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Reference: 022054.400

September 28, 2022

Shane Phillips, P.E., D.PE, D.CEP
Moffat & Nichol
600 University Street, Suite 610
Seattle, Washington 98101

Subject: Preliminary Wetland Delineation Results, Redwood Multipurpose Marine Terminal, Samoa, California

Dear Shane Phillips:

Introduction

This preliminary wetland delineation results memo provides the results of a protocol wetland delineation at the proposed Redwood Multipurpose Marine Terminal (RMMT) site in Samoa, California. The delineation was completed to inform conceptual planning for the proposed terminal and is intended as baseline information regarding the existing wetland resources within the study area.

Site Description

The RMMT site is located on the Samoa Peninsula, a narrow peninsula that separates Humboldt Bay from the Pacific Ocean (Figure 1 in Appendix 1). The subject site has a long industrial history of timber production that has resulted in significant grading, infilling, and expansion over previous intertidal and dune lands along the Humboldt Bay shoreline. The majority of the study area has been previously developed with paved surfaces, foundations, drainageways, and compacted soils that remain following demolitions of structures and industrial facilities.

Wetlands with natural conditions occur throughout the project area supporting a mix of native and non-native hydrophytes. Wetland conditions also exist within highly manipulated situations with concrete underlayment, compacted gravels, non-functioning drainage, and other circumstances resulting from past use and abandonment. In addition, estuarine intertidal wetlands occur along Humboldt Bay that support salt marsh and other intertidal habitats. Lastly, coastal wetlands including 1- and 2-parameter features occur throughout the site with varied levels of wetland habitat quality.

Delineation Methods

Wetland delineation fieldwork was conducted from April 29 through August 2, 2022. Wetland delineation methods described in "U.S. Army Corps of Engineers (USACE) Wetlands Delineation Manual" (USACE, 1987) and "The Regional Supplement to the Corps of Engineers Wetland Delineation Manual:



Western Mountains, Valleys, and Coast Region (Version 2.0)” (USACE, 2010) were used to identify potential wetlands and other waters. The California Coastal Commission (CCC) requires only one of the three wetland parameters be present for an area to qualify as a coastal wetland. Mapping reflects CCC and USACE requirements by showing areas meeting one, two, or three parameters. Also surveyed and mapped were stormwater and anthropogenic features; anthropogenic features being characterized as areas of human development that after abandonment or neglect have developed wetland features.

Hydrophytic vegetation refers to plant species known to be adapted to wetland sites. To classify the hydrophytic plants onsite, the most recent “Western Mountains, Valleys, and Coast 2020 Regional Wetland Plant List” was used (USACE, 2020). Hydric soils are those formed under saturated conditions, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile (USDA-NRCS, 2018).

Prior to conducting the field investigation, SHN staff reviewed the United States Geological Survey (USGS) topographic quadrangle map (Figure 1); Google Earth (Google Earth, 2021); U.S. Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS) Web Soil Survey website (USDA-NRCS, 2022; Appendix 2); and National Wetland Inventory (NWI) map (USFWS, 2022; Appendix 2). Visual inspection of the site prior to test pit (TP) excavation was performed to identify appropriate TP locations and potential wetland locations and boundaries. During the TP subsurface investigation, sample points were characterized at each pit for the botanical, hydrological, and soil parameters. Wetland TP locations were selected to:

- achieve appropriate coverage and characterization of wetland and upland habitats;
- document potential changes in the vegetative community (such as a shift in the dominant species); and
- determine the approximate boundary line between wetlands and uplands by evaluating the extent of key wetland criteria (hydrology, hydric soils, and hydrophytic vegetation).

TP locations were mapped using a Trimble sub-meter GPS (global positioning system) unit.

Results

A diverse array of wetland habitat types occurs throughout the project area (see Figures 2-14). All these features have been manipulated in the past and display differing levels of impact. Naturalized wetlands have a wide range of conditions from highly manipulated to primarily naturalized and have 1, 2, or 3 wetland parameters present. A total of 73,746.727 square feet of 1,2, and 3 parameter wetlands occur within the study area (see Table 1). Of this, approximately 40,341.521 square feet will likely be impacted by the project (see Table 1). Additionally, 8,828.810 square feet of 1,2, and 3-parameter wetlands occur within the proposed mitigation area and 24,576.396 square feet of 1,2, and 3 parameter wetlands within the study area are not anticipated to be impacted by the project (see Table 1 in Attachment 2).

Areas with wetland parameters contained within completely artificial conditions such as concrete basins or foundations are considered anthropogenic wetlands, and wetland conditions within features created for stormwater capture and treatment are considered anthropogenic stormwater features.



Shane Phillips

Preliminary Wetland Delineation Results, Redwood Multipurpose Marine Terminal, Samoa, CA

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Approximately 27,053.790 square feet of anthropogenic wetlands and 10,037.750 square feet of stormwater features occur within the study area, all of which occur within the project impact area (see Table 1, Appendix 2). Table 1 gives a summary of the area occupied by each feature including 1-, 2-, and 3-parameter features and anthropogenic features within the study area. In addition, features are separated by the level of impact anticipated on account of the proposed project, as many of the wetlands within the study area will not be impacted by the project or are within the area proposed for mitigation. All wetland features (1-, 2-, and 3-parameter); anthropogenic wetlands; and anthropogenic stormwater features are shown on Figures 2 through 14.

Estuarine intertidal wetlands occur within the study area at or below the Mean Higher High-Water mark (MHHW). This was determined to be located at a 7.37-foot elevation in Samoa and is shown on Figures 2 through 9, 11, and 13 in Appendix 1. Table 1 in Appendix 2 provides a summary of the length of MHHW within the study area. The MHHW and associated estuarine intertidal wetlands are described by length and not by area because estuarine intertidal wetlands extend far beyond the study area boundary. In addition, the MHHW length is separated by the level of impact anticipated on account of the proposed project as portions of the MHHW and estuarine intertidal wetlands within the study area will not be impacted by the project or are within the area proposed for mitigation.

