

November 15, 2017



ROUND VALLEY
RESERVOIR PROJECT



The Round Valley Reservoir Structures Refurbishment and Resource Preservation Project



OVERVIEW

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About Round Valley

About the Project

Project Components

- Embankment Modifications
- Grouting
- Regrading
- Dredging
- Tower Repairs

Timeline

Public Impacts

The Project Website

Q & A

TEAM INTRODUCTION

MARC BROOKS, P.E.
Chief Engineer



SCOTT RASCHKE, P.E.
Consulting Engineer

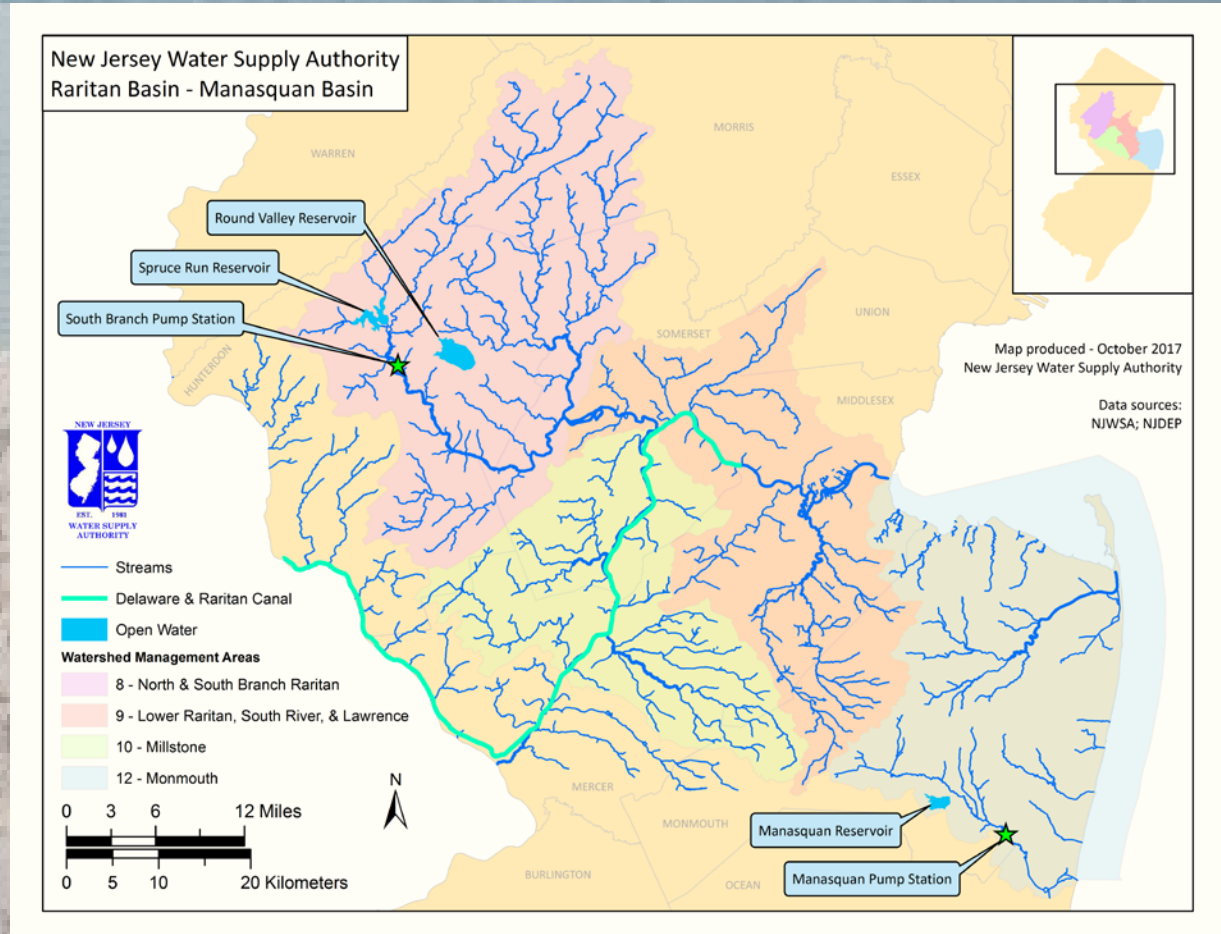


NICOLE PACE-ADDEO, M.A.
Public Outreach Specialist



ABOUT THE NJWSA

- Independent State Authority, “in but not of” the New Jersey Department of Environmental Protection
- Created in 1981 to take over and operate existing water supply facilities and implement projects identified in the State Water Supply Plan
- Operate three water supply systems:
 - Raritan Basin System (Spruce Run, Round Valley, D&R Canal)
 - Manasquan Reservoir System
 - Manasquan Water Treatment Plant & Transmission System



ABOUT ROUND VALLEY

- Three earthen embankments constructed in 1960s to close valley and impound water
- Capacity is 55 billion gallons – largest reservoir by volume in New Jersey
- Round Valley water is released into the North Branch of the Rockaway Creek near Whitehouse Station
- These dams are regulated by NJDEP Dam Safety Program

