

APPENDIX E ONSHORE WETLAND DELINEATION REPORT

**WETLAND DELINEATION REPORT FOR THE ONSHORE
COMPONENTS FOR THE PROPOSED
BLUEWATER SPM PROJECT**

San Patricio and Aransas counties, Texas

Submitted to:

Bluewater Texas Terminal LLC

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Prepared By:

Perennial Environmental Services, LLC



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INTRODUCTION

Bluewater Texas Terminal LLC (BWTT) retained Perennial Environmental Services, LLC (Perennial) to conduct an environmental survey for onshore components associated with the Bluewater SPM Project (Project), including a wetland delineation. The onshore components associated with the Project consists of the construction of approximately 22 miles of two, 30-inch diameter crude oil pipelines designed to transport crude oil from a planned multi-use terminal, located in San Patricio County, to the Port Aransas Causeway (HWY 361), also located in San Patricio County (**Attachment 1**).

From HWY 361, the pipelines will connect inshore components and offshore components which are not included in Perennial's scope for environmental survey and is not discussed within this wetland delineation report.

The entire Project is located within the jurisdictional boundary of the U.S. Army Corps of Engineers (USACE) Galveston District. Perennial's purpose was to identify and delineate all wetlands and waterbodies within the survey areas that encompassed approximately 812.74 acres in order to provide a complete wetland assessment of the proposed Project area. Maps of the Project location, environmental survey area, and delineated features are provided in **Appendix A**.

This wetland delineation included the identification and recording of physical features that may be considered "Waters of the United States," as defined by the USACE. "Waters of the United States" includes most wetlands, rivers, creeks, streams, lakes, tributaries, etc. This report summarizes the results of the delineation within the surveyed area and will be utilized to determine impacts on jurisdictional "Waters of the United States."

METHODOLOGY

Preliminary Data Gathering

Prior to visiting the Project survey area, a resource review was conducted of available background site information, including historic aerial photography, National Wetland Inventory (NWI) mapping, and historic U.S. Geological Survey (USGS) 7.5-minute topographic

quadrangle maps.

Identification of Potential Waters of the United States

The wetland and waterbody delineations were conducted in accordance with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region* (Version 2.0) (USACE, 2010) and the routine determination guidelines provided in the *USACE Wetland Delineation Manual* (Technical Report Y-87-1) (USACE, 1987). According to the Manual, an area is a wetland if positive indicators for the three mandatory wetland criteria are identified in a given area, with special exceptions. These criteria include the presence of hydrophytic vegetation, wetland hydrology, and hydric soils. Identification of dominant vegetative species and the associated wetland indicator status, as defined by the *USACE National Wetland Plant List* (NWPL), dictates the presence of hydrophytic vegetation. Location, inundation, saturation, and other physical indicators suggesting the presence of water are used to determine wetland hydrology at a site. A small pit is dug to evaluate soils within each wetland and surrounding upland area to determine if hydric soils are present.

Waterbodies (eg. creeks, streams, etc.) are typically identified by the presence of an ordinary high-water mark (OHWM). OHWMs are established by physical characteristics such as “a clear, natural line impressed on the bank, shelving, changes in the character soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.” Manmade ponds, lakes, and other bodies of open water that may not have an OHWM were also included in this category. If present, on-site streams, open waters, and wetlands were delineated and the boundaries were surveyed.

Data Points/Soil Stations

Data point locations within the Project survey area are depicted on the Aerial/Natural Resources Conservation Service (NRCS) Soils Maps, which are included in **Appendix A**. Data sheets documenting each site (soil station) as well as changes in vegetative communities and/or differences between wetland and upland areas are provided in **Appendix B**. A unique naming scheme included the survey team number (P1). Soil stations were named by either using the feature name followed by upland or wetland distinction, or by a unique chronological number preceded by an upland distinction. An example of this for an upland soil station would be

WP1001_UP or UPP1001, respectively. In addition to the data sheets, photographs were taken at each data point and/or delineated feature in order to document conditions, such as vegetative communities, present at the time of survey. **Appendix C** contains photographs that are labeled by feature or data point name followed by the alphabetic qualifier for the order in which the photograph was taken.

All data points were collected using a Trimble Ranger 7 global positioning system (GPS) equipped with a wireless, Bluetooth receiver or a Trimble Geo 7X which has an internal GPS receiver to geographically reference features, such as data points and wetland boundaries obtained during the field survey. These units typically have real-time and post-processed sub-meter accuracy. Geographic Information System (GIS) software was used to analyze collected features, calculate the extent of delineated areas, and generate mapping provided in **Appendix A**.

CONDITIONS DOCUMENTED AT PROJECT SITE

Perennial biologists conducted wetland and waterbody delineations of the Project area from February 4-15, 2019 and February 25, 2019 to ascertain conditions within the 812.74-acre survey area. Of the 812.74 acres surveyed, 761.28 acres consisted of uplands, 28.40 acres consisted of palustrine emergent (PEM) wetlands, 1.77 acres consisted of palustrine scrub-shrub (PSS) wetlands, 9.93 acres consisted of estuarine intertidal emergent (E2EM) wetlands, 0.13 acre of estuarine intertidal scrub-shrub (E2SS), 0.90 acre of mudflats (E2USP), and 10.32 acres consisted of waterbodies (streams and open waters).

Land use in the upland areas is characterized as agricultural, open land, industrial, commercial, and forested. A summary of the vegetation, soils, and hydrology observed in the survey area is presented below.

Vegetation

Data sheets documenting the vegetative species observed during the surveys are provided in **Appendix B**. The dominant vegetation species observed within the uplands and wetlands within the survey area are presented below.

Uplands

The uplands are comprised predominately of active agricultural land, shrubland, forest and open land. Dominant vegetation associated with these areas include: Bermudagrass (*Cynodon dactylon*), sugarberry (*Celtis laevigata*), hairyfruit chervil (*Chaerophyllum tainturieri*), stickywilly (*Galium aparine*), common sunflower (*Helianthus annuus*), honey mesquite (*Prosopis glandulosa*), giant reed (*Arundo donax*), big bluestem (*Andropogon gerardii*), black medick (*Medicago lupulina*), shepherd's purse (*Capsella bursa-pastoris*), switchgrass (*Panicum virgatum*), chinaberry tree (*Melia azedarach*), peach (*Prunus persica*), yellow bluestem (*Bothriochloa ischaemum*), henbit deadnettle (*Lamium amplexicaule*), corn (*Zea mays*), Texas nightshade (*Solanum triquetrum*), spiny hackberry (*Celtis pallida*), Texas persimmon (*Diospyros texana*), Santa Maria feverfew (*Parthenium hysterophorus*), sweet acacia (*Vachellia farnesiana*), sand spikerush (*Eleocharis montevidensis*), scarlet pimpernel (*Lysimachia arvensis*), spiny chloracantha (*Chloracantha spinosa*), redroot amaranth (*Amaranthus retroflexus*), curly dock (*Rumex crispus*), Johnsongrass (*Sorghum halepense*), bristly nama (*Nama hispidum*), common dandelion (*Taraxacum officinale*), lime pricklyash (*Zanthoxylum fagara*), floating primrose-willow (*Ludwigia peploides*), Texas swampprivet (*Forestiera angustifolia*), hooded windmill grass (*Chloris cucullata*), gulf cordgrass (*Spartina spartinae*), saltmeadow cordgrass (*Spartina patens*), eastern baccharis (*Baccharis halimifolia*), pinkladies (*Oenothera speciosa*), Texas prickly pear (*Opuntia lindheimeri*), Christmas cactus (*Opuntia leptocaulis*), Heller's rosette grass (*Dichanthelium oligosanthes*), and camphorweed (*Heterotheca subaxillaris*).

Wetlands

Dominant vegetation within the PEM wetlands consisted of bushy seaside tansy (*Borrchia frutescens*), switchgrass, big bluestem, saltmeadow cordgrass, smallflowered milkvetch (*Astragalus nuttallianus*), sand spikerush, woodrush flatsedge (*Cyperus entrerianus*), brownseed paspalum (*Paspalum plicatulum*), shoregrass (*Monanthochloe littoralis*), green flatsedge (*Cyperus virens*), five-stamen tamarisk (*Tamarix chinensis*), coastal saltgrass (*Distichlis spicata*), and eastern baccharis.

Dominant vegetation associated within the PSS wetlands consists of marsh primrose-willow (*Ludwigia palustris*), Chinese tallow (*Triadica sebifera*), sand spike-rush, broom-sedge bluestem

(*Andropogon virginicus*), common buttonbush (*Cephalanthus occidentalis*), bigpod sesbania (*Sesbania herbacea*), coastal salt grass, Brazilian peppertree (*Schinus terebinthifolia*), and saw greenbrier (*Smilax bona-nox*).

Dominant vegetation within the E2EM wetlands consisted of saltmeadow cordgrass, bushy seaside tansy, saltgrass, shoregrass, and dwarf saltwort (*Salicornia bigelovii*).

Dominant vegetation within the E2SS wetlands consisted of five-stamen tamarisk, bushy seaside tansy, and Brazilian peppertree.

Wetlands identified as E2USP consist of mud flats or sand flats that are tidally influenced with sparsely vegetated surfaces that usually makes up less than five percent of total vegetative cover. Dominant vegetation within the E2USP mudflats consisted of saltgrass, bushy seaside tansy, and dwarf saltwort.

Soils

According to the United States Department of Agriculture (USDA) NRCS Web Soil Survey for San Patricio and Aransas counties, Texas, the Project survey area is located within 15 mapping units. The mapping unit texture, drainage, general location, and NRCS hydric soil rating is summarized in **Table 1**.

Table 1				
Soil Mapping Units Located within the Bluewater SPM Project				
Mapping Unit	Texture and Drainage	General Location	Acres within Survey Area	NRCS Hydric Rating
San Patricio County, Texas				
Aransas clay, 0 to 1 percent slopes, slightly saline, moderately sodic, frequently flooded (As)	The Aransas series consists of very deep, poorly drained, very slowly permeable soils that formed in clayey alluvial sediments of Holocene age. Slopes range from 0 to 1 percent.	Coastal Plains	20.09	Hydric
Banquete clay, 0 to 1 percent slopes (Ec)	The Banquete series consists of very deep, moderately well drained, very slowly permeable soils that formed in clayey fluviomarine sediments. Slopes range from 0 to 1 percent.	Coastal Plains	22.43	Not Hydric

