

# **Supplemental Information on Foundation Conditions beneath Central Clayey Core of Oroville Dam**

**Information Requested by Ad Hoc Group  
at Ad Hoc Group Meeting No. 2  
(October 30, 2018)**

**Summary:** The attached supplemental information intended to document that central clayey core (Zone 1) is founded on hard, tight rock – described in geologic terms as slightly weathered to fresh rock.

## **Attachments:**

- 1. Cover Page of Final Geology Report for Oroville Dam, Specification No. 62-05, Project Geology Report C-34, December 1968, (Page 2)**
- 2. Excerpts from Final Geology Report describing foundation objectives, foundation rock conditions, and foundation treatments (Pages 3 and 4)**
- 3. Modified Geologic Map of the Foundation Rock beneath Oroville Dam mapped during construction after soil and loose rock had been removed and before embankment material was placed – shows foundation for central clayey core to be composed of slightly weathered to fresh rock (Page 5).**
- 4. Photograph of Cleaning of Foundation Rock Beneath Concrete Core Block/Core using High Pressure Water Hoses (Page 6)**
- 5. Photographs of Cleaned Slightly Weathered Rock in Excavation for Grout Galley in Foundation Trench for Central Clayey Core on Right Abutment (Page 6)**

**November 14, 2018**

# PROJECT SURVEILLANCE

OFP ORO

Box # 19

FINAL GEOLOGIC REPORT  
ON  
FOUNDATION CONDITIONS AND GROUTING  
OROVILLE DAM

State Water Facilities  
Oroville Division  
Butte County, California

Appendix A to  
Final Construction Report  
Contract No. 352193  
Specification No. 62-05

PART I  
FOUNDATION GEOLOGY

PROJECT GEOLOGY REPORT C-34, PART I

DECEMBER 1968

### Core Trench Excavation

The core trench for Oroville Dam forms the foundation for Zone 1 impervious materials constructed as an inclined core. The trench ranges from a maximum width of 400 feet adjacent to the concrete core block to a minimum width of 40 feet adjacent to the spillway. A five- by seven-foot concrete gallery for grouting and access was ground-formed in a trench excavated below the core trench foundation surface.