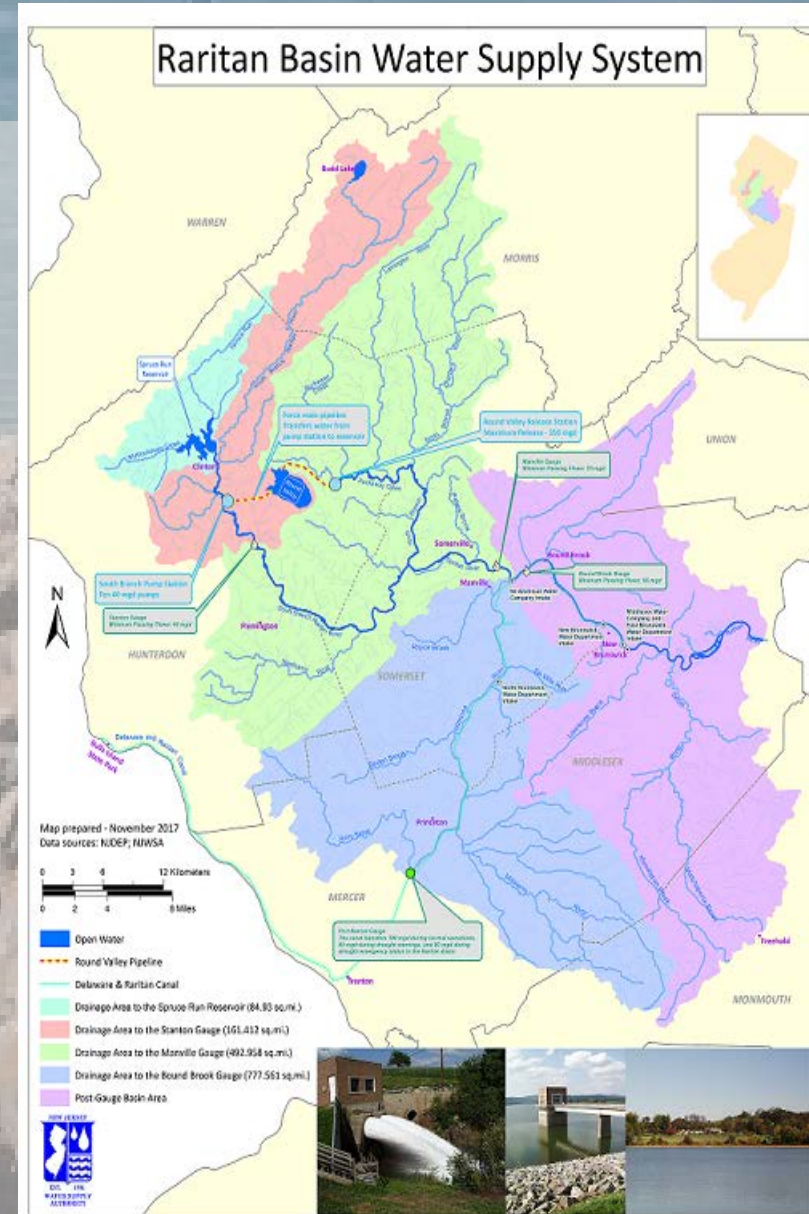


Dike & North Dam during original construction



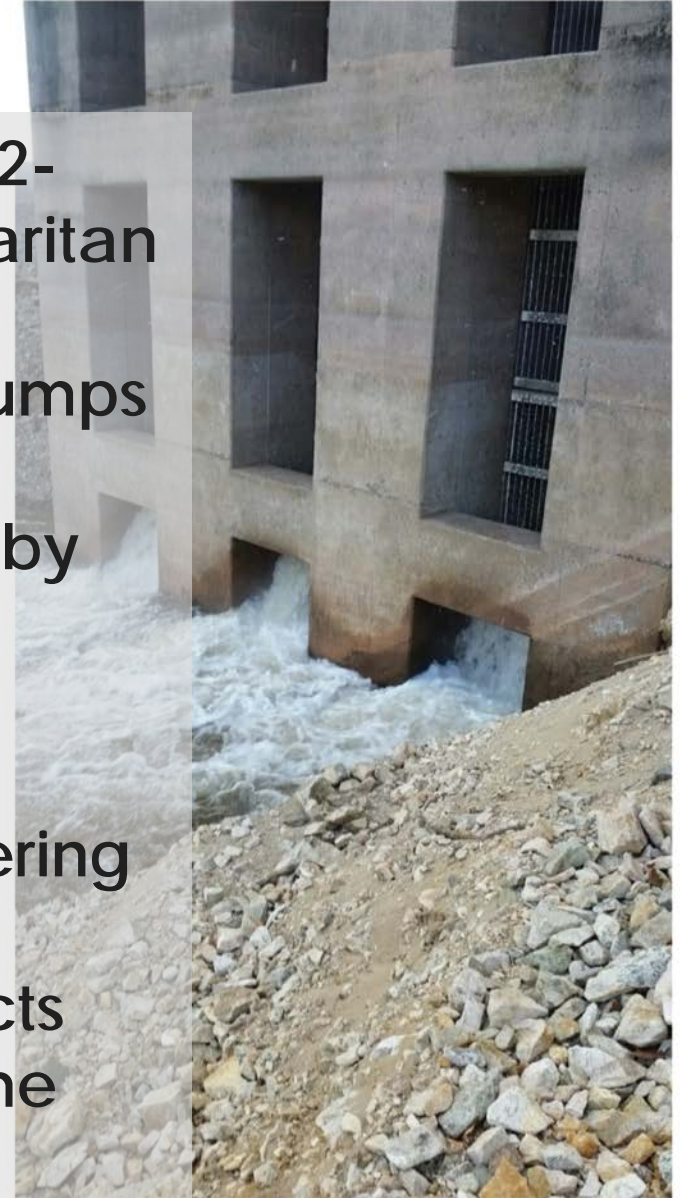
ABOUT ROUND VALLEY

- Part of Raritan Basin System, designed to help maintain passing stream flows on the Raritan River
- Raritan Basin System provides 241 MGD in safe yield to ensure adequate water supply and protection against drought
- The safe yield is the amount of water that a reservoir system can supply without fail during the drought of record
- Approximately 1.5 million people in central New Jersey rely on the Raritan Basin System



ABOUT ROUND VALLEY

- “Off stream pumped storage” – reservoir is filled by 3.2-mile pipeline connected to the South Branch of the Raritan River
- South Branch Pumping Station contains ten 40MGD pumps
- In 2017, 7 billion gallons of water was pumped to the reservoir over about 6 months, raising the water level by about 10 feet
- Professional staff are on site every day on the dams: maintenance, instrumentation readings, security
- Dam inspections are conducted quarterly by engineering staff
- NJDEP State Park Service operates recreational aspects
- NJDEP Division of Fish & Wildlife operates fish and game aspects, boat launch



ABOUT THE PROJECT – WHY?

- Protect and maintain State asset to ensure adequate water supply and protection against drought
- Dams were built with an estimated operating life of 50 -100 years and it's been almost 60 years; this is an investment in the State's future
- Design standards have changed since the 1960s – we are retrofitting the structures with the latest engineering approaches to increase resiliency and sustainability for long term water supply needs



