TWINING GEOTECHNICAL

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August 21, 2020
Project No. 200055.2

Nicole Salem, PE
Senior Engineer
City of San Diego
525 B Street, Suite 750 (MS 908A)
San Diego, CA 92101

Subject: Response to City of San Diego LDR-Geology
Environmental Review
City Project No. 630996; Cycle 5

Project: City of San Diego Task 15GT15 – Water and Storm Drain Group 968
San Diego, California

References: i) Twining Cost Proposal to Provide a City of San Diego Amendment Response Letter to LDR-Geology, Cycle 5, review comments (Dated July 20, 2020).

ii) City of San Diego Plans for the Construction of Water and Storm Drain Group 968, Drawing Number 38719, 25 Sheets (Signed July 1, 2020).

iii) City of San Diego Reviewer Issues draft, Environmental Review prepared by LDR-Geology, Cycle 5, Project No. 630996, Review dated March 23, 2020 (Print dated June 10, 2020)

iv) Twining Project No. 200055.2 Preliminary Geologic Hazards Study (9 sites) for City of San Diego Task 15GT15 –Water and Storm Drain Group 968 (Dated February 12, 2020) (*Response to Reference vi*).

v) Twining Cost Proposal to Provide a Geologic Hazards Reconnaissance Study (9 sites), Proposal No. 19-2393 (Dated January 20, 2020).

vi) City of San Diego Cycle Issues draft, Environmental Review prepared by LDR-Geology, Cycle 2, Project No. 630996, Reviews dated April 3, 2019 and October 25, 2019 (Dated October 30, 2019).

vii) Twining Project No. 180325.2 Preliminary Geotechnical Investigation for City of San Diego Task 15GT15 – Manzanita Canyon Water and Storm Drain Group 968 (Dated September 28, 2018).

Dear Ms. Salem,

In accordance with your request and authorization, we are providing this letter to respond to the LDR-Geology Review Issues dated March 23, 2020 as part of the City Environmental Review process (Reference iii). This response is based upon a review of the references above, our conference call with city staff on July 16, 2020 to resolve addressing the LDR-Geology Issues, and additional site reconnaissance.

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PROJECT UNDERSTANDING

The City intends to install new water and storm drain piping and abandon water mains at ten locations as shown on the updated and signed City engineering construction plans (Reference ii). The locations of the 10 sites are shown on the attached Figures 1 through 10, prepared by the City to show the locations of biological Environmentally Sensitive Lands (ESL) and the proposed limits of work.

Twining previously performed a geotechnical investigation for Site 3 (Reference vii). Twining also prepared a Preliminary Geologic Hazards Study for Sites 1, 2, and 4 thru 10 (Reference iv) and recommended a geotechnical subsurface investigation for Sites 1, 2, 5, 7 and 9. These reports were reviewed by the City Geology section who provided additional review issues (Reference iii). A conference call was held on July 16, 2020 to resolve the City Geology review issues. Based upon the issues resolved it was understood that Site 7 was previously redesigned to exclude the steeper canyon slope areas, and that Site 9 will be redesigned for trenchless pipe installation to limit impacts to the steep slopes. However, based upon the final City construction plans for Site 9, this site will not be trenchless construction (Reference ii). It was also understood that the City Geology section would not require a fault or liquefaction investigation for Sites 1, 2 and 5. In addition, the City would provide Twining with maps for all 10 sites showing the planned limits for construction "impact/work areas" and any ESL (see Figures 1-10). The intent was for Twining to confirm that geotechnical remedial grading should not be necessary outside these areas and provide a professional opinion that the sites are "adequately stable" without performing any additional geotechnical subsurface investigation.

Due to the changes in the numbering of the 10 project sites over the last two years, the following Table provides a cross reference summary for the attached 10 Figures. This Table also includes the City ESL determination for each site:

Table 1 - Updated Site Location Cross References & City ESL Determination

Site Location	Twining Figure # This Response Letter	Site # Twining Geological Hazards Study 2/12/20	Site # City ESL Maps & Plans for Construction Water Storm Drain Group 968; Signed 7/1/20	City Staff Determined Impacts to ESL?
Old Town (Whitman & Jackson)	**Figure 1**	Site 1	Site 4	No
Airport (N Harbor Dr)	**Figure 2**	Site 2	Site 3	No
Manzanita & 39th * *See Twining Geotech Investigation Report 9/28/18*	**Figure 3**	Site 3*	Site 1	**Yes**
Encanto (Scimitar)	**Figure 4**	Site 4	Site 11	No
Mission Valley (Camino Del Rio N)	**Figure 5**	Site 5	Site 6	No
North Park (Laurel)	**Figure 6**	Site 6	Site 9A & 9B	No
Mid-City (Quince/Redwood/Alley)	**Figure 7**	Site 7	Site 7	**Yes**
Mid-City (Sycamore/Shamrock St)	**Figure 8**	Site 8	Site 9C	No
Mid-City (Laurel & Roseview)	**Figure 9**	Site 9	Site 8	**Yes**
Peninsula (Kellogg)	**Figure 10**	Site 10	Site 2	No