Table 1
Soil Mapping Units Located within the Bluewater SPM Project

Mapping Unit	Texture and Drainage	General Location	Acres within Survey Area	NRCS Hydric Rating
Calallen sandy clay loam, 0 to 1 percent slopes (Os)	The Calallen series consists of very deep, well drained, moderately permeable soils that formed in loamy fluviomarine sediments. Slopes range from 0 to 1 percent.	Coastal Plains	30.80	Not Hydric
Dietrich loamy fine sand, 0 to 1 percent slopes, very rarely flooded (Dt)	The Dietrich series consists of very deep, poorly drained, very slowly permeable soils that formed in loamy sediments of late Pleistocene age. Slopes range from 0 to 2 percent.	Coastal Plains	23.87	Hydric
Galveston-Mustang complex, 0 to 3 percent slopes, occasionally flooded, frequently ponded (GM)	The Galveston series consists of very deep, somewhat excessively drained, very rapidly permeable soils that formed in sandy eolian deposits derived from igneous, metamorphic and sedimentary rock. Slopes range from 0 to 12 percent. The Mustang series consists of very deep, poorly drained, very slowly permeable soils that formed in sandy eolian and storm wash over sediments. Slopes range from 0 to 1 percent.	Barrier Islands	37.48	Not Hydric
Mustang fine sand, 0 to 1 percent slopes, occasionally flooded, frequently ponded (Mu)	Mustang—See Description Above	Barrier Islands	20.52	Hydric
Narta loam, 0 to 1 percent slopes, rarely flooded (Na)	The Narta series consists of very deep, poorly drained, very slowly permeable soils that formed in loamy fluviomarine sediments derived from the Beaumont Formation of Late Pleistocene age. Slopes range from 0 to 1 percent.	Coastal Plains	44.61	Hydric
Orelia fine sandy loam, 0 to 1 percent slopes (Or)	The Orelia series consists of very deep, well drained, slowly permeable soils that formed in loamy fluviomarine deposits of Pleistocene age. Slopes range from 0 to 3 percent.	Coastal Plains	30.67	Not Hydric
Papalote fine sandy loam, 0 to 1 percent slopes (PaA)	The Papalote series consists of very deep, moderately well drained soils that formed in loamy and clayey alluvium. Slopes range from 0 to 5 percent.	Coastal Plains	43.31	Not Hydric

Table 1 Soil Mapping Units Located within the Bluewater SPM Project				
Mapping Unit	Texture and Drainage	General Location	Acres within Survey Area	NRCS Hydric Rating
Raymondville clay loam, 0 to 1 percent slopes (RaA)	The Raymondville series consists of deep, moderately well drained, slowly permeable soils that formed in calcareous moderately fine and fine textured sediments. Slopes range from 0 to 5 percent.	Coastal Plains	68.93	Not Hydric
Raymondville clay loam, 1 to 3 percent slopes (RaB)	Raymondville —See Description Above	Coastal Plains	2.15	Not Hydric
Victoria clay 0 to 1 percent slopes (VcA)	The Victoria series consists of very deep, well drained, very slowly permeable soils that formed in clayey deltaic and marine sediments. Slopes range from 0 to 3 percent.	Coastal Plains	316.38	Not Hydric
Victoria clay, depressionnal (Vd)	Victoria series – See Description Above	Coastal Plains	78.87	Not Hydric
Willacy fine sandy loam, 0 to 1 percent slopes (WfA)	The Willacy series consists of deep, well drained, moderately permeable soils that formed in alkaline loamy sediments. Slopes range from 0 to 5 percent.	Coastal Plains	0.60	Not Hydric
Aransas County, Texas				
Dianola soils (Ds)	The Dianola series consists of deep, poorly drained, rapidly permeable soils that formed in sandy marine sediments. Slopes range from 0 to 1 percent.	Coastal Plains	1.28	Hydric
Galveston-Mustang complex, 0 to 3 percent slopes, occasionally flooded, frequently ponded (GM)	Galveston series – See Description Above Mustang – See Description Above	Barrier Islands	22.42	Not Hydric
Mustang fine sand, 0 to 1 percent slopes, occasionally flooded, frequently ponded (Mu)	Mustang – See Description Above	Barrier Islands	48.31	Hydric

Hydrology

All facilities and workspaces associated with the Project will be located within three watersheds: The Project survey area is located within the North Corpus Christi Bay Watershed (Hydrologic Unit Code [HUC] 8: 12110201), Aransas Watershed (HUC 8: 12100407), and the Aransas Bay Watershed (HUC 8: 12100405). The main hydrological features located within the Project vicinity consist of Conn Brown Harbor, Gum Branch, McCampbell Slough, Nueces Bay, the

Turning Basin, and Redfish Bay.

The following seven primary wetland hydrology indicators were observed within the wetlands: saturation, standing water, algal mat or crust, aquatic invertebrates, drift deposits, thin muck surface, and water-stained leaves. Additionally, four secondary wetland hydrology indicators were observed: crayfish burrows, cracked soil surface, FAC-Neutral test, and geomorphic position. Hydrologic indicators, including drift deposits, FAC-Neutral test, geomorphic position, high water table, soil saturation, surface water, and water marks, were also observed within some of the uplands.

WATERS OF THE UNITED STATES SUMMARY

Naming Scheme

Perennial utilized a unique scheme to identify wetlands, streams and open water features. This naming scheme consisted of three parts: feature abbreviation, survey team number, and feature ID number. Features were abbreviated as follows: wetland (W), stream (S), and open waters (OW). One team of biologists conducted field surveys and was designated as (P1). Feature identification numbers were assigned consecutively. Additionally, a suffix with the cover type was added to the wetland name, such as _PEM, if more than one wetland type were observed within a single wetland. An example of an identified wetland using this naming scheme is WP1001_WET_PEM. Furthermore, some features consisted of two or more wetlands of the same type, these features were abbreviated with the cover type followed by a letter designation of (e.g. _B or _C), respectively. An example of this would be (e.g. WP1001_PEM_B). Desktop features have a (_DT) abbreviation in the feature ID name (e.g. WP1001_PEM_DT).

Wetlands

Perennial biologists delineated a total of 70 wetland areas that exhibited positive indicators for the three required criteria of a wetland as defined by the USACE. Of the 70 wetlands identified within the Project survey area, 53 were characterized as PEM wetlands, eight were characterized as PSS wetlands, and nine were characterized as special aquatic sites that are tidally influenced.

The Survey Area Aerial/NRCS soils maps (**Appendix A**) depict the locations of the delineated wetlands. Photographic documentation of the representative conditions and vegetation is

included as **Appendix C**. The type, classification, acreage, and location of the non-tidally influenced wetlands within the survey area are summarized in **Table 2**.

Table 2					
Wetlands Delineated (Not Tidally Influenced) within the Bluewater SPM Project Survey Area					
Wetland ID	Wetland Type	Acreage	Location		Class of Aquatic Resource
			Latitude	Longitude	
San Patricio County					
WP1001	PEM	0.09	27.93203	-97.26912	§ 404
WP1002	PEM	1.59	27.92859	-97.21027	§ 404
WP1003	PEM	0.03	27.92905	-97.20735	§ 404
WP1004	PEM	0.01	27.92859	-97.20693	§ 404
WP1005	PEM	0.34	27.92920	-97.20544	§ 404
WP1006	PEM	1.76	27.92934	-97.20254	§ 404
WP1007	PEM	0.21	27.92947	-97.20077	§ 404
WP1008	PEM	0.17	27.92938	-97.19745	§ 404
WP1009	PEM	0.58	27.92996	-97.19623	§ 404
WP1010	PEM	0.64	27.93085	-97.19057	§ 404
WP1011	PEM	0.13	27.93090	-97.19152	§ 404
WP1012	PEM	1.11	27.93042	-97.19425	§ 404
WP1013	PEM	0.31	27.93100	-97.18932	§ 404
WP1018	PEM	0.16	27.93127	-97.18281	§ 404
WP1019	PEM	0.24	27.93153	-97.18313	§ 404
WP1020	PEM	0.06	27.93026	-97.18241	§ 404
WP1021	PEM	3.14	27.93043	-97.18059	§ 404
WP1022	PEM	12.59	27.93230	-97.17580	§ 404
WP1023	PEM	0.19	27.93271	-97.17286	§ 404
WP1024	PEM	0.06	27.93251	-97.17210	§ 404
WP1025	PEM	0.09	27.93088	-97.16993	§ 404
WP1026	PEM	0.01	27.93012	-97.16908	§ 404
WP1027	PEM	0.52	27.93005	-97.16655	§ 404
WP1028	PEM	0.10	27.92956	-97.16611	§ 404
WP1029_PEM	PEM	0.01	27.92905	-97.16429	§ 404
WP1029_PSS	PSS	0.03	27.92903	-97.16437	§ 404
WP1030	PSS	0.03	27.92923	-97.16441	§ 404
WP1031	PEM	0.02	27.92944	-97.16402	§ 404
WP1033	PEM	0.10	27.92941	-97.16244	§ 404
WP1032	PEM	0.01	27.92970	-97.16475	§ 404
WP1034	PEM	0.15	27.92899	-97.16185	§ 404
WP1035	PEM	0.01	27.92878	-97.16284	§ 404

Table 2 Wetlands Delineated (Not Tidally Influenced) within the Bluewater SPM Project Survey Area					
Wetland ID	Wetland Type	Acreeage	Location		Class of Aquatic Resource
			Latitude	Longitude	
WP1036	PEM	0.04	27.92894	-97.16260	§ 404
WP1038	PEM	0.06	27.92865	-97.15991	§ 404
WP1039	PEM	0.20	27.92829	-97.16003	§ 404
WP1040	PEM	0.04	27.92846	-97.15900	§ 404
WP1041	PEM	0.12	27.92815	-97.15653	§ 404
WP1042	PEM	0.01	27.92794	-97.15635	§ 404
WP1043	PEM	0.01	27.92865	-97.15611	§ 404
WP1037	PSS	0.04	27.92899	-97.16278	§ 404
WP1045	PEM	0.004	27.92597	-97.15231	§ 404
WP1046	PEM	0.003	27.92612	-97.15219	§ 404
WP1058_WET_PEM_DT	PEM	0.33	27.92844	-97.22471	§ 404
WP1059_WET_PEM_DT	PEM	0.39	27.92850	-97.22199	§ 404
Aransas County					
WP1044	PEM	0.04	27.92663	-97.15187	§ 404
WP1047	PEM	0.94	27.92550	-97.15068	§ 404
WP1048	PEM	0.04	27.92458	-97.15015	§ 404
WP1049	PEM	0.15	27.92174	-97.14512	§ 404
WP1050_PSS_B	PSS	0.27	27.92030	-97.14085	§ 404
WP1050_PSS	PSS	0.08	27.92020	-97.14128	§ 404
WP1050_PEM_D	PEM	0.61	27.91998	-97.14045	§ 404
WP1050_PEM_C	PEM	0.10	27.92040	-97.14093	§ 404
WP1050_PEM	PEM	0.60	27.92040	-97.14142	§ 404
WP1051	PEM	0.06	27.91924	-97.13628	§ 404
WP1052	PEM	0.09	27.91848	-97.13531	§ 404
WP1055_PEM	PEM	0.07	27.91146	-97.13799	§ 404
WP1055_PSS	PSS	0.09	27.91146	-97.13782	§ 404
WP1056_PSS	PSS	0.99	27.91279	-97.13716	§ 404
WP1055_PEM_B	PEM	0.03	27.91157	-97.13776	§ 404
WP1057_WET_PSS_DT	PSS	0.24	27.91504	-97.13516	§ 404
WP1060_WET_PEM_DT	PEM	0.03	27.91509	-97.13564	§ 404
Total Acres Delineated		30.17			

Special Aquatic Sites

Perennial biologists delineated nine wetlands within the Project survey area that exhibited positive indicators for the three required wetland criteria, as defined by the USACE, and that are

tidally influenced. Additionally, six mud flats were identified and delineated within the tidally influenced portions of the Project survey area. Of the nine wetlands, seven were identified as having E2EM characteristics and two were identified as having E2SS characteristics. The delineated wetlands encompassed approximately 10.06 acres, while the mud flats encompassed approximately 0.91 acre within the Project survey area.

See **Appendix A** for the location of each wetland, mud flat, and the respective data points within the Project survey area. Photographs of wetlands as viewed from data points are provided in **Appendix C**. The type, classification, acreage, and location of the wetlands within the Project survey area are summarized in **Table 3**.

