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PROTECTING THE BAY FOR A SUSTAINABLE FUTURE

Underground Flow Equalization System Project

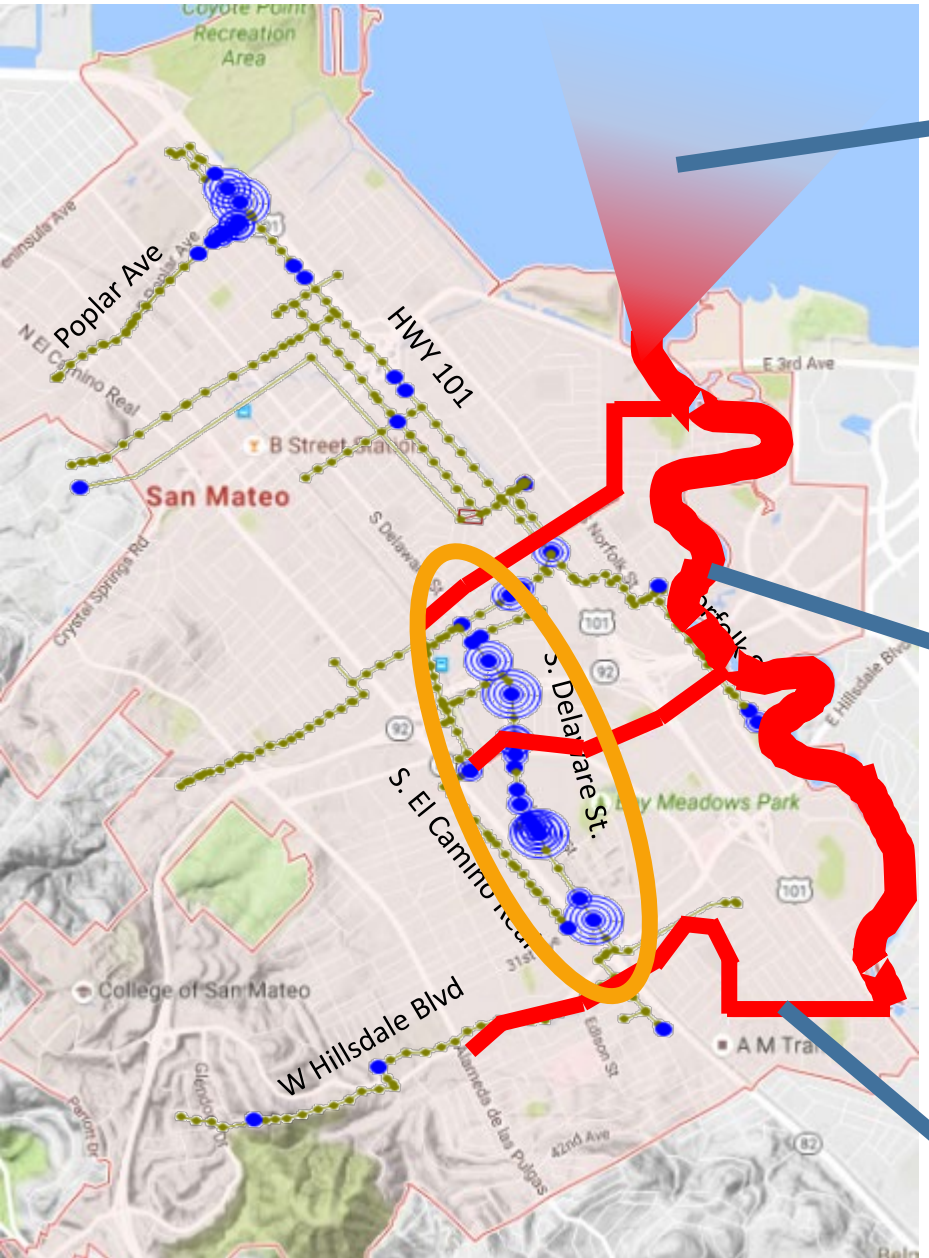
Neighborhood Meeting

May 21, 2019

Agenda

- Why we need the Underground Flow Equalization System (UFES) and what it is
- How UFES will be constructed
- Project schedule
- Q&A session

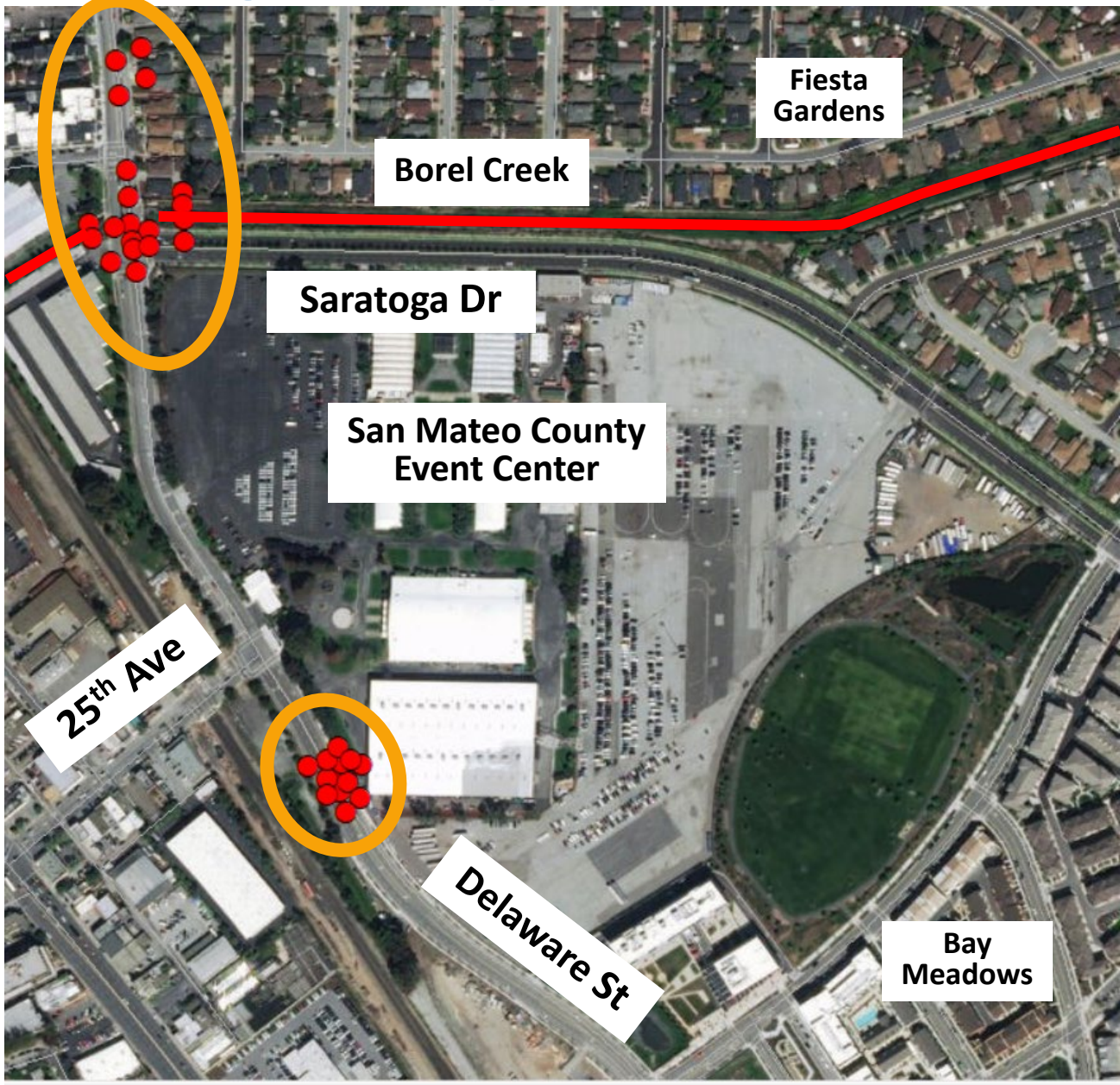
Sewer Overflow Impacts & Regulatory Violations



SF BAY

LAGOON & BEACHES

CREEKS



Sanitary Sewer Overflow (SSO) at Saratoga Dr & Delaware St

Why Is the UFES Project Needed?

CALIFORNIA Water Boards
STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS

CEASE & DESIST

- Meet Cease & Desist Order requiring prevention of SSOs
- Provide System Capacity and Optimize Collection System Performance
- Improve safety and reliability of the system and reduce discharges of raw sewage in San Mateo and the Bay.

