DEMYSTYIFYING
& MAINSTREAMING

Ground Source GEOTHERMAL DRILLING

A candid conversation with Geothermal drilling professional, Brock Yordy

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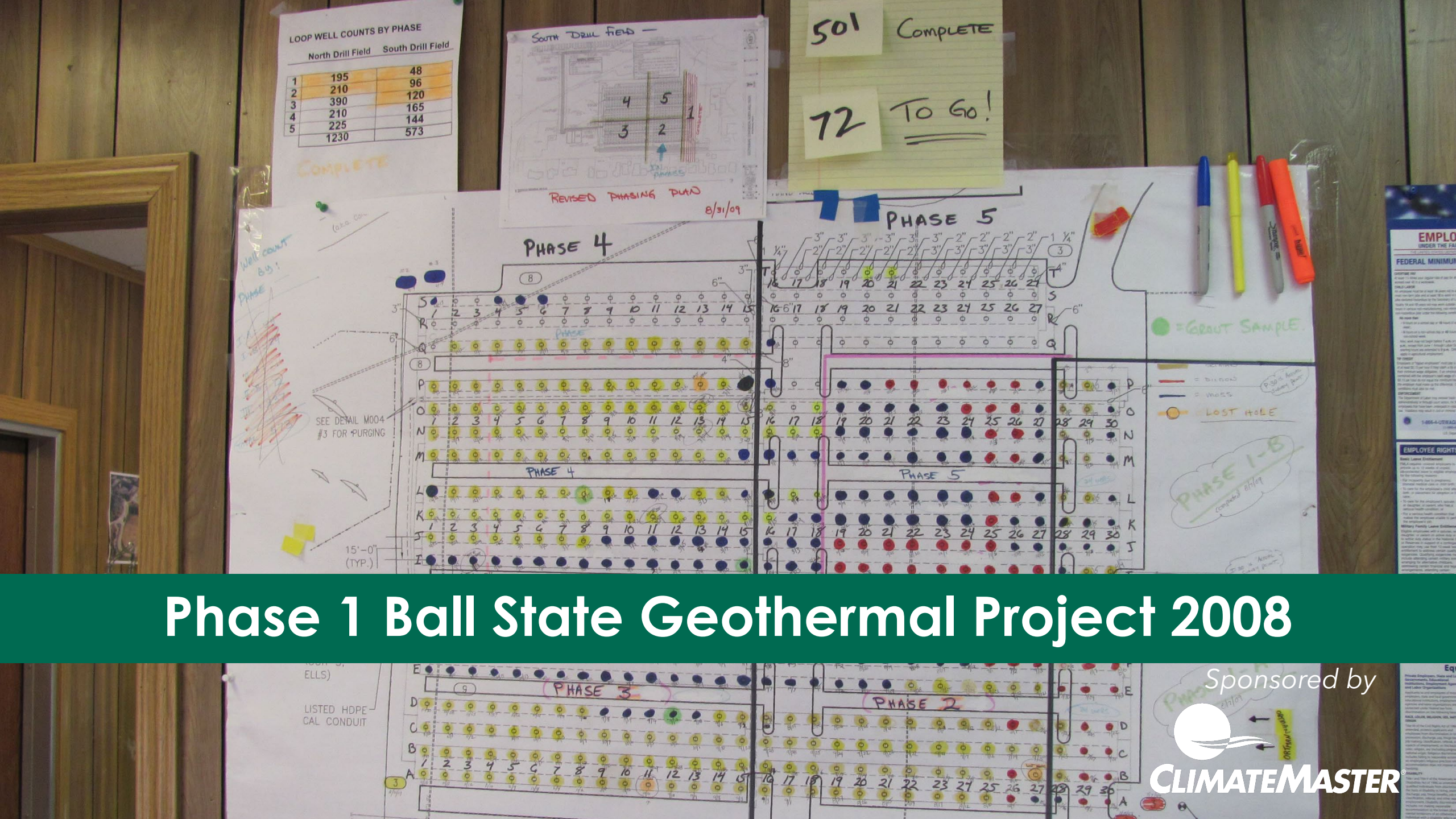
Drilling SME: Geothermal, Water, Construction
US Military-Department of Labor SME & Trainer
Safety Professional & Authorized OSHA 1926 Trainer
Municipal Water & Wastewater EHS&S Veolia NA
Director of Wells & Drilling SUEZ North American
Drilling Fluids – Solids Control: Barrick, BHP, Kinross
Halliburton Drilling & Fluids Engineer
Industry Advocate NYSERDA, HEET, IGSHPA, NGWA
Journalist, Host, & Teacher at TheDriller.com

