



April 23, 2021

U.S. Army Corps of Engineers, San Francisco District
Attn: Roberta Morganstern
450 Golden Gate Ave 4th Floor
San Francisco, CA 94102

San Francisco Bay Regional Water Quality Control Board
Attn: Nicole Fairley
1515 Clay Street, Suite 1400
Oakland, CA 94612

San Francisco Bay Conservation & Development Commission
Attn: Erik Buehmann
375 Beale St., Suite 510
San Francisco, CA 94105

RE: Corte Madera Four-Acre Tidal Marsh Restoration Project As-Built Report
USACE Nationwide File No. 1999-24251N
RWQCB Place ID: 857558
BCDC Permit No: M2019.011.00
USFWS Biological Opinion 08FBDT00-2019-F-0184

Dear Resources Agencies:

In compliance with the Habitat Mitigation and Monitoring Plan (HMMP) for the Corte Madera Four-Acre Tidal Marsh Restoration Project and on behalf of Golden Gate Bridge, Highway and Transportation District (District), WRA, Inc. (WRA) respectfully submits this letter to serve as notification for the completion of the wetland mitigation construction activities at the Corte Madera marsh. Included in this letter are the as-built conditions for the tidal marsh and seasonal wetland and a summary of activities that were conducted during the implementation phase.

Based on the as-built survey, the project meets the requirements to restore 4.3 acres of tidal marsh and mitigate for temporary impacts to 0.18 acres of tidal marsh and 0.28 acres of seasonal wetland. In addition, 0.75 acres of transition zone and 10.02 acres of upland refugia were created adjacent to the tidal marsh. The project also includes replacement of a portion of a public access trail, pedestrian/dog exclusion fencing along the new trail, and improvements to the existing trail.

Wetland Restoration Implementation

Construction was conducted in accordance with the *Corte Madera 4-Acre Tidal Marsh Restoration Project Construction Documents*, dated July 2020 (“Construction Documents”). Construction activities commenced in October 2020 and were completed in January 2021. Following construction, the elevations of the tidal marsh and seasonal wetland were surveyed by a licensed surveyor to determine the location and area of each (see Attachment A). This was cross referenced with aerial LiDAR (see Attachment B). The survey was conducted at low tide in order to account for all ground surfaces within the tidal marsh in the project area. Survey of the bathymetry in the adjacent Northern Drainage Channel was not conducted because portions below low tide are outside of the project area and project activities did not impact channel grades. Existing soil within the marsh with elevated nickel content was removed during excavation and placed in the area shown on Attachment B. Over excavation of the soil with elevated nickel content in the tidal marsh and placement in the soil reuse area was done in conformance with the Construction Documents.

The area of created tidal marsh and seasonal wetland is in compliance with the HMMP’s restoration goals and is shown on the enclosed as-built plans (Attachment A). Attachment C shows the 10 established photo point locations and Attachment D contains photographs of the pre-construction, interim, and as-built conditions at the photo point locations.

Grading activities followed the Construction Plans with minor alterations to account for site conditions.

Tidal Marsh and Transition Zone Planting and Irrigation

Following earthwork, a temporary spray irrigation system was installed within the transition zone to provide supplemental water to the plantings during the first three years following installation. The plants will be irrigated in the dry season (May through October) and during winter months if necessary to help with establishment and increase survivorship rates. The intent of the irrigation system is to provide the minimum amount of water to sustain good plant health during the establishment and monitoring periods.

The installed tidal marsh and transition zone plantings included all of the species proposed in the HMMP, and in addition, alkali heath (*Frankenia salina*) was installed in the tidal marsh. Alkali heath has been observed within the adjacent Corte Madera marsh and is appropriate for the tidal marsh plant community. The quantities of each species varied somewhat compared to what was proposed in the Construction Plans due to nursery availability. The species, container size, on-center spacing, and total quantity of each species installed in the tidal marsh and transition zone are provided in Tables 1 and 2.

Table 1: Tidal Marsh Planting Palette and Quantities

Botanical Name	Common Name	Container Size	On-center Spacing (feet)	Total Construction Drawing Quantity	Total As-Built Quantity
<i>Distichlis spicata</i>	Salt Grass	TB5	1.0	2,651	2,651
<i>Jaumea carnososa</i>	Marsh Jaumea	TB5	1.0	300	1,642
<i>Frankenia salina</i>	Alkali Heath	TB5	1.0	980	541
<i>Limonium californica</i>	California Sea Lavender	TB5	1.0	821	821
<i>Salicornia pacifica</i>	Pickleweed	TB5	1.0	11,661	11,090
Total				16,413	16,745

Table 2: Transition Zone Planting Palette and Quantities

Botanical Name	Common Name	Container Size	On-center Spacing (feet)	Total Construction Drawing Quantity	Total As-Built Quantity
<i>Baccharis glutinosa</i>	Salt Marsh Baccharis	D16	3.0	189	189
<i>Baccharis pilularis</i>	Coyote Brush	D16	6.0	108	108
<i>Grindelia stricta</i>	Coastal Gumweed	D16	3.0	189	189
Total				486	486

Seasonal Wetland Seeding

Native seed was broadcast in the seasonal wetland per the HMMP and Construction Plans. Composition and quantity of seed mix is provided in Table 3.