Wetland ID	Wetland Type	Acreage	Location		Class of Aquatic Resource
			Latitude	Longitude	
San Patricio County					
WP1014	E2EM	0.12	27.93105	-97.18886	§ 10
WP1015	E2EM	0.46	27.93156	-97.18871	§ 10
WP1016_E2EM	E2EM	4.93	27.93161	-97.18690	§ 10
WP1017	E2EM	0.22	27.93204	-97.18544	§ 10
WP1016_E2USP_A	E2USP	0.01	27.93146	-97.18633	§ 10
WP1016_E2USP_B	E2USP	0.10	27.93180	-97.18582	§ 10
WP1016_E2USP_C	E2USP	0.15	27.93141	-97.18590	§ 10
Aransas County					
WP1054_E2SS	E2SS	0.03	27.91604	-97.13479	§ 10
WP1054_E2USP_B	E2USP	0.02	27.91624	-97.13452	§ 10
WP1054_E2EM	E2EM	1.14	27.91605	-97.13446	§ 10
WP1054_E2USP	E2USP	0.04	27.91579	-97.13438	§ 10
WP1053_E2SS	E2SS	0.10	27.91684	-97.13404	§ 10
WP1053_E2EM	E2EM	3.03	27.91749	-97.13398	§ 10
WP1053_E2USP	E2USP	0.59	27.91717	-97.13359	§ 10
WP1053_E2EM_B	E2EM	0.03	27.91736	-97.13347	§ 10
Total Acreage Delineated		10.97			

Waterbodies

Perennial biologists identified 54 waterbodies that exhibited an OHWM as defined by the USACE within the Project survey area. The waterbodies ranged from perennial to ephemeral. Of

the 54 waterbodies delineated, four were classified as having perennial flow characteristics, four were classified as having intermittent flow characteristics, and 36 were classified as ephemeral flow characteristics, and 10 were classified as open waters. Of the 10 open waters, four were classified as being manmade and six were classified as natural ponds.

The 44 streams delineated within the Project survey area encompassed approximately 5.02 acres, while the 10 open waters encompassed approximately 5.30 acres. The type, acreage, and location of the waterbodies within the survey area are summarized in **Table 4** and **Table 5**.

Table 4 Streams Delineated within the Bluewater SPM Project Survey Area						
Waterbody ID	Flow Type	OHWB Width (feet)	Acreage	Location		Class of Aquatic Resource
				Latitude	Longitude	
San Patricio County						
SP1001	Ephemeral	1	0.15	27.90966	-97.38866	§ 404
SP1002	Ephemeral	6	0.03	27.91001	-97.39289	§ 404
SP1003	Ephemeral	6	0.03	27.90996	-97.39267	§ 404
SP1004	Perennial	70	0.88	27.90979	-97.37670	§ 404
SP1005	Ephemeral	3	0.02	27.90948	-97.36019	§ 404
SP1006	Ephemeral	2	0.13	27.91298	-97.35991	§ 404
SP1007	Intermittent	9	0.21	27.91628	-97.35837	§ 404
SP1008	Ephemeral	1.5	0.01	27.92444	-97.34333	§ 404
SP1009	Ephemeral	3	0.02	27.93299	-97.34380	§ 404
SP1010	Ephemeral	2.5	0.02	27.94598	-97.33565	§ 404
SP1011	Ephemeral	3	0.02	27.94639	-97.33537	§ 404
SP1012	Perennial	15	0.19	27.95391	-97.32355	§ 404
SP1013	Ephemeral	6	0.04	27.95103	-97.31570	§ 404
SP1014	Ephemeral	2	0.01	27.94734	-97.30527	§ 404
SP1015	Ephemeral	6	0.04	27.94207	-97.29044	§ 404
SP1016	Ephemeral	3	0.02	27.93837	-97.27939	§ 404
SP1017	Ephemeral	3	0.02	27.93830	-97.27921	§ 404
SP1018	Perennial	12	0.17	27.93370	-97.26858	§ 404
SP1019	Ephemeral	2	0.01	27.93328	-97.26870	§ 404
SP1020	Ephemeral	6	0.04	27.93085	-97.26814	§ 404
SP1021	Ephemeral	4	0.03	27.93007	-97.24885	§ 404

**Table 4
Streams Delineated within the Bluewater SPM Project Survey Area**

Waterbody ID	Flow Type	OHWM Width (feet)	Acreage	Location		Class of Aquatic Resource
				Latitude	Longitude	
SP1022	Ephemeral	3	0.42	27.92789	-97.23813	§ 404
SP1023	Ephemeral	2	0.01	27.92839	-97.23157	§ 404
SP1024	Ephemeral	1.5	0.01	27.92839	-97.23140	§ 404
SP1025	Ephemeral	1	0.005	27.92852	-97.21698	§ 404
SP1026	Ephemeral	1	0.005	27.92867	-97.20955	§ 404
SP1027	Ephemeral	3	0.02	27.92867	-97.20942	§ 404
SP1028	Ephemeral	4	0.33	27.92819	-97.21272	§ 404
SP1029	Ephemeral	4	0.07	27.92803	-97.22420	§ 404
SP1030	Ephemeral	4	0.06	27.92847	-97.20616	§ 404
SP1031	Perennial	40	0.60	27.93133	-97.18814	§ 404
SP1032	Ephemeral	2	0.02	27.93125	-97.18946	§ 404
SP1033	Intermittent	12	0.46	27.93002	-97.18092	§ 404
SP1034	Ephemeral	4	0.03	27.93186	-97.17139	§ 404
SP1035	Ephemeral	1.5	0.01	27.92822	-97.15764	§ 404
SP1036	Intermittent	10	0.19	27.92835	-97.15528	§ 404
SP1037	Ephemeral	7.5	0.05	27.92809	-97.15469	§ 404
SP1043	Ephemeral	12	0.15	27.90881	-97.14002	§ 404
SP1044	Intermittent	7.5	0.12	27.90795	-97.14038	§ 404
Aransas County						
SP1038	Ephemeral	8	0.09	27.92308	-97.14711	§ 404
SP1039	Ephemeral	3	0.01	27.91847	-97.13510	§ 404
SP1040	Ephemeral	3.5	0.02	27.91816	-97.13499	§ 404
SP1041	Ephemeral	40	0.24	27.91665	-97.13428	§ 404
SP1042	Ephemeral	2	0.01	27.91175	-97.13749	§ 404
Total Acreage Delineated			5.02			

Table 5 Open Waters Delineated within the Bluewater SPM Project Survey Area					
Waterbody ID	Flow Type	Acreage	Location		Class of Aquatic Resource
			Latitude	Longitude	
San Patricio County					
OWP1001	Manmade Pond	0.03	27.93091	-97.26603	§ 404
OWP1002	Natural Pond	1.88	27.93166	-97.17680	§ 404
OWP1003	Manmade Pond	0.06	27.93244	-97.17317	§ 404
OWP1004	Manmade Pond	0.35	27.92998	-97.16828	§ 404
OWP1005	Natural Pond	0.02	27.92926	-97.16606	§ 404
OWP1006	Natural Pond	0.21	27.92895	-97.16075	§ 404
OWP1007	Manmade Pond	0.17	27.92866	-97.15772	§ 404
OWP1009	Natural Pond	0.06	27.92638	-97.15265	§ 404
Aransas County					
OWP1008	Natural Pond	0.02	27.92658	-97.15173	§ 404
OWP1010	Natural Pond	2.50	27.91367	-97.13608	§ 404
Total Acreage Delineated		5.30			

CONCLUSIONS

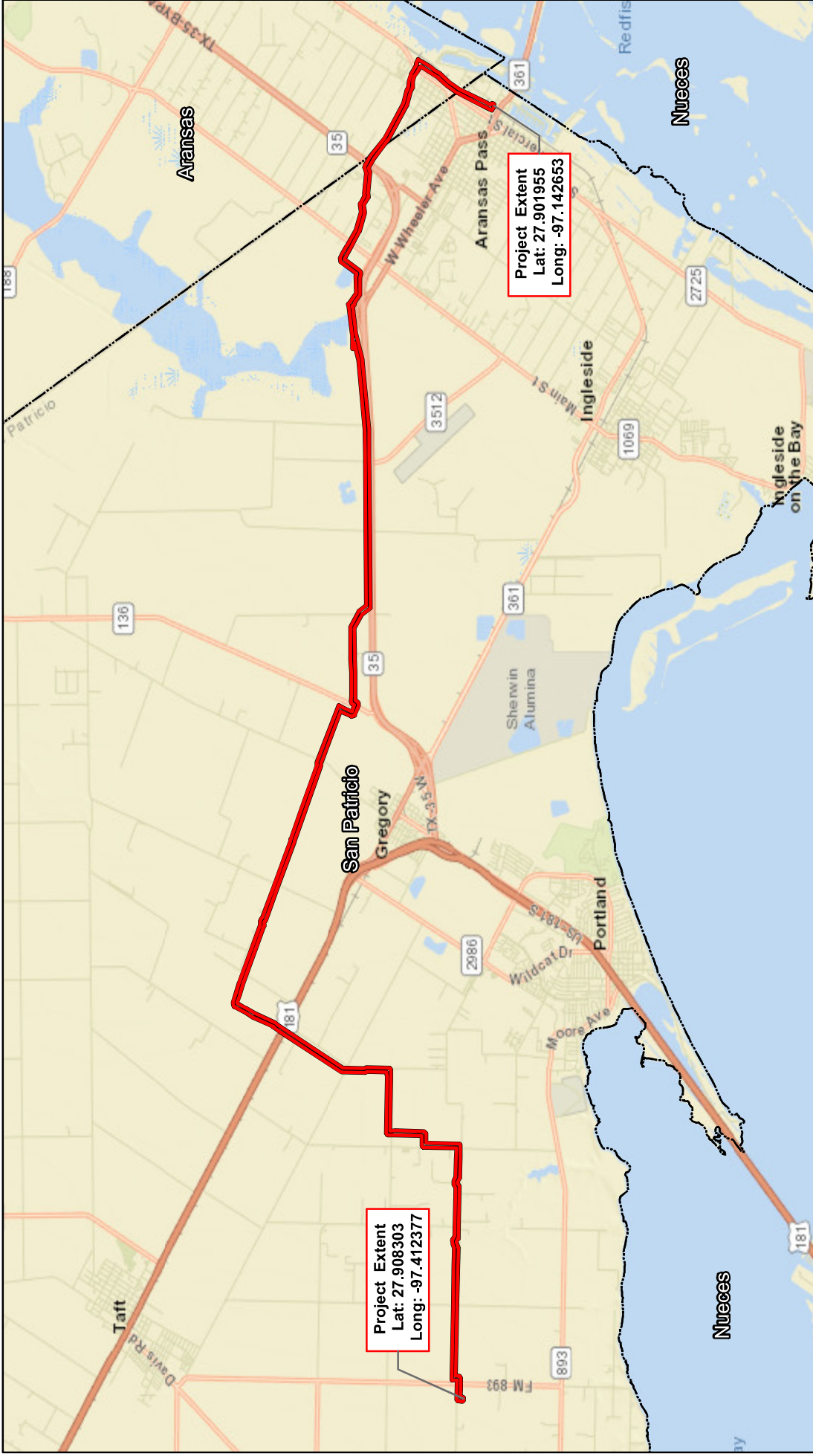
Perennial conducted the wetland and waterbody delineation of the 812.74-acre survey area on various dates in February 2019. Perennial biologists delineated 70 areas within the Project survey area that exhibited positive indicators for the three required wetland criteria, as defined by the USACE. Of the 70 wetlands identified within the Project survey area, nine were classified as being tidally influenced. Of the 61 non-tidally influenced wetlands, 53 were characterized as PEM wetlands and eight were characterized as PSS wetlands. Of the nine tidally influenced wetlands, seven were classified as E2EM wetlands and two were classified as E2SS. Additionally, six areas were classified as tidally influenced mudflats. The non-tidally influenced wetlands encompassed 30.17 acres within the survey area. The tidally influenced wetlands encompassed 10.06 acres within the survey area. The mudflats encompassed 0.91 acre within the survey area. Biologists also identified 54 waterbodies within the survey area encompassing a total of 10.32 acres. Of the 54 waterbodies, 36 were classified as ephemeral streams/drainage ditches, 4 were classified as intermittent streams, 4 were classified as perennial streams, 4 were classified as manmade ponds, and 6 were classified as natural ponds.

