

Lakemont Boulevard at Coal Creek Project

July 26, 2023



Agenda

- Project Team
- Project Purpose
- Project Overview
- Two-Phased Solution
- Community Impacts



Project Team

- Michaelene Fowler, City of Bellevue Public Information Officer
- Prabhat Karna, P.E., City of Bellevue Project Manager
- Jerry Scheller, P.E., Design Consultant Project Manager (Tetra Tech)

The background of the slide is a photograph of a storm drain opening in a wooded area, surrounded by dense vegetation and tree roots. The entire image is covered with a semi-transparent blue filter. The text is centered over the image.

Project Purpose

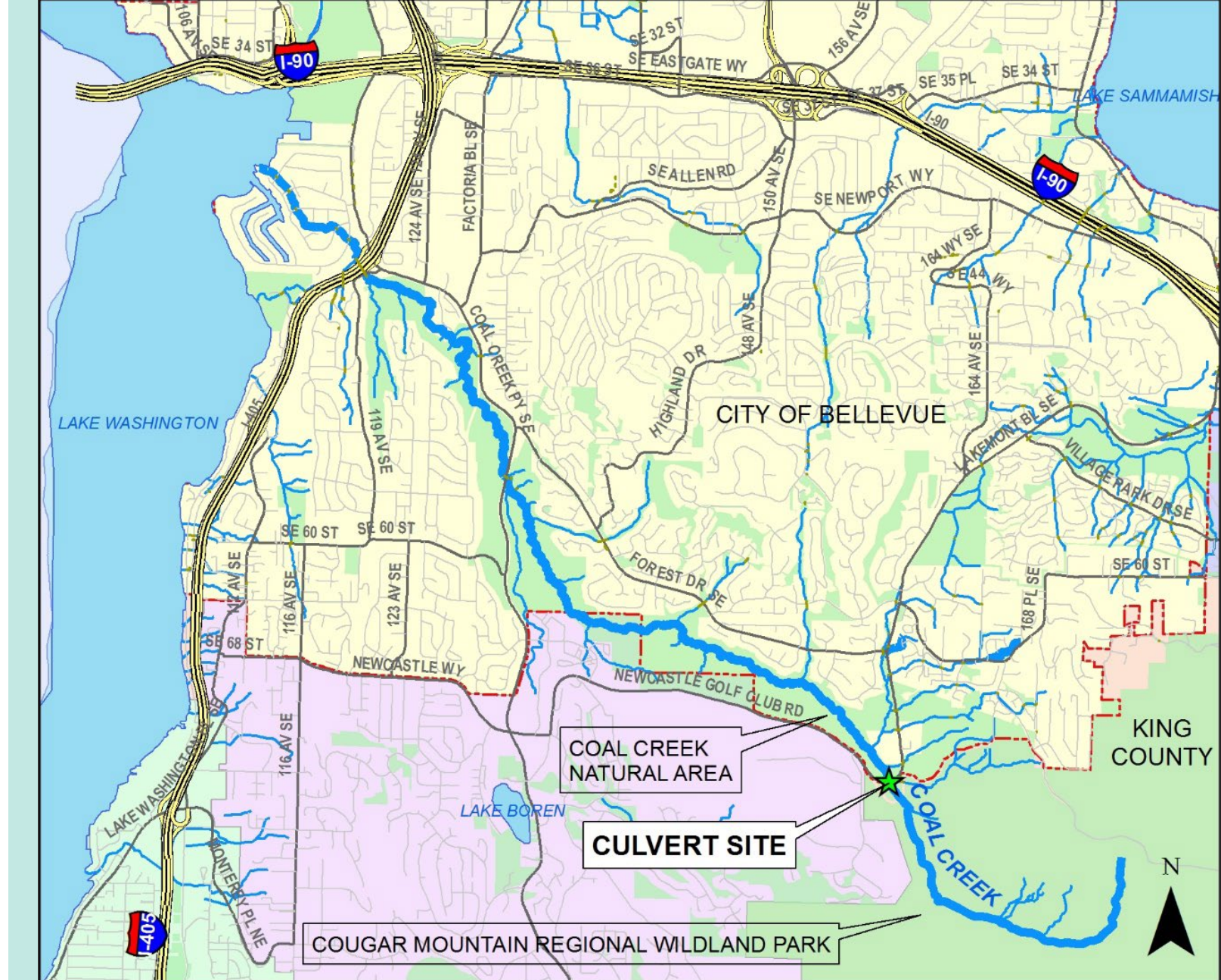
Emergency project to address safety hazards, road and embankment instability, and flood conveyance.