Respectfully,

SHN



Joseph Saler

Senior Botanist/Ecologist

JS:ame

- Appendices:
1. Wetland Area Maps
 2. Wetland Features



References

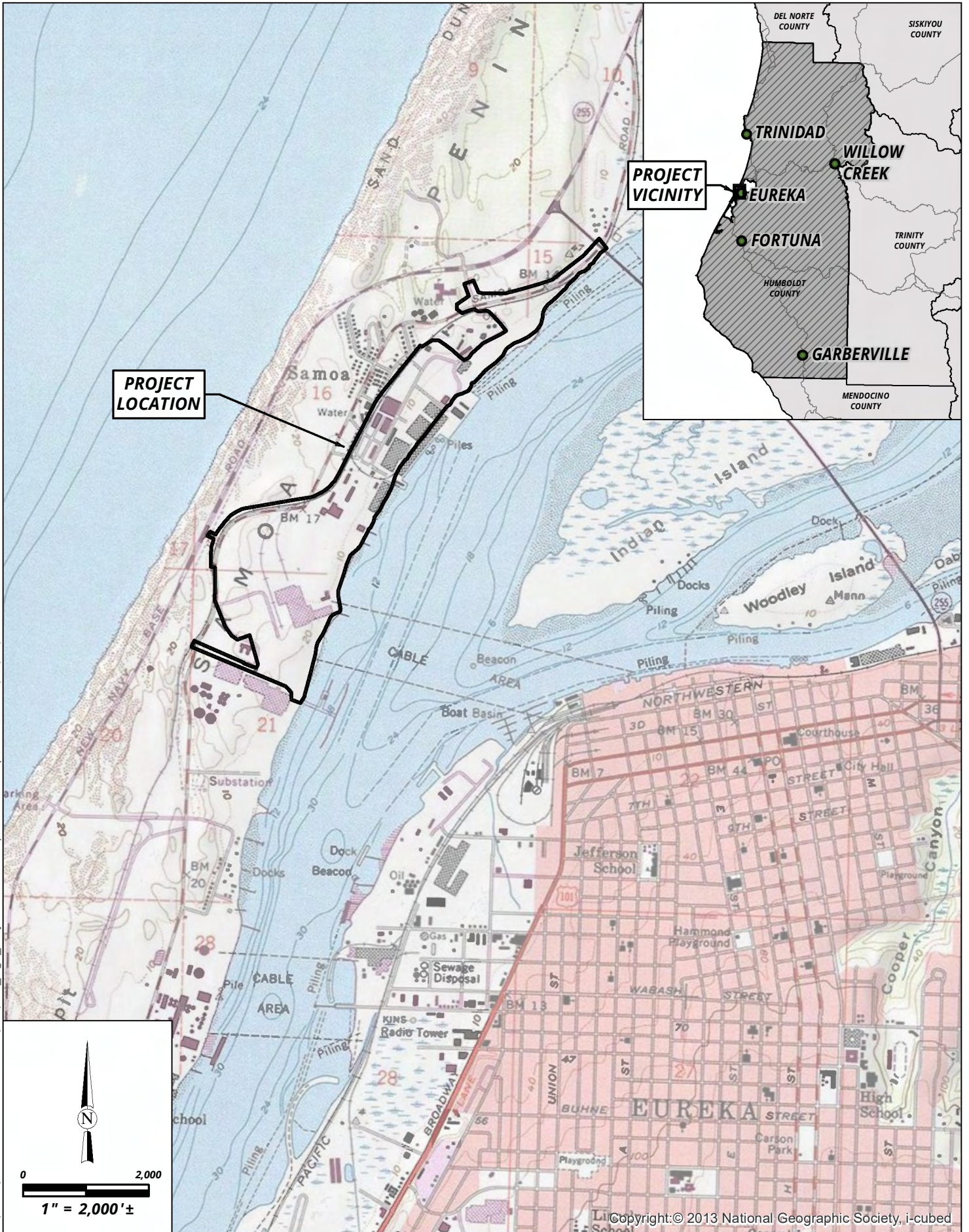
- U.S. Army Corps of Engineers (USACE). (1987) "U.S. Army Corps of Engineers Wetlands Delineation Manual." Vicksburg, MS:USACE Research and Development Center.
- . (2010). "Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountain, Valleys, and Coast Region." J.S. Wakeley, R.W. Lichvar, and C.V. Noble (eds) ERDC/EL TR-08-03. Vicksburg, MS:USACE Research and Development Center.
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Wetland Area Maps

1

\\eureka\projects\2022\022054-Humboldt-RMMT\GIS\WD_Fig1_ProjectLocationMap.mxd USER: pix4d DATE: 9/28/22, 2:27PM



Humboldt Bay Harbor, Rec., & Cons. District
 Redwood Marine Multipurpose Terminal
 Eureka, California

Project Location Map
Wetland Delineation Report
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Figure 1

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EXPLANATION

- SHEET INDEX
- STUDY AREA
- TEST PIT (3-PARAMETER)
- TEST PIT (2-PARAMETER)
- TEST PIT (1-PARAMETER)
- TEST PIT (UPLAND)
- DRAINAGE INLET
- STORMWATER POINT
- CULVERT
- 3-PARAMETER WETLAND
- 2-PARAMETER WETLAND
- 1-PARAMETER WETLAND
- STORMWATER FEATURE
- ANTHROPOGENIC FEATURE
- MHHW (7.13 FT)

0 600

 1" = 600' ±

PHOTO SOURCE:

 UAV, SHN, APRIL 2022



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EXPLANATION

- TEST PIT (3-PARAMETER)
- TEST PIT (1-PARAMETER)
- TEST PIT (UPLAND)
- 3-PARAMETER WETLAND
- STUDY AREA
- - - MHHW (7.13 FT)
- CULVERT

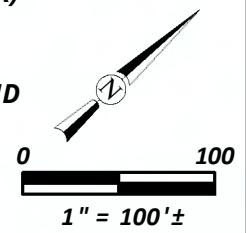


PHOTO SOURCE:
UAV, SHN, APRIL 2022

NOTE: TEST PITS SHOWN WITHOUT IDENTIFIERS
ARE EXPLORATORY, THE WETLAND PARAMETERS
CORRESPOND TO THE SYMBOLOGY IN THIS LEGEND.