Based on a significant nexus and/or adjacency to other “Waters of The United States,” it is Perennial’s professional opinion that these wetlands and waterbodies would be subject to the USACE’s jurisdiction under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

REFERENCES

- U.S. Army Corps of Engineers. 2012. Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Eastern Mountain and Piedmont Region. Version 2.0. U.S. Army Engineers Research and Development Center, Vicksburg, MS.
- U.S. Army Corps of Engineers Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, U.S. Army Engineers Waterways Experiment Station, Vicksburg, MS.
- U.S. Department of Agriculture - Natural Resources Conservation Service. 2013. Web Soil Survey. <http://websoilsurvey.nrcs.usda.gov>. Accessed February 2019.
- U.S. Geological Survey. 1971. 7.5-Minute Topographic Quadrangle Map. Aransas Pass, TX.
- U.S. Geological Survey. 1969. 7.5-Minute Topographic Quadrangle Map. Gregory, TX.
- U.S. Geological Survey. 1969. 7.5-Minute Topographic Quadrangle Map. Taft, TX.



Appendix A
Project Location Map, Aerial Maps, Topographic Excerpt Maps,
and NWI Maps (see enclosed electronic copy)

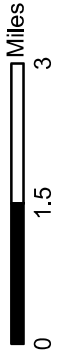



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 Long: -97.412377

Project Extent
 Lat: 27.901955
 Long: -97.142653



-  ESA
-  County Boundary

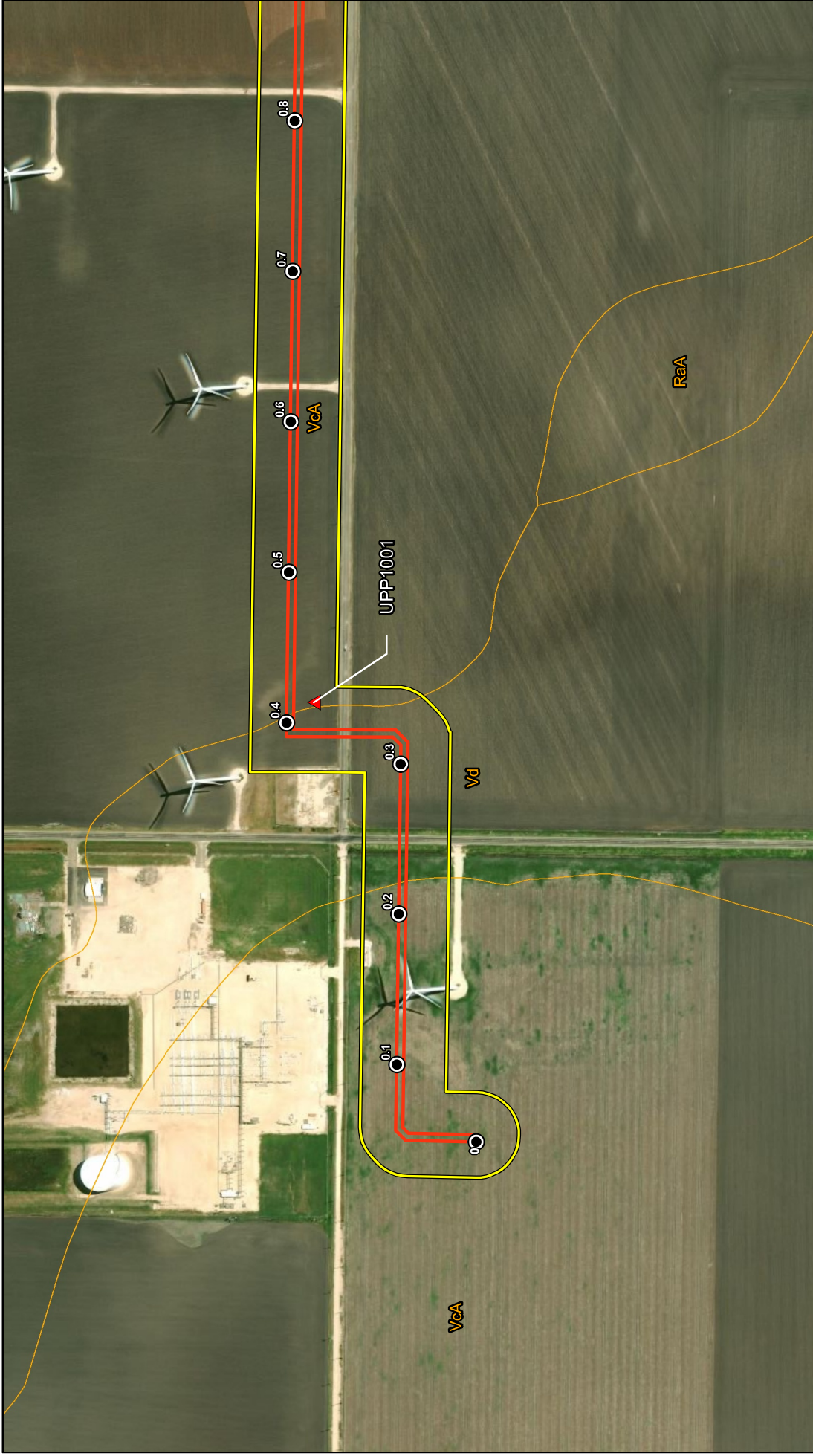



PERENIAL

Vicinity Map
 Bluewater Texas Terminal LLC
 Bluewater SPM Project
 San Patricio & Aransas Counties, Texas

Page 1 of 1
 NAD 83 TX SC ft

Scale: 1:130,000
 Date: April 2019



PERENNIAL

Aerial Map
 Bluewater Texas Terminal LLC
 Bluewater SPM Project
 San Patricio County, Texas

● Milepost
 — Centerline
 ▲ Soil Station
 □ ESA

□ County Boundary
 Stream
 NRCS Soils
 Open Water

E2EM Wetland
 E2SS Wetland
 E2USP Wetland
 PEM Wetland
 PSS Wetland

0 500 1,000 Feet





PERENNIAL

Aerial Map
 Bluewater Texas Terminal LLC
 Bluewater SPM Project
 San Patricio County, Texas

Page 2 of 27
 NAD 83 TX SC ft

Scale: 1:6,000
 Date: April 2019

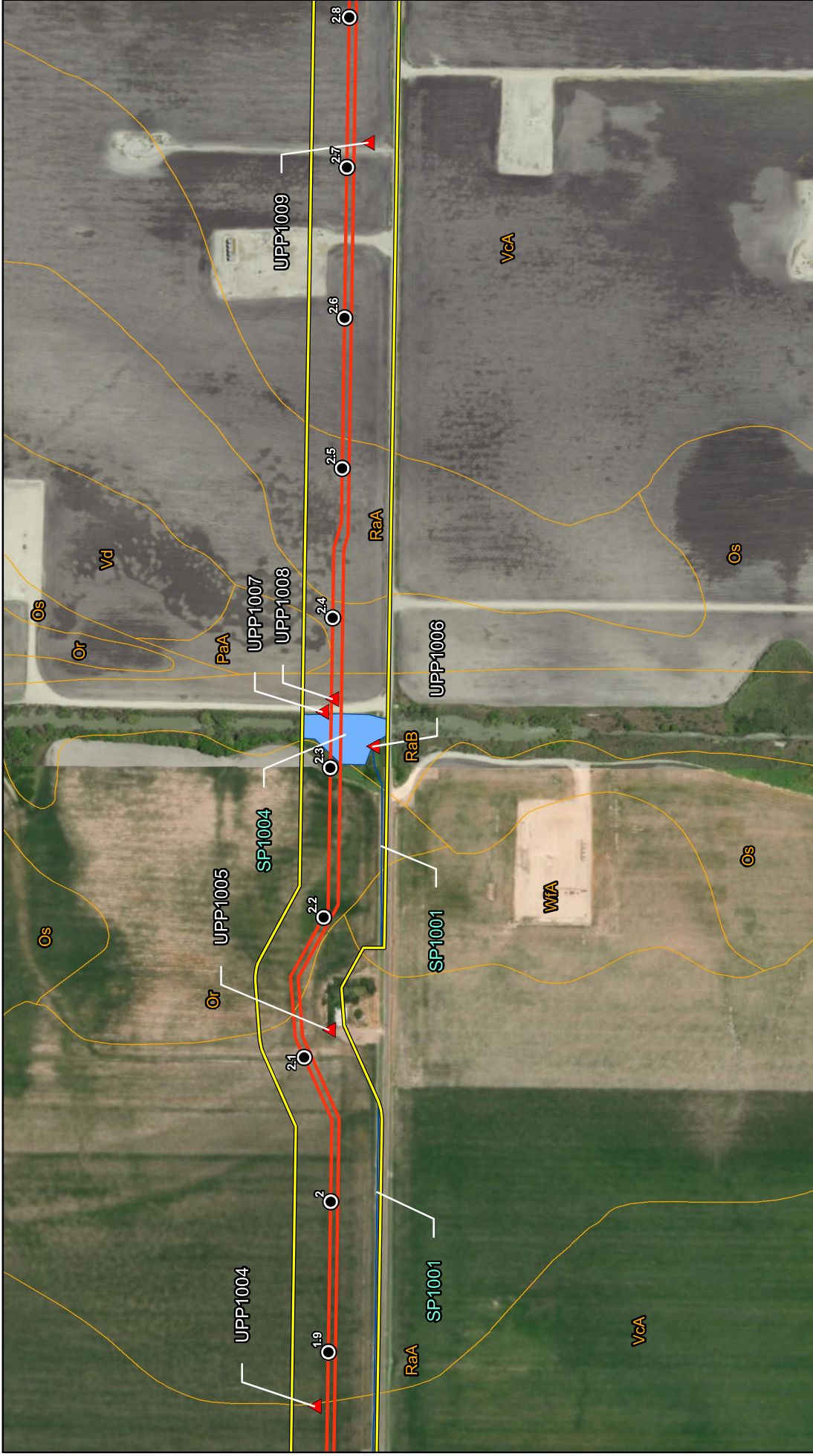
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- Centerline: Red line
- Soil Station: Triangle
- ESA: Yellow box
- County Boundary: Dashed line
- Stream: Blue line
- NRCS Soils: Yellow box
- Open Water: Blue area
- E2EM Wetland: Green shape
- E2SS Wetland: Orange shape
- E2USP Wetland: Purple shape
- PEM Wetland: Light green shape
- PSS Wetland: Pink shape

Scale: 0, 500, 1,000 Feet

North Arrow





PERENNIAL

Aerial Map
 Bluewater Texas Terminal LLC
 Bluewater SPM Project
 San Patricio County, Texas