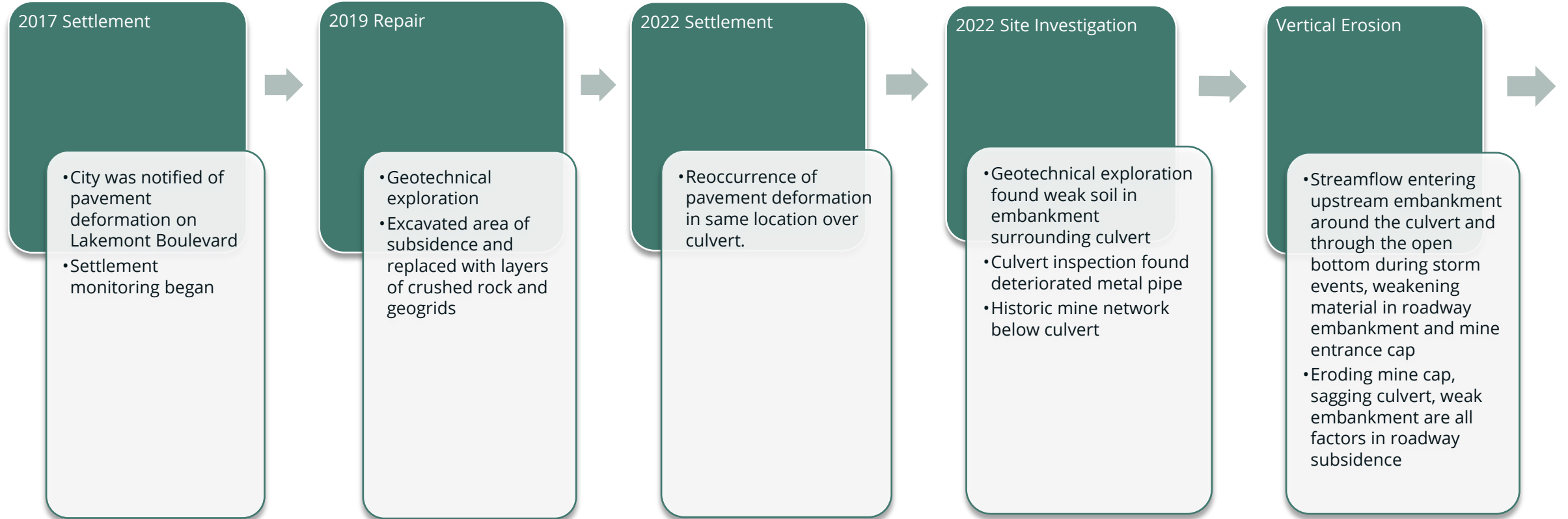
Project Overview

Project Location

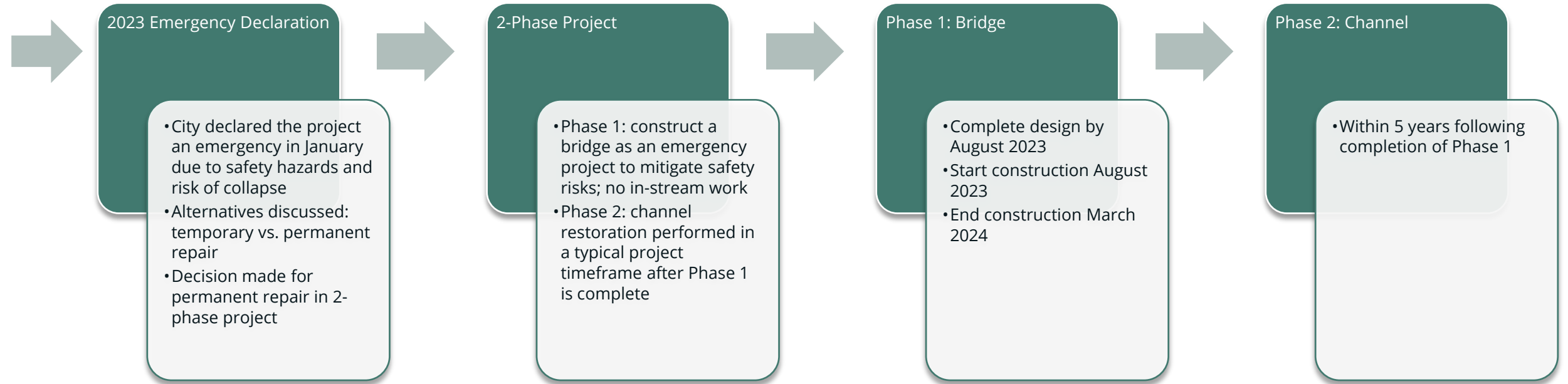
- Lakemont Boulevard SE
- Newcastle Golf Club Road
- Coal Creek
- Bellevue/King County border



Timeline



Timeline

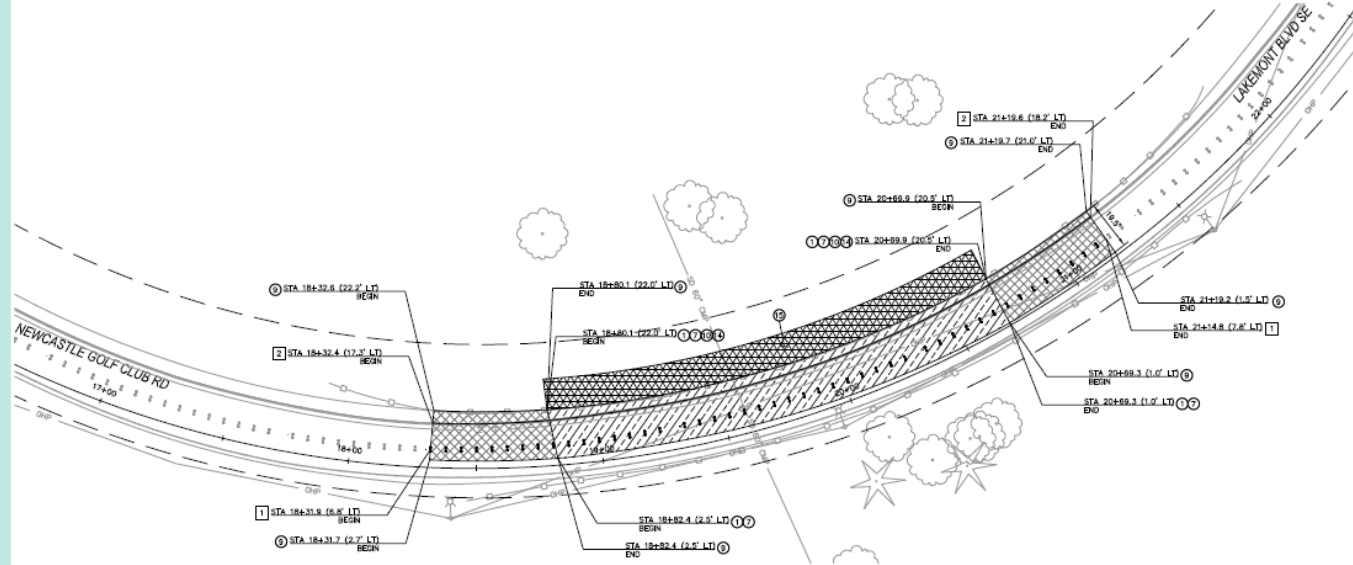


February 2017 Settlement

- Pavement deformation
- Separation of blocks from posts



- Excavated top section of embankment
- Replaced with layers of crushed surfacing and geogrid



