

COULD A SAFE DAM HAVE BEEN CONSTRUCTED AT THE TETON DAM SITE?

J. David Rogers, Ph.D., P.E., R.G.

**Department of Geological Sciences &
Engineering**

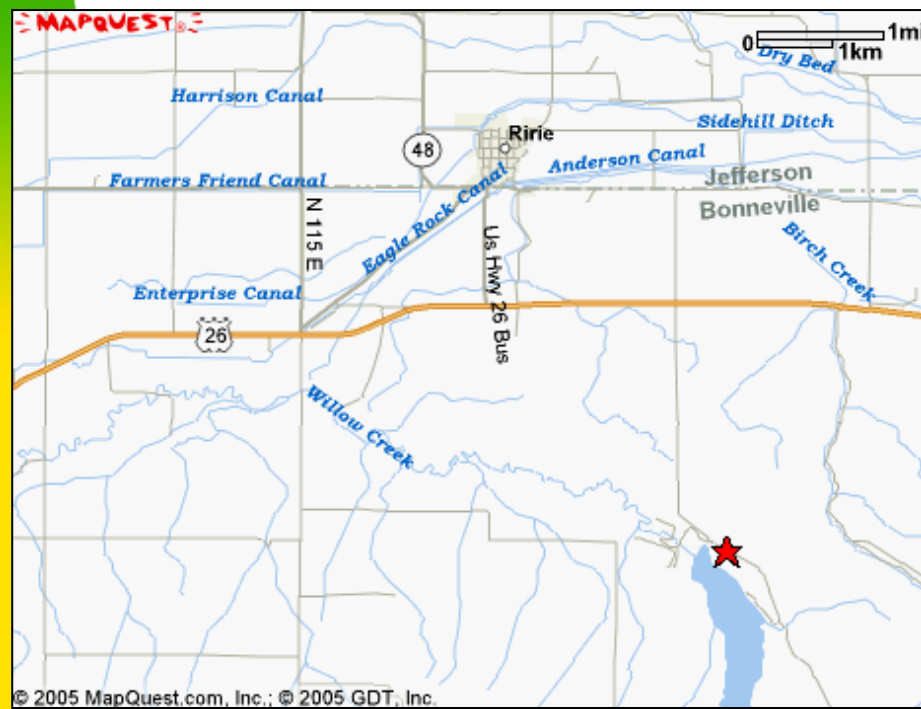
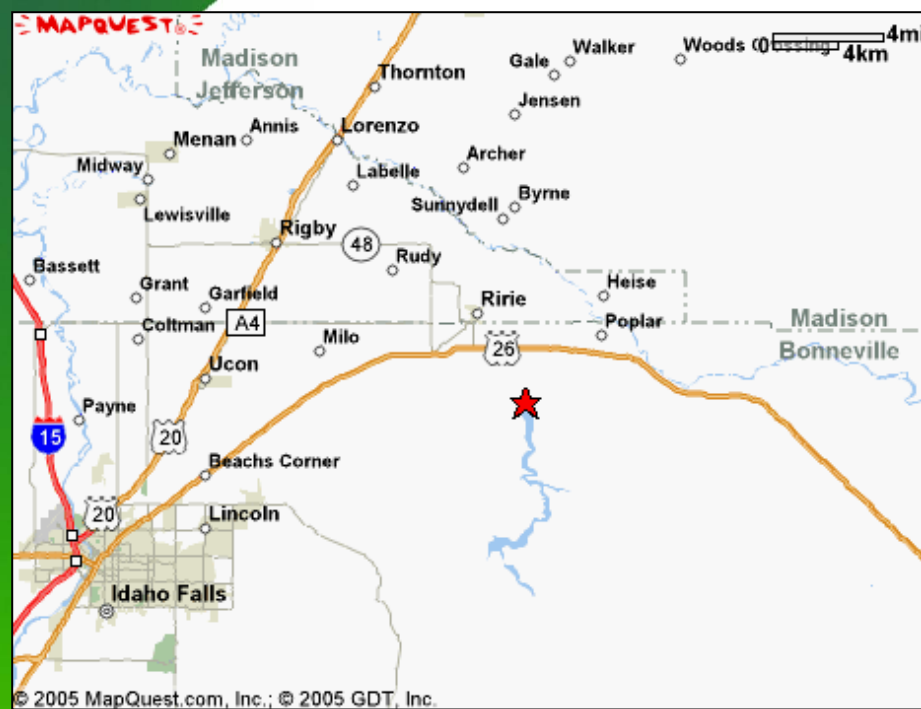
