



# Draft Water Resources Technical Report

---

District: Amarillo  
Limits: SW 9<sup>th</sup> Ave to FM 1719  
CSJ Number: 2635-04-034  
Location: Potter County, Texas

November 2019

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

## Table of Contents

1	Project Description.....	1
2	Project Area .....	1
2.1	Project Area Description .....	1
2.2	Ecological Systems and Vegetation .....	1
2.3	Geology .....	2
2.4	Soils .....	3
2.5	Data Review .....	3
3	Water Resources Compliance .....	4
3.1	Section 404 of the Clean Water Act: Federally Jurisdictional Waters of the U.S.....	4
3.1.1	Water Resources Descriptions.....	5
3.1.1.1	Crossing 1 .....	5
3.1.1.2	Crossing 2 .....	5
3.1.1.3	Crossing 3 .....	5
3.1.1.4	Crossing 4 .....	5
3.1.1.5	Crossing 5 .....	6
3.2	Section 402 of the Clean Water Act (Stormwater Permits) .....	8
3.3	Section 303(d) of the Clean Water Act/ Impaired Waters .....	8
3.4	Executive Order 11988 (Floodplain Management) .....	8
4	Permits and Commitments.....	9
5	References .....	10

### List of Tables

Table 1.	Vegetation Present within the Proposed Project Area .....	2
Table 2.	Soil Types Present within Proposed Project Area.....	3
Table 3.	Summary of Proposed Impacts to Water Resources .....	7

### List of Appendices

Appendix A – Exhibits  
Appendix B – Photos

Page is intentionally left blank

# 1 Project Description

The Texas Department of Transportation (TxDOT), in conjunction with the Amarillo Metropolitan Planning Organization (AMPO), proposes improvements to State Loop (SL) 335 from SW 9<sup>th</sup> Avenue to Farm-to-Market (FM) Road 1719 (Western Street) in Potter County, Texas. SL 335 creates a circumferential loop around the city of Amarillo and is divided into 10 segments. The proposed improvements between SW 9<sup>th</sup> Avenue and FM 1719 are within Segment C-1 and includes expanding from a two-lane to a four-lane freeway, grade separation at intersections, a new interchange to accommodate a future road, and bicycle and pedestrian facilities. The project length is approximately six miles.

The proposed SL 335 Segment C-1 project would follow the existing SL 335 alignment within the proposed project limits. The proposed project would increase regional and local mobility, improve safety, and provide corridor redundancy for freight traffic and hazardous cargo in the Amarillo region.

## 2 Project Area

### 2.1 Project Area Description

The proposed project is in the unincorporated portions of Potter County. Land uses within a one-mile buffer surrounding the proposed project area include undeveloped open land, residences, ranches, an energy plant, a cement plant, a nature center, and storage facilities. The project area is situated in uplands with some valley-like topography formed by streams downcutting the uplands.

### 2.2 Ecological Systems and Vegetation

Vegetation within the proposed project area mainly consist grasslands including short, and mixed grass prairies with mesquite (*Prosopis velutina*), hackberry (*Celtis laevigata*), eastern cottonwood (*Populus deltoids*), yucca (*Yucca campestris*), and wildflowers (e.g. prairie verbena [*Glandularia bipinnatifida*], Missouri evening primrose [*Oenothera macrocarpa*], and copper-mallow [*Sphaeralcea coccinea*]) interspersed. The Texas Parks and Wildlife Department (TPWD) lists the following ecological system types in its Ecological Mapping Systems of Texas (EMST) database: CRP/Other Improved Grassland; High Plains: Floodplain Deciduous Shrubland; High Plains: Floodplain Hardwood Forest, High Plains: Floodplain Herbaceous Vegetation; High Plains: Riparian Herbaceous Vegetation; High Plains: Shortgrass Prairie; Native Invasive: Deciduous Shrubland; Native Invasive: Mesquite Shrubland; Native Invasive: Sand Sage Shrubland; Rolling Plains: Breaks Canyon; Rolling Plains: Mixed Grass Prairie; Urban High Intensity; and Urban Low Intensity. A field survey of the vegetation types a difference in systems that were actually present within the proposed project area. **Table 1** identifies the mapped versus actual EMST ecological system found within the proposed project area.

Table 1. Vegetation Present within the Proposed Project Area

MOU Habitat Type	Ecosystem Name	EMST Vegetation Type	Mapped Acres	Observed Acres
Cliffs, Breaks, and Barrens	Llano Estacado Caprock Escarpment and Breaks Shrubland and Steppe (CES303.725)	Rolling Plains: Breaks Canyon	2.49	2.43
			<b>MOU Habitat Type Acreage Total</b>	<b>2.49</b>
Disturbed Prairie	Disturbance/Improved Grassland	CRP/Other Improved Grassland	0.08	0.00
		Native Invasive Shrub and Woodland	Native Invasive: Deciduous Shrubland	2.45
	Native Invasive: Mesquite Shrubland		4.09	23.79
	Native Invasive: Sand Sage Shrubland		15.49	0.00
<b>MOU Habitat Type Acreage Total</b>		<b>22.11</b>	<b>24.70</b>	
Mixed/Arid/Sand Grasslands	Central Mixed Grass Prairie (CES303.659)*	Rolling Plains: Mixedgrass Prairie	93.92	103.86
	Western Great Plains Shortgrass Prairies (CES303.672)	High Plains: Shortgrass Prairie	128.55	141.90
<b>MOU Habitat Type Acreage Total</b>		<b>222.47</b>	<b>245.76</b>	
Urban	Urban	Urban: Low Intensity	57.27	0.00
		Urban: High Intensity	10.30	0.00
<b>MOU Habitat Type Acreage Total</b>		<b>67.56</b>	<b>0.00</b>	
Western Wetlands, Riparian	Western Great Plains Floodplain (CES303.678)*	High Plains: Floodplain Deciduous Shrubland	0.91	0.28
		High Plains: Floodplain Hardwood Forest	0.01	6.09
		High Plains: Floodplain Herbaceous Vegetation	31.30	0.68
	Western Great Plains Riparian (CES303.956)	High Plains: Riparian Herbaceous Vegetation	2.02	2.41
<b>MOU Habitat Type Acreage Total</b>		<b>34.24</b>	<b>9.46</b>	
<b>Total Acres</b>		<b>348.88</b>	<b>282.35**</b>	

\* Designated as Rare Plant Communities (Remnant Vegetation) by TCAP

\*\* 66.53 Acres of Paved Roadways Excluded from Observed Acres Calculations

### 2.3 Geology

The proposed project area is within three major geologic formations. These geologic formations include Tecovas Formation belonging in the Triassic period, Ogallala Formation (PoMo) lasting in the Tertiary period, and Blackwater Draw Formation (Qbd) belonging in the Quaternary period. These formations are mostly sandy with shale, silt, and clay also present.

## 2.4 Soils

The National Resources Conservation Service (NRCS) Soil Web Survey data shows that there are fifteen soil types within the proposed project area. Thirteen of the fifteen soil types are not hydric, and two soil types may contain hydric inclusions. Soil types within the proposed project area can be found in Table 2 and in the Soils Map in **Appendix A**.

