Cullinan Ranch Restoration Project Update

Napa-Sonoma Marshes Restoration Group
November 28, 2018

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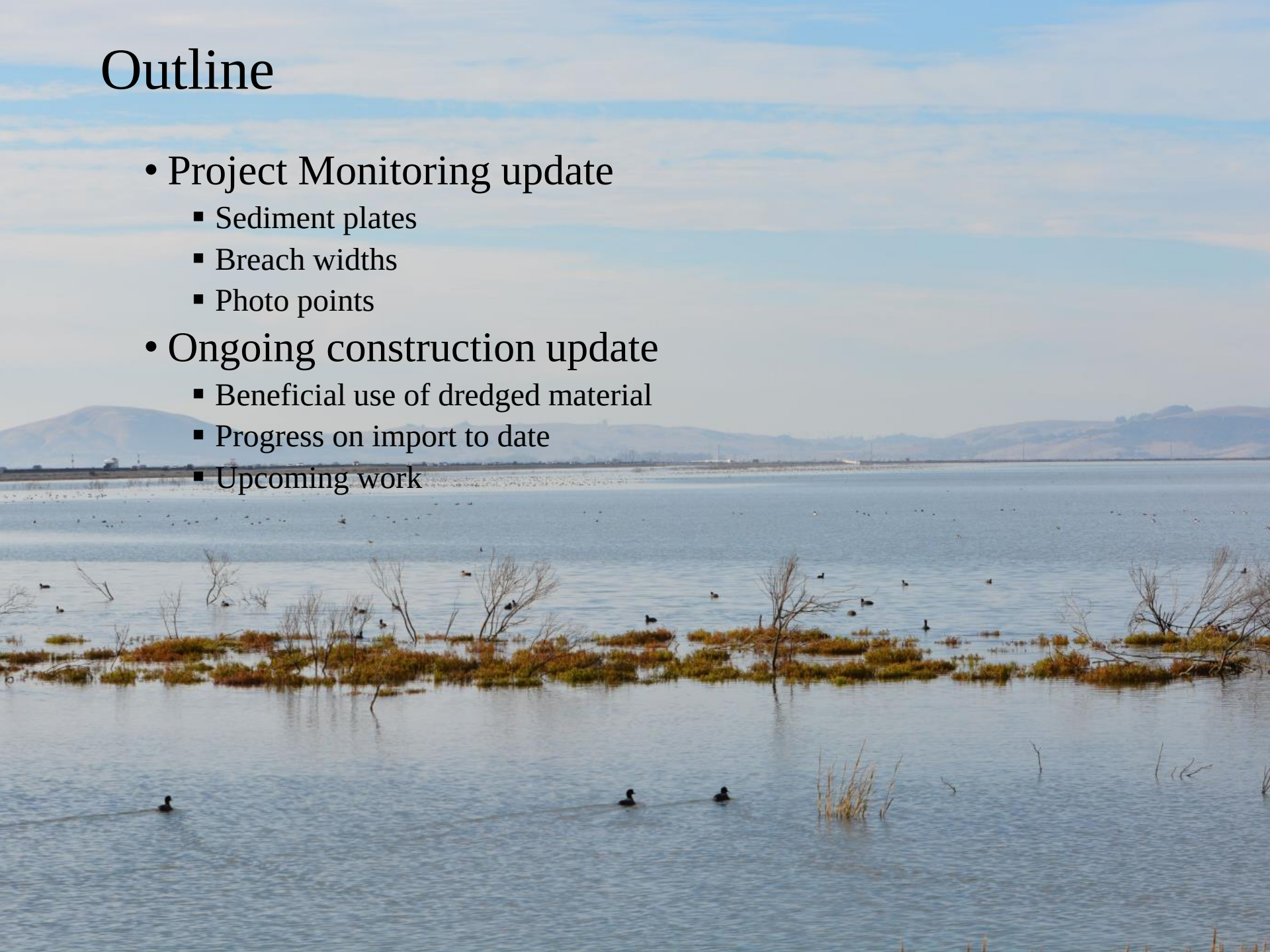
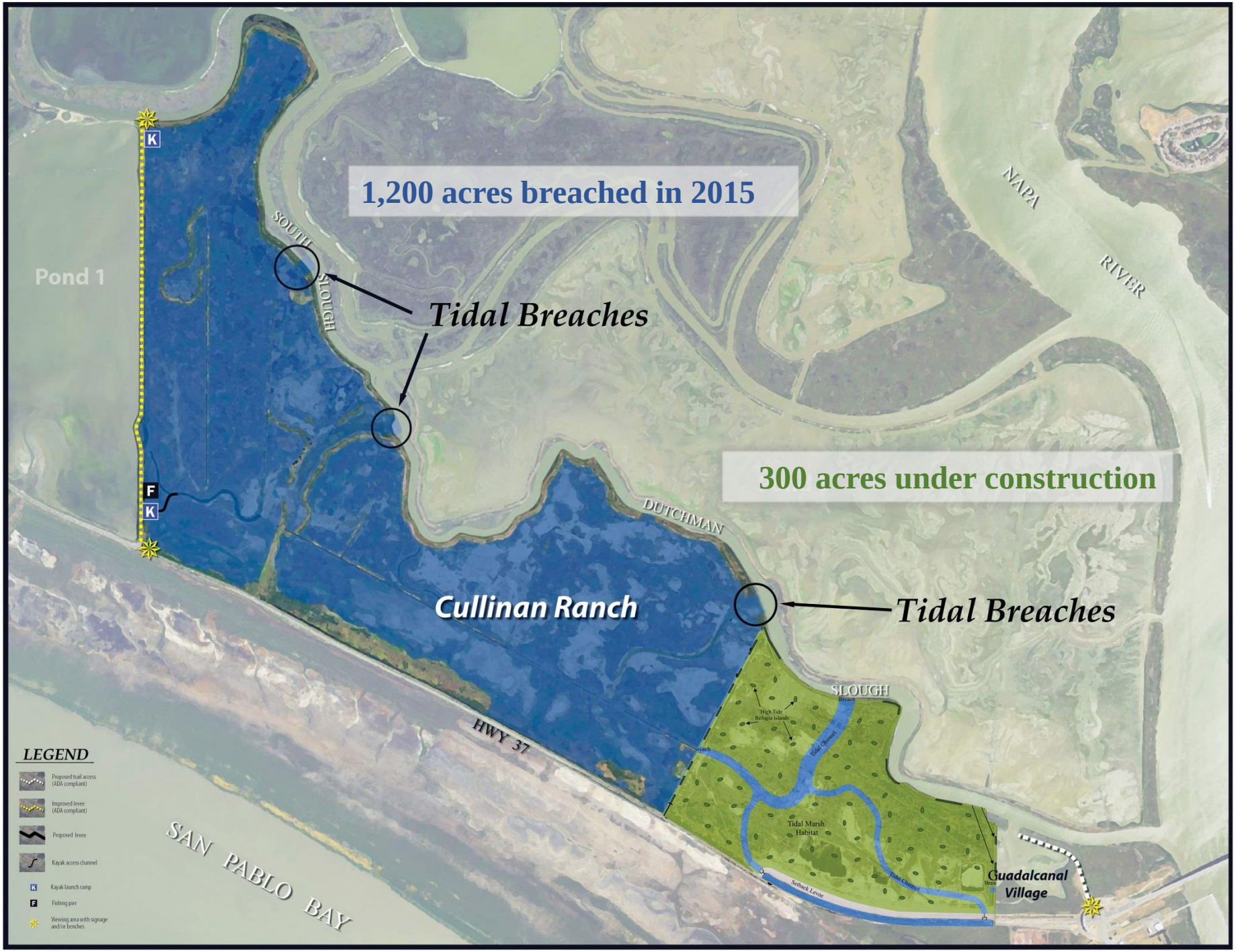
Outline

- Project Monitoring update
  - Sediment plates
  - Breach widths
  - Photo points
- Ongoing construction update
  - Beneficial use of dredged material
  - Progress on import to date
  - Upcoming work



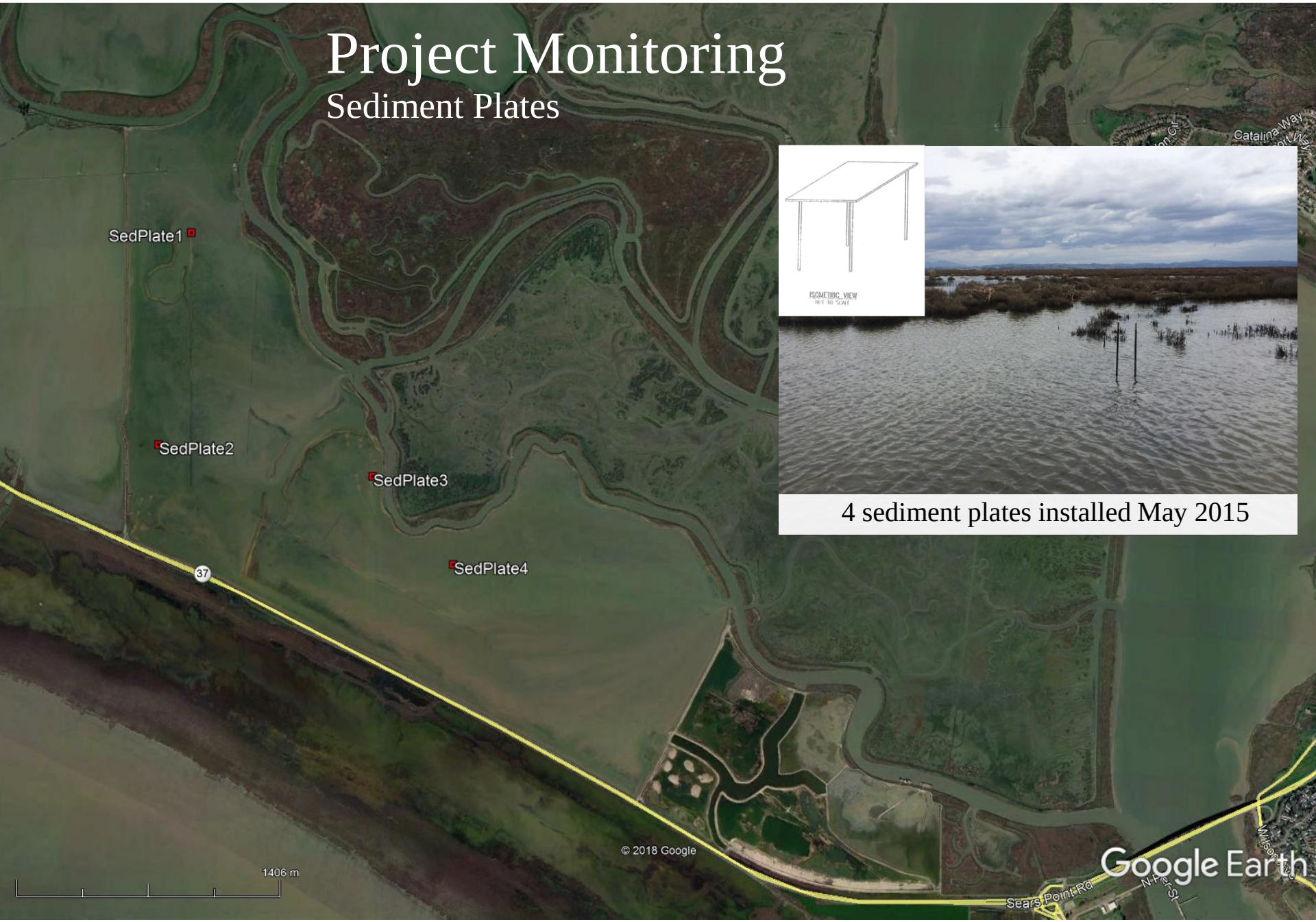
Low tide - April 17, 2018

February 2018 imagery


1,200 acres breached in 2015
Pond 1
SOUTH SLOUGH
Tidal Breaches
NAPA RIVER
300 acres under construction
DUTCHMAN
Cullinan Ranch
Tidal Breaches
SLOUGH
HWY 37
SAN PABLO BAY
Guadalcanal Village
LEGEND
Proposed trail access (ADA compliant)
Improved levee (ADA compliant)
Proposed levee
Kayak access channel
Kayak launch ramp
Fishing pier
Viewing area with signage and/or benches

Project Monitoring

Sediment Plates



4 sediment plates installed May 2015

Project Monitoring
Sediment Plates

- Field method for data collection: survey stake lowered to plate, mud line measured
- Varied across site: 3-13 cm over 2 year period

Plate #	Fixed Plate Elevation	May 2017 average sediment depth (in)
1	1.2’ NAVD 88	5.1”
2	0.57’ NAVD 88	1.1”
3	0.59’ NAVD 88	2.6”
4	-0.34’ NAVD 88	2.4”

Project Monitoring

Breaches

Project Monitoring
Breaches

- 3 constructed breaches have widened between 10-26 feet over two years
- Overtopping & natural breaching also along lowered sections of levee

Breach	May 2015 Width (ft)	May 2017 Width (ft)
Pole Barn Breach	121’	147’
Blue Goose Breach	120’	140’
Canvasback Breach	74’	84’

King tide - Jan 11, 2017

Lowered levee section

Project Monitoring

Photo points

Photo Point 1

Photo Point 2

Photo Point 3

Photo Point 4

Ongoing construction – 300 acres

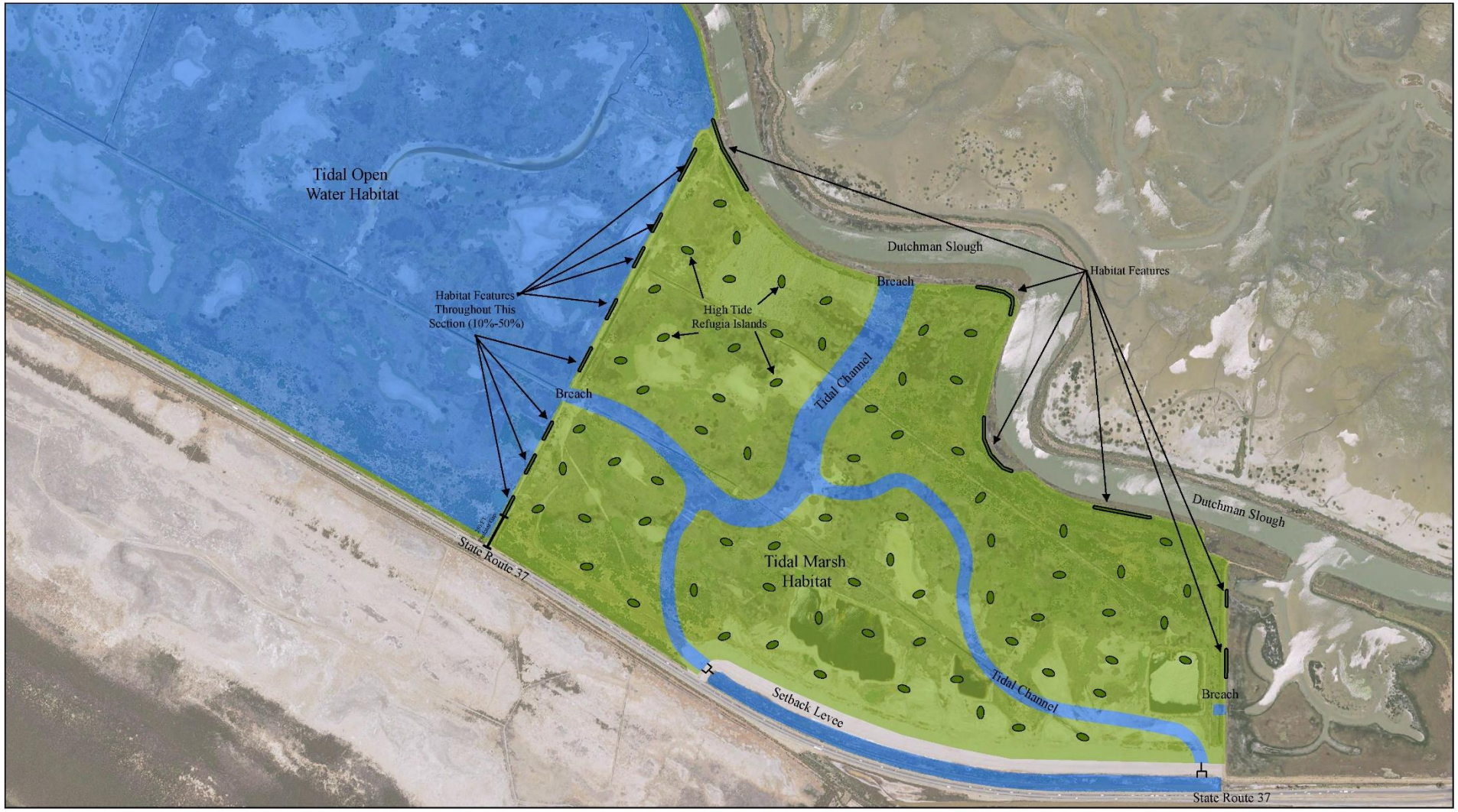


Figure 2. Cullinan Ranch Conceptual Post Construction Habitat Map

Aerial photo: 2014 NAIP 1 Meter Color Orthophotography

Project location: Sections 4, 9 & 10, T3N, R4W, Solano County, CA

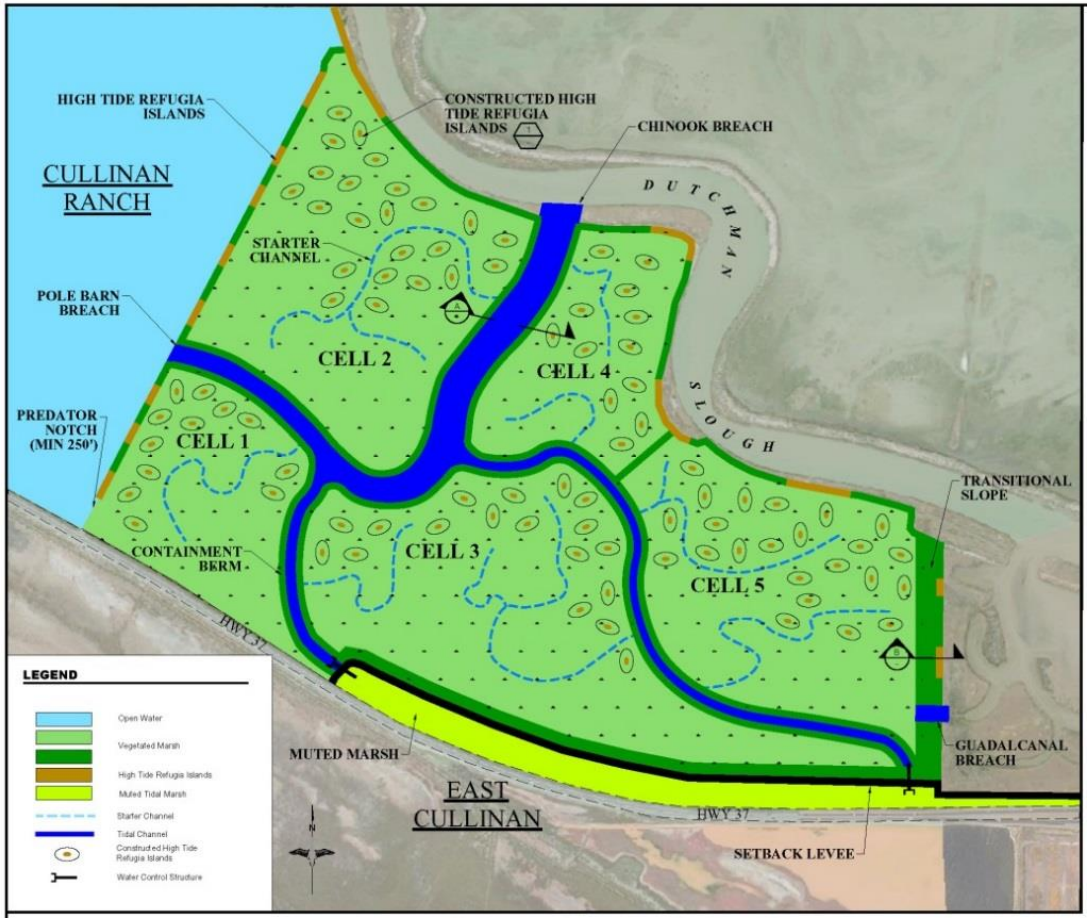
N

0 500 1,000 Feet

Ongoing construction

Beneficial Use of Dredged Material

- 5 cells and interior channel
- **Water control structures**: 1 tidal intake and 7 cell to cell structures
- **Goal:** Raise cell elevation approx. 6 feet with dredge material (~3,000,000 cubic yards total)
- Additional habitat features: high tide refugia islands and mounds along channels
- 3 external breaches when completed

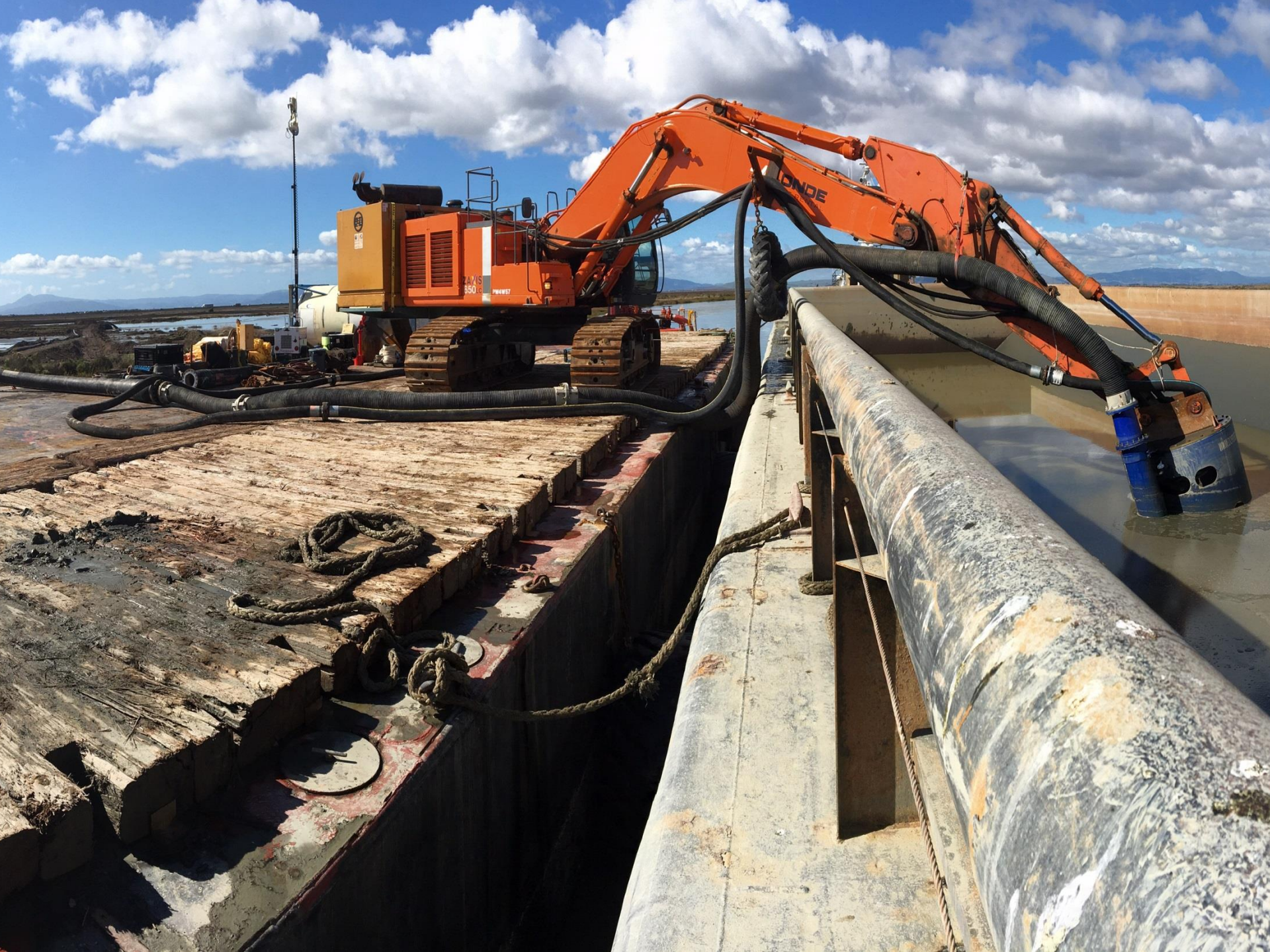


Ongoing construction

Beneficial Use of Dredged Material

LindMarine

LindMarine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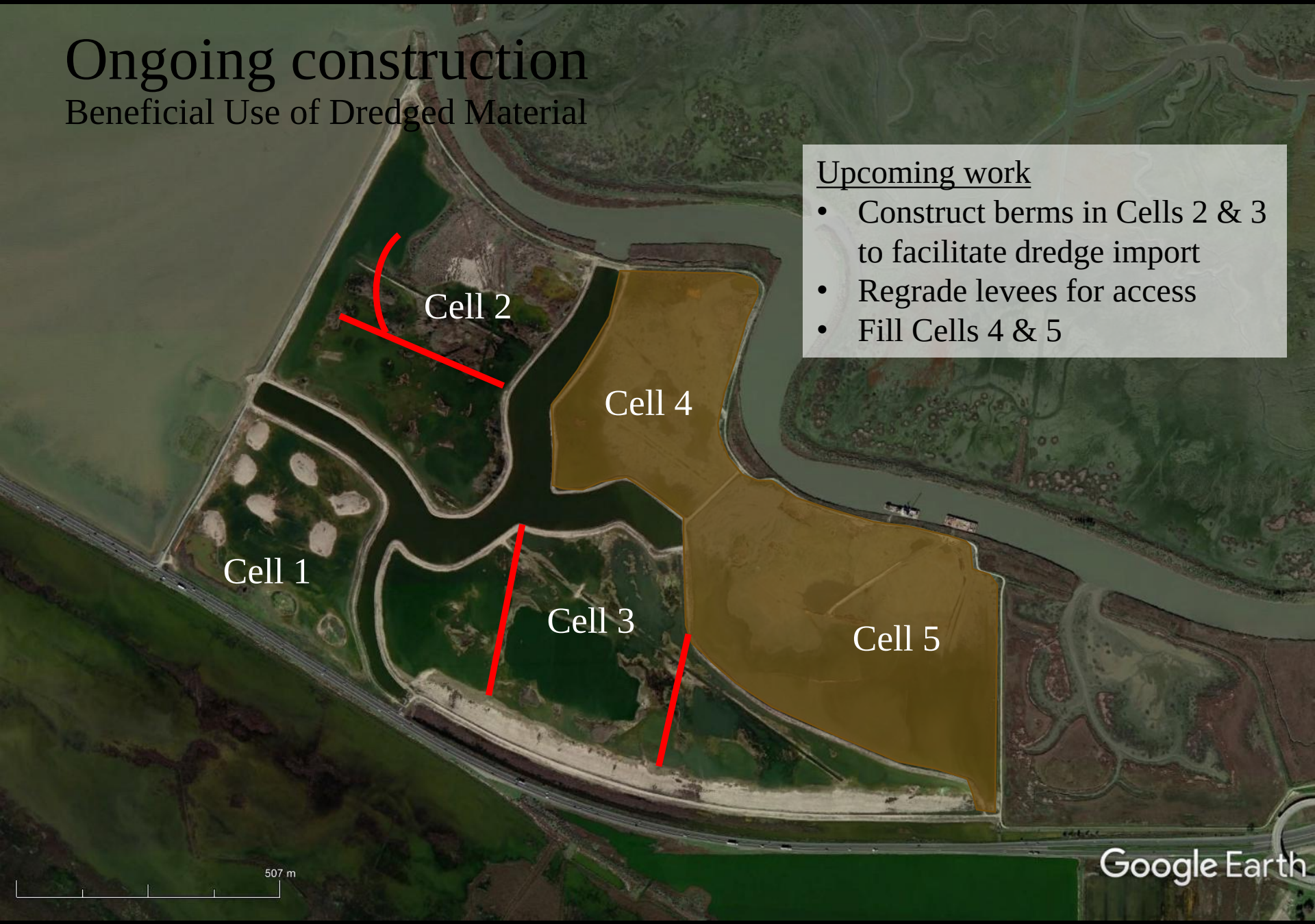
Ongoing construction