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Wetland Delineation
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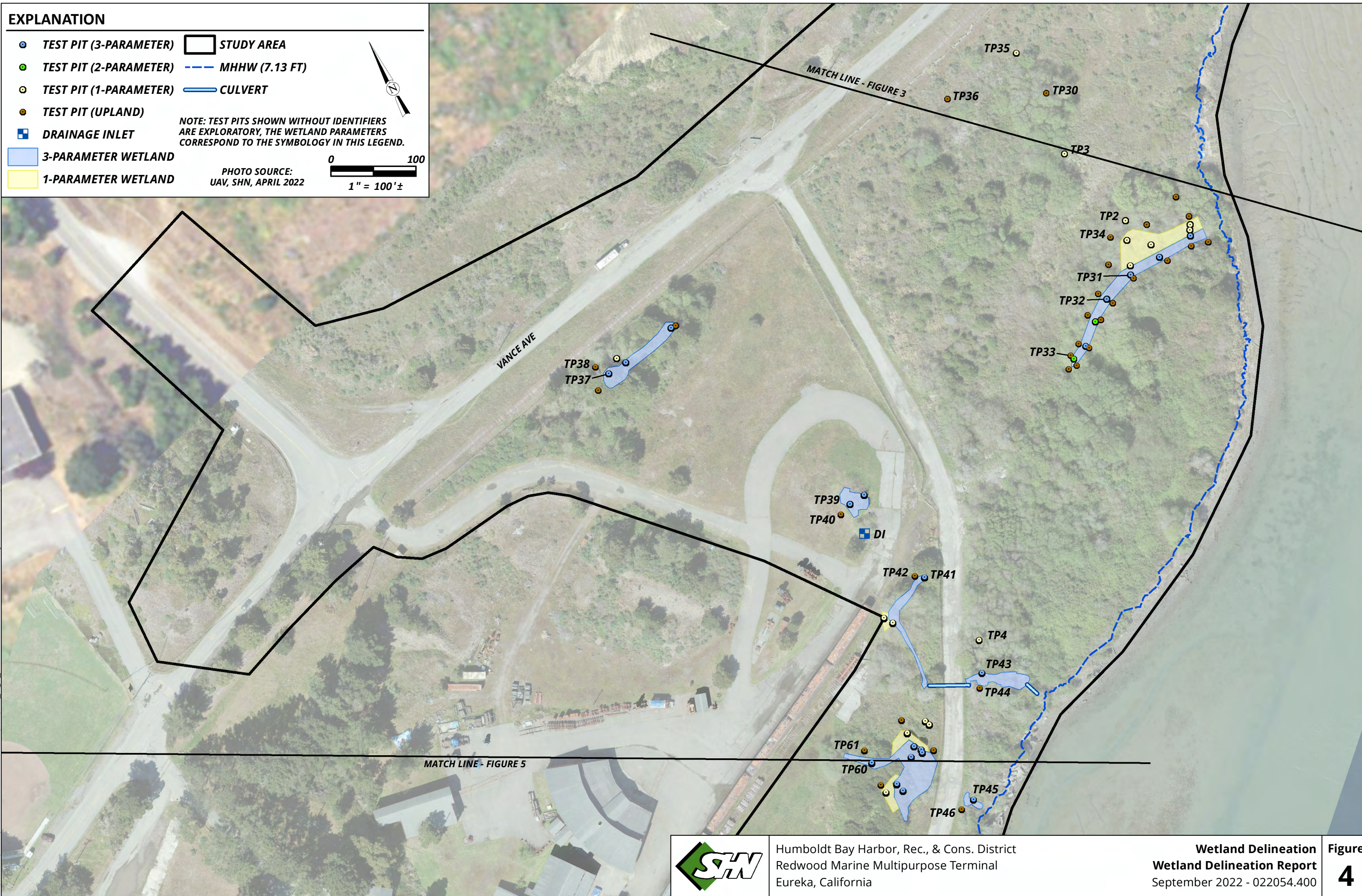
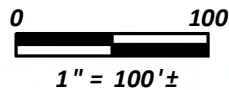
Figure
3

EXPLANATION

- TEST PIT (3-PARAMETER) □ STUDY AREA
- TEST PIT (2-PARAMETER) - - - MHHW (7.13 FT)
- TEST PIT (1-PARAMETER) ——— CULVERT
- TEST PIT (UPLAND)
- DRAINAGE INLET
- 3-PARAMETER WETLAND
- 1-PARAMETER WETLAND

NOTE: TEST PITS SHOWN WITHOUT IDENTIFIERS ARE EXPLORATORY, THE WETLAND PARAMETERS CORRESPOND TO THE SYMBOLOGY IN THIS LEGEND.

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Wetland Delineation
Wetland Delineation Report
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Figure
4

EXPLANATION

- TEST PIT (3-PARAMETER)
- TEST PIT (2-PARAMETER)
- TEST PIT (1-PARAMETER)
- TEST PIT (UPLAND)

