and photographs of the project area are included in **Attachment B** of this report.

3. RESULTS

3.1 General Description of the Project Area

The proposed project is located in the Edwards Plateau Natural Region of Texas (Gould, 1960). The Edwards Plateau is an uplifted ecological region of Central Texas characterized by thin top soils and rolling hills of sandstone, limestone, and shales. Elevations within this region range from 100 feet to 3,000 feet above mean sea level and the topography is dissected by several river systems, which create a well-drained landscape.

The proposed project area is located in a primarily urban area. Both commercial and residential structures exist adjacent to the project corridor (**Photos 1 – 4**). Several parcels adjacent to the US 290 and SH 71 roadways are vacant, undeveloped lots, which contain disturbed oak-juniper and native-invasive woodland vegetation (**Photos 4 - 9**). Undeveloped land is fragmented throughout the project area and includes riparian channels around creek crossings, limestone outcrops, and wooded areas (**Photos 10 – 13**). The proposed detention pond areas are a mixture of native and introduced vegetation surrounded by residential and commercial land. The proposed detention pond site located west of SH 71 is currently being used for livestock grazing (**Photos 14 – 16**), and the proposed detention pond site located adjacent to Old Bee Caves Road is currently undeveloped land that is bisected by a sewer line and relic irrigation infrastructure (sprinkler system) (**Photos 17 – 18**). Although there have been additional commercial and residential developments along US 290/SH 71, land use along the OHP Project corridor has not significantly changed since the 2018 ROD.

Geology

The geology of the project area is a typical representation of karst topography (eroded limestone) in Central Texas. Two bedrock formations underlie the project area (**Figure 3**). West of the Mount Bonnell Fault lies the Upper Glen Rose Limestone formation which forms the stair-step topography that characterizes the Texas Hill Country region (TNRIS, 2007; Ward, 2006). East of the Mount Bonnell fault lies the Fredericksburg Group of the Edwards Formation. At the intersection between these two formations lies the Mount Bonnell Fault. The project area geology has not changed as a result of the proposed design revisions.

A Geologic Assessment (GA) was conducted for the portion of the project area located over the Edwards Aquifer Recharge Zone in 2009, updated in 2016 (Rahe, 2009; HDR, 2016), and revised in 2019 (HDR, 2019). Six geologic features were documented and discussed in the Final EIS/ROD. All six previous features were located in the general vicinity of Williamson Creek at the US 290/SH71 crossing. The six features described in 2016 were evaluated as sensitive (i.e., they have the potential to provide aquifer recharge pathways) and located over the Edwards Aquifer Recharge Zone.

The revised GA was completed in March 2019 and is provided under a separate cover. The revised assessment included surveys of the proposed detention pond facilities and other properties that were granted right-of-entry following the 2018 Final EIS/ROD. Six additional features were identified during the field investigation. One of these features, located south of US 290 and east of RM 1826 over the Edwards Aquifer Contributing Zone, is a solution enlarged fracture in a streambed. This feature is located within the existing right-of-way and within the OHWM mark of the drainage. It was determined that this feature has a drainage area greater than six acres and was evaluated as sensitive with a moderate potential for infiltration. The revised GA summarized that this feature included characteristics that could contribute greater than average recharge to the Edwards Aquifer. The remaining five features were evaluated as non-sensitive with low relative potential for infiltration.

Soils

Information regarding soils within the project corridor was obtained from the U.S. Department of Agriculture NRCS Soil Surveys for Travis County (NRCS, 2018) (**Figure 4**). Twelve soil series are located in the project area and have a range of slopes and infiltration characteristics. No soils within the project area are mapped as hydric or containing hydric inclusions. A list of soils occurring within the project area is included as **Table 1**.

Table 1: Soils within the Oak Hill Parkway Project Area

Soil Series Code	Soil Series	Hydric (Yes/No)
BID	Brackett-Rock outcrop complex, 1 to 12 percent slopes	No
BoF	Brackett-Rock outcrop-Real complex, 8 to 30 percent slopes	No
CrA	Crawford clay, 0 to 1 percent slopes	No
CrB	Crawford clay, 1 to 3 percent slopes	No
DeB	Denton silty clay, 1 to 3 percent slopes	No
GP	Pits, gravel, 1 to 90 percent slopes	No
Md	Mixed alluvial land, 0 to 1 percent slopes, frequently flooded	No
PuC	Purves silty clay, 1 to 5 percent slopes	No
SaB	San Saba clay, 1 to 2 percent slopes	No
SsC	Speck stony clay loam, 1 to 5 percent slopes	No
TcA	Tarrant and Speck soils, 0 to 2 percent slopes	No
VoD	Volente silty clay loam, 1 to 8 percent slopes	No

Source: NRCS, 2018

The project area soils have not changed as a result of the proposed design revisions.

Hydrology

The proposed project is located within the Colorado River Basin, within the Austin-Travis Lakes HUC8 watershed (12090205). The watersheds for Slaughter Creek, Williamson Creek, and Barton Creek cross the proposed project area. Within the project area, US 290 is crossed by Wheeler Branch (a tributary to Williamson Creek), Williamson Creek, Devil's Pen Creek (a

tributary to Slaughter Creek), and five unnamed tributaries to Williamson Creek. SH 71 is crossed by Scenic Brook Tributary, one unnamed tributary to Williamson Creek, and the main branch of Williamson Creek. Williamson Creek is listed by the U.S. Geologic Survey (USGS) and National Hydrography Dataset as a perennial stream but was noted to be dry in multiple locations throughout the project area during several of the field visits. All tributaries in the project area are listed as intermittent or ephemeral. The project area intersects the Federal Emergency Management Agency (FEMA) designated 100-year floodplains associated with Devil's Pen Creek and several locations of Williamson Creek and its tributaries. These resources are show on **Figure 5**. The hydrology of the project area has not changed as a result of the proposed design revisions

3.2 Section 404 of the Clean Water Act

Wetland ecologists initially conducted field investigations for aquatic features in 2015. The results of that effort were presented in the 2018 Final EIS/ROD. In March 2019, the project team acquired additional right-of-entry agreements, which allowed for additional site visits and delineation of the proposed detention pond locations. As a result, a total of 18 aquatic features have been delineated within the project area. Aquatic features identified within the project area include four classifications: intermittent streams, ephemeral streams, emergent wetlands, and open waters (**Table 2**, **Figure 5a-b**, **Figure 6a-m**, and **Attachment C**).

The acreage of each potentially jurisdictional water body within the existing and proposed right-of-way, along with the total project area acreages, are shown in **Table 2** below. Field data sheets are included in **Attachment C** for the two wetland locations.

Table 2 – Evaluated Aquatic Features within the Project Area

Aquatic Resource ID	Description	Approx. OHWM (feet)	Acreage/Linear Feet within Existing Right-of-Way	Acreage/Linear Feet within Proposed Right-of-Way	Acreage/ Linear Feet within Total Project Area
Wetland 1	Emergent Wetland	NA	0.0322 /NA	NA	0.0322 /NA
Wetland 2	Emergent Wetland adjacent to S-11	NA	0 / NA	NA	0.0142 / NA
S-1	Ephemeral Stream to Scenic Brook Tributary-Unnamed Tributary	3	0.0019 / 28.67	0.0006 / 9.20	0.0026 / 37.34
S-2	Ephemeral Stream – Unnamed Tributary to Wheeler Branch	2	0.0349 / 759.65	0.0000 /	0.0349 / 759.65
S-3	Ephemeral Stream - Wheeler Branch	11	0.4258 / 1769.78	0.0000	0.4258 / 1769.78
S-4	Ephemeral Stream - Scenic Brook Tributary to Williamson Creek	19	0.0726 / 150.66	0.0139 / 51.25	0.0865 / 201.91
S-5	Intermittent Stream, perennial pools - Headwaters of Williamson Creek at SH 71 bridge	6	0.0264 / 198.42	0.0125 / 65.33	0.0389 / 263.74
S-6	Intermittent Stream - Williamson Creek	15	1.2198 / 3406.29	0.4362 / 1316.51	1.6405 / 4722.79
S-7	Ephemeral Stream - Unnamed Tributary to Williamson Creek	5	0.0294 / 255.42	NA	0.0294 / 255.42
S-8	Ephemeral Stream - Unnamed Tributary to Williamson Creek	4	0.0066 / 71.47	NA	0.0066 / 71.47
S-9	Ephemeral Stream - Unnamed Tributary to Williamson Creek	4	0.0093 / 102.13	0.0000 / 0.89	0.0093 / 103.02
S-10*	Ephemeral Stream - Unnamed Tributary to Williamson Creek	2	--	--	--
S-11	Intermittent Stream - Unnamed Tributary to Williamson Creek (SH 71 detention pond)	10	--	0.4059 / 1859.90	0.4059 / 1859.90
S-12	Ephemeral Stream – Braided channel along Unnamed Tributary to Williamson Creek (Bee Cave detention pond)	8	--	0.3132 / 1669.98	0.3132 / 1669.98

Aquatic Resource ID	Description	Approx. OHWM (feet)	Acreage/Linear Feet within Existing Right-of-Way	Acreage/Linear Feet within Proposed Right-of-Way	Acreage/ Linear Feet within Total Project Area
S-13	Ephemeral Stream - Unnamed Tributary to Williamson Creek (Bee Cave detention pond)	4	---	0.0245 / 265.88	0.0245 / 265.88
S-14	Ephemeral Stream – Devil's Pen Creek	14	0.1904 / 157.01	0.0031 / 2.49	0.1935 / 159.50
Open Water 1	Excavated Pond on channel of S-11	NA	0 / NA	0.1752 / NA	0.1752 / NA
Open Water 2	Excavated pond on channel of S-11	NA	0 / NA	0.1675 / NA	0.1675 / NA
Total			2.05 / 6898.88	1.57 / 5342.41	3.60 / 12241.29

Project Team, 2019

*S-10 was identified within the survey area in 2019 but was ultimately determined not to lie within the reevaluation project limits.

Ephemeral Streams

In total, 11 ephemeral stream channels were observed within the project area (**Figure 5a-b** and **Figure 6a-m**). One of these features is depicted on USGS topographic maps and on NHD maps (S-12) but the rest are not. None of these features had flowing water during the March 2019 investigations.

- S-1 is a small ephemeral stream with a 3-foot-wide OHWM. S-1 begins near the existing northern right-of-way on SH 290 and flows north into Scenic Brook Tributary (**Figure 6i** and **Photo 19**).
- S-2 is a small ephemeral stream with a 2-foot OHWM. S-2 begins at El Ray Boulevard and parallels US 290 for about 450 feet before turning north to cross under the existing roadway and flow into Wheeler Branch (**Figure 6h** and **Photo 20**).
- Wheeler Branch (S-3) flows east along the north side of US 290 for approximately 1,000-feet before being conveyed through a culvert to the south side of US 290; this portion of Wheeler Branch has an 11-foot wide OHWM (**Figure 6f-g** and **Photos 21-22**). Wheeler Branch flows southwest from the project area for approximately 5 miles before terminating in Williamson Creek.
- Scenic Brook Tributary (S-4) originates west of the project area and drains to Williamson Creek east of SH 71; S-4 has an OHWM of 19 feet and is conveyed beneath SH 71 through large concrete culverts (**Figure 6e** and **Photo 23**).
- S-7 is an ephemeral stream with an OHWM of 5 feet; it originates south of the project then flows under US 290/SH 71 and into Williamson Creek (**Figure 6c** and **Photo 33**).
- S-8 is a short ephemeral stream with an OHWM of 4 feet; it originates south of the project then flows under US 290/SH 71 into Williamson Creek (**Figure 6c** and **Photo 34**).
- S-9 is a short ephemeral stream with an OHWM of 4 feet; it originates north of the project area, immediately west of William Cannon Drive, and flows into Williamson Creek (**Figure 6b**).
- S-10 is a short ephemeral stream with an OHWM of 2 feet; it originates north of the project and flows into Williamson Creek (**Figure 6a-b** and **Photo 35**). This feature was not identified as an aquatic resource in the 2018 Final EIS/ROD but was delineated during the 2019 site visit. Current design indicates that this feature would not be impacted.
- S-12 is an unnamed tributary on the headwaters of Williamson Creek originating in the Bee Cave detention pond site (**Figure 6l** and **Photos 38-39**). S-12 is an ephemeral stream with an OHWM of 6 to 8 feet. An isolated segment of this stream widens and exhibits multiple braided channels within a 60-foot OHWM.
- S-13 is an unnamed tributary on the headwaters of Williamson Creek also originating in the Bee Cave detention pond site (**Figure 6l**). S-13 is an ephemeral stream with an OHWM of 4 feet.

