Draft Waters of the U.S. Delineation Report

Barton Skyway Ramp Relief

MoPac Expressway from Barton Skyway to Loop 360 (CSJ 3136-01-193)

Texas Department of Transportation, Austin District

April 2021

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 USC 327 and a Memorandum of Understanding dated December 09, 2019, and executed by FHWA and TxDOT.

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Acronyms

Acronym	Definition
amsl	Above mean sea level
CRK	Creek
CWA	Clean Water Act
ECOS	Environmental Compliance Oversight System
F	Fahrenheit
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GPS	Global Positioning System
JD	Jurisdictional Determination
LRR	Land Resource Region
MLRA	Major Land Resource Area
NHD	National Hydrography Dataset
NI	No Indicator
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
NWPL	National Wetland Plant List
OBL	Obligate Wetland
OHWM	Ordinary High Water Mark
RGL	Regulatory Guidance Letter
RHA	Rivers and Harbors Act
ROE	Right of entry
ROW	Right of way
TNW	Traditionally navigable waterway
TxDOT	Texas Department of Transportation
UPL	Obligate Upland
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WOTUS	Waters of the U.S.
WOTUSDR	Waters of the U.S. Delineation Report

1.0 Introduction

Atkins North America, Inc., on behalf of the Central Texas Regional Mobility Authority (CTRMA), conducted a waters of the U.S. (WOTUS) delineation for roadway improvements along MoPac Expressway from Barton Skyway to Loop 360 in Austin, Travis County, Texas (the Project). The delineation was completed on August 26 to August 30, 2019, and October 28 to October 30, 2019.

The Project will be constructed within existing TxDOT right of way (ROW). Potential WOTUS were delineated within the Project ROW, plus an additional 50-foot buffer area (the Survey Area), where possible. Wetlands and drainages outside of the existing TxDOT ROW that staff could not access due to right-of-entry (ROE) concerns were not included in the features mapped in this report.

It is anticipated that this waters of the U.S. delineation report (WOTUSDR) will be used in support of the jurisdictional determination (JD) process for on-site aquatic resources. If it is determined that jurisdictional resources will be impacted, this WOTUSDR also will support applications for regulatory permits that may be required from the United States Army Corps of Engineers (USACE) for proposed construction activities. Recent regulatory changes to the Navigable Waters Protection Rule, which became effective June 22, 2020, may remove regulatory jurisdiction from ephemeral streams (USEPA and USACE 2020). However, the USACE has the final authority on the jurisdictional status of the potential WOTUS presented within this report. Thus, for the purposes of the delineation, all waterways will be included in the report.

Waterbodies were delineated according to USACE Regulatory Guidance Letter (RGL) 05-05 Ordinary High Water Mark (OHWM) Identification (referred to as RGL 05-05) (USACE 2005). As required under Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act (RHA), wetlands were delineated using the routine method described in the USACE 1987 Wetlands Delineation Manual (1987 Manual) (Environmental Laboratory 1987) and the USACE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region version 2.0 (2010 Regional Supplement) (USACE 2010). Wetland types and boundaries were determined through initial map review, followed by fieldwork involving the examination of three parameters: hydrology, vegetation, and soils. Delineation criteria and indicators for each of these parameters are outlined in the 1987 Manual and the 2010 Regional Supplement. The 2010 Regional Supplement presents wetland indicators, delineation guidance, and other information that is specific to the Great Plains Region, per the 2010 Regional Supplement. Wetlands were classified according to the Cowardin Classification System (Cowardin et al. 1979) used for the United States Fish and Wildlife Service's (USFWS) National Wetlands Inventory (NWI). This document contains the following two appendices:

- Appendix 1—Figures: contains maps of the Survey Area
- Appendix 2—Site Photographs: contains photographs taken during the site visits

2.0 Project Overview

The Project includes roadway improvements that extend approximately 2 miles along MoPac Expressway from Barton Skyway to Loop 360 in Austin, Travis County, Texas. The full Project description is available in TxDOT's Environmental Compliance Oversight System (ECOS).

The Project will be constructed within existing TxDOT ROW. Potential WOTUS were delineated within the Project ROW plus an additional 50-foot buffer area (the Survey Area). The Survey Area extends along MoPac Expressway from Barton Skyway to approximately 2,400 feet south of Loop 360.

Appendix 1 contains figures of the Survey Area. **Figure 1** provides a vicinity map that depicts the location of the Survey Area. **Figure 2** shows Edwards Aquifer zones. **Figure 3** is a 7.5-minute series United States Geological Survey (USGS) topographic overview map with Federal Emergency Management Agency (FEMA) 100-year floodplain. **Figure 4** depicts constraints, including National Hydrography Dataset (NHD), NWI, and groundwater

wells. **Figure 5** shows mapped soil types per the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). **Figure 6** displays potentially jurisdictional WOTUS as mapped by Atkins field staff in August 2019 and October 2019.

3.0 Ecological Site Description

The Survey Area is located within one ecological area in the Southwest Plateaus and Plains Range and Cotton Region (Land Resource Region [LRR] I) of the Great Plains, Major Land Resource Area (MLRA) 81C (Edwards Plateau, Eastern Part). The ecological area is characterized by limestone ridges and canyons and nearly level to gently sloping valley floors (USDA/NRCS 2006). Elevation is 900 feet above mean sea level (amsl) at the east end of the region and increases westward to 2,000 feet amsl. The Eastern Part of the Edwards Plateau is underlain primarily by limestones in the Glen Rose, Fort Terrett, and Edwards Formations of Cretaceous age. The river valleys are underlain by Quaternary alluvium. In most of the area, the average annual precipitation is 24 inches to 36 inches, and the average annual temperature is 63° Fahrenheit (F) to 68° F. The dominant soil orders are Calciustolls, Haplustolls, or Haplustepts, which are well drained and generally shallow with skeletal particle-size class.

The Eastern Part of the Edwards Plateau supports a plant community that consists of trees, shrubs, and mid or tall grasses. Examples of vegetation include live oak (*Quercus virginiana*), juniper (*Juniperus sp.)*, cedar elm (*Ulmus crassifolia*), saw greenbriar (*Smilax bona-nox*), cedar sedge (*Carex planostachys*), little bluestem, Texas grama (*Bouteloua rigidiseta*), curly mesquite (*Hilaria belangeri*), and woodsorrel (*Oxalis sp.)* (USDA/NRCS 2006).

Major wildlife species include white-tailed deer (*Odocoileus virginianus*), javelina (*Tayassu tajacu*), coyote (*Canis latrans*), fox (*Vulpes vulpes*), bobcat (*Lynx rufus*), raccoon (*Procyon lotor*), skunk (*Mephitis mephitis*), opossum (*Didelphis virginiana*), jackrabbit (*Lepus californicus*), cottontail (*Sylvilagus floridanus*), Wild Turkey (*Meleagris gallopavo*), Bobwhite Quail (*Colinus virginianus*), Scaled Quail (*Callipepla squamata*), White-Winged Dove (*Zenaida asiatica*), and Mourning Dove (*Zenaida macroura*) (USDA/NRCS 2006).

