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Wolf Creek Dam Saftey



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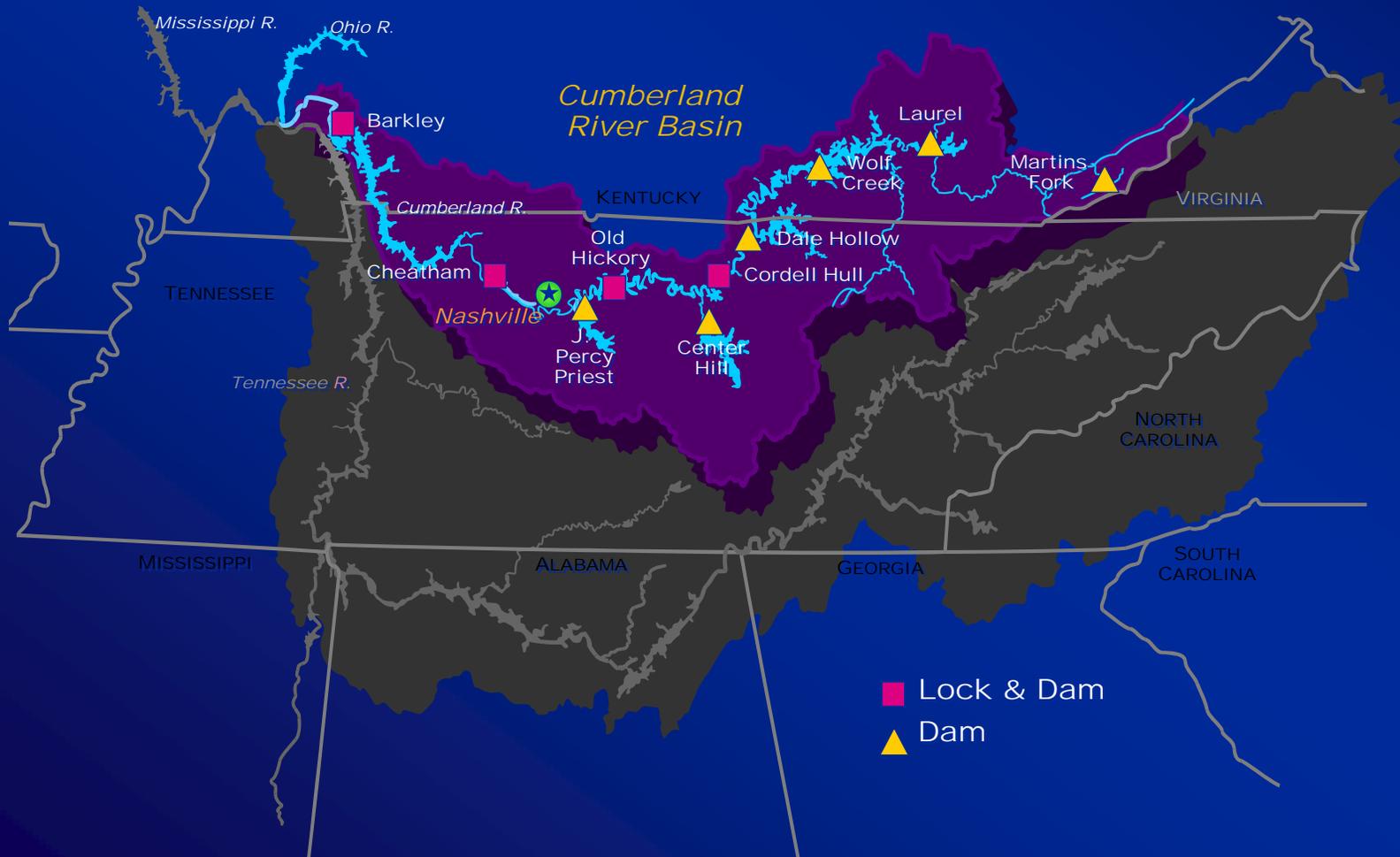
Outline of Topics

- **Project Features and Benefits**
- **History of Problems**
- **Initial Fix**
- **Current Repair Measures**



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Nashville District Boundary





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Project Features





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Project Benefits

- **Flood Control**
 - **Average annual flood damages prevented = \$34 million**
- **Hydropower**
 - **\$77 million / year**
- **Recreation**
 - **5 million visitors per year**
 - **\$159 million impact on local economy**
- **Water Supply**
- **Water Quality**



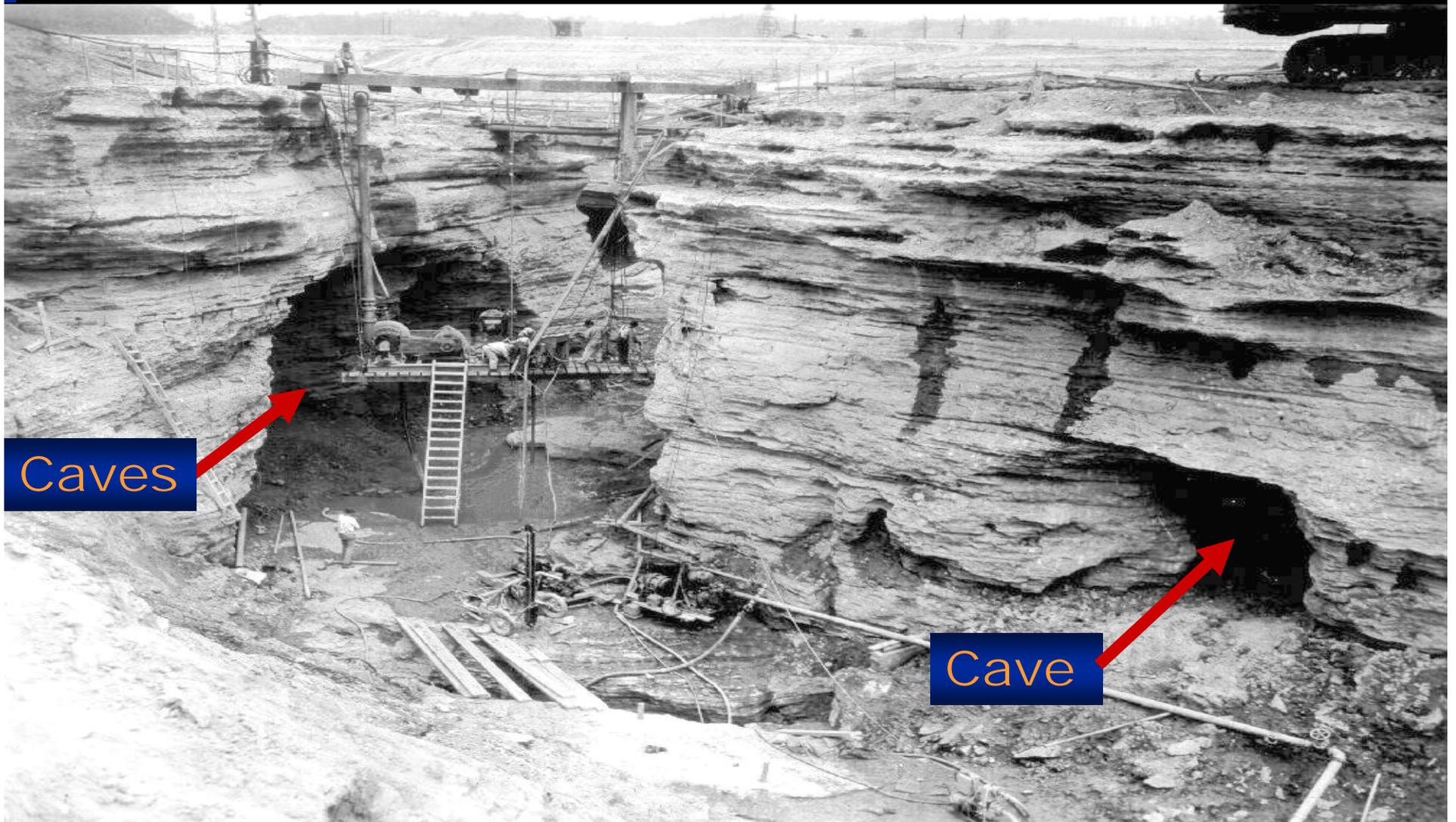
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Foundation Problems



