



OREANA DAM REPLACEMENT



- I Design Team: Brenden Jack, Jacob Smith, Mitchell Langland, and Jacob Wisshack
- I Project Sponsors: Luke Landriani (GEOTEK) and Hattie Zobott (ARDURRA)
- I Faculty Advisor: Dr. Richard Neilsen Ph.D., P.E.

Purpose

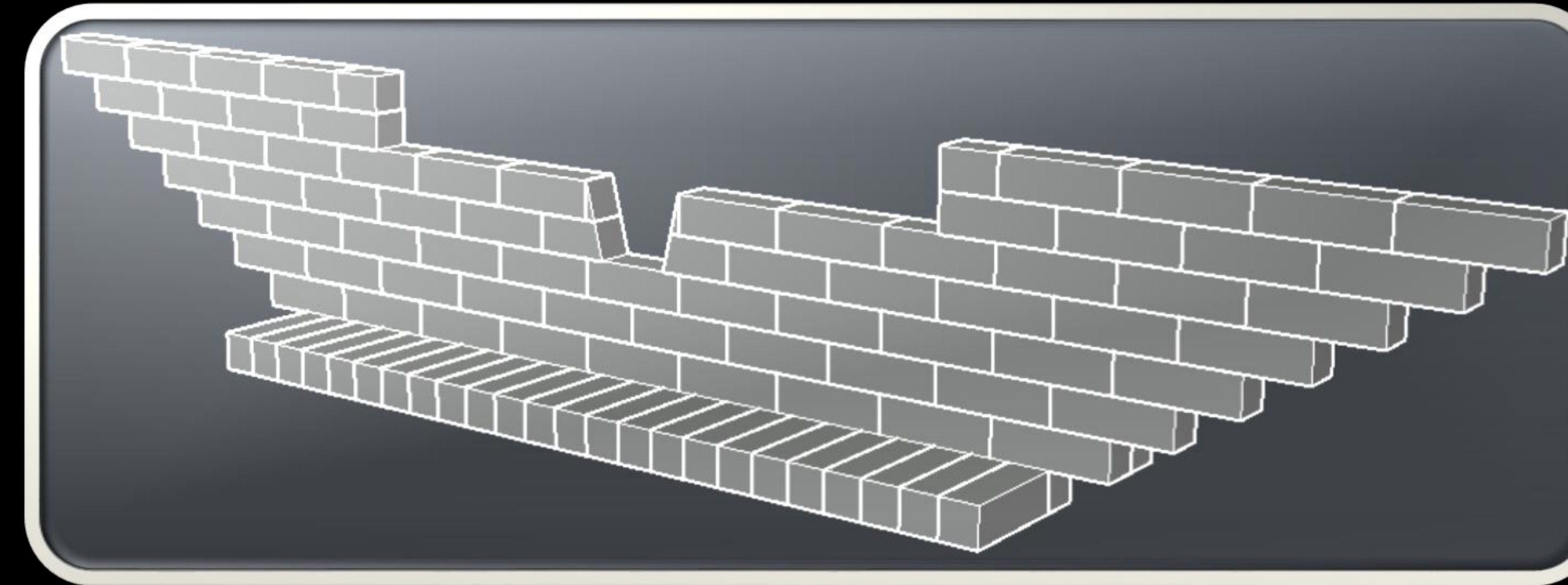
- Private clients wish to develop a pond for irrigation and waterfowl habitat
- Existing dam on property is beyond its service life
- Proposed dam location at the confluence of Catherine and Castle Creeks