Currently, the Survey Area consists of urbanized TxDOT ROW. The land adjacent to the Survey Area consists primarily of commercial and residential development, parklands, and a mix of grassland and woodland ecosystems. A site vicinity map is included in **Figure 1, Appendix 1.**

The Survey Area is located within the Edwards Aquifer, which is an ecologically sensitive area. The Edwards Aquifer is a karst system denoted by open chambers, such as caves, chambers, fractures, and other features, that created subsurface rock formations. It consists of three zones, including the Contributing, Recharge, and Transition Zone (Edwards Aquifer Authority 2019). The Survey Area is within the Recharge Zone. Refer to **Figure 2, Appendix 1** for a depiction of the Edwards Aquifer zones within the Survey Area.

4.0 Methods

4.1 Map and Database Review

The following information sources were considered and, if applicable, consulted prior to and during the field delineation to assist in the identification of potential WOTUS within the Survey Area.

4.1.1 USGS Topographic Maps

USGS topographic maps illustrate elevation contours, drainage patterns, and hydrography. The Oak Hill, and Austin West, Texas, USGS Quad maps (1:24000) were reviewed to determine the likelihood of the Survey Area containing jurisdictional waterbodies (USGS 2019).

4.1.2 USFWS NWI Data

NWI data (USFWS 2020) were reviewed as a contributing resource to help identify potential wetland features located within the Survey Area.

4.1.3 NRCS Soil Survey Data

The USDA NRCS maintains an online Web Soil Survey database (USDA/NRCS 2020). The data provided in the Web Soil Survey provides a good basis for the soil textures and types that can be expected at a particular delineation area. NRCS-mapped soil types at the Survey Area were reviewed to determine which of the soils exhibit hydric characteristics. NRCS-mapped soil types are assigned a hydric indicator status of "hydric" or "non-hydric" by the National Technical Committee for Hydric Soils (USDA/NRCS 2010).

4.1.4 Aerial Photography

Aerial photography provides good insight to the state and function of land resources. Signs of inundation and vegetative signatures on aerial images indicate whether land might be functioning as a wetland or supporting a stream system. Using Google Earth, historic and current aerial photography was reviewed prior to and during the field delineation to further understand the nature of the Survey Area (Google 2020).

4.1.5 FEMA FIRM

FEMA maintains flood insurance rate maps (FIRMs). The FIRM including the Survey Area was reviewed to determine if the 100-year floodplain is mapped. The USACE uses the 100-year floodplain to assist in determining jurisdiction of aquatic features. FEMA FIRM data were reviewed to evaluate the location of any mapped floodplain in relation to aquatic resources located within the Survey Area (FEMA 2020).

4.2 Waters of the U.S. Delineation

With respect to any non-tidal waterbodies located within the Survey Area, biologists followed the methodology outlined in RGL 05-05 (USACE 2005). Data collected for any waterbodies included average water depth, average width per waterbody, length of linear segments within the Project boundary, and water flow classification (i.e., tidal, non-tidal, ephemeral, intermittent, and/or perennial).

Any wetland delineation was conducted based on the 1987 Manual and the 2010 Regional Supplement, as well as the three parameters described within this guidance. The three-parameter approach requires investigation of hydrological characteristics, hydrophytic vegetation, and hydric soils at selected sample points within the Survey Area. Sample points are located to ascertain upland/wetland boundaries and to record significant spatial changes in wetland plant communities. All three indicator parameters must be met for the area to be classified as a wetland. See subsections on Vegetation, Soils, and Hydrology, below, for indicator-specific information.

Geospatial data were collected using a Trimble GeoXT 2007 Series Global Positioning System (GPS) with sub-meter accuracy. All geospatial data were collected in accordance with the April 21, 2016, memorandum from the Fort Worth District of the USACE entitled, "Standard Operating Procedure, Recording Jurisdictional Delineations using GPS" (USACE 2016).

4.2.1 Hydrology

Wetland hydrology is characterized when, under normal circumstances, the surface is either inundated or the upper horizons of the soil are saturated at a sufficient frequency and duration to create anaerobic conditions. Seasonal and long-term rainfall patterns, local geology and topography, soil type, local water table conditions, and drainage are factors that influence hydrology.

Wetland hydrology indicators include oxidized rhizospheres along living roots, saturated soils, standing surface water, algal mat, aquatic fauna, high groundwater table, iron deposits, sparsely vegetated concave surfaces,

geomorphic position, moss trim lines, water-stained leaves, crawfish burrows, watermarks, drainage patterns, and surface soil cracks.

During the field survey, these indicators were used to determine if an area exhibited wetland hydrology.

4.2.2 Vegetation

In accordance with the procedure set forth in the 1987 Manual and the 2010 Regional Supplement, the hydrophytic status of vegetative communities was determined by identifying dominant species and, if necessary, calculating a "prevalence index," as defined in the 1987 Manual.

Individual plant species were checked against the current National Wetland Plant List (NWPL), and their regional wetland indicator status was determined (USACE 2018). Species are classified as follows:

- Obligate Wetland (OBL) if they almost always occur in wetlands (>99 percent of the time)
- Facultative Wetland (FACW) if they usually occur in wetlands (67 percent to 99 percent of the time)
- Facultative (FAC) if they are equally likely to occur in wetlands and non-wetlands (34 percent to 66 percent of the time)
- Facultative Upland (FACU) if they usually occur in non-wetlands (67 percent to 99 percent of the time)
- Obligate Upland (UPL) if they almost always occur in non-wetlands (>99 percent of the time)

A no indicator (NI) status is recorded for those species for which insufficient information is available to determine an indicator status.

Hydrophytic (wetland) vegetation is considered prevalent where more than 50 percent of the dominant species in a plant community have an indicator status of OBL, FACW, or FAC. However, in cases where the vegetation community does not meet this hydrophytic threshold, but indicators of hydric soils and wetlands hydrology are present, the prevalence index can be applied. Calculation of this index is based on consideration of both dominant and non-dominant plants in the vegetation community, whereby each indicator status category is given a numeric code and weighted by absolute percent cover. The prevalence index ranges from 1 to 5 and an index of 3 or less signifies that hydrophytic vegetation is present.

4.2.3 Soils

Hydric soils are defined as soils that are saturated, flooded, or ponded for long enough during the growing season to develop anaerobic conditions in the upper horizons. Anaerobic conditions created by repeated or prolonged saturation or flooding result in permanent changes in soil color and chemistry. The changes in soil color are used to differentiate hydric from non-hydric soils.