- Devil's Pen Creek (S-14) is a small ephemeral stream with an OHWM of 14-feet that is conveyed under US 290 through a concrete box culvert; this waterway is a tributary to Slaughter Creek (**Figure 6j** and **Photo 40**).

The above features are defined as ephemeral, and by definition, only flow in response to rain events. They are not expected to have a connection to sub-surface flows and/or groundwater. Ephemeral streams within the project area varied in channel morphology and geometry. All 11 features have a direct and apparent downstream surface hydrologic connection to another body of water, an observable contiguous OHWM, and observable bed and bank features; thus, under current USACE guidance, they would likely be considered waters of the U.S. Additionally, the ephemeral stream channels observed within the project area eventually convey flows to either Williamson Creek or Slaughter Creek, which are tributaries to the Colorado River (a traditionally navigable water).

Intermittent Streams

In total, two intermittent streams at three crossings were observed within the project area (**Figure 5a-b** and **Figure 6a-d**, **6k**, and **6m**). Both of these features are depicted on USGS topographic maps and on NHD maps.

- Williamson Creek (S-5 and S-6) is an intermittent stream with a variable width OHWM of 5 to 25-feet within the project area (**Figure 6a-d**, **6k**, and **Photos 24-32**). S-5 was identified as the headwaters of Williamson Creek and exhibited flow with perennial pools observed at the time of the delineation in 2019. S-6 was identified as the main branch of Williamson Creek. Williamson Creek originates northwest of the project area and flows to the southeast along US 290/SH 71 into Onion Creek and on to the Colorado River. Williamson Creek is located within the 100-year FEMA designated floodplain.
- S-11 is an intermittent stream originating in the SH 71 detention pond site, with an OHWM of 10-feet (**Figure 6m** and **Photos 36-37**). S-11 is an unnamed tributary to the headwaters of Williamson Creek that is located in heavily grazed pastureland. It displays little to no riparian buffer and exhibited abundant erosion, sloughing walls, and silt deposition. S-11 is not located within a FEMA mapped floodplain and was dry during the March 2019 delineation.

These features are defined as intermittent, and by definition, convey seasonal flow. These features are expected to have a connection to sub-surface flows and/or groundwater. These 2 features all have a direct and apparent downstream surface hydrologic connection to another body of water, an observable contiguous OHWM, and observable bed and bank features; thus, under current USACE guidance, they would likely be considered waters of the U.S. Additionally, the intermittent stream channels observed within the project area eventually convey flows to the Colorado River (a traditionally navigable water).

Emergent Wetlands

In total, 2 emergent wetlands (Wetland 1 and Wetland 2, which are potentially jurisdictional emergent wetlands) are located within the project area (**Figure 5b** and **Figure 6i** and **6m**).

Wetland 1 was identified on the south side of US 290 near Boling Drive (**Figure 5b**, **Figure 6i** and **Photo 43**). This wetland was not identified on the NWI and is not located within a floodplain. Wetland 1 appears to be located on the headwaters of Scenic Brook Tributary (S-1). It appears to have been excavated from uplands on the headwaters of Scenic Brook Tributary (S-1) to retain stormwater. Wetland 1 has a weir and pump on the end of the wetland nearest the road. During the field investigations, Wetland 1 did not have any standing water within its delineated boundary but had developed conditions to be considered an emergent wetland. A scoured channel in Wetland 1 adjacent to Scenic Brook Tributary (S-1) creates a hydrologic connection between the two water features during large precipitation events. Due to its hydrologic connection to a likely jurisdictional stream (Scenic Brook Tributary), Wetland 1 is a potentially jurisdictional wetland.

Wetland 2 was not identified in the 2018 Final EIS/ROD as an aquatic feature within the project area, however, it was delineated within the SH 71 proposed detention pond site in 2019 (**Figure 5b**, **Figure 6m**, and **Photo 44**). This wetland was not identified on the NWI and is not located within a floodplain. This small emergent wetland was located adjacent to the S-11 (unnamed tributary to Williamson Creek) stream channel. Two inches of standing water was observed within the wetland during the field investigation. Due to its hydrologic connection to a likely jurisdictional stream (S-11), Wetland 2 is a potentially jurisdictional wetland.

Open Water

Two open water features are located within the project area and were not identified in the 2018 Final EIS/ROD. These features are not linear in nature, have closed topographic contours subject to ponding, and have developed a normal-pool elevation. Neither of these features are depicted on USGS topographic maps or NWI maps (**Figure 5b** and **Figure 6m**).

- Open Water 1 and Open Water 2 are on-channel impoundments of S-11 (unnamed tributary to Williamson Creek) and would be best described as excavated stock ponds (**Photos 41-42**). Standing water, approximately 5 inches to more than 36 inches deep, was observed within both of these features during the field investigations.

These features would likely be classified as “deep water habitat” and do not qualify as wetlands, since one or more of the three necessary wetland indicators (wetland hydrology, hydrophytic vegetation, and hydric soil conditions) are missing. Due to their hydrologic connection to Williamson Creek, these open water ponds would likely be considered jurisdictional features.

Summary of Impacts

Potential impacts to the 18 delineated potentially jurisdictional streams, wetland, and open waters are anticipated as a result of the proposed project. The impacts to these waters would occur from extending existing culverts, placing fill for concrete aprons and/or rock rip rap at bridges, and placing temporary fills during construction. Exact fill types and amounts will be determined once design is finalized and, if necessary, would be permitted with a nationwide permit 14 for linear transportation projects from USACE. Until the limits of construction, including construction footprints in the detention pond locations, are provided, calculation of impacts at each crossing cannot be determined. It is likely that a Pre-Construction Notification would be required due to impacts associated with the two wetlands. Preliminary design indicates that many of the stream crossings would be bridged, which would minimize or avoid potential fill impacts at these locations. The wetland and waters of the U.S. delineation identified several features that were not included in the Final EIS/ROD discussion (Wetland 2, S-10, and Open Waters 1 and 2). These additional features were assessed following new right-of-entry approvals and not as a result of the 2019 design revisions.

3.3 Section 401 of the Clean Water Act

The proposed project is anticipated to require authorization under Nationwide Permit 14; therefore, erosion control, sediment control, and post-construction total suspended solids (TSS) control Best Management Practices (BMPs) would be incorporated into the construction plan per TCEQ's conditional Section 401 certification requirements.

3.4 Section 402 of the Clean Water Act

Section 402 of the Clean Water Act established the National Pollutant Discharge Elimination System (NPDES). Permit program authority has been delegated to TCEQ and is implemented through the Texas Pollutant Discharge Elimination System (TPDES). TPDES requirements include notification to Municipal Separate Storm Sewer System (MS4) operators. These permit requirements happen independently of environmental documentation required by the National Environmental Policy Act (NEPA). This NEPA-compliant document does not require discussion of Section 402 compliance; however, since compliance would affect water quality protections on the proposed project, the proposed compliance actions are discussed generally below.

Section 402: Texas Pollutant Discharge Elimination System

The project would include five or more acres of earth disturbance; therefore, TxDOT would comply with TCEQ's TPDES Construction General Permit (CGP). A Storm Water Pollution Prevention Plan (SW3P) would be implemented, and a construction site notice would be posted on the construction site. An NOI would be required. The 2019 design revisions would not result in additional coordination requirements under the TPDES CGP.

Section 402: Municipal Separate Storm Sewer System

The project area is within the Phase I MS4 area that serves the COA, TxDOT Austin District, and Travis County. Since TPDES CGP authorization and compliance (and the associated documentation) occur outside of the environmental clearance process, compliance is ensured by the policies and procedures that govern the design and construction phases of the projects. The 2019 design revisions would not result in additional coordination requirements for MS4 compliance.

3.5 Water Quality Section 303(d) of the Clean Water Act

Since the issuance of the 2018 Final EIS/ROD, the TCEQ has adopted the *2016 Texas Integrated Report - Texas 303(d) List (Category 5*) (TCEQ, 2019); however, there has been no change to the listing status for waters within the OHP Project area or to waters that are within 5-miles of the project.

For the purposes of monitoring water quality, the TCEQ has divided the major water bodies within the Colorado River Basin into 34 discrete segments. Williamson Creek, an unclassified water body, has been designated by TCEQ as Segment 1427B. This water body drains in a southeastern direction into Onion Creek (Segment 1427), which intersects with the Colorado River below Town Lake (Segment 1428-02), and eventually drains into the Gulf of Mexico (**Figure 7**). Devil's Pen Creek is an ephemeral waterway at the western end of the project area and is not a monitored stream segment; however, it drains southward into Slaughter Creek (Segment 1427A), which terminates at its confluence with Onion Creek (**Figure 7**). Scenic Brook Tributary, Wheeler Branch, and all unnamed tributaries within the project area are unclassified water bodies without TCEQ-designated segments; however, they all drain to Williamson Creek, which is not an impaired waterbody.

Williamson Creek is not listed as impaired, nor does it flow into an impaired waterway within five miles of the project area. Although Devil's Pen Creek flows into Slaughter Creek (listed as impaired since 2002), Slaughter Creek does not have a US EPA-approved TMDL standard or a TCEQ-approved implementation plan established to address these issues (**Figure 7**). The 2019 design revisions would not result in additional impacts to impaired waters.

3.6 Floodplains

FEMA publishes Flood Insurance Rate Maps (FIRMs) that delineate the base floodplain elevations and floodways for the major rivers and streams. The FIRMs were consulted to identify floodplains within the project area. The project is located in Travis County, which is a participant in the National Flood Insurance Program. According to the FEMA FIRM Community Panel Numbers 48453C0560H and 48453C0580H, the project intersects the FEMA-designated 100-year floodplains associated with Williamson Creek and Devil's Pen Creek (see

Figure 5). Approximately 69.21 acres of floodplain associated with Williamson Creek and 1.30 acres of Devil's Pen Creek floodplain are mapped within the project area. The 2019 design revisions have resulted in the inclusion of an additional 1.19 acres of Williamson Creek floodplain within the project area. No change to the floodplain at Devil's Pen Creek has occurred since the 2018 Final EIS/ROD was issued.

Executive Order 11988– Floodplain Management

The 2019 design revisions to the OHP Project would not provide new access across the floodplains of Williamson Creek or Devil's Pen Creek, and it would not support incompatible development within any floodplain. Although the existing US 290/SH 71 roadways represent a current encroachment upon the 100-year floodplains of these two creeks, the proposed project would avoid significant floodplain encroachments, would avoid actions that adversely affect the base floodplains, and would be compatible with the National Flood Insurance Program and FEMA programs. The requirements of this Executive Order would be satisfied through adherence to the policies and procedures provided in TxDOT's Hydraulic Design Manual.

3.7 Groundwater and Edwards Aquifer

The Safe Drinking Water Act, the Edwards Aquifer Rules (30 TAC 213), and the TxDOT-TCEQ Memorandum of Understanding (MOU) regulate project activities that have a potential to affect the Edwards Aquifer. The Final EIS/ROD and supporting material provided an in-depth analysis of the OHP project's effects to groundwater and the Edwards Aquifer. No change to the baseline conditions for these resources have occurred as a result of the 2019 design revisions. A summary of these topics are included below.