- ▭ STUDY AREA
- - - MHHW (7.13 FT)
- CULVERT

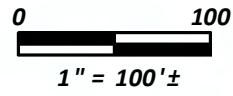


- 3-PARAMETER WETLAND
- 2-PARAMETER WETLAND
- 1-PARAMETER WETLAND

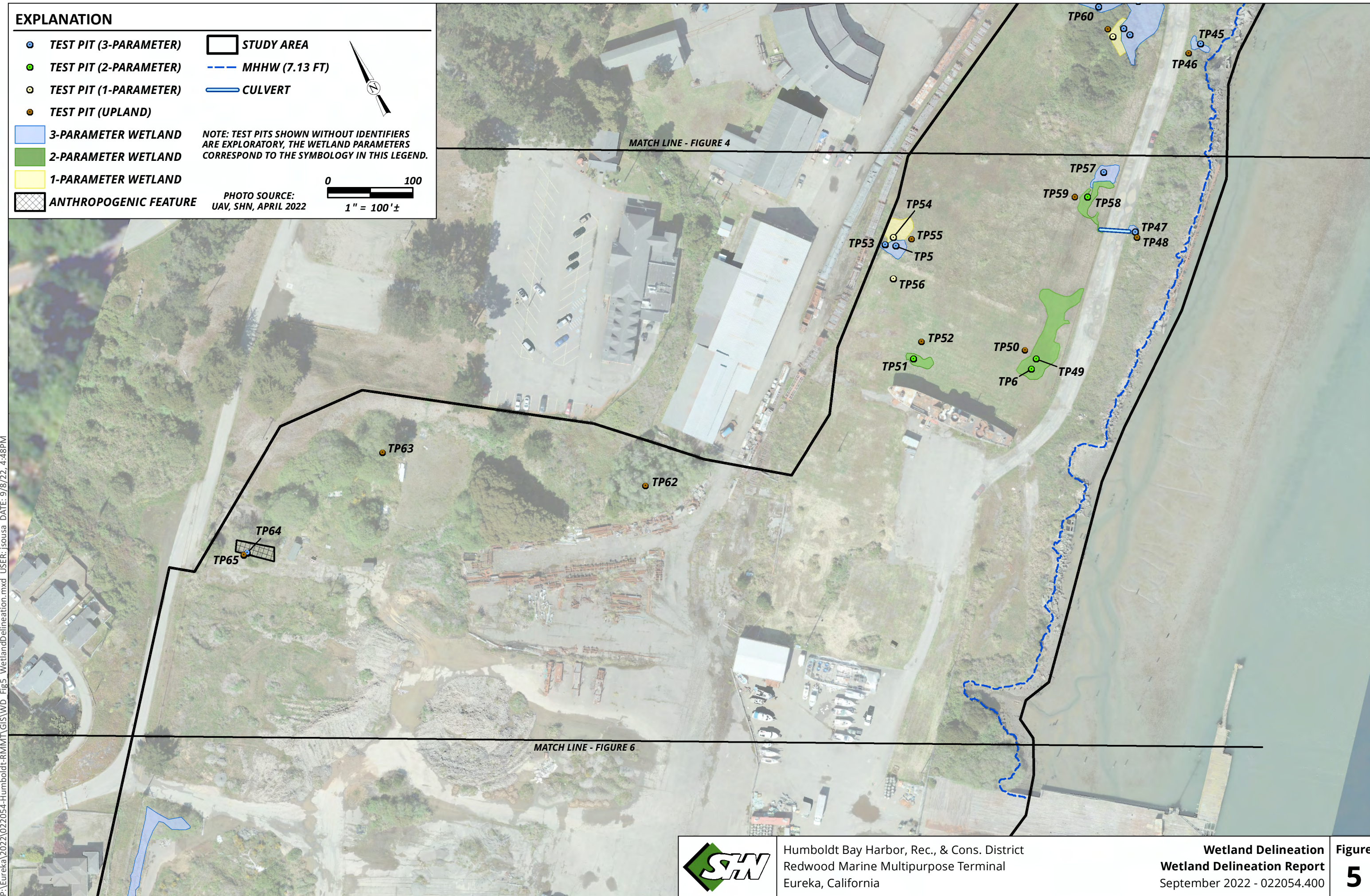
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- ▨ ANTHROPOGENIC FEATURE

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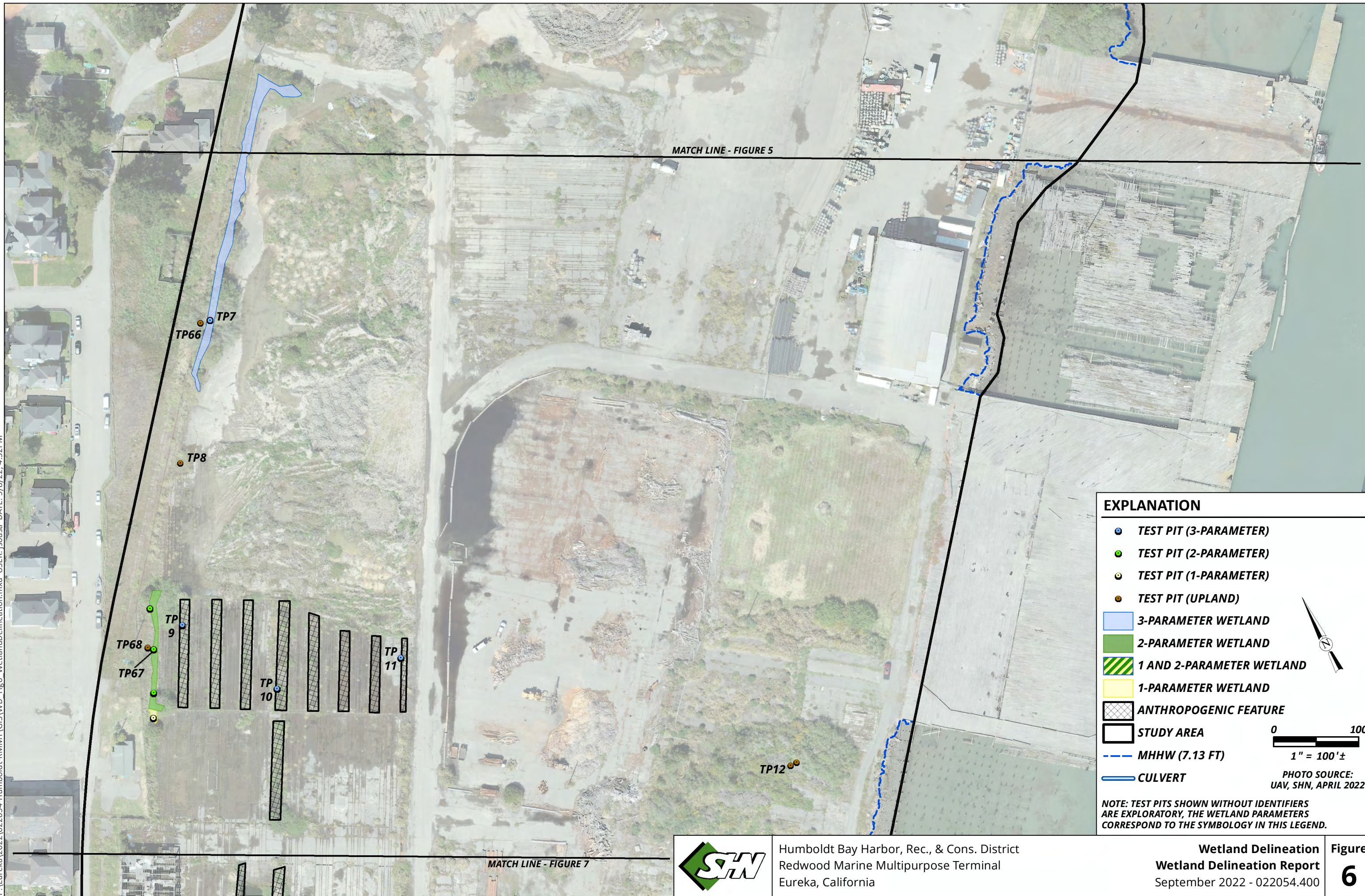
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Figure
5