Table 3: Seasonal Wetland Seed Mix

Botanical Name	Common Name	Pure Live Seed (lb / acre)	Pure Live Seed (lbs)
<i>Carex praegracilis</i>	Field Sedge	2.0	0.56
<i>Eleocharis macrostachys</i>	Creeping Spike Rush	1.0	0.28
<i>Elymus triticoides</i>	Creeping Wild Rye	4.0	1.12
<i>Hordeum brachyantherum</i>	Meadow Barley	6.0	1.68
<i>Juncus bufonius</i>	Toad Rush	1.0	0.28
<i>Juncus phaeocephalus</i>	Brownhead Rush	1.0	0.28
<i>Oenothera elata</i>	Evening Primrose	2.0	0.56

Botanical Name	Common Name	Pure Live Seed (lb / acre)	Pure Live Seed (lbs)
Total			4.76

Upland and Transition Zone¹ Seeding

Seed in the upland and transition zone areas was applied by hydroseed. Species include all those proposed in the HMMP except for purple owl's clover (*Castilleja exserta*) which was not available at the time of construction. All remaining seed quantities matched those in the HMMP with the exception of *Baccharis pilularis* which was applied at a lower quantity. It was determined that this reduction in seed would not affect the overall establishment of upland vegetation cover. Seed was mixed with water, mulch and tackifier and sprayed with a hydroseeder. Composition and quantity of seed mix is provided in Table 4.

Table 4. Upland/Transition Zone Seed Mix

Botanical Name	Species Name	Pure Live Seed (lb / acre)	Pure Live Seed (lbs)
<i>Baccharis pilularis</i>	Coyote Brush	0.15	1.5
<i>Bromus carinatus</i>	California Brome	3.0	30.0
<i>Danthonia californica</i>	California Oatgrass	3.0	30.0
<i>Elymus glaucus</i>	Blue Wildrye	6.0	60.0
<i>Eschscholzia californica</i>	California Poppy	4.0	40.0
<i>Festuca microstachys</i>	Three Weeks Fescue	6.0	60.0
<i>Hordeum brachyantherum</i>	Meadow Barley	8.0	80.0
<i>Sisyrinchium bellum</i>	Blue-eyed Grass	3.0	30.0
<i>Stipa pulchra</i>	Purple Needlegrass	4.0	40.0
Total			371.5

Fencing, Gates, Seating and Signage

A 5-foot tall welded wire fence was installed per the Construction Plans along both sides of the relocated trail within the project area. Several maintenance access gates were installed along the fence. In addition to providing a compacted surface for the relocated trail as shown in the Construction Plans, a layer of aggregate base was added to the trail. BCDC wayfinding and regulatory signage was also installed at each end of the relocated trail as well as several other areas along the existing trail outside the project area per the Construction Documents. In addition, 2 interpretive panel frames and 4 concrete benches were installed per the Construction Drawings. Design of the interpretive panels has been approved by BCDC and are currently being fabricated. Installation will occur in Spring 2021.

1. Transition Zone was planted with container plants as well as hydroseeded.

Summary and Conclusion

The as-built conditions of the project are consistent with the design intent of the Construction Plans and meet the requirements described in the HMMP and resource agency permits.

Performance monitoring will be conducted in Fall 2021 at the end of the first full growing season following construction, and the first year's Annual Report will be submitted by January 31 after first full growing season and associated performance monitoring activities have been completed. Subsequent Annual reports will be submitted by January 31st of the following year as described in the HMMP. Each annual report will include a summary of each year's monitoring results in relation to established performance standards, photographs, maps to identify plots and habitat boundaries, and any recommendations for actions needed to meet final performance standards.

If you have any questions regarding this submittal, please do not hesitate to contact me at 510.717.2731 or by email at morken@wra-ca.com

Respectfully Submitted,



Ingrid C. Morken

Attachments: Attachment A – As-Built Drawing
Attachment B – As-Built Drone Aerial Contour Plan
Attachment C – Photo Points Plan
Attachment D – Site Photographs