At each sample point, in areas where the absence of inundation or heavy saturation allowed, a pit was excavated to a depth of at least 16 inches to reveal soil profiles and to determine whether positive indicators of hydric soils were present. Hydric soil indicators relate to color, structure, organic content, and the presence of reducing conditions. Color characteristics (hue, value, and chroma) were recorded using Munsell® Charts (Munsell Soil Color Charts 2019).

5.0 Results

5.1 Map and Database Review

5.1.1 USGS Topographic Maps

The Survey Area spans the 7.5-minute Oak Hill Quadrangle, and the 7.5-minute Austin West Quadrangle (USGS 2019). The topography of the Survey Area consists of gently to steep sloping landforms with elevations ranging from 500 feet amsl to 700 feet amsl. In the portion of the Survey Area within the 7.5-minute Oak Hill Quadrangle,

Barton Creek is shown flowing north to south; an unnamed tributary to Barton Creek is shown flowing north to south. In the portion of the Survey Area within the 7.5-minute Austin West Quadrangle, Skunk Hollow Creek is shown flowing west to east. The sharpest incline occurs in the valley of Barton Creek and its associated tributaries in the 7.5-minute Oak Hill Quadrangle. Surface runoff as sheet flow conforms to the site gradient. Refer to **Figure 3, Appendix 1** for a depiction of the topographic map.

5.1.2 USFWS NWI Data

Table 1 summarizes the NWI features within the Survey Area (USFWS 2020). Refer to **Figure 4, Appendix 1** for an illustration of the NWI features in and surrounding the Survey Area.

Table 1: NWI Features

Classification Code	Code Description	Wetland Type
R4SBC	Riverine, Intermittent, Streambed, Seasonally Flooded	Riverine

5.1.3 NRCS Soil Survey Data

Table 2 summarizes the soil units represented within the Survey Area based on information collected from the Web Soil Survey database (USDA/NRCS 2020). Refer to **Figure 5, Appendix 1** for an illustration of the mapped soil units in and surrounding the Survey Area.

Table 2: NRCS Soil Units

Soil Unit	Soil Unit Name	Description	Hydric/Non-hydric
BID	Brackett-Rock outcrop complex, 1 to 12 percent slopes	A well-drained soil that occupies stair-stepped ridges on dissected plateaus. The parent material consists of residuum weathered from limestone.	Non-hydric
BoF	Brackett-Rock outcrop-Real complex, 8 to 30 percent slopes	A well-drained soil that occupies stair-stepped ridges on dissected plateaus. The parent material consists of residuum weathered from limestone.	Non-hydric
CrB	Crawford clay, 1 to 3 percent slopes	A well-drained soil that occupies plains on dissected plateaus. The parent material consists of residuum weathered from limestone.	Non-hydric
GP	Pits, gravel, 1 to 90 percent slopes	The Pits is a miscellaneous area.	Non-hydric
SsC	Speck stony clay loam, 1 to 5 percent slopes	A well-drained soil that occupies plains on dissected plateaus. The parent materials consist of residuum weathered from limestone.	Non-hydric
TaD	Eckrant very stony clay, 5 to 18 percent slopes	A well-drained soil that occupies ridges on dissected plateaus. The parent material consists of residuum weathered from limestone.	Non-hydric
TcA	Eckrant and Speck soils, 0 to 2 percent slopes	A well-drained soil that occupies ridges on dissected plateaus. The parent material consists of residuum weathered from limestone.	Non-hydric

Soil Unit	Soil Unit Name	Description	Hydric/Non-hydric
TdF	Eckrant-Rock outcrop complex, 18 to 50 percent slopes	A well-drained soil that occupies ridges on dissected plateaus. The parent material consists of residuum weathered from limestone.	Non-hydric
TeA	Eckrant soils and Urban land, 0 to 2 percent slopes	A well-drained soil that occupies ridges on dissected plateaus. The parent material consists of residuum weathered from limestone.	Non-hydric
VoD	Volente silty clay loam, 1 to 8 percent slopes	A well-drained soil that occupies ridges on dissected plateaus. The parent material consists of calcareous clayey colluvium and/or alluvium derived from limestone.	Non-hydric
VuD	Volente soils and Urban land, 1 to 8 percent slopes	A well-drained soil that occupies ridges on dissected plateaus. The parent material consists of calcareous clayey colluvium and/or alluvium derived from limestone.	Non-hydric

5.1.4 Aerial Photography

Overall, the aerial imagery from 1995 to 2018 does not show major changes in land cover or vegetation type or habitat; major roadways such as MoPac Expressway, Barton Skyway, and Loop 360 are present in the Project Area across the 25-year span without noticeable changes to their design or appearance. There are also no noticeable changes in land cover or land use across the 25-year time span. Major features adjacent to the Project Area, such as the Barton Skyway Mall, Intel Corporation campus, and various office and residential properties have remained in the same locations. The vegetative areas present in the Project area have not changed noticeably in size or appearance as well. For example, the large median by Loop 360 contained about 34 acres of Ashe Juniper Forest in 04/2002, and then contained about 36 acres in 04/2020 (Google 2020).

5.1.5 FEMA FIRM

The Survey Area is located within the FEMA designated map panels 48453C0445J, effective on 01/06/2016, and 48453C0585H, effective on 09/26/2008 (FEMA 2020). A total of 0.13 acres of the 100-year regulatory floodplain is located within the Survey Area (**Figure 3, Appendix 1**). An increase in base flood elevation to a level that would violate applicable floodplain regulations and ordinances due to Project activities is not expected at this time.

5.2 Waters of the U.S. Delineation

Refer to **Figure 6, Appendix 1** for the boundaries of each waterbody/wetland feature, as well as the sample point locations within the Survey Area. Refer to **Appendix 2**, for site photographs of each waterbody/wetland feature observed. **Table 3** summarizes the features of the waterbodies/wetlands in the Survey Area.

Table 3: Summary of Waterbody/Wetland Features

Waterbody or Wetland Number	Name	Type[1]	Latitude, Longitude	Acres within Survey Area (all waterbodies and wetlands)[2]	Linear Feet within Survey Area (waterbodies only)[3]	Estimated Permanent Impacts (acres)[4]	Potentially Jurisdictional (Section 404)?	Potentially Navigable (Section 10)?
CRK 01	Unnamed Tributary to Barton Creek	EPH	30.264016°, -97.789339°	0.007	143.24	0.00	No	No
CRK 02	Skunk Hollow Creek	EPH	30.258093°, -97.796995°	0.069	604.27	0.00	No	No
CRK 03	Unnamed Tributary to Skunk Hollow Creek	EPH	30.257949°, -97.797008°	0.003	133.45	0.00	No	No
CRK 04	Unnamed Tributary to Barton Creek	EPH	30.245377°, -97.805666°	0.004	55.87	0.00	No	No
			Totals	**0.083**	**936.82**	**0.00**	—	—

[1]EPH = Ephemeral
[2]An impact analysis will be provided when the Project design has been completed.
[3]Total length of stream features do not include culverted sections.
[4]Permanent impacts are based on the current Project design and are subject to change as a result of additional Project design changes. Temporary impacts and scour protection will be assessed when the Project design is finalized.