*Table 2. Soil Types Present within Proposed Project Area*

Soil Series Name	Hydric Soil?
AcB—Acuff loam, 1 to 3 percent slopes	No
AcC—Acuff loam, 3 to 5 percent slopes	No
BcA—Bippus clay loam, 0 to 1 percent slopes, occasionally flooded, cool	No*
Bd—Bippus and Spur soils, 0 to 2 percent slopes, frequently flooded, cool	No*
OcB—Olton clay loam, 1 to 3 percent slopes	No
PaC—Paloduro clay loam, 3 to 5 percent slopes	No
PaD—Paloduro clay loam, 5 to 8 percent slopes	No
PcC—Pep clay loam, 3 to 5 percent slopes	No
PMG—Potter-Mobeetie association, 8 to 45 percent slopes, cool	No
PnB—Posey clay loam, 1 to 3 percent slopes	No
PnC—Posey clay loam, 3 to 5 percent slopes	No
PuB—Pullman clay loam, 1 to 3 percent slopes	No
VPD—Veal-Paloduro association, undulating	No
WeC—Weymouth clay loam, 3 to 5 percent slopes	No

\* May contain hydric inclusions (NRCS 2018)

## 2.5 Data Review

Potentially jurisdictional waters were identified using several published data resources and a field survey. Data resources included the United States Geological Survey (USGS) topographic map, the USGS National Hydrography Dataset (NHD), Federal Emergency Management Agency (FEMA) 100-year floodplain maps, U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI), and recent aerial photography.

The USGS Amarillo West (2016) and the Cliffside (2019) 7.5-minute quadrangle topographic maps were reviewed to assess the surface topography within the proposed project area. Based on the maps, there are five unnamed tributaries to West Amarillo Creek within the proposed project area. The two southern tributaries flow from south to west into the third unnamed tributary located near Tascosa Road, which bisects West Amarillo Creek just north of the proposed project area. The fourth and fifth tributaries located near Hester Drive flows from south to north where it eventually bisects West Amarillo Creek north of the proposed project area.

The USGS NHD data shows that the proposed project area is located within the Tecovas Creek-Canadian River watershed (Hydrologic Unit Code [HUC] 10-1109010503) of the Middle

Canadian Basin (HUC 6-110901). NHD data also shows that the five unnamed tributaries that intersect the proposed project area are intermittent.

The FEMA 100-year floodplain maps show that the tributaries near 9<sup>th</sup> Avenue, Tascosa Road, and Hester Drive are within the 100-year floodplain. The NWI database did not show any wetlands within the proposed project area, and none were identified during field survey.

### **3 Water Resources Compliance**

#### **3.1 Section 404 of the Clean Water Act: Federally Jurisdictional Waters of the U.S.**

The U.S. Army Corps of Engineers (USACE) regulates the discharge of dredge and fill material into wetlands and non-wetland waters of the U.S. under Section 404, subsection 330.5(a)(21) of the Clean Water Act (CWA). Section 10 of the Rivers and Harbors Act of 1899 authorizes the USACE to regulate any work in or affecting navigable waters of the U.S. (WOUS). Authorization is required from the USACE for any activity that would result in the discharge of dredged or fill material into WOUS. Regulated activities may be permitted through the USACE via an Individual Permit (IP), Regional General Permit (RGP), Nationwide Permit (NWP), or Letter of Permission (LOP).

The *Corps of Engineers Wetland Delineation Manual* defines wetlands based on a multiparameter approach where three criteria (presence of hydro-phytic vegetation, hydric soils, and wetland hydrology) must generally be present for an area to qualify as a wetland (Environmental Laboratory 1987). Some exceptions can occur in disturbed areas or in newly formed wetlands where one indicator might be lacking. Wetlands were addressed on an individual basis.

In addition to jurisdictional wetlands, the CWA regulates impacts to other WOUS. The term “waters of the U.S.” has broad meaning and incorporates both deep water aquatic habitats and special aquatic sites, including wetlands, as follows: territorial seas with respect to discharge of fill material; coastal and inland waters, lakes, rivers, and streams that are navigable waters of the U.S. including adjacent wetlands; tributaries to navigable waters of the U.S. including adjacent wetlands; and interstate waters and their tributaries, including adjacent wetlands.

For linear WOUS, the presence of an ordinary high water mark (OHWM) was assessed using a combination of factors in accordance with Section 328.3(e) of the CWA including the following: natural line impressed on the bank; shelving; changes in soil character; destruction of terrestrial vegetation; presence of litter or debris; wracking; vegetation matted down, bent, or absent; sediment sorting; leaf litter disturbed or washed away; scour; deposition; multiple observed flow events; presence of bed and banks; water staining; change in plant community; and/or other appropriate means that consider the characteristics of the surrounding areas.

### 3.1.1 Water Resources Descriptions

#### 3.1.1.1 Crossing 1: Unnamed Tributary 1 to West Amarillo Creek (north of SW 9<sup>th</sup> Avenue)

Crossing 1 is an unnamed tributary of West Amarillo Creek located approximately 0.5 mile north of the intersection of SL 335 and SW 9<sup>th</sup> Avenue. NWI shows that the tributary is intermittent with a streambed, and that it is seasonally flooded. FEMA maps show that a small portion of the tributary to the east is located within the 100-year floodplain. The existing tributary bottom consist of approximately 180 feet that is concrete-lined; soil and herbaceous/grass-lined bottom for approximately 500 feet to the west; and 150 feet of a clear bed and steep, eroding banks to the east. During the field survey, there was no water present and vegetation included mesquite, yucca, wildflowers, and other herbaceous and grass species. The average OHWM was approximately 15 feet within the proposed project area.

#### 3.1.1.2 Crossing 2: Unnamed Tributary 2 to West Amarillo Creek (north of Stoneridge Drive)

Crossing 2 is an unnamed tributary of West Amarillo Creek located immediately north of the intersection between SL 335 and Stoneridge Drive. NWI shows that the tributary is intermittent with a streambed, and that it is seasonally flooded. FEMA maps show that the tributary is not within the 100-year floodplain. The existing tributary is within a culvert under the existing portions of SL 335 for approximately 180 feet. The tributary to the east and west of the culvert were unlined. There was no water present during the field survey, and vegetation consisted of herbaceous species. The average OHWM was approximately 6 feet within the proposed project area.

#### 3.1.1.3 Crossing 3: Unnamed Tributary 3 to West Amarillo Creek (north of Tascosa Road)

Crossing 3 is an unnamed tributary of West Amarillo Creek located just north of Tascosa Road. NWI shows that that tributary is intermittent with a streambed, and that it is temporarily flooded. FEMA maps show that portions of the tributary are within the 100-year floodplain. The existing tributary is unlined and conveyed under two, 30-foot conspans under the ramps to Tascosa Road and one, 50-foot conspan under the SL 335 mainlanes. During the field survey, water was present and flowing. Vegetation included Easter cottonwoods along the banks of non-culverted sections of the tributary and herbaceous species. The average OHWM was approximately 20 feet within the proposed project area.

#### 3.1.1.4 Crossing 4: Unnamed Tributary 4 to West Amarillo Creek (south of Hester Drive)

Crossing 4 is an unnamed tributary of West Amarillo Creek located south of Hester Drive. NWI shows that the tributary is intermittent with a streambed, and that it is temporarily flooded. FEMA maps show that the entire tributary is within the 100-year floodplain. The tributary is unlined and had flowing water during the field survey. Herbaceous and shrub species, including cattails, were present during the field survey. The average OHWM was approximately 19 feet within the proposed project area.

### 3.1.1.5 Crossing 5: Unnamed Tributary 5 to West Amarillo Creek (north of Hester Drive)

Crossing 5 is an unnamed tributary of West Amarillo Creek located north of Hester Drive. NWI shows that the tributary is intermittent with a streambed, and that it is seasonally flooded. Based on FEMA maps, the tributary is located within the 100-year floodplain. The tributary is concrete-lined for approximately 290 feet with the remaining portions within the proposed project area unlined, and an OHWM of approximately 13 feet. There was no water present during the field survey, and vegetation present included herbaceous species.