Reoccurrence of Settlement in 2022

- Pavement deformation occurred at the same location
- Over the culvert crossing

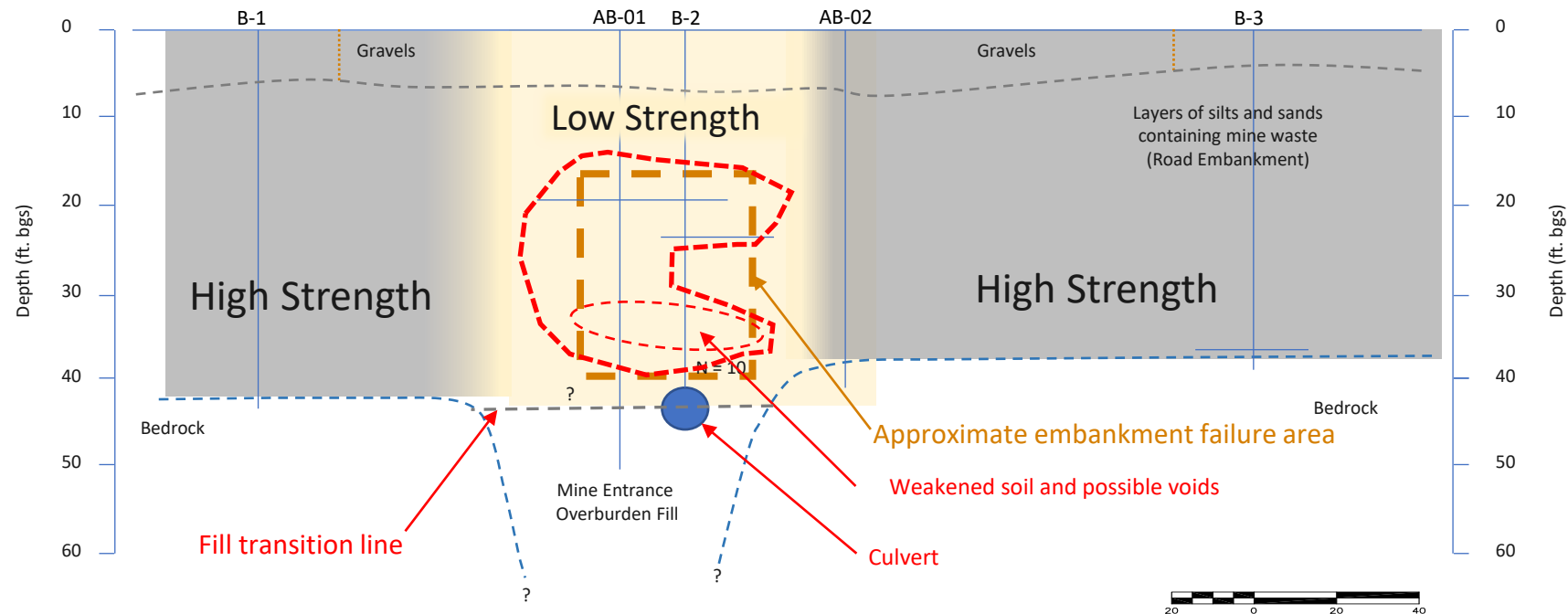


2022 Condition Assessment

- Eroded corrugation
- Culvert is no longer structurally sound or watertight
- Streamflow leaking into culvert foundation material