5.2.1 Hydrology

There were no wetlands identified to occur within the Survey Area. Therefore, there were no sample points that exhibited wetland hydrological indicators within the Survey Area.

5.2.2 Vegetation

Normal circumstances were present within the Survey Area. Representative dominant taxa for each distinct habitat type encountered within the Survey Area are listed in **Table 4** through **Table 10**, below. Indicator status for each species was obtained from the current NWPL (USACE 2018).

Table 4: Edwards Plateau: Deciduous Oak/Evergreen Motte and Woodland Dominant Plant Species

Strata	Scientific Name	Common Name	NWPL Classification
Shrub	*Prosopis glandulosa*	Honey mesquite	FACU
Tree	*Celtis laevigata*	Hackberry	FAC
Tree	*Quercus virginiana*	Live oak	FACU
Shrub	*Parkinsonia aculeata*	Jerusalem thorn	FAC
Tree	*Sapindus Saponaria var. drummondii*	Soapberry	FACU

Table 5: Native Invasive: Deciduous Woodland Dominant Plant Species

Strata	Scientific Name	Common Name	NWPL Classification
Shrub	*Prosopis glandulosa*	Honey mesquite	FACU
Tree	*Fraxinus pennsylvanica.*	Green ash	FAC

Strata	Scientific Name	Common Name	NWPL Classification
Tree	*Celtis laevigata*	Hackberry	FAC

Table 6: Edwards Plateau: Ashe Juniper Motte and Woodland Dominant Plant Species

Strata	Scientific Name	Common Name	NWPL Classification
Tree	*Juniperus ashei*	Ashe juniper	UPL
Tree	*Celtis laevigata*	Hackberry	FAC
Tree	*Quercus virginiana*	Live oak	FACU
Shrub	*Parkinsonia aculeata*	Jerusalem thorn	FAC

Table 7: Edwards Plateau: Oak-Ashe Juniper Slope Forest Dominant Plant Species

Strata	Scientific Name	Common Name	NWPL Classification
Tree	*Juniperus ashei*	Ashe juniper	UPL
Tree	*Quercus virginiana*	Live oak	FACU
Herb	*Monarda punctata*	Spotted beebalm	UPL

Table 8: Native Invasive: Mesquite Shrubland Dominant Plant Species

Strata	Scientific Name	Common Name	NWPL Classification
Shrub	*Parkinsonia aculeata*	Jerusalem thorn	FAC
Shrub	*Prosopis glandulosa*	Honey mesquite	FACU
Herb	*Helianthus maximilian*	Maximillian sunflower	FACU

Table 9: Edwards Plateau: Riparian Hardwood/Ashe Juniper Forest Dominant Plant Species

Strata	Scientific Name	Common Name	NWPL Classification
Tree	*Juniperus ashei*	Ashe juniper	UPL
Tree	*Quercus fusiformis*	Plateau live oak	UPL
Shrub	*Parkinsonia aculeata*	Jerusalem thorn	FAC
Shrub	*Prosopis glandulosa*	Honey mesquite	FACU

Table 10: Urban Low Intensity Dominant Plant Species

Strata	Scientific Name	Common Name	NWPL Classification
Herb	*Cynodon dactylon*	Bermudagrass	FACU
Herb	*Panicum coloratum*	Kleingrass	FAC

5.2.3 Soils

There were no wetlands identified to occur within the Survey Area. Therefore, there were no sample points that exhibited hydric soils within the Survey Area.

6.0 Conclusion

A WOTUS delineation was conducted for the Project in Austin, Travis County, Texas (CSJ 3136-01-193). The Survey Area limits extend from Barton Skyway to Loop 360 along MoPac Expressway. The field delineation was completed on August 26 to August 30, 2019, and from October 28 to October 30, 2019. Refer to **Table 3** in **Section 5.2**, above, for a table summarizing the aquatic resources (i.e., waterbodies/wetlands) identified within the Survey Area.

CRKs 01 to 04 are all tributaries that eventually flow into the Colorado River, a known WOTUS. The Colorado River is considered a Traditionally Navigable Water (TNW) southeast of the Longhorn Dam in Austin, Texas (USACE 2011). As a result of the connectivity to a TNW, all streams identified within this report have the potential to be considered jurisdictional by the USACE. However, recent regulatory changes to the Navigable Waters Protection Rule, which became effective June 22, 2020, may remove regulatory jurisdiction from ephemeral streams (USEPA and USACE 2020). However, the USACE has the final authority on the jurisdictional status of the potential WOTUS presented within this report. In addition, none of the streams within the Survey Area are expected to have any impacts as a result of project activities. Therefore, a Nationwide Permit is not expected to be required for this project.

None of the streams within the Survey Area would be subject to Section 10 of the Rivers and Harbors Act (RHA). All streams within the Survey Area are ephemeral, which would not be considered TNWs. Additionally, none of streams delineated within the Survey Area are indicated on the USACE Section 10 list (USACE 2011).

The professional opinion offered in this report is based on best professional judgement. It should be noted that the USACE makes the final determination on the location of waterbody and wetland boundaries and their jurisdictional status. To obtain an official JD from the USACE, this report must be submitted to the USACE Austin District Office, along with a JD request form and, if appropriate, a Section 404 pre-construction notification/permit application.