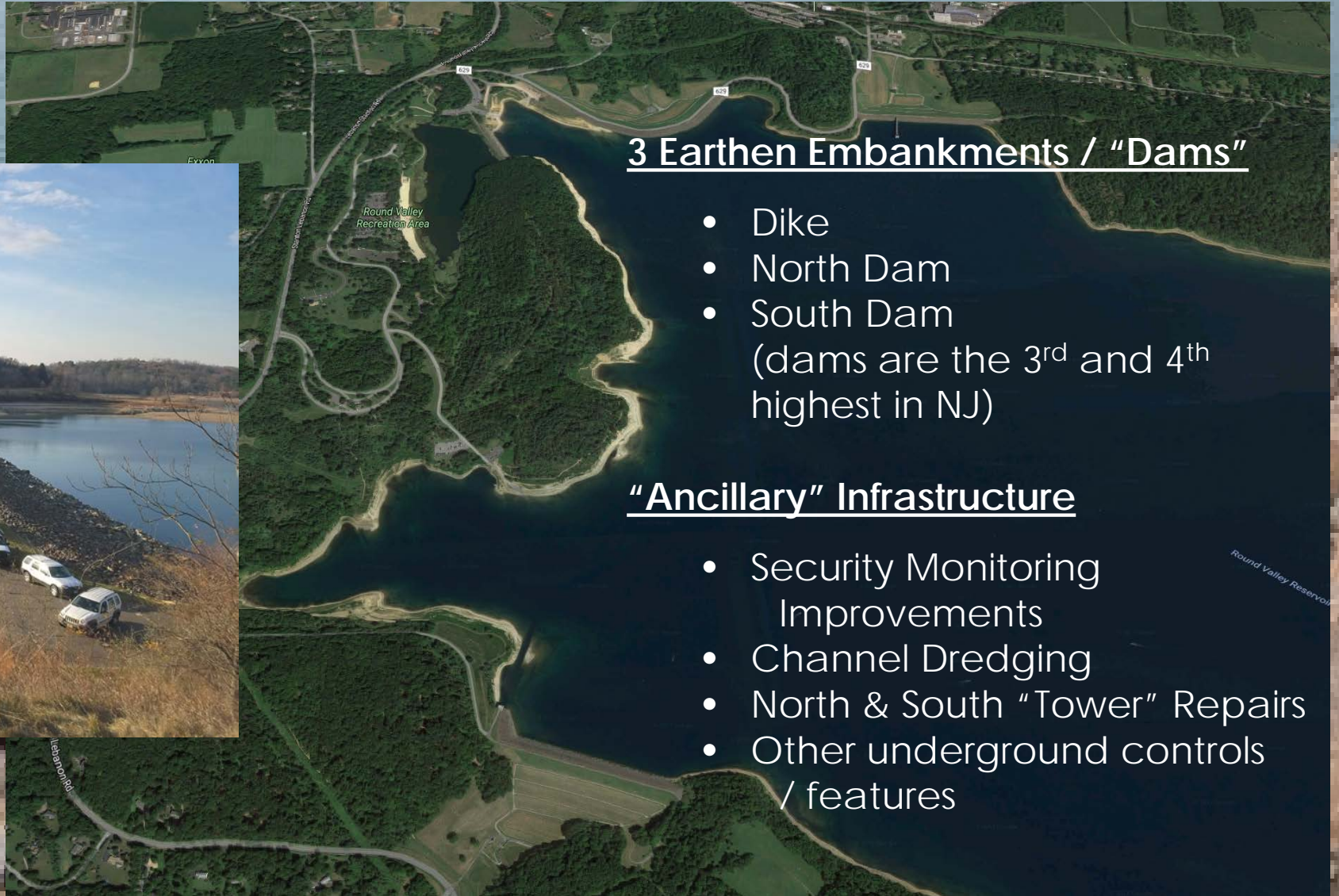
South Dam during original construction



ABOUT THE PROJECT

- NJWSA convened a panel of world renowned dam safety experts to advise us on how best to extend the operating life of the reservoir
- Cost of project will be financed through revenue generated by the sale of water – no tax money involved
- NJWSA procured two engineering firms to design and oversee the project
- Schnabel Engineering is Engineer of Record

PROJECT COMPONENTS



3 Earthen Embankments / "Dams"

- Dike
- North Dam
- South Dam
(dams are the 3rd and 4th highest in NJ)

"Ancillary" Infrastructure

- Security Monitoring Improvements
- Channel Dredging
- North & South "Tower" Repairs
- Other underground controls / features