MATCH LINE - FIGURE 5

MATCH LINE - FIGURE 7

EXPLANATION

- TEST PIT (3-PARAMETER)
- TEST PIT (2-PARAMETER)
- TEST PIT (1-PARAMETER)
- TEST PIT (UPLAND)
- 3-PARAMETER WETLAND
- 2-PARAMETER WETLAND
- 1 AND 2-PARAMETER WETLAND
- 1-PARAMETER WETLAND
- ANTHROPOGENIC FEATURE
- STUDY AREA
- MHHW (7.13 FT)
- CULVERT

0 100
1" = 100'±

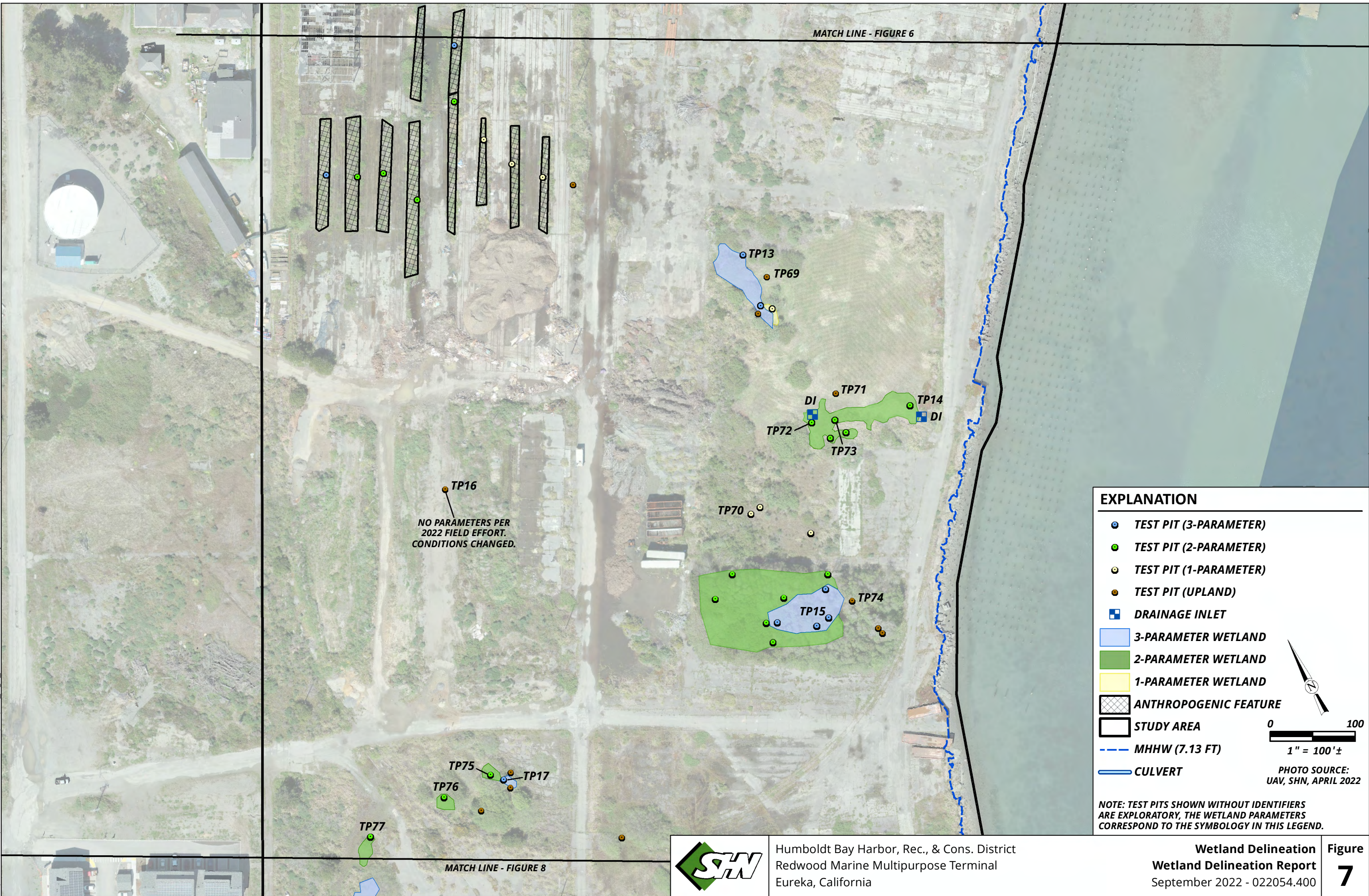
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MATCH LINE - FIGURE 6

TP16
NO PARAMETERS PER
2022 FIELD EFFORT.
CONDITIONS CHANGED.

TP75 TP17
TP76

MATCH LINE - FIGURE 8

EXPLANATION

- TEST PIT (3-PARAMETER)
- TEST PIT (2-PARAMETER)
- TEST PIT (1-PARAMETER)
- TEST PIT (UPLAND)
- DRAINAGE INLET
- 3-PARAMETER WETLAND
- 2-PARAMETER WETLAND
- 1-PARAMETER WETLAND
- ANTHROPOGENIC FEATURE
- STUDY AREA
- MHHW (7.13 FT)
- CULVERT

0 100
1" = 100'±











PHOTO SOURCE:
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Humboldt Bay Harbor, Rec., & Cons. District
Redwood Marine Multipurpose Terminal
Eureka, California

EXPLANATION

-  TEST PIT (3-PARAMETER)
-  TEST PIT (2-PARAMETER)
-  TEST PIT (1-PARAMETER)
-  TEST PIT (UPLAND)
-  DRAINAGE INLET
-  3-PARAMETER WETLAND
-  1-PARAMETER WETLAND
-  STORMWATER FEATURE
-  STUDY AREA
-  MHHW (7.13 FT)