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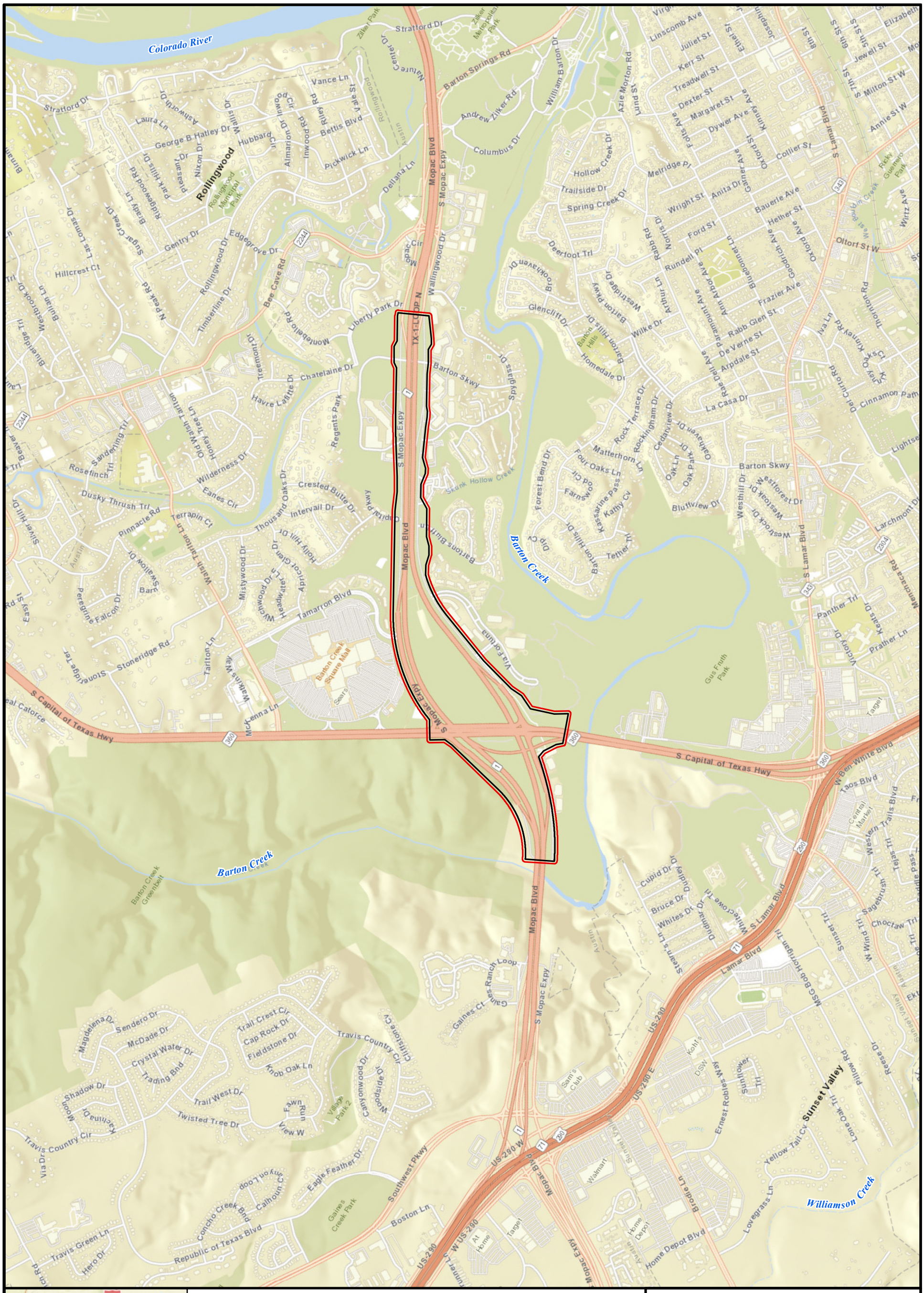
8.0 Appendices

1. Figures
2. Site Photographs

Appendix 1—Figures



ATKINS
Member of the SNC-Lavalin Group

Figure 1
Vicinity
Barton Skyway Ramp Relief

Central Texas Regional Mobility Authority

Travis County, Texas

Date: Apr 08, 2021 | Scale: 1 " = 1,700 '

N:\Clients\C_D\CTRMA\Barton_Skyway\geo\figures\Waters\BSkyway_W_vicinity_v2.mxd

Basemap: Esri, DeLorme, HERE, USGS, Intermap, iPC, NRCAN, METI, TomTom. World Street Map. Sept. 2020.
1:20,400; generated by Atkins; using ArcMap. <http://server.arcgisonline.com/ArcGIS/rest/services/World_Street_Map/MapServer> (08 April 2021)

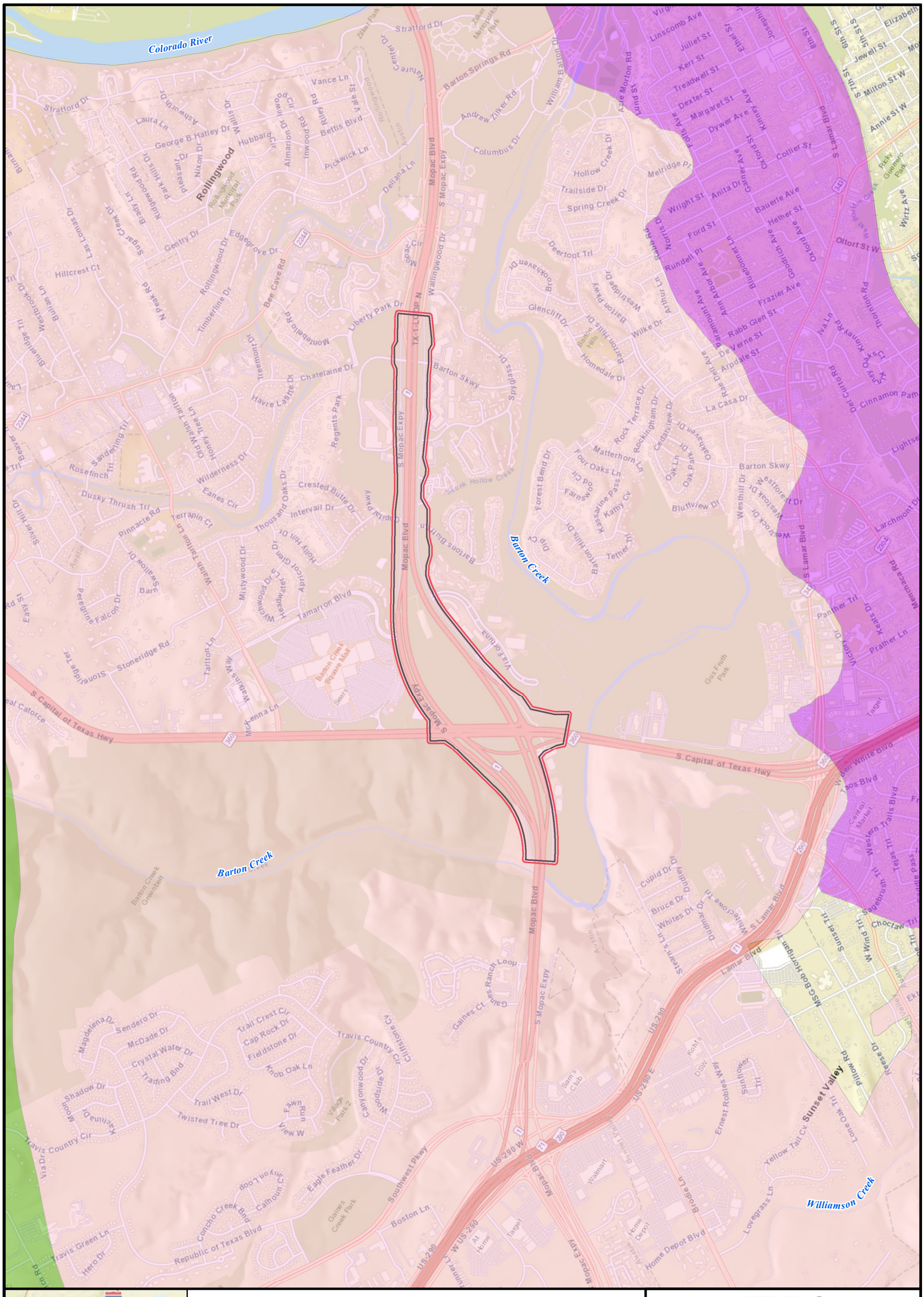


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Figure 2
Edwards Aquifer
Barton Skyway Ramp Relief