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Wolf Creek Foundation



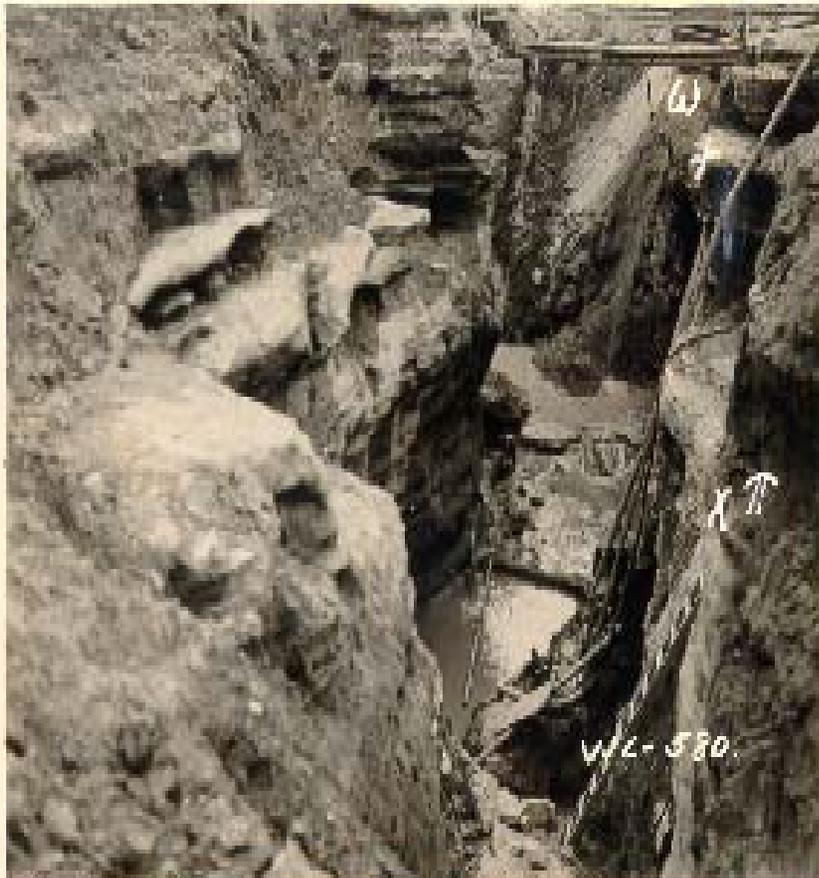
Caves

Cave



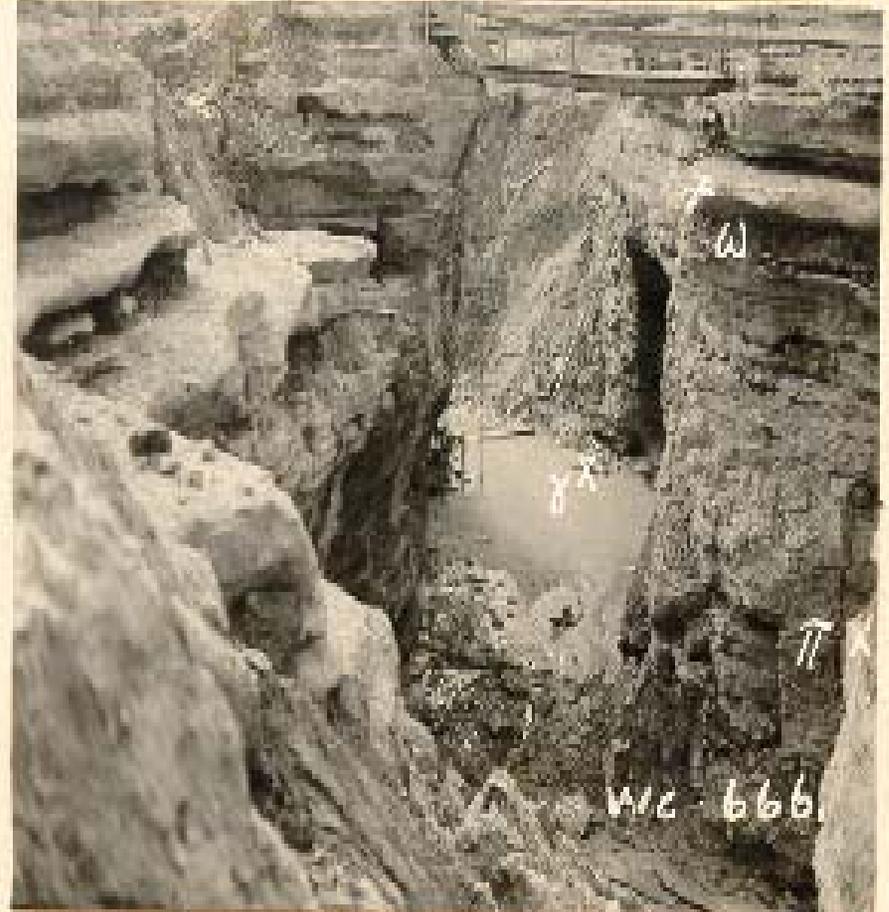
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Cutoff Trench Treatment



8-22-48/looking S in trench from
vicinity embankment sta. 36+10.

I-G



9-01-48/looking S in trench from
vicinity embankment sta. 36+10.

I-F

Before

After



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Backfilling Operations in Cavity





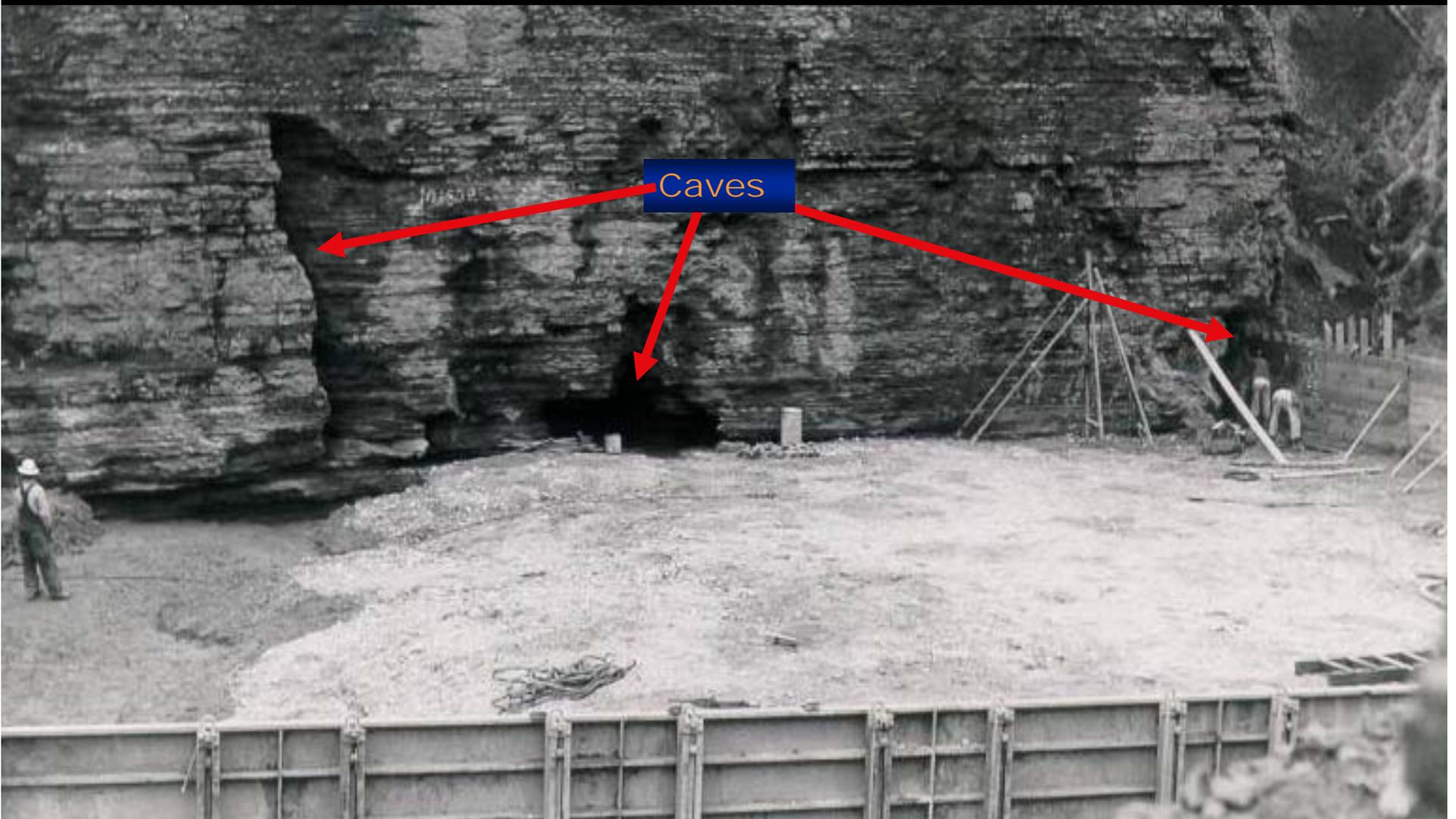
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Filling Cutoff Trench