Page 3 of 27
 NAD 83 TX SC ft

Scale: 1:6,000
 Date: April 2019

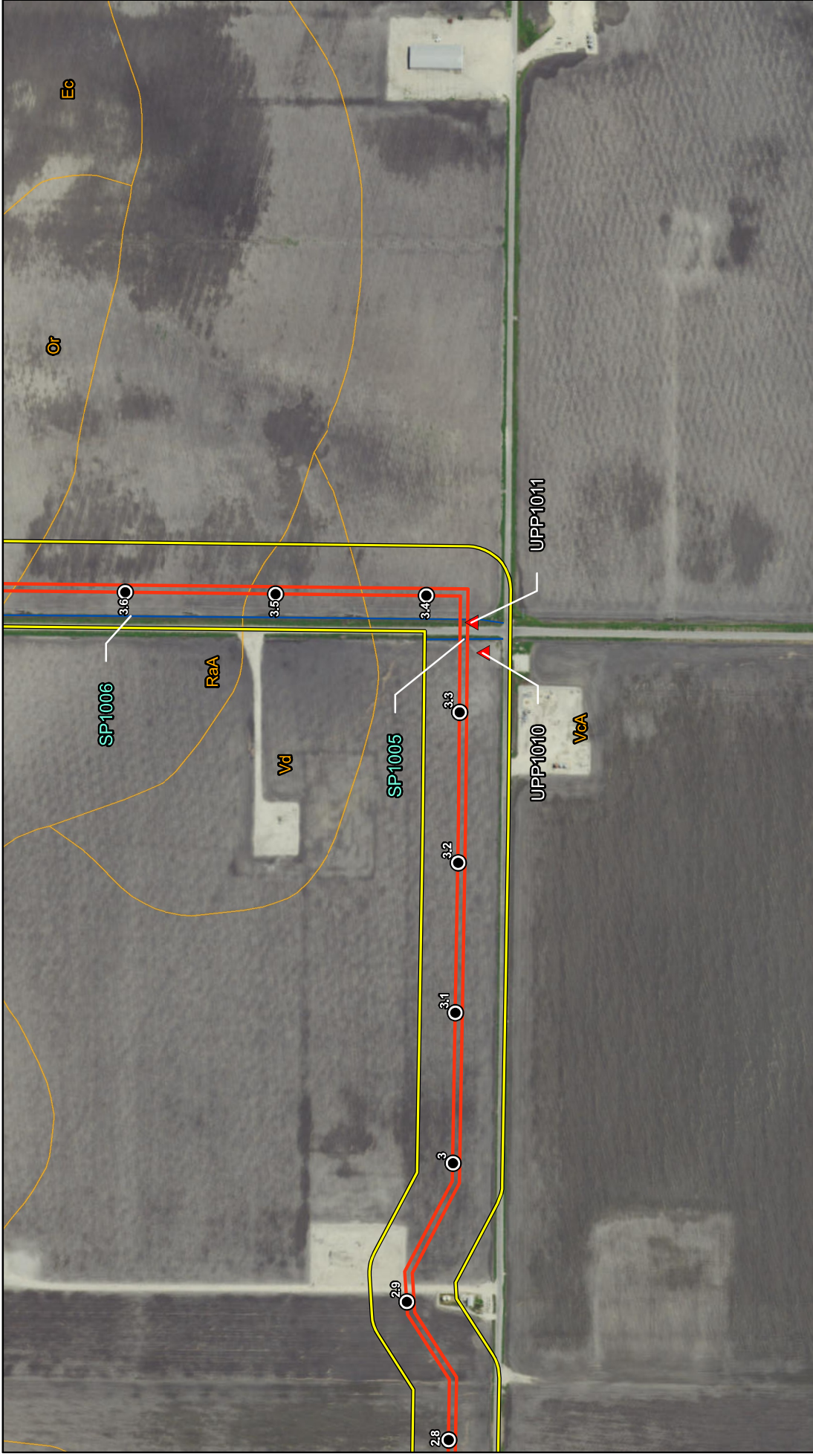
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- Soil Station: Triangle
- ESA: Yellow outline
- County Boundary: Dashed line
- Stream: Blue shape
- NRCS Soils: Yellow shape
- Open Water: Blue shape
- E2EM Wetland: Green shape
- E2SS Wetland: Orange shape
- E2USP Wetland: Purple shape
- PEM Wetland: Light green shape
- PSS Wetland: Pink shape

0 500 1,000 Feet

North Arrow





PERENNIAL

Aerial Map
 Bluewater Texas Terminal LLC
 Bluewater SPM Project
 San Patricio County, Texas

Page 4 of 27
 NAD 83 TX SC ft

Scale: 1:6,000
 Date: April 2019

Legend

- Milepost: Centerline (red line), Soil Station (red triangle), ESA (yellow outline)
- County Boundary (dashed line), Stream (blue line), NRCS Soils (yellow outline), Open Water (blue area)
- E2EM Wetland (green), E2SS Wetland (orange), E2USP Wetland (purple), PEM Wetland (light green), PSS Wetland (pink)

0 500 1,000 Feet

North Arrow





PERENNIAL

Aerial Map
 Bluewater Texas Terminal LLC
 Bluewater SPM Project
 San Patricio County, Texas

Page 5 of 27
 NAD 83 TX SC ft

Scale: 1:6,000
 Date: April 2019

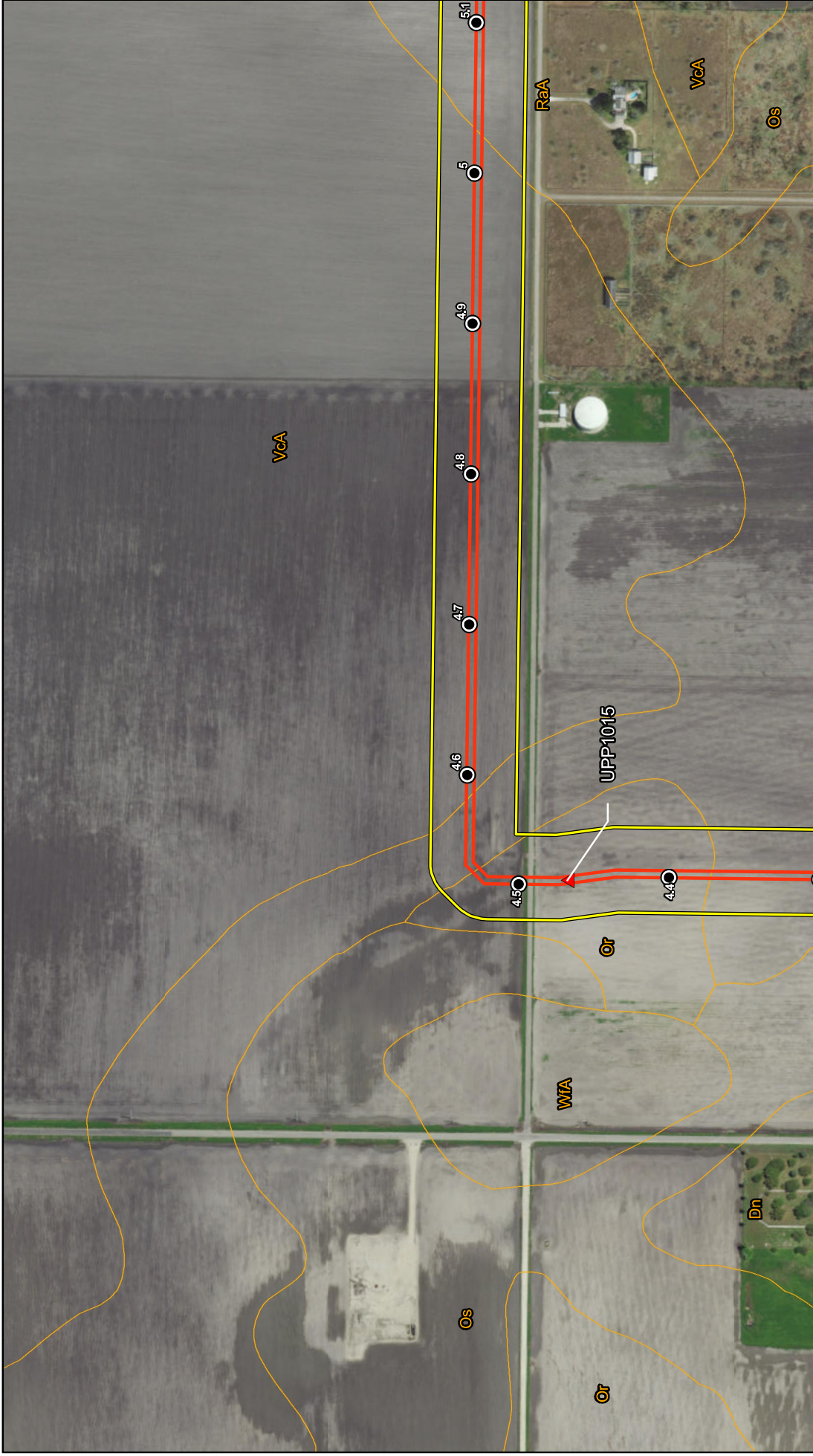
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0 500 1,000 Feet

North Arrow





PERENNIAL

Aerial Map
 Bluewater Texas Terminal LLC
 Bluewater SPM Project
 San Patricio County, Texas

Page 6 of 27
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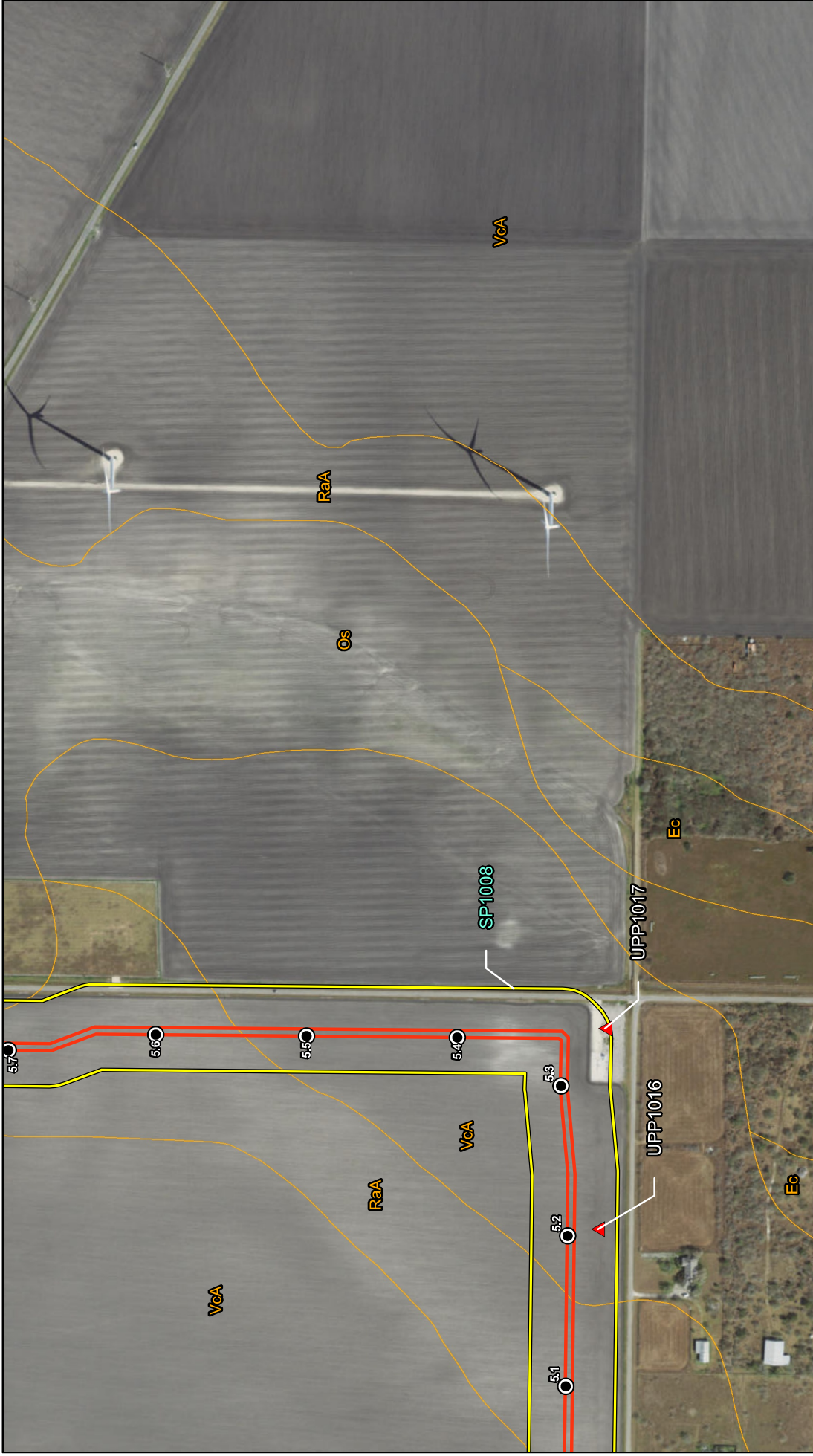
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Legend