Table 3. Summary of Proposed Impacts to Water Resources within the Proposed Project Area

Crossing Number	Water Body Name	Average OHWM within ROW (feet)	Existing Structure(s)	Potential Jurisdictional WOUS? (Y/N)	Approximate Linear Feet/Acreage within Proposed ROW	Approximate Proposed Impact Linear Feet/Acreage*
1	Unnamed Tributary 1	15	Concrete-lined portion	Yes	827 LF/0.32 ac	96 LF/<0.1 ac <sup>1</sup>
2	Unnamed Tributary 2	6	Culvert portion	Yes	800 LF/0.28 ac	228 LF/0.07 ac <sup>2</sup>
3	Unnamed Tributary 3	20	Conspan portions	Yes	953LF/0.58 ac	96 LF/0.09 ac <sup>3</sup>
4	Unnamed Tributary 4	19	N/A	Yes	720 LF/0.24 ac	0 LF/0 ac <sup>4</sup>
5	Unnamed Tributary 5	13	Concrete-lined portion	Yes	1473 LF/0.50 ac	60 LF/<0.1 ac <sup>5</sup>

\*Potential impacts are based on the current design available and are subject to change based on design refinements.

<sup>1</sup>This acreage would be due to temporary construction of bent columns for the southbound on-ramp and the southbound mainlane, and the area would be recontoured to existing contours.

<sup>2</sup>This acreage would be due to a culvert extension.

<sup>3</sup>This acreage would be due to grading within and along crossing.

<sup>4</sup>Bridges would span crossing based on current design.

<sup>5</sup>This acreage would be due to temporary construction of bent column for the northbound mainlane, and the area would be recontoured to existing contours.

### **3.2 Section 402 of the Clean Water Act (Stormwater Permits)**

Section 402 of the CWA established the National Pollutant Discharge Elimination System (NPDES) permit program (33 USC 1342), which regulates point source discharges into waters of the U.S. In Texas, the permit program has been delegated to TCEQ, which established the Texas Pollutant Discharge Elimination System (TPDES) permit program. TCEQ issues the Construction General Permit, TXR150000, and Municipal Separate Storm Sewer System (MS4) permits under this program.

Although the permits are issued separately – Construction General Permit (CGP) for construction projects and MS4 for operators of MS4s – there is a CGP requirement to notify the operator of any MS4 of an anticipated stormwater discharge, depending upon project location. The MS4 of Amarillo, TX will be notified.

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 Project Development Process Manual and the Plans, Specifications, and Estimates (PS&E) Preparation Manual require an SW3P be included in the plans of all projects that disturb one or more acres. The Construction Contract Administration Manual requires that the appropriate CGP authorization documents (NOI or site notice) be completed, posted, and submitted, when required by the CGP, to TCEQ and the MS4 operator. It also requires that projects be inspected to ensure compliance with the CGP.

The PS&E Preparation Manual requires that all projects include Standard Specification Item 506 (Temporary Erosion, Sedimentation, and Environmental Controls), and the “Required Specification Checklists” require Special Provision 506-003 on all projects that need authorization under the CGP. These documents require the project contractor to comply with the CGP and SW3P and complete the appropriate authorization documents.

### **3.3 Section 303(d) of the Clean Water Act/ Impaired Waters**

The State of Texas is required, under Sections 305(b) and 303(d) of the federal CWA, to prepare biennial statewide water quality assessments that identify the status of use attainment for water bodies, and to identify water bodies for which effluent limitations are not stringent enough to implement water quality standards. Based on the assessments, the areas of potential effect are accounted for on the Texas Integrated Report of Surface Water Quality.

There are no impaired assessment units within the proposed project area or within a five-mile radius of the project area. All required control measures given by the CGP will be followed to achieve compliance.

### **3.4 Executive Order 11988 (Floodplain Management)**

The tributaries that cross the project area are part of the Upper West Amarillo Creek subwatershed (Hydrologic Unit Code [HUC]12-110901050308), which is within the Tecovas Creek-Canadian River watershed (Hydrologic Unit Code [HUC] 10-1109010503) of the Middle

Canadian Basin (HUC 6-110901). Within the watershed, most of the land is made up of undeveloped grassland and shrubland. However, in the southeast part of the watershed, there are high intensity and low intensity urban development. There is also patches of agricultural uses toward the south and southwest part of the watershed.

Executive Order (EO) 11988 directs each federal agency to act to reduce the risk of losses associated with floods, to minimize the impact of floods on human health and safety, and to preserve the beneficial values of floodplains. The proposed project is inside Potter County, TX, which participates in the National Flood Insurance Program. Per the FEMA Flood Insurance Rate Maps (Panel Numbers 48375C0368C, 48375C0369C, 48375C0504C, 48375C0505C, and 48375C0510C), the proposed project is within the FEMA-designated 100-year floodplain associated with unnamed tributaries of West Amarillo Creek (**Appendix A**).

The purpose of the project is to convert existing two-lane arterial to a four-lane controlled access freeway that will include frontage roads, ramps, and grade separations over intersection cross streets. Construction of the proposed project would comply with county and local floodplain guidelines and policies. In addition, coordination with the local floodplain administrator would be required for proposed impacts within the limits of the 100-year floodplain.

#### **4 Permits and Commitments**

Five potentially jurisdictional WOUS were identified within the proposed project area. These crossings are currently culverted, concrete-lined, or unlined within the existing facility. Impacts to potentially jurisdictional WOUS provided in this report are preliminary and may change during detailed engineering design. All proposed roadway and drainage improvements would be designed in a manner to avoid or minimize impacts to WOUS crossing to the extent practicable. It is anticipated that impacts will be reduced in final design; however, current impacts to WOUS would be authorized through a NWP without a PCN by USACE. Commitments, BMPs, and mitigation requirements would be implemented based on the results of coordination with USACE.

Coordination with the local floodplain administrator would be required. An SW3P would be required in compliance with TPDES. Additionally, construction and post-construction BMPs would be designed and utilized to minimize erosion, off-site sedimentation, and the movement of other pollutants off-site as part of stormwater runoff.

## 5 References

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual, Environmental Laboratory Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Federal Emergency Management Administration (FEMA). 2017. FEMA Flood Map Service Center (FIRM Panels 48375C0368C, 48375C0369C, 48375C0504C, 48375C0505C, and 48375C0510C) Retrieved from <https://msc.fema.gov/portal>.

Texas Commission on Environmental Quality (TCEQ). 2015. 2014 Texas Integrated Report – Texas 303(d) List (Category 5). Retrieved from [https://www.tceq.texas.gov/assets/public/waterquality/swqm/assess/14txir/2014\\_303d.pdf](https://www.tceq.texas.gov/assets/public/waterquality/swqm/assess/14txir/2014_303d.pdf).

Texas Parks and Wildlife Department (TPWD). 2017. TEAM: Texas Ecosystem Analytical Mapper. Retrieved from <http://tpwd.texas.gov/gis/team/>.