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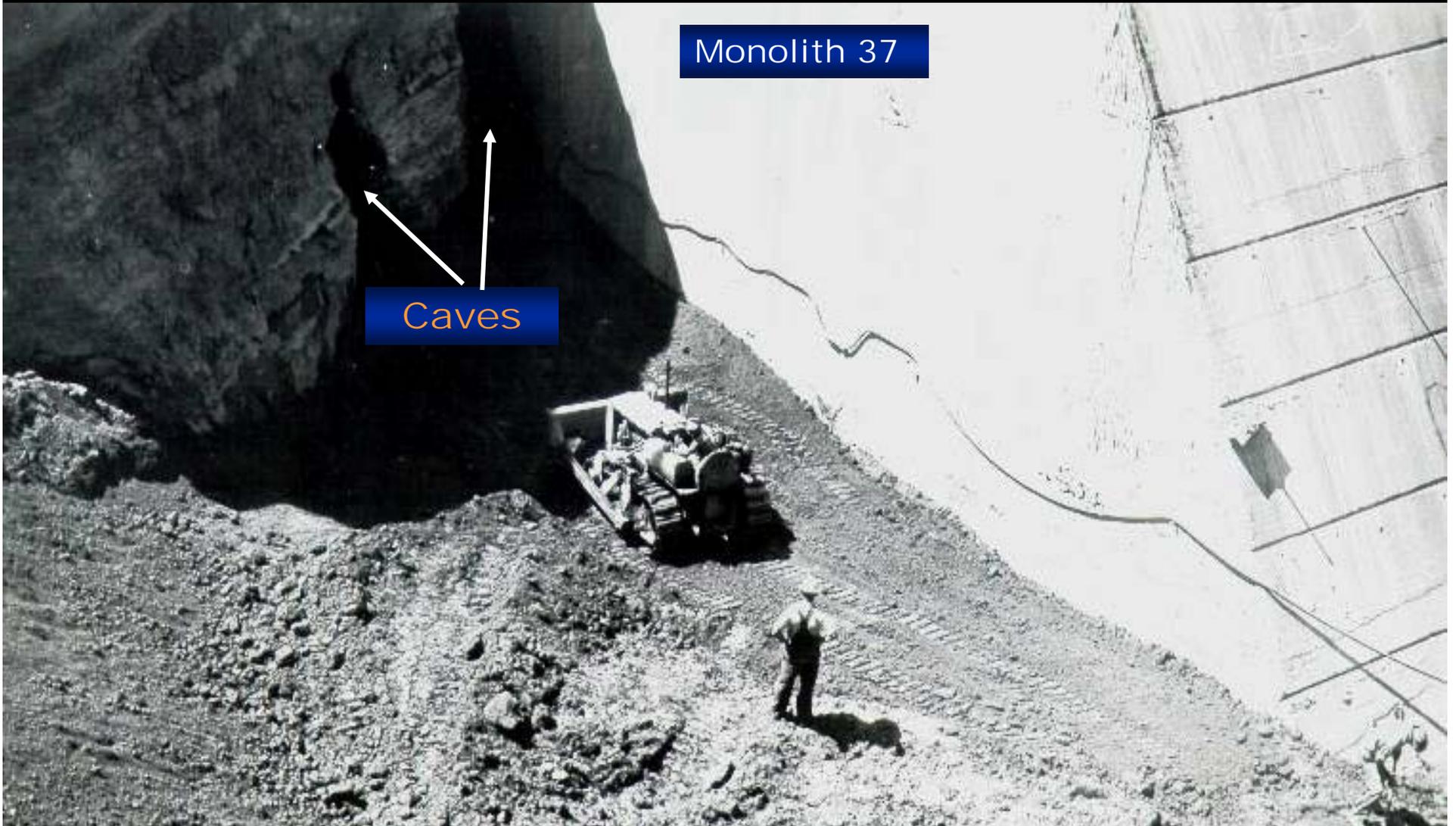