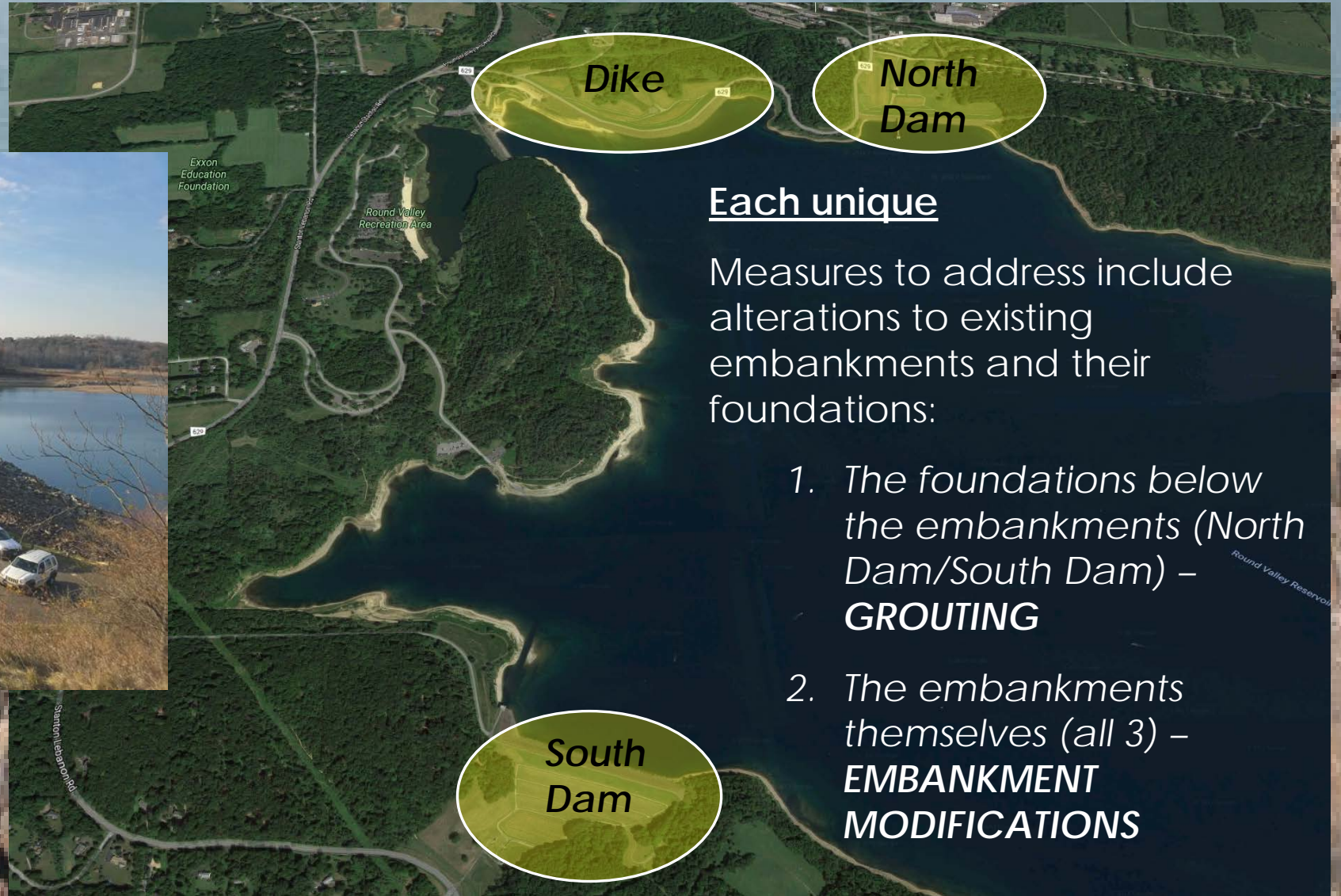


South Dam

EARTHEN EMBANKMENTS



South Dam



Dike

North Dam

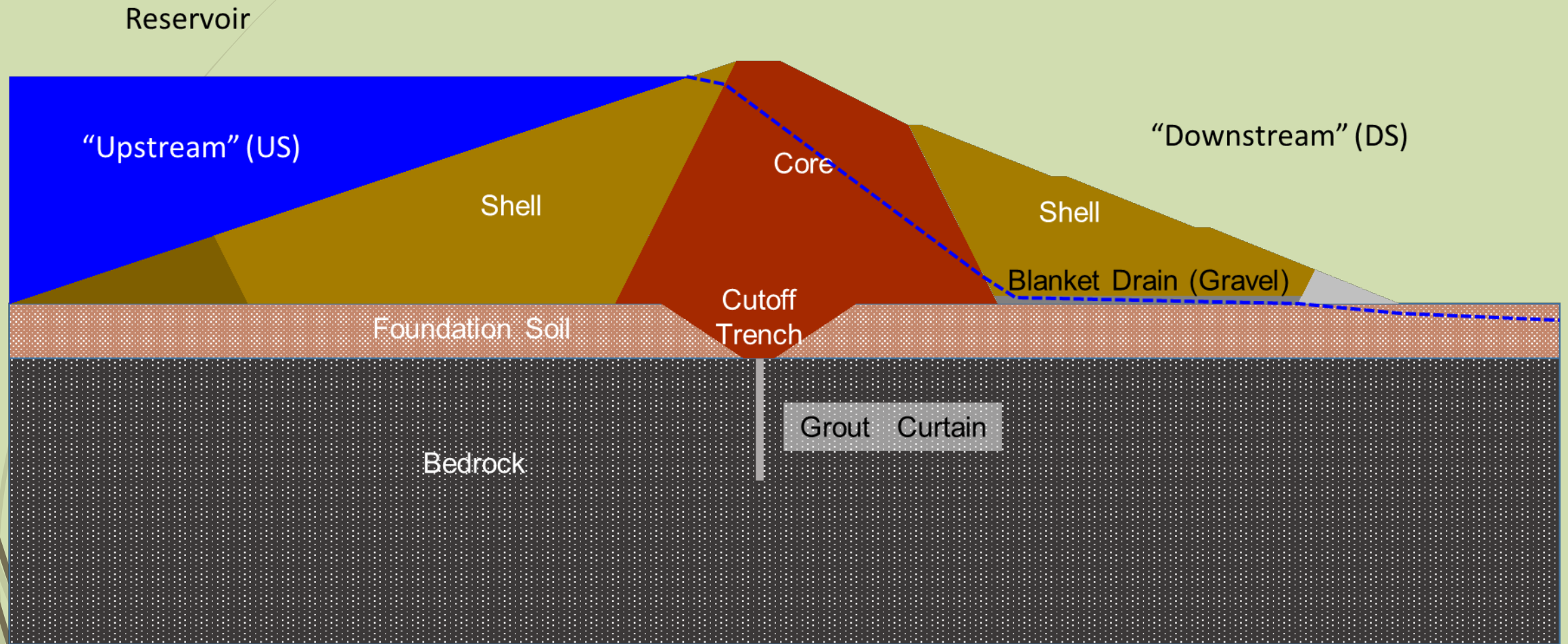
South Dam

Each unique

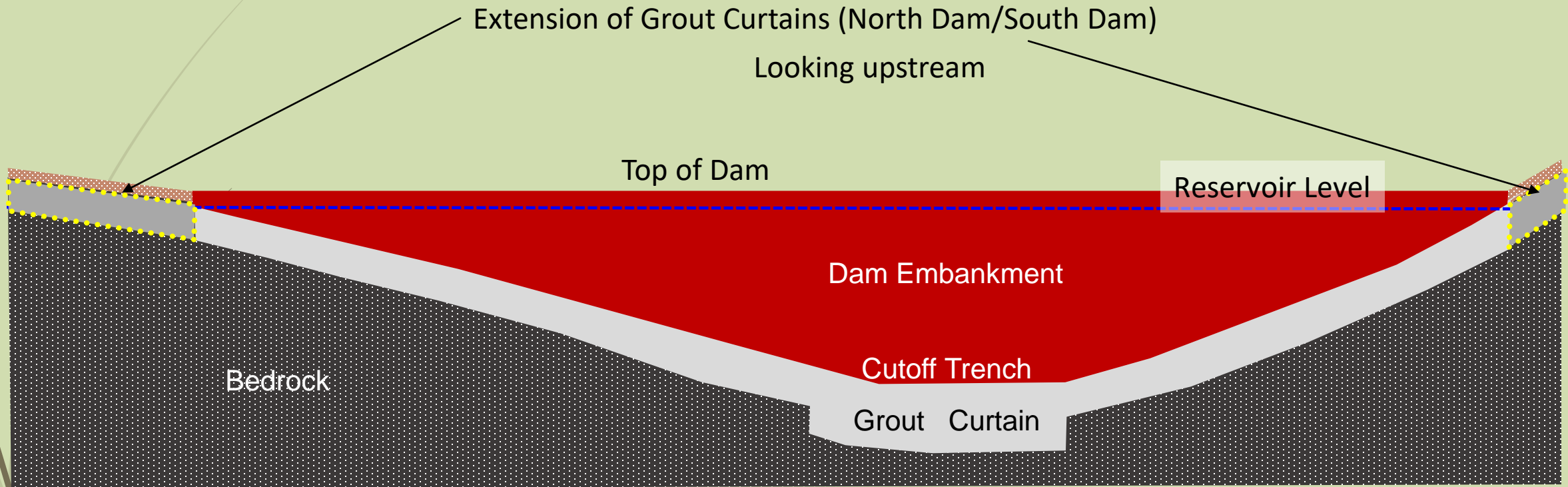
Measures to address include alterations to existing embankments and their foundations:

1. The foundations below the embankments (North Dam/South Dam) – **GROUTING**
2. The embankments themselves (all 3) – **EMBANKMENT MODIFICATIONS**

