Sludge Happens: The Benefits and Challenges of Hydro-Excavation

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Objectives

- What is hydro-excavation?
- Why choose hydro-excavation?
- Sludge Happens – now what?
- SMUD’s current plan
What is Hydro-Excavation?

History of Hydro-Excavation:

• Mid 1800’s – California Miner using hydraulic mining techniques

• 1969 – ExcaVactor under development

• 1970s-80s – Hydro-Excavation units mounted to vehicles
What is Hydro-Excavation?

- Non-mechanical, non-destructive process
- Uses high pressure water to cut into soil
- Vacuum system removes soil/water mixture (sludge) into a tank
- Used for potholing, trenching, hole excavation, and exposing utilities
Hydro-excavation Photos
Hydro-excavation Photos
Why Choose Hydro-Excavation?

**Hand Digging**

- Labor intensive
- Longer time to complete task
- Higher risk of injury
Why Choose Hydro-Excavation?

**Mechanical Digging**

- Typically backhoes or augers
- Higher risk of injury
- Higher risk of underground utility damage
Why Choose Hydro-Excavation?

**Air Excavation (Air Knife)**

- Safer
- Faster
- Lower risk of underground utility damage
- Less backfill/restoration
- Less environmental impact
- Fewer disposal issues
- Less efficient with certain soil types
Why Choose Hydro-Excavation?

Hydro-Excavation

- Safer
- Faster
- Lower risk of underground utility damage
- Less backfill/restoration
- Less environmental impact
- Reduced overall cost
Water/soil mixture (sludge) is generated via the hydro-excavation process.

Sludge is vacuumed into a debris tank.

What do you do with it now??
Sludge Happens – Now What?

Disposal Options

• Landfill with ponds
• Mixing with dry dirt/material
• Drying beds
• Landfill without ponds
  ▪ High water content may preclude disposal
• Third-Party Contractor
  ▪ Costly
• Sewer system?
SMUD’s Initial Disposal Process

- Bermed area in equipment storage yard
- Unlined pond system
- Solids then mixed with dry material and sent for disposal
SMUD’s Alternatives Review

- Site Location
- Engineering Design
- Environmental Considerations
- Permitting
- Construction costs
Concrete-lined sedimentation basin system

- Collaboration between line crews and environmental management staff
- 3 basin system
- Allows for sedimentation and clarification
- Includes Infiltration Swale to keep all basin overflow onsite
- Ongoing sampling of spoils to ensure no contamination exists
FOR INFORMATION ONLY

NOTES:
1. PROVIDE NOTCHES IN BASIN WALL WITH THE DIMENSIONS AND LOCATIONS AS SHOWN.
2. SEE HED-C1A-D001 FOR ADDITIONAL FABRICATION AND INSTALLATION SPECIFICATIONS.

REFERENCE DRAWINGS:
HED-C1A-D001 PRECAST CONCRETE BASINS FABRICATION AND INSTALLATION NOTES
SMUD’s Current Plan

- In final design phase
- Precast basins currently set for fabrication
- Construction planned for summer 2016
- Currently working with Sacramento County on Grading/Building permit
- Project Approval received from Regional Water Quality Control Board
Summary

• Hydro-excavation can be a very beneficial process for a variety of projects including potholing, trenching, exposing utilities, and hole excavation.

• Managing the hydro-excavation spoils can be challenging.

• Effective collaboration between environmental management and line crews allowed for a realistic solution to manage SMUD’s hydro-excavation process.
Questions?