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Monolith 37

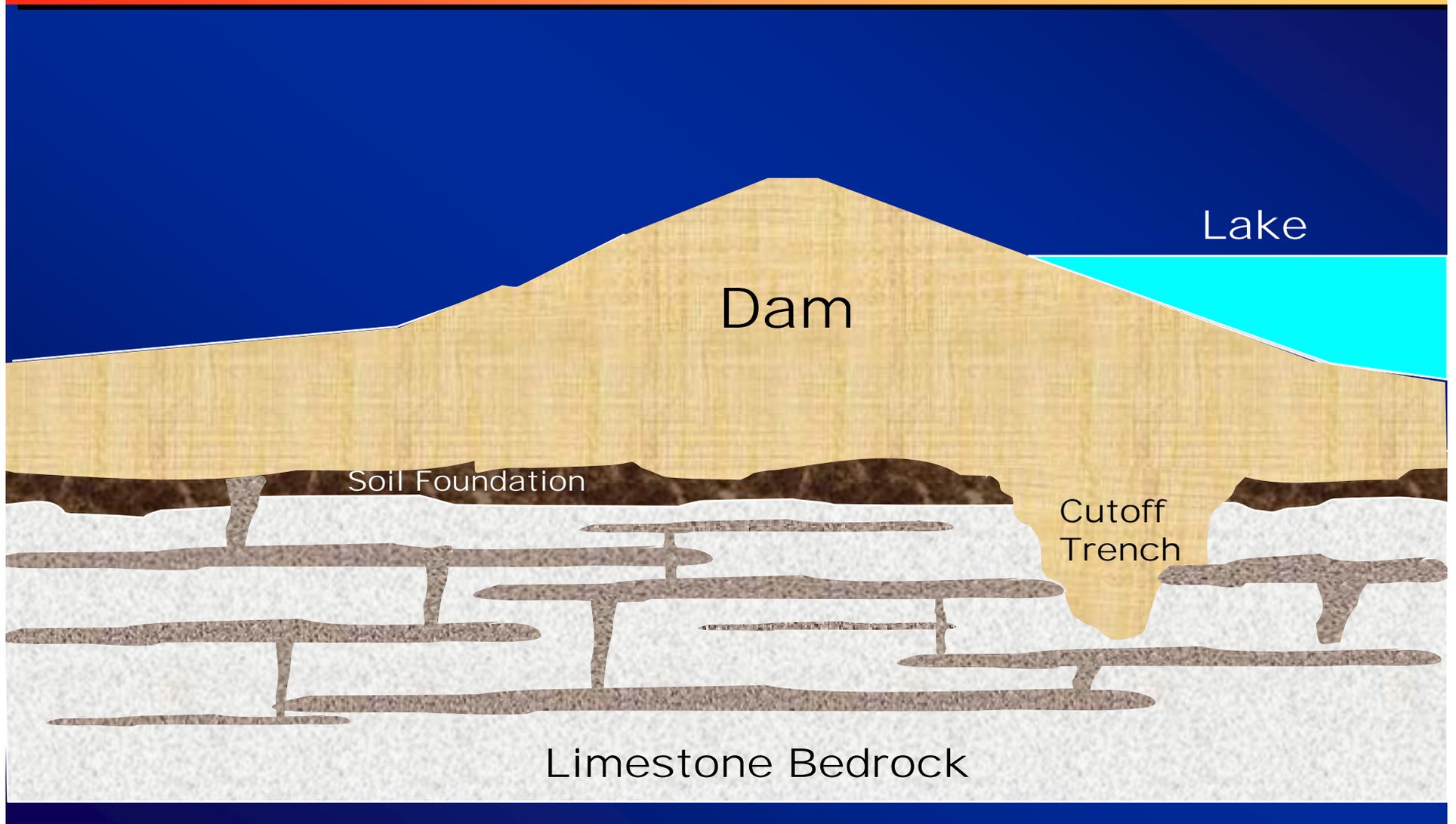
Caves





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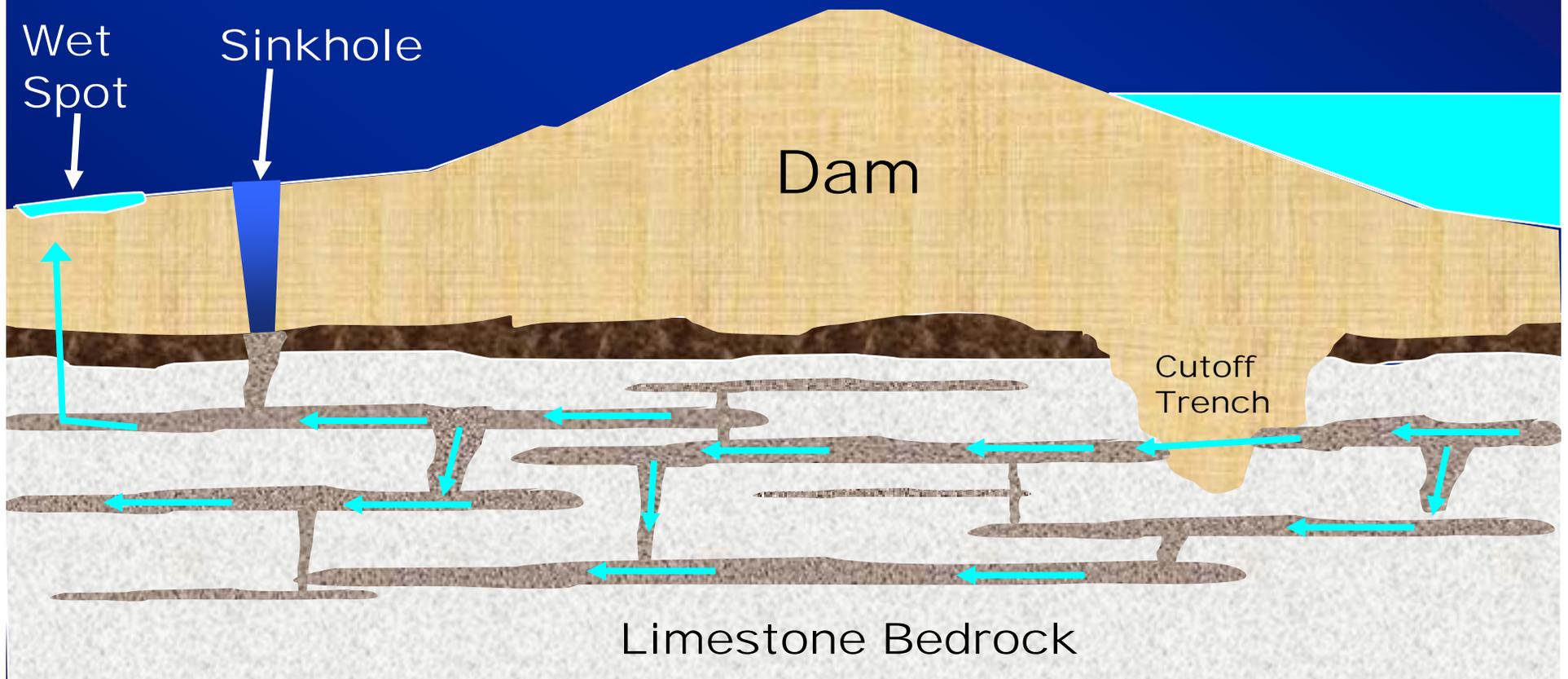
Dam Section





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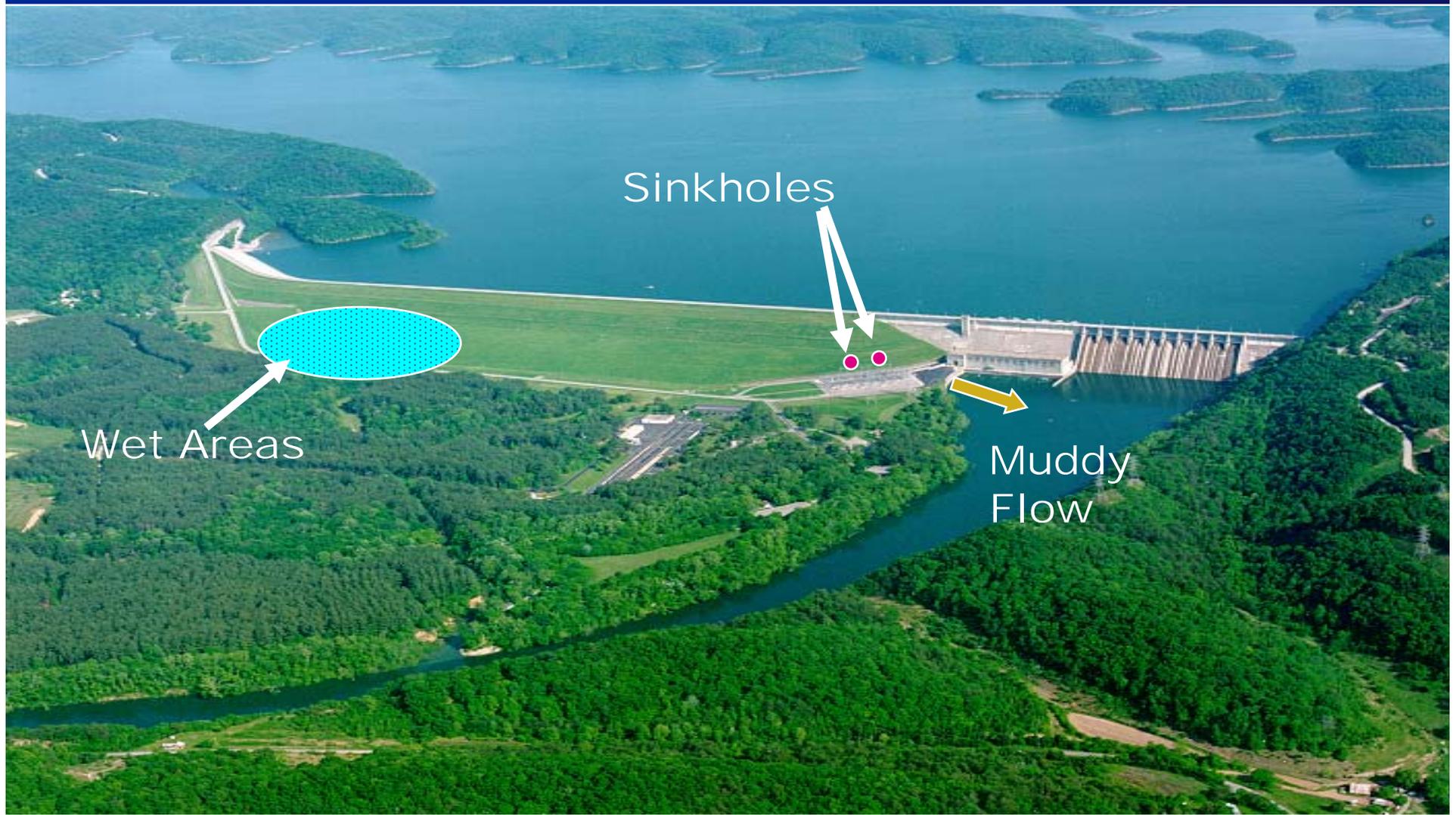
Dam Section