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RESPONSES TO LDR-GEOLOGY

The following provides our responses to each of the remaining City of San Diego LDR-Geology Issues (Reference iii):

City Cycle 5; Issue No. 6: Submit a digital copy (on CD or USB data storage device) of all geotechnical documents submitted for review with the next re-submittal.

Twining Response: *A digital copy of all referenced geotechnical documents (References iv and vii), and this letter response are being provided.*

City Cycle 5; Issue No. 7: The project's geotechnical consultant must submit an addendum geotechnical report or update letter for the purpose of an environmental review that specifically addresses the proposed development plans and the following:

Twining Response: *This updated letter response is being provided for the City environmental review, as agreed during the referenced conference call on July 16, 2020. In addition, Twining has reviewed (from a geotechnical standpoint) the updated and signed City of San Diego Plans for the Construction of Water and Storm Drain Group 968, Drawing Number 38719, 25 Sheets (Reference ii).*

City Cycle 5; Issue No. 8: The geotechnical investigation report should contain a geologic/geotechnical map in areas of proposed construction within environmentally sensitive land. The limits of anticipated remedial grading should be circumscribed to delineate the proposed footprint of the project in these areas.

Twining Response: *Twining has reviewed the City of San Diego ESL maps and proposed limits of work as shown for each site on Figures 1 through 10. Twining confirms that geotechnical remedial grading should not be necessary outside these areas. The geologic maps of areas of proposed construction were previously presented in the referenced Twining reports (References iv and vii). [Please note that Figures 3 & 7 include 2018 biological limits for proposed limits of work; however, based on the updated 2020 construction plans, there will be no water main built in some of those areas. In addition, Twining does not determine ESL for biological resources, and the City has stated that steep hillsides (ESL Steep Slopes) are not a CEQA issue for pipelines].*

City Cycle 5; Issue No. 9: If there are existing and/or proposed slopes, the project's geotechnical consultant must provide a professional opinion that they will have a factor-of-safety of 1.5 or greater for both gross and surficial stability following project completion.

Twining Response: *Twining has reviewed our previous reports (References iv and vii), the updated construction plans (Reference ii), and performed additional site reconnaissance's on August 7 and 12, 2020. Twining is providing this professional opinion for this environmental review that the sites are "adequately stable" with the incorporation of our recommendations, without performing any additional geotechnical subsurface investigations (as agreed during the referenced conference call on July 16, 2020). Based upon a review of sheets 11 and 20 of the updated construction plans for Site 8 (Figure 9 - Laurel and Roseview), if the City constructs the proposed 13 cut off walls per SDS-115 perpendicular to the existing steep slopes, then Twining is providing the following recommendations. From the construction plan referenced in this report, 8 feet deep cut-off walls will be constructed with an approximately 11 feet deep excavation. Shoring will be necessary for vertical excavations from the existing ground due to the existing slope gradient. Shoring should be maintained throughout the installation. For design of cantilevered shoring with heights of 15 feet or less, a triangular distribution of lateral active earth pressure may be used. Soils behind the shoring are anticipated to be sloping approximately 20 degrees. On this basis and assuming a conservative friction angle of 25° with a soil unit weight of 130 pound per cubic foot, an equivalent fluid pressure of 74 pounds per cubic foot may be assumed for design. The approximate depth of any fills on the exposed slope of Site 8 is unknown as a geotechnical investigation was not conducted. Temporary slopes in fill should not be steeper than 1:1 (horizontal:vertical). The contractor's Competent Person should inspect the faces of temporary slopes daily before personnel are allowed to enter the excavation area. Any zones of potential instability, sloughing or raveling should be brought to the attention of the Engineer and corrective action implemented before personnel begin working in the excavation.*

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<u>City Cycle 5; Issue No. 10:</u> The project's geotechnical consultant should provide a conclusion regarding if the proposed development will destabilize or result in settlement of adjacent property or the right of way.