U.S. Army Corps of Engineers (USACE). 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0), eds. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-10-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

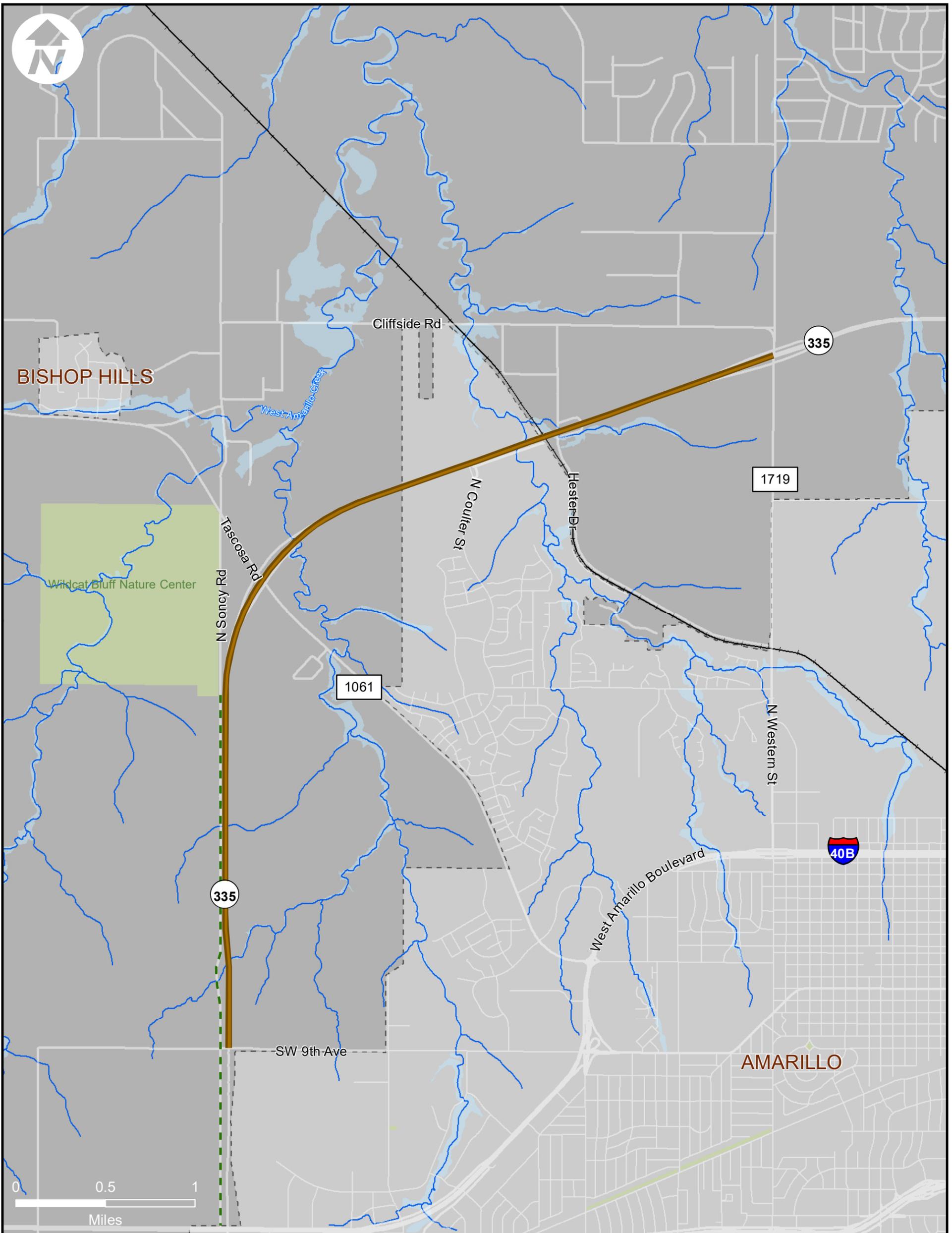
U.S. Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS). 2016. Web Soil Survey. Prepared by Soil Survey Staff. Retrieved from <http://websoilsurvey.nrcs.usda.gov/>.

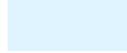
U.S. Geological Survey (USGS). 2002. Geologic Atlas of Texas. Retrieved from <https://txpub.usgs.gov/txgeology/>.

2018. National Hydrography Dataset. Retrieved from <https://viewer.nationalmap.gov/advanced-viewer/>.

U.S. Fish and Wildlife Service. 2018. National Wetlands Inventory. Retrieved from <https://www.fws.gov/wetlands/data/mapper.html>.

*Appendix A*  
*Exhibits*



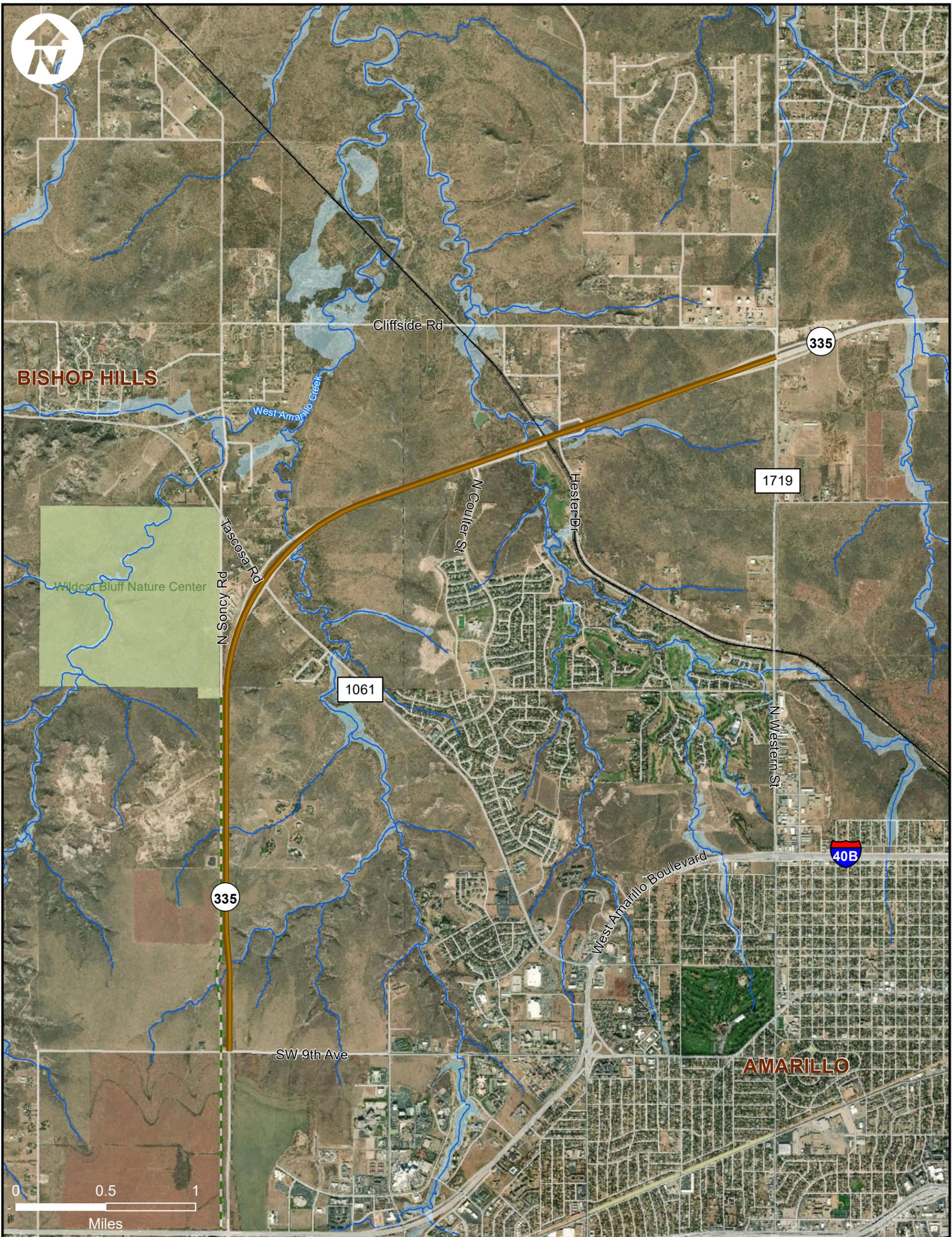
-  Proposed Project
-  Old Soncy Trail
-  Waterbody
-  100-Year Floodplain
-  City Limit
-  County Limit