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1960's Problem Areas



Sinkholes

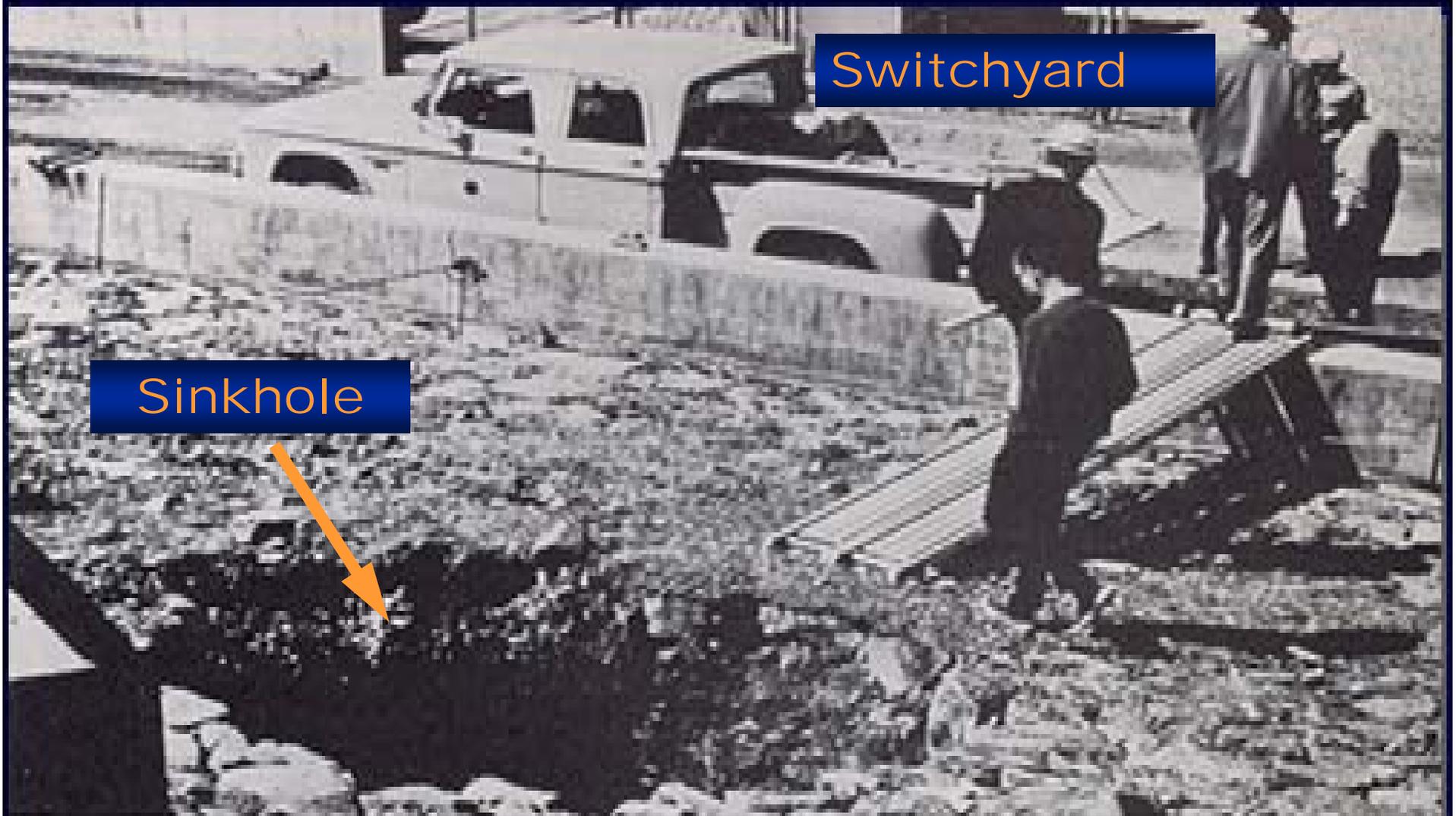
Wet Areas

Muddy
Flow



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1968 Sinkhole



Switchyard

Sinkhole



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Initial Fix



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Emergency Grouting Program





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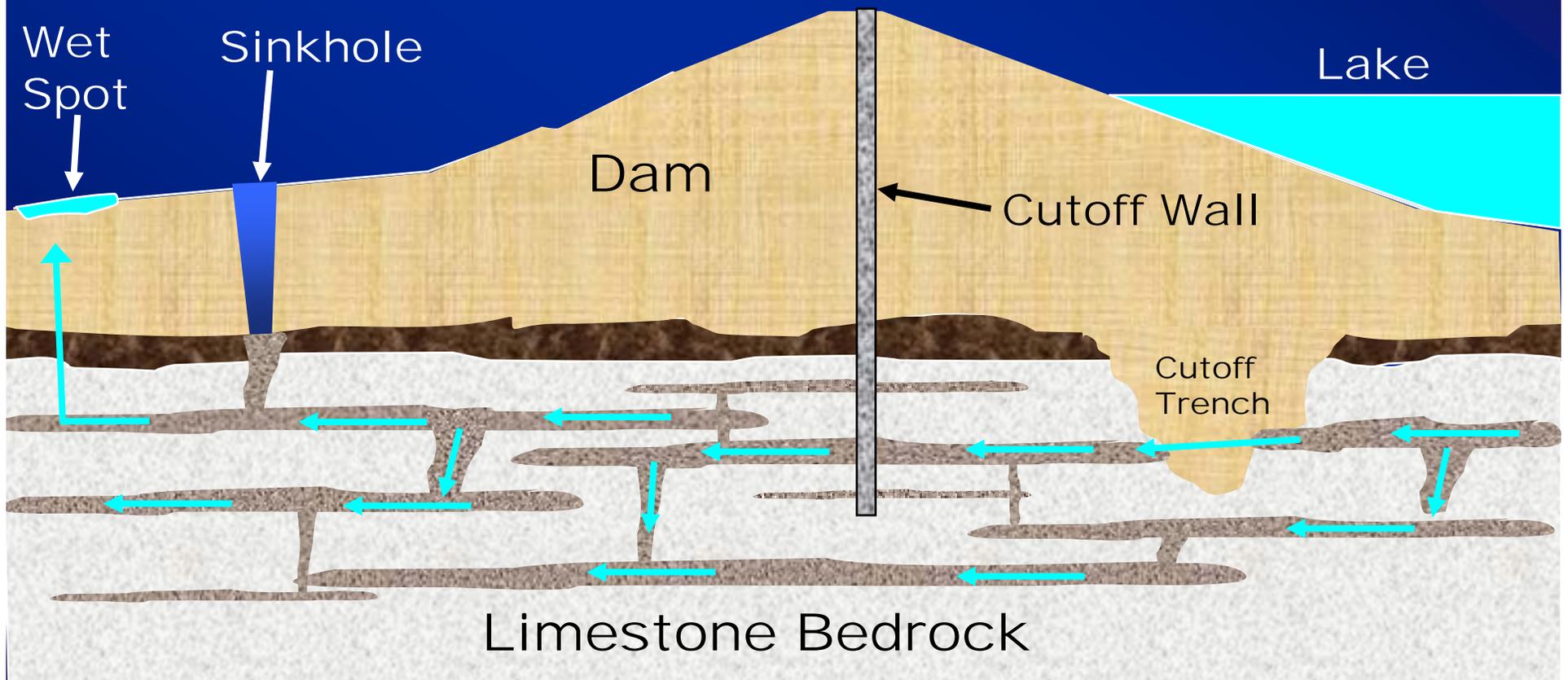
Concrete Cutoff Wall





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Concrete Cutoff Wall





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2005 Observations



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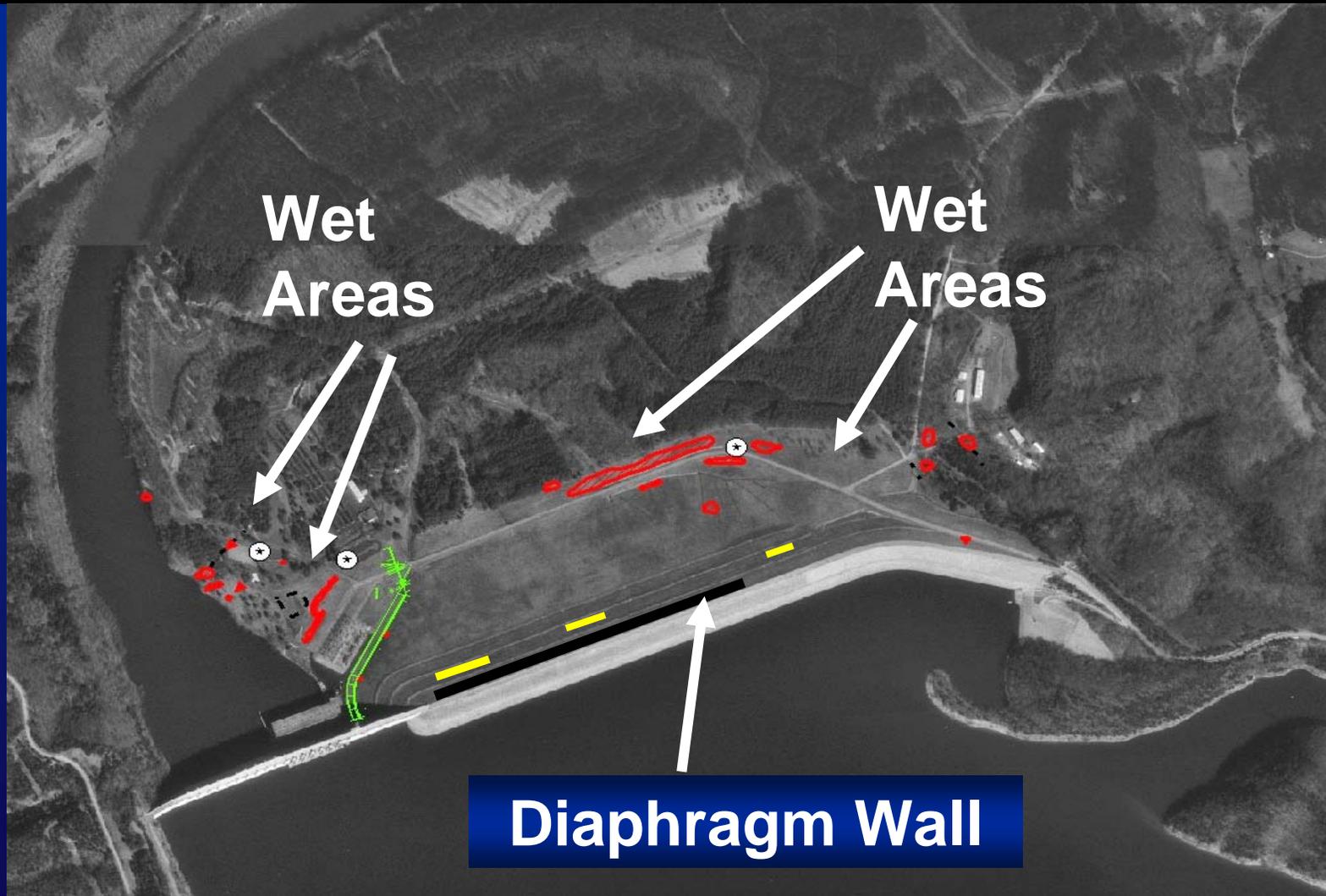
2005 Observations