Geotechnical

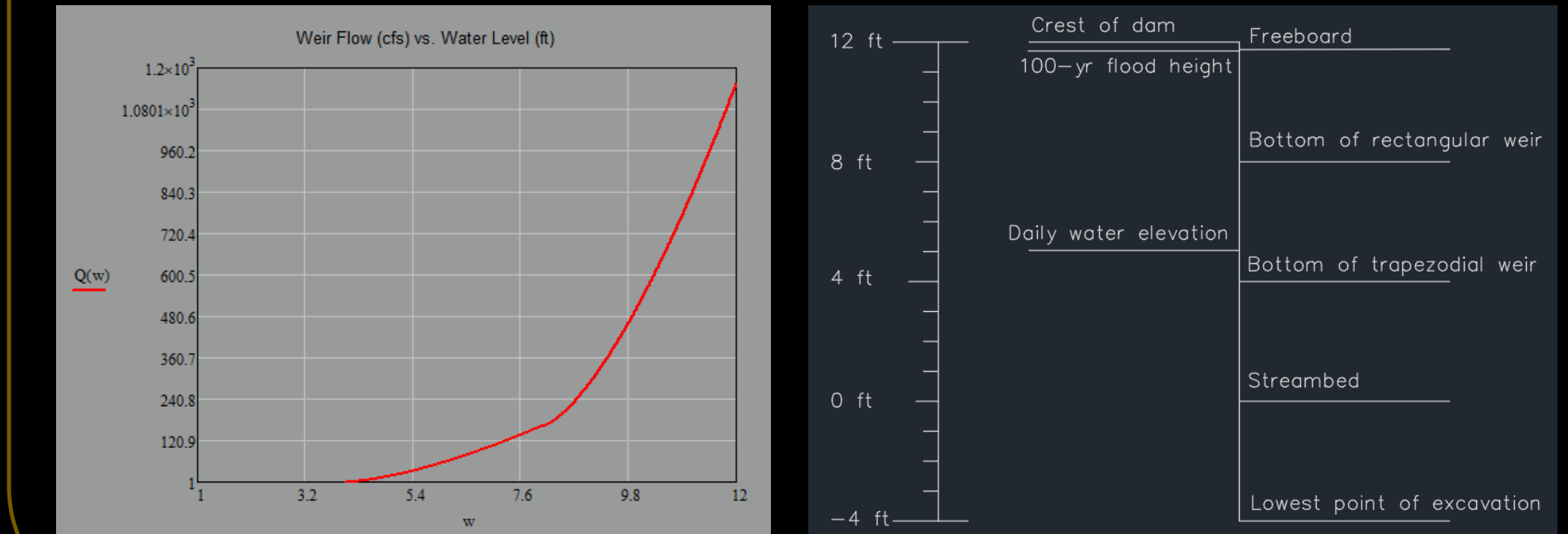
Material Testing of Received Site Samples

- Sieve Analysis of fine aggregate
- Atterberg limit's
- Falling Head Test
- Direct Shear Test

Soil Test Results	4 ft Sample	8 ft Sample	Units
Atterberg Liquid Limit	30	N/A	%
Hydraulic Conductivity	2.864E-05	6.989E-05	cm/s
Friction Angle	37.04	44.51	degrees
Cohesion	N/A	N/A	lb/ft ²