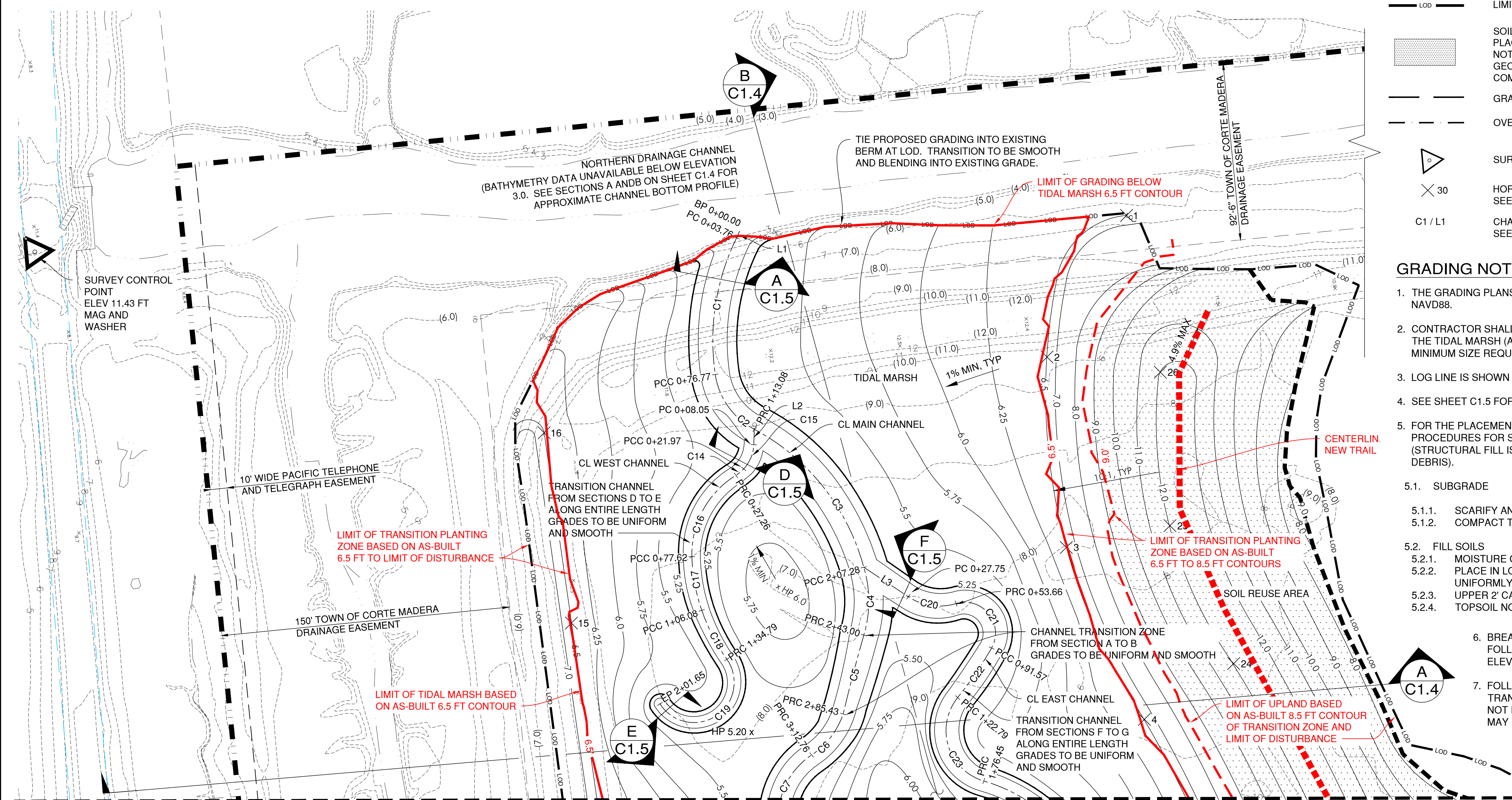
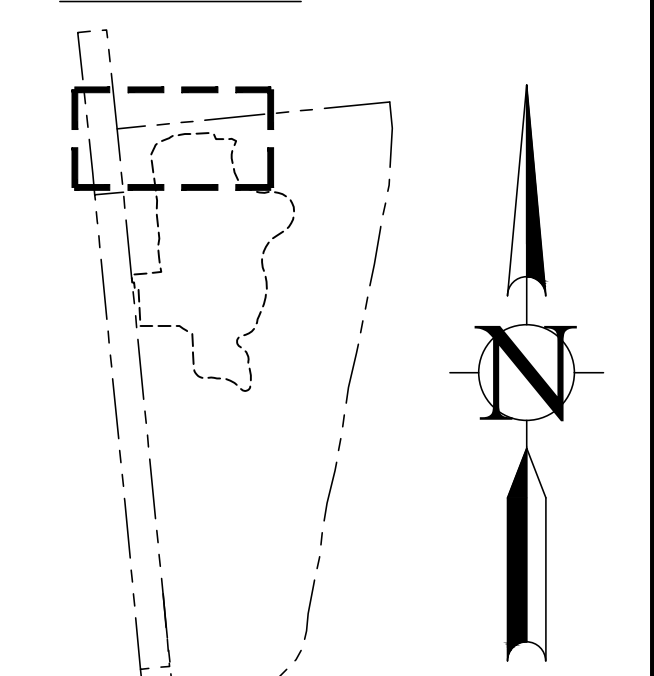
Copy to: John Eberle, Golden Gate Bridge, Highway and Transportation District
Lynford Edwards, Golden Gate Bridge, Highway and Transportation District

ATTACHMENT A

LEGEND:

- PROPERTY LINE
- EXISTING EASEMENT
- EXISTING CONTOUR (9.0)
- PROPOSED CONTOUR (9.0)
- CHANNEL CENTERLINE
- LIMIT OF GRADE
- LIMIT OF DISTURBANCE
- SOIL REUSE AREA FILL PLACEMENT (SEE GRADING NOTES, SPECIFICATIONS AND GEOTECH REPORT FOR COMPACTION REQUIREMENTS)
- GRADING MODIFICATION AREA
- OVER EXCAVATION AREA
- SURVEY CONTROL POINT
- HORIZONTAL CONTROL POINT SEE SHEET C1.6
- C1 / L1 CHANNEL CENTERLINE CURVE OR LINE SEE SHEET C1.6