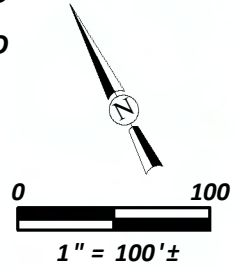
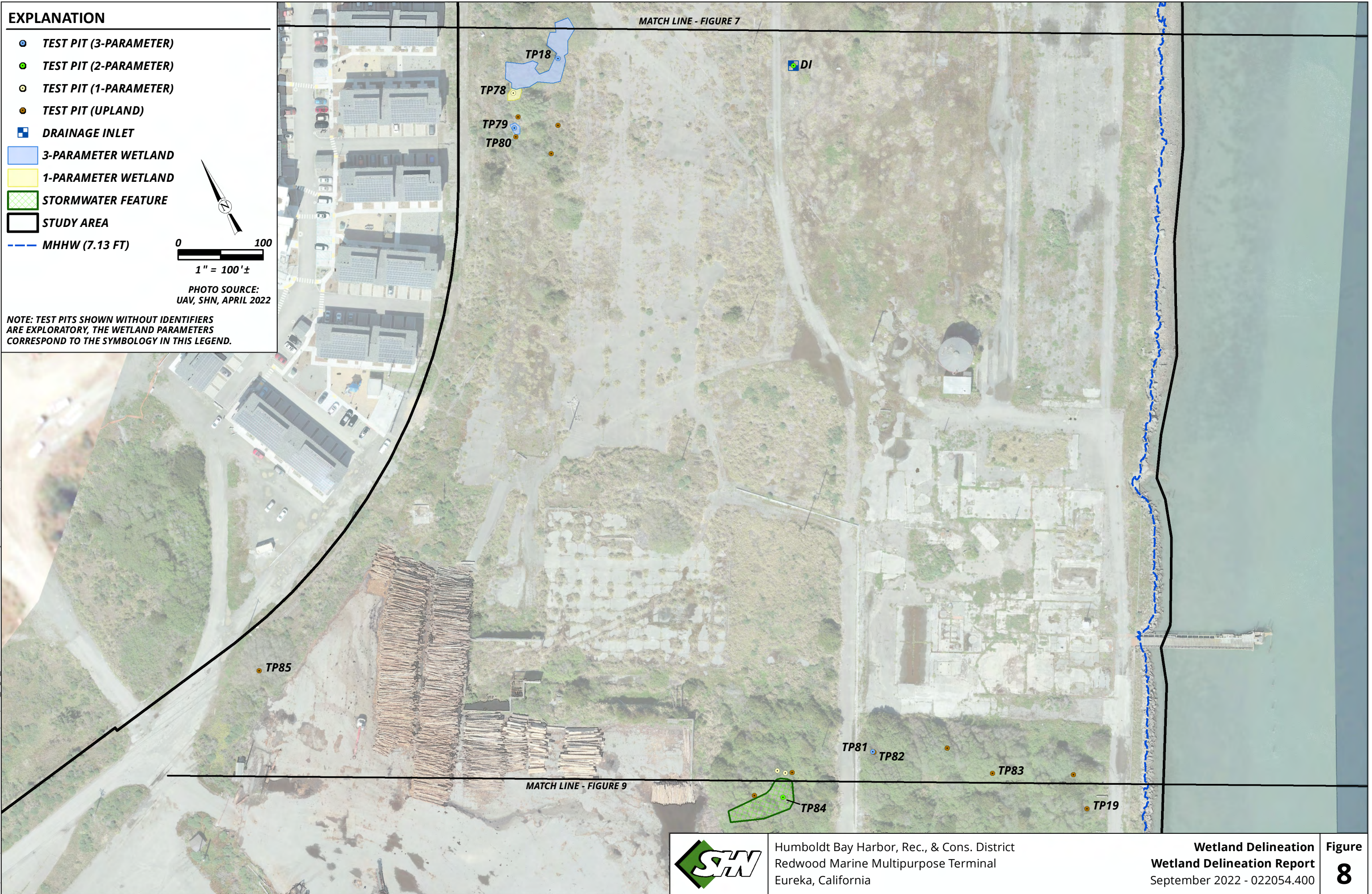


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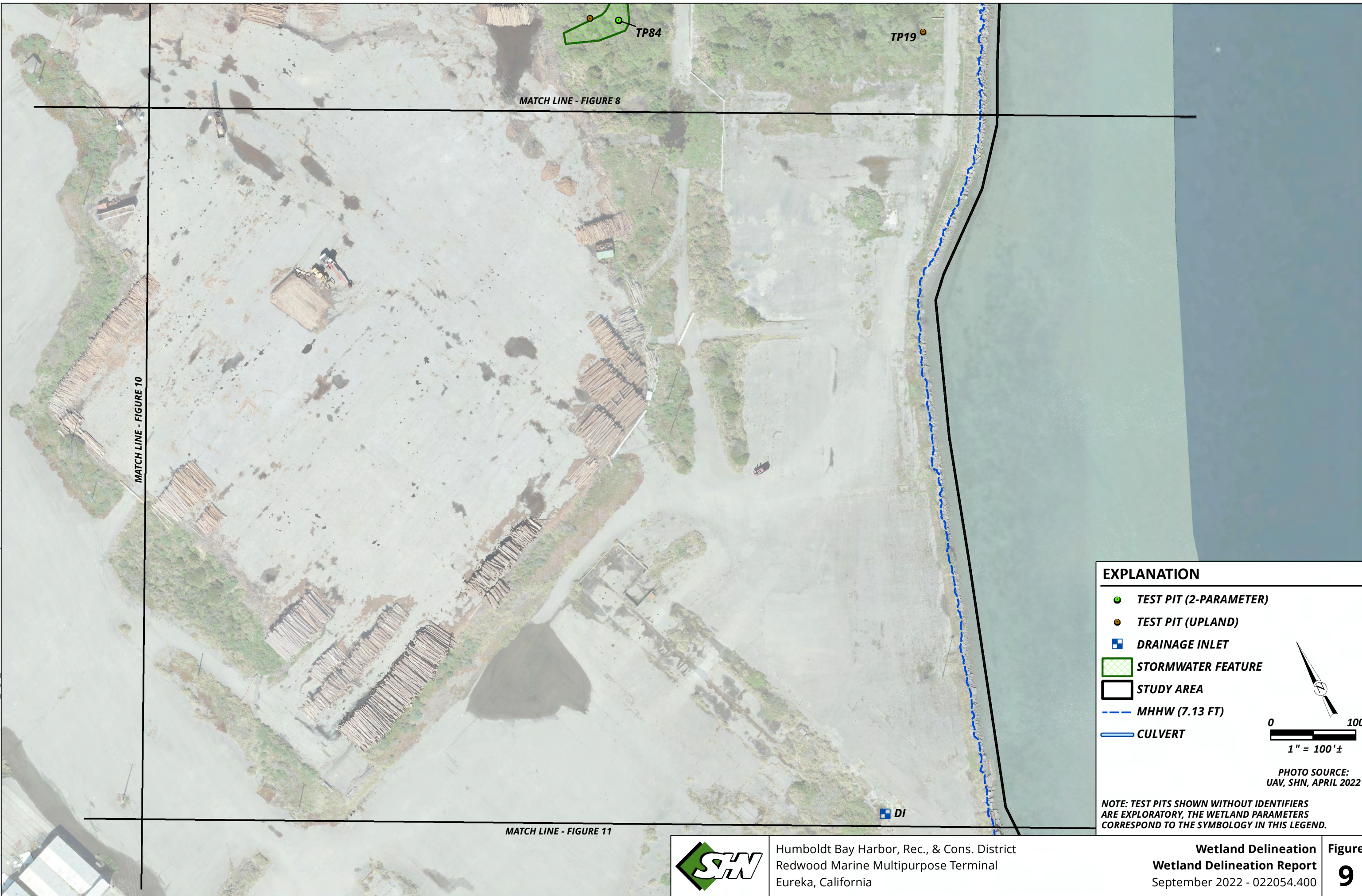