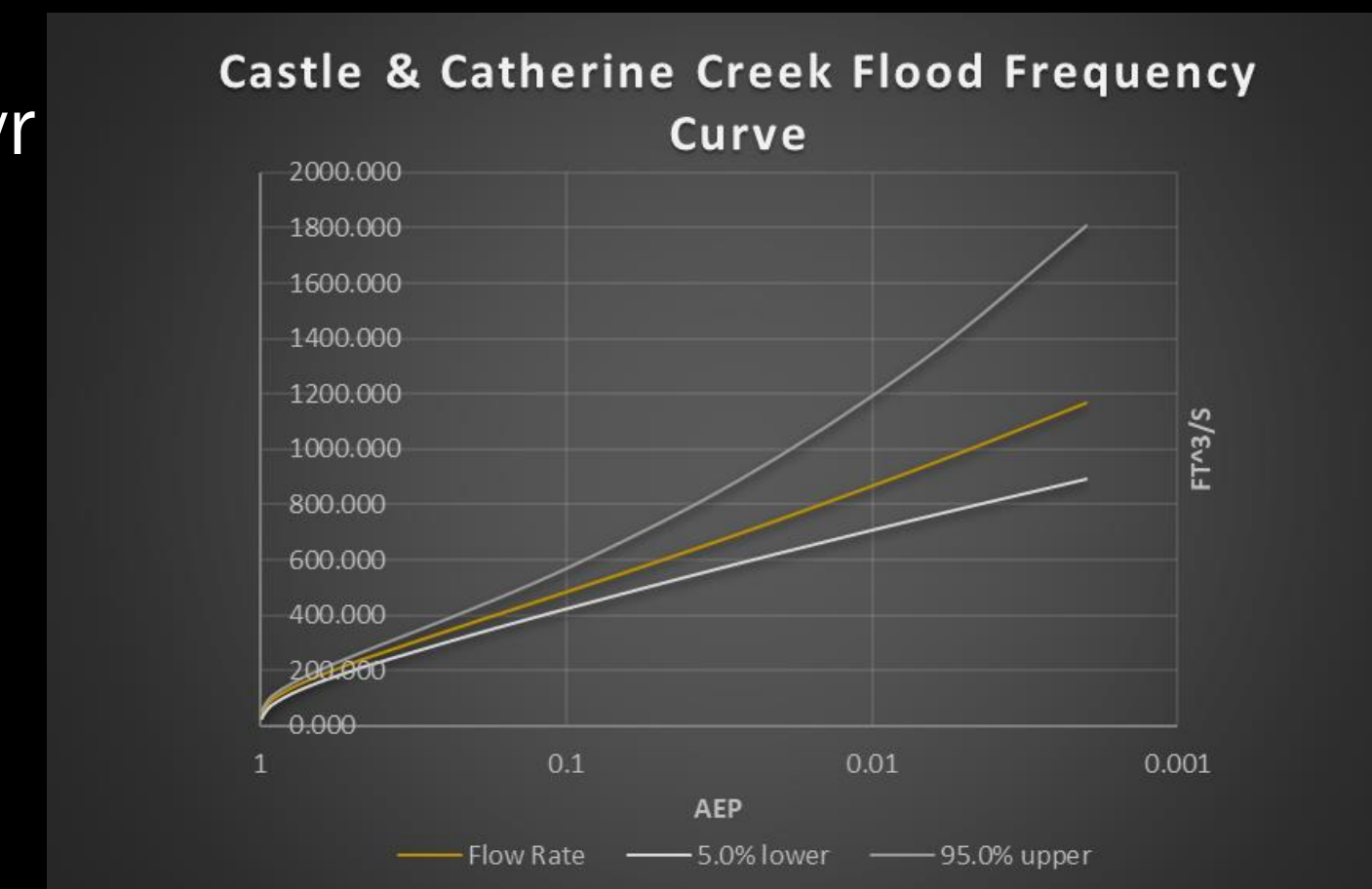


Dam Hydraulics

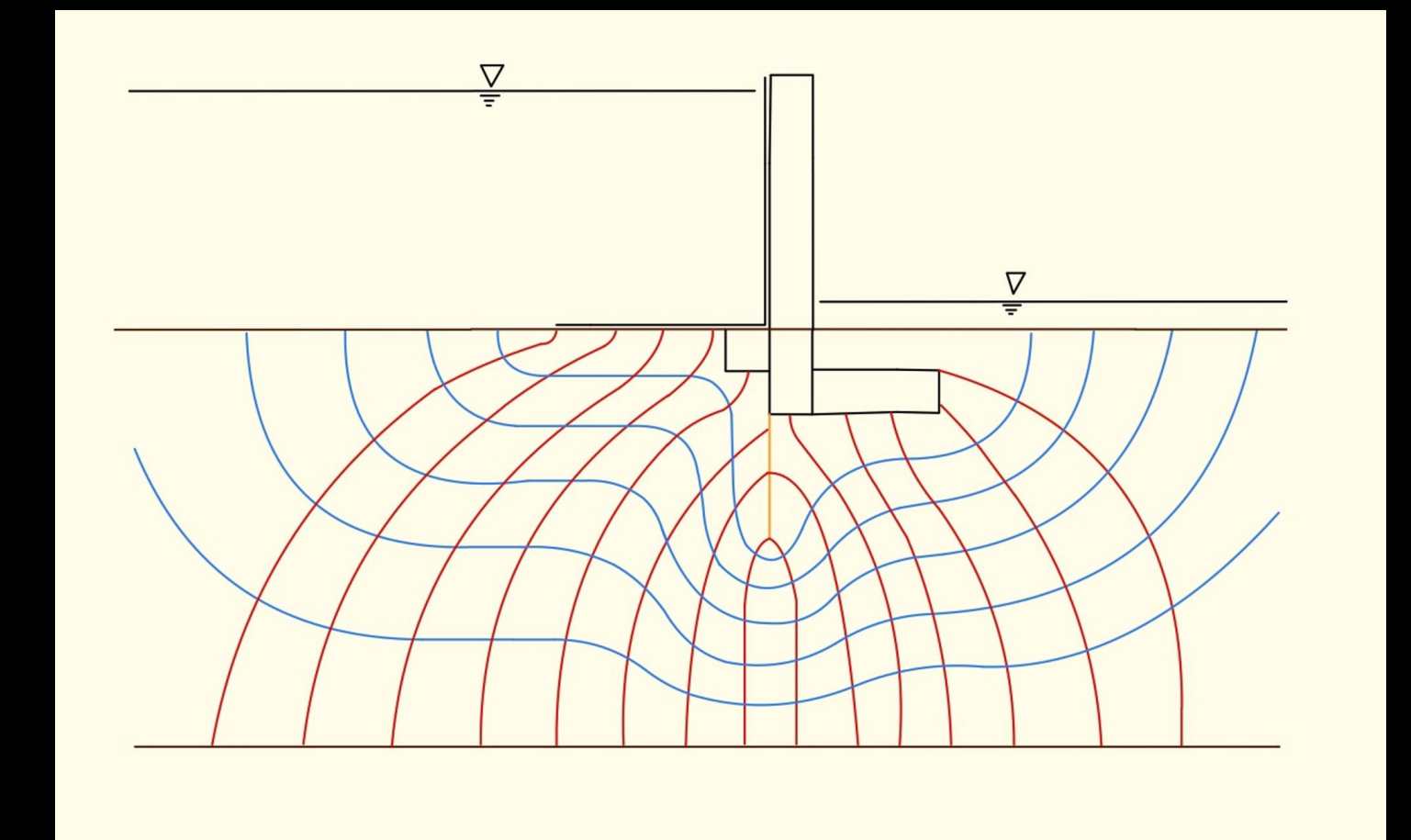


Hydrologic Information

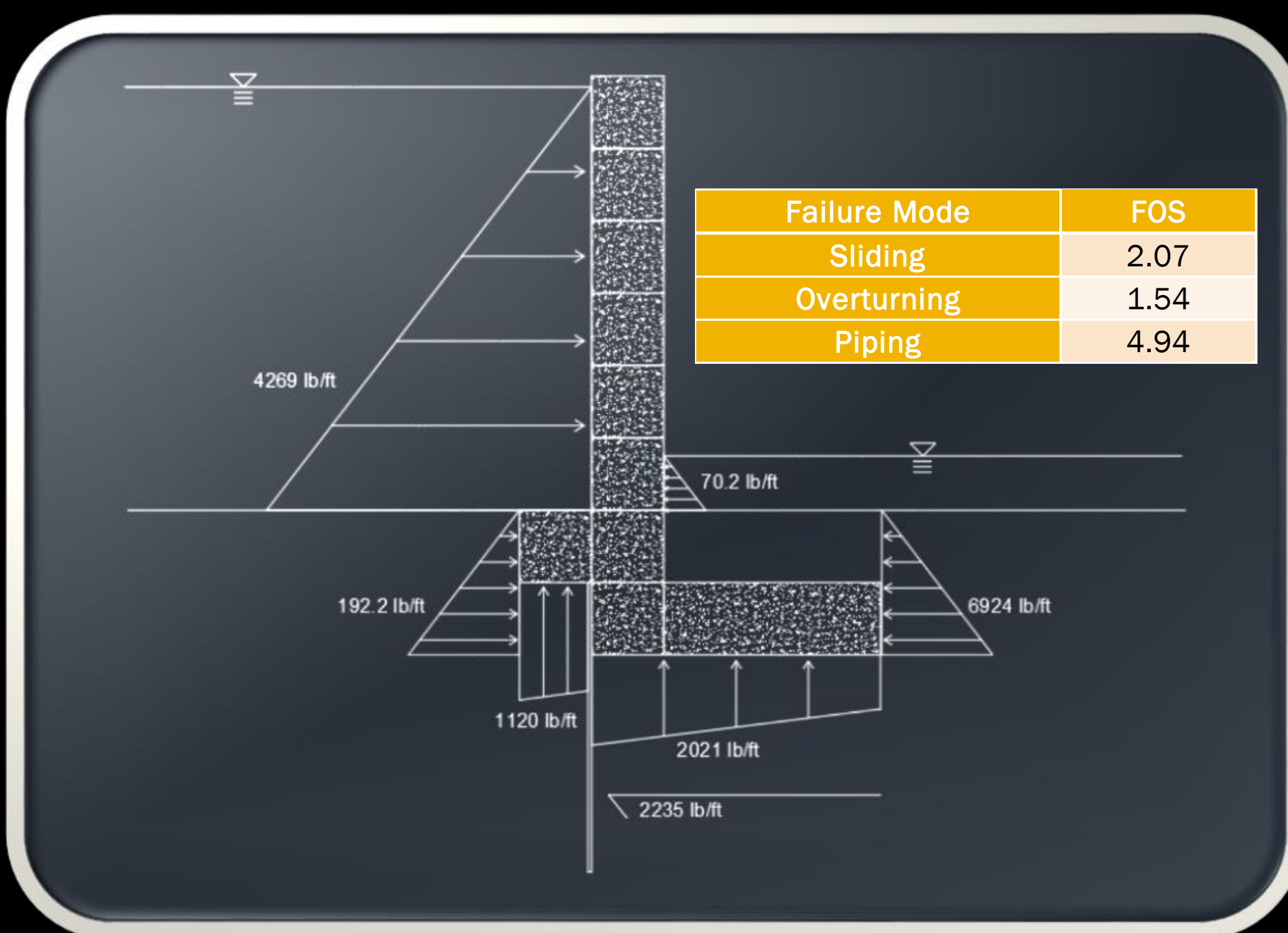
- USGS Streamstats 100-year flood = 9,200 cfs
- TR-55 graphical peak discharge method 100-yr flood = 194 to 2,241 cfs
- Weighted area method 100-yr flood = 867 cfs
- NRCS peak break discharge from upper dam = 179 cfs
- Maximum probable flood = 1,046 cfs
- Daily flow rate = 42.06 cfs