The Edwards Aquifer includes three primary zones: the Contributing Zone, the Recharge Zone, and the Transition/Artesian Zone. The OHP Project crosses the Recharge and Contributing Zones. Within the project area, the Contributing Zone is located approximately 800 feet west of the intersection of US 290 and William Cannon Drive and the Recharge Zone is located to the east of the intersection of US 290 and William Cannon Drive (see Figure 3). Approximately 36 percent (138.76 acres) of the total project area occurs within the Recharge Zone, and 64 percent (255.18 acres) lies within the Contributing Zone of the Edwards Aquifer. As required by ty the TxDOT-TCEQ MOU, TxDOT completed coordination with the TCEQ for the OHP Project in May 2018. The TCEQ did not provide comments on the project or the EIS document. TxDOT has committed to a number of BMPs to protect water quality within the project area. No additional coordination with the TCEQ would be required as a result of the 2019 design revisions. All BMPs committed to in the Final EIS/ROD pertaining to water quality and geologic resources would remain in effect for the reevaluation.

Groundwater discharge from the Edwards Aquifer is primarily through springs or pumped wells. According to well data within the project area, groundwater depth is variable throughout the Oak Hill Parkway corridor. Well data suggests that the aquifer depth ranges from approximately 35 to 265 feet below the ground surface throughout the project area (see **Table 3**) (TWDB, 2019). The TWDB Groundwater Database lists 13 water wells within 500 feet of the OHP Project area (see **Figure 6a-m**). **Table 3** shows the well numbers, well types, and recorded water depth for the listed wells.

Table 3: Water Wells within 500 feet of the Project Area

Well Number	Aquifer	Primary Use	Water Depth (feet)	Date of Sample	Well Type
5841903	Trinity	Domestic	130	1969	Withdrawal of Water
5849310	Trinity	Unused	195	1962	Withdrawal of Water
5849316	Trinity	Domestic	240	1980	Withdrawal of Water
5849323	Unassigned	Unknown	N/A	N/A	Withdrawal of Water
5850103	Edwards	Domestic	35	1947	Withdrawal of Water
5850104	Edwards	Unused	219	1946	Withdrawal of Water
5850105	Edwards	Unused	145	1978	Withdrawal of Water
5850115	Trinity	Domestic	142	1970	Withdrawal of Water
5850123	Edwards	Public Supply	157	2003	Withdrawal of Water
5850129	Trinity	Irrigation	265	2004	Withdrawal of Water
5850130	Trinity	Irrigation	265	2004	Withdrawal of Water
5841903	Trinity	Domestic	130	1999	Withdrawal of Water
5849323	Unassigned	Unknown	N/A	2003	Withdrawal of Water

Source: TWDB, 2019

The 2019 design revisions did not result in additional impacts to recorded wells within the project area; however, two wells (5841903 and 5849323) were added to **Table 3** due their location near the Bee Cave detention pond location.

3.8 Executive Order 11990, Wetlands

Executive Order 11990 Protection of Wetlands (issued in 1977) requires federal agencies to minimize the destruction or modification of wetlands. Two wetlands were delineated within the project area; therefore, Executive Order 11990 would apply and project design would minimize impacts to wetlands, as practicable.

3.9 Other Regulations

The 2019 design revisions would not result in a change to the findings described in the Final EIS for the regulations listed below. Each regulation was addressed in detail during the water resources analysis conducted for the Final EIS/ROD and a brief summary of each finding is provided below.

General Bridge Act and Section 9 of the Rivers and Harbors Act

No waters within the project area would meet the definition of navigable (as defined at 33 CFR 2.36); therefore, this regulation is not applicable to the project.

Section 10 of the Rivers and Harbors Act

The Fort Worth District of the USACE is among a group of districts that have produced a list of navigable waters that are regulated under Section 10 of the Rivers and Harbors Act. No waters within the OHP Project area are considered navigable; therefore, the proposed project would not require a Section 10 permit.

Texas Coastal Management Program

The project is located in Travis County, outside of the Texas Coastal Management Program Boundary; therefore, a consistency determination would not be required.

Coastal Barrier Resources Act

The proposed project is located within Travis County, Texas, and is not located within a Coastal Barrier Resources System unit or otherwise protected area; therefore, CBRA is not applicable.

Trinity River Corridor Development Certificate

The project is located outside the Trinity River Corridor Development Regulatory zone. A Corridor Development Certificate would not be required.

International Boundary and Water Commission

The project is located outside of the jurisdiction of the International Boundary and Water Commission; therefore, coordination would not be required.

Wild and Scenic Rivers

This project would not involve work within a segment of any river designated as a Wild and Scenic River, and it would not harm the free-flowing condition, water quality, or outstanding resource values of any designated Wild and Scenic Rivers.

4. CONCLUSIONS

This *Water Resources Technical Addendum* has been prepared to document new water resources impacts resulting from the OHP Project 2019 design changes. Additionally, this addendum includes the results of field investigations conducted along portions of the proposed right-of-way where access to previously unsurveyed parcels has been granted. The results of the additional analysis and site visits are summarized below:

- The natural setting and land use of the project area would not be substantially changed from what was presented in the Final EIS/ROD as a result of the 2019 reevaluation.

- Six new geologic features were identified in the 2019 revised GA. Only one of these features has been evaluated as sensitive. Geologic resources within the project area would undergo impacts from construction activities. No new impacts are anticipated as a result of the 2019 design revisions. Because the project area has been heavily modified by long-term development, impacts to geology and soils resulting from the OHP Project would be largely consistent with the continued operation and maintenance of the existing facility. However, due to the higher TSS removal, some water quality impacts could be mitigated by the proposed BMPs identified in the Final EIS/ROD.

- A wetland/waters of the U.S. delineation was conducted in March 2019. This effort documented four additional water features (one stream, two open water features, and one wetland) that were not discussed in the Final EIS/ROD. Wetland and Waters of the U.S. impacts have not been quantified at this point in project development. Based on initial design, it appears that many of the individual stream crossings could be bridged, therefore minimizing or avoiding fill impacts to these resources. However, impacts to the two wetland sites are likely and would require a Pre-construction Notification to the USACE. Once limits of construction are known, permitting requirements can be identified.

- No additional coordination with the TCEQ would be required as a result of the 2019 reevaluation. The project would require the implementation of an approved Edwards Aquifer Protection Plan once design has been finalized. No additional impacts to groundwater wells or the Edwards Aquifer are anticipated as a result of the design revisions.

- The project would require Section 401 Water Quality Certification and would require compliance with Section 402 requirements related to the TPDES and the CGP as well as MS4 notification requirements.
- Coordination with the local floodplain coordinator would be required. This action and those outlined in TxDOT's Hydraulic Design Manual would satisfy the requirements established by Executive Order 11988.

No additional water resource commitments would be required in order to achieve NEPA clearance on the 2019 reevaluation.

5. REFERENCES

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Attachment A: Figures

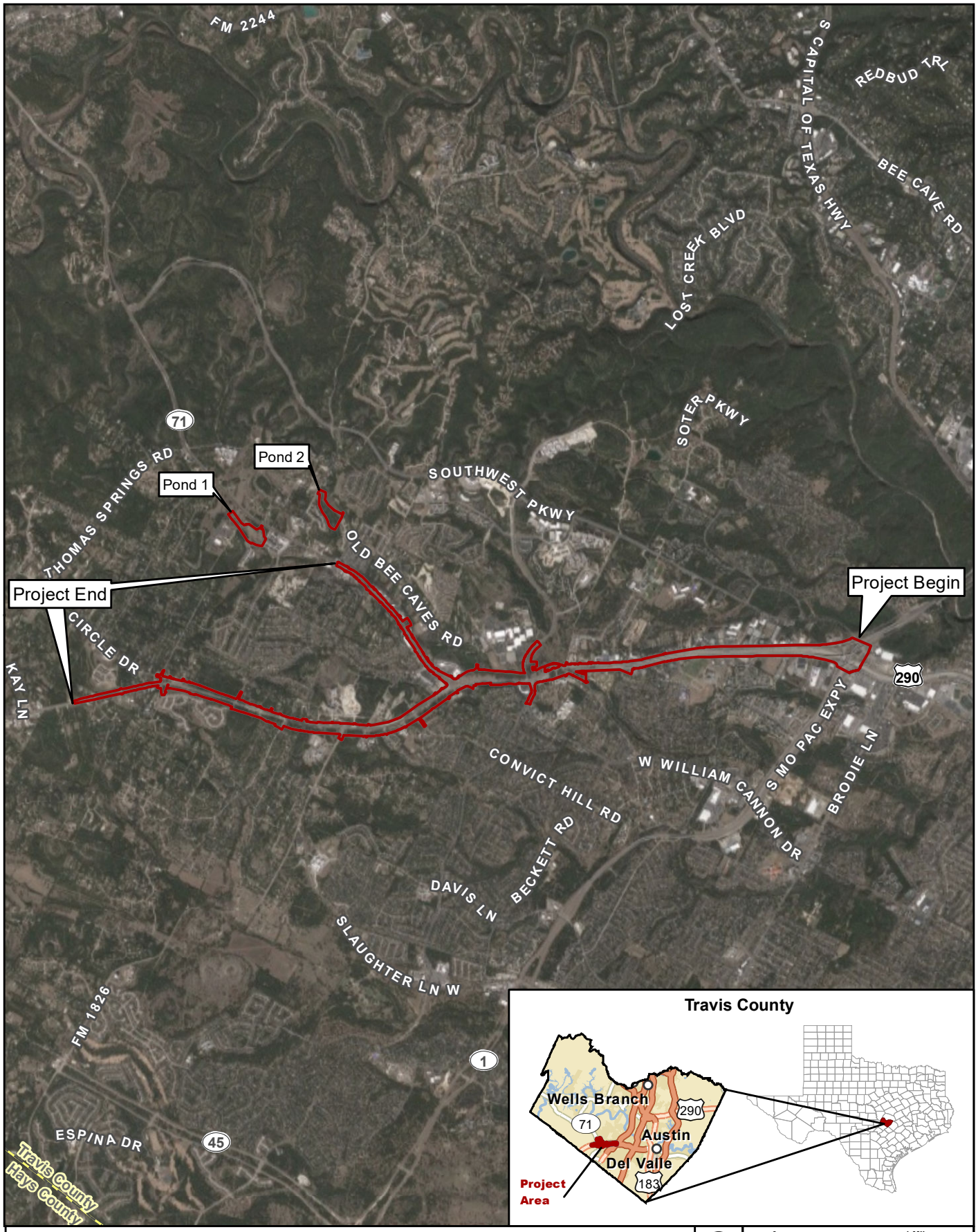

Figure 1. **Project Location (Aerial Base)**

Oak Hill Parkway: US 290W from Mopac/Loop1 to west of Circle Drive and SH 71 from US 290W to Silvermine Drive

Project Location

Basemap Source: Google (2018)

0 1 Mile
0 1.5 Kilometers

Prepared for: TxDOT	1 in = 1 mile
	Scale: 1:63,360
CSJ: 0013-08-060 and 0700-03-077	Date: 5/7/2019