Central Texas Regional Mobility Authority

Travis County, Texas

Date: Apr 08, 2021	Scale: 1 " = 1,700 '

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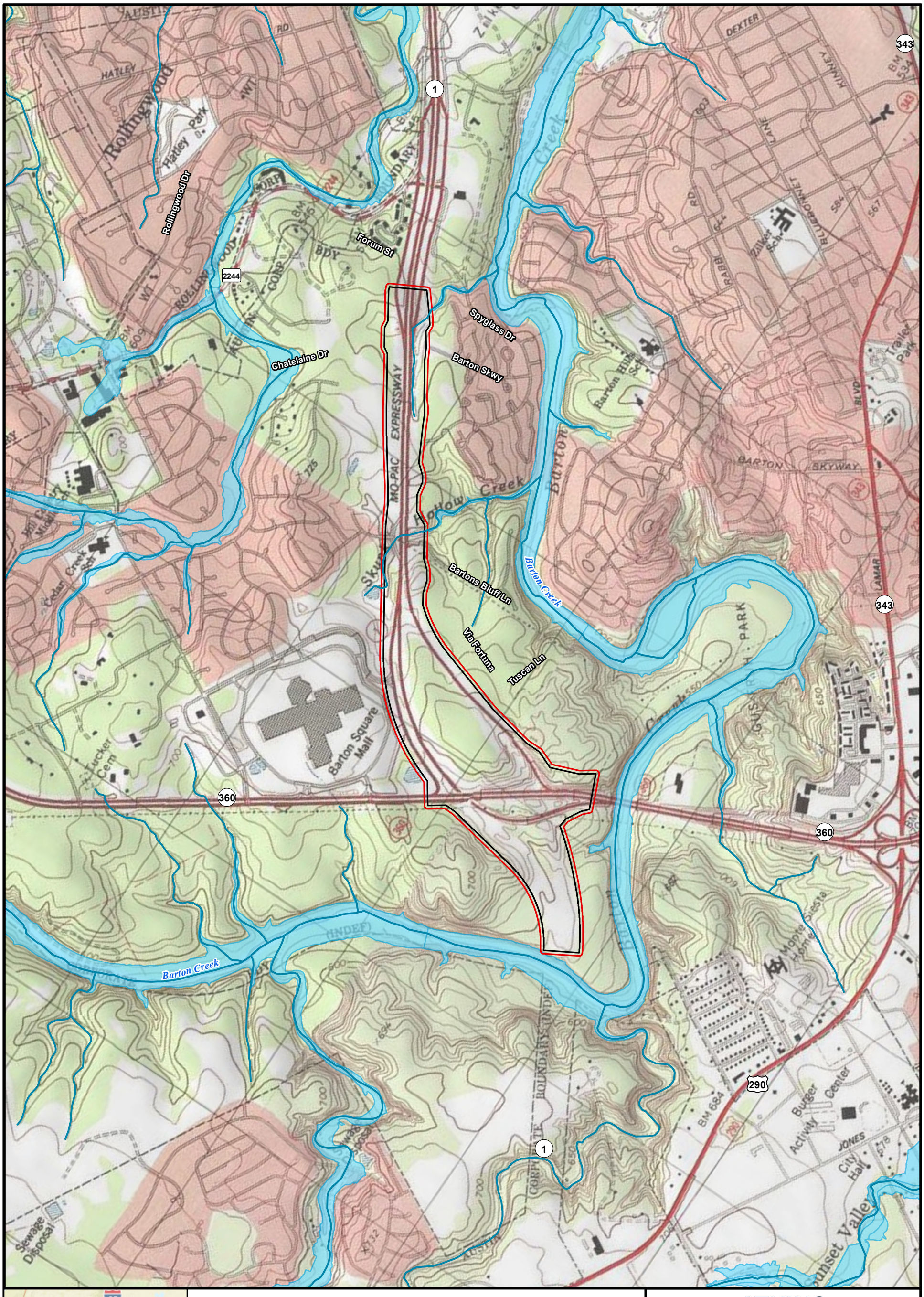
Basemap: Esri, DeLorme, HERE, USGS, Intermap, iPC, NRCAN, METI, TomTom. World Street Map. Sept. 2020.
1:20,400; generated by Atkins; using ArcMap. <http://server.arcgisonline.com/ArcGIS/rest/services/World_Street_Map/MapServer> (08 April 2021) Aquifer: TCEQ 2019



Existing ROW
Survey Area
NHD Flowline
100-year Floodplain

0 350 700 1,400 Feet

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Figure 3
Topographic
Barton Skyway Ramp Relief

Central Texas Regional Mobility Authority

Travis County, Texas

Date: Apr 08, 2021 | Scale: 1 " = 1,400 '

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Topo: USGS, National Geographic, i-cubed. USA Topo Maps. March 2019. 1:16,800; generated by Atkins; using ArcMap.
<http://services.arcgisonline.com/ArcGIS/rest/services/USA_Topo_Maps/MapServer> (08 April 2021). NHD: USGS 2020. Floodplain: FEMA 2020