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Existing Storage System on Delaware St

- Temporary baker tanks used for flow equalization to mitigate SSOs

Temporary Baker Tanks

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Project Location & Features

- Event Center, east corner
- Approximate 5.3 million gallon underground temporary holding structure
- New diversion system (diversion sewer, diversion structure, and force main)
- Above-ground electrical building
- Continuous odor control facilities

Project Location & Features

What to Expect During Construction

- UFES step by step activities:
  - —Site preparation
  - —Shoring options
  - —Dewatering
  - —Excavation
  - —Foundation piles
  - —Concrete
- Pipeline construction
- Approximate duration of each phase
- Monitoring
- Control of traffic, vibration, groundwater levels, dust, and noise

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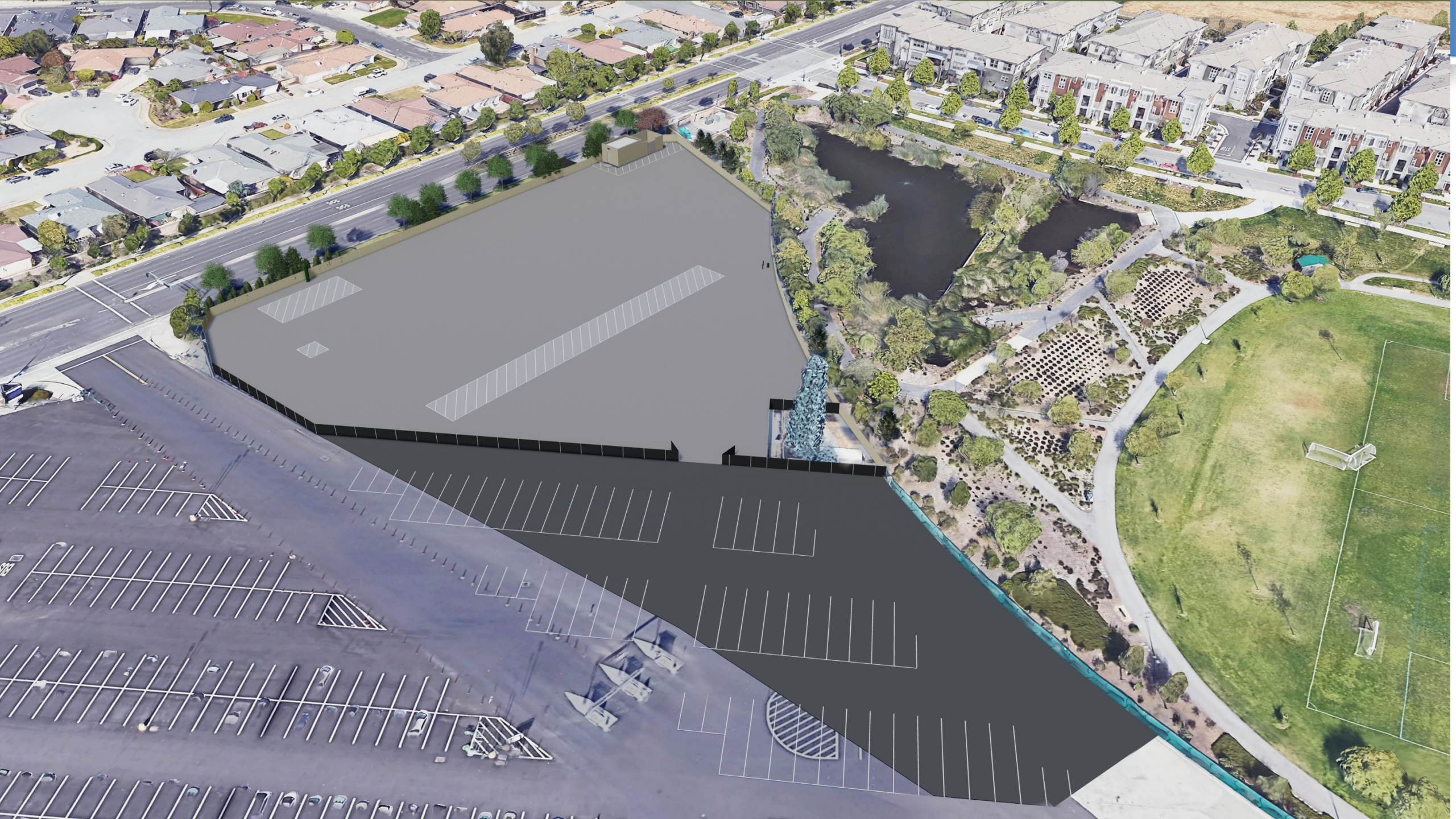
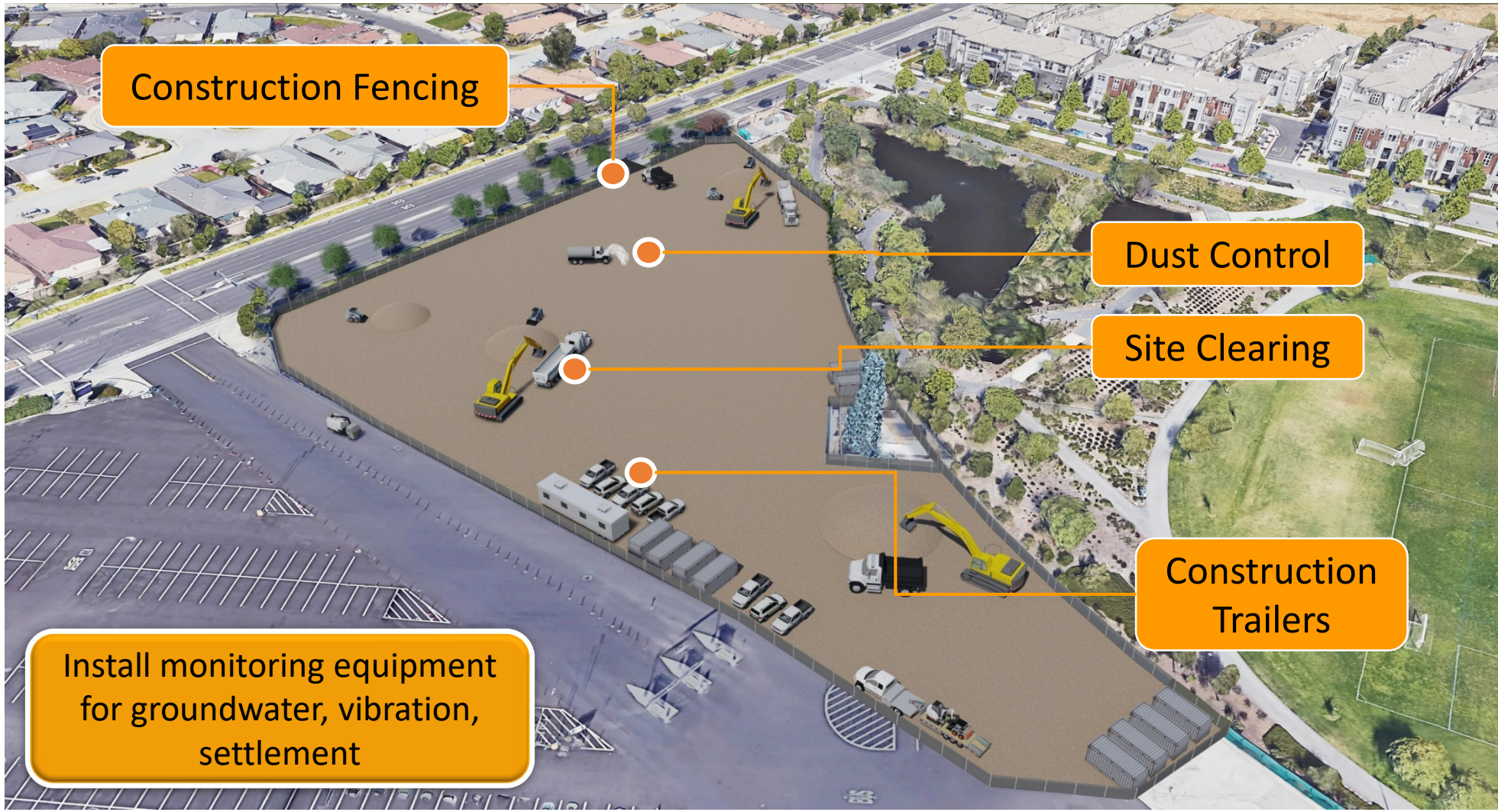


Phase 1: Site Preparation

Average trips per day:
20 heavy vehicle trips
20 worker commute trips

Duration: 3 months



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Phase 2: Shoring Installation

Average trips per day:
95 heavy vehicle trips
100 worker commute trips

Duration: 4 months

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What is “Shoring”?

- An engineered system that safely holds an excavation open for an extended duration
- *“A large wall that holds the hole open”*
- Water is removed from inside and around to maintain stability
- Can be removed (temporary) or integrated into the structure

Site soil/groundwater conditions dictate feasible shoring methods

- Analyzed soils – no bedrock in our construction zone
- Mostly clay soils
- Groundwater is close to the surface, 3’-5’ below ground
- Soil and groundwater investigations determined no contamination
- Conducted dewatering pump test to observe groundwater level fluctuations in nearby wells

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Shoring system evaluation process