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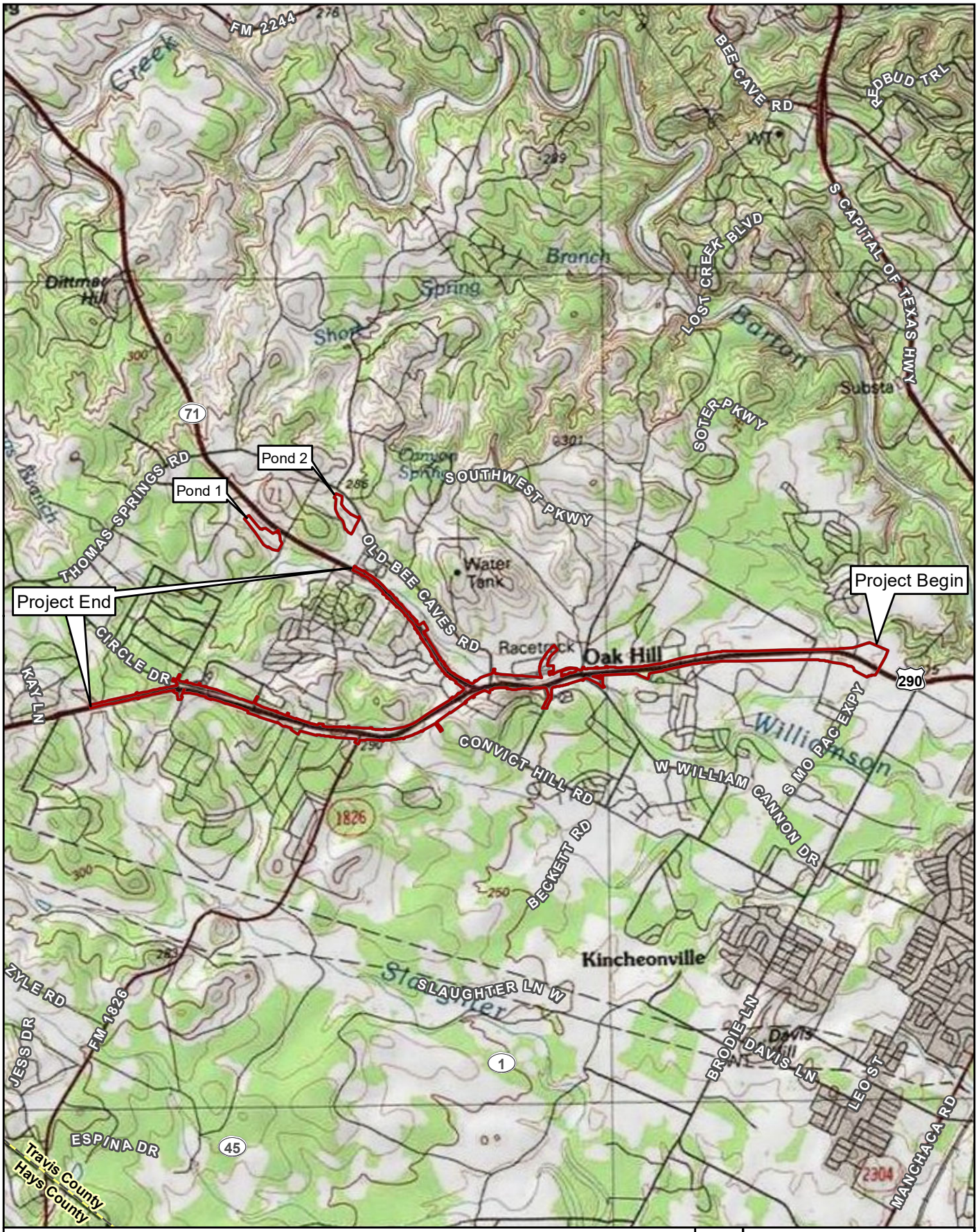

Figure 2. **Project Location (Topographic Base)**

Oak Hill Parkway: US 290W from Mopac/Loop1 to west of Circle Drive and SH 71 from US 290W to Silvermine Drive

Project Location

Topographic Source: USGS Austin, Texas 30' x 60' Quadrangle (1985)

0 1 Mile
0 1.5 Kilometers

Prepared for: TxDOT	1 in = 1 mile
	Scale: 1:63,360
CSJ: 0013-08-060 and 0700-03-077	Date: 5/7/2019

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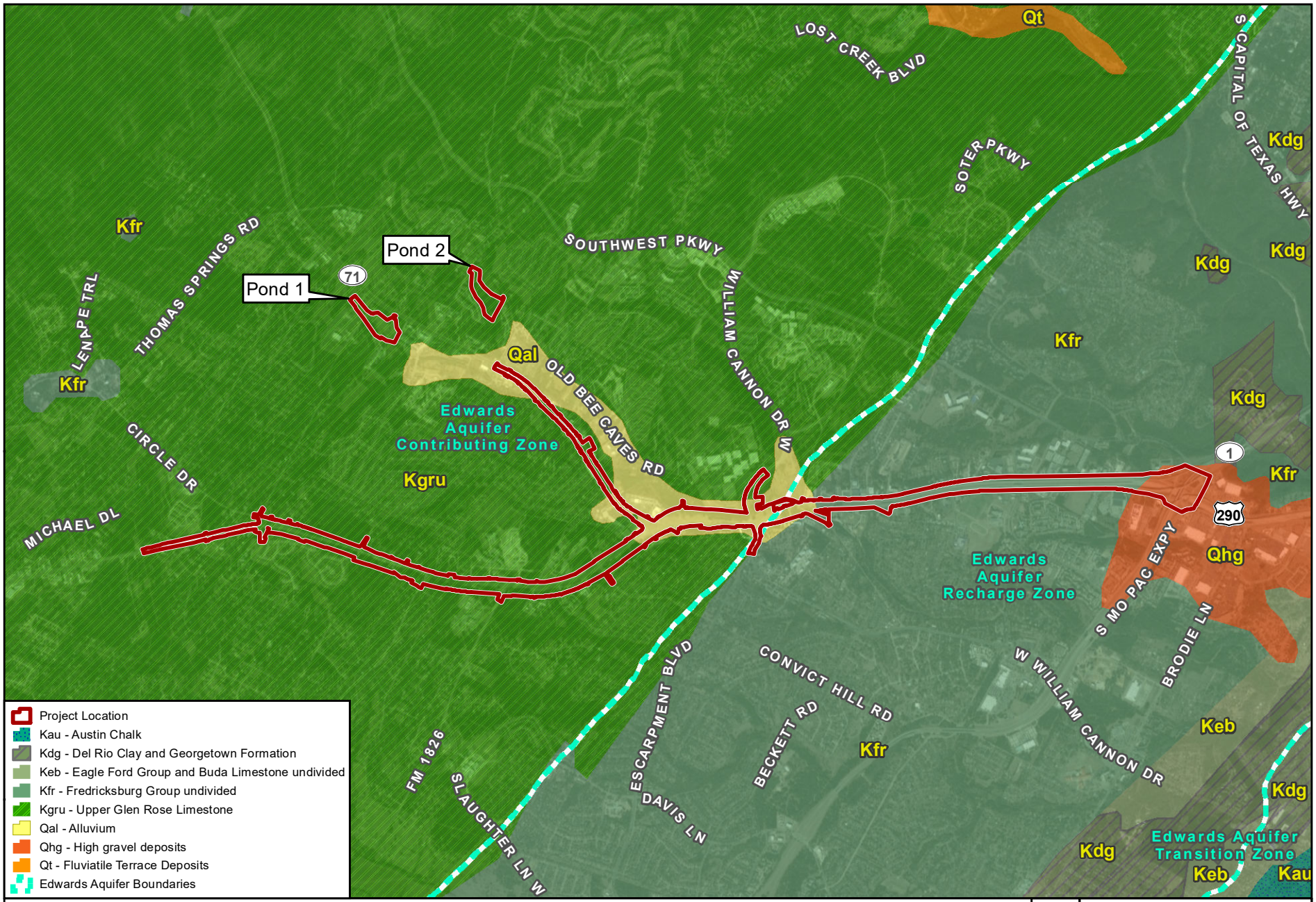

Figure 3. Project Area Geology

Oak Hill Parkway: US 290W from Mopac/Loop 1 to west of Circle Drive and SH 71 from US 290W to Silvermine Drive

Data Sources: Geologic Database of Texas (2007)/
Geologic Atlas of Texas Austin Sheet (1981), TCEQ (2005)
Aerial Source: Google (2018)

Prepared for: TxDOT	1 in = 0.75 mile
	Scale: 1:47,520
CSJ: 0013-08-060 and 0700-03-077	Date: 5/8/2019

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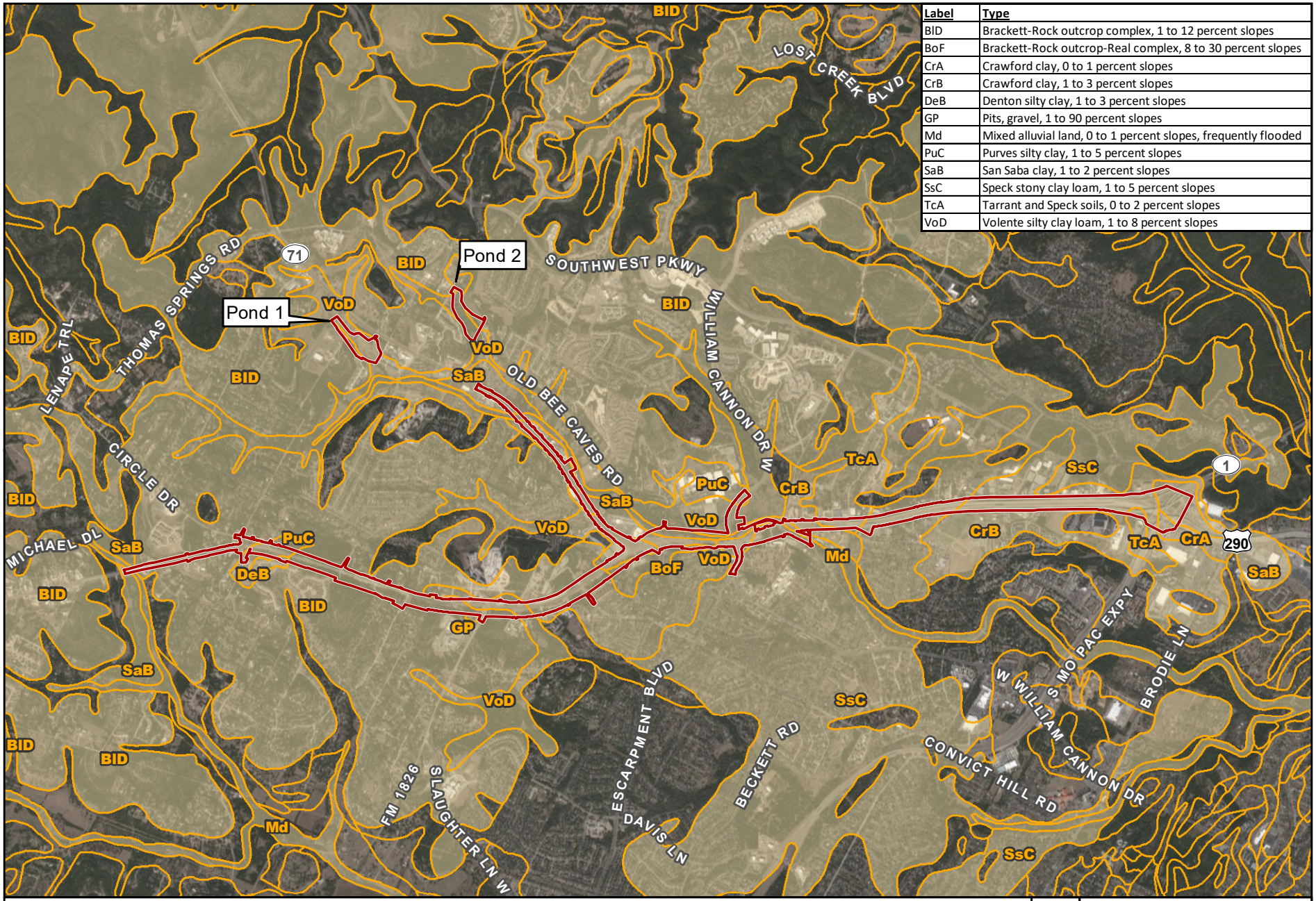