Brock Yordy



Phase 1 Ball State Geothermal Project 2008

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Ball State University - Muncie Indiana

George Lucas Narrative Arts Museum 2018

University of Michigan – November 2023

Residential Geothermal

LIMITED ACCESS BASEMENT DRILLING

Geothermal Project Flow Chart – Client

Feasibility,
Budget, &
Stakes of Project.

Contractor
Qualifications

Test Well
& Logs

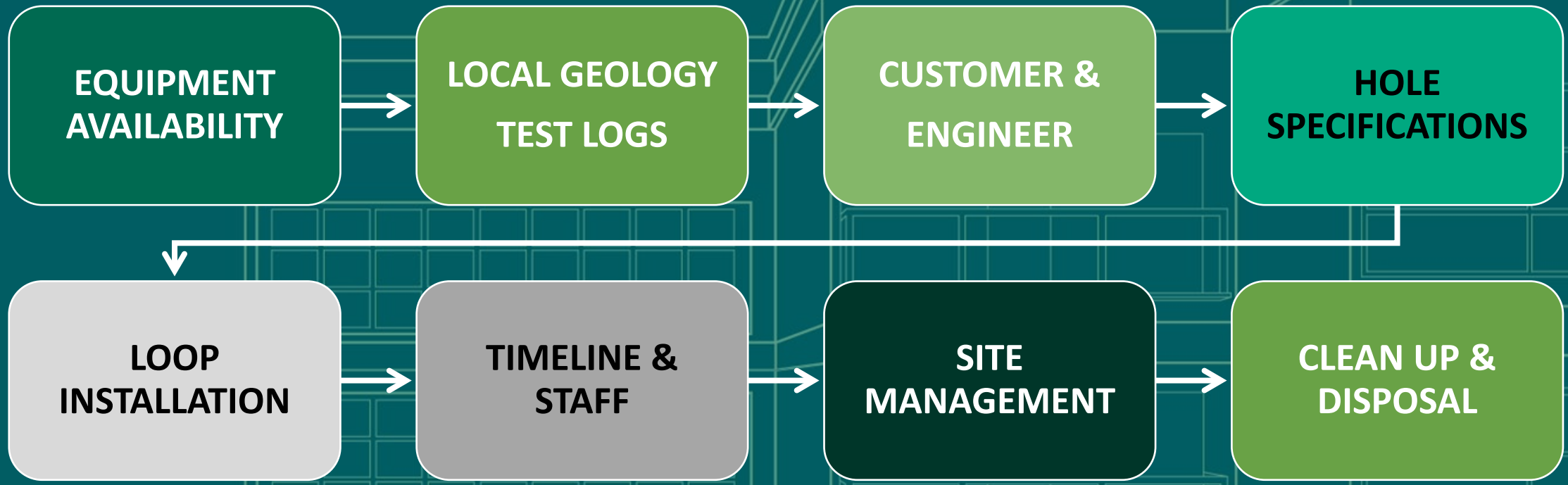
Regulations

Construction
Timeline

Hole
Specifications

Rig & Tooling
Specifications

DRILLING CONTRACTOR BID PROCESS



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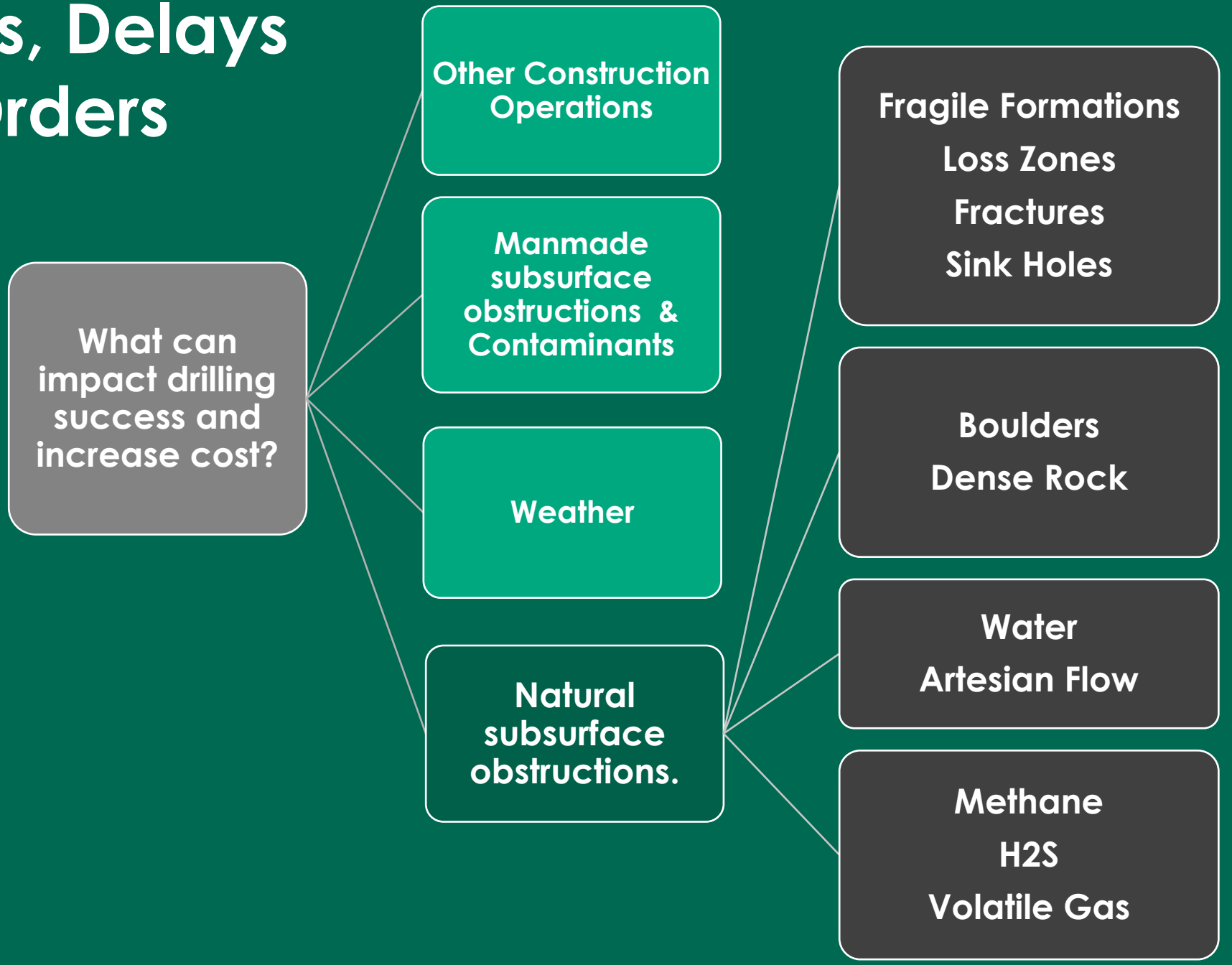
Project Impacts, Delays and Change Orders