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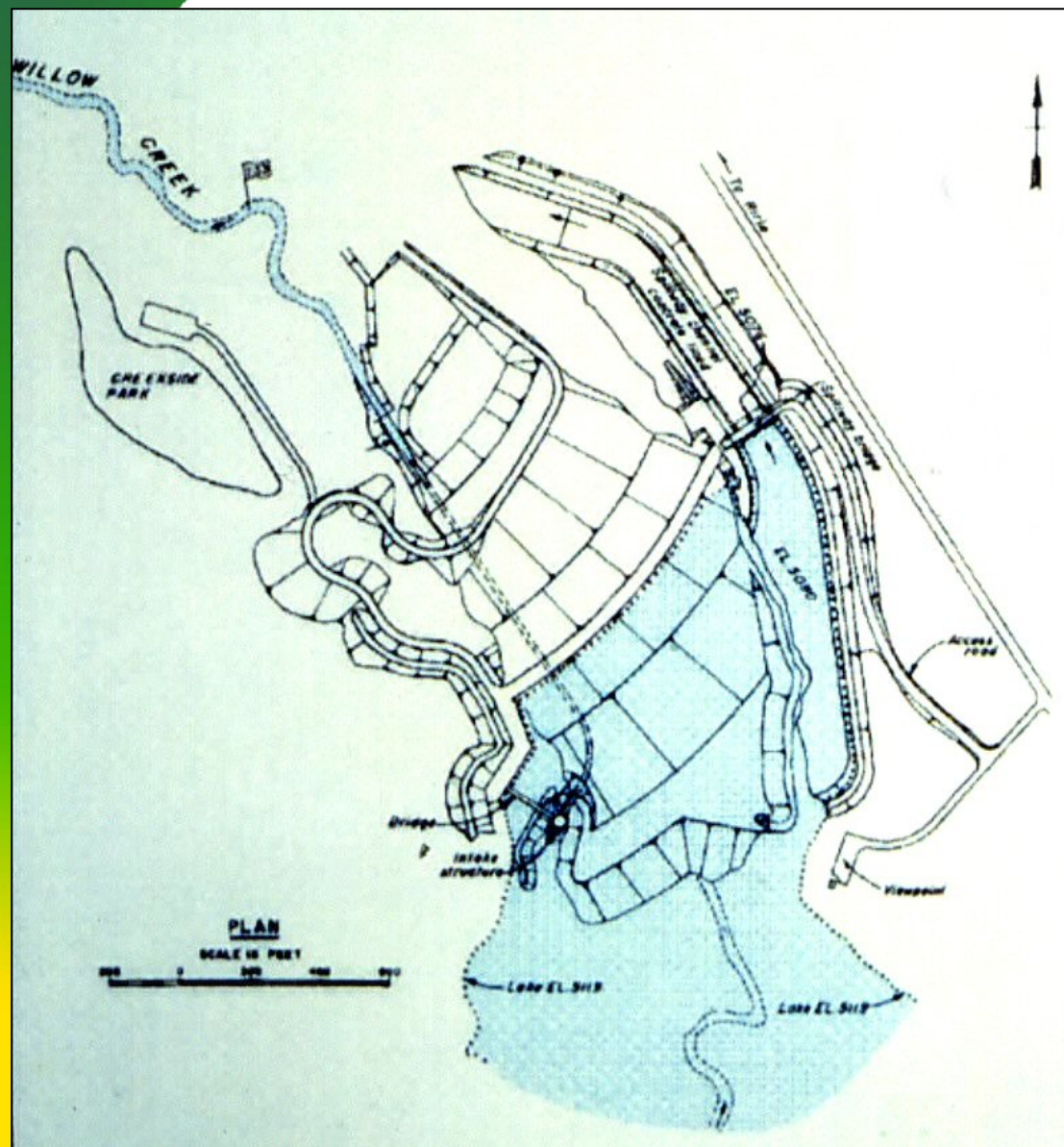


- Ririe Dam was built by the Walla Walla District of the Corps of Engineers in an adjoining watershed with near-identical geology at the same time as Teton Dam.