Label	Type
BID	Brackett-Rock outcrop complex, 1 to 12 percent slopes
BoF	Brackett-Rock outcrop-Real complex, 8 to 30 percent slopes
CrA	Crawford clay, 0 to 1 percent slopes
CrB	Crawford clay, 1 to 3 percent slopes
DeB	Denton silty clay, 1 to 3 percent slopes
GP	Pits, gravel, 1 to 90 percent slopes
Md	Mixed alluvial land, 0 to 1 percent slopes, frequently flooded
PuC	Purves silty clay, 1 to 5 percent slopes
SaB	San Saba clay, 1 to 2 percent slopes
SsC	Speck stony clay loam, 1 to 5 percent slopes
TcA	Tarrant and Speck soils, 0 to 2 percent slopes
VoD	Volente silty clay loam, 1 to 8 percent slopes

Figure 4. Project Area Soils

Oak Hill Parkway: US 290W from Mopac/Loop 1 to west of Circle Drive and SH 71 from US 290W to Silvermine Drive

Project Location
Soil Unit Boundary
Intersecting Soil

Data Source: NRCS (2018)
Aerial Source: Google (2018)

0 0.75 Miles
0 1 Kilometer

Prepared for: TxDOT	1 in = 0.75 mile
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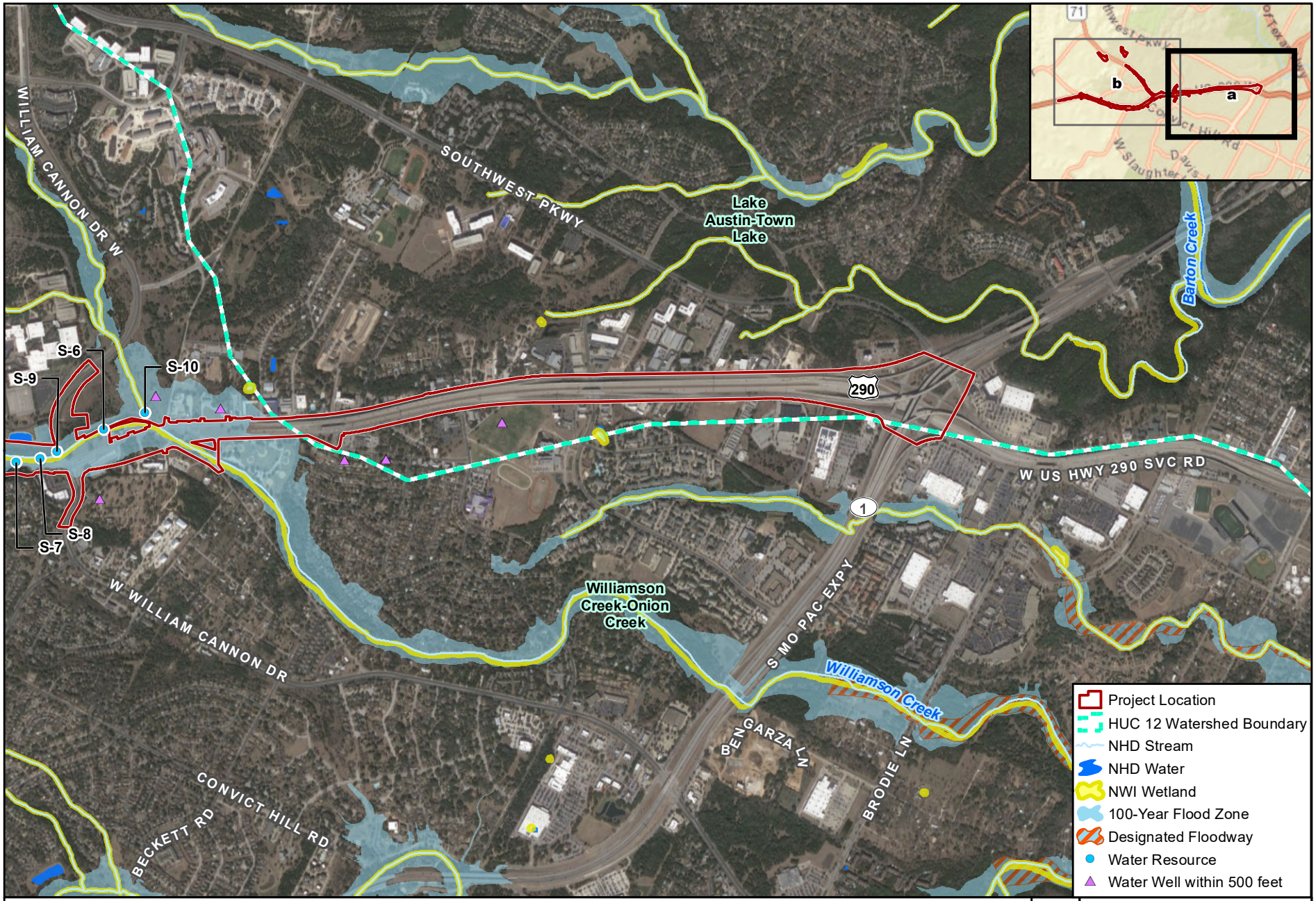

Figure 5a. Water Resources

Oak Hill Parkway: US 290W from Mopac/Loop 1 to west of Circle Drive and SH 71 from US 290W to Silvermine Drive

Data Sources: NHD (2018), NWI (2018), FEMA NFHL (2018), TWDB (2019), HDR (2019)
Aerial Source: Google (2018)

Prepared for: TxDOT	1 in = 2,000 feet
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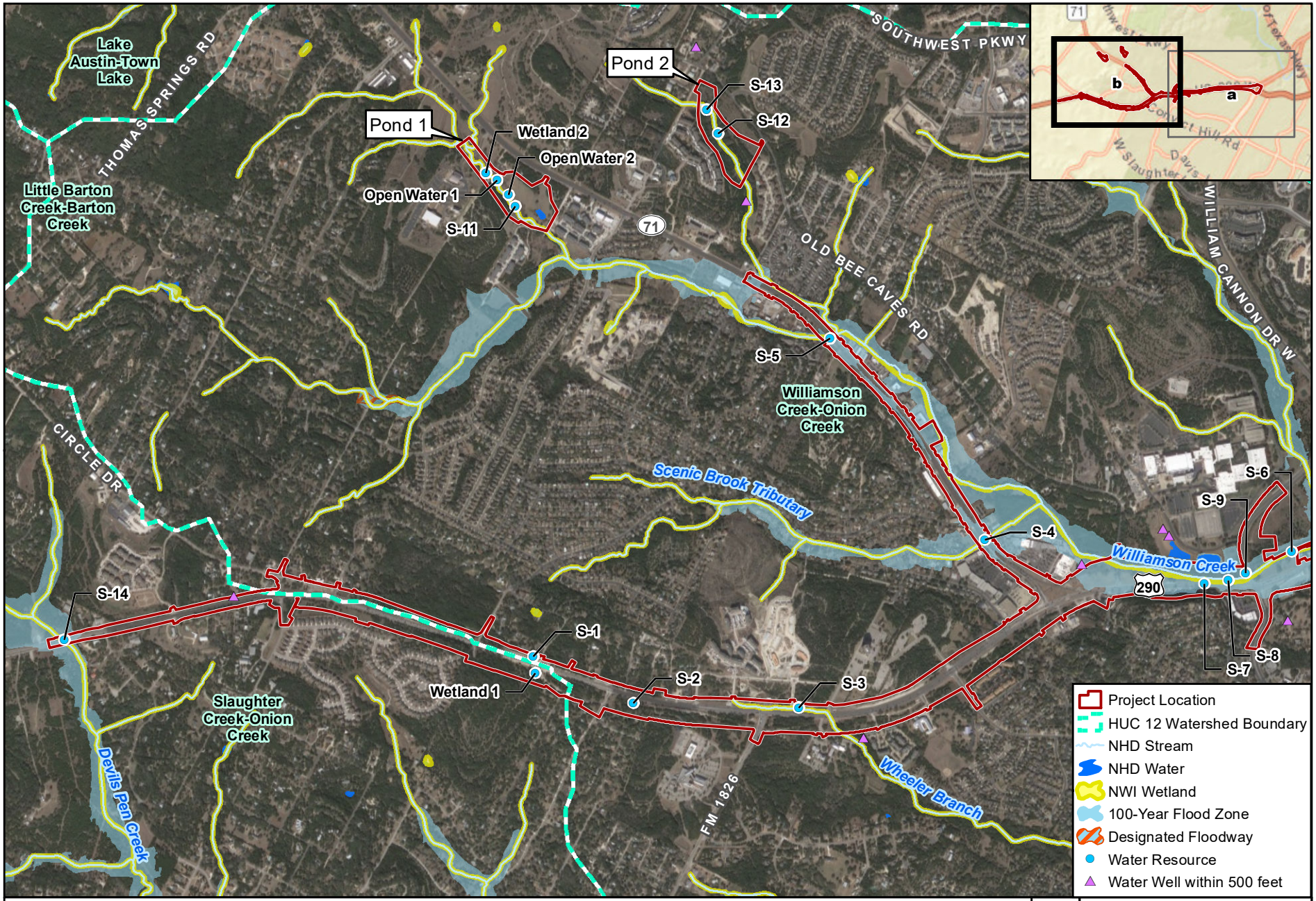

Figure 5b. Water Resources

Oak Hill Parkway: US 290W from Mopac/Loop 1 to west of Circle Drive and SH 71 from US 290W to Silvermine Drive

Data Sources: NHD (2018), NWI (2018), FEMA NFHL (2018), TWDB (2019), HDR (2019)
Aerial Source: Google (2018)

Prepared for: TxDOT	1 in = 2,000 feet
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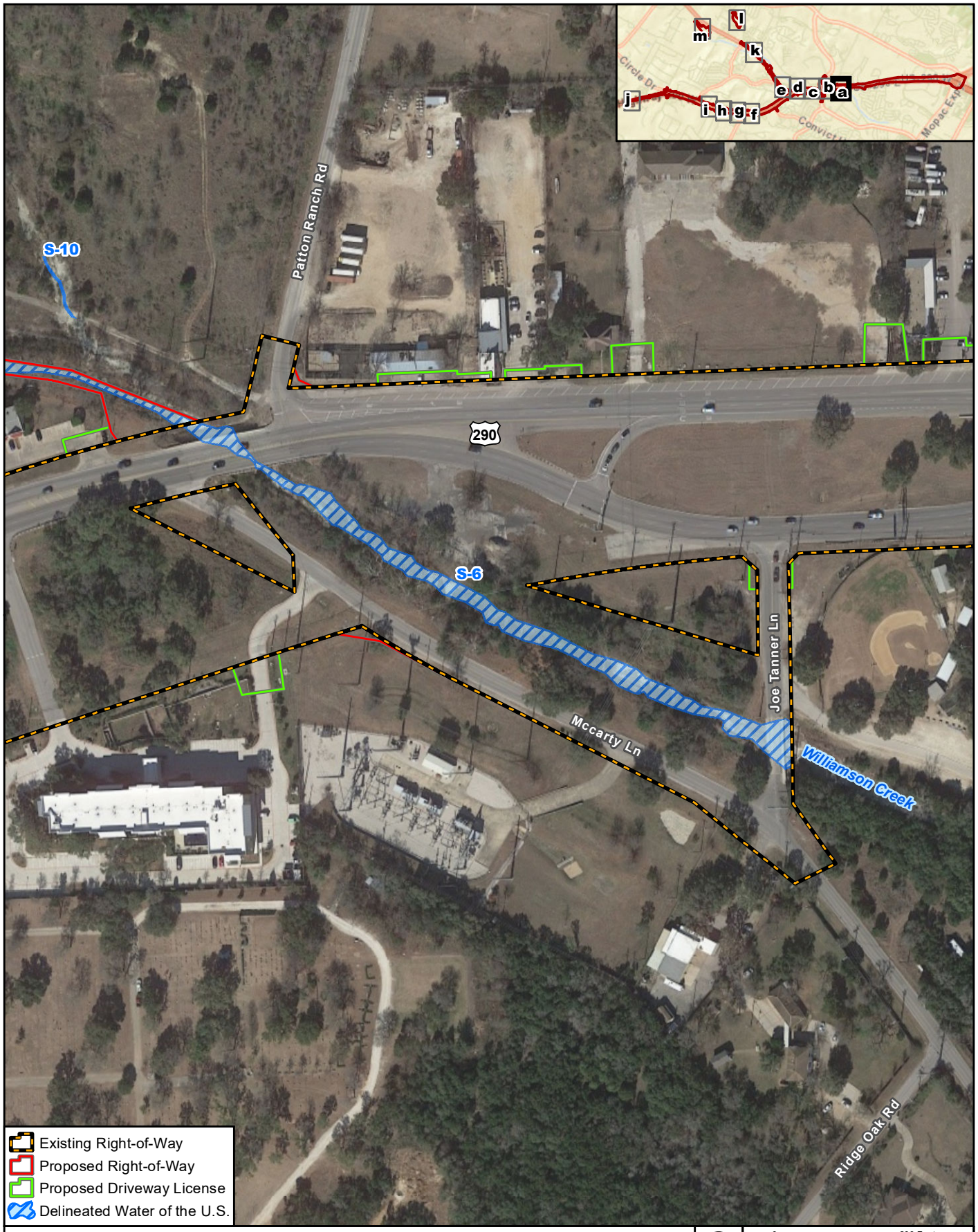