- **Instrumentation indicates increasing seepage in the bedrock**
- **Wet areas**
- **Settlement along top of dam**
- **Soft zones in the dam**



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2005 Observations



Wet
Areas

Wet
Areas

Diaphragm Wall



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Current Repair



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Wolf Creek Dam Current Repair





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Wolf Creek Dam Construction Contracts



Barrier Wall

Foundation Grouting

Halcomb's Landing



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Wolf Creek Dam Foundation Grouting

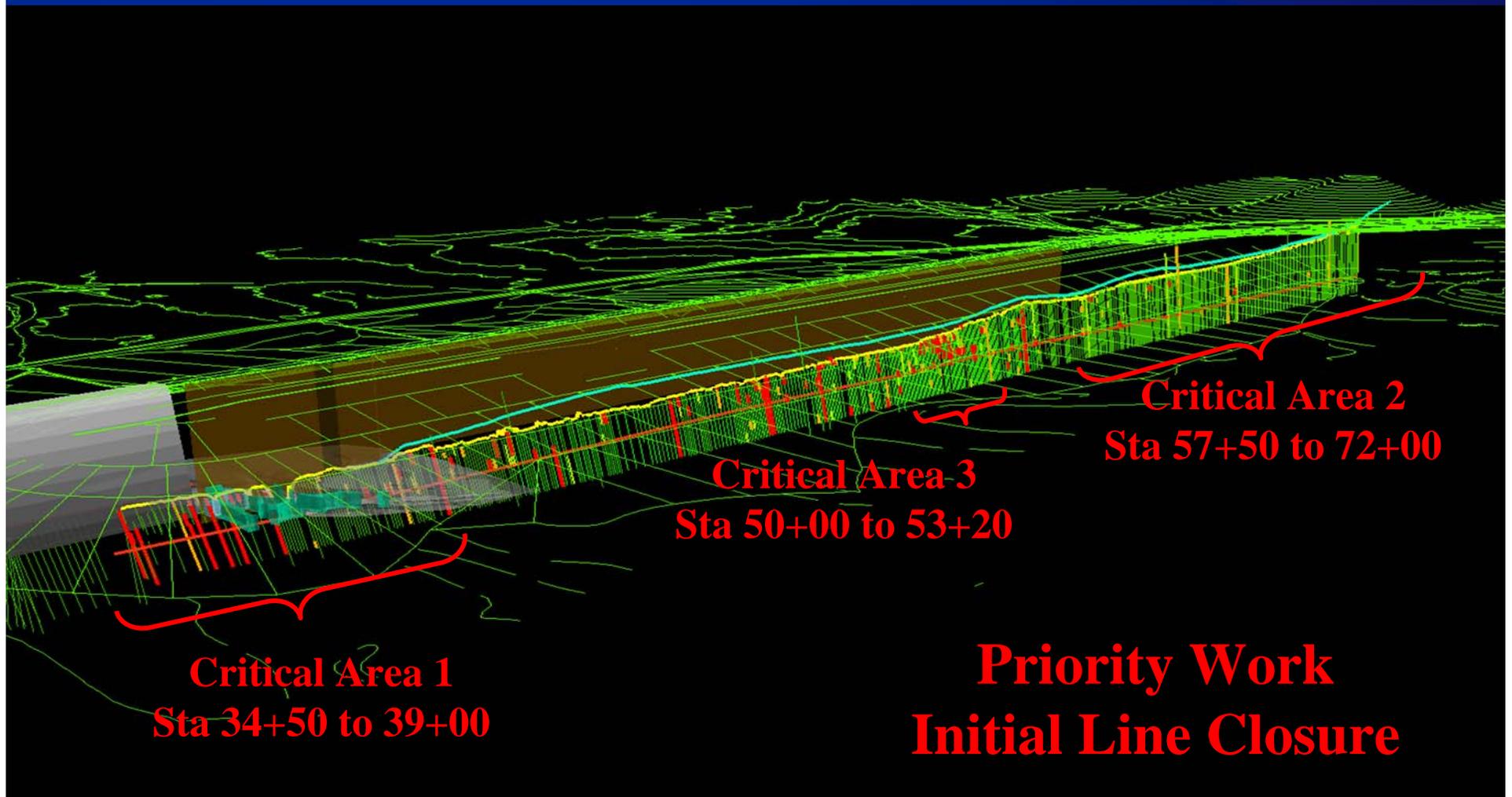


Dual Line Grout Curtain



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Wolf Creek Dam Foundation Grouting

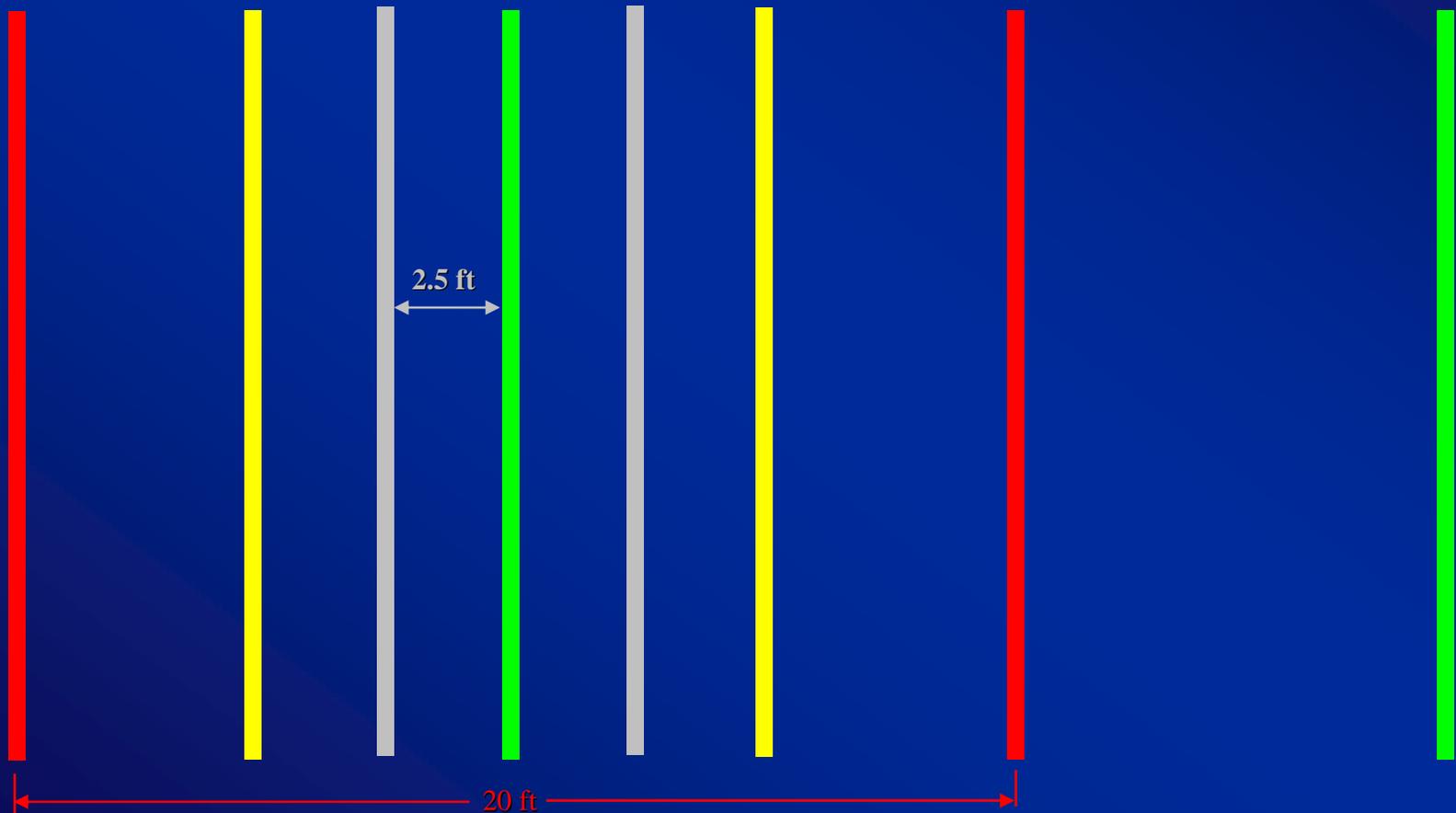




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Wolf Creek Dam Foundation Grouting

Primary **Tertiary** ← 5 ft → **Secondary** ← 10 ft → **Primary** ← 10 ft → **Secondary**
Quaternary Quaternary Tertiary





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Wolf Creek Dam Foundation Grouting

As of 23 March 2008...