RIRIE DAM

- Ririe Dam is located on Willow Creek about 20 miles east of Idaho Falls, and 6 miles from Ririe, Idaho.
- The stream flows from the southeast to the northwest and enters the adjoining Snake River Plain about three miles below the dam.
- The lower watershed near the damsite is an erosion-dissected plateau surface, which is slightly tilted toward the northeast.



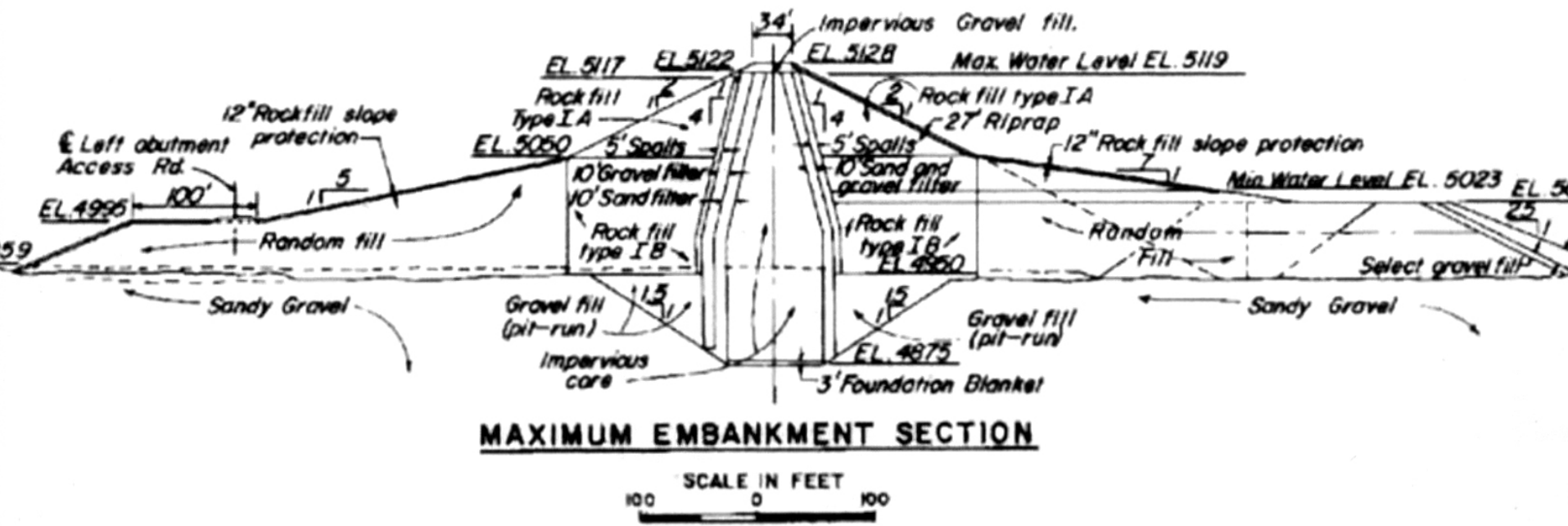


- Plan view of Ririe Dam, showing layout of embankment across Willow Creek and spillway on right abutment.
- The dam is 253 feet high and was constructed between 1967-75, at the same time as the Teton Dam.
- Encountered same foundation problems as Teton