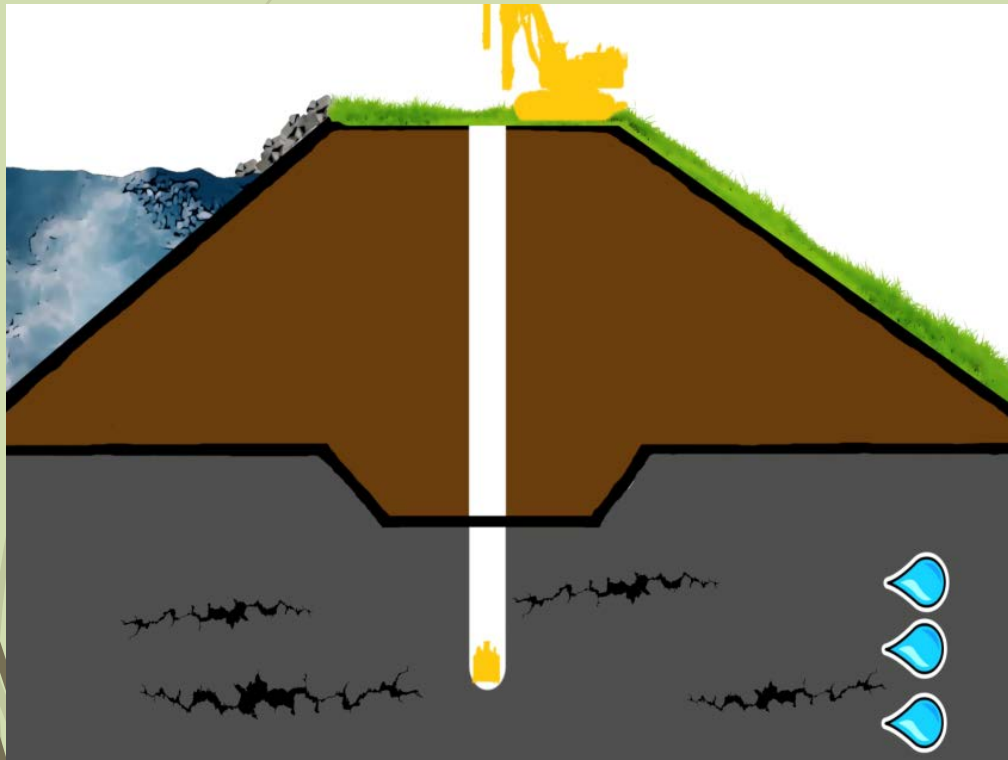
EARTHEN EMBANKMENTS



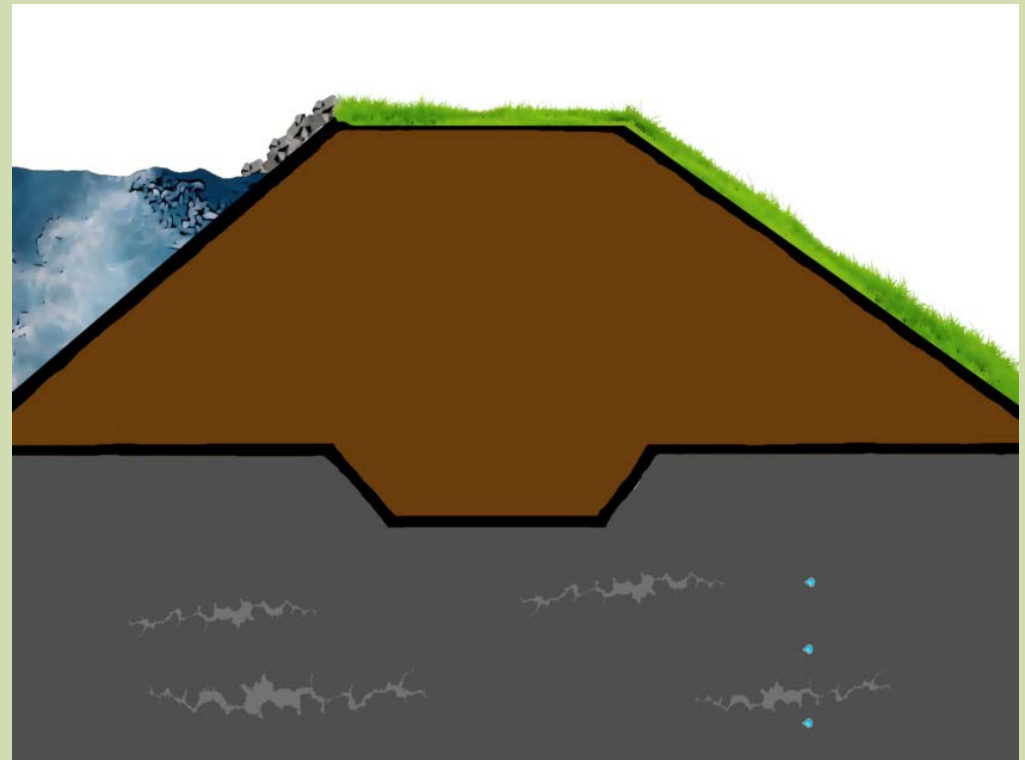
EMBANKMENT MODIFICATION 1: GROUTING (NORTH & SOUTH DAMS)