KEY MAP



GRADING NOTES

1. THE GRADING PLANS INDICATE FINISHED GRADE ELEVATIONS. ELEVATIONS GIVEN IN NAVD88.
2. CONTRACTOR SHALL DEMONSTRATE THAT THE AREA WITHIN THE BOUNDARY OF THE TIDAL MARSH (AREA WITHIN LOD BELOW ELEVATION 6.5' NAVD88) MEETS THE MINIMUM SIZE REQUIREMENT OF 4.3 ACRES.
3. LOG LINE IS SHOWN EXCEPT WHERE IT OVERLAPS THE LOD.
4. SEE SHEET C1.5 FOR MAIN, WEST AND EAST CHANNEL PROFILES
5. FOR THE PLACEMENT OF FILL IN SOIL REUSE AREA FOLLOW THE BELOW PROCEDURES FOR STRUCTURAL FILL AS DESCRIBED IN THE GEOTECHNICAL REPORT (STRUCTURAL FILL IS DEFINED AS SITE SOIL WITHOUT ORGANIC MATERIAL OR DEBRIS).
 - 5.1. SUBGRADE
 - 5.1.1. SCARIFY AND MOISTURE CONDITION TO WITHIN 2% OPTIMUM CONTENT
 - 5.1.2. COMPACT TO 90% RELATIVE COMPACTION.
 - 5.2. FILL SOILS
 - 5.2.1. MOISTURE CONDITION TO WITHIN 2% OPTIMUM CONTENT
 - 5.2.2. PLACE IN LOOSE HORIZONTAL LIFTS OF 8 INCHES THICK OR LESS AND UNIFORMLY COMPACT TO AT LEAST 90% RELATIVE COMPACTION.
 - 5.2.3. UPPER 2' CAN BE REDUCED TO 85% RELATIVE COMPACTION
 - 5.2.4. TOPSOIL NOT SUITABLE FOR USE AS STRUCTURAL FILL
6. BREACH OF EXISTING BERM AT DRAINAGE CHANNEL TO OCCUR FOLLOWING GRADING OF TIDAL MARSH (ALL PROPOSED ELEVATIONS BELOW 6.5' NAVD88).
7. FOLLOWING ROUGH GRADING, PLACE TOPSOIL IN SOIL REUSE AREA, TRANSITION PLANTING ZONE AND NEW SEASONAL WETLAND. DO NOT PLACE TOPSOIL IN TIDAL MARSH AREA. ANY EXCESS TOPSOIL MAY BE PLACED IN SOIL REUSE AREA.
8. NO VEHICULAR ACCESS SHALL BE PERMITTED IN AREAS OF FINISHED GRADING AFTER FINAL QUALITY ASSURANCE AND ACCEPTANCE BY THE ENGINEER.

PLAN
SCALE: 1" = 30'

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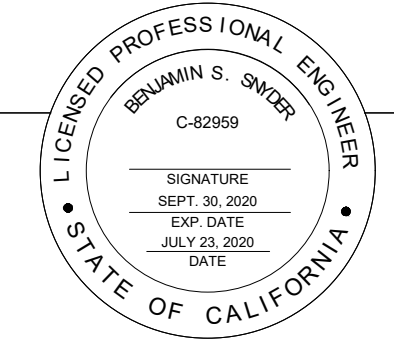


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DETAILS	BY RP	CHECKED IM/BS
QUANTITIES	BY RP	CHECKED IM/BS

RUSSELL PRANGE
PROJECT LANDSCAPE ARCHITECT



BEN SNYDER
REGISTERED CIVIL ENGINEER
23 JULY 2020
PLANS APPROVAL DATE



NO. REVISIONS	BY	DATE
CONTRACT NO.: 2020-F-035	DRAWING NO. C1.1	DATE
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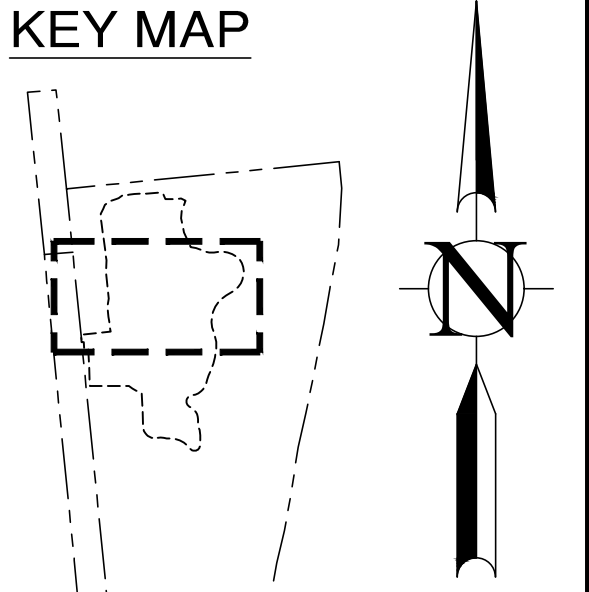
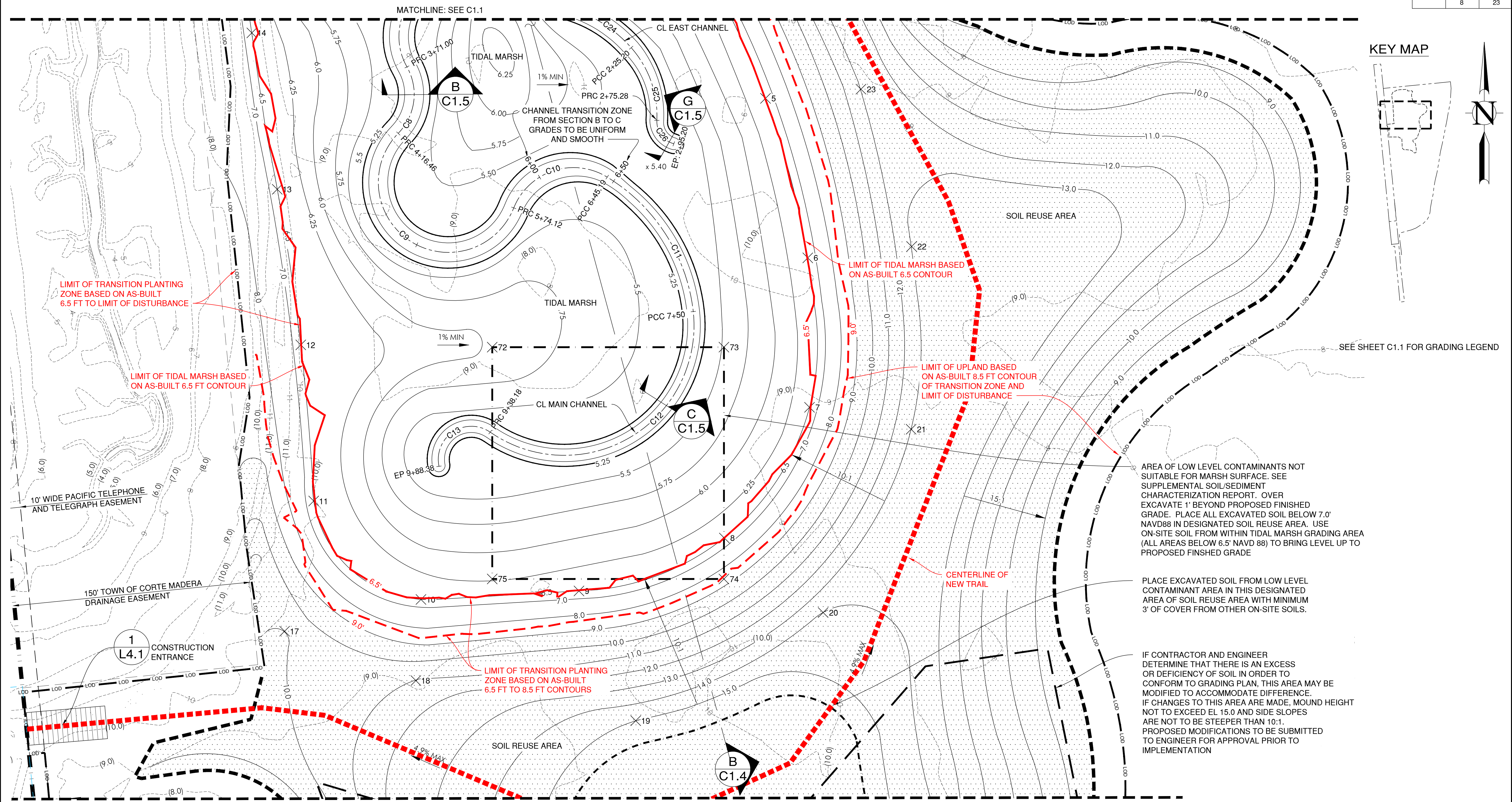
APPROVED BY
DISTRICT ENGINEER