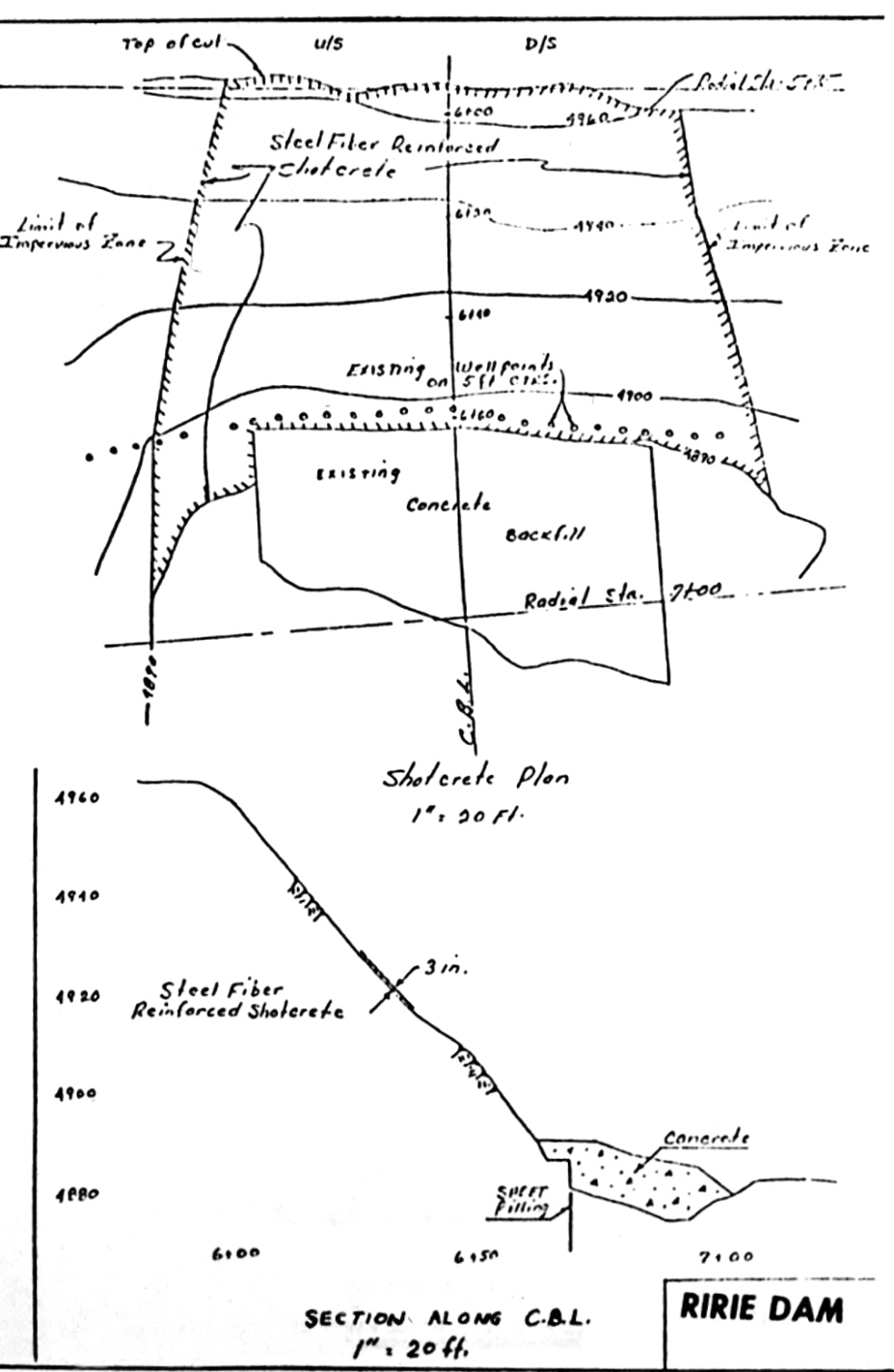


The plateau into which Willow Creek is entrenched is comprised of **Pleistocene volcanic flows and intercalated sediments** which, in turn rest with angular unconformity on the regional widespread Salt Lake Formation.