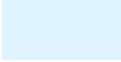
# State Loop 335 Segment C-1

## Project Location Map

CSJ 2635-04-034



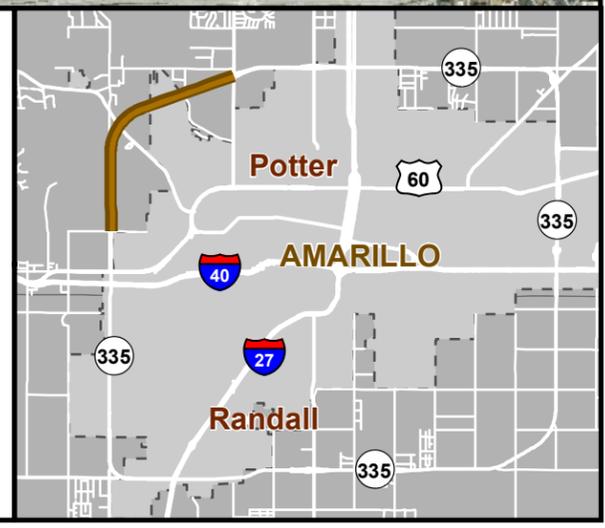


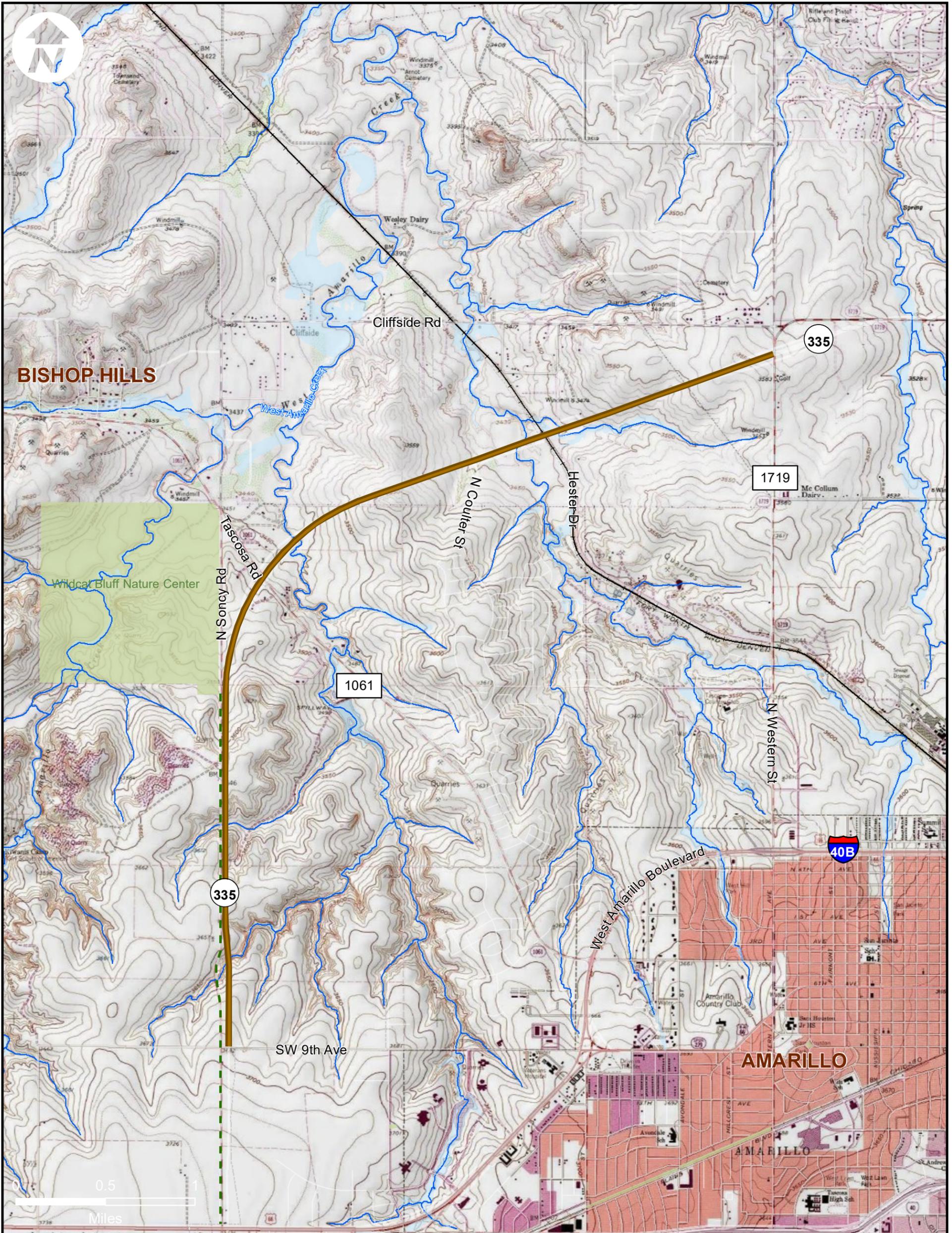
-  Proposed Project
-  Old Sancy Trail
-  Waterbody
-  100-Year Floodplain
-  City Limit

# State Loop 335 Segment C-1

## Aerial Map

CSJ 2635-04-034





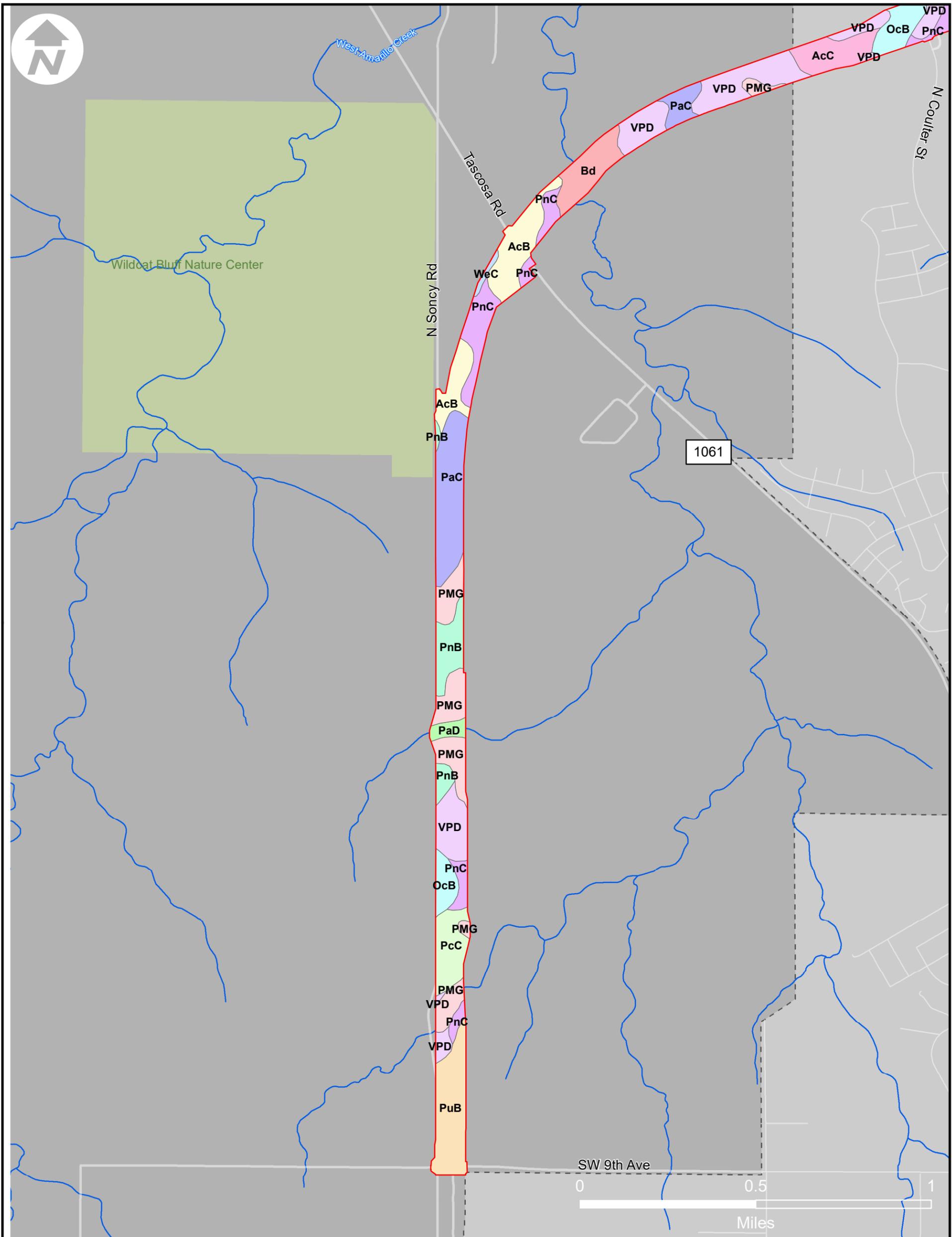
- Proposed Project
- Old Soncy Trail
- Waterbody
- 100-Year Floodplain
- City Limit