Twining Response: *Twining has reviewed our previous reports (References iv and vii), the updated construction plans (Reference ii), and performed additional site reconnaissance. Twining is providing this professional opinion for this environmental review that the sites are "adequately stable" with the incorporation of our recommendations. This is based on Twining not performing any additional geotechnical subsurface investigations (as agreed during the referenced conference call on July 16, 2020). In addition, Twining's opinion is limited to the project plan area for Site 8 (Figure 9 - Laurel & Roseview), and does not include the off-site hummocky hillsides and erosional areas. Twining previously noted the following for Site 8 in our Reference iv: "Existing topography ranges between 190 and 250 feet. Excavations for the water main and storm drain replacement are anticipated to be within existing pipeline backfill, San Diego Formation, and canyon slope wash. Seepage was not observed during our site visit. Groundwater was encountered in the bottom of the canyon drainage at the intersections of the unimproved portions of Roseview Place and Laurel Street. Significant surface storm water erosion has occurred in the canyon carving an approximate 4-foot-deep ravine at the base."*

We appreciate the opportunity to be of service on this project. Should you have any questions regarding this letter report, or if we can be of further service, please do not hesitate to contact the undersigned.

Respectfully submitted,
TWINING, INC.

REGISTERED PROFESSIONAL ENGINEER
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exp. 12/31/20
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FIGURES

Proposed/Existing

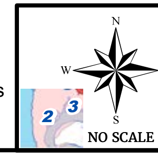
- Proposed Water Main
- Proposed Water Main Abandonment
- Proposed Limits of Work 10' Wide
- Study Area 300' Buffer
- Roads
- Existing Trail
- Access Path
- Jusridictional Unvegetated Channel 3' Wide

Tier I & II (ESL) Resource Limit

- MHPA - Multipl Habitat Planning Area
- Nuttall's Scrub Oak
- Wart-Stemmed Ceanothus
- Scrub Oak Chaparral
- Diegan Coastal Sage Scrub
- Diegan Coastal Sage Scrub - Restoration
- Disturbed Diegan Coastal Sage Scrub
- Southern Willow Scrub

Tier IV (Non-ESL) Resource Limit

- Chamise Chaparral
- Disturbed Habitat
- Eucalyptus Woodland
- Parks and Ornamental Plantings
- Urban/Developed



The City of SAN DIEGO Public Works

WATER GROUP 968
DATE: AUG 3, 2020
WBS #: B-14099

BIOLOGICAL RESOURCES MAP | SITE 4

TWINING

CITY ESL & LIMITS OF WORK

TASK 15GT15 WATER AND STORM DRAIN GROUP 968
SAN DIEGO, CALIFORNIA

PROJECT NO.	REPORT DATE	FIGURE 1
200055.2	August 2020	


SPRUANCE
PRIVATE
UNNAMED MILITARY
UNNAMED MILITARY
UNNAMED MILITARY
NORTH HARBOR
SPANISH LANDING
Proposed/Existing
Proposed Water Main
Proposed Water Main Abandonment
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Tier IV (Non-ESL) Resource Limit
Chamise Chaparral
Disturbed Habitat
Eucalyptus Woodland
Parks and Ornamental Plantings
Urban/Developed
N
W
E
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2
3
NO SCALE

The City of SAN DIEGO Public Works

WATER GROUP 968
DATE: AUG 3, 2020
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BIOLOGICAL RESOURCES MAP | SITE 3

TWINING

CITY ESL & LIMITS OF WORK

TASK 15GT15 WATER AND STORM DRAIN GROUP 968
SAN DIEGO, CALIFORNIA

PROJECT NO.	REPORT DATE	FIGURE 2
200055.2	August 2020	

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Tier IV (Non-ESL) Resource Limit

- Chamise Chaparral
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- Urban/Developed