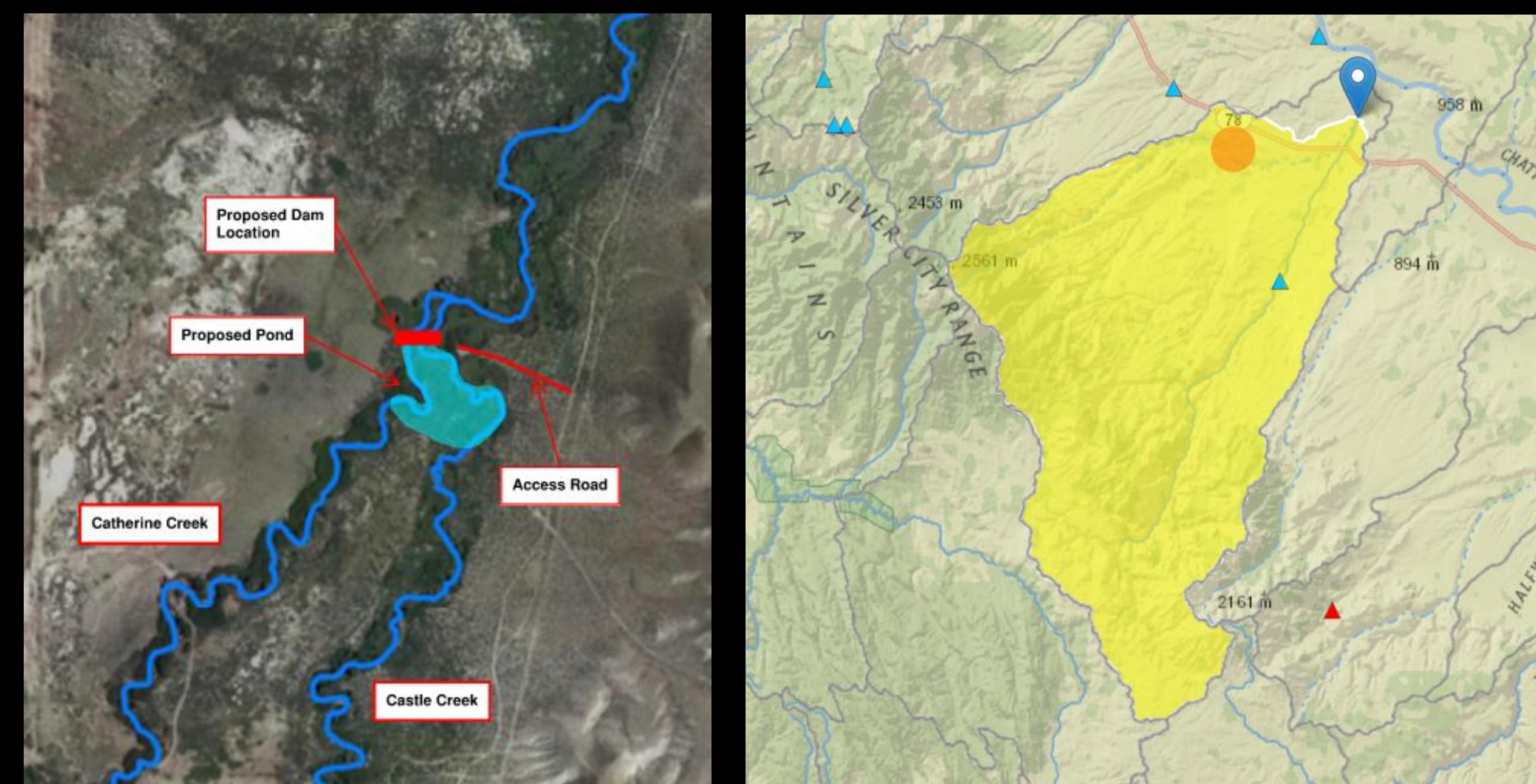
Flow Net



Dam Stability



Site Location



Structural Connections