PROJECT TITLE
CORTE MADERA 4-ACRE TIDAL MARSH RESTORATION PROJECT

SHEET TITLE
AS-BUILT GRADING PLAN 1 OF 3

SCALE: 1" = 30' DATE: 15 MARCH 2021





SEE SHEET C1.1 FOR GRADING LEGEND

AREA OF LOW LEVEL CONTAMINANTS NOT SUITABLE FOR MARSH SURFACE. SEE SUPPLEMENTAL SOIL/SEDIMENT CHARACTERIZATION REPORT. OVER EXCAVATE 1' BEYOND PROPOSED FINISHED GRADE. PLACE ALL EXCAVATED SOIL BELOW 7.0' NAVD88 IN DESIGNATED SOIL REUSE AREA. USE ON-SITE SOIL FROM WITHIN TIDAL MARSH GRADING AREA (ALL AREAS BELOW 6.5' NAVD 88) TO BRING LEVEL UP TO PROPOSED FINISHED GRADE

PLACE EXCAVATED SOIL FROM LOW LEVEL CONTAMINANT AREA IN THIS DESIGNATED AREA OF SOIL REUSE AREA WITH MINIMUM 3' OF COVER FROM OTHER ON-SITE SOILS.

IF CONTRACTOR AND ENGINEER DETERMINE THAT THERE IS AN EXCESS OR DEFICIENCY OF SOIL IN ORDER TO CONFORM TO GRADING PLAN, THIS AREA MAY BE MODIFIED TO ACCOMMODATE DIFFERENCE. IF CHANGES TO THIS AREA ARE MADE, MOUND HEIGHT NOT TO EXCEED EL 15.0 AND SIDE SLOPES ARE NOT TO BE STEEPER THAN 10:1. PROPOSED MODIFICATIONS TO BE SUBMITTED TO ENGINEER FOR APPROVAL PRIOR TO IMPLEMENTATION

PLAN
SCALE: 1" = 30'

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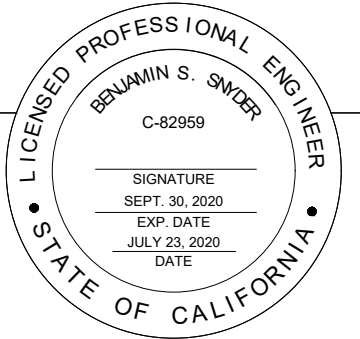


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RUSSELL PRANGE
PROJECT LANDSCAPE ARCHITECT



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REGISTERED CIVIL ENGINEER
23 JULY 2020
PLANS APPROVAL DATE



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APPROVED BY
DISTRICT ENGINEER
DATE