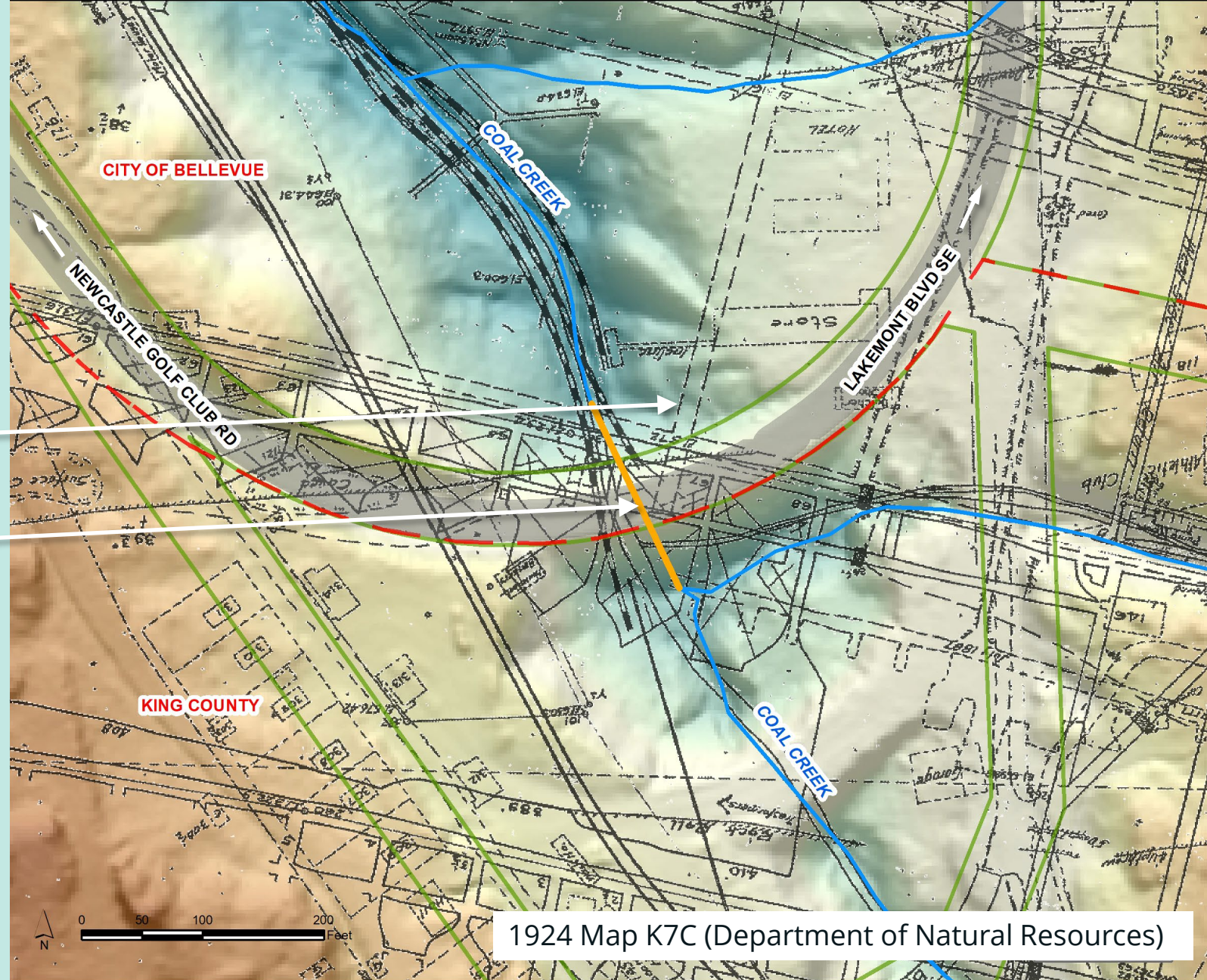


2022 Condition Assessment - Subsurface



Mine Shaft and Appurtenances

- No. 3 Seam / Coal Creek Mine
- Existing culvert



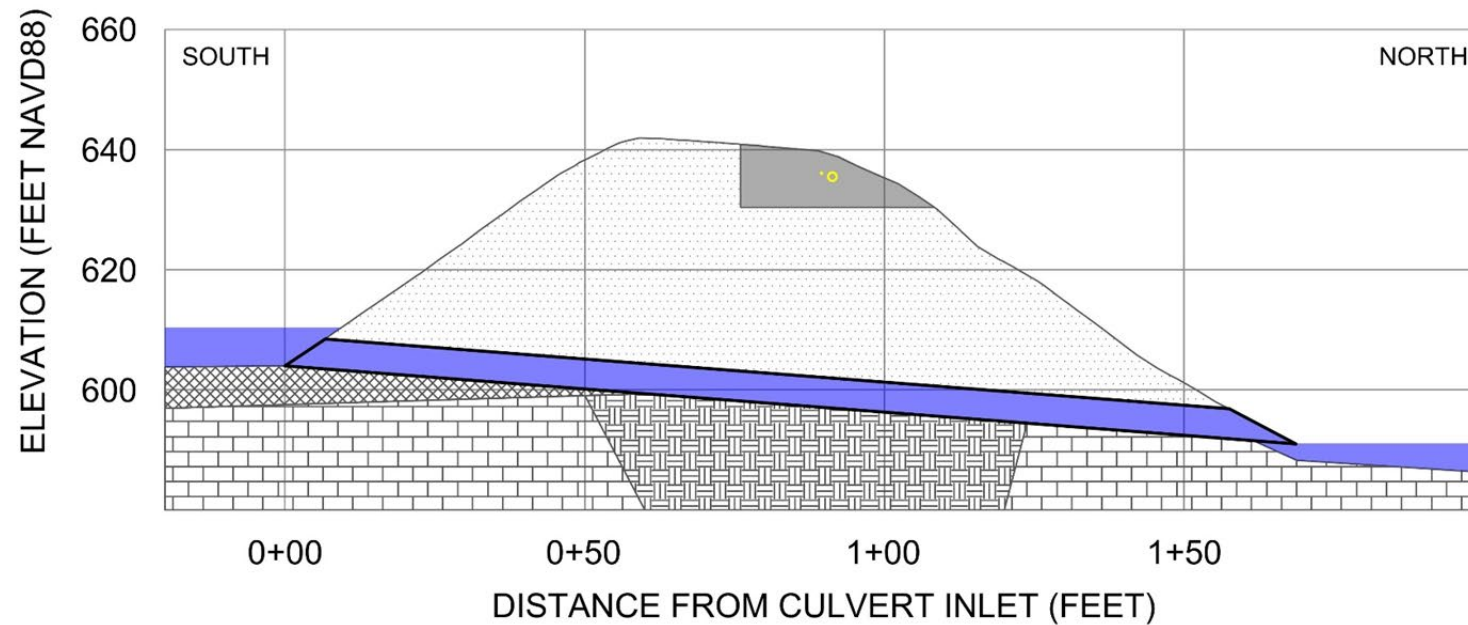
Coal Creek Mine Entrance

- December 1894 fire
- Coal Creek diverted into mine to put out fire



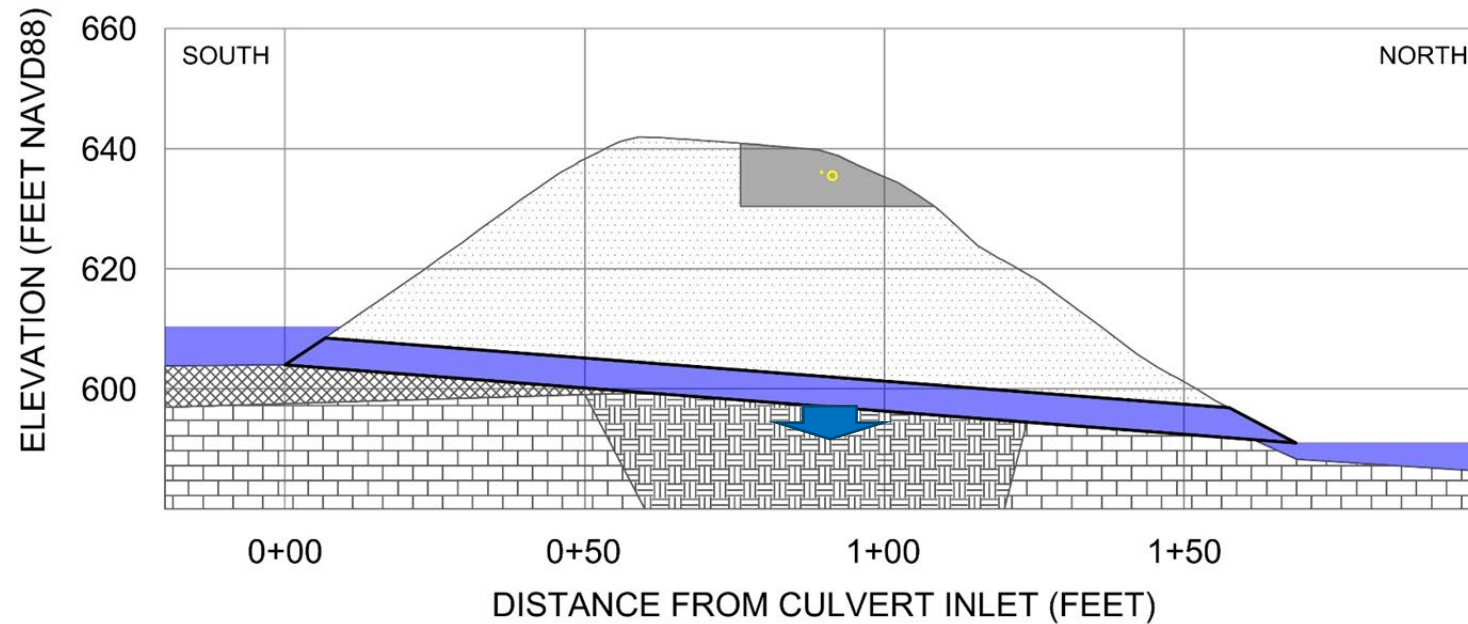
Root Cause of Failure

- Bottom of culvert eroded



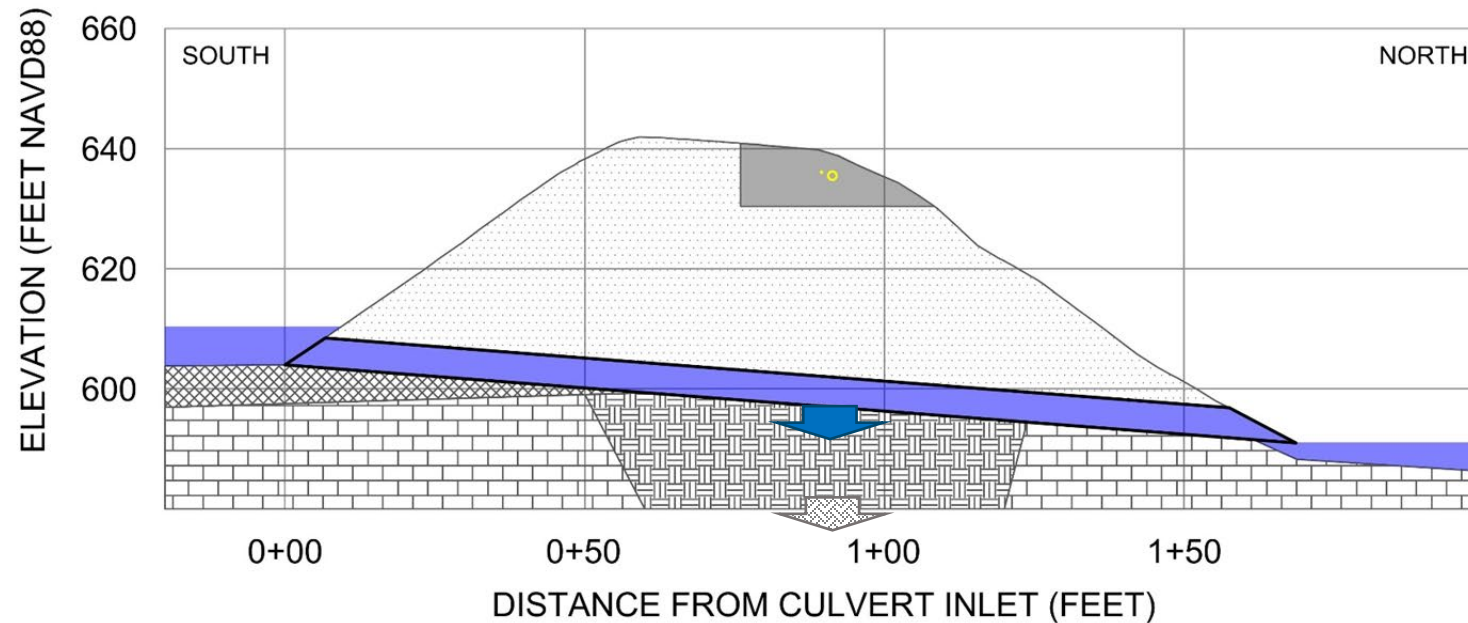
Root Cause of Failure

- Bottom of culvert eroded
- Water leaked from culvert bottom into mine entrance



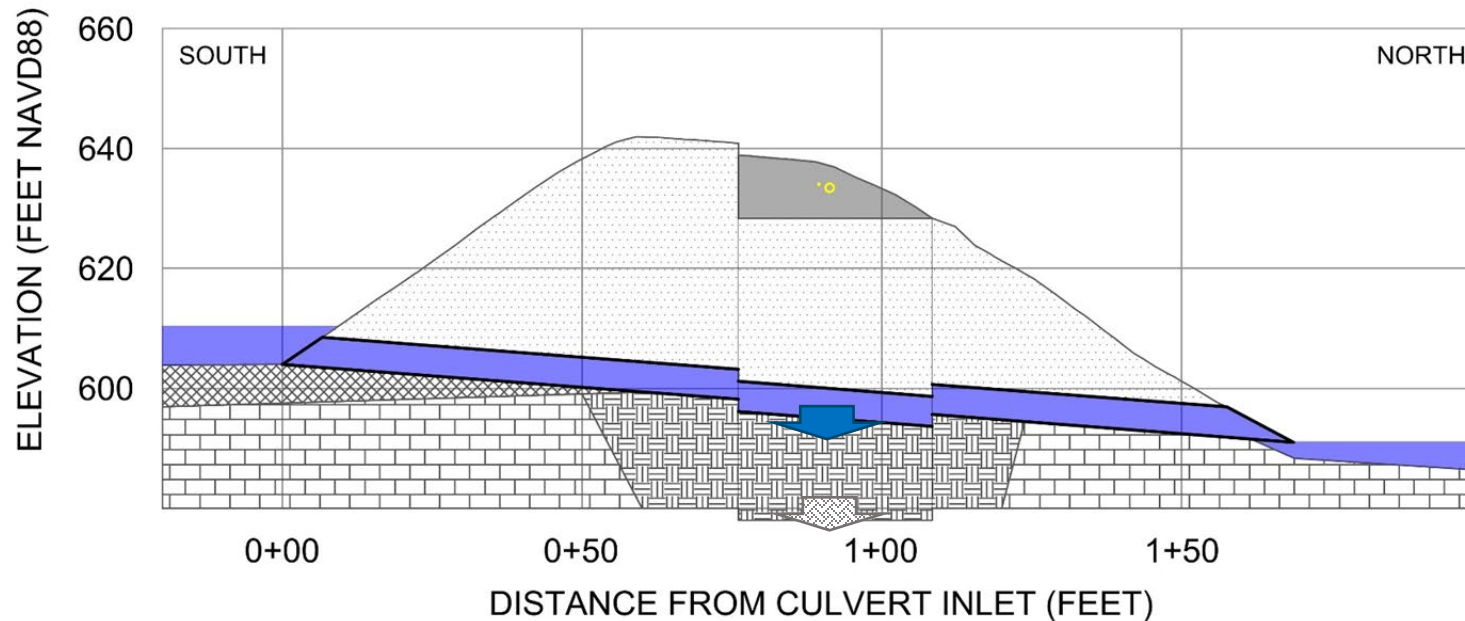
Root Cause of Failure

- Bottom of culvert eroded
- Water leaked from culvert bottom into mine entrance
- Vertical erosion occurred in fill placed to seal mine opening



Root Cause of Failure

- Bottom of culvert eroded
- Water leaked from culvert bottom into mine entrance