- Milepost:
- Centerline:
- Soil Station:
- ESA:
- County Boundary:
- Stream:
- NRCS Soils:
- Open Water:
- E2EM Wetland:
- E2SS Wetland:
- E2USP Wetland:
- PEM Wetland:
- PSS Wetland:

0 500 1,000 Feet





PERENNIAL

Aerial Map
 Bluewater Texas Terminal LLC
 Bluewater SPM Project
 San Patricio County, Texas

Page 7 of 27
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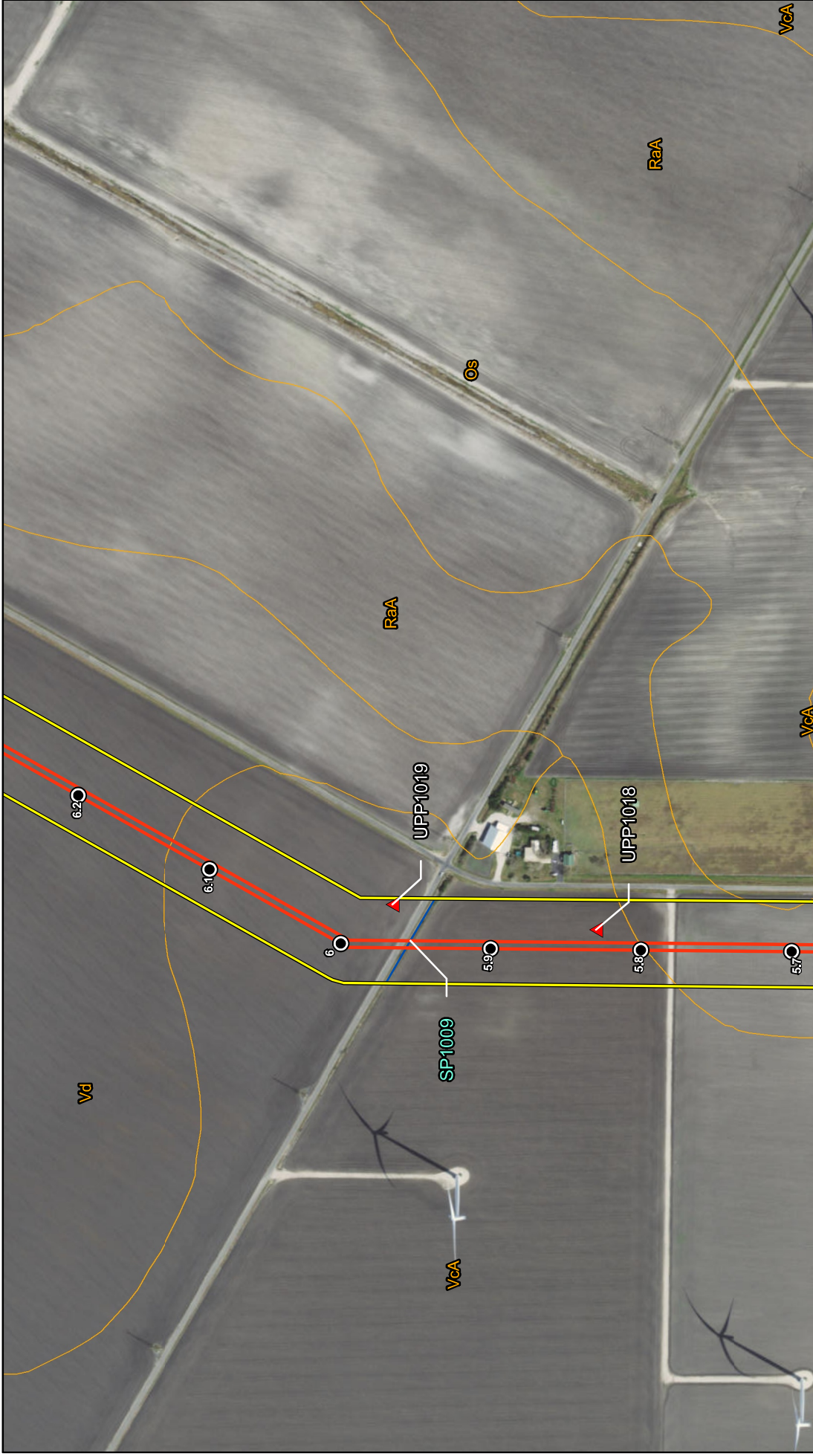
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






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









PERENNIAL
Aerial Map
Bluewater Texas Terminal LLC
Bluewater SPM Project
San Patricio County, Texas

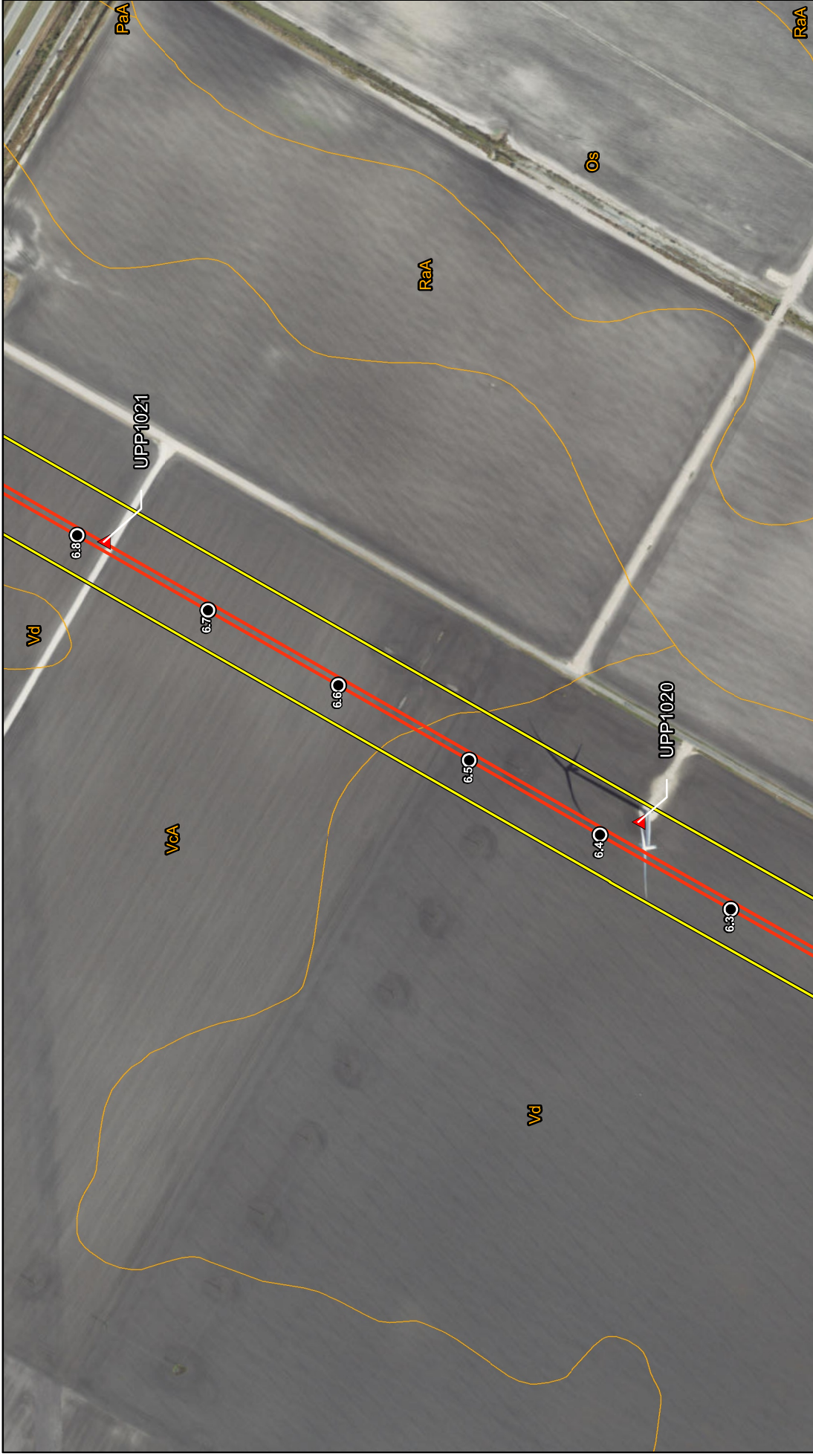


	Milepost		County Boundary
	Centerline		Stream
	Soil Station		NRCS Soils
	ESA		Open Water

	E2EM Wetland		E2SS Wetland
	E2USP Wetland		PEM Wetland
	PSS Wetland		


 0 500 1,000 Feet





PERENNIAL

Aerial Map
 Bluewater Texas Terminal LLC
 Bluewater SPM Project
 San Patricio County, Texas