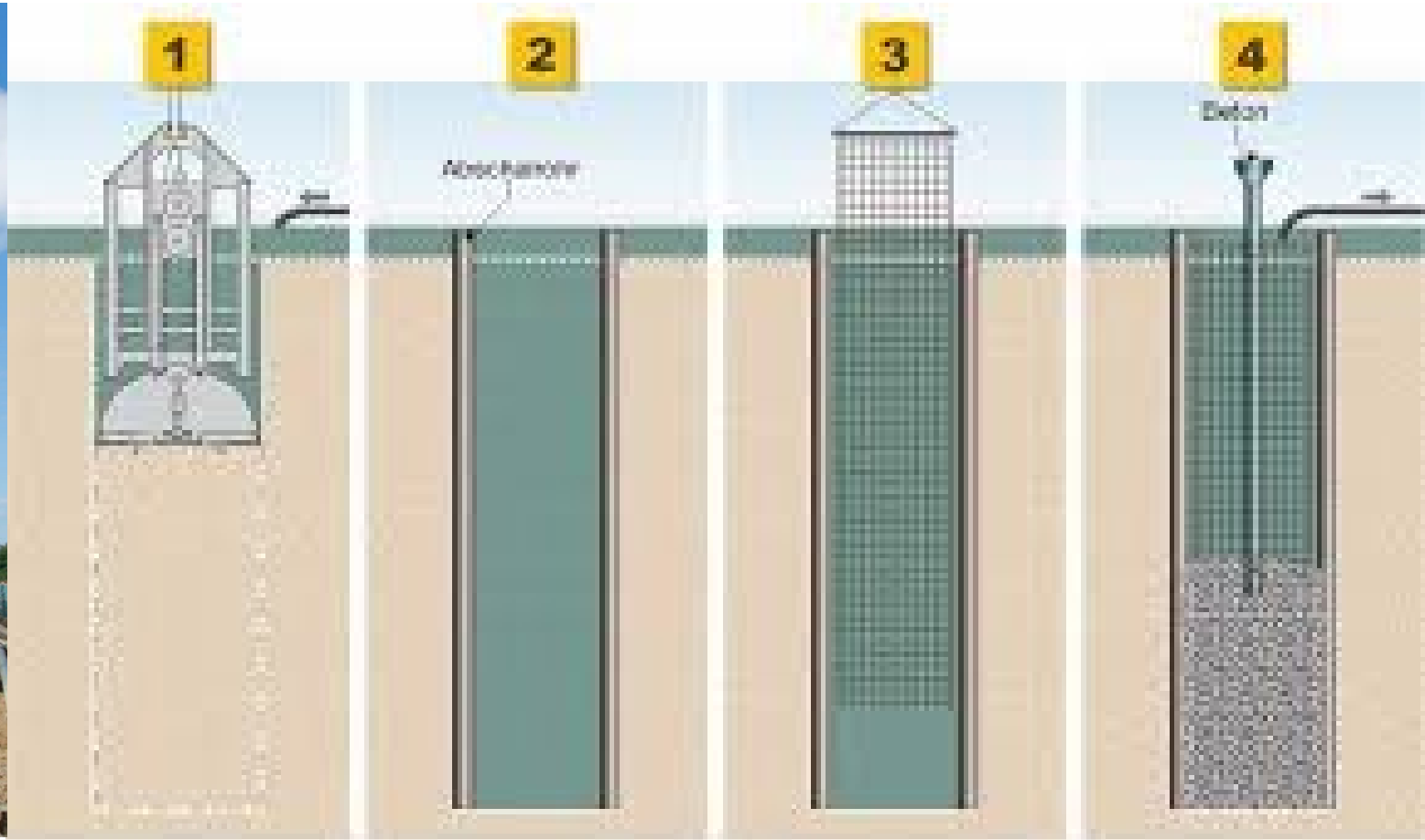
- We evaluated 6 different typical shoring methods
- What factors did we use?
  - *Technical feasibility – does it work for this site?*
  - *Duration of installation*
  - *Dewatering requirements*
  - *Noise*
  - *Vibration*
  - *Cost*

Shoring Systems

- *Sheet piling is not technically feasible for this project*

- Approved for contractor selection
  - —*Slurry walls*
  - —*Concrete deep soil mixing (CDSM) walls*
  - —*Secant pile walls*
- All technically feasible, similar duration, and is quieter

Shoring Alternative - Slurry Wall Construction



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Shoring Alternative - Cement Deep Soil Mixing

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Shoring Alternative - Secant Piles

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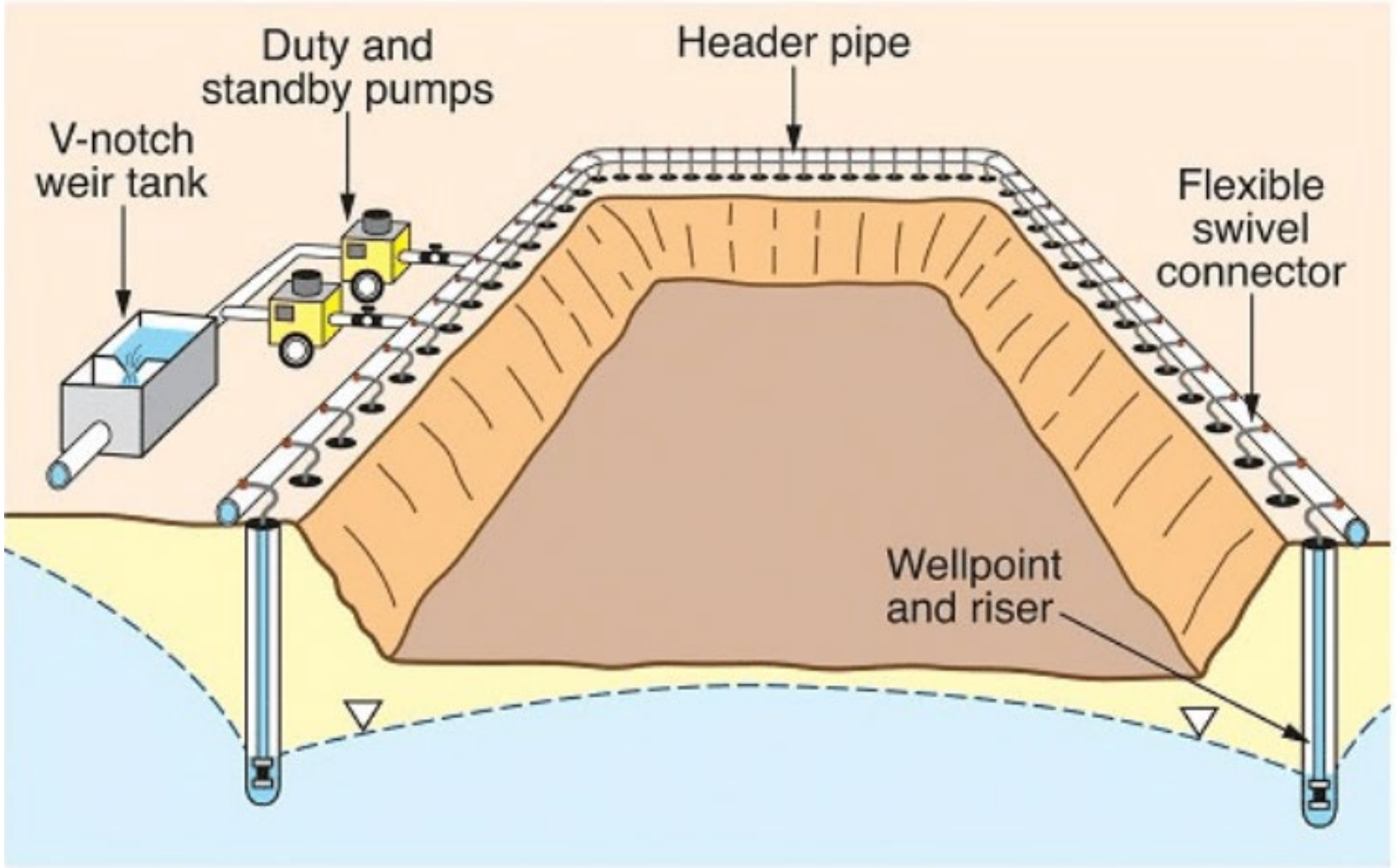
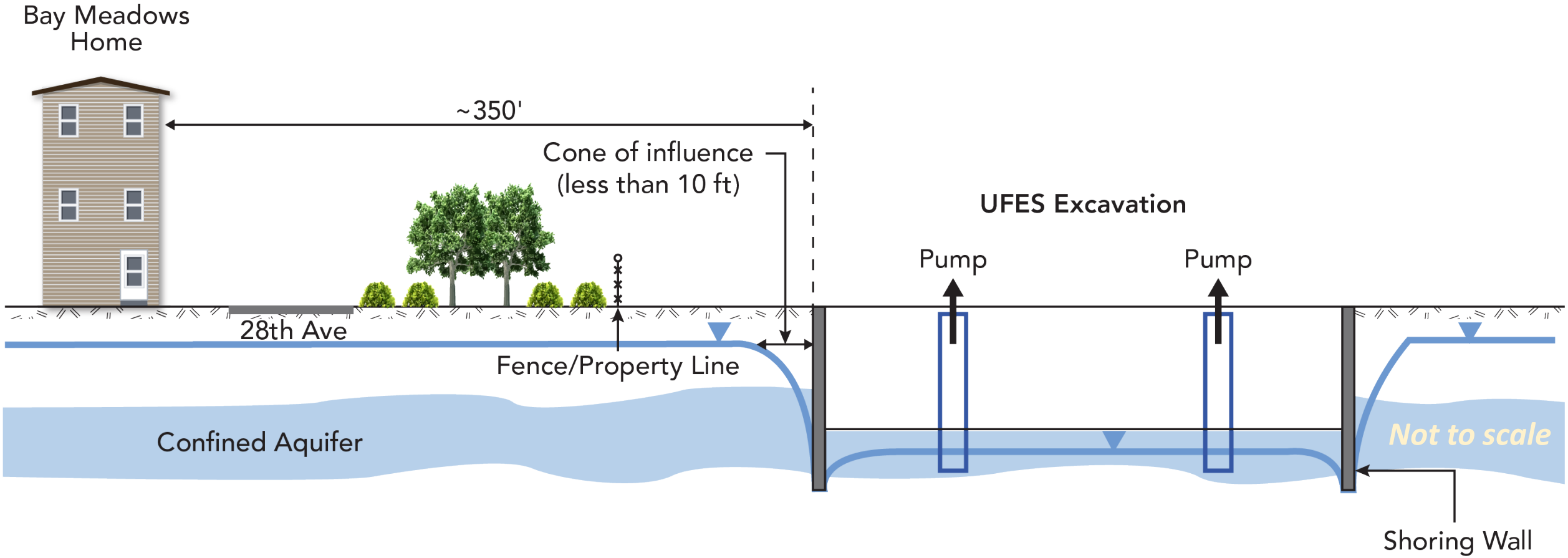
Dewatering

The shoring and dewatering methods shown are not technically feasible for our project