- Vertical erosion occurred in fill placed to seal mine opening
- Erosion resulted in culvert sag and road subsidence
- Sagging culvert creates voids in embankment and weakened zone in embankment fill



Root Cause of Failure

- Streamflow at culvert inlet
 - Flow beneath invert
- ➡ Mine cap entrance fill eroding



Root Cause of Failure

Scour holes and voids

- ➡ Flow into embankment
- ➡ Weakened material below road
- ➡ Risk of piping around culvert



Root Cause of Failure

- Sag in middle of culvert
- Abraded corrugation and subgrade near outlet



Two-Phased Solution



- Phase 1: Bridge construction
 - Emergency project

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- The diagram illustrates a cross-section of a bridge structure. Key components and dimensions include:
- Top Deck:** Features a **BICYCLE RAIL** and a **PEDESTRIAN BARRIER** on the right side. The top surface is labeled **SLOPE**.
 - Dimensions:**
 - 47'-5"** (MEASURED ALONG THE ROADWAY ALIGNMENT) for the main bridge span.
 - VARIES** (LENGTH OF APPROACH SLAB) for the approach slabs on both sides.
 - 35'-0" CLEAR** for the width of the bridge deck.
 - 15' MIN** for the depth of the excavation below the deck.
 - 2' MIN BELOW EXISTING PIPE FOR FUTURE CONSTRUCTION** for the rock socket depth.
 - Structural Elements:**
 - SECANT PILE CAP, 5'-0" WIDTH ± 5'-0" MIN DEPTH, TYP.**
 - 5'-0" DRILLED SHAFT, TANGENT PILE WALL, TYP.**
 - HSS STRUT WITH WAGER** supporting the deck.
 - PHASE 1 EXCAVATION** and **PHASE 2 EXCAVATION** areas.
 - APPROXIMATE PHASE 1 FINISHED GRADE** line.
 - 60" EXISTING CULVERT** located within the excavation.
 - 3'-6" ROCK SOCKET** at the base of the pile wall.