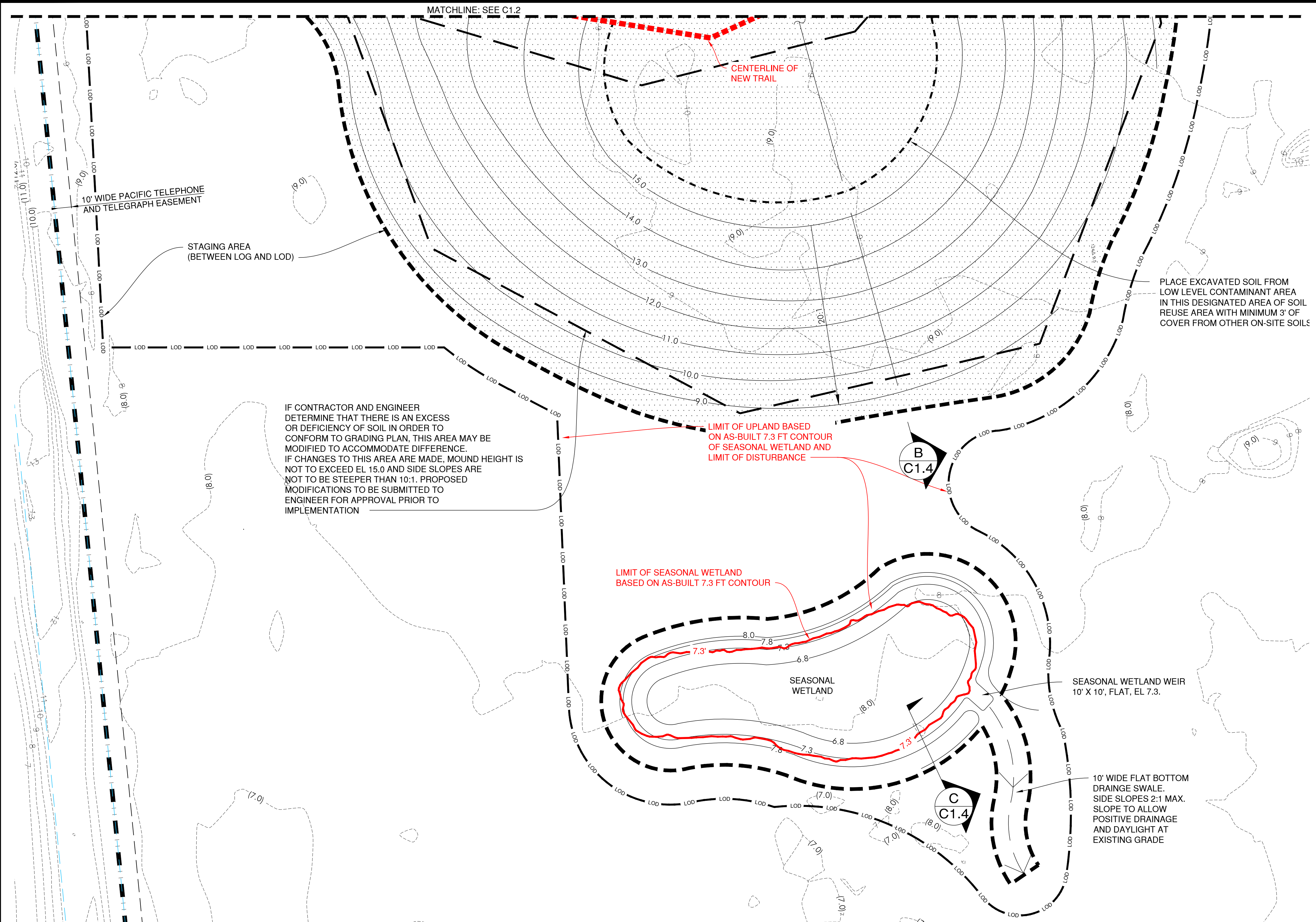
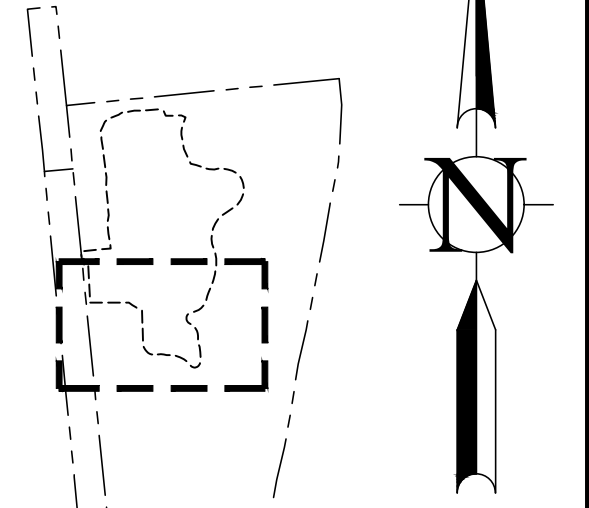
PROJECT TITLE
CORTE MADERA 4-ACRE TIDAL MARSH RESTORATION PROJECT

SHEET TITLE
AS-BUILT GRADING PLAN 2 OF 3

SCALE: 1" = 30' DATE: 15 MARCH 2021

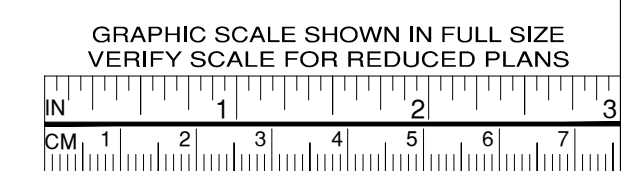


KEY MAP



PLAN

SCALE: 1" = 30'

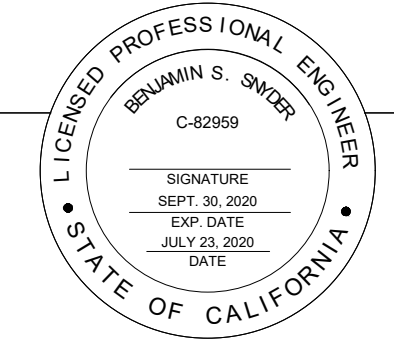


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QUANTITIES	BY RP	CHECKED IM/BS