Overburden (Sonic) Holes	1134
Rock-Drilled Holes	796
Holes Water Tested	771
Holes Grouted	734
Gallery Holes Completed	50
Total Grout in Foundation	593,700 gallons



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Wolf Creek Dam Barrier Wall



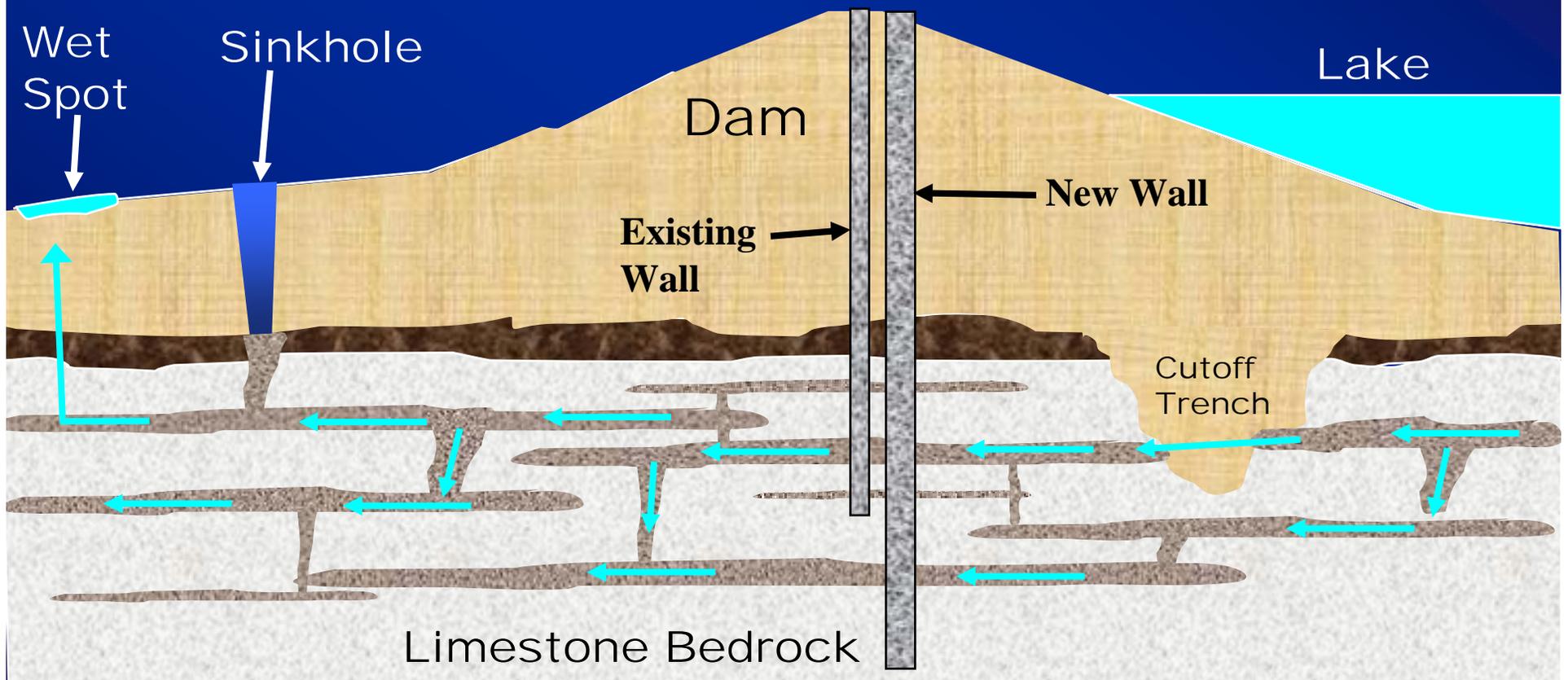
Concrete Barrier Wall

Dual Line Grout Curtain



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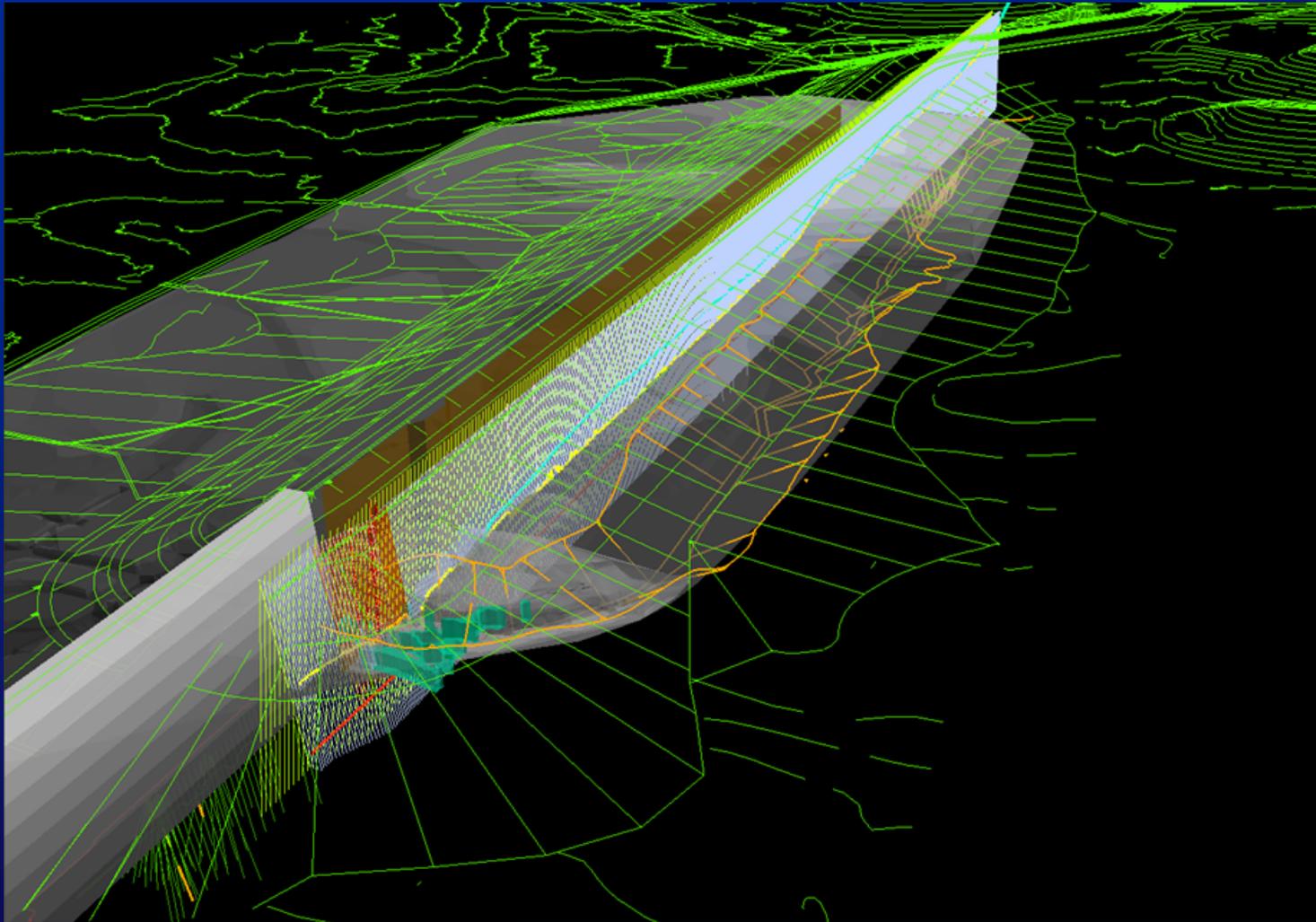
Cutoff Wall