EMBANKMENT MODIFICATION 1: GROUTING



Injection of cementitious grout into bedrock at dam abutments



Grout fills cracks in the bedrock to reduce seepage

EMBANKMENT MODIFICATION 1: GROUTING – NORTH DAM



EMBANKMENT MODIFICATION 1: GROUTING – SOUTH DAM



EMBANKMENT MODIFICATION 1: GROUTING

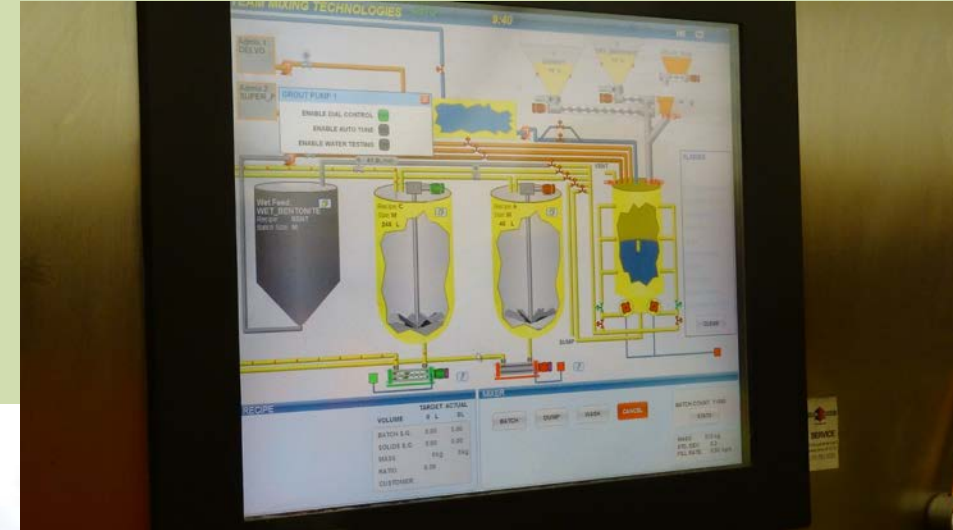


Examples of grouting construction activities at other facilities

EMBANKMENT MODIFICATION 1: GROUTING

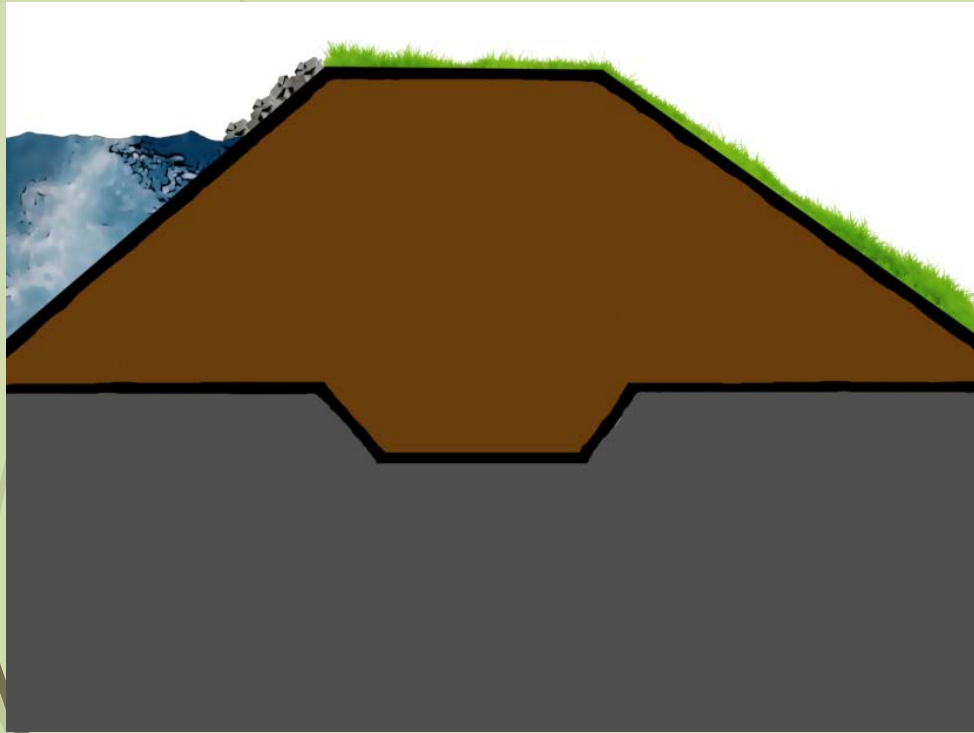


Examples of grouting construction activities at other facilities

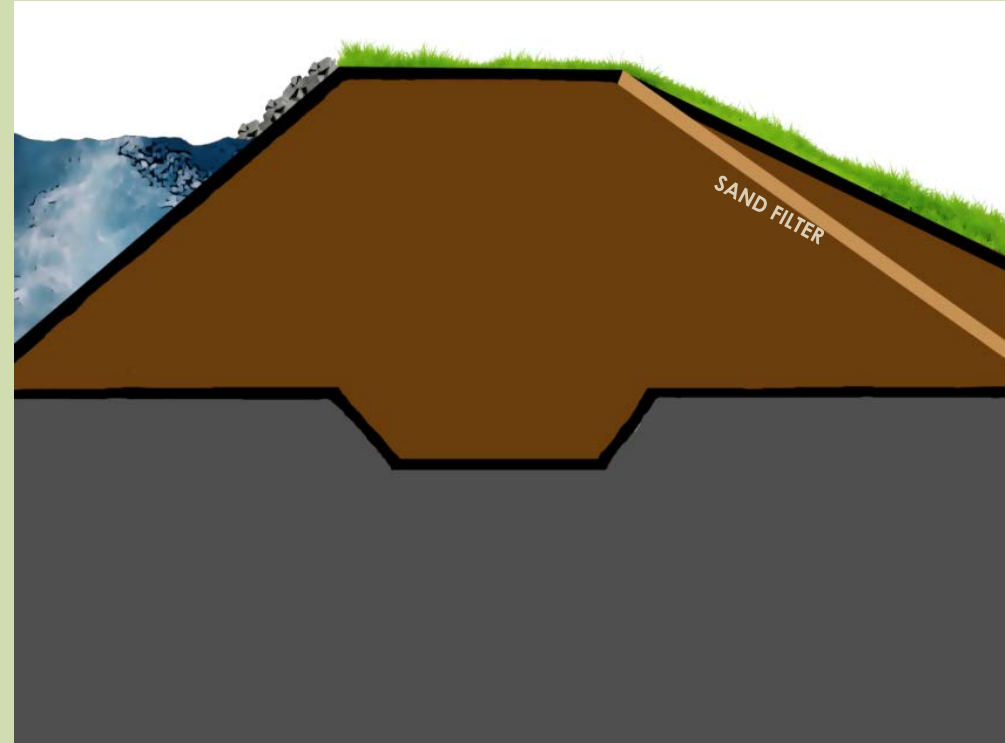


VOLUME	TARGET	ACTUAL
SOLIDS S.G.	0.00	0.00
SOLIDS S.C.	0.00	0.00
WATER	0.00	0.00
CUTWATER		

EMBANKMENT MODIFICATION 2: NEW CHIMNEY/ TOE DRAIN AND REGRADING (ALL DAMS)

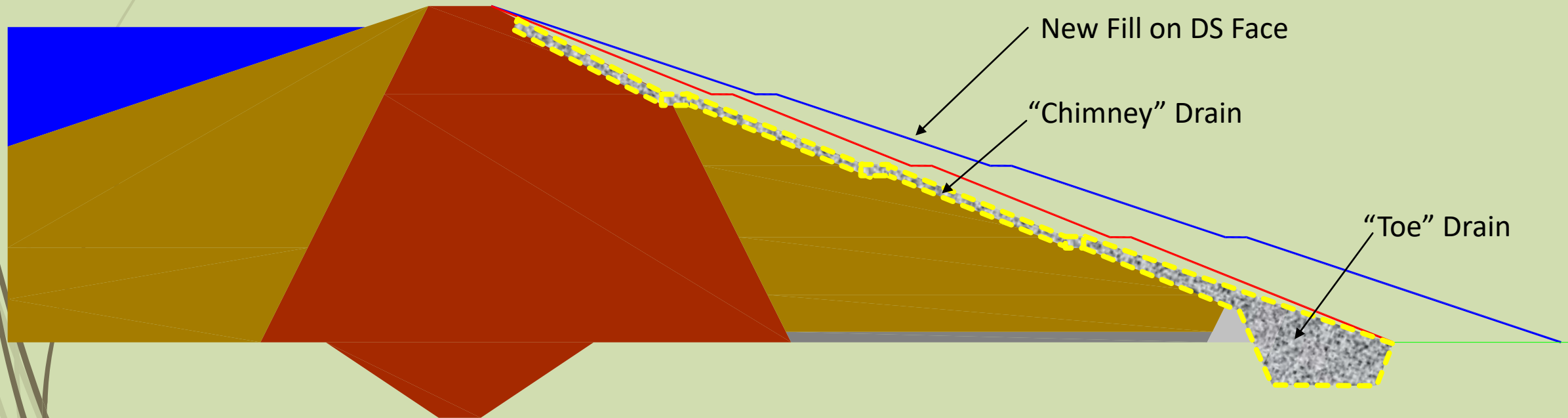


Current conditions (no chimney drain)