# State Loop 335 Segment C-1

## Topographic Map

CSJ 2635-04-034





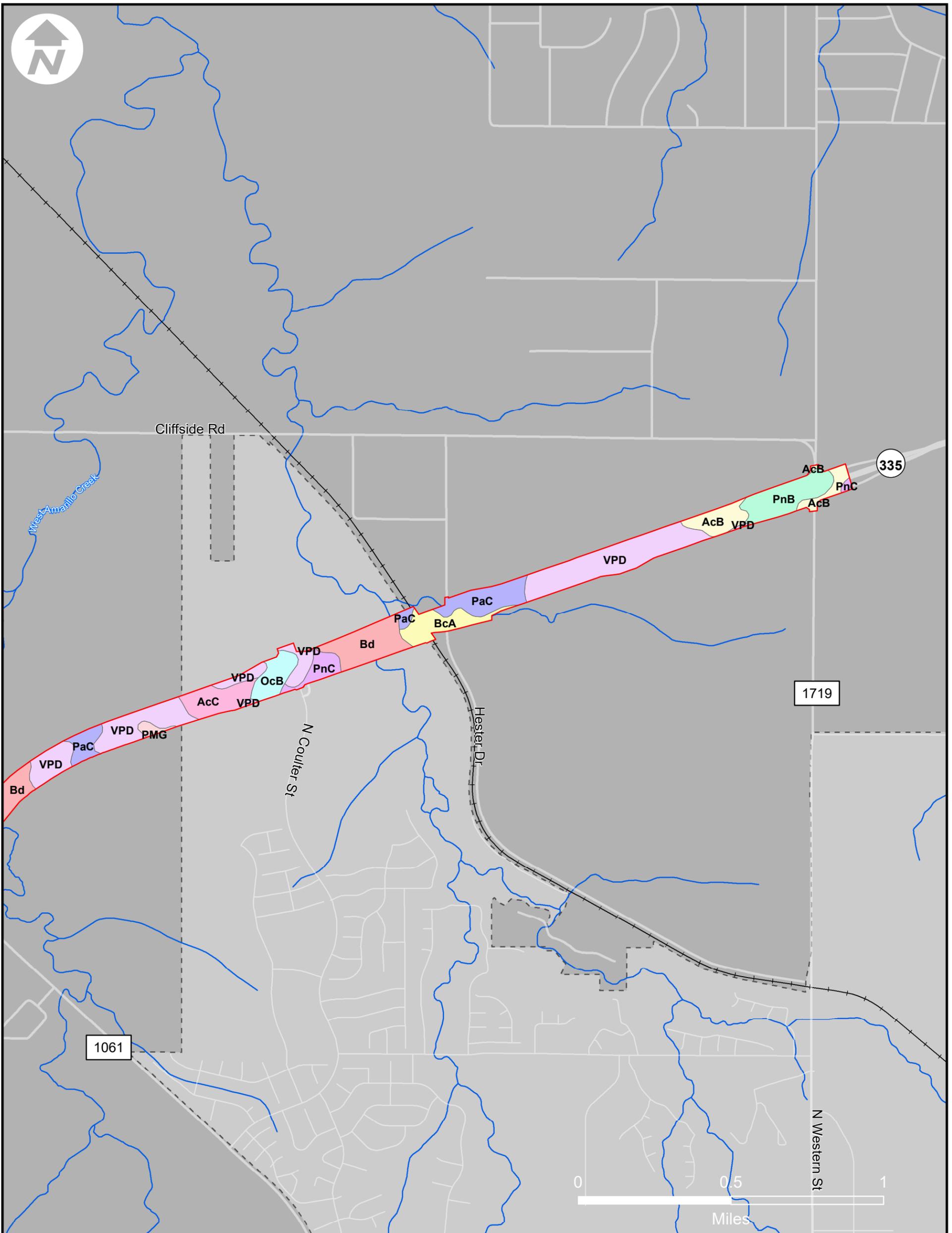
- |                                  |                                 |
|----------------------------------|---------------------------------|
| Project Area                     | PaD - Paloduro Clay Loam, 5-8%  |
| AcB - Acuff Loam, 1-3%           | PcC - Pep Clay Loam, 3-5%       |
| AcC - Acuff Loam, 3-5%           | PnB - Posey Clay Loam, 1-3%     |
| BcA - Bippus Clay Loam, 0-1%     | PnC - Posey Clay Loam, 3-5%     |
| Bd - Bippus and Spur Soils, 0-2% | PuB - Pullman Clay Loam, 1-3%   |
| OcB - Olton Clay Loam, 1-3%      | VPD - Veal-Paloduro, undulating |
| PMG - Potter-Mobeetie, 8-45%     | WeC - Weymouth Clay Loam, 3-5%  |
| PaC - Paloduro Clay Loam, 3-5%   | Waterbody                       |
| City Limit                       | County Limit                    |