Page 9 of 27
 NAD 83 TX SC ft

Scale: 1:6,000
 Date: April 2019

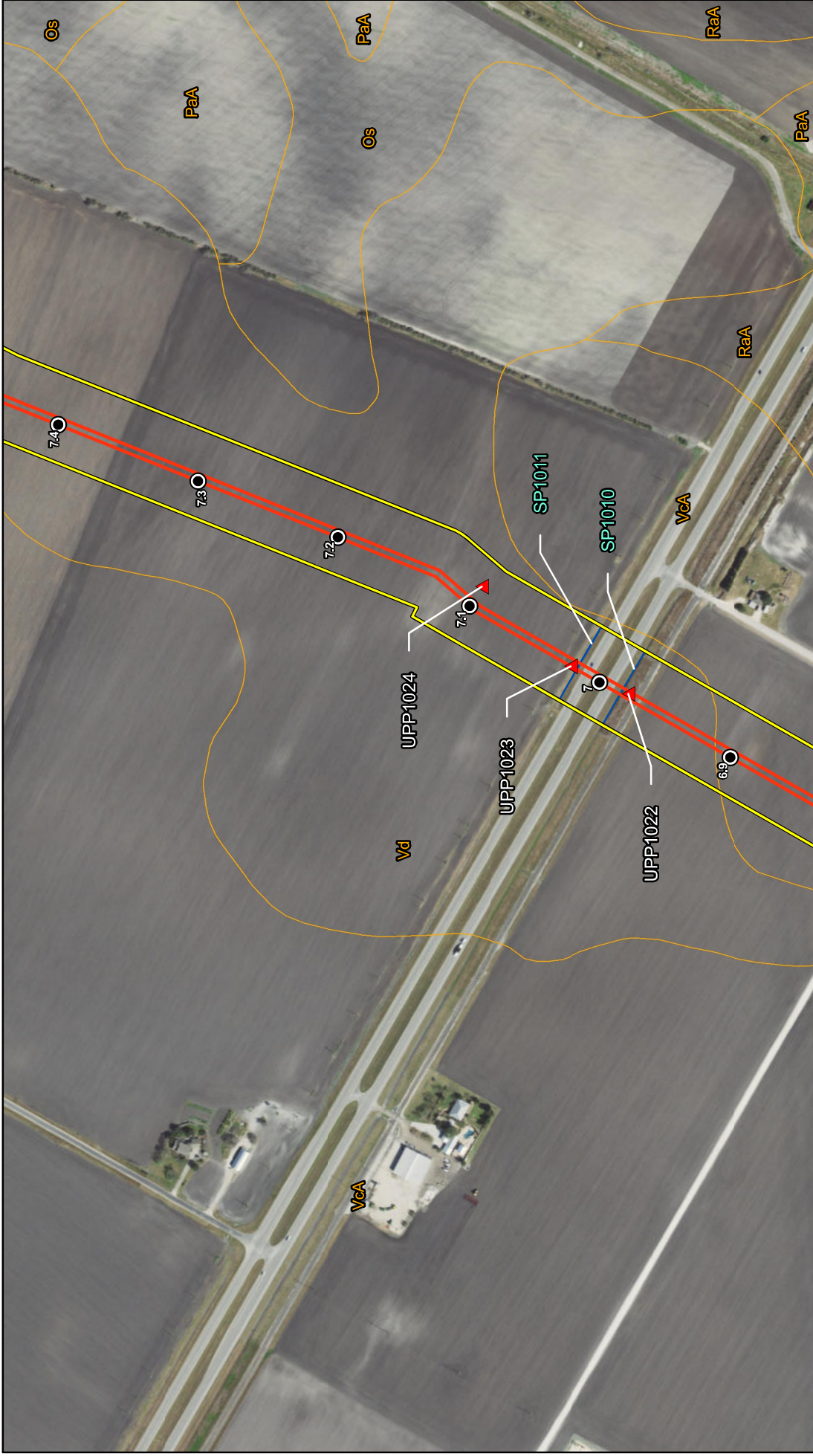
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- County Boundary (dashed line)
- Stream (blue line)
- NRCS Soils (yellow outline)
- Open Water (blue area)
- E2EM Wetland (green)
- E2SS Wetland (orange)
- E2USP Wetland (purple)
- PEM Wetland (light green)
- PSS Wetland (pink)

0 500 1,000 Feet

North Arrow





PERENNIAL

Aerial Map
 Bluewater Texas Terminal LLC
 Bluewater SPM Project
 San Patricio County, Texas

Page 10 of 27
 NAD 83 TX SC ft

Scale: 1:6,000
 Date: April 2019

Legend

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- County Boundary (dashed line)
- Stream (blue wavy line)
- NRCS Soils (orange wavy line)
- Open Water (blue solid area)
- E2EM Wetland (green wavy line)
- E2SS Wetland (orange wavy line)
- E2USP Wetland (purple wavy line)
- PEM Wetland (light green wavy line)
- PSS Wetland (pink wavy line)

Scale: 0, 500, 1,000 Feet

North Arrow





PERENNIAL

Aerial Map
 Bluewater Texas Terminal LLC
 Bluewater SPM Project
 San Patricio County, Texas

Page 11 of 27
 NAD 83 TX SC ft

Scale: 1:6,000
 Date: April 2019

Legend

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- Stream (blue line)
- NRCS Soils (yellow outline)
- Open Water (blue area)
- E2EM Wetland (green)
- E2SS Wetland (orange)
- E2USP Wetland (purple)
- PEM Wetland (light green)
- PSS Wetland (pink)

Scale: 0, 500, 1,000 Feet

North Arrow





PERENNIAL

Aerial Map
 Bluewater Texas Terminal LLC
 Bluewater SPM Project
 San Patricio County, Texas

Page 12 of 27
 NAD 83 TX SC ft

Scale: 1:6,000
 Date: April 2019

Legend

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- County Boundary (dashed line), Stream (blue line), NRCS Soils (yellow outline), Open Water (blue area)
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0 500 1,000 Feet

North Arrow





PERENNIAL

Aerial Map
 Bluewater Texas Terminal LLC
 Bluewater SPM Project
 San Patricio County, Texas

Page 13 of 27
 NAD 83 TX SC ft

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 Date: April 2019

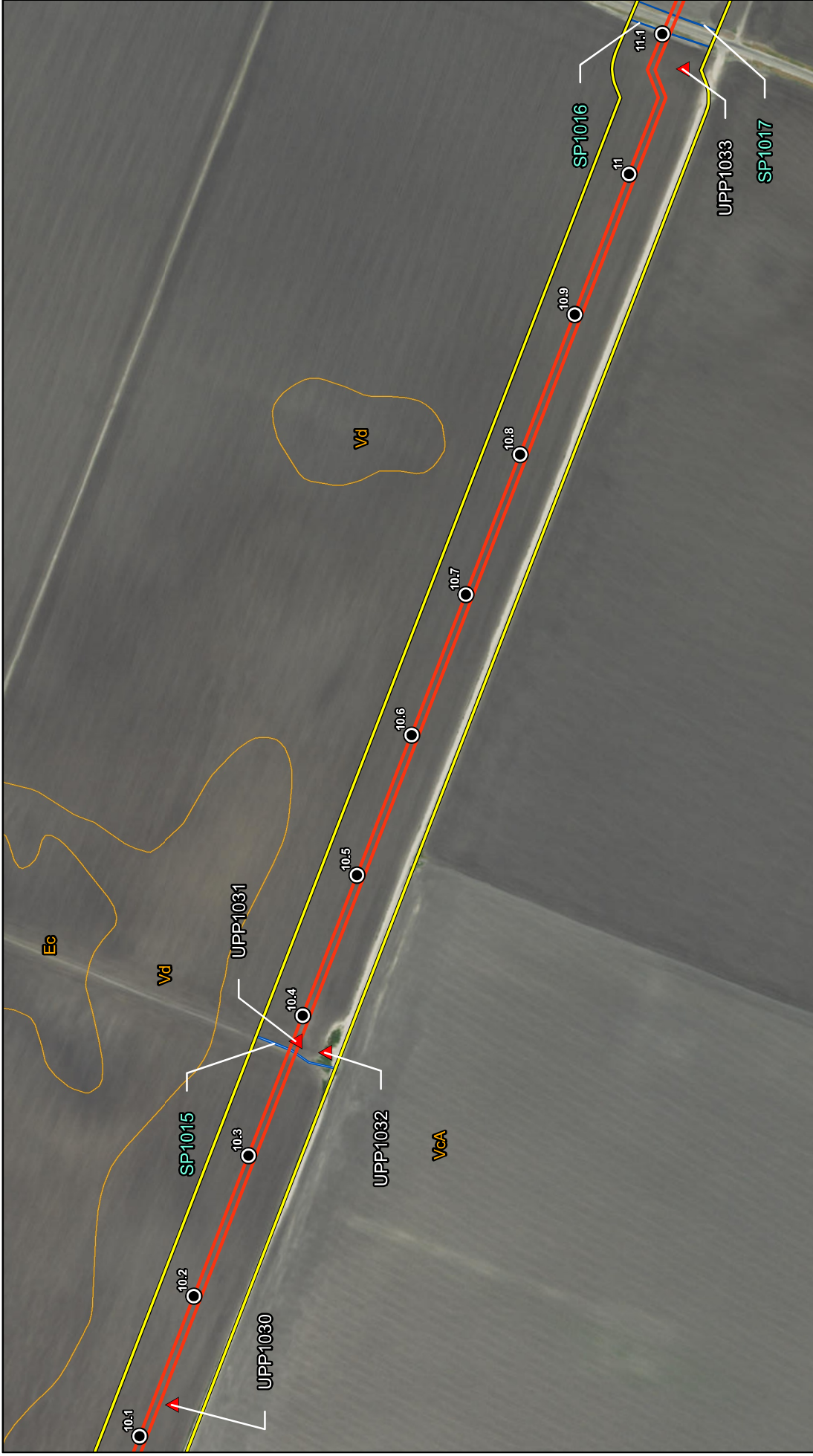
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- County Boundary
- Stream
- NRCS Soils
- Open Water
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- E2USP Wetland
- PEM Wetland
- PSS Wetland

North

0 500 1,000 Feet





PERENNIAL

Aerial Map
 Bluewater Texas Terminal LLC
 Bluewater SPM Project
 San Patricio County, Texas

Page 14 of 27
 NAD 83 TX SC ft

Scale: 1:6,000
 Date: April 2019

Legend

- Milepost
- Centerline
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- ESA
- County Boundary
- Stream
- NRCS Soils
- Open Water
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- E2SS Wetland
- E2USP Wetland
- PEM Wetland
- PSS Wetland

Scale
 0 500 1,000 Feet

North Arrow





PERENIAL

Aerial Map
 Bluewater Texas Terminal LLC
 Bluewater SPM Project
 San Patricio County, Texas