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Figure
8

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EXPLANATION

-  TEST PIT (2-PARAMETER)
-  TEST PIT (UPLAND)
-  DRAINAGE INLET
-  STORMWATER FEATURE
-  STUDY AREA
-  MHHW (7.13 FT)
-  CULVERT

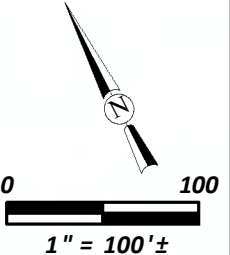


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EXPLANATION

 **STUDY AREA**

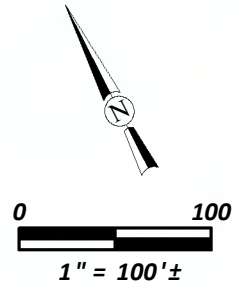


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MATCH LINE - FIGURE 12

MATCH LINE - FIGURE 9

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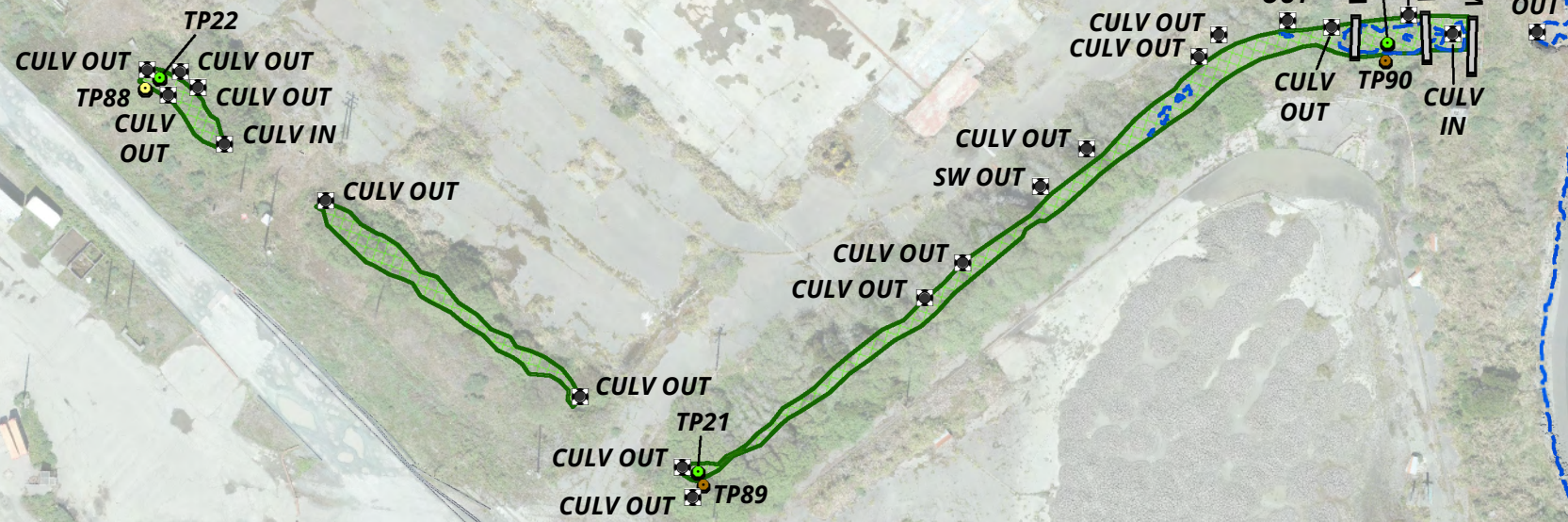
Wetland Delineation
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Figure
10

MATCH LINE - FIGURE 9

MATCH LINE - FIGURE 12

MATCH LINE - FIGURE 13



EXPLANATION

- TEST PIT (2-PARAMETER)
- TEST PIT (1-PARAMETER)
- TEST PIT (UPLAND)
- ✱ STORMWATER POINT
- STORMWATER FEATURE
- STUDY AREA
- MHHW (7.13 FT)