RUSSELL PRANGE
PROJECT LANDSCAPE ARCHITECT



BEN SNYDER
REGISTERED CIVIL ENGINEER
23 JULY 2020
PLANS APPROVAL DATE



NO. REVISIONS	BY	DATE
CONTRACT NO.: 2020-F-035	DRAWING NO.	C1.3
CADD FILE: 9-23294-C1.3_GRADE_CHECK.DWG	DATE	

APPROVED BY

DISTRICT ENGINEER

PROJECT TITLE
CORTE MADERA 4-ACRE TIDAL MARSH RESTORATION PROJECT

SHEET TITLE
AS-BUILT GRADING PLAN
3 OF 3

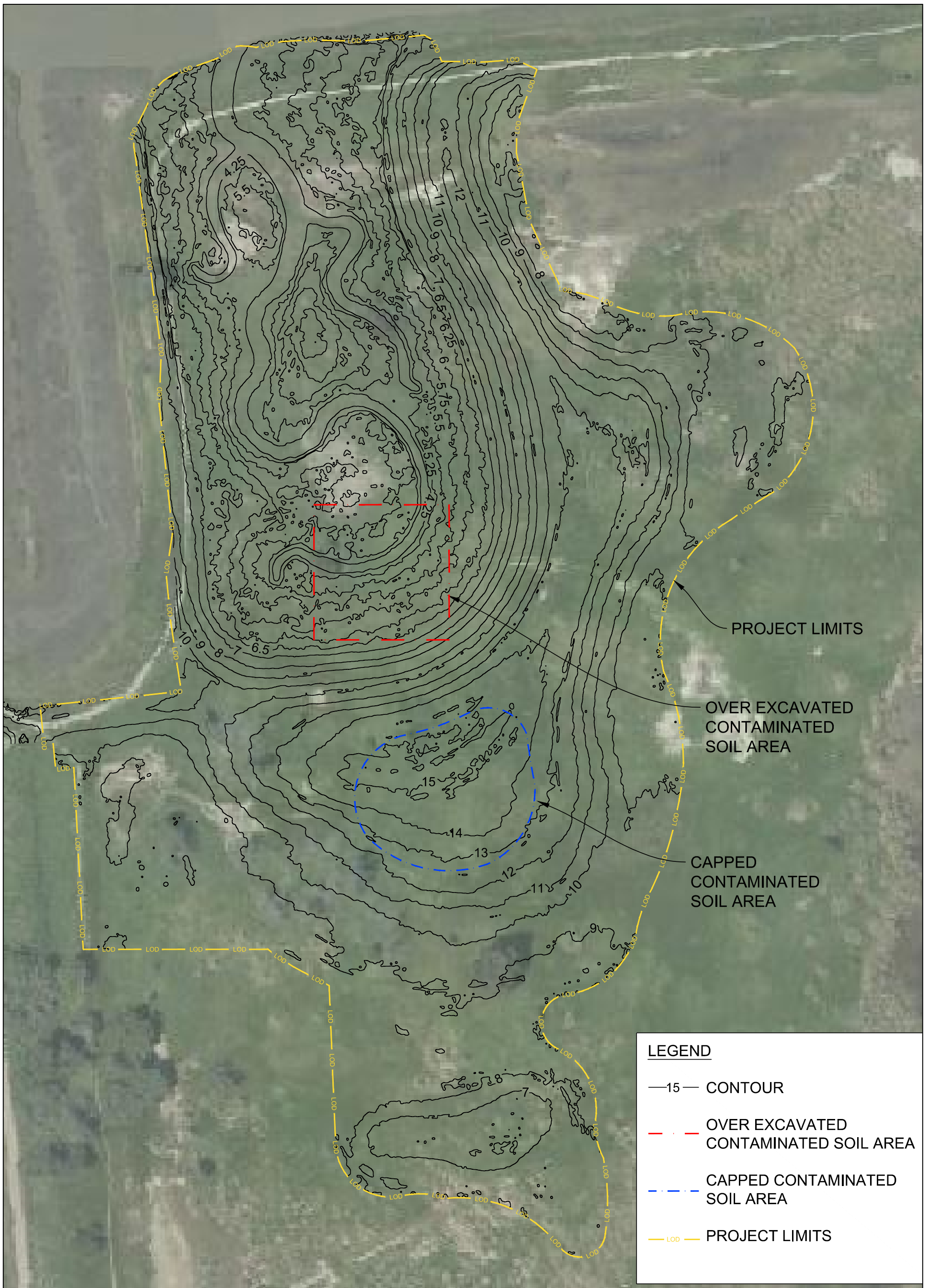
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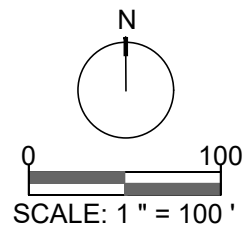
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ATTACHMENT B