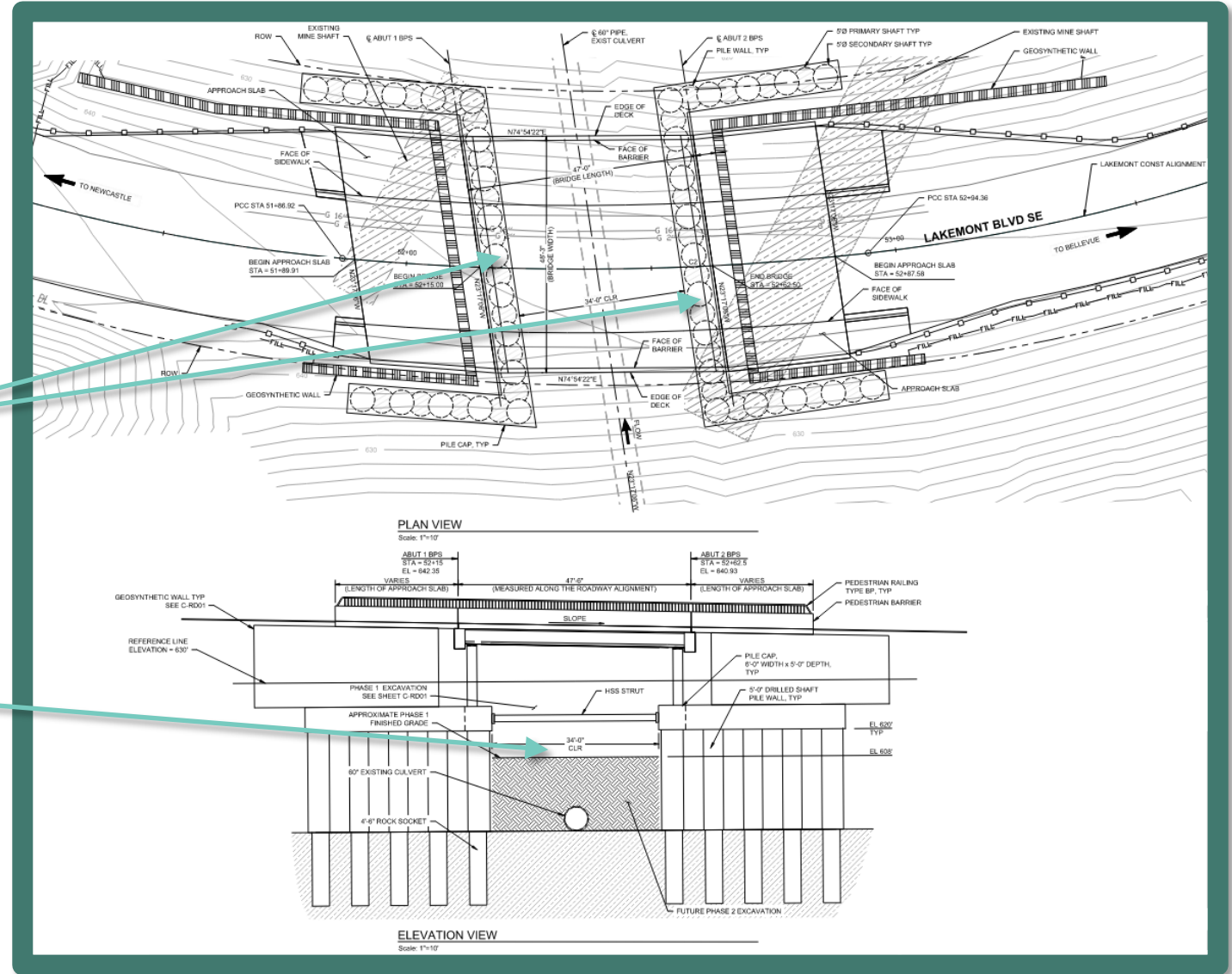
Two-Phased Solution

- Phase 1: Bridge construction
 - Emergency project
- Phase 2: Channel restoration
 - Within 5 years of Phase 1