Images: Australian Department of Agriculture and Water Resources

UFES Dewatering



Controlling Groundwater – Bay Meadows

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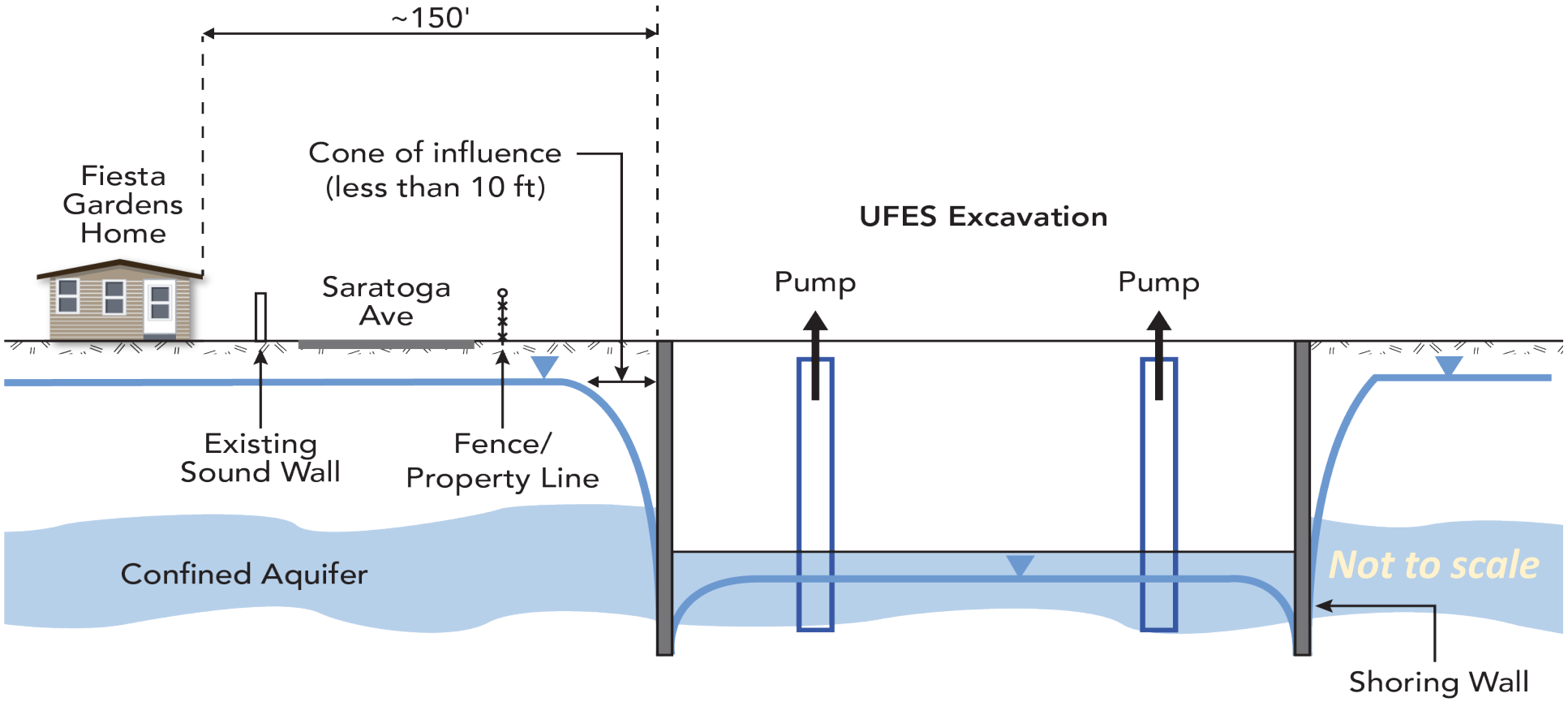
UFES Dewatering



UFES Dewatering

- Significantly reduces potential for settlement
- Compatible with allowable impermeable shoring systems
- Interior dewatering limits groundwater table drawdown

Construction Monitoring

- Install more observation wells near the site before construction to monitor groundwater levels
- Survey and document existing nearby structures before, during and after construction
- Monitor noise and vibration
- Enforceable stop action thresholds that exceed specified acceptable limits

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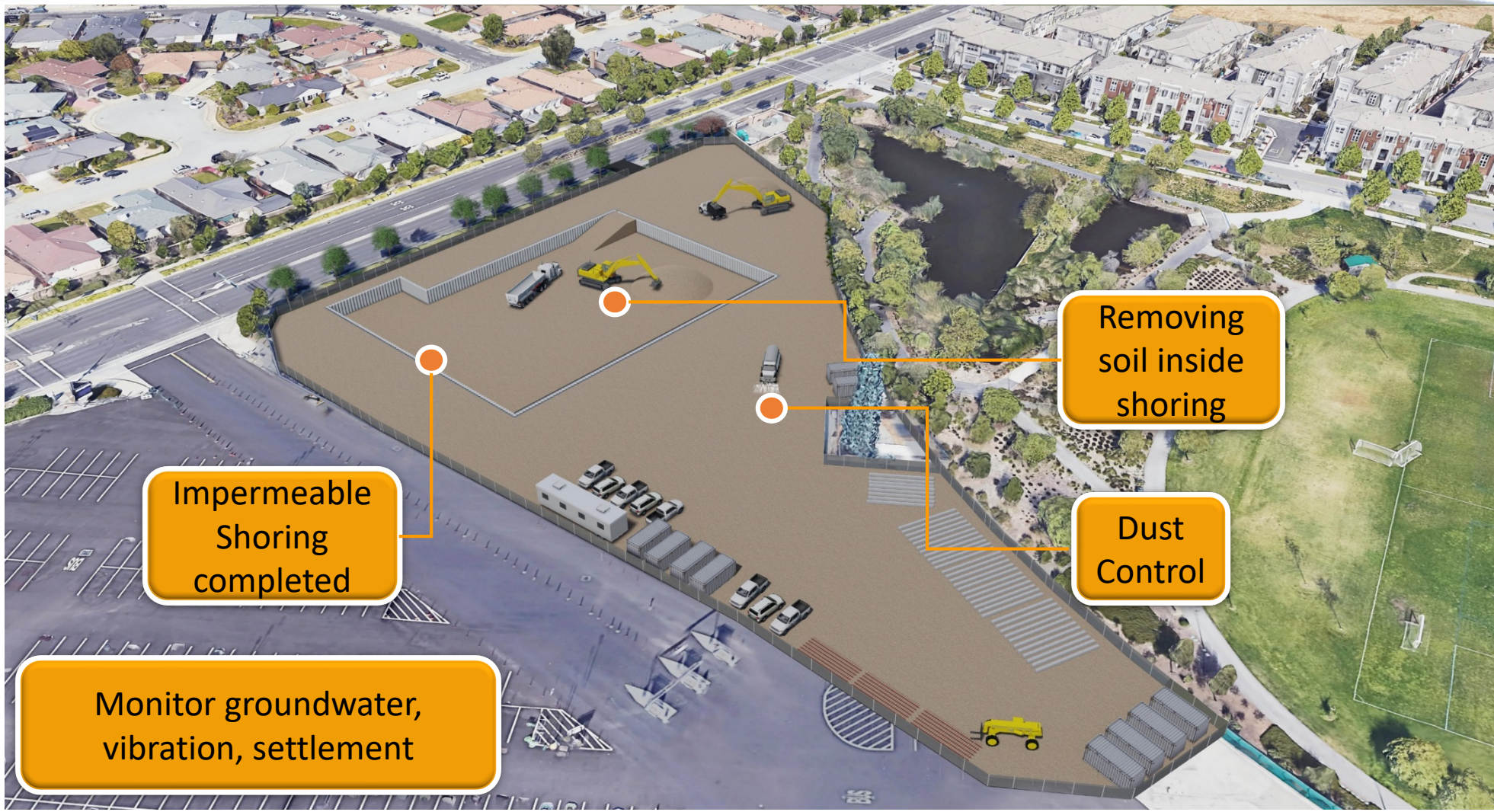
Phase 3: Excavation

Average trips per day:
115 heavy vehicle trips
100 worker commute trips

Duration: 3 months



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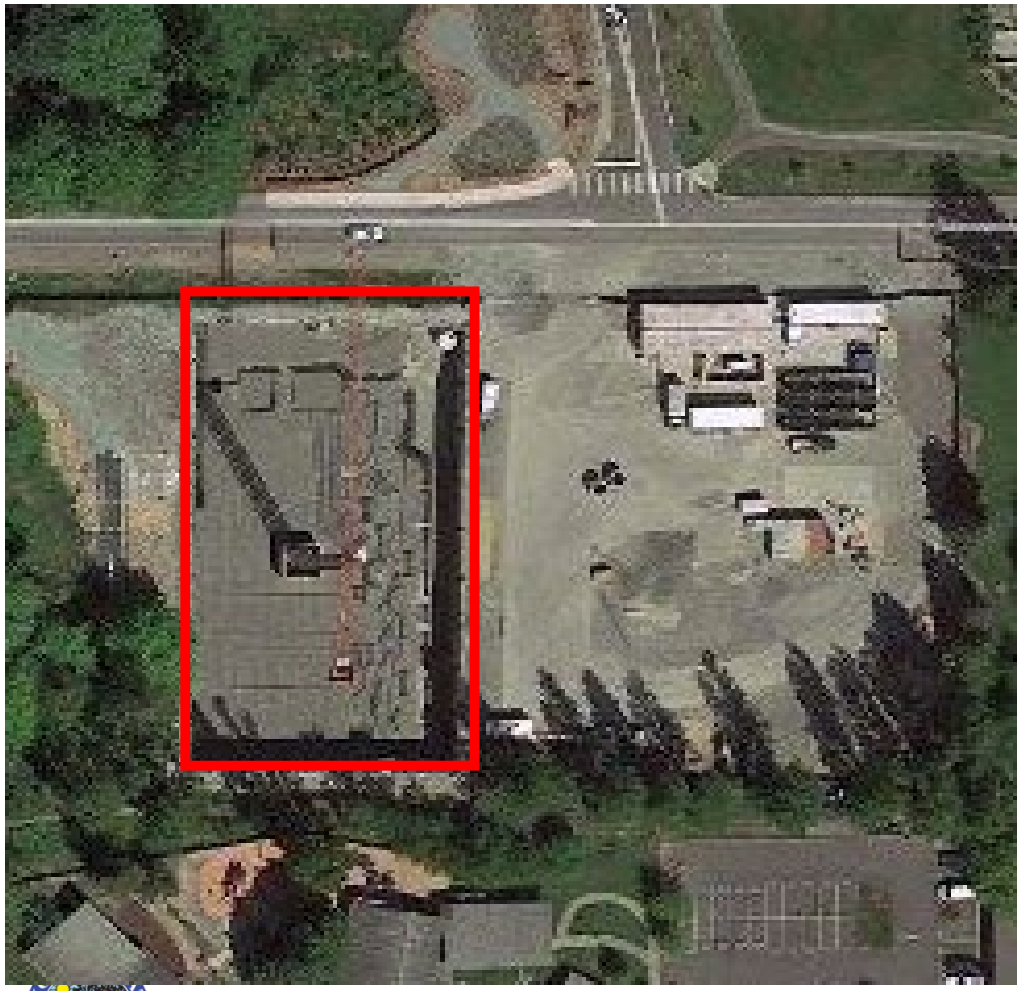
Relative to Other Projects

- UFES is smaller in size and scale
- UFES shoring and dewatering methods prevent settlement
- Less truck trips
- Some similar construction activities (earthwork)
- Similar traffic haul routes

Pacifica Project Surrounding Community


Residential Neighborhood
Skate Park
Dewatering System
Impermeable Shoring
VSLU801692
MGW.
TARE.
NET.
CU.CAP.