N W E S

NO SCALE

The City of SAN DIEGO Public Works

WATER GROUP 968
DATE: AUG 3, 2020
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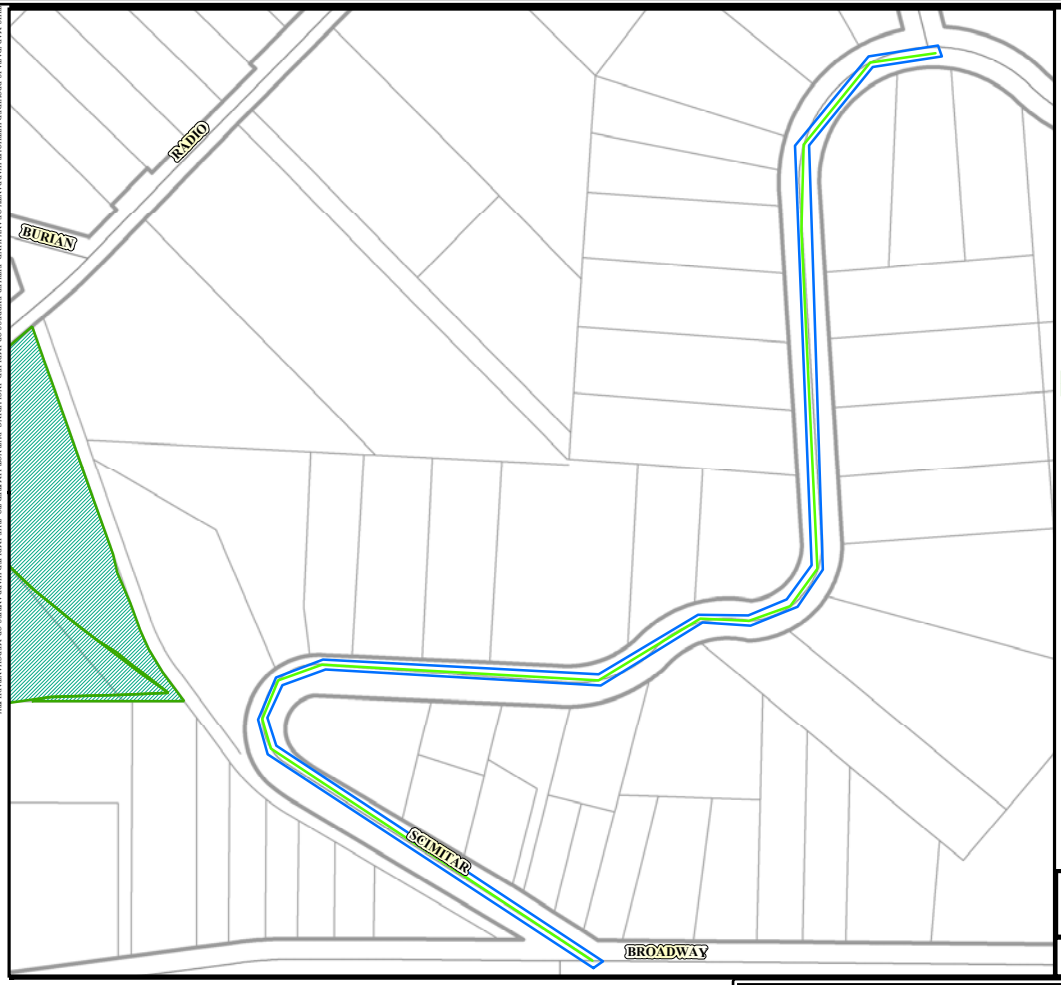
BIOLOGICAL RESOURCES MAP | SITE 1

TWINING

CITY ESL & LIMITS OF WORK

TASK 15GT15 WATER AND STORM DRAIN GROUP 968
SAN DIEGO, CALIFORNIA

PROJECT NO.	REPORT DATE	FIGURE 3
200055.2	August 2020	



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N W E S 2 3 NO SCALE

The City of SAN DIEGO Public Works

WATER GROUP 968
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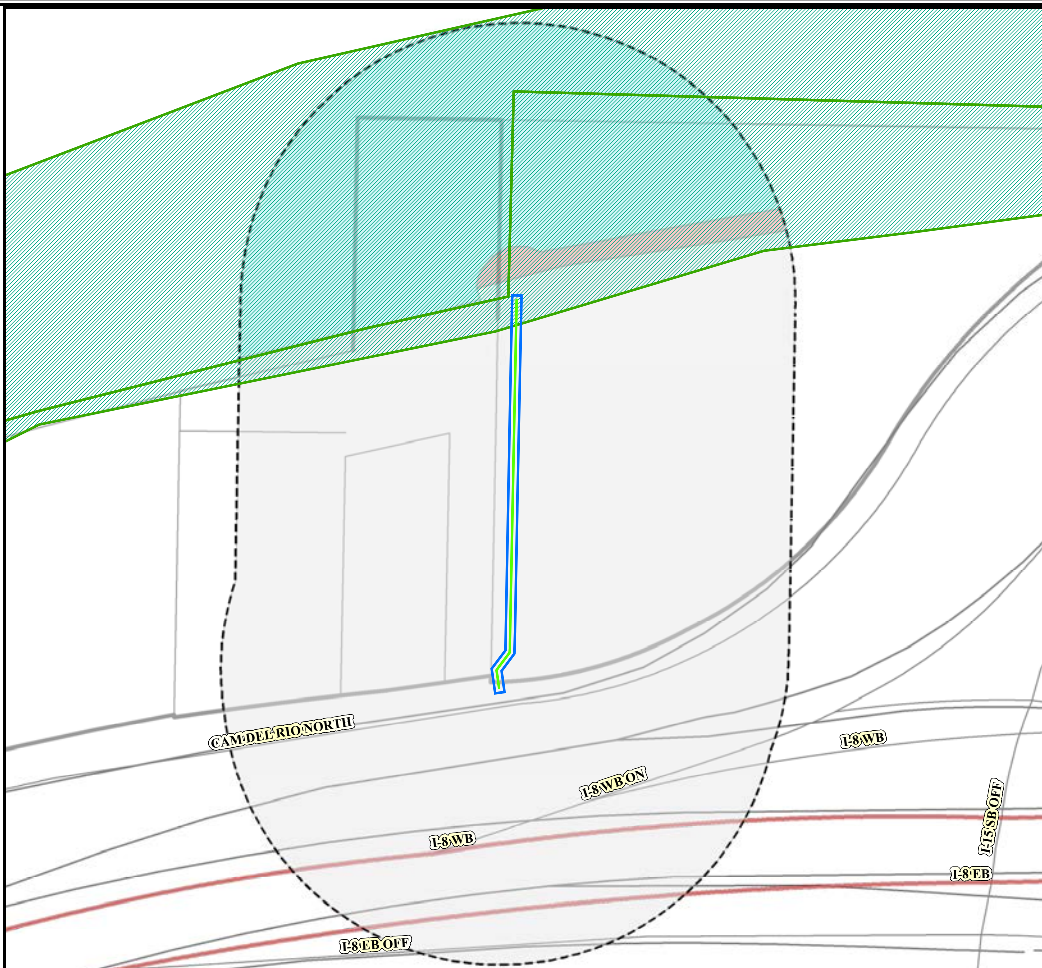
BIOLOGICAL RESOURCES MAP | SITE 11