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Equipment & Methods

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RIG CAPABILITIES

- Rotation
- Pullback
- Pulldown

PUMPING CAPACITY

- Mud pumps
- Air compressor

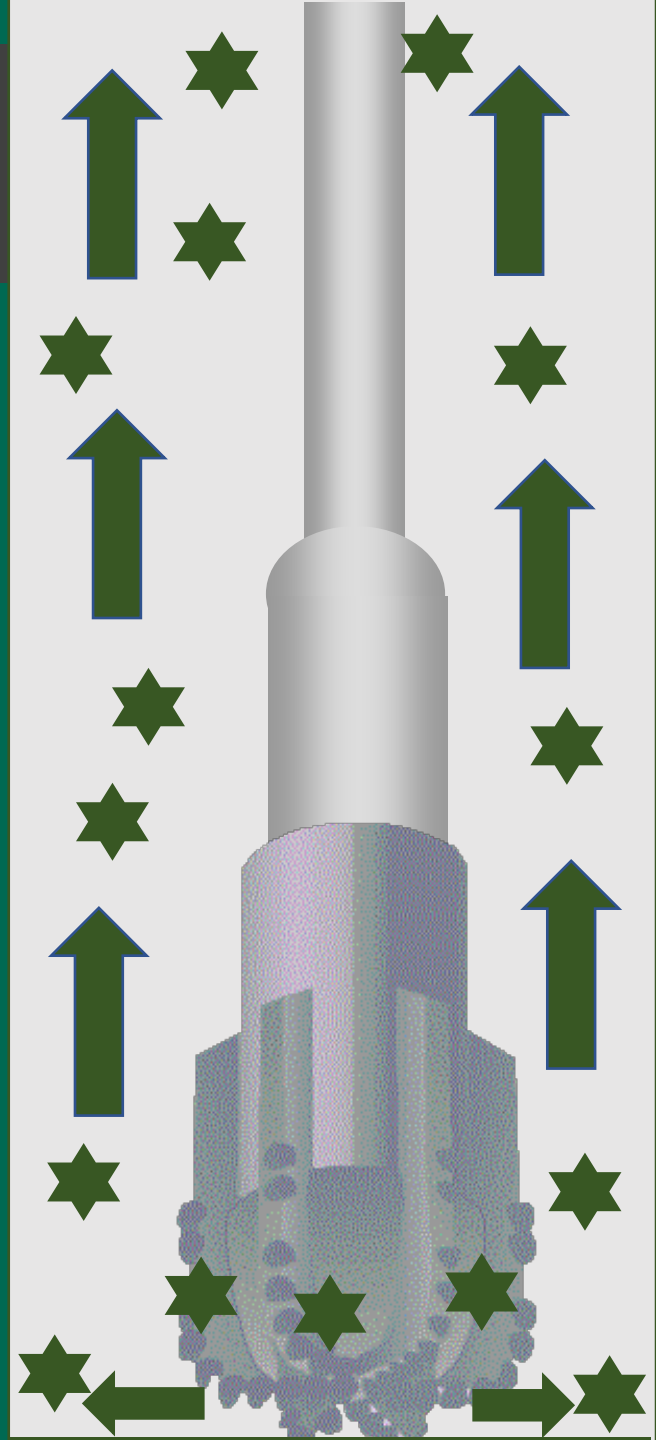
TOOLING

BIT SELECTION

- Type–cutting action
- Hydraulics
- Size - borehole diameter

DRILLING 101

- Rotation turns bit, creating cutting action
- Feed pressure exerted by the rig.
- Fluid is pumped down to move solids out of the hole.



Drilling Methods & Impacts

Water-based drilling fluid = mud – Medium Impact

60 to 150 feet per minute

Air - High Impact

3,500 to 7,500 feet per minute

Air – Foam Combination – Low Impact

100 - 200 feet per minute

Special Capabilities – Sonic – RC – Dual Tube

5 to 75 feet per minute

LOOP INSTALLATION – 1.25 to 1.5 HDPE U-Bends

LOOP INSTALLATION

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HOLE DESIGN & LOOP SPECIFICATIONS