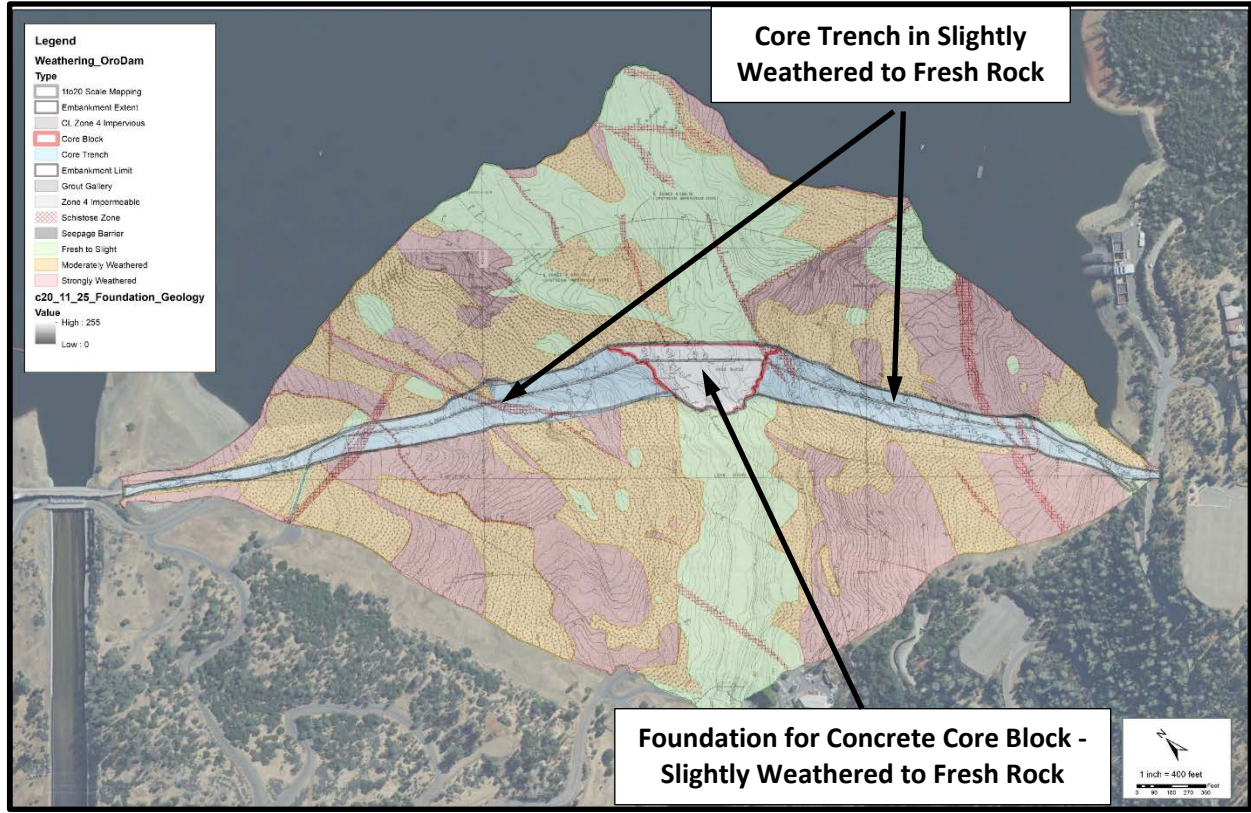
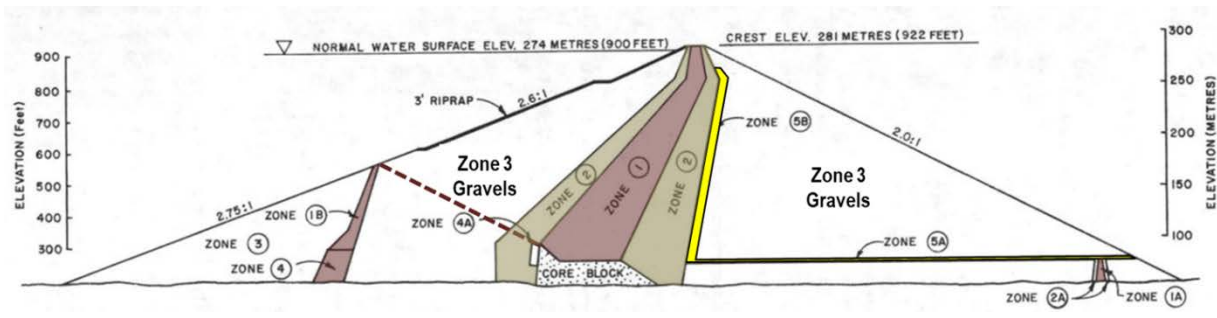
Excavation for Zone 1 foundations, as for the core block, consisted of removal of material down to sound, hard rock; and excavation of seams and shear zones to a depth approximately equal to their width. Foundation rock was to be of sufficient quality to provide an impervious foundation after grouting.

After initial stripping of weathered overburden, most of the remaining core trench excavation was drilled and blasted. Approximately 875,000 cubic yards of material was excavated from the trench. Some weathered rock was removed with scrapers, and with dozers equipped with rippers (Photo 44). The Contractor deep-drilled and overblasted numerous areas of the foundation (Photos 46 through 49). Several of the larger blasts were monitored in the core block gallery and Palermo Outlet Works Tunnel with a portable seismograph which indicated that blast vibrations were not strong enough to be damaging to these concrete structures.

Localized secondary drilling and blasting was required to bring the foundation to grade and to remove projecting ribs of hard rock which would have interfered with placement and compaction of impervious materials.

Final cleanup was done using high pressure air and water jets directed downslope to the edge of the clay core, where the loose materials were scraped from the embankment (Photos 50, 51, and 52). The rock surface was lightly sprayed with water and then was slush grouted. Photos 53 through 57 show selected views of core trench foundation rock.

Slush grout was applied to most of the rock surfaces to seal cracks and crevices, and to prevent piping of fines from



**Figure 1: Foundation Geology Mapped During Construction Overlaid on Aerial Photograph (Adapted from Final Geology Report, Report No. C-34, DWR, 1968)**

- Denotes Strongly Weathered Rock after soil and loose rock removed
- Denotes Moderately Weathered Rock after soil and loose rock removed
- Denotes Slightly Weathered to Fresh Rock after soil and loose rock removed
- Core Block Foundation – Slightly Weathered to Fresh Rock over which the concrete Core Block was placed. Core Block serves as the base footing/foundation for the central clayey Zone 1 core in the lower river channel
- Zone1 Core Foundation – Slightly Weathered to Fresh Rock, grouted with slurry and curtain grouting over which the central clayey Zone 1 core was placed



**Figure 2: Photograph of Foundation Clean-up Using High Pressure Water Hose in Central Concrete Core Block/Core Area (Photograph taken April 29, 1963, from DWR Photography Files)**



**Figure 3: Photographs of Slightly Weathered Rock Exposed in Excavation of Grout Gallery on Right Abutment of Oroville Dam (from DWR Photography Files)**