Windermere (Seattle)
Flow Equalization Facility During Excavation



Phase 4: Foundation Pile Installation

Average trips per day:
70 heavy vehicle trips
20 worker commute trips

Duration: 2 months

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What are “Foundation Piles”?

- Prevent uplift (floating) from high groundwater
- Prevent settlement (sinking)
- Keep the structure in place during seismic events

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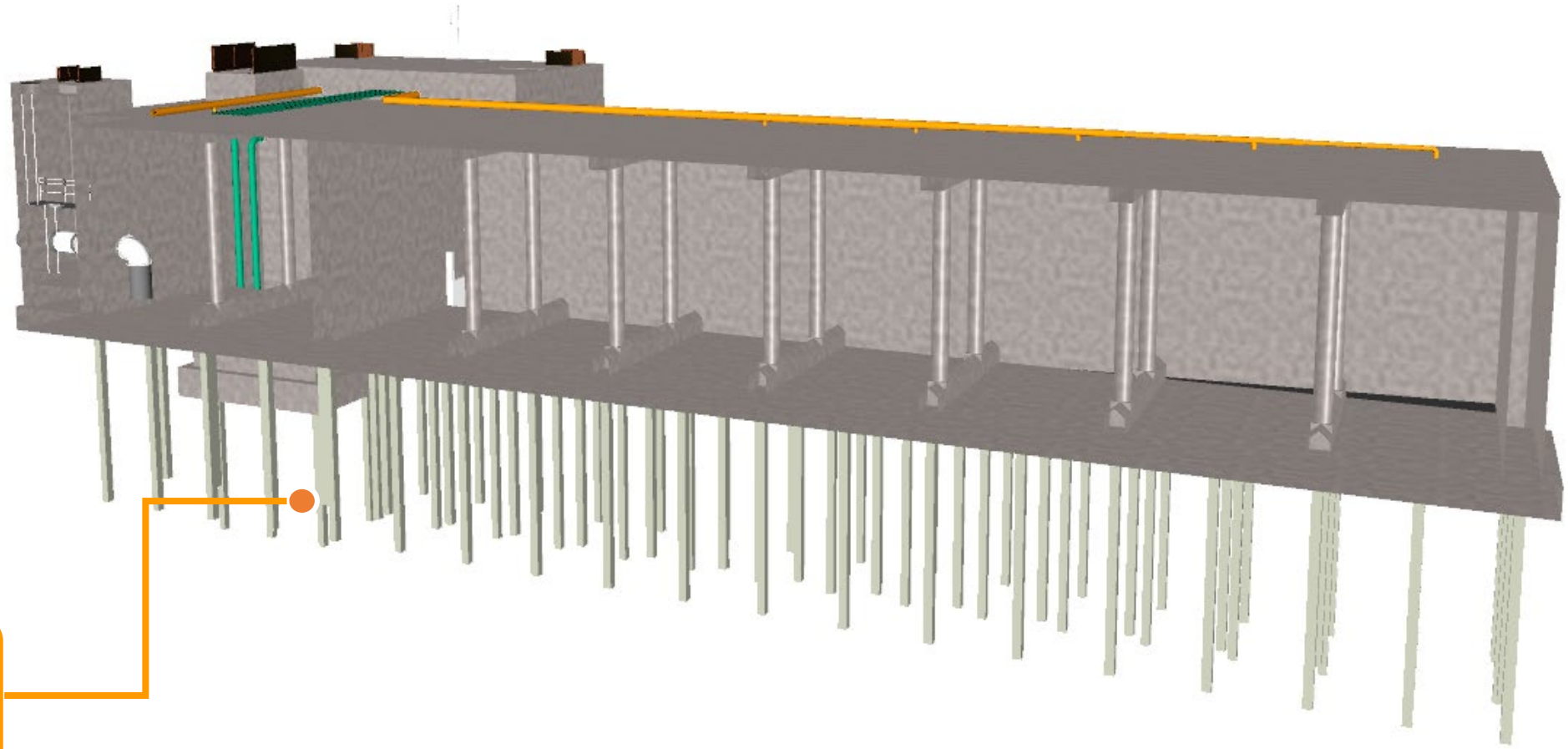
Ground Level

Bottom of Excavation

Micropiles under structure



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Pile system evaluation process

- We evaluated 7 different typical pile types and installation methods
- What factors did we use?
  - *Technical feasibility – does it work for this site?*
  - *Shoring system compatibility*
  - *Duration of installation*
  - *Noise*
  - *Vibration*
  - *Cost*