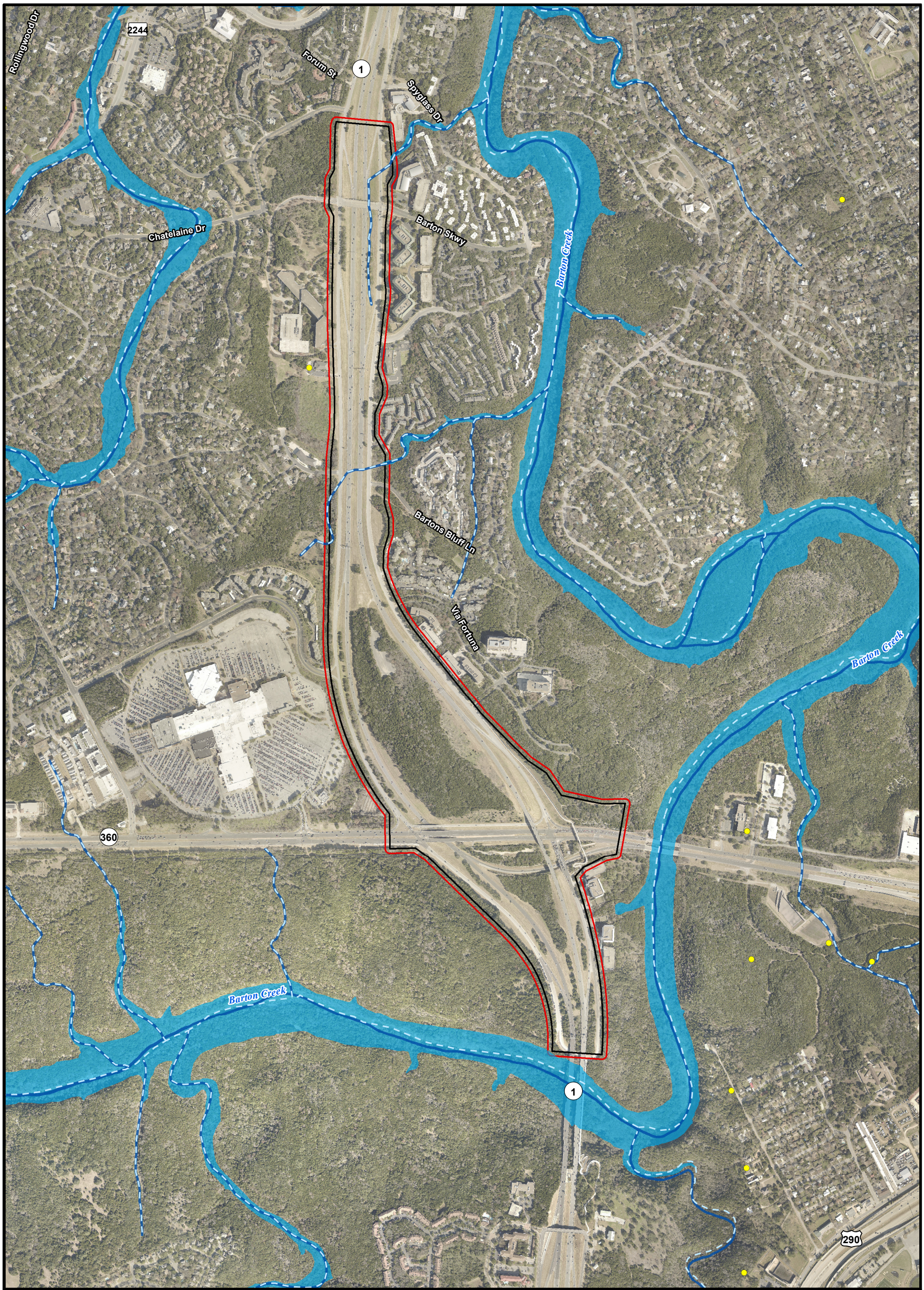

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Figure 4
Constraints
Barton Skyway Ramp Relief

Central Texas Regional Mobility Authority

Travis County, Texas

Date: Apr 19, 2021	Scale: 1 " = 1,000 '

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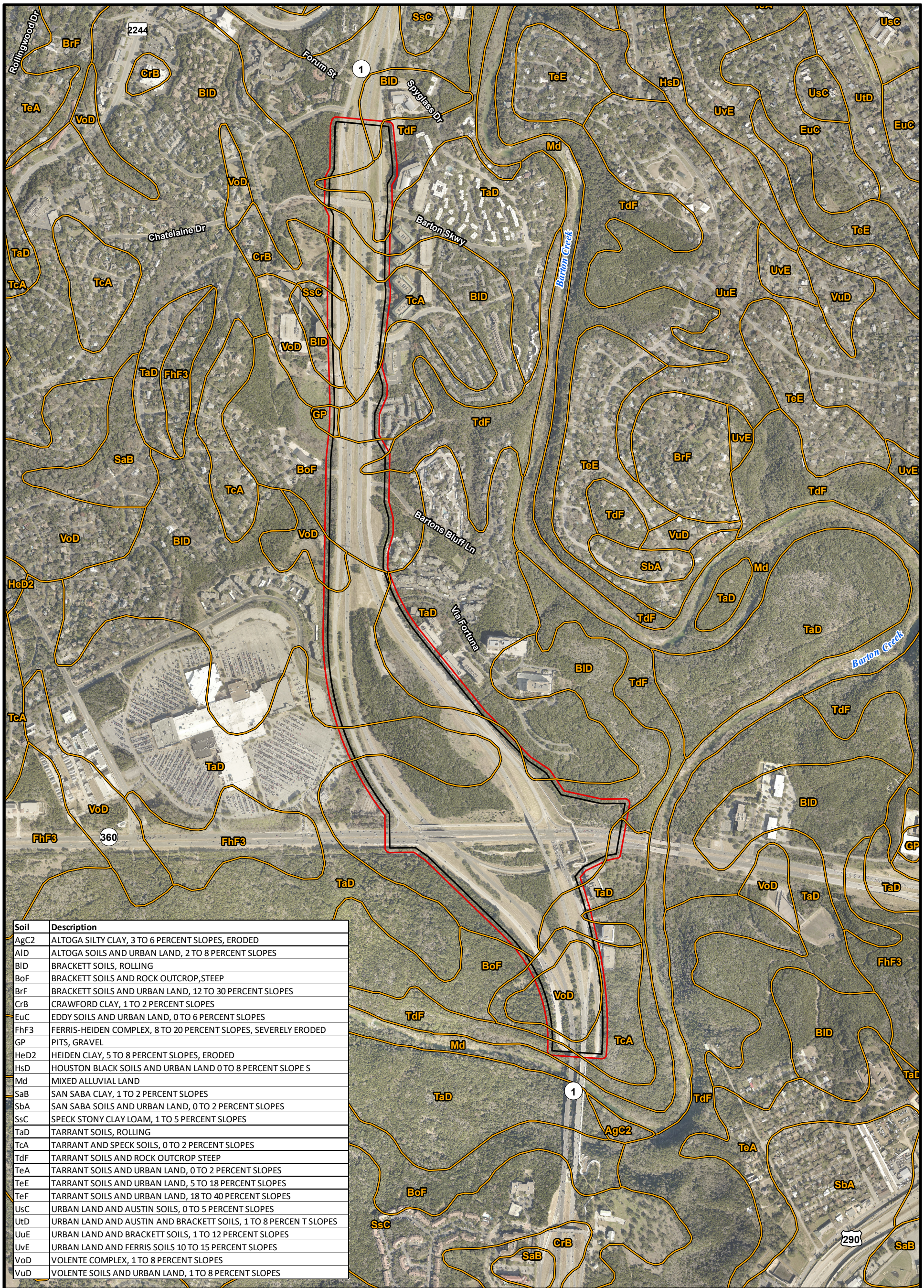
Aerials: CAPCOG 2019. 1:12,000; generated by Atkins; using ArcMap. (19 April 2021).
NHD: USGS 2020. Floodplain: FEMA 2020. Wetlands: USFWS 2020. Wells: TCEQ 2020, TWDB 2020