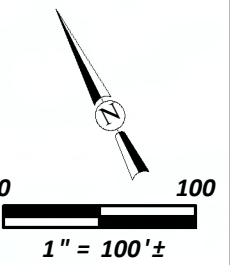


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Figure
11

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




MATCH LINE - FIGURE 10

MATCH LINE - FIGURE 11

MATCH LINE - FIGURE 14

EXPLANATION

-  TEST PIT (3-PARAMETER)
-  TEST PIT (UPLAND)
-  STUDY AREA
-  3-PARAMETER WETLAND

1" = 100' ±

PHOTO SOURCE:
UAV, SHN, APRIL 2022

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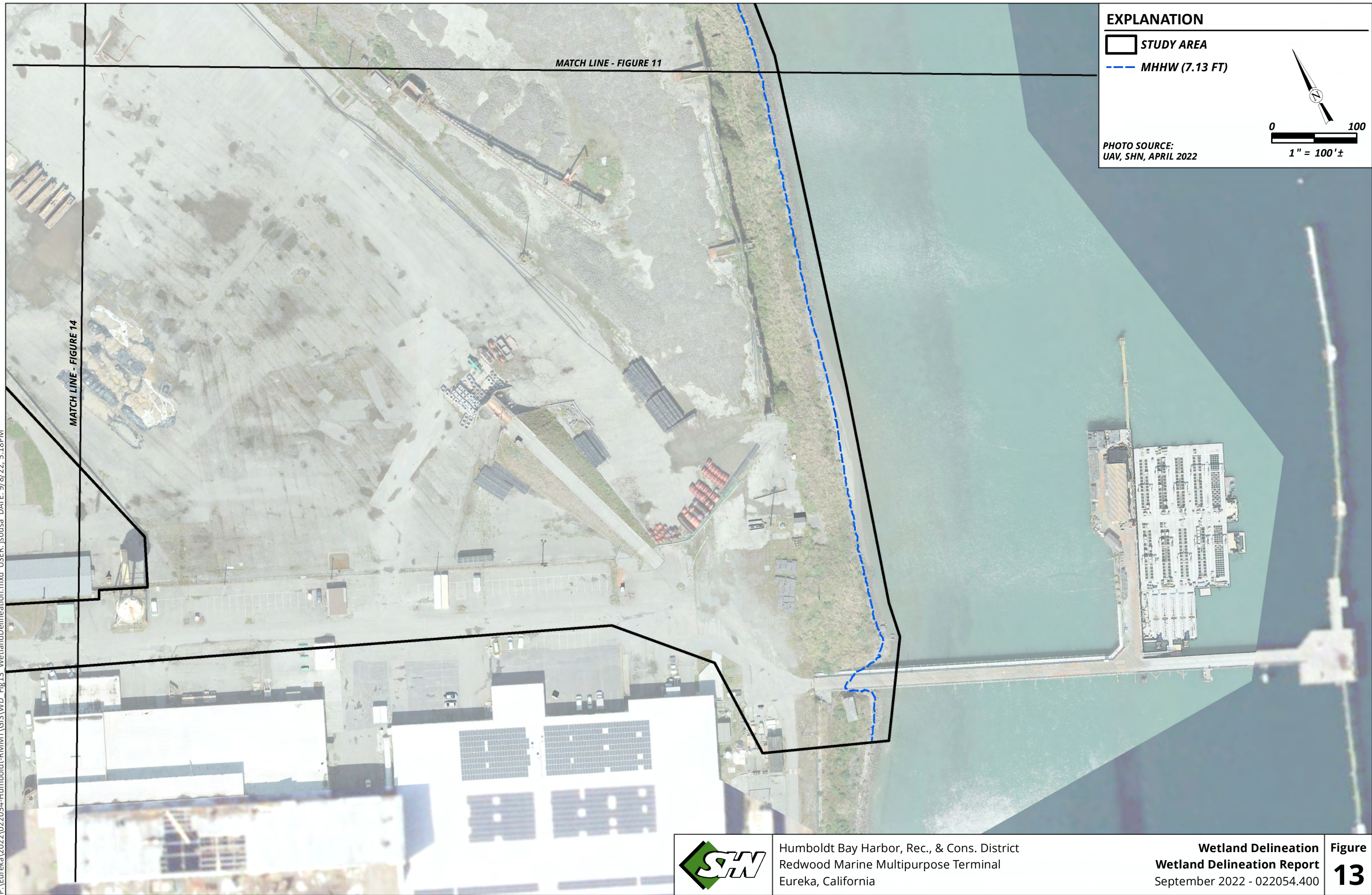


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Figure
12

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MATCH LINE - FIGURE 11

MATCH LINE - FIGURE 14

EXPLANATION

STUDY AREA

MHHW (7.13 FT)

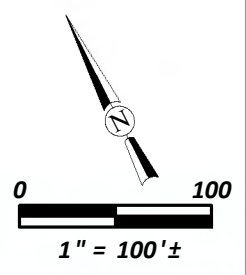


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Redwood Marine Multipurpose Terminal
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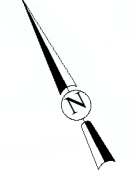
Figure
13

MATCH LINE - FIGURE 12

MATCH LINE - FIGURE 13

EXPLANATION

 STUDY AREA



0 100
1" = 100'±

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Redwood Marine Multipurpose Terminal
Eureka, California

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Figure
14

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Wetland Features

2

Table 1. Wetlands and Features Within the Study Area

Aquatic Resource Type	Feature Area (sqft)	MHHW Length (linear feet)
Naturalized Wetlands (1-3 parameter)		
Naturalized Wetland Features Impacted by the Project		
3-parameter	15,528.827	N/A
2-parameter	20,531.954	N/A
1-parameter	4,280.740	N/A
Total Naturalized Wetland Features Impacted by the Project:	40,341.521 (0.926 ac)	N/A
Naturalized Wetland Features within Mitigation Area		
3-parameter	8,203.600	N/A
2-parameter	153.300	N/A
1-parameter	471.910	N/A
Total Naturalized Wetland Features Within Mitigation Area:	8,828.810 (0.203 ac)	N/A
Naturalized Wetland Features not anticipated to be impacted by the project		
3-parameter	24,576.396 (0.564 ac)	N/A
2-parameter	None	N/A
1-parameter	None	N/A
Total Naturalized Wetland Features Not Impacted	24,576.396 (0.564 ac)	N/A
Total Naturalized Wetland Features within the Study Area (incl. all areas above)		
3-parameter	48,308.823 (1.109 ac)	N/A
2-parameter	20,685.254 (0.475 ac)	N/A
1-parameter	4,752.650 (0.109 ac)	N/A
Total Naturalized Wetland Features within the Study Area:	73,746.727 (1.693 ac)	N/A
Anthropogenic Features (All occur within the impact area)		
Anthropogenic Wetlands	27,053.790 (0.621 ac)	N/A
Stormwater Features	10,037.750 (0.230 ac)	N/A
Total Anthropogenic Features	37,091.540 (0.852 ac)	N/A
Mean Higher High Water Mark (Estuarine Intertidal Wetlands)		
MHHW within Impact Area	N/A	7,690.571 feet (1.457 mi)
MHHW within Mitigation Area	N/A	2,143.660 feet (0.406 mi)
MHHW not anticipated to be impacted	N/A	1,009.330 feet (0.191 mi)
Total MHHW Length in Study Area	N/A	10,843.561 feet (2.053 mi)