# State Loop 335 Segment C-1

## Soils Map 1 of 2

CSJ 2635-04-034





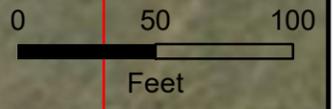
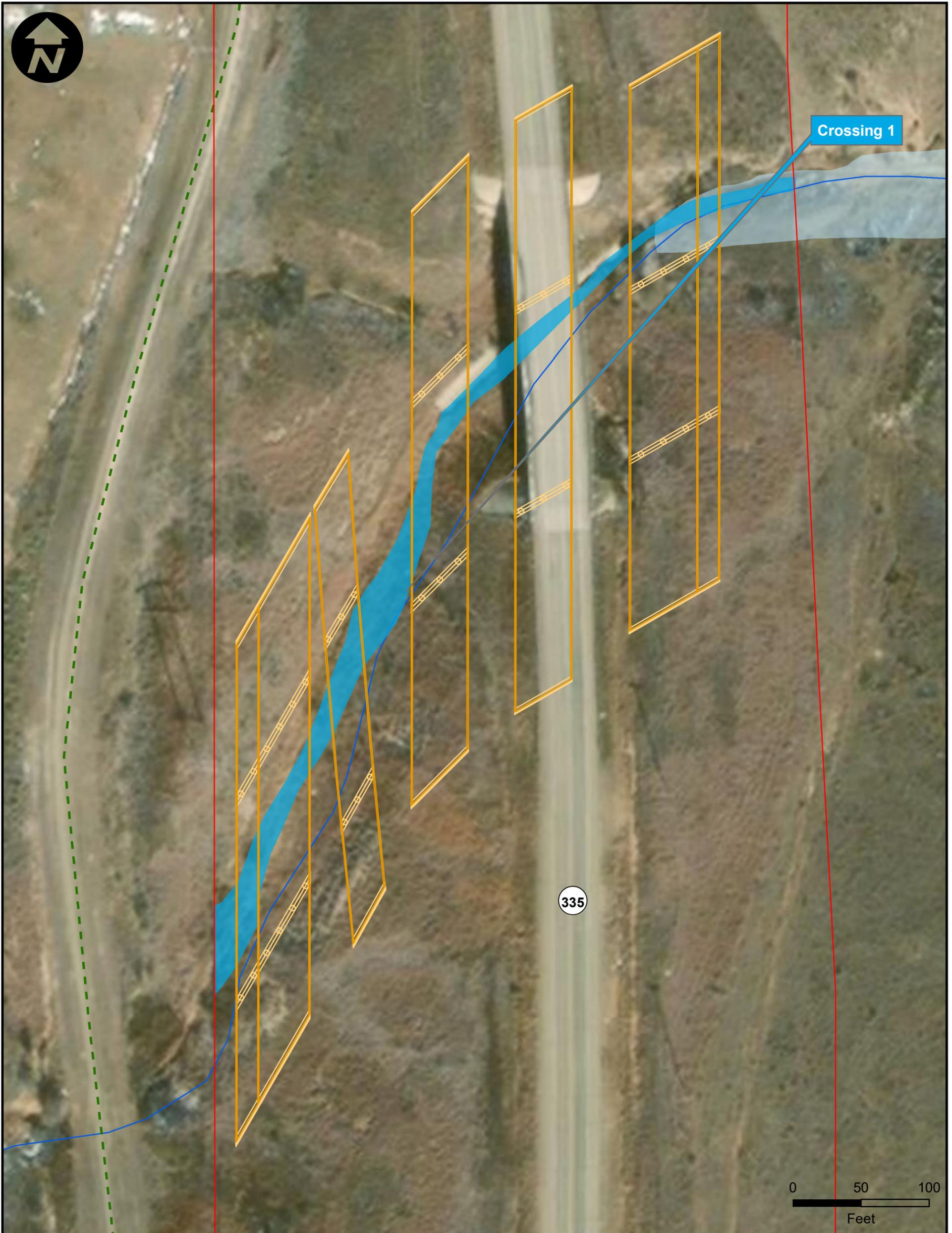
- |                                  |                                 |
|----------------------------------|---------------------------------|
| Project Area                     | PaD - Paloduro Clay Loam, 5-8%  |
| AcB - Acuff Loam, 1-3%           | PcC - Pep Clay Loam, 3-5%       |
| AcC - Acuff Loam, 3-5%           | PnB - Posey Clay Loam, 1-3%     |
| BcA - Bippus Clay Loam, 0-1%     | PnC - Posey Clay Loam, 3-5%     |
| Bd - Bippus and Spur Soils, 0-2% | PuB - Pullman Clay Loam, 1-3%   |
| OcB - Olton Clay Loam, 1-3%      | VPD - Veal-Paloduro, undulating |
| PMG - Potter-Mobeetie, 8-45%     | WeC - Weymouth Clay Loam, 3-5%  |
| PaC - Paloduro Clay Loam, 3-5%   | Waterbody                       |
| City Limit                       | County Limit                    |

# State Loop 335 Segment C-1

## Soils Map 2 of 2

CSJ 2635-04-034





- Project Area
- Old Soncy Trail
- Bent
- Bridge
- Culvert
- Water Crossing
- Potentially Impacted Water
- NHD Waterbody
- 100-Year Floodplain

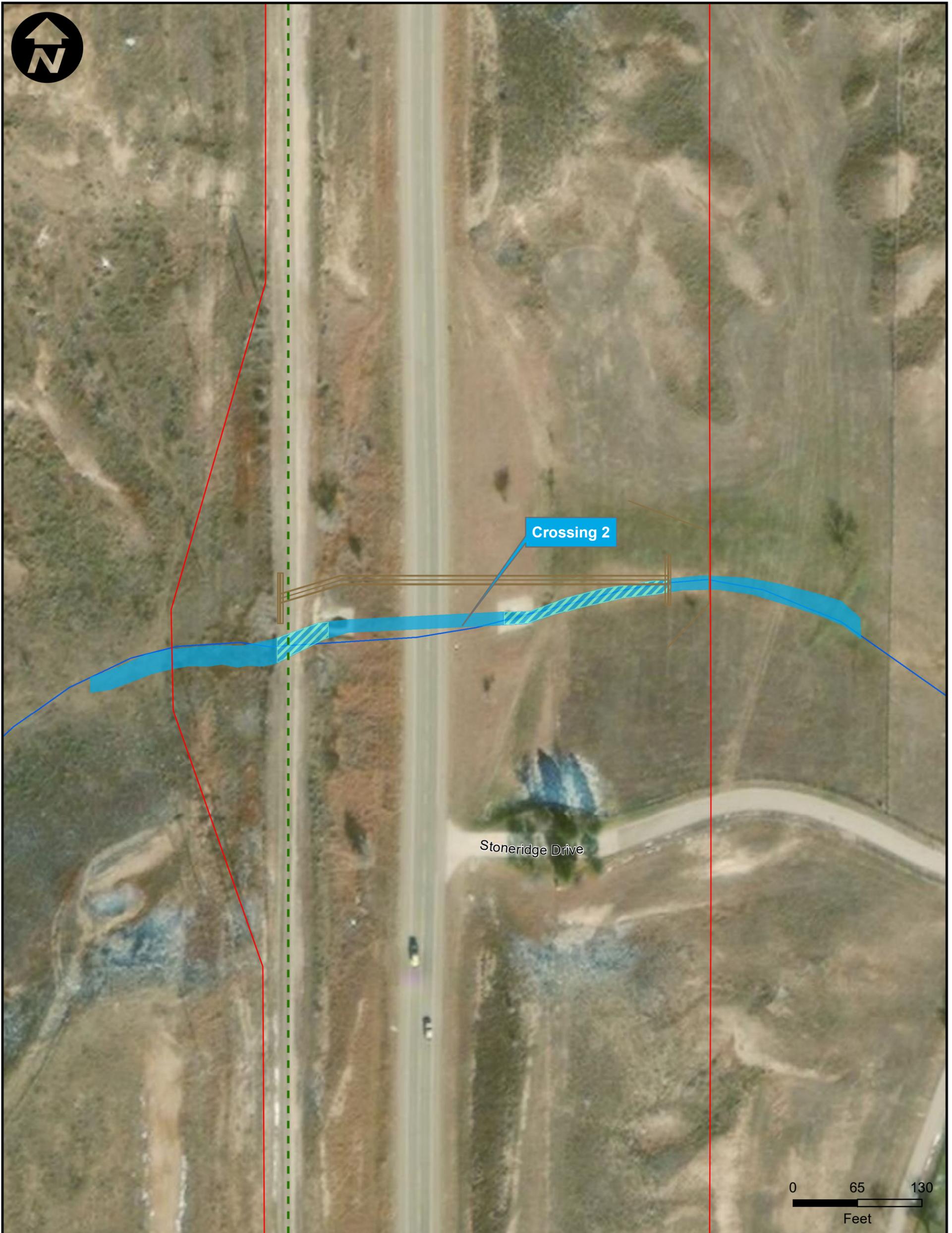
# State Loop 335 Segment C-1

## *Water Resources Map*

CSJ 2635-04-034

Page 1 of 5





-  Project Area
-  Old Soncy Trail
-  Bent
-  Bridge
-  Culvert
-  Water Crossing
-  Potentially Impacted Water
-  NHD Waterbody
-  100-Year Floodplain