Technically feasible foundation pile systems

- *Impact (or hammered) piles were eliminated from consideration*

- Cast-in-Drilled-Hole piles
- Drilled Micropiles **(Selected Method)**

- All technically feasible, similar duration, and meet other key criteria

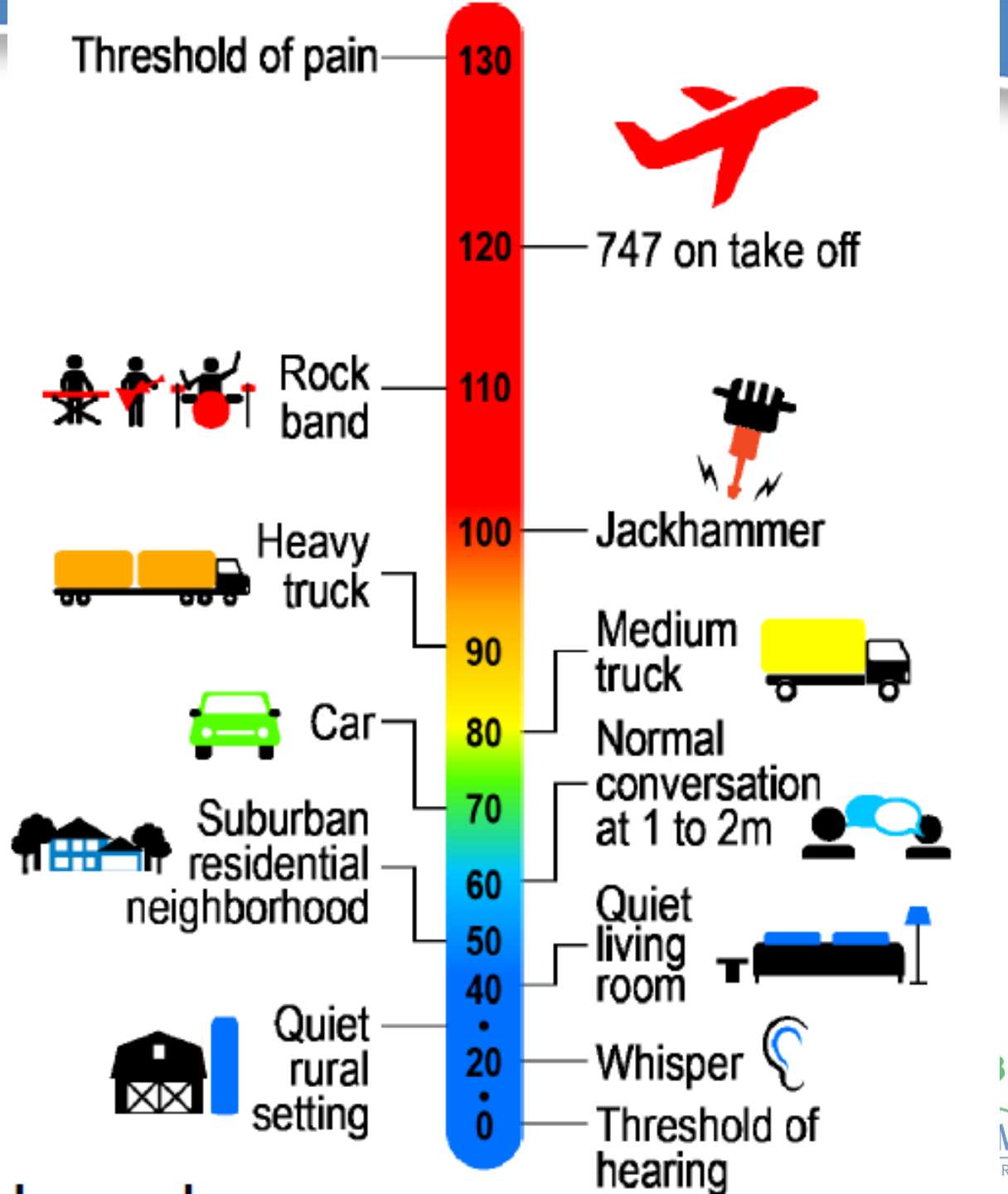
Impact Piles

Removed from consideration for this project

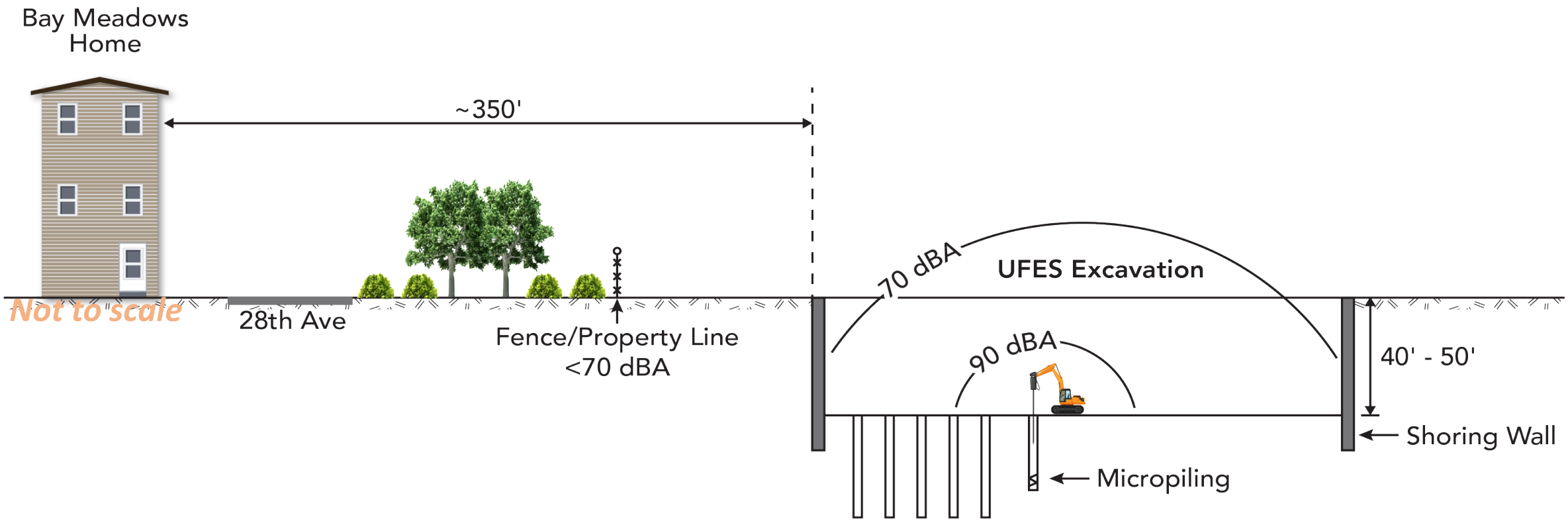
Drilled Micropiles

Selected Method

Sound Thermometer



Drilled Micropile Installation



Section Showing Anticipated Sound Levels From Micropiling Activities – Bay Meadows

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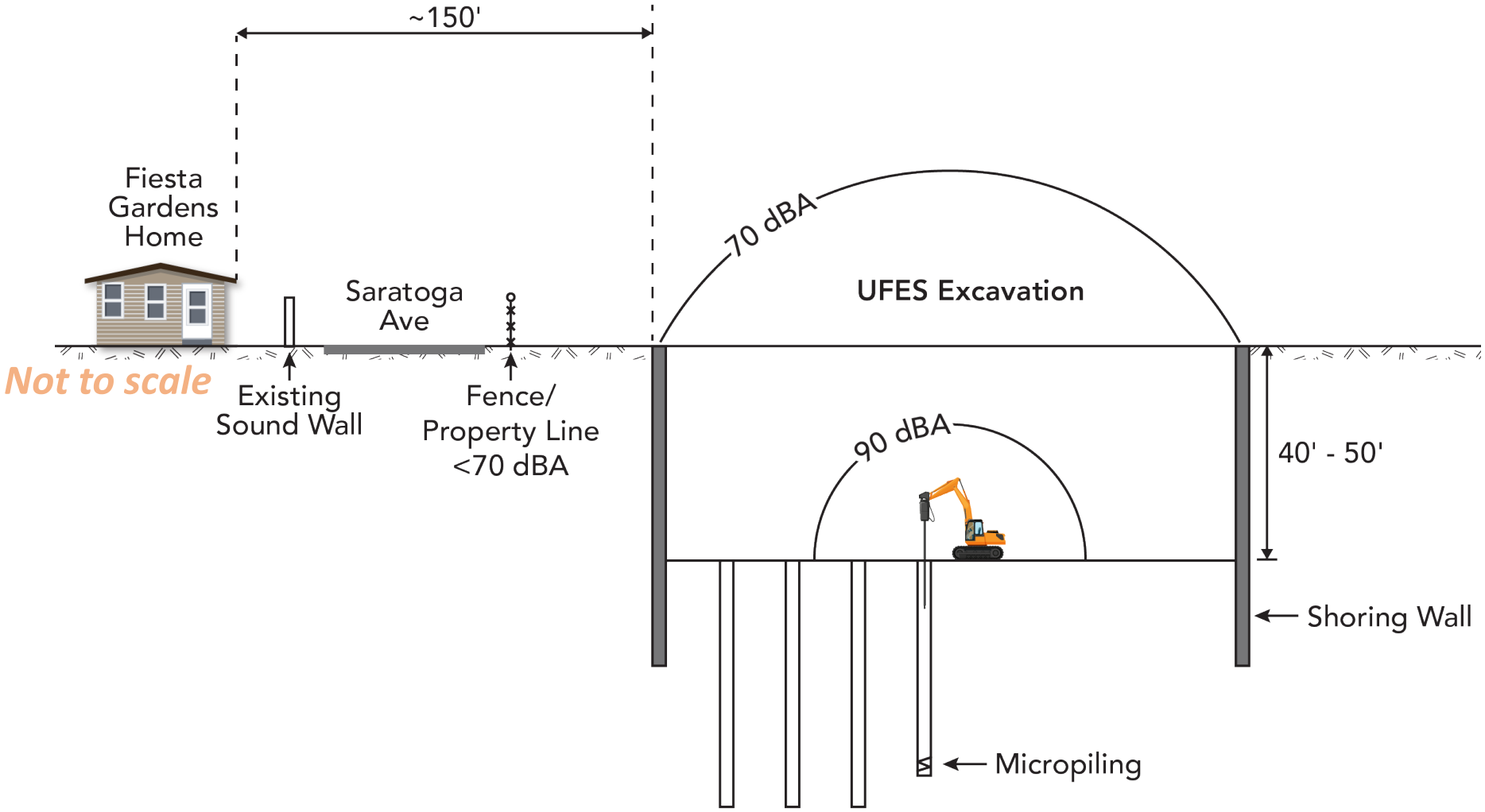
Drilled Micropile Installation



Section Showing Anticipated Sound Levels From Micropiling Activities – Fiesta Gardens

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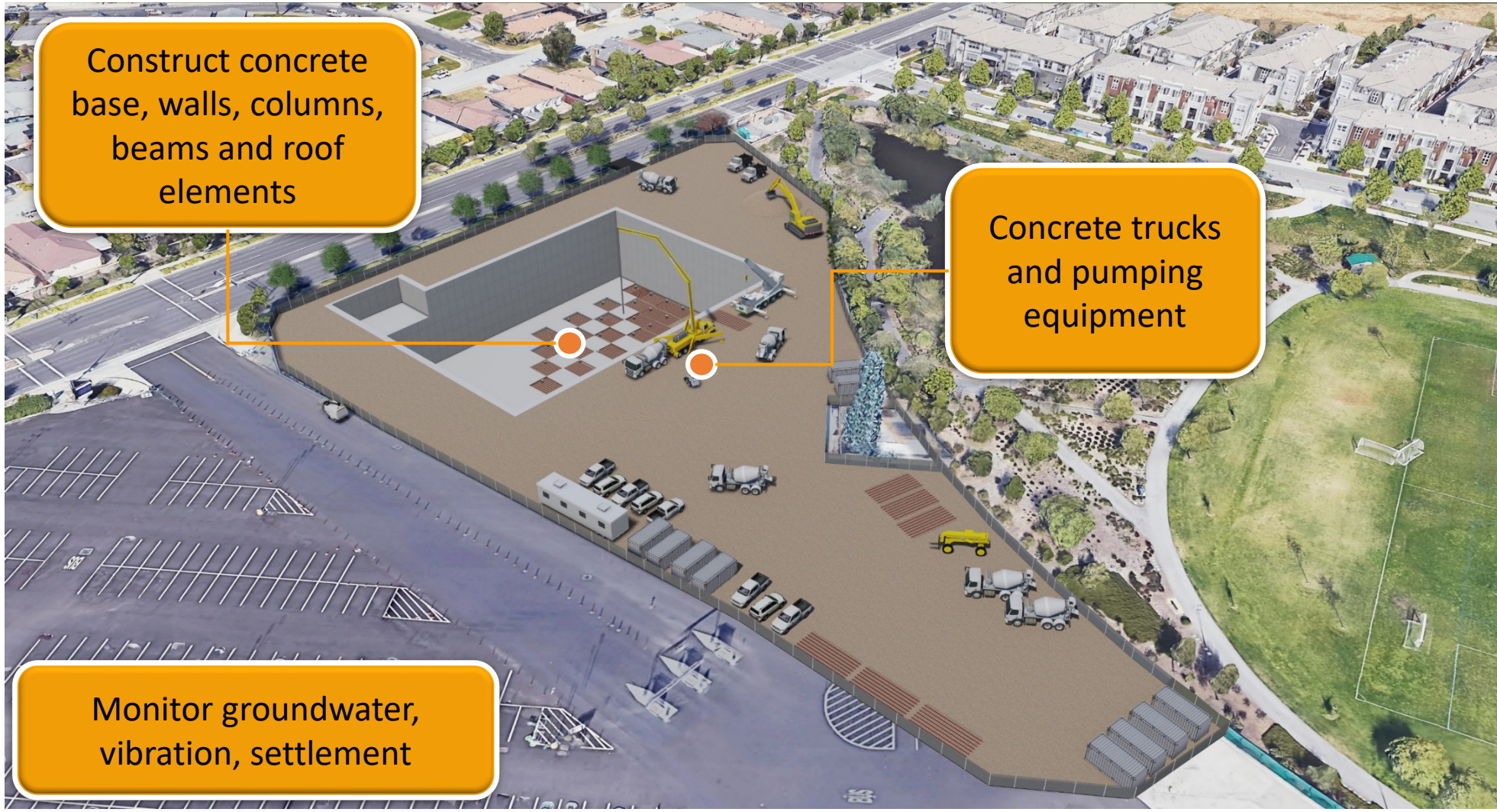
Phase 5: Concrete