TWINING

CITY ESL & LIMITS OF WORK

TASK 15GT15 WATER AND STORM DRAIN GROUP 968
SAN DIEGO, CALIFORNIA

PROJECT NO.	REPORT DATE	FIGURE 4
200055.2	August 2020	



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N W E S
NO SCALE

The City of SAN DIEGO Public Works

WATER GROUP 968
DATE: AUG 3, 2020
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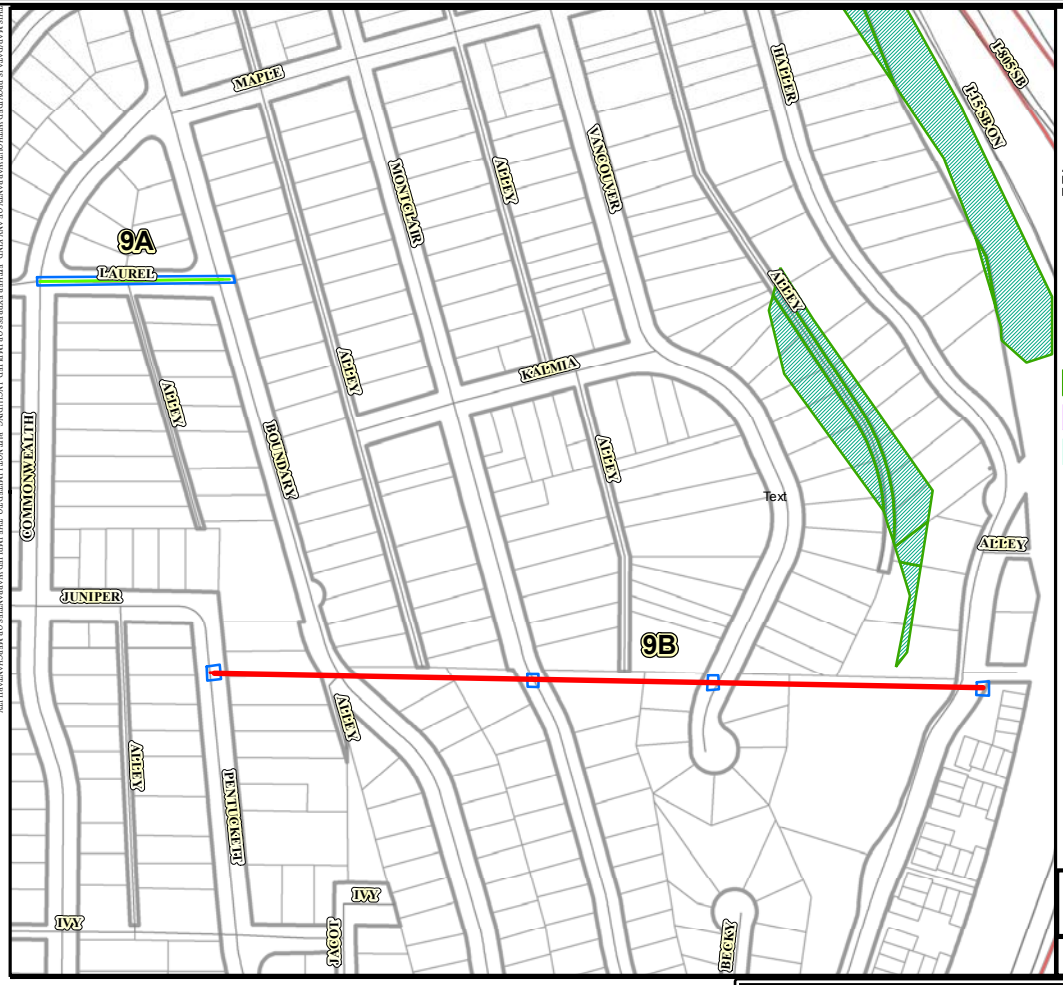
BIOLOGICAL RESOURCES MAP | SITE 6