Figure 6a. Water Crossings

Oak Hill Parkway: US 290W from Mopac/Loop 1 to west of Circle Drive and SH 71 from US 290W to Silvermine Drive

Data Sources: HDR (2019)
Aerial Source: Google (2018)

0 200 Feet
0 60 Meters

Prepared for: TxDOT	1 in = 200 feet
	Scale: 1:2,400
CSJ: 0013-08-060 and 0700-03-077	Date: 5/8/2019

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Figure 6b. Water Crossings

Oak Hill Parkway: US 290W from Mopac/Loop 1 to west of Circle Drive and SH 71 from US 290W to Silvermine Drive

Data Sources: HDR (2019)
Aerial Source: Google (2018)

0 200 Feet
0 60 Meters

Prepared for: TxDOT	1 in = 200 feet
	Scale: 1:2,400
CSJ: 0013-08-060 and 0700-03-077	Date: 5/8/2019

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Figure 6c. Water Crossings

Oak Hill Parkway: US 290W from Mopac/Loop 1 to west of Circle Drive and SH 71 from US 290W to Silvermine Drive

Data Sources: HDR (2019)
Aerial Source: Google (2018)

0 200 Feet
0 60 Meters

Prepared for: TxDOT	1 in = 200 feet
	Scale: 1:2,400
CSJ: 0013-08-060 and 0700-03-077	Date: 5/8/2019

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Figure 6d. Water Crossings

Oak Hill Parkway: US 290W from Mopac/Loop 1 to west of Circle Drive and SH 71 from US 290W to Silvermine Drive

Data Sources: HDR (2019)
Aerial Source: Google (2018)

0 200 Feet
0 60 Meters

Prepared for: TxDOT	1 in = 200 feet
	Scale: 1:2,400
CSJ: 0013-08-060 and 0700-03-077	Date: 5/8/2019

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Figure 6e. Water Crossings

Oak Hill Parkway: US 290W from Mopac/Loop 1 to west of Circle Drive and SH 71 from US 290W to Silvermine Drive

Data Sources: HDR (2019)
Aerial Source: Google (2018)

0 200 Feet
0 60 Meters

Prepared for: TxDOT	1 in = 200 feet
	Scale: 1:2,400
CSJ: 0013-08-060 and 0700-03-077	Date: 5/8/2019

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Figure 6f. Water Crossings

Oak Hill Parkway: US 290W from Mopac/Loop 1 to west of Circle Drive and SH 71 from US 290W to Silvermine Drive

Data Sources: HDR (2019)
Aerial Source: Google (2018)

0 200 Feet
0 60 Meters

Prepared for: TxDOT	1 in = 200 feet
	Scale: 1:2,400
CSJ: 0013-08-060 and 0700-03-077	Date: 5/8/2019

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Figure 6g. Water Crossings

Oak Hill Parkway: US 290W from Mopac/Loop 1 to west of Circle Drive and SH 71 from US 290W to Silvermine Drive

Data Sources: HDR (2019)
Aerial Source: Google (2018)

0 200 Feet
0 60 Meters

Prepared for: TxDOT	1 in = 200 feet
	Scale: 1:2,400
CSJ: 0013-08-060 and 0700-03-077	Date: 5/8/2019

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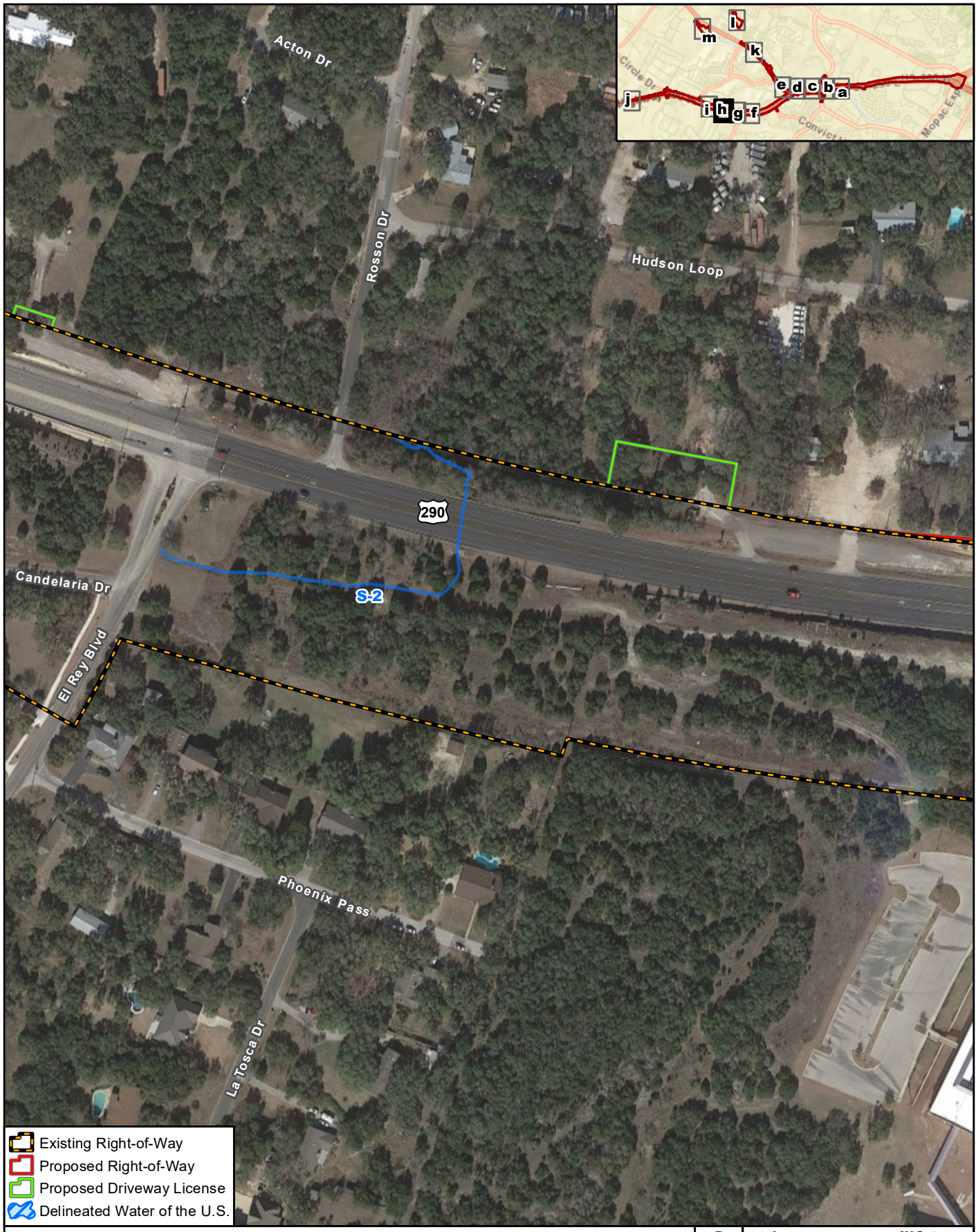

Figure 6h. Water Crossings

Oak Hill Parkway: US 290W from Mopac/Loop 1 to west of Circle Drive and SH 71 from US 290W to Silvermine Drive

Data Sources: HDR (2019)
Aerial Source: Google (2018)

0 200 Feet
0 60 Meters

Prepared for: TxDOT	1 in = 200 feet
	Scale: 1:2,400
CSJ: 0013-08-060 and 0700-03-077	Date: 5/8/2019

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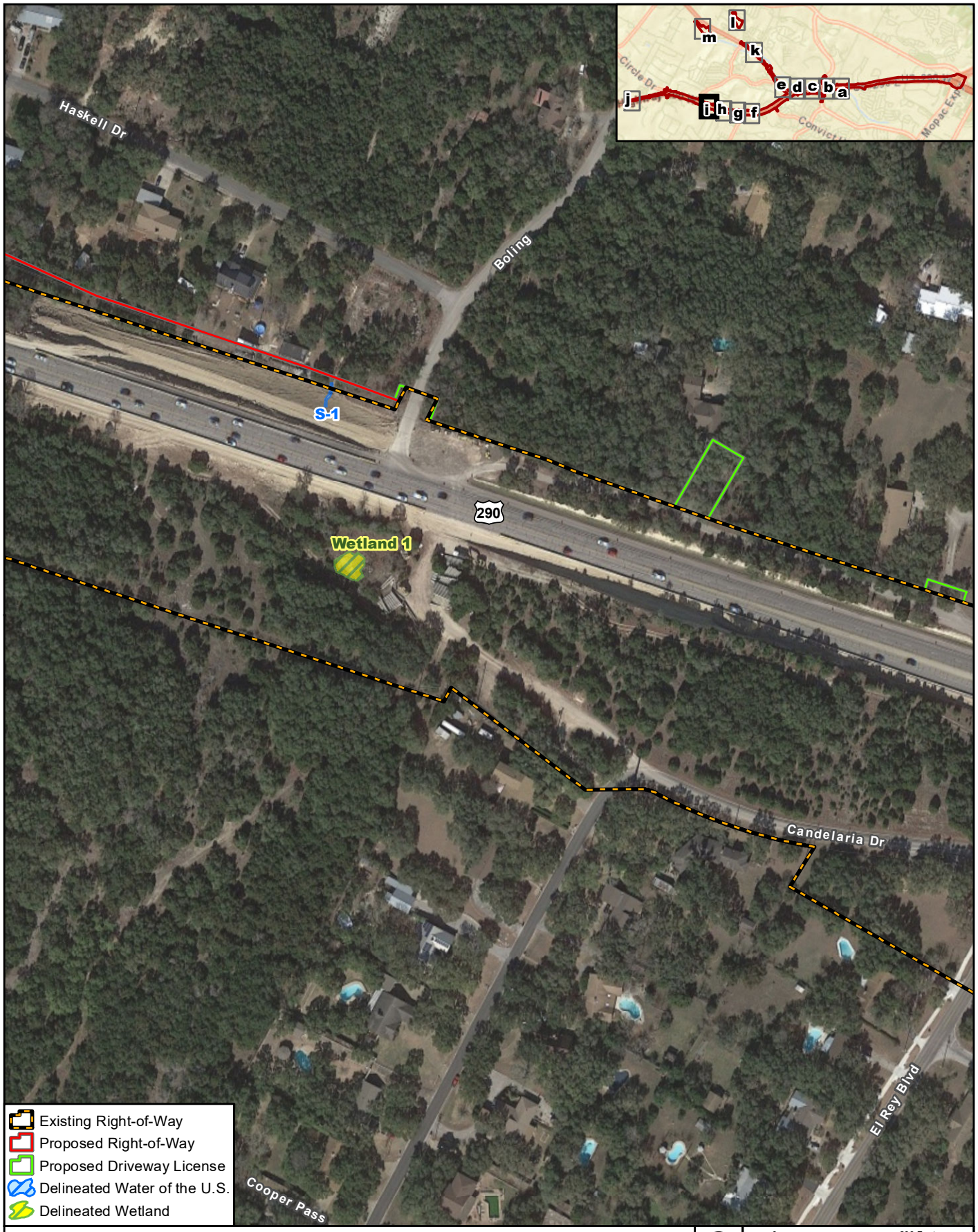