METHOD OF DRILLING

DRILLING FLUID PACKAGE

INCORPORATION OF DRILL SOLIDS

LOOP INSTALLATION

GROUTING & WASTE DISPOSAL

THE GROUTING PROCESS

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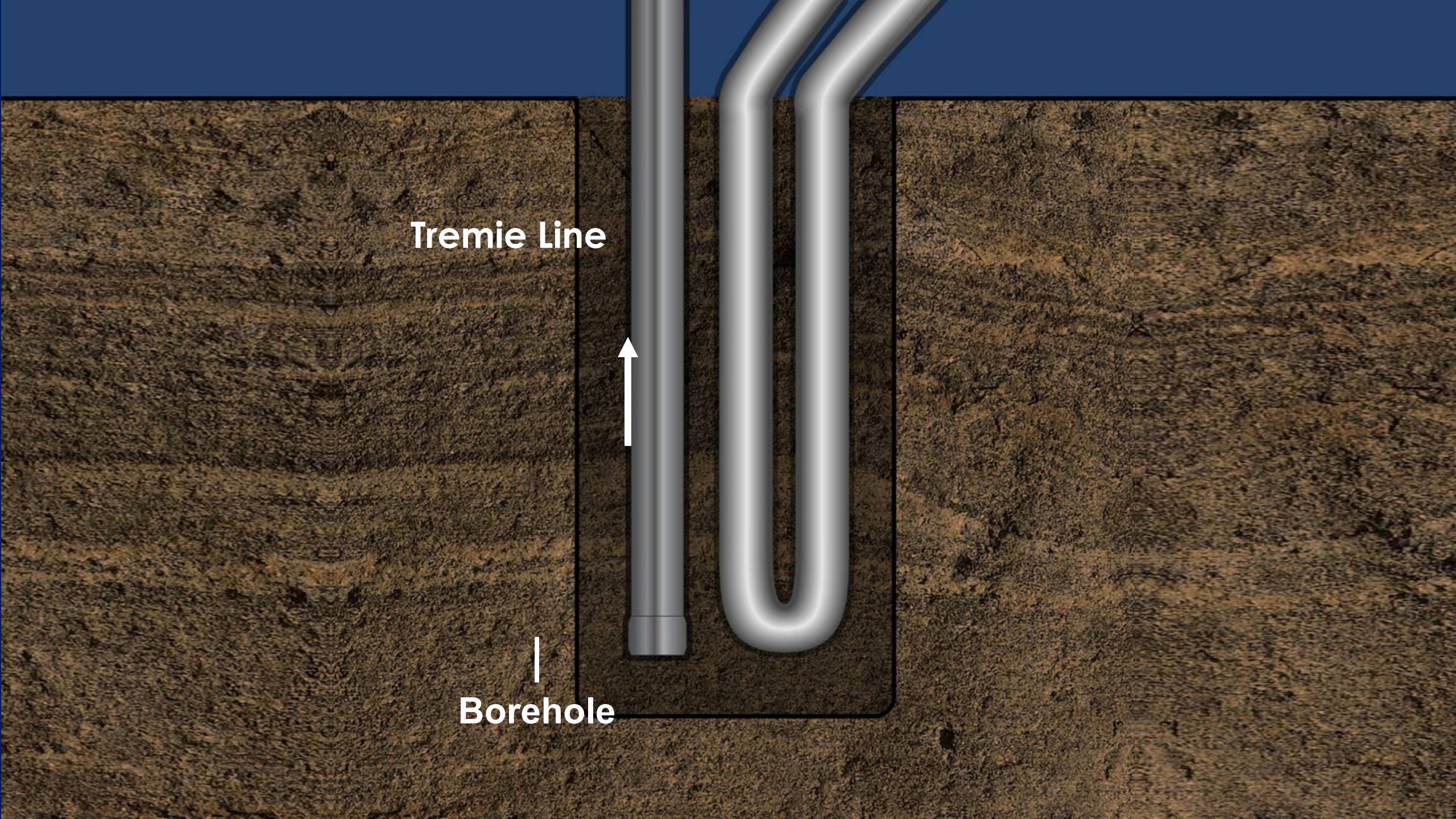
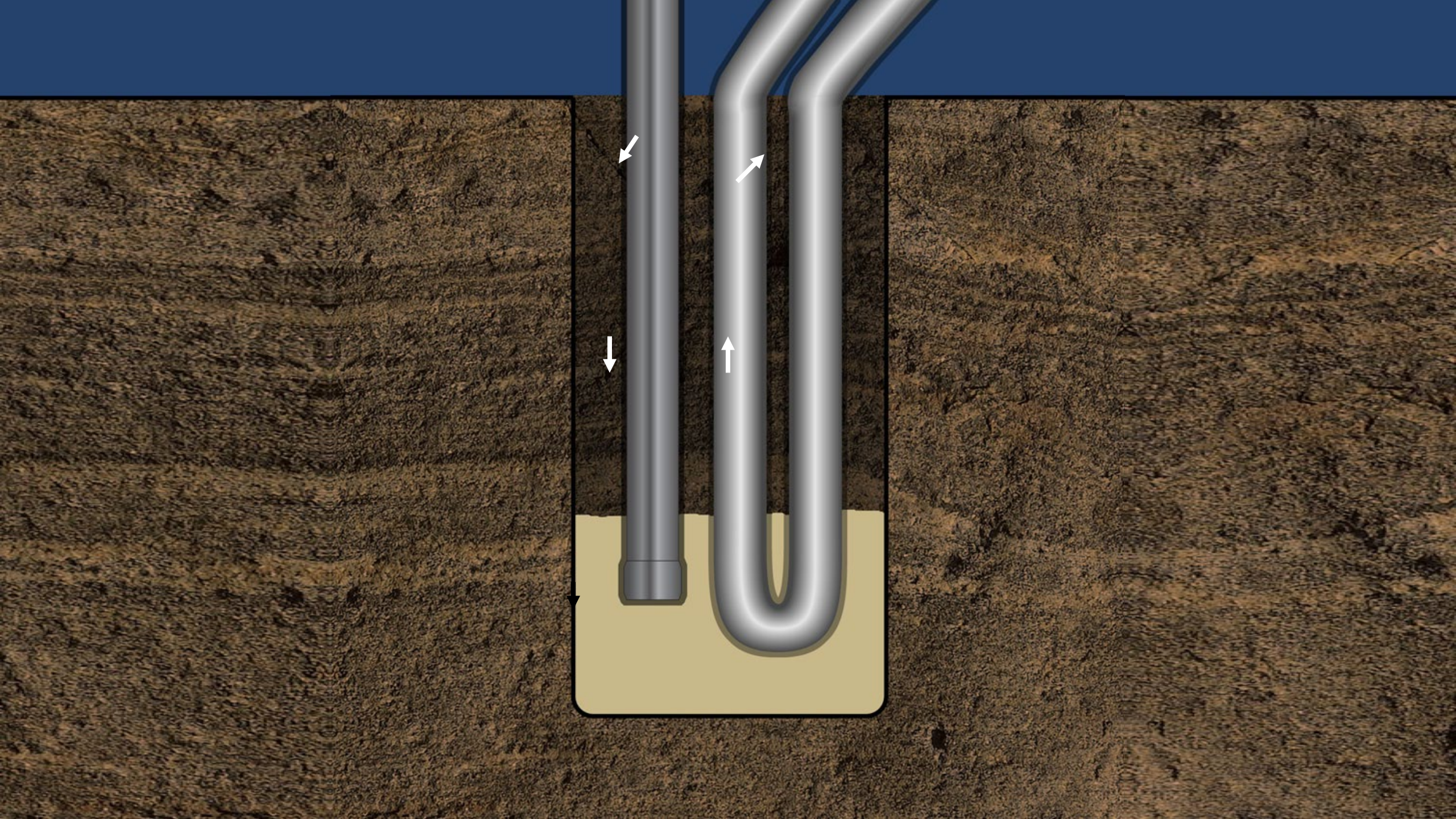
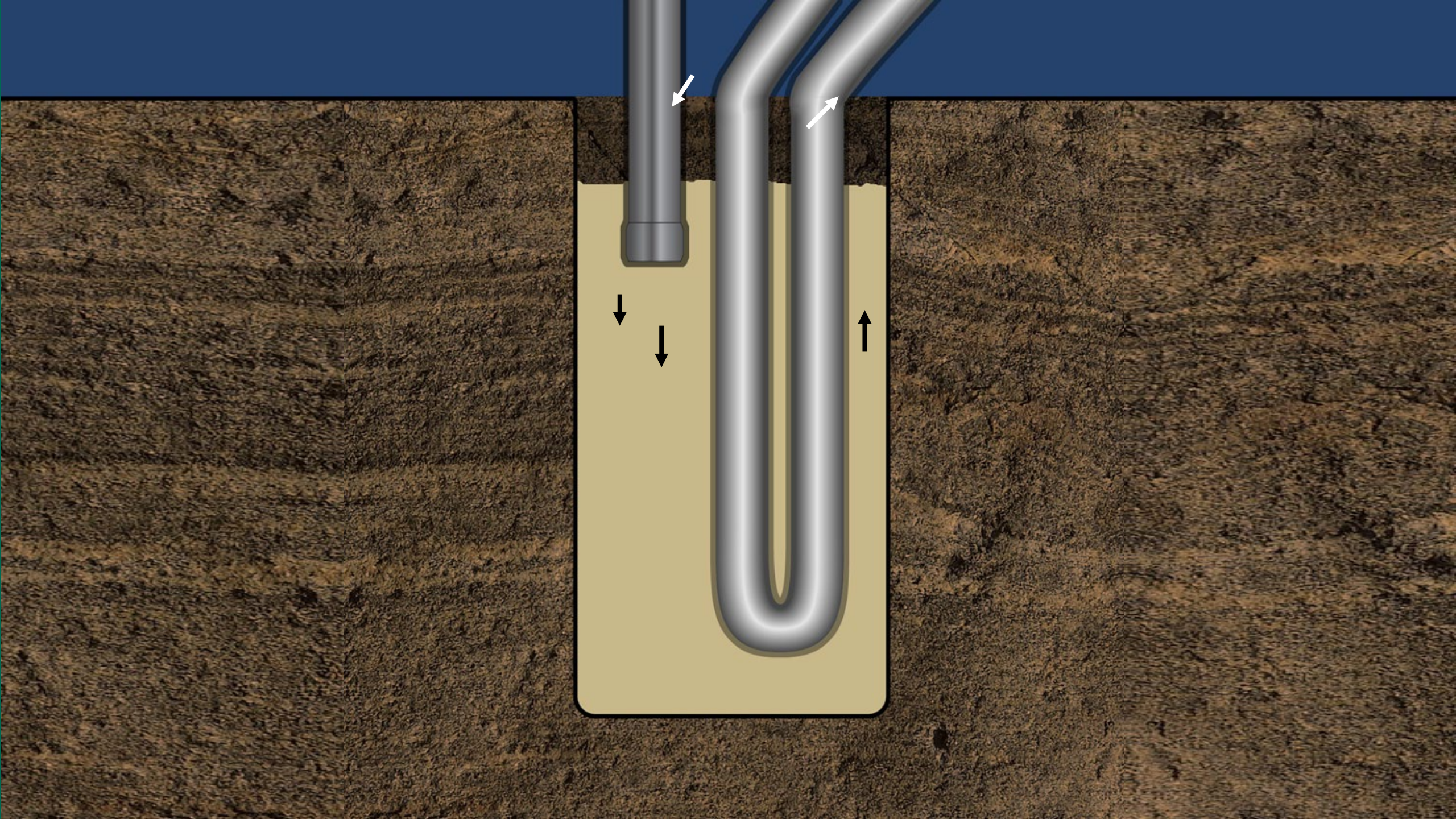

Tremie Line
Borehole





5” x 300’ = 1.82 CYs

Project Totals
25 Holes = 45.5 CYs

All Drilling Generates Waste.

Kiawah Island South Carolina

GEOTHERMAL PROJECT SOLIDS CREATION AND DISPOSAL

5.5" x 400ft = 2.44 Cubic Yards

- Drilling 4 holes a day = ***9.76 Cubic Yards***

5.875 x 800ft = 5.6 Cubic Yard Per Hole

- Drilling 2 holes a day = ***11.12 Cubic Yards***

SUCCESSFUL EXECUTION

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QUESTIONS?

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"Ground Source Geothermal has the power to enhance economic growth, support energy independence, and improve the health and well-being of the American people."

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