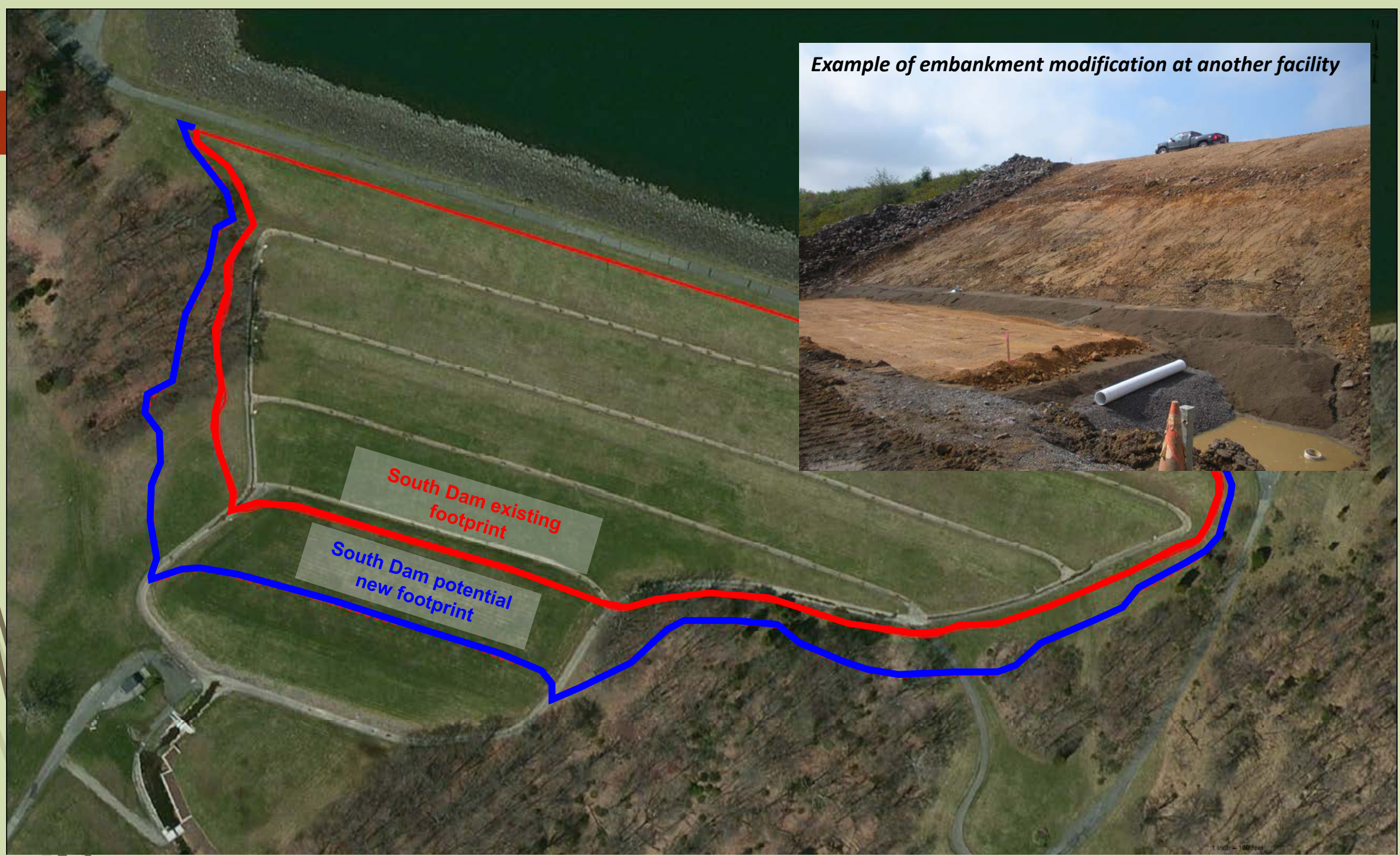


Post-construction conditions, showing chimney drain and regrading

EMBANKMENT MODIFICATION 2: NEW CHIMNEY/TOE DRAIN AND REGRADING



Example of embankment modification at another facility



South Dam existing footprint

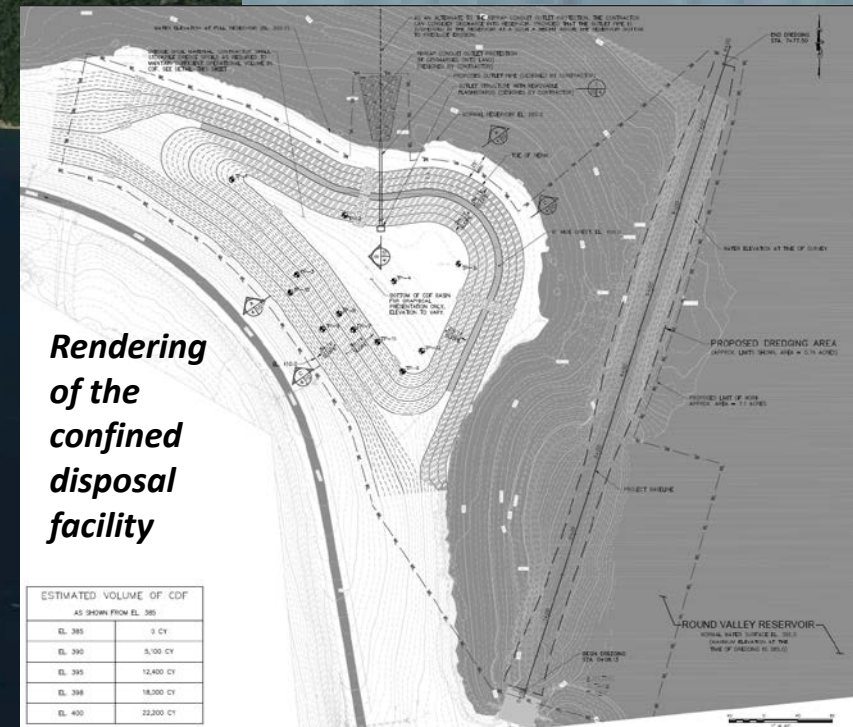
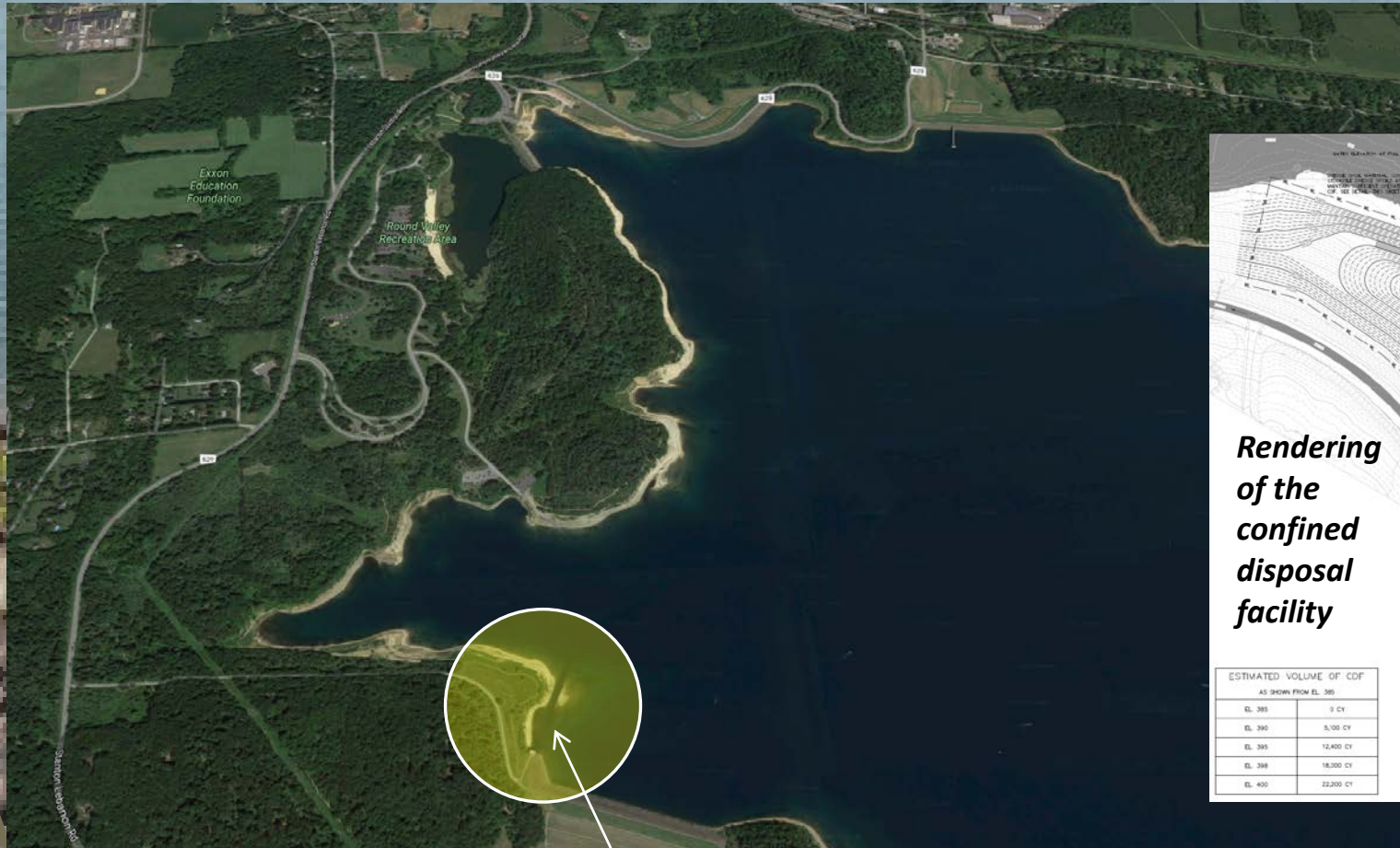
South Dam potential new footprint