Figure 6i. Water Crossings

Oak Hill Parkway: US 290W from Mopac/Loop 1 to west of Circle Drive and SH 71 from US 290W to Silvermine Drive

Data Sources: HDR (2019)
Aerial Source: Google (2018)

0 200 Feet
0 60 Meters

Prepared for: TxDOT	1 in = 200 feet
	Scale: 1:2,400
CSJ: 0013-08-060 and 0700-03-077	Date: 5/8/2019

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Figure 6j. Water Crossings

Oak Hill Parkway: US 290W from Mopac/Loop 1 to west of Circle Drive and SH 71 from US 290W to Silvermine Drive

Data Sources: HDR (2019)
Aerial Source: Google (2018)

0 200 Feet
0 60 Meters

Prepared for: TxDOT	1 in = 200 feet
	Scale: 1:2,400
CSJ: 0013-08-060 and 0700-03-077	Date: 5/8/2019

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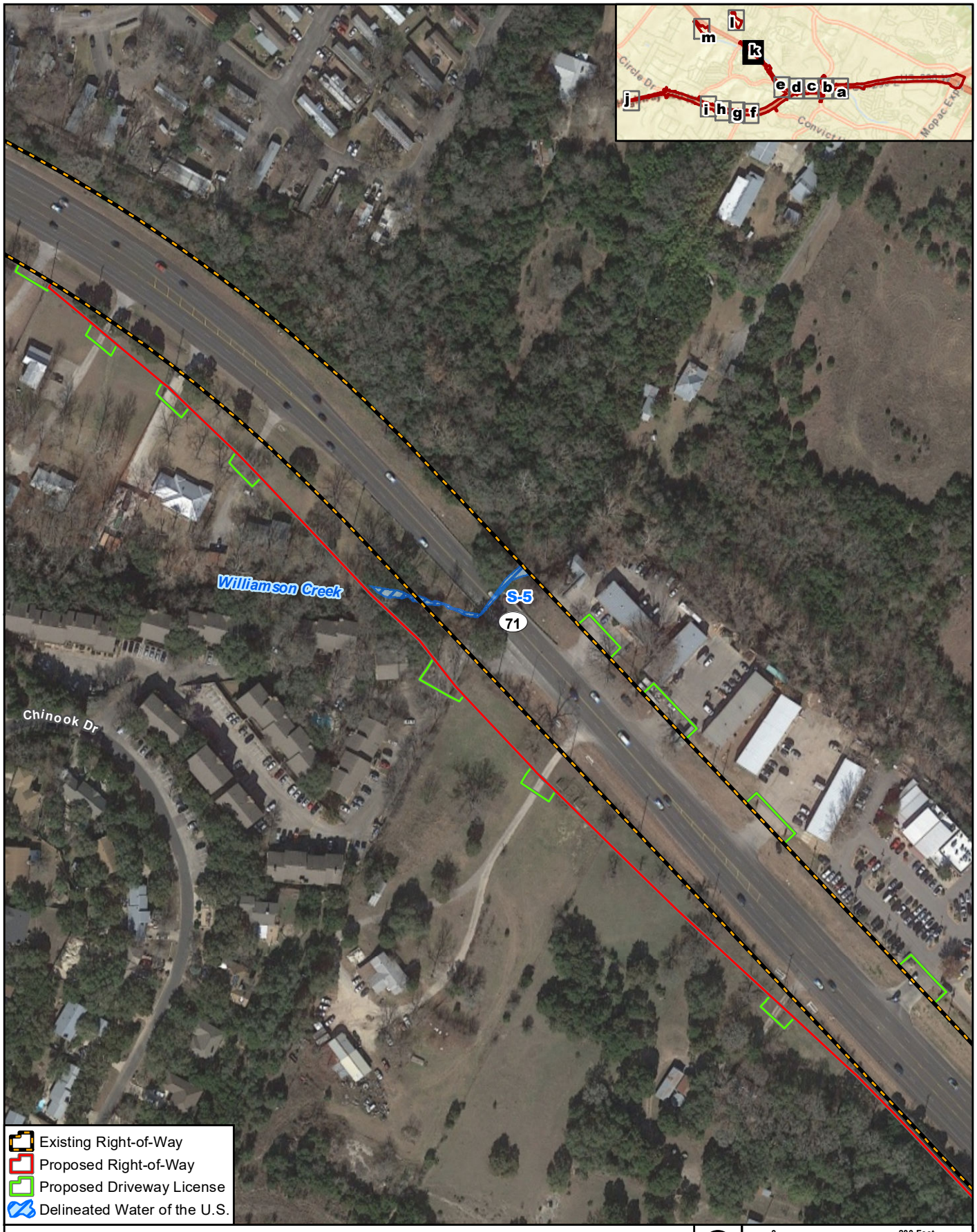

Figure 6k. Water Crossings

Oak Hill Parkway: US 290W from Mopac/Loop 1 to west of Circle Drive and SH 71 from US 290W to Silvermine Drive

Data Sources: HDR (2019)
Aerial Source: Google (2018)

0 200 Feet
0 60 Meters

Prepared for: TxDOT	1 in = 200 feet
	Scale: 1:2,400
CSJ: 0013-08-060 and 0700-03-077	Date: 5/8/2019

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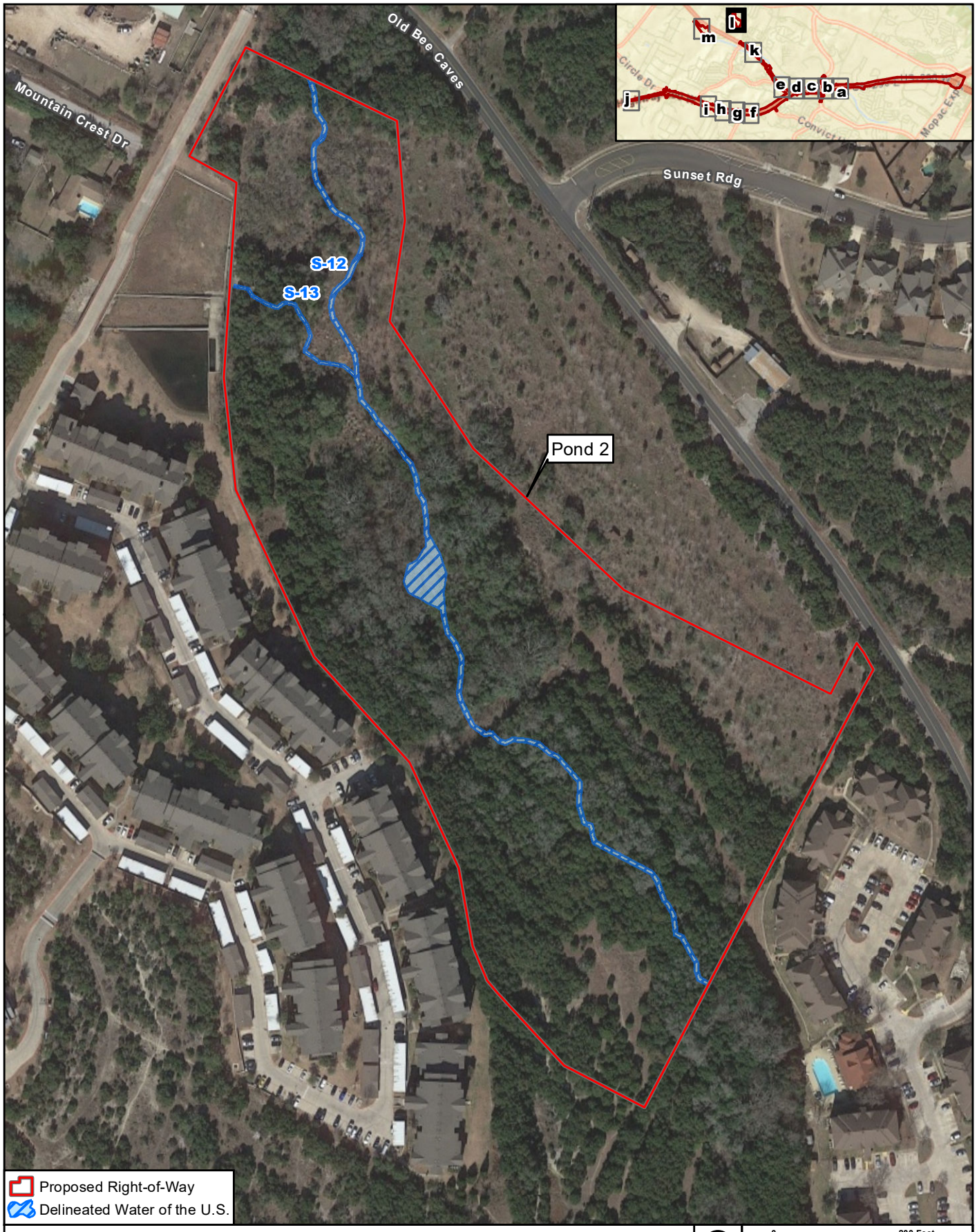

Figure 6l. Water Crossings

Oak Hill Parkway: US 290W from Mopac/Loop 1 to west of Circle Drive and SH 71 from US 290W to Silvermine Drive

Data Sources: HDR (2019)
Aerial Source: Google (2018)

0 200 Feet
0 60 Meters

Prepared for: TxDOT	1 in = 200 feet
	Scale: 1:2,400
CSJ: 0013-08-060 and 0700-03-077	Date: 5/8/2019

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Figure 6m. Water Crossings

Oak Hill Parkway: US 290W from Mopac/Loop 1 to west of Circle Drive and SH 71 from US 290W to Silvermine Drive

Data Sources: HDR (2019)
Aerial Source: Google (2018)

0 200 Feet
0 60 Meters

Prepared for: TxDOT	1 in = 200 feet
	Scale: 1:2,400
CSJ: 0013-08-060 and 0700-03-077	Date: 5/8/2019