Average trips per day:
89 heavy vehicle trips
20 worker commute trips

Duration: 9 months



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Pacific


SMCI

Pacifica Construction

Phase 5: Site Finishing

Average trips per day:
58 heavy vehicle trips
20 worker commute trips

Duration: 8 months

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Diversion System

(Diversion Sewer, Diversion Structure, and Force Main along Delaware St and Saratoga Dr)

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Diversion System Alignments & Locations

- **Diversion Structure**
  - —*South of Saratoga and Delaware Intersection*
- **Diversion Sewer**
  - —*New 36-inch diameter, 15 to 22 feet deep*
- **Force Main**
  - —*18-inch sewer pipe*

Diversion Sewer Open Trench Construction

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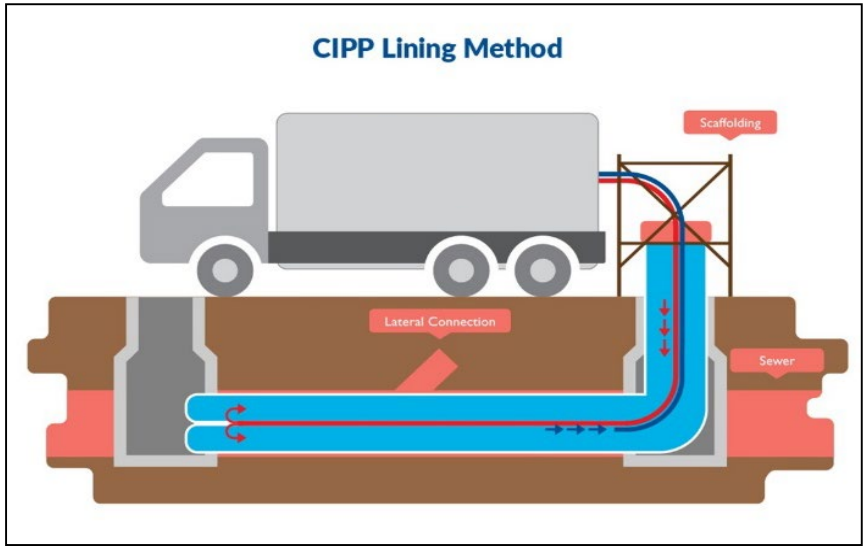
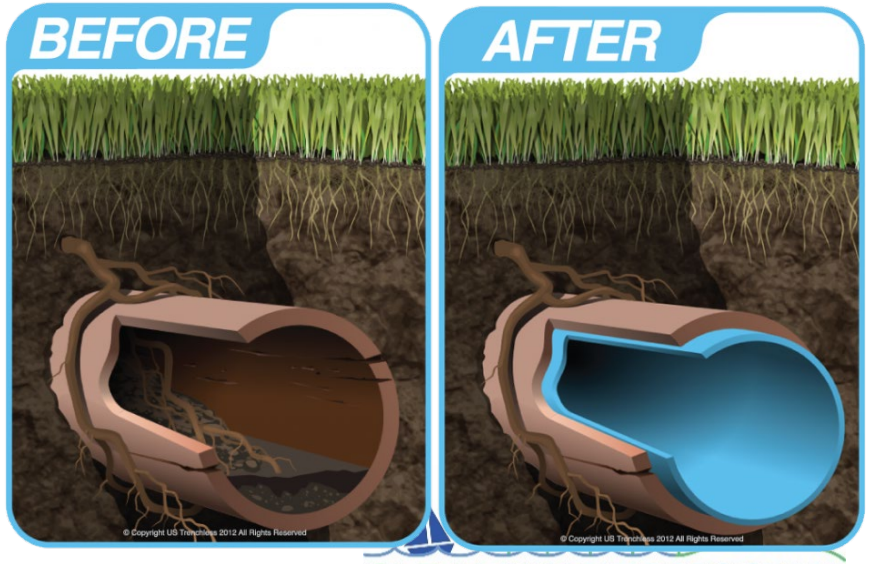
Trenchless Construction

- **Borel Creek Culvert Undercrossing at Delaware**
  Horizontal directional drilling of New 18” Force Main

- **Saratoga Force Main**
  Cured in Place Pipe Lining of Existing 18” Pipe





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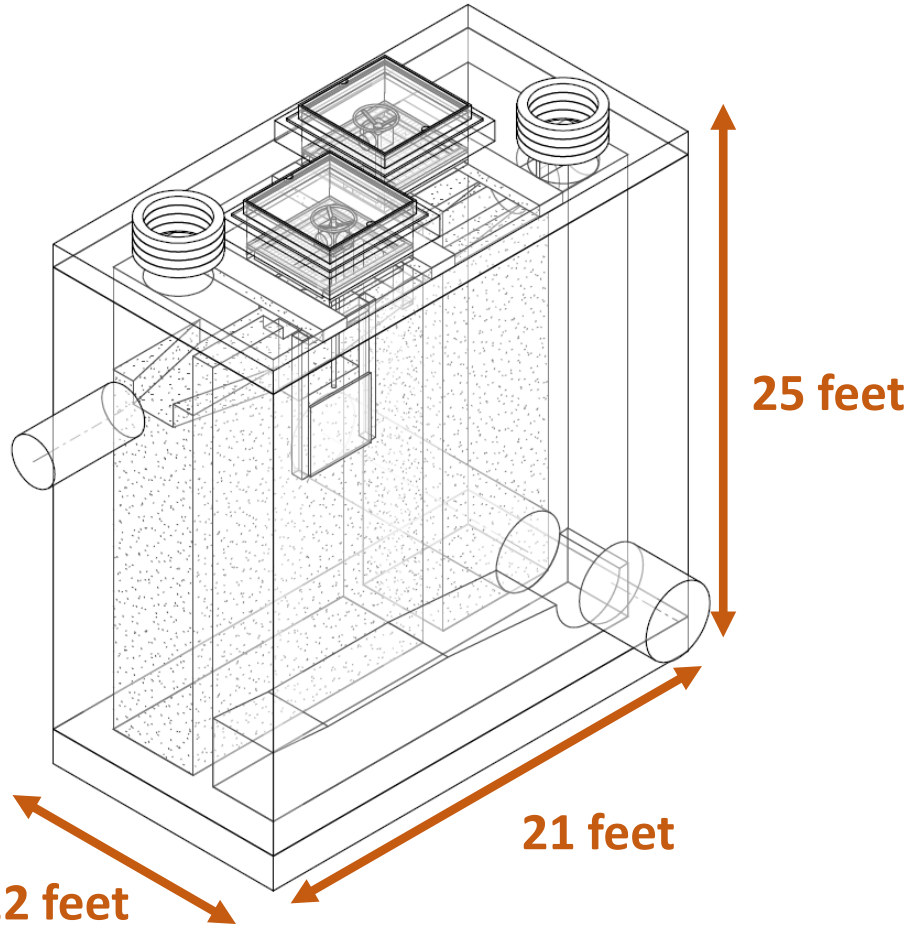
Diversion Structure Construction

- Excavation in intersection of Delaware and Saratoga
- Temporary shoring
- Traffic control around excavation
- Duration: 3 months



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Dust Control

Streets

Wet Sweeping on Surrounding streets and around Construction Site

Covered trucks, site watering, fence screening and tire wash facilities

Construction Areas

Construction Hours

- Allowable construction hours are Monday to Friday, 7 am – 7 pm
- Typical construction day is expected to be 8-10 hours
- Construction work is not planned for weekends or outside hours of 7 am – 7 pm
  - *Exceptions may be needed, but only with City approval (e.g. concrete pour)*