As-Built Aerial Drone Contour Data

Corta Madera Marsh
Corte Madera, CA



Date: April 2021
Figure By: RFP

ATTACHMENT C

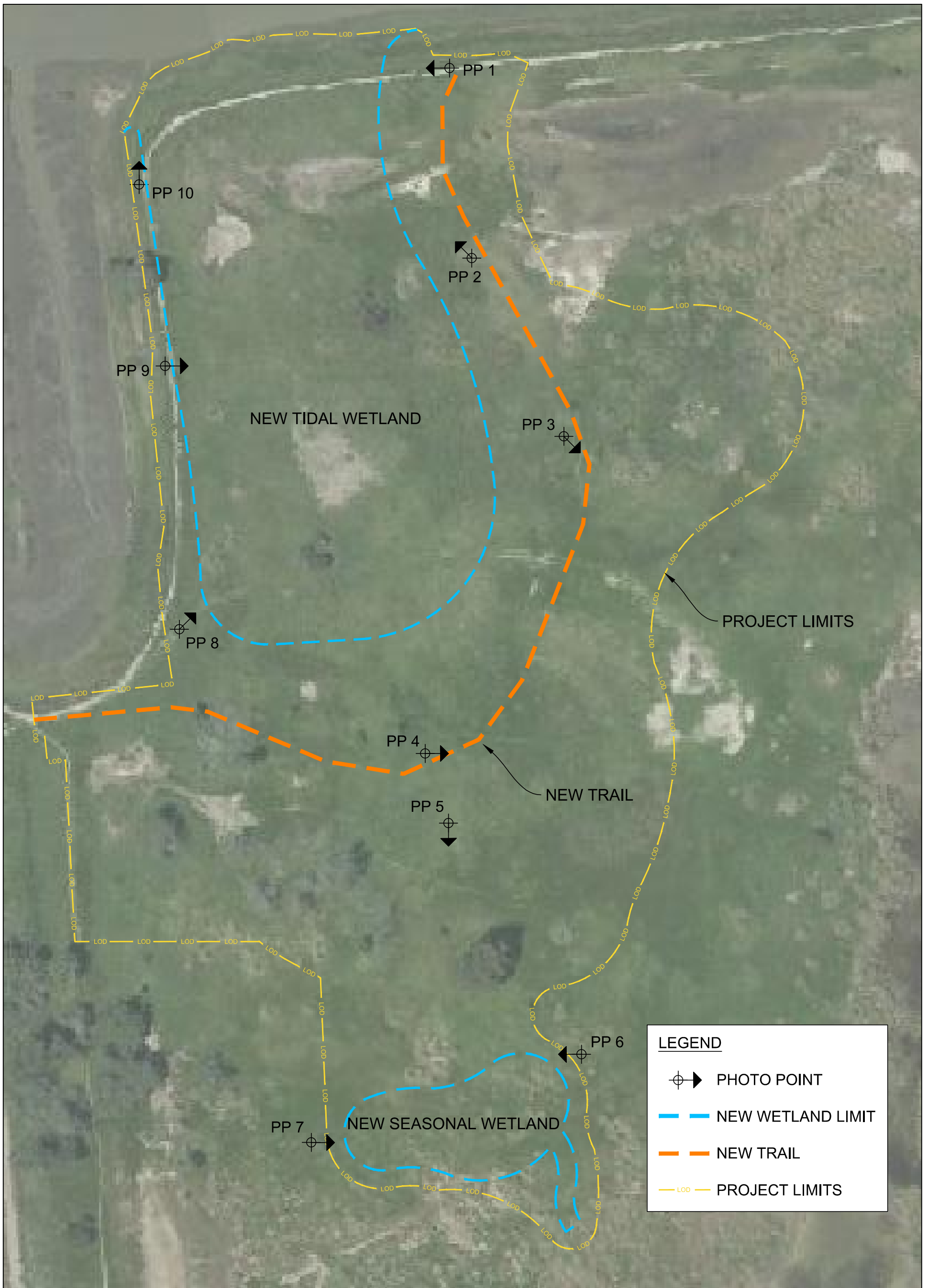
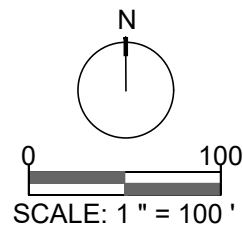


Photo Points

Corta Madera Marsh
Corte Madera, CA



LEGEND	
	PHOTO POINT
	NEW WETLAND LIMIT
	NEW TRAIL
	PROJECT LIMITS



Date: April 2021
Figure By: RFP

ATTACHMENT D



Pre-construction Photo Point 1: View of trail and northern berm, facing west. Photo taken October 24, 2020.



Post-construction Photo Point 1: View of new transition zone and tidal marsh, facing west. Photo taken February 12, 2021.



Pre-construction Photo Point 2: View of upland with seasonal wetland in background, facing northwest. Photo taken October 24, 2020.



Post-construction Photo Point 2: View of new transition zone and tidal marsh, facing northwest. Photo taken February 12, 2021.



Pre-construction Photo Point 3: View of upland, facing southeast. Photo taken October 24, 2020.



Post-construction Photo Point 3: View of new trail and exclusion fence, facing southeast. Photo taken February 12, 2021.



Pre-construction Photo Point 4: View of upland facing west. Photo taken October 24, 2020.



Post-construction Photo Point 4: View of new transition zone and tidal marsh, facing west. Photo taken February 12, 2021.



Pre-construction Photo Point 5: View of upland, facing south. Photo taken October 24, 2020.



Post-construction Photo Point 5: View of new upland disposal area with seasonal wetland in background, facing south. Photo taken February 12, 2021.



Pre-construction Photo Point 6: View of upland, facing west. Photo taken October 24, 2020.



Post-construction Photo Point 6: View of new seasonal wetland, facing west. Photo taken February 12, 2021.



Pre-construction Photo Point 7: View of upland, facing east. Photo taken October 24, 2020.



Post-construction Photo Point 7: View of new seasonal wetland, facing east. Photo taken February 12, 2021.



Pre-construction Photo Point 8: View of upland, facing northeast. Photo taken October 24, 2020.



Post-construction Photo Point 8: View of new transition zone and tidal marsh, facing northeast. Photo taken February 12, 2021.



Pre-construction Photo Point 9: View upland, facing east. Photo taken October 24, 2020.



Post-construction Photo Point 9: View of new tidal marsh, facing east. Photo taken February 12, 2021.



Pre-construction Photo Point 10: View of trail, berm and adjacent marsh, facing north. Photo taken October 24, 2020.



Post-construction Photo Point 10: View of new tidal wetland and adjacent previously existing marsh, facing north. Photo taken February 12, 2021.