TWINING

CITY ESL & LIMITS OF WORK

TASK 15GT15 WATER AND STORM DRAIN GROUP 968
SAN DIEGO, CALIFORNIA

PROJECT NO.	REPORT DATE	FIGURE 5
200055.2	August 2020	



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N W E S NO SCALE

The City of SAN DIEGO Public Works

WATER GROUP 968
DATE: AUG 3, 2020
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BIOLOGICAL RESOURCES MAP | SITE 9A & 9B

TWINING

CITY ESL & LIMITS OF WORK

TASK 15GT15 WATER AND STORM DRAIN GROUP 968
SAN DIEGO, CALIFORNIA

PROJECT NO.	REPORT DATE	FIGURE 6
200055.2	August 2020	

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N W E S 2 3 NO SCALE

The City of SAN DIEGO Public Works

WATER GROUP 968
DATE: AUG 3, 2020
WBS #: B-14099

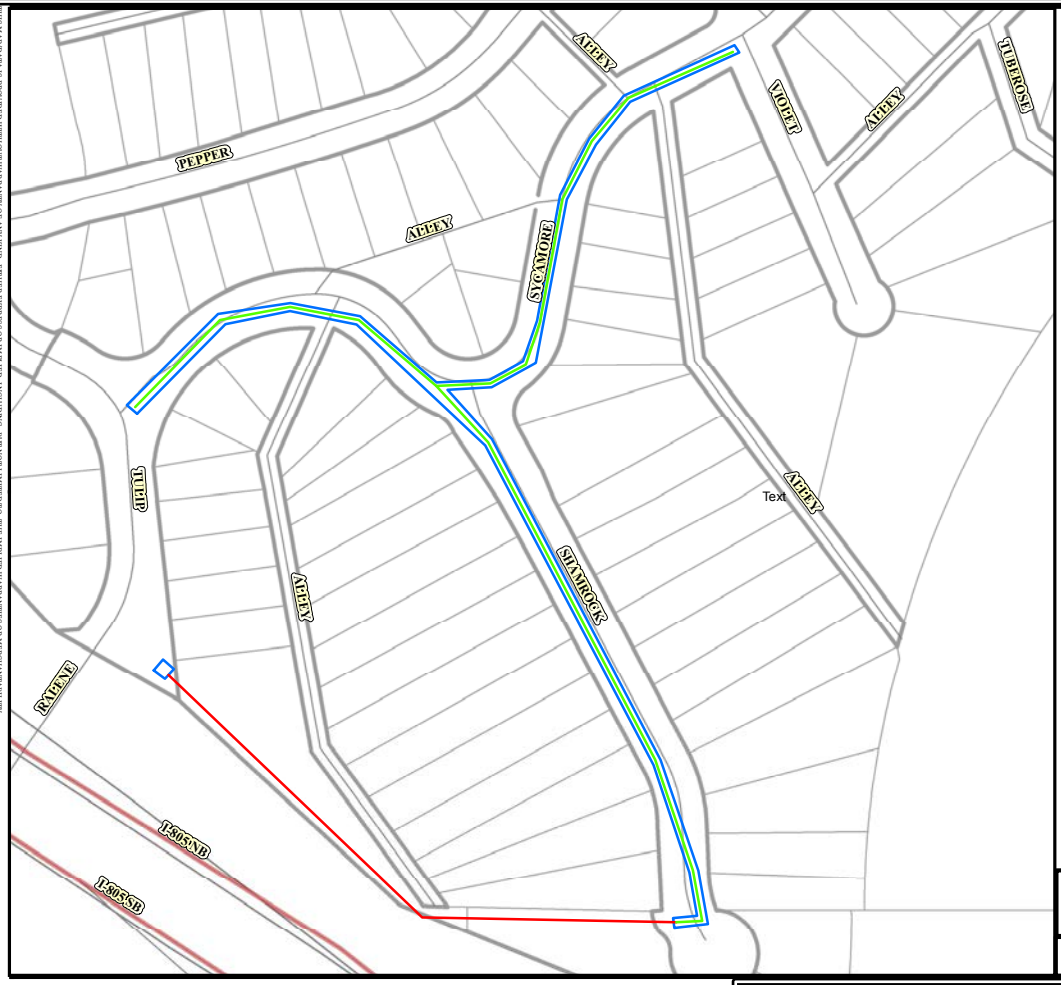
BIOLOGICAL RESOURCES MAP | SITE 7

TWINING

CITY ESL & LIMITS OF WORK

TASK 15GT15 WATER AND STORM DRAIN GROUP 968
SAN DIEGO, CALIFORNIA

PROJECT NO.	REPORT DATE	FIGURE 7
200055.2	August 2020	



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N W E S 2 3 NO SCALE

The City of SAN DIEGO Public Works

WATER GROUP 968
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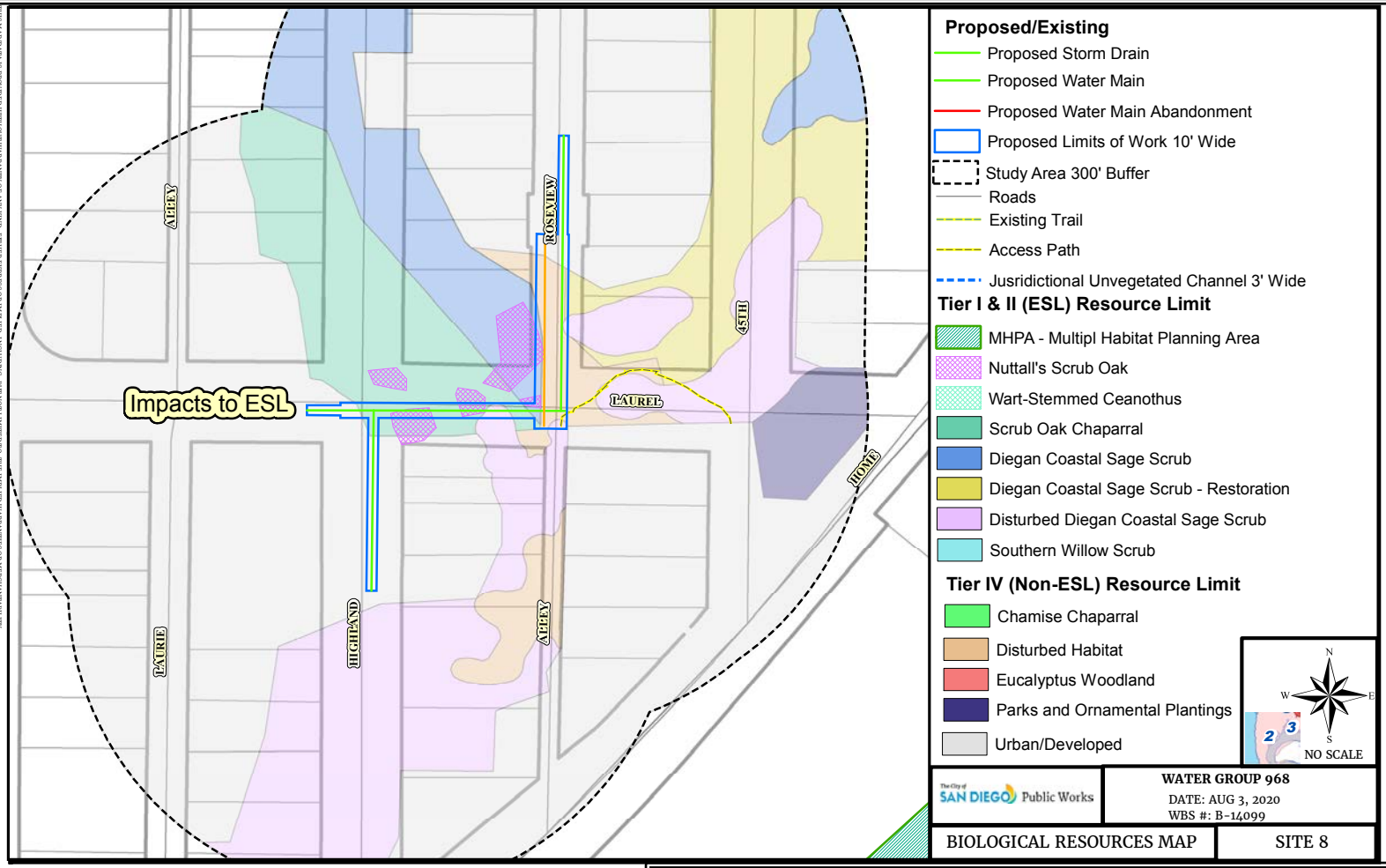
BIOLOGICAL RESOURCES MAP | SITE 9C