EMBANKMENT MODIFICATION 2: NEW CHIMNEY/TOE DRAIN AND REGRADING



Examples of chimney and toe drain installation at other facilities

DREDGING



The South Dam inlet channel will be dredged to restore its original design capacity. Dredged material will be stored in a confined disposal facility in a restricted area adjacent to the reservoir.

DREDGING: SOUTH DAM CHANNEL



South Dam Tower, where the reservoir is filled and can be emptied

DREDGING: SOUTH DAM CHANNEL



View of the inlet channel from the South Dam Tower



View of the South Dam Tower from the inlet channel

TOWER REPAIRS AND UNDERGROUND CONTROLS/FEATURES





CURRENT TIMELINE

- Security Improvements – planned for 2018
- North & South Dam Grouting – planned for Summer/Fall 2018 (4-6 months)
- Channel Dredging – planned for Summer/Fall 2018 (10 months)
- Embankment Construction – *estimated* for March 2019 (1-2 years)



PUBLIC IMPACTS: ROADS

- Truck traffic on local roads will be extensive
- 660,000 to 850,000 cubic yards of material will be brought onsite by truck (one dump truck carries 10 – 14 cy of material)
- A section of Route 629 (over the Dike) will be closed at times during the project
- Timeline and other details will be announced via our email list and website

PUBLIC IMPACTS: ROAD CLOSURE & TRUCK ROUTES



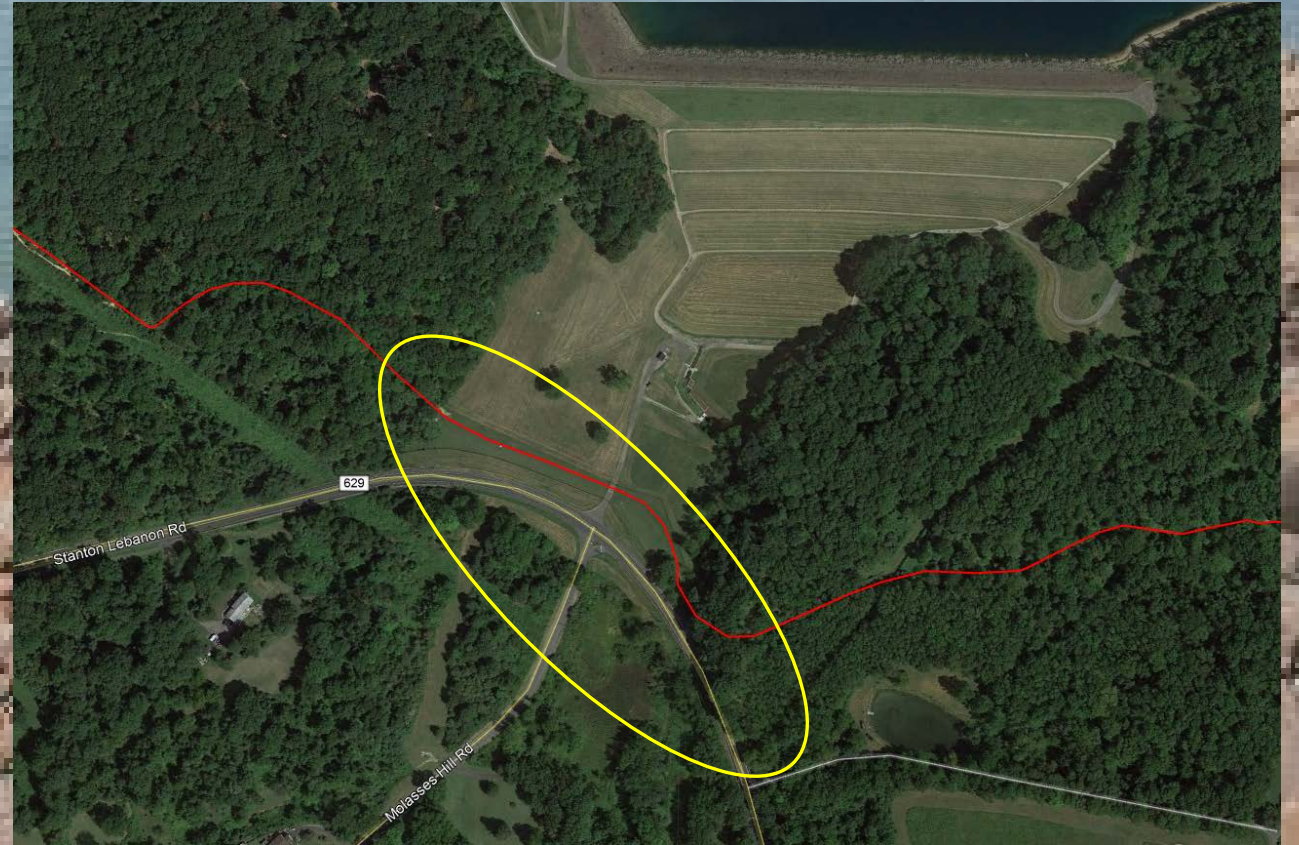


PUBLIC IMPACTS: WATER LEVEL

- We will keep the Division of Fish & Wildlife informed about anticipated water level changes and they will try to accommodate boaters
- Based on construction needs, the level of the reservoir is not expected to go below 25' from full pool elevation (comparable to 2016 summer conditions)
- Drought may reduce the water level due to water usage – this is impossible to predict
- Information about water level decisions, including timing, will be announced via our email list and website

PUBLIC IMPACTS: RECREATION AREA

- Cushetunk (red) trail – a small area near the South Dam will likely be re-routed for safety
- Short term trail closures may be necessary for safety
- Changes to the trail will be coordinated with the State Park Service and posted on our website
- Staging areas located near the Recreation area may be visible but are not expected to affect the public's use of the Recreation area



PROJECT WEBSITE

www.RoundValleyProject.com

FEATURES:

- About
- Project Overview
- Project Meeting Info
- Project Area Map
- Project Updates
- FAQ
- Contact
 - Email (sign up to receive updates)
 - Phone Hotline



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[PROJECT UPDATES](#)

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Welcome To The Round Valley Reservoir Structures Refurbishment and Resource Preservation Project

[Learn More](#)

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