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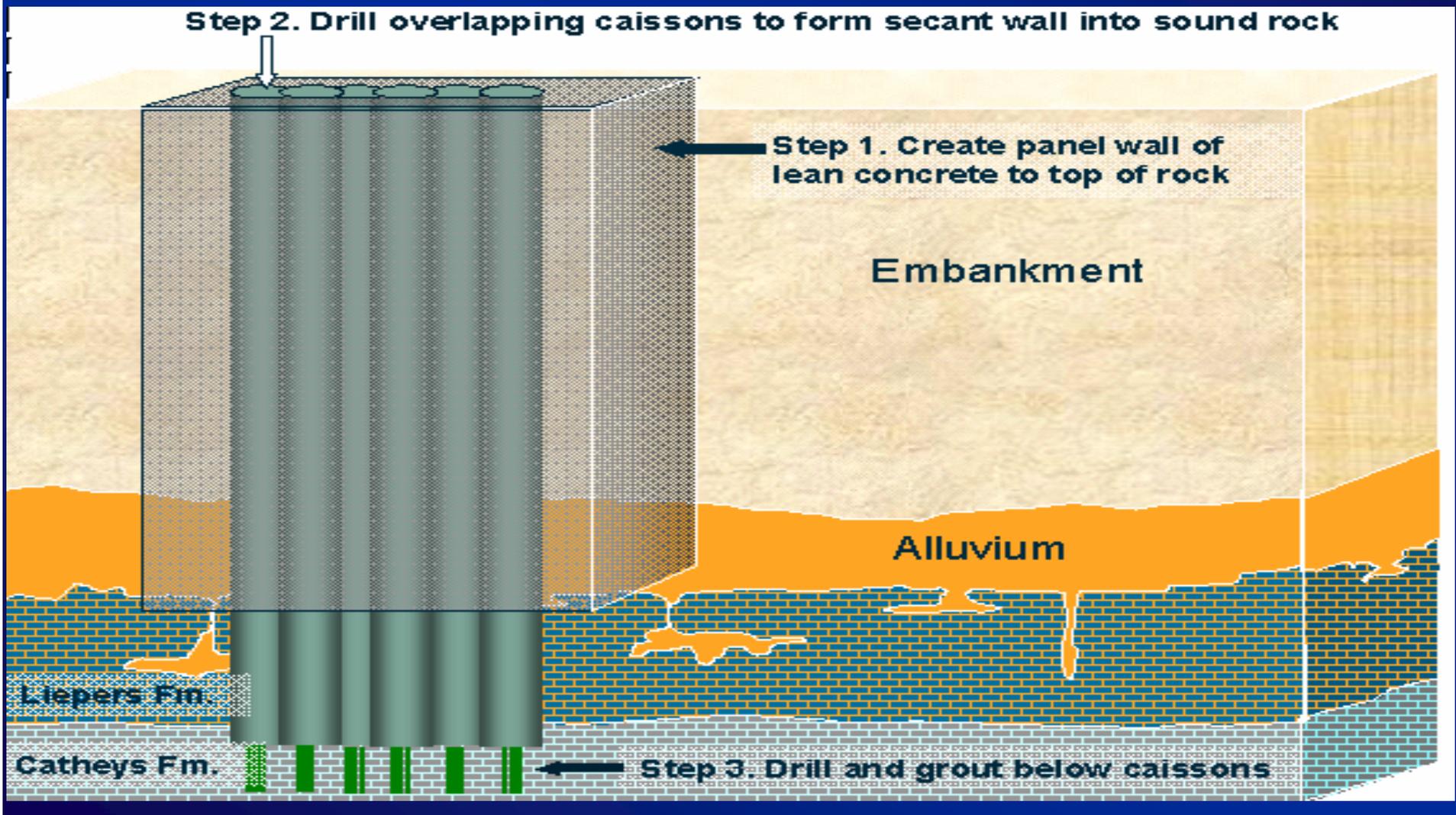
Wolf Creek Dam Barrier Wall





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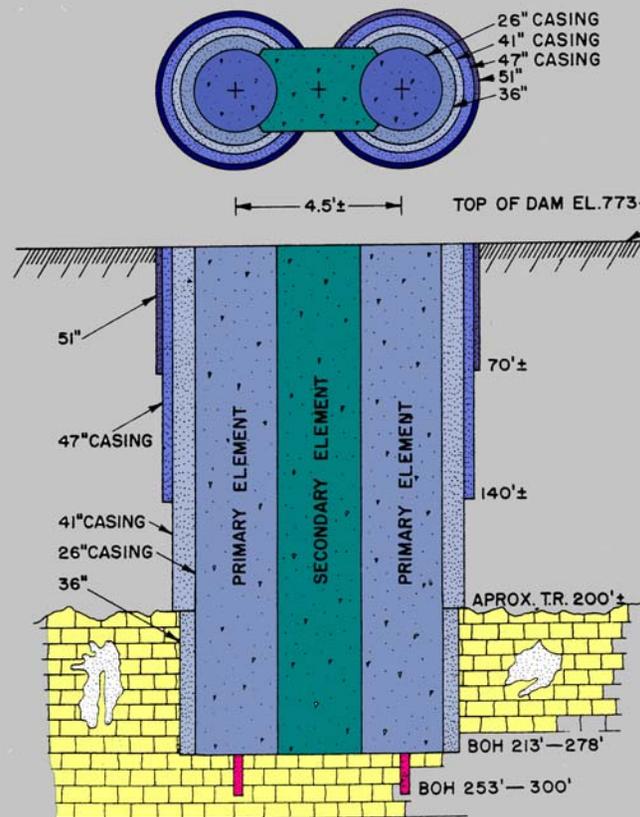
Proposed Secant Wall





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Diaphragm Wall

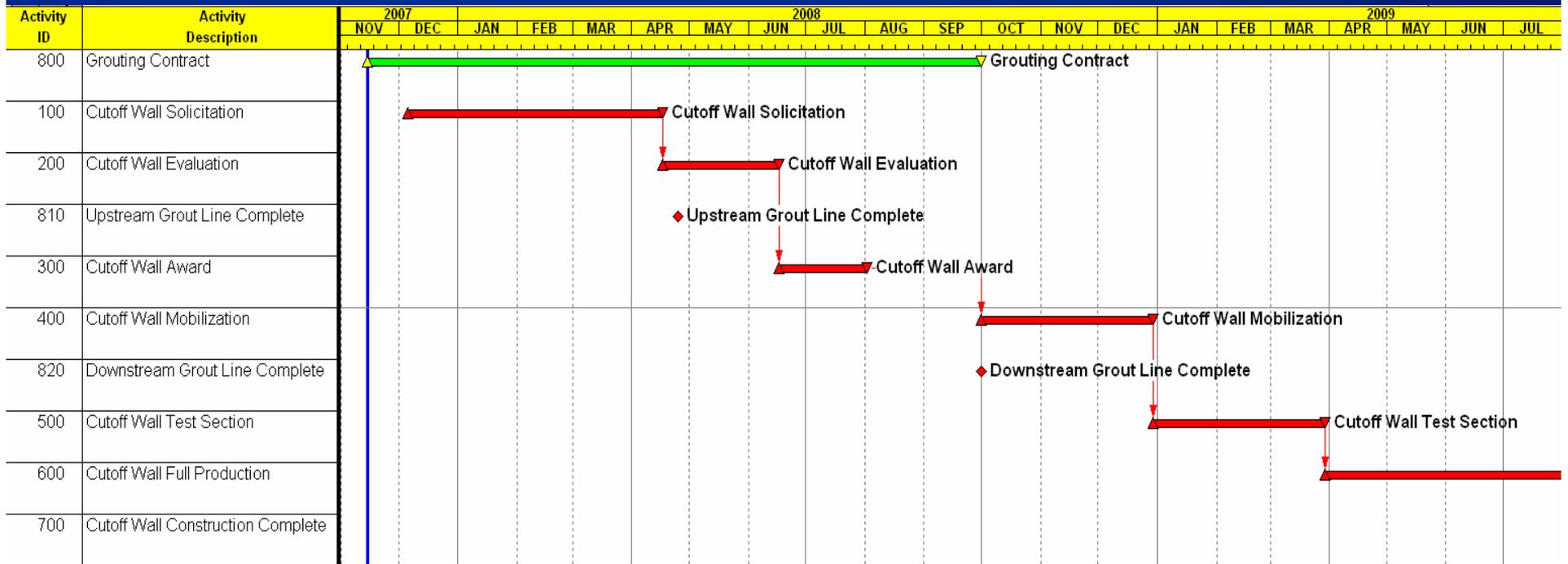


Typical Section



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Wolf Creek Dam Schedule





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Wolf Creek Dam Funding Stream

2005	\$ 100,000
2006	\$ 8,800,000
2007	\$ 44,000,000
2008	\$ 53,200,000
2009	\$ 57,000,000
2010	\$ 90,000,000
2011	\$ 66,000,000
2012	\$ 7,000,000
Total	\$ 326,100,000



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Questions