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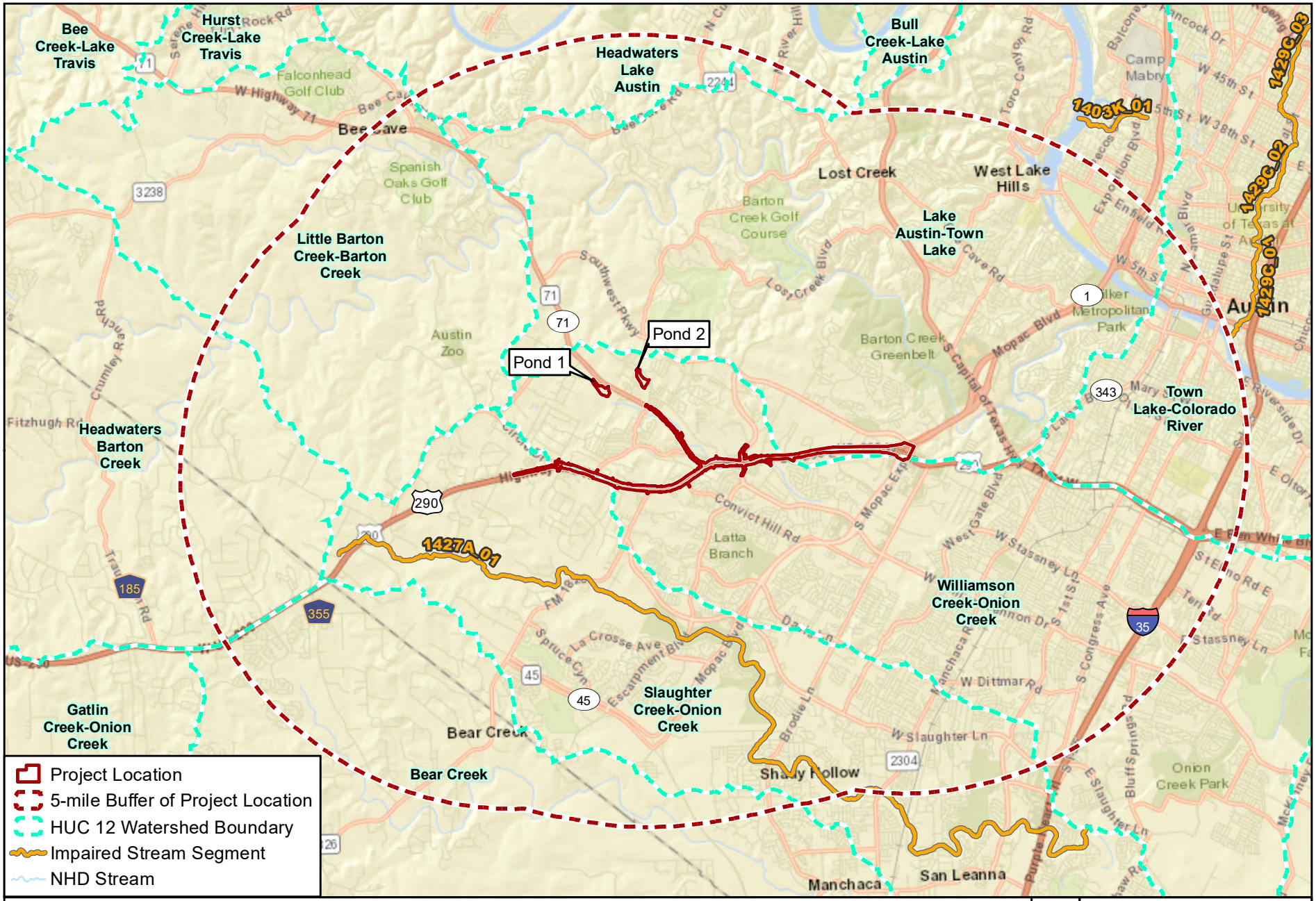

Figure 7. Impaired Stream Segments

Oak Hill Parkway: US 290W from Mopac/Loop1 to west of Circle Drive and SH 71 from US 290W to Silvermine Drive

Data Sources: TCEQ (2018), NHD (2018)
Basemap Source: ESRI (2019)

0 2 Miles
0 3 Kilometers

Prepared for: TxDOT	1 in = 2 miles
	Scale1:126,720
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Attachment B: Project Area Photographs

Photograph 1: Commercial land use along SH 71 south of Williamson Creek crossing; facing south.

Photograph 2: Urban land use and commercial properties along US 290; facing east.

Photograph 3: Disturbed oak-juniper vegetation along US 290 (foreground) and residential development in background; facing southeast.

Photograph 4: Project eastern terminus at Mopac; facing east.

Photograph 5: Oak-juniper woodland and native-invasive vegetation along US 290; facing west.

Photograph 6: Urban low intensity along US 290 adjacent to roadway and disturbed oak-juniper vegetation adjacent to the fenceline; facing east.

Photograph 7: Live Oak grove at Circle Drive and US 290; facing northeast

Photograph 8: Woodland vegetation type along US 290; facing north.

Photograph 9: Riparian vegetation at SH 71 Williamson Creek crossing (S-5); facing southeast.

Photograph 10: Riparian vegetation along Williamson Creek (S-6) at Joe Tanner; facing northwest towards US 290/SH71.

Photograph 11: Riparian vegetation along Williamson Creek (S-6) at Old Bee Caves Road; facing east.

Photograph 12: Limestone outcrop along US 290; facing west.

Photograph 13: Urban Low Intensity vegetation and limestone cliff at the start of Recharge Zone along US290/SH71 at William Cannon; facing east.

Photograph 14: A portion of the SH 71 detention pond, currently being used as a disk golf course; facing northeast.

Photograph 15: Grazing land located within central portion of SH 71 detention pond site; facing south.

Photograph 16: Recently tilled plot of land near residential structure located in SH 71 detention pond site; facing west.

Photograph 17: Utility infrastructure within the Bee Cave detention pond; facing west.

Photograph 18: Vegetated woodland within the Bee Cave detention pond; facing west.

Photograph 19: S-1; facing north.

Photograph 20: S-2; facing north.

Photograph 21: Wheeler Branch (S-3) south of 290; facing north.

Photograph 22: Wheeler Branch (S-3) north of US 290; facing south.

Photograph 23: Scenic Brook Tributary (S-4) from south of SH 71; facing north.

Photograph 24: S-5 under SH 71 looking west

Photograph 25: S-5 looking east

Photograph 26: Along Williamson Creek (S-6) north of US 290/SH 71; facing east.

Photograph 27: Williamson Creek (S-6) west of the low water crossing at Old Bee Caves Road; facing east.

Photograph 28: Perennial pool areas along S-6, Williamson Creek east of William Cannon; viewing east.

Photograph 29: Perennial pool areas along S-6, Williamson Creek, east of William Cannon; viewing east.

Photograph 30: Williamson Creek (S-6) upstream of US 290/SH 71 crossing; facing south.

Photograph 31: Downstream of US 290/SH 71 crossing of Williamson Creek (S-6); facing south.

Photograph 32: Williamson Creek (S-6) at William Cannon Road crossing; facing east.

Photograph 33: Unnamed tributary to Williamson Creek (S-7) south of US 290/SH 71; facing east.

Photograph 34: Unnamed tributary to Williamson Creek (S-8) north of US 290/SH 71; facing south.

Photograph 35: S-10, dry creek bed; facing north.

Photograph 36: Unnamed tributary to Williamson Creek (S-11) within SH 71 detention pond site; facing south.

Photograph 37: Unnamed tributary to Williamson Creek (S-11) within SH 71 detention pond site; facing north.

Photograph 38: Unnamed tributary to Williamson Creek (S-12) within the Bee Cave detention pond site; facing northwest.

Photograph 39: Unnamed tributary to Williamson Creek (S-12) within Bee Cave detention pond site; facing south.

Photograph 40: Devil's Pen Creek (S-14) at the US 290 crossing at the western project terminus; facing north.

Photograph 41: Excavated on-channel stock pond (Open Water 1) located within SH 71 detention pond; facing north.

Photograph 42: Excavated on-channel stock pond (Open Water 2) within SH 71 detention pond; facing southwest.

Photograph 43: Wetland (Wetland 1) near Boling Drive, within the project area; facing south.

Photograph 44: Wetland (Wetland 2) within the SH 71 detention pond; facing south.

Attachment C: Wetland Determination Forms

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: 290/71 Oakhill Parkway City/County: Travis Sampling Date: 7/20/2015

Applicant/Owner: TxDOT State: Tx Sampling Point: W-1

Investigator(s): C. Magers, S. Moren Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): - Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): I (Southwest Plateaus) Lat: 30.231008 Long: -97.899092 Datum: NAD 83

Soil Map Unit Name: Brackett-Rock outcrop complex, 1 to 12 percent slopes NWI classification: n/a

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ 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 _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Appears to be a dry pond that was dug in uplands during construction of roadway with a cut into an existing stream.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. none			
2.			
3.			
4.			
	-	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. Baccharis halimifolia	5	yes	FAC
2. Salix nigra	5	yes	FACW
3. Sapium sebiferum	5	yes	FAC
4. Juniperus ashei	5	yes	NI
5. Melia azedarach	5	yes	FACU
	25	= Total Cover	
Herb Stratum (Plot size: 5')			
1. Polygonum hydropiperoides	30	yes	OBL
2. Muhlenbergia reverchonii	15	no	FAC
3. Typha latifolia	5	no	OBL
4. Yucca rupicola	5	no	NI
5.			
6.			
7.			
8.			
9.			
10.			
	55	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1. Lonicera japonica	20	yes	FACU
2.			
	20	= Total Cover	

% Bare Ground in Herb Stratum 45

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: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 57% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: W-1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10 YR 6/2						gravel	

[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: gravel

Depth (inches): 2

Hydric Soil Present? Yes ____ No ✓

Remarks:

Soil appears to be greatly affected by adjacent roadway. Gravel was found at surface level and restricted digging below 2 inches.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ✓ No ____

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

Google Earth aerial photograph

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Oak Hill Parkway / Life Austin Church City/County: Austin, Travis Sampling Date: 03-15-19

Applicant/Owner: Texas Department of Transportation State: TX Sampling Point: UP-1

Investigator(s): S. Moren, A. Roberts, M. Gordey Section, Township, Range: N/A

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

Subregion (LRR): Southwestern Prairies (LRRJ) Lat: 30.251613° Long: -97.900889° Datum: NAD 83

Soil Map Unit Name: Volente silty clay loam 1 to 8 percent slopes 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	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus virginiana*	50	Y	FACU
2. Juniperus ashei	10	N	FACU
3. Ulmus crassifolia	10	N	FAC
4.			
	70	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1. Ligustrum japonicum	5	N	FAC
2. Ilex vomitoria	5	N	FAC
3. Mahonia trifoliolata	5	N	
4.			
5.			
	15	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Bothriochloa ischaemum	35	Y	
2. Bothriochloa sacharoides	35	Y	
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	50	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. Smilax bona-nox	5	N	FACU
2. *Rubus trivialis*	5	N	FAC
	10	= Total Cover	

% Bare Ground in Herb Stratum 30

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (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:

Mowed warm season grasses dominate the herbaceous layer.

SOIL

Sampling Point: UP-1

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

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-16	10YR 3/2	100					Silty Clay	uniform matrix color

[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:

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: Oak Hill Parkway / Life Austin Church City/County: Austin, Travis Sampling Date: 03-15-19

Applicant/Owner: Texas Department of Transportation State: TX Sampling Point: W-1

Investigator(s): S. Moren, A. Roberts, M. Gordey Section, Township, Range: N/A

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

Subregion (LRR): Southwestern Prairies (LRRJ) Lat: 30.251648° Long: -97.900925° Datum: NAD 83

Soil Map Unit Name: Brackett-Rock outcrop complex, 1 to12 percent slopes NWI classification: Riverine - 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 _____, 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:

Small emergent wetland adjacent to stream channel.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. *Typha angustifolia*	50	Y	OBL
2. Eleocharis palustris	5	N	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	55 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 45

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

X 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:

No woody species within area delineated as wetland.

SOIL

Sampling Point: W-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-4	10YR 3/1	100	None				Sandy Clay Loam	
5-14	10YR 3/2	100	None				Sandy Clay Loam	

[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**)
- X 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:

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X 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)
- ___ 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): Surface

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

Wetland Hydrology Present? **Yes** X **No** _____

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

Remarks: