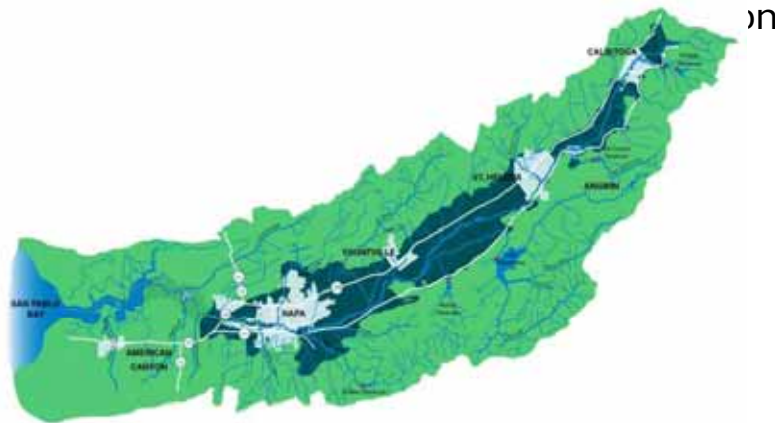


## Introduction

- ▶ US Army Corps of Engineers – Napa River/Napa Creek Flood Protection Project
- ▶ Located on the east bank of the Napa River south of the Imola Bridge
- ▶ Construction contract to JA Gallegos Construction
- ▶ Construction performed between May 2005 and October 2005

## Napa River Project Overview

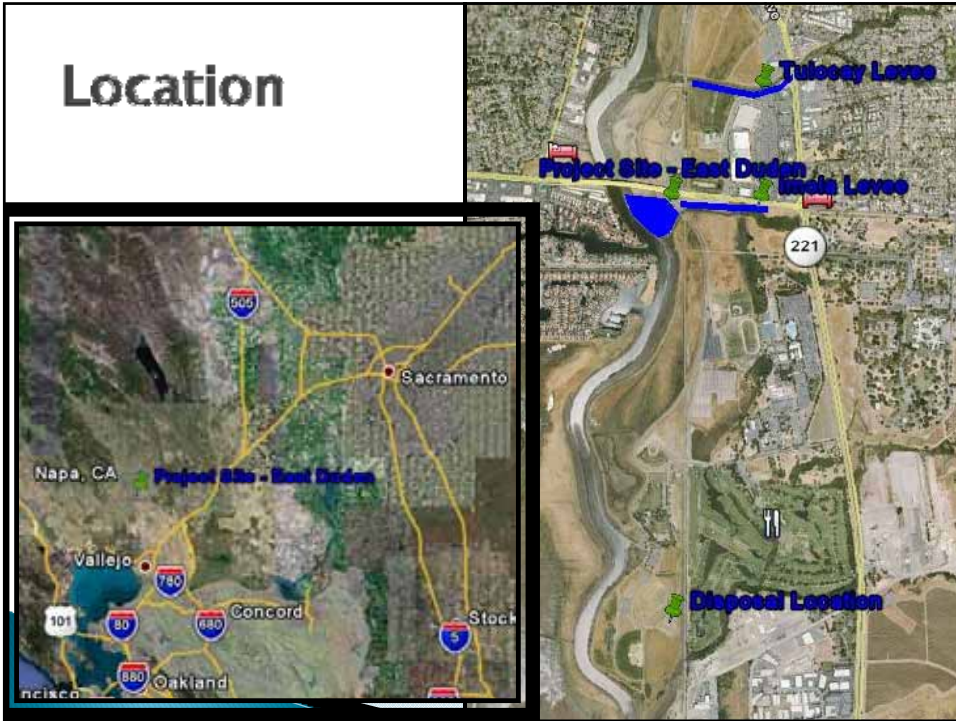


### Purpose

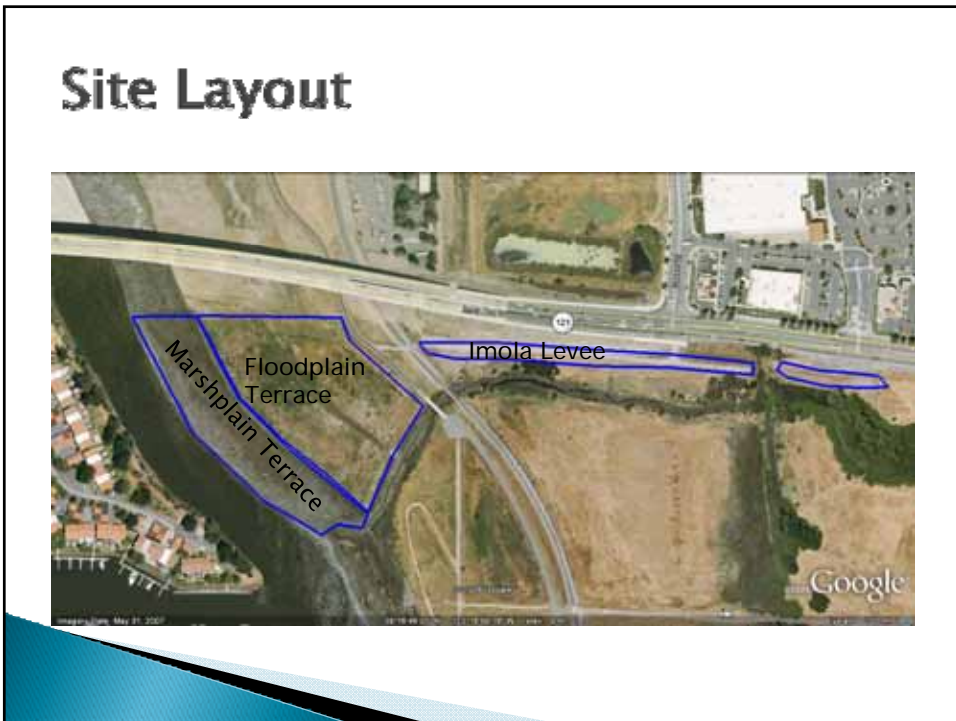
"The Napa River Flood Management Plan, built on a set of "living river" principles. Developed by an unprecedented countywide coalition ... the plan provides flood protection in part by reconnecting the Napa River to its historical floodplain and the restoring of over 600 acres of tidal wetlands." – Napa Flood and Water Conservation District website



# Location



# Site Layout



## Site History

The East Duden Property – south of Imola Avenue and north of Tulocay Creek along the Napa River – was filled in over a century for use as a restaurant, storage yard, and residence. Fill on the south end of the property over the tidal marshplains allowed for boat access to the restaurant. Fill on the north end of the property consisted primarily of concrete and asphalt construction debris.

## Project Summary

- ▶ Terraced excavation of tidally influenced Napa River marsh and floodplain, excavation and removal of contaminated materials, construction of levees
- ▶ By the numbers:
  - 96,000 CY excavation and removal from marshplain and floodplain
  - 2,300 linear feet of turbidity curtain
  - 1,450 linear feet of new levee
  - 1,800 linear feet of repairs to existing levees
  - 65,000 CY of soil screened to remove debris
  - 25,000 CY of crushed concrete debris

## Scope of Work

- ▶ Site preparations including creating site access
- ▶ Excavation and removal of contaminated material – petroleum hydrocarbons, mercury, and ACM
- ▶ Installation of turbidity curtain and daily water quality monitoring
- ▶ In-water excavation of marshplain to 0.0 NGVD
- ▶ Excavation floodplain and drainage swales
- ▶ Construction of Imola Levee, repairs to the Tulocay Levee
- ▶ Stockpiling and screening of excess material, crushing concrete debris to 6" minus
- ▶ Drill seeding and site restoration

## Schedule of Activities

- ▶ Remove Contaminated Material
- ▶ Installation of Turbidity Curtain
- ▶ Excavation of Marshplain / Construction of Imola Levee
- ▶ Excavation of Floodplain / Construction of Tulocay Levee
- ▶ Screening of Disposal Material – Crushing Concrete to six inch minus material
- ▶ Drill Seeding of floodplain

## Limitations

- ▶ No in-water work prior to June 15th
- ▶ In-water work complete NLT September 1<sup>st</sup>
- ▶ Site access across active railroad lines – daily coordination with railroad for construction shutdown during train operations
- ▶ No increase in turbidity of the Napa River
- ▶ Drill Seeding of floodplain between September 30<sup>th</sup> and November 1st

## Contaminated Material Removal



## Contaminated Material Removal

- ▶ Removed 20,000 Tons of contaminated material to a Class II Landfill
- ▶ Contaminants: Motor Oil, Heavy Metals
- ▶ Removed 750 Tons to Class I Landfill
- ▶ Contaminants: Lead and Asbestos
- ▶ Other Waste Streams: 450 CY of Green Waste recycled, 60 tons of metal recycled, 20 loads of wood debris recycled, 300 CY of general waste to Class III landfill

## Turbidity Curtain



## Daily Water Quality Monitoring



Testing upstream,  
at turbidity curtain,  
and downstream.  
Testing included:

- Turbidity
- Suspended solids
- pH
- Dissolved Oxygen
- Temperature
- Salinity

## In-Water Excavation



## In-Water Excavation

Utilized a dual-slope laser for excavator grade control. Allowed for rough control – plus or minus two tenths – of excavation while conducting mass excavation through tidally inundated areas.



## Marshplain Terracing



## Marshplain Terracing

Rough grade achieved while loading trucks – wet or dry. Fine grading (plus or minus two tenths) performed by smaller excavator working from oak mats. Both utilizing laser transmitter and receiver for grade control.



## Imola Avenue Levee – Inspection Trench



## Imola Avenue Levee

Imola Levee – 1450 linear feet of levee. 18,000 CY of fill from the marshplain excavation used for construction on the south side of Imola Avenue. Began with the excavation of an inspection trench to five feet in depth. Excavated and exposed two fiber optic and one sanitary sewer lines crossing trench alignment – encased in CLSM.



## Floodplain Terracing



## Floodplain Terracing

Eight acres of floodplain graded to plus or minus one tenth. Drainage swale running north to south drains into Tulocay Creek.



## Finishing



## Finishing



## Screening to Remove Concrete

Screened 60,000 CY of excess material from the site to remove asphalt, concrete, and other debris. Screened majority to three inch minus.



## Crushing Concrete Debris

Crushed 20,000 CY of concrete, rock, and asphalt debris screened from site soils to six inch minus material. Segregated out other waste streams – wood and metal were recycled, general waste to landfill.



## Seeding



## Final Product



## Challenges

- ▶ Excavation with tide / against tide without raising turbidity levels of the Napa River
- ▶ Trucking through Napa – heavy traffic during late summer
- ▶ Grade control on saturated bay mud
- ▶ Material segregation for different waste streams or reuse options
- ▶ Survey of marshplain

## Accomplishments

- ▶ No failing water quality tests through 90 days of in-water excavation
- ▶ Achieved rough grade of marshplain with minimal reworking of material
- ▶ Maximized material segregation to different waste streams and clean fill to the Imola Levee construction
- ▶ Effective utilization of laser transmitters and receivers for grade control through several feet of tidal waters

## Questions?

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