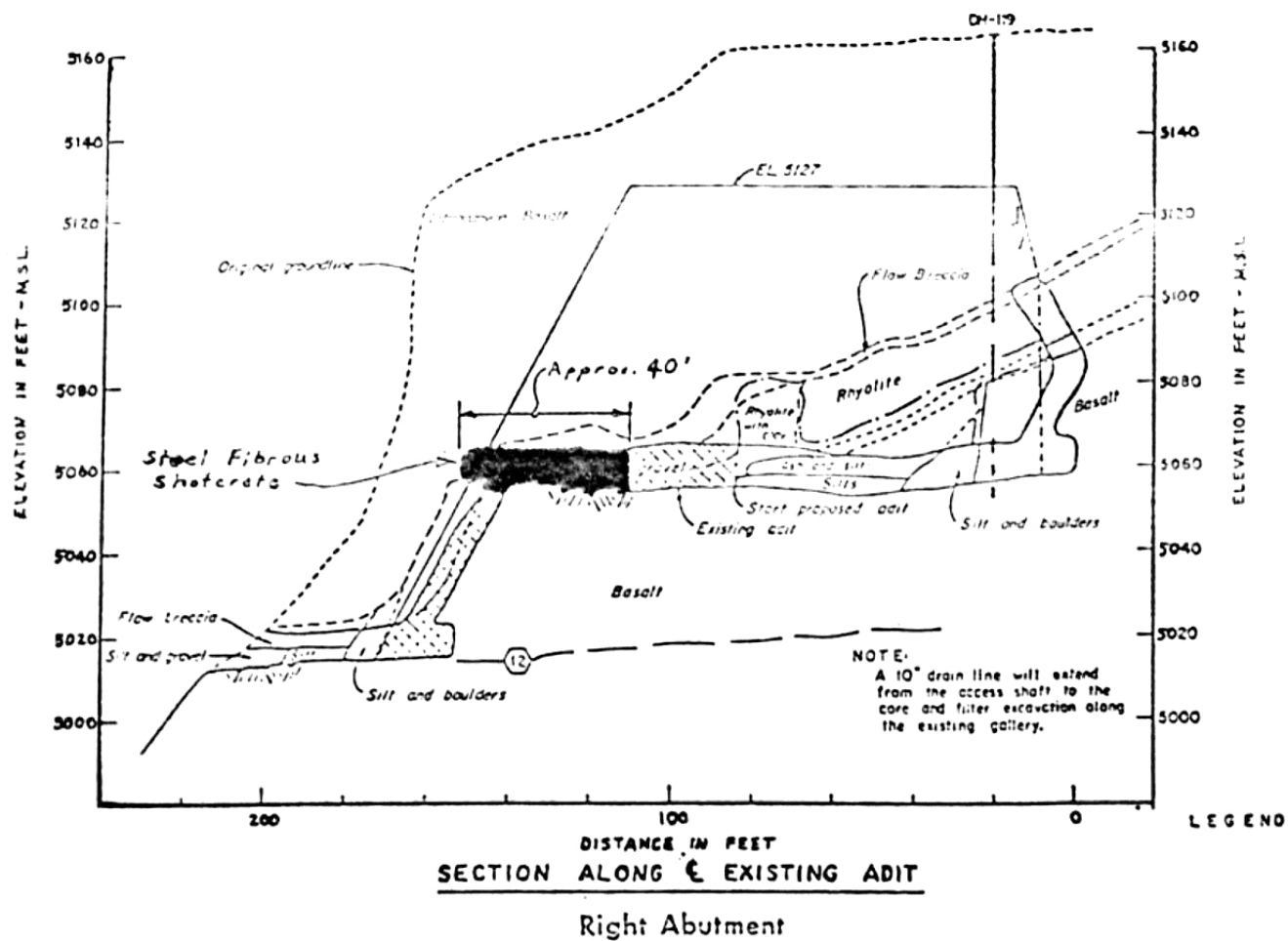
- The Salt lake formation is identified locally as "basalt sediments". It is a Pliocene age unit of continental origin with **highly variable lithology**.
- The surface of the volcanic rocks is often overlain by a variable thickness of unconsolidated, **windblown loess** (silt).
- At the damsite the valley alluvium is about 70 to 90 feet deep and is underlain by the canyon wall basalt sequence, except where erosion and faulting have exposed the underlying basal sediments.



- Maximum section through Ririe's zoned rockfill embankment, which is 253 feet high. Note gentle 7:1 and 5:1 side slopes and the deep cutoff section beneath the dam's central core.
- At the damsite Willow Creek has entrenched itself 250 feet below the surrounding plateau surface. The floor of the river valley under normal conditions is about 550 feet wide and nearly level at elevation 4,960 ft, with the Willow Creek channel was incised about 5 to 10 feet into alluvial deposits.



- The dam's abutments were comprised of a perversely fractured welded ash-flow tuff (rhyolite), with beds of lapilli tuff and basalt; similar to conditions encountered at Teton Dam.
- After stripping revealed numerous open fractures in the volcanic rock, abutment keyway trenches were added to the design, similar to what occurred at Teton Dam.



- Lean concrete backfill was placed over much of the floor area of the abutment keyways
- Steel fiber-reinforced shotcrete was applied to the right abutment keyway excavation to seal large fissures and joints before loess fill was placed against the excavation floor and walls. This was the first American dam that employed this technique.



- Ririe Dam was completed in 1975, about a year before Teton Dam.
- It is now operated by the Bureau of Reclamation and has performed without safety incidents ever since, thanks to the **additional foundation treatment** and attention to foundation conditions during construction