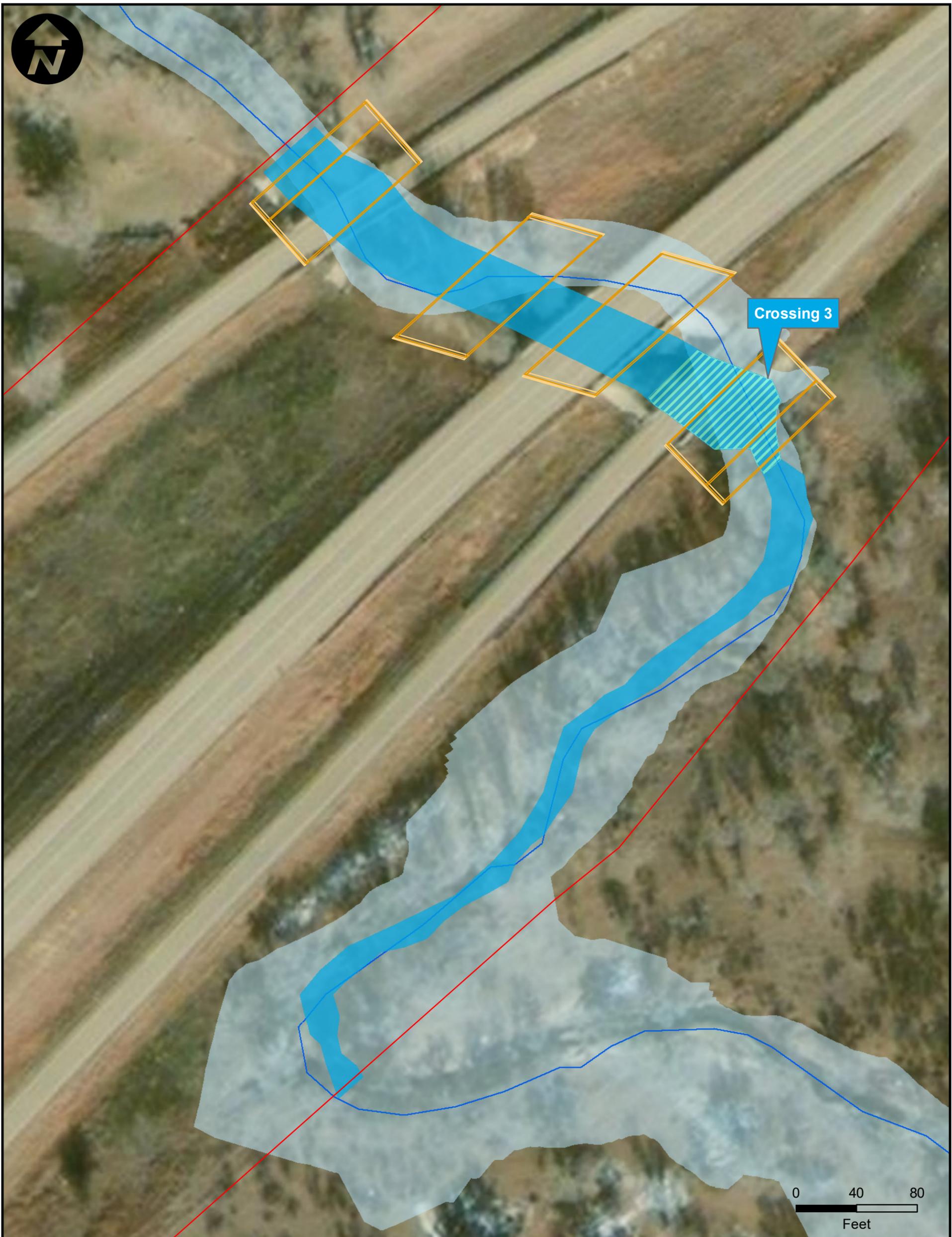
# State Loop 335 Segment C-1

## Water Resources Map

CSJ 2635-04-034

Page 2 of 5





-  Project Area
-  Old Soncy Trail
-  Bent
-  Bridge
-  Culvert
-  Water Crossing
-  Potentially Impacted Water
-  NHD Waterbody
-  100-Year Floodplain

**State Loop 335  
Segment C-1**

*Water Resources Map*

CSJ 2635-04-034

Page 3 of 5





-  Project Area
-  Old Soncy Trail
-  Bent
-  Bridge
-  Culvert
-  Water Crossing
-  Potentially Impacted Water
-  NHD Waterbody
-  100-Year Floodplain

# State Loop 335 Segment C-1

## Water Resources Map

CSJ 2635-04-034





-  Project Area
-  Old Soncy Trail
-  Bent
-  Bridge
-  Culvert
-  Water Crossing
-  Potentially Impacted Water
-  NHD Waterbody
-  100-Year Floodplain

# State Loop 335 Segment C-1

## Water Resources Map

CSJ 2635-04-034

Page 5 of 5



*Appendix B*  
*Photos*

**State Loop 335 Segment C-1  
Draft Water Resources Report  
Photos during April 15-16, 2019 Field Survey**

Crossing 1 – Unnamed Tributary 1 to West Amarillo Creek (north of SW 9<sup>th</sup> Avenue)



*Photo 1. Crossing 1 on west side of roadway, facing south*



*Photo 2. Crossing 1 on east side of roadway, facing east*



*Photo 3. Crossing 1 on west side of roadway, facing west*

Crossing 2 – Unnamed Tributary 2 to West Amarillo Creek (north of Stoneridge Drive)



*Photo 4. Tributary 2 on west side of roadway, facing south*



*Photo 5. Tributary 2 on west side of roadway, facing west*



*Photo 6. Tributary 2 on east side of roadway, facing east*

Crossing 3 – Unnamed Tributary 3 to West Amarillo Creek (north of Tascosa Road)



*Photo 7. Crossing 3 on east side of roadway, facing northwest*



*Photo 8. Crossing 3 on east side of roadway, facing east*



*Photo 9. Crossing 3 under the northbound SL 335 ramp, facing west*



*Photo 10. Crossing 3 instream vegetation between conspans, facing west*



*Photo 11. Crossing 3 under the SL 335 mainlanes, facing east*



*Photo 12. Crossing 3 at the SL 335 southbound ramp, facing east*

Crossing 4 – Unnamed Tributary 4 to West Amarillo Creek (south of Hester Drive)



*Photo 13. Crossing 4 on west side of roadway, facing northeast*



*Photo 14. Crossing 4 on east side of roadway, facing east*



*Photo 15. Crossing 4 on west side of roadway, facing west*

Crossing 5 – Unnamed Tributary 5 to West Amarillo Creek (north of Hester Drive)



*Photo 16. Crossing 5 on the east side of the roadway, facing northeast*



*Photo 17. Crossing 5 on the east side of the roadway, facing southeast*



*Photo 18. Crossing 5 on east side of roadway, facing northeast*



*Photo 19. Crossing 5 on east side of roadway, facing southwest*