TWINING

CITY ESL & LIMITS OF WORK

TASK 15GT15 WATER AND STORM DRAIN GROUP 968
SAN DIEGO, CALIFORNIA

PROJECT NO.	REPORT DATE	FIGURE 8
200055.2	August 2020	



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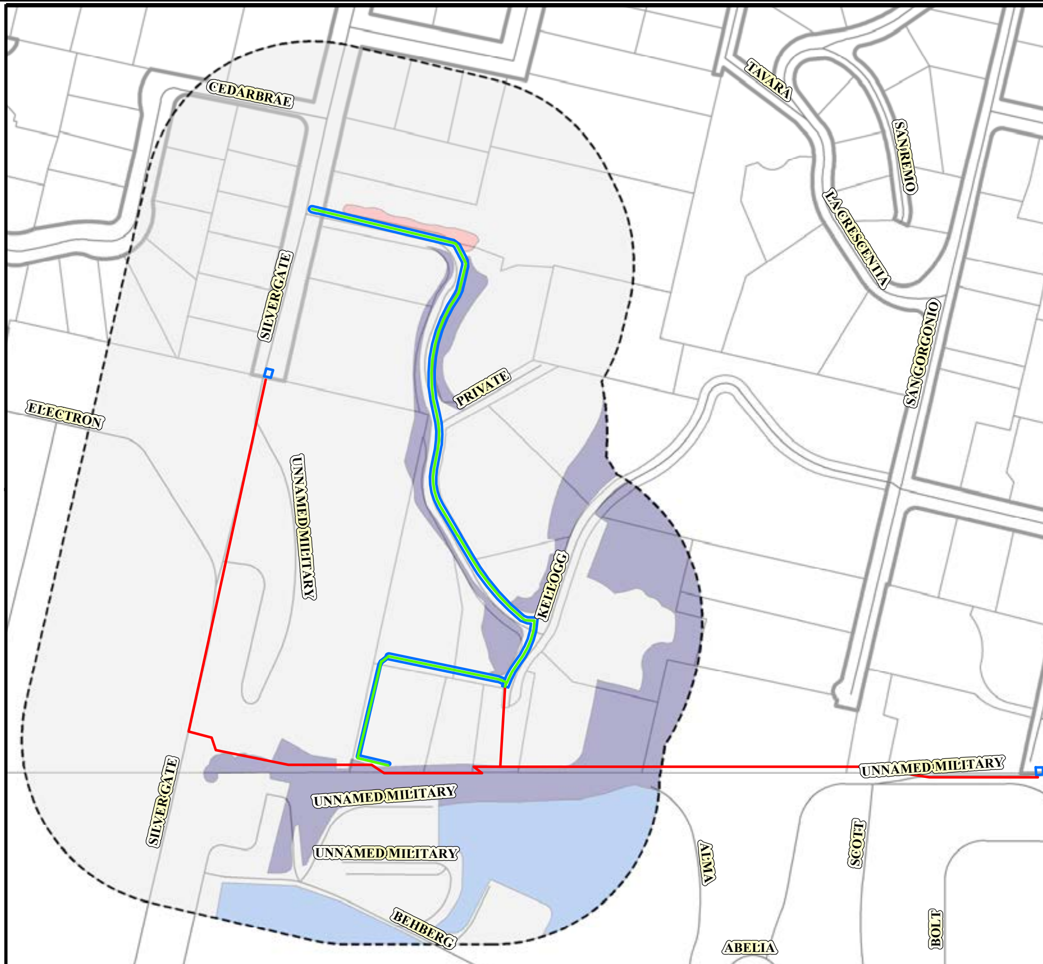
CITY ESL & LIMITS OF WORK

TASK 15GT15 WATER AND STORM DRAIN GROUP 968
SAN DIEGO, CALIFORNIA

PROJECT NO.	REPORT DATE	FIGURE 9
200055.2	August 2020	



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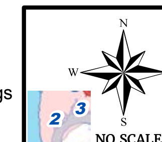

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BIOLOGICAL RESOURCES MAP | SITE 2

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TASK 15GT15 WATER AND STORM DRAIN GROUP 968
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PROJECT NO.	REPORT DATE	FIGURE 10
200055.2	August 2020	