Beneficial Use of Dredged Material

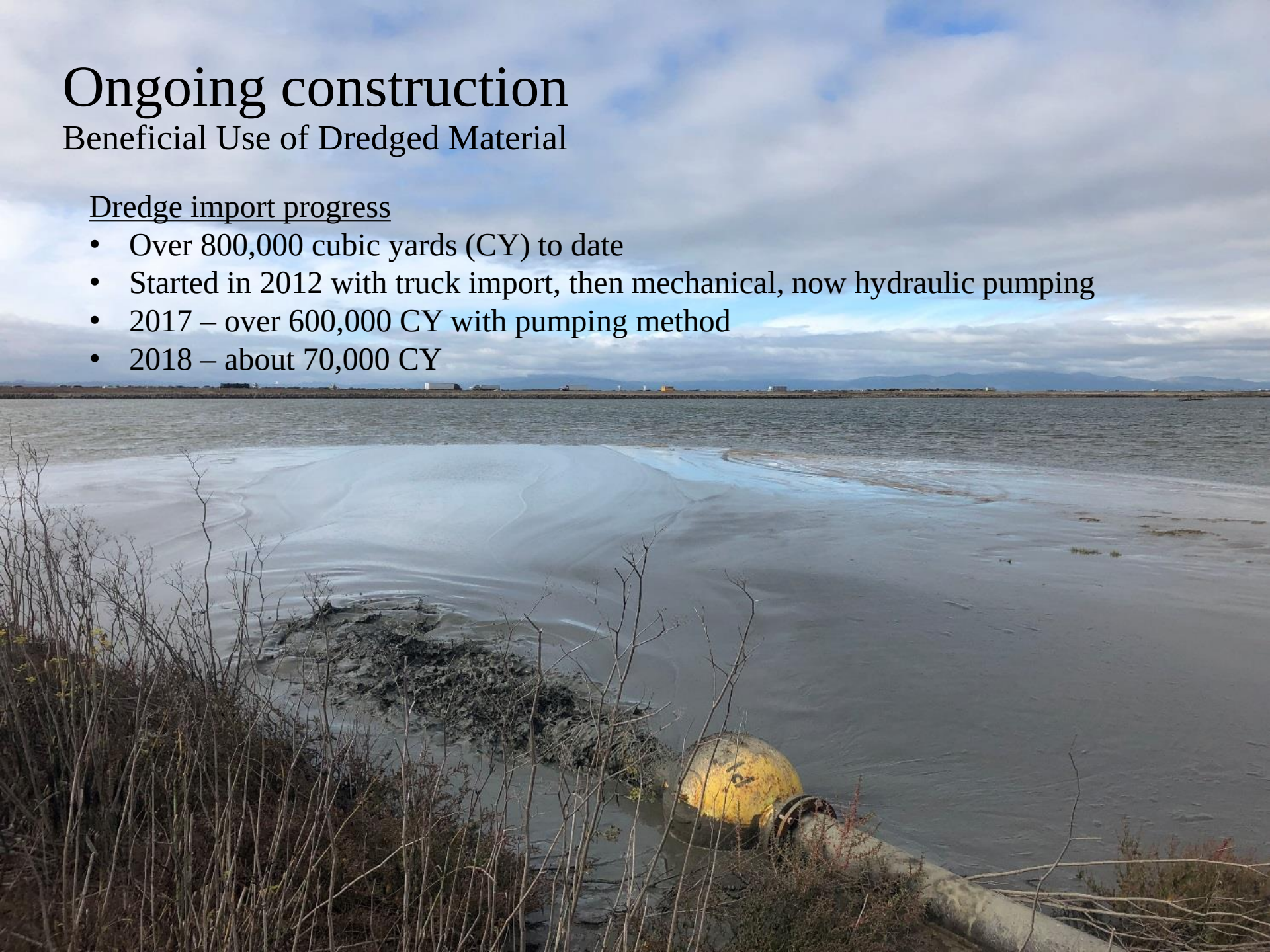


Upcoming work

- Construct berms in Cells 2 & 3 to facilitate dredge import
- Regrade levees for access
- Fill Cells 4 & 5

Ongoing construction

Beneficial Use of Dredged Material



Dredge import progress

- Over 800,000 cubic yards (CY) to date
- Started in 2012 with truck import, then mechanical, now hydraulic pumping
- 2017 – over 600,000 CY with pumping method
- 2018 – about 70,000 CY

Haire Ranch Restoration Project Update

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Bay Area Field Station

February 2018 imagery

Google Earth

Skaggs Island (including Haire)