Page 15 of 27 Scale: 1:6,000
 NAD 83 TX SC ft Date: April 2019

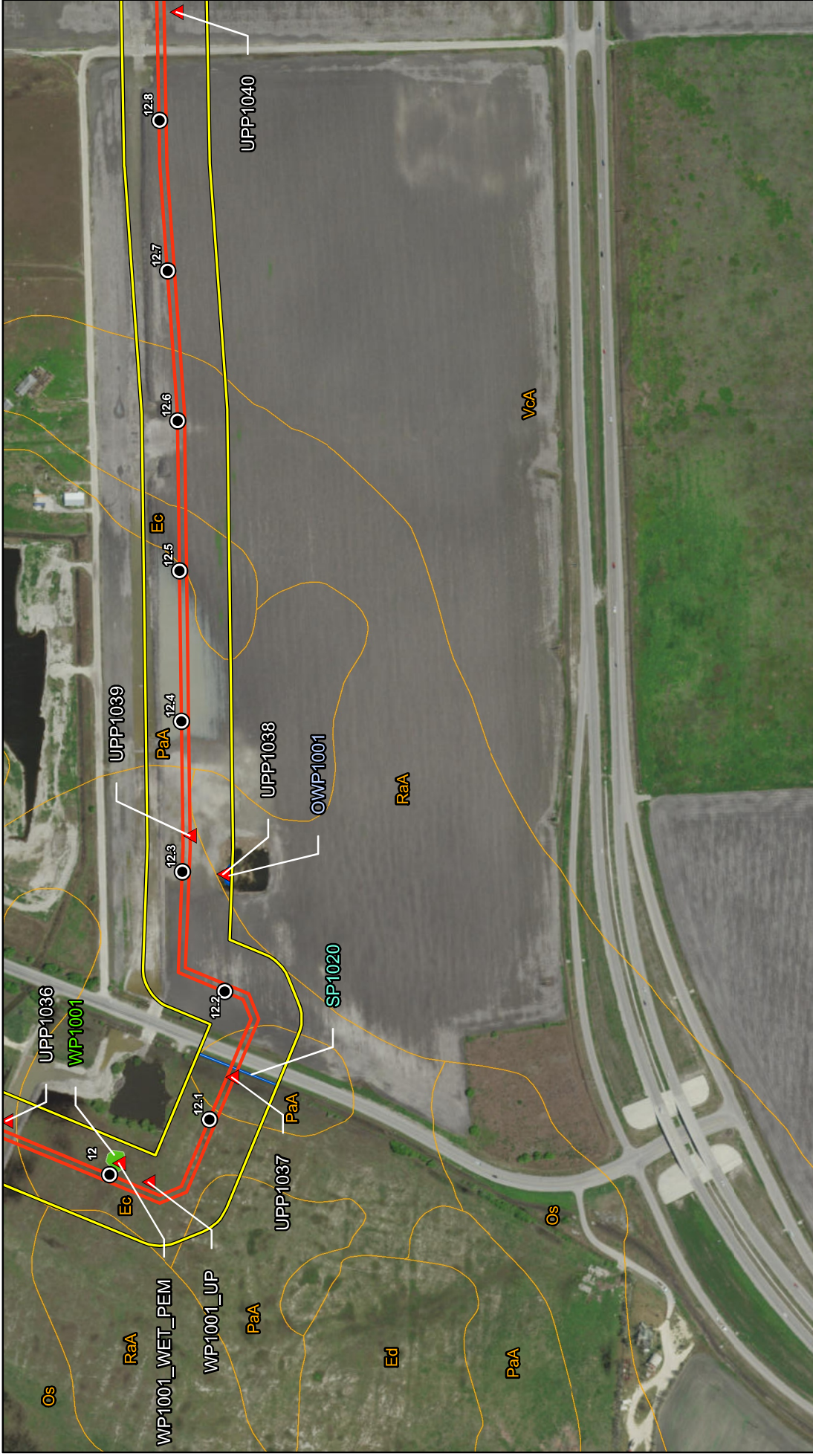
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- Stream (blue line)
- NRCS Soils (yellow outline)
- Open Water (blue area)
- E2EM Wetland (green)
- E2SS Wetland (orange)
- E2USP Wetland (purple)
- PEM Wetland (light green)
- PSS Wetland (pink)

0 500 1,000 Feet

North Arrow





PERENNIAL

Aerial Map
 Bluewater Texas Terminal LLC
 Bluewater SPM Project
 San Patricio County, Texas

Page 16 of 27
 NAD 83 TX SC ft

Scale: 1:6,000
 Date: April 2019

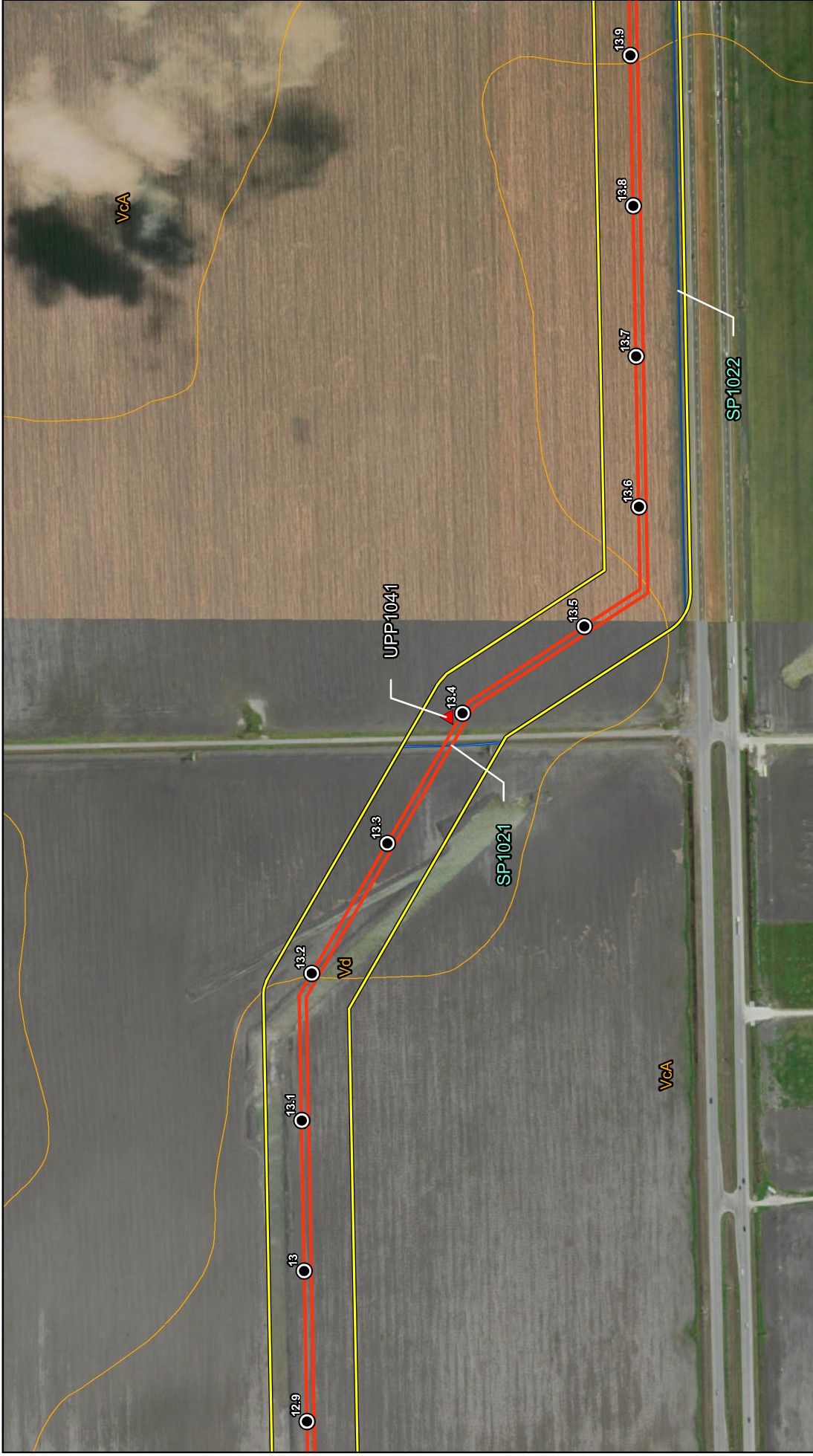
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- Open Water (dark blue area)
- E2EM Wetland (green)
- E2SS Wetland (orange)
- E2USP Wetland (purple)
- PEM Wetland (light green)
- PSS Wetland (pink)

0 500 1,000 Feet

North Arrow





PERENNIAL

Aerial Map
 Bluewater Texas Terminal LLC
 Bluewater SPM Project
 San Patricio County, Texas

Page 17 of 27 Scale: 1:6,000
 NAD 83 TX SC ft Date: April 2019

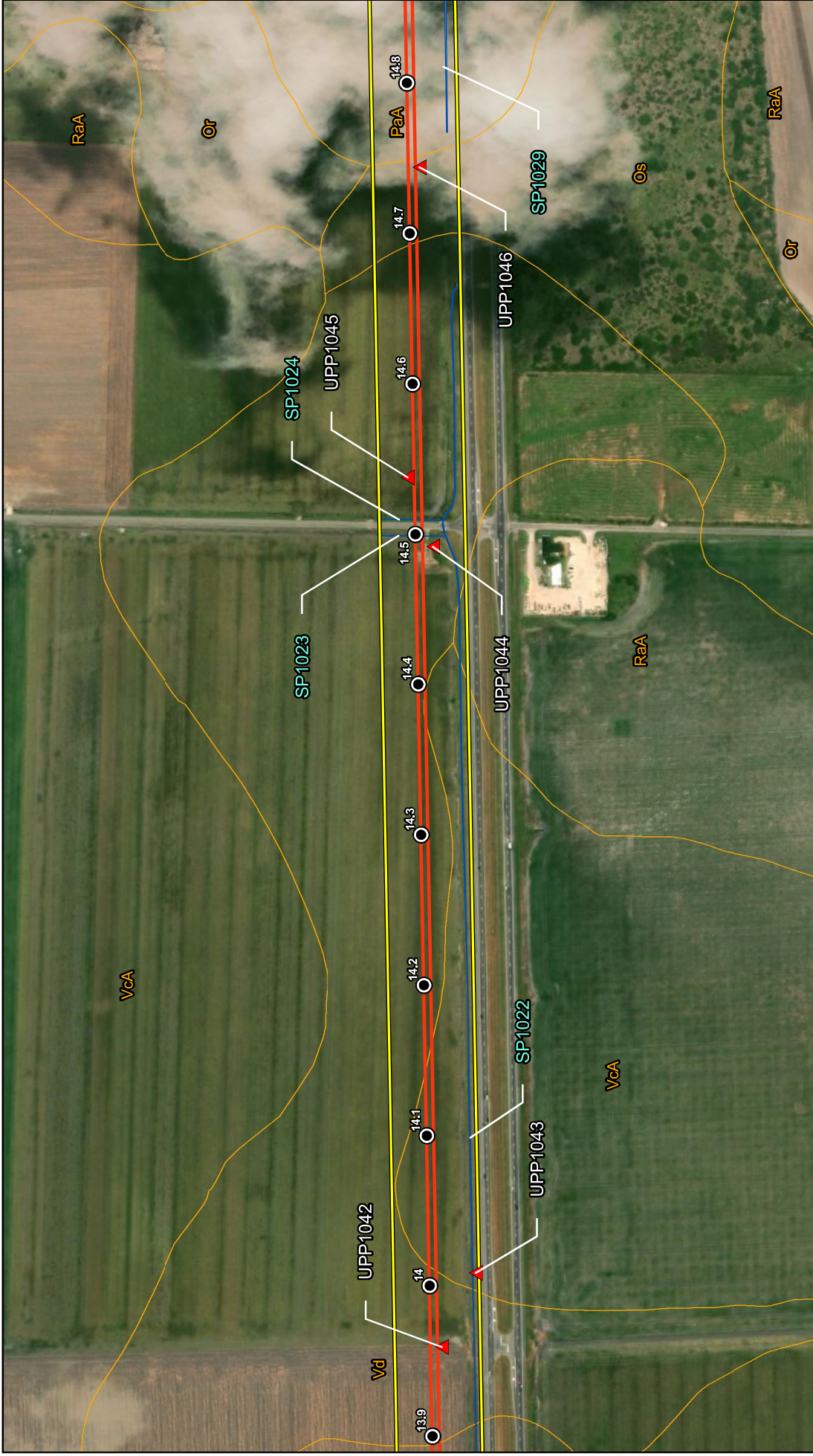
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- E2EM Wetland (green), E2SS Wetland (orange), E2USP Wetland (purple), PEM Wetland (light green), PSS Wetland (pink)

0 500 1,000 Feet

North Arrow





PERENNIAL

Aerial Map
 Bluewater Texas Terminal LLC
 Bluewater SPM Project
 San Patricio County, Texas

Legend

- Milepost: Centerline (red line), Soil Station (red triangle), ESA (yellow outline)
- County Boundary (dashed line), Stream (blue line), NRCS Soils (yellow outline), Open Water (blue area)
- E2EM Wetland (green), E2SS Wetland (orange), E2USP Wetland (purple), PEM Wetland (light green), PSS Wetland (pink)

Scale: 0 to 1,000 Feet

North Arrow



Page 18 of 27
 Scale: 1:6,000
 NAD 83 TX SC ft
 Date: April 2019