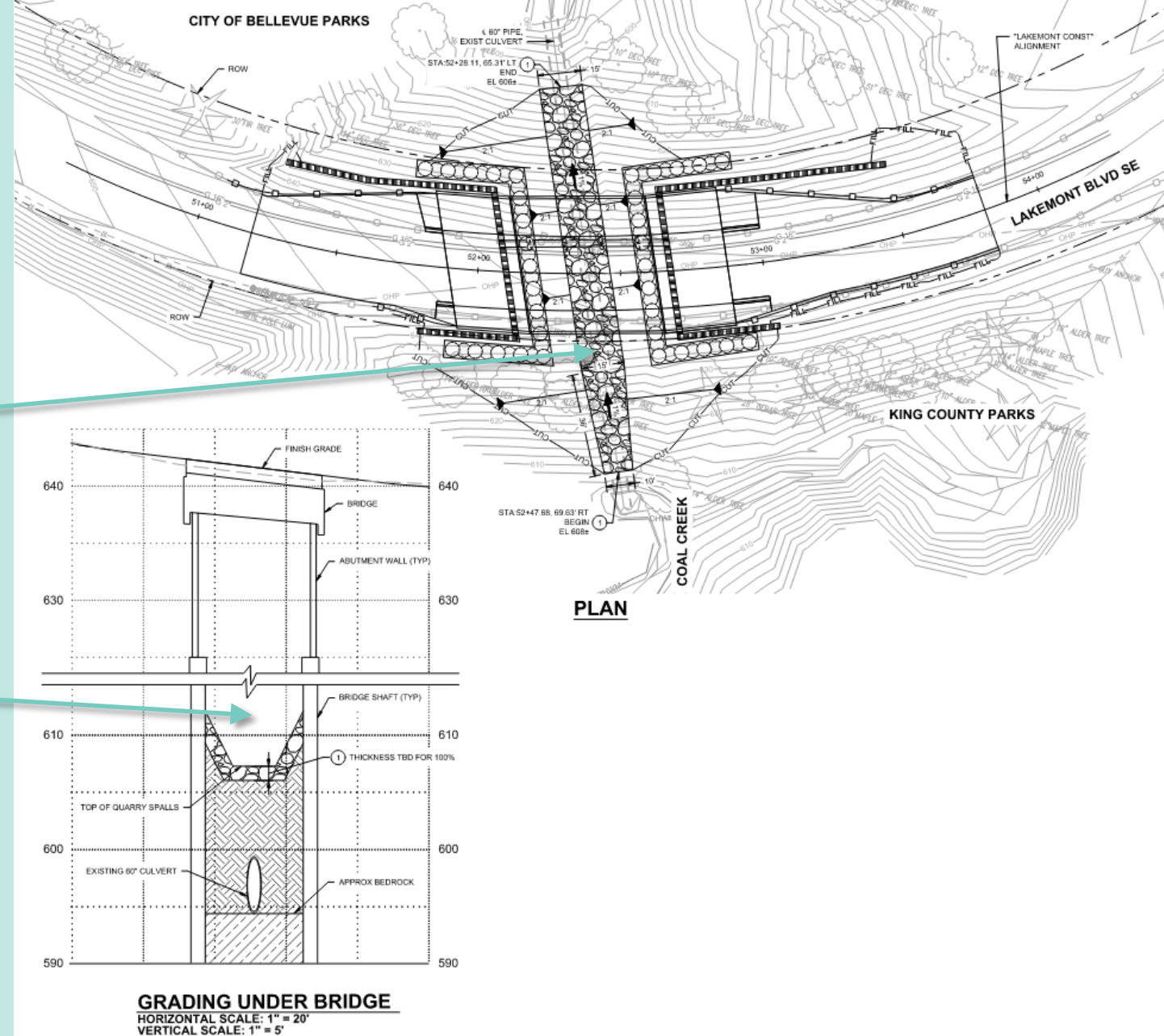
Emergency Project: Phase 1 Bridge

- Construct bridge
- Install secant pile walls
 - Isolate culvert corridor and stabilize roadway
- Excavate overflow path
 - Provide safe overflow during storm events



Emergency Project: Phase 1 Bridge

- Quarry spalls to protect overflow path
- Open channel below bridge and above existing culvert

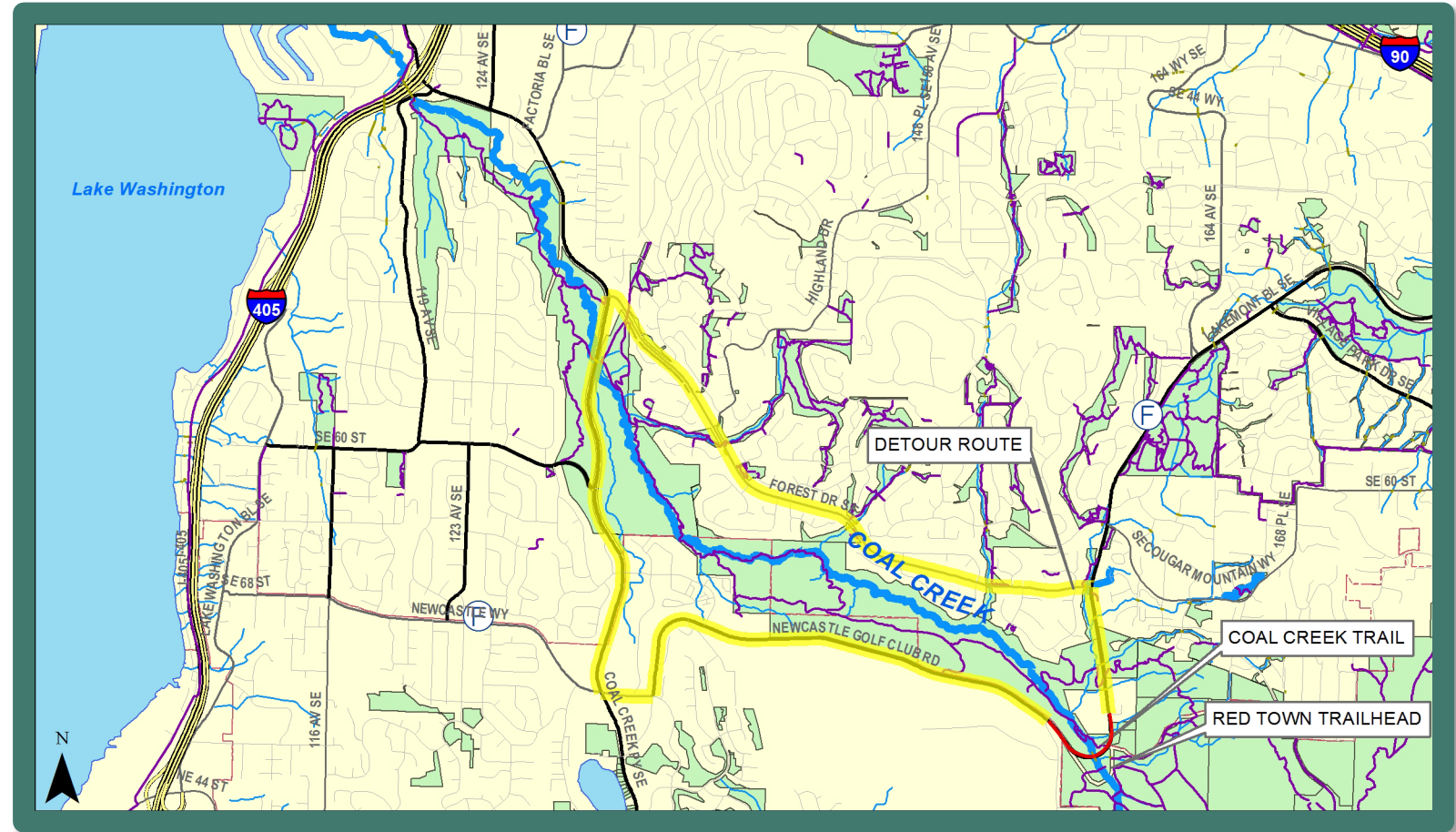




Community Impacts

Community Impacts

- Road closure during construction
- Detours along Forest Drive SE and Coal Creek Parkway SE



Community Impacts

Access temporarily restricted:

- Coal Creek Trail
- Red Town Trailhead



Contact Information

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Thank you

For more information, please visit the project page on the City of Bellevue website
www.BellevueWa.gov/lakemont-culvert