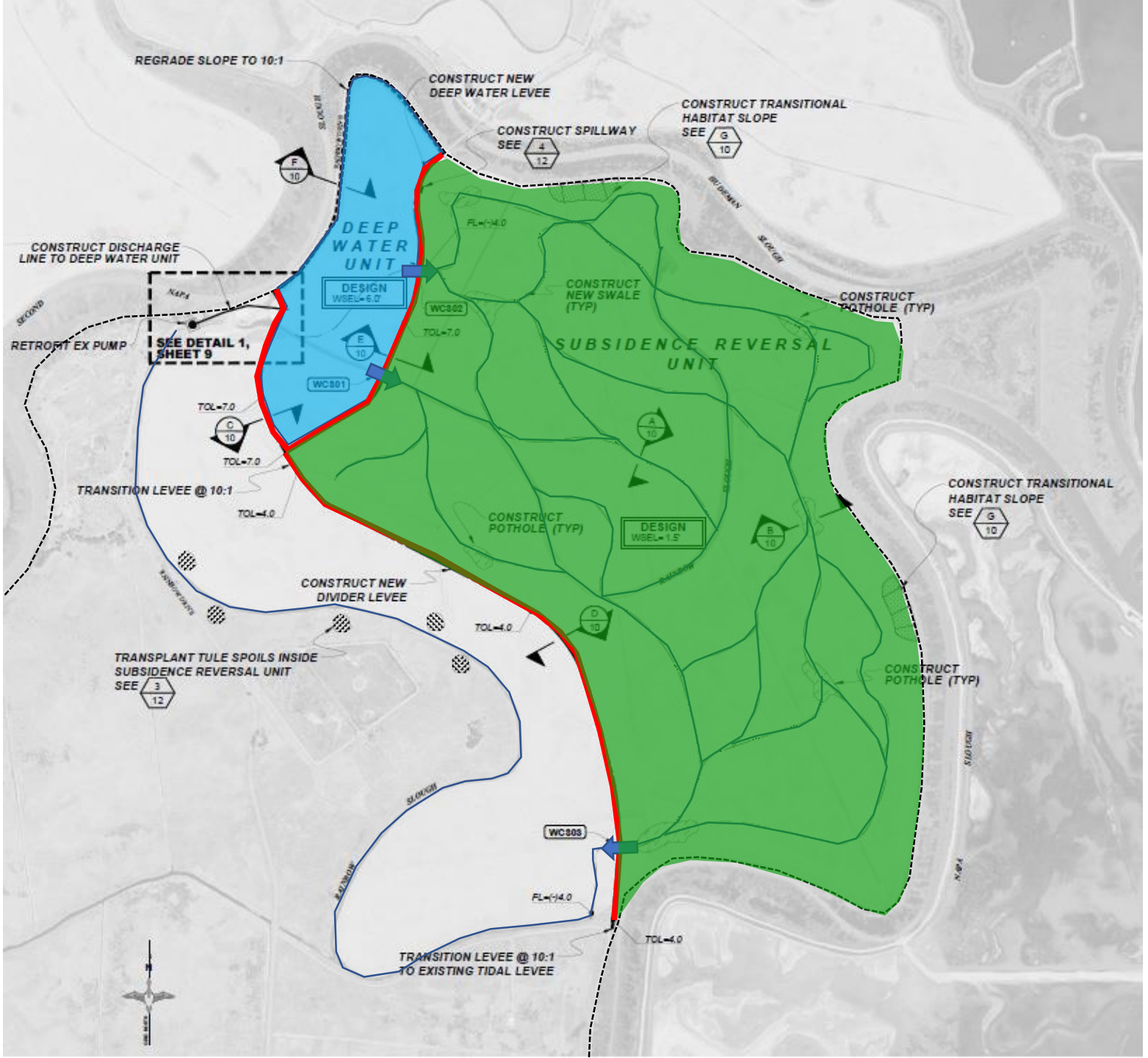
Major Challenges:

- **Subsidence & SLR**
- **Infrastructure**
- **VORTAC**
- **Haire Ranch**

Over 12 miles of levees, 3 bridges, but approximately 30-70 miles on the SF Bay Area!

NRCS Easement and obligation to restore 550 acres by 2018

Proximately 30-70 miles on the SF Bay Area!


REGRADE SLOPE TO 10:1
CONSTRUCT NEW DEEP WATER LEVEE
CONSTRUCT SPILLWAY SEE 4/12
CONSTRUCT TRANSITIONAL HABITAT SLOPE SEE G/10
CONSTRUCT DISCHARGE LINE TO DEEP WATER UNIT
DEEP WATER UNIT
DESIGN WSEL= 6.0'
SEE DETAIL 1, SHEET 9
RETROFIT EX PUMP
WC802
WC801
WC803
FL=(-)4.0
TOL=7.0
TOL=4.0
CONSTRUCT NEW SWALE (TYP)
CONSTRUCT POTHOLE (TYP)
SUBSIDENCE REVERSAL UNIT
DESIGN WSEL= 1.5'
TRANSITION LEVEE @ 10:1
CONSTRUCT NEW DIVIDER LEVEE
TRANSPLANT TULE SPOILS INSIDE SUBSIDENCE REVERSAL UNIT SEE 3/12
TRANSITION LEVEE @ 10:1 TO EXISTING TIDAL LEVEE
SLOUGH
N

CAT