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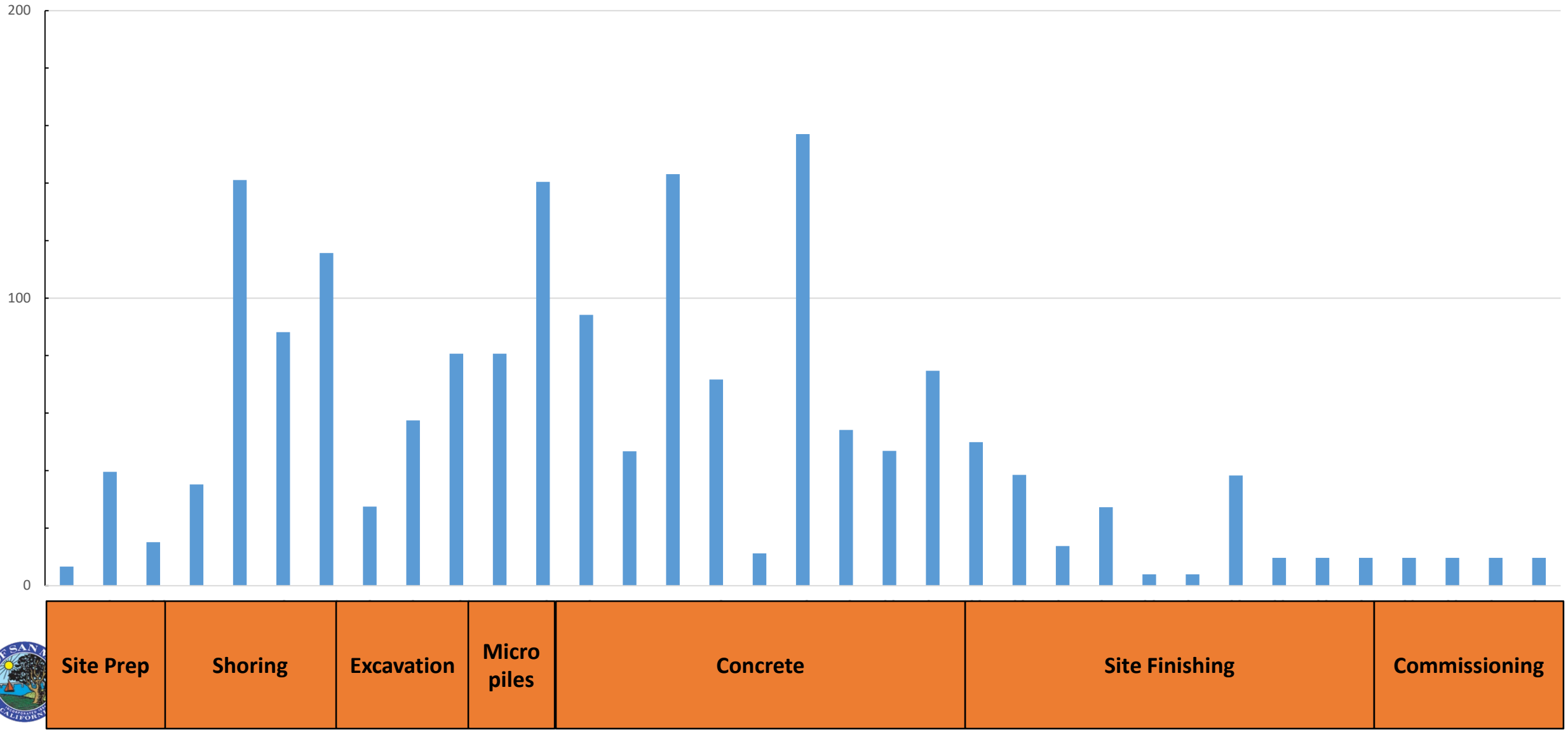
Construction Traffic Routes

City Designated Truck/Haul Routes

Proposed Project Routes

Average Heavy Construction Vehicles per Day



Post-Construction Operations & Maintenance

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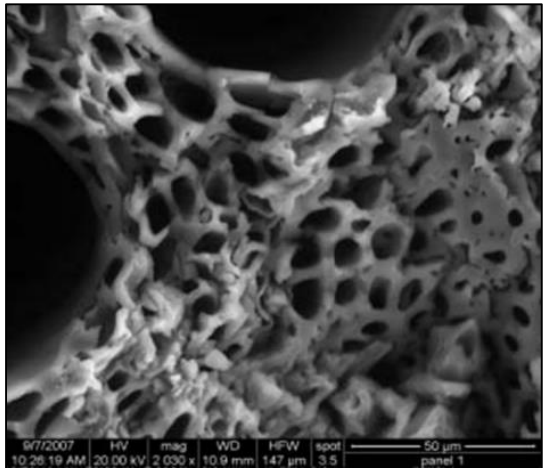
Future Operations and Maintenance

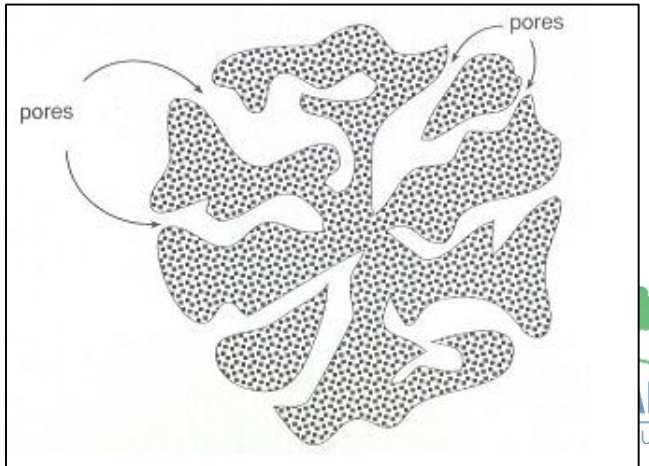
- Facility expected to be used less than 20 times per year on average
- Temporarily holds flows for up to 24 hours
- Holding structure cleaned with the tipping buckets and emptied after each use
- Inspected by City after each event

Odor Control

Carbon Odor Scrubber

- Highly efficient technology: carbon odor scrubbers
- Large pore surface area adsorbs large mass of odors
- 3 grams has surface of a football field!

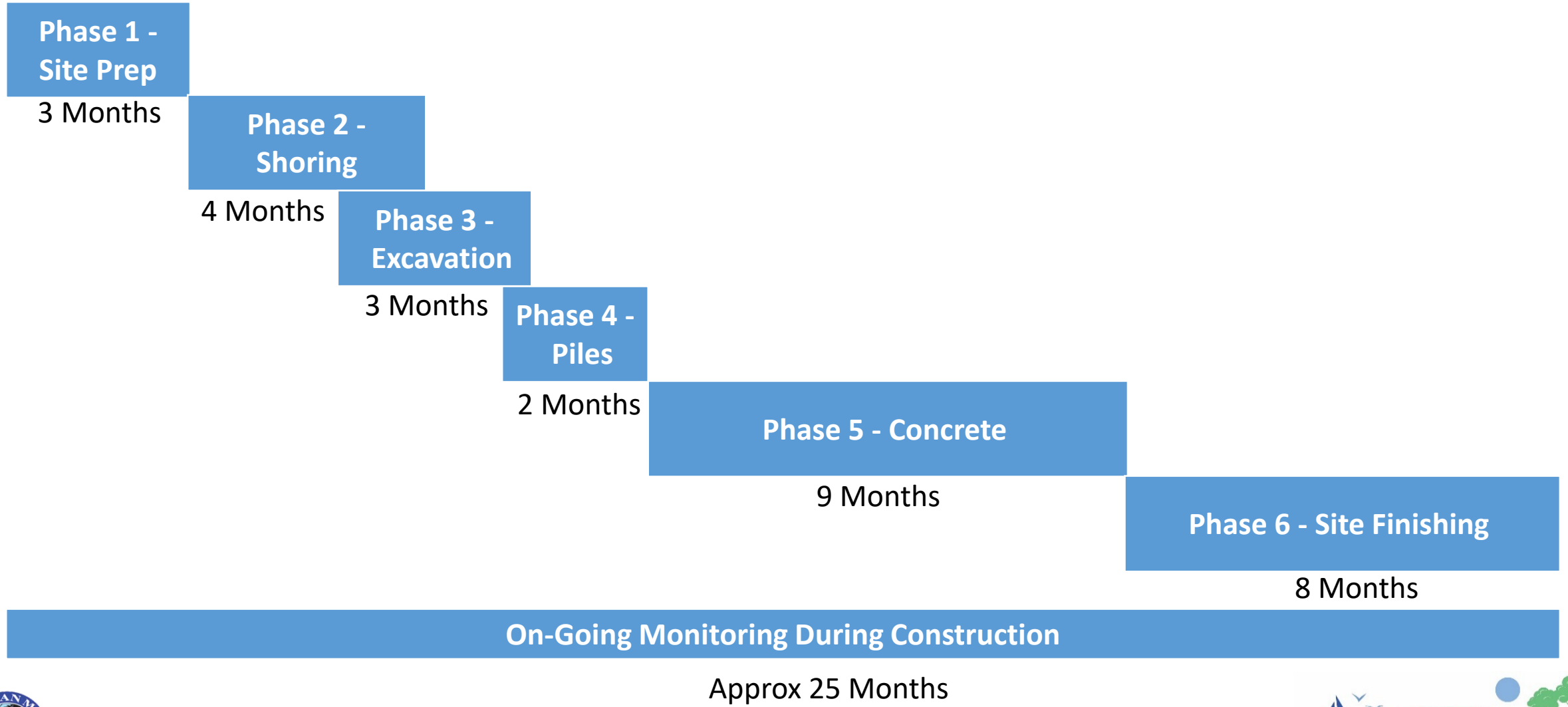




Summary

- Selected Drilled Micropiles
- Selected three impermeable shoring alternatives
- Dewatering inside the excavation limits groundwater drawdown
- Contractor's traffic management plan requires City approval
- Other mitigation (noise, vibration, dust) will require plans and approvals
- Monitoring will be ongoing during construction and actions will be taken
- Live response for citizen inquiries and a dedicated phone number

Anticipated Construction Schedule



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Next Steps

- Draft EIR Comment Period Ends: May 31, 2019
- Planning Commission Study Session: August 27, 2019
- Planning Commission Recommendation (Final EIR/Special Use Permit) Meeting: September 24, 2019
- City Council Approval (Final EIR/Special Use Permit) Meeting: October 7, 2019
- Anticipated Construction Start: Spring 2020

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Aligning with the Clean Water Program Goals

Replace aging infrastructure and facilities

Build wet weather sewer system capacity assurance to prevent overflows

Meet current and future regulatory requirements

Align with the City of San Mateo and Foster City's sustainability goals

Protecting the Bay and our Community for a Sustainable Future

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Q & A

Please share methods to effectively communicate

Sign Up for Email Updates
info@cleanwaterprogramsanmateo.org

Visit the UFES Project Website
www.CleanWaterProgramSanMateo.org/UFES

Call the Clean Water Program
650-727-6870

Follow the City's Social Media

Nextdoor

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