Soil	Description
AgC2	ALTOGA SILTY CLAY, 3 TO 6 PERCENT SLOPES, ERODED
AlD	ALTOGA SOILS AND URBAN LAND, 2 TO 8 PERCENT SLOPES
BlD	BRACKETT SOILS, ROLLING
BoF	BRACKETT SOILS AND ROCK OUTCROP,STEEP
BrF	BRACKETT SOILS AND URBAN LAND, 12 TO 30 PERCENT SLOPES
CrB	CRAWFORD CLAY, 1 TO 2 PERCENT SLOPES
EuC	EDDY SOILS AND URBAN LAND, 0 TO 6 PERCENT SLOPES
FhF3	FERRIS-HEIDEN COMPLEX, 8 TO 20 PERCENT SLOPES, SEVERELY ERODED
GP	PITS, GRAVEL
HeD2	HEIDEN CLAY, 5 TO 8 PERCENT SLOPES, ERODED
HsD	HOUSTON BLACK SOILS AND URBAN LAND 0 TO 8 PERCENT SLOPE S
Md	MIXED ALLUVIAL LAND
SaB	SAN SABA CLAY, 1 TO 2 PERCENT SLOPES
SbA	SAN SABA SOILS AND URBAN LAND, 0 TO 2 PERCENT SLOPES
SsC	SPECK STONY CLAY LOAM, 1 TO 5 PERCENT SLOPES
TaD	TARRANT SOILS, ROLLING
TcA	TARRANT AND SPECK SOILS, 0 TO 2 PERCENT SLOPES
TdF	TARRANT SOILS AND ROCK OUTCROP STEEP
TeA	TARRANT SOILS AND URBAN LAND, 0 TO 2 PERCENT SLOPES
TeE	TARRANT SOILS AND URBAN LAND, 5 TO 18 PERCENT SLOPES
TeF	TARRANT SOILS AND URBAN LAND, 18 TO 40 PERCENT SLOPES
UsC	URBAN LAND AND AUSTIN SOILS, 0 TO 5 PERCENT SLOPES
UtD	URBAN LAND AND AUSTIN AND BRACKETT SOILS, 1 TO 8 PERCEN T SLOPES
UuE	URBAN LAND AND BRACKETT SOILS, 1 TO 12 PERCENT SLOPES
UvE	URBAN LAND AND FERRIS SOILS 10 TO 15 PERCENT SLOPES
VoD	VOLENTE COMPLEX, 1 TO 8 PERCENT SLOPES
VuD	VOLENTE SOILS AND URBAN LAND, 1 TO 8 PERCENT SLOPES

Existing ROW

Survey Area

SSURGO Soil (NRCS)

0 250 500 1,000 Feet

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Figure 5
Soils
Barton Skyway Ramp Relief

Central Texas Regional Mobility Authority

Travis County, Texas

Date: Apr 19, 2021 | Scale: 1 " = 1,000 '

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Aerials: CAPCOG 2019. 1:12,000; generated by Atkins; using ArcMap. (19 April 2021). Soils: NRCS 2020

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Figure 6
Delineated Potential Waters of the U.S.
Barton Skyway Ramp Relief

Central Texas Regional Mobility Authority

Travis County, Texas

Date: Apr 19, 2021	Scale: 1 " = 1,000 '

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Aerials: CAPCOG 2019. 1:12,000; generated by Atkins; using ArcMap. (19 April 2021).

Appendix 2—Site Photographs

Photo 1: Typical upstream view of CRK 01, an unnamed potentially jurisdictional ephemeral stream.

Photo 2: Typical downstream view of CRK 01, an unnamed potentially jurisdictional ephemeral stream.

Photo 3: Typical upstream view of CRK 02 (Skunk Hollow Creek), a potentially jurisdictional ephemeral stream.

Photo 4: Typical downstream view of CRK 02 (Skunk Hollow Creek), a potentially jurisdictional ephemeral stream.

Photo 5: Typical upstream view of CRK 03, a potentially jurisdictional unnamed ephemeral tributary to Skunk Hollow Creek.

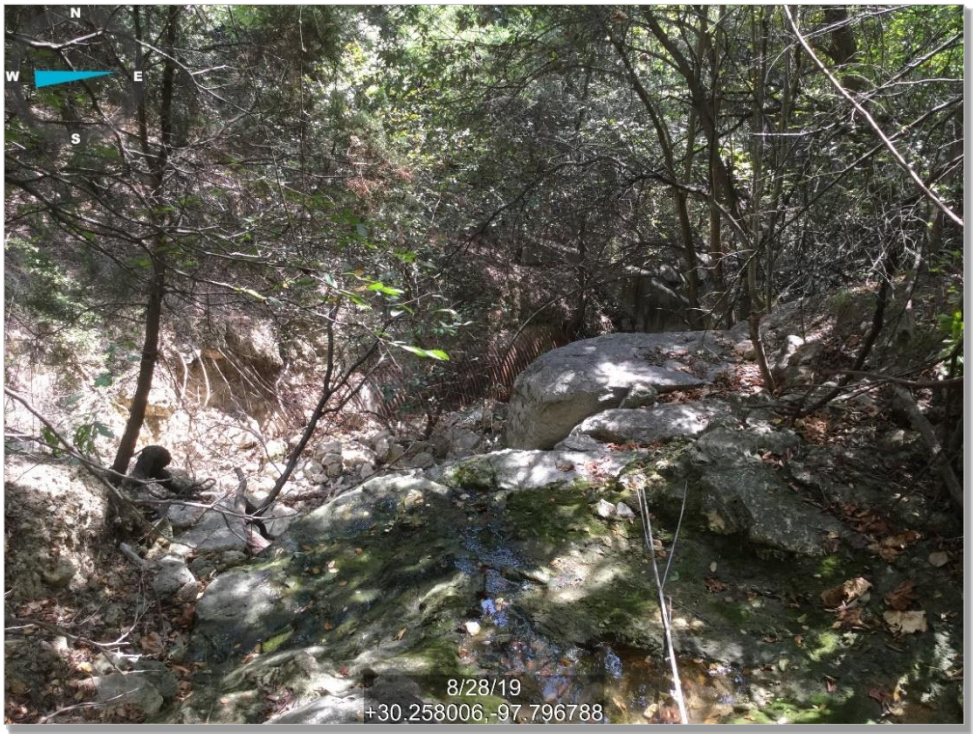

Photo 6: Typical downstream view of CRK 03, a potentially jurisdictional unnamed ephemeral tributary to Skunk Hollow Creek.

Photo 7: Typical upstream view of CRK 04, a potentially jurisdictional unnamed ephemeral stream.

Photo 8: Typical downstream view of CRK 04, a potentially jurisdictional unnamed ephemeral stream.