

# Coveville Dam

NTS Engineering  
Coveville Irrigation - Earthen Dam



Chase Madsen  
Matt Moulton  
Donald Olsen  
Dallas Rodabaugh  
Logan Wood

## Summary

Due to drought conditions in recent years, Coveville Irrigation (CI) has struggled to meet the needs of the local farmers they serve. CI sought to increase the storage of the already existing reservoir to provide water that will prolong the growing season.

CI has asked NTS Engineering to design an embankment dam to meet their irrigation needs. After several months of discussion and design, an embankment, inlet tower, stilling basin, and emergency spillway were designed.



Fig. 1: Existing structure at site



Fig. 2: Landen Chugg surveying the site



## Alternatives

NTS Engineering investigated the following alternatives to prolong the growing season:

**Alternative 1 – No Change**

**Alternative 2 – Improve Existing (Ex.) Dam**  
- No embankment, add mechanical gate

**Alternative 3 – Dam at Ex. Structure**  
- Dredge channel, erect earthen dam

**Alternative 4 – Dam South of Ex. Structure**  
- Similar to Alt. 3, erect earthen dam south

**Alternative 5 – Maximum Storage**  
- Erect earthen dam south of existing structure  
- Construct 3-foot berms near highway

## Criteria

The alternatives were analyzed based on the following criteria:

**Cost:** Budget for dam is \$1 Million (without use of grants).

**Storage Volume:** Goal storage of 1,000 acre-ft given by client.

**Location:** Preference given by client.

**Environmental Impact:** Measured by affected area of impact.

**Operation & Maintenance:** Higher ratings given to easier operation & maintenance.

**Ease of Design:** Preference to easier design.

## Selected Alternative

After review of the criteria of the alternatives, NTS Engineering selected Alternative 3. This alternative met the following criteria:

**Total Cost:** \$1.7 Million

**Storage Volume:** ~1000 acre-ft

**Location:** Existing Structure Location

**Environmental Impact:** Minimal Affected Area

**Operation & Maintenance:** Dam inspections once every 5 years

**Ease of Design:** Earthen embankment is area of expertise

This alternative will allow the local farmers the water they need to grow one more crop in the late summer months (August – September).

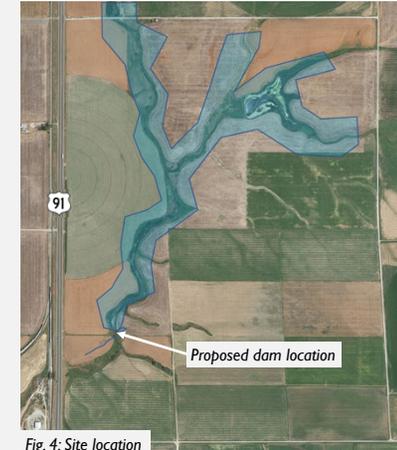


Fig. 4: Site location

## Proposed Design

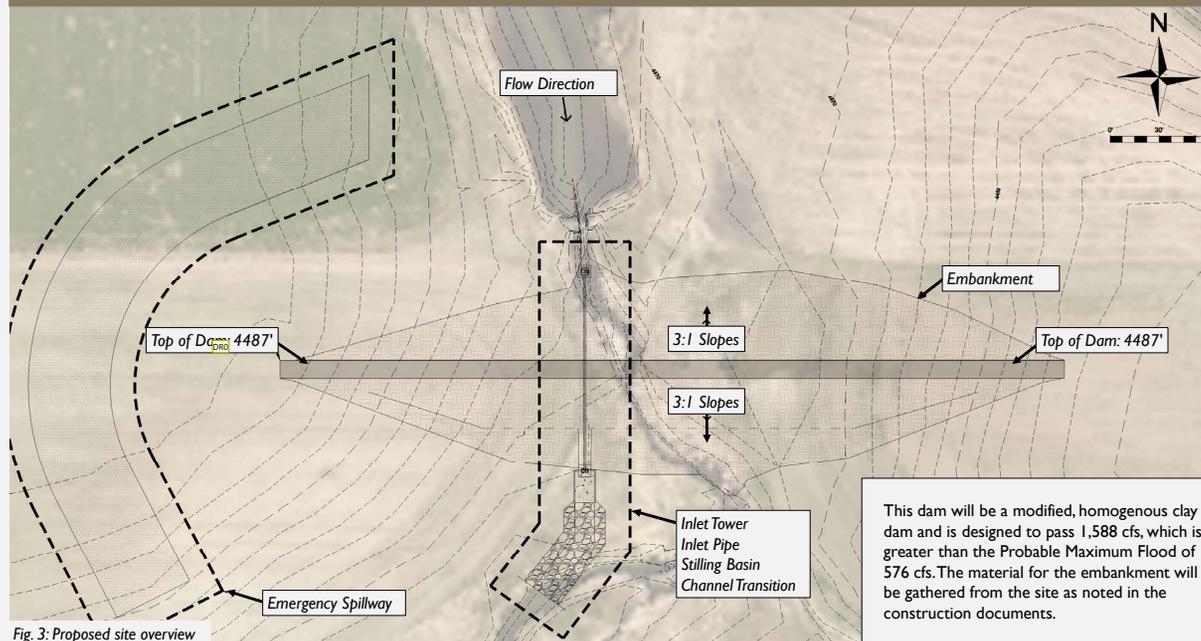


Fig. 3: Proposed site overview

This dam will be a modified, homogenous clay dam and is designed to pass 1,588 cfs, which is greater than the Probable Maximum Flood of 576 cfs. The material for the embankment will be gathered from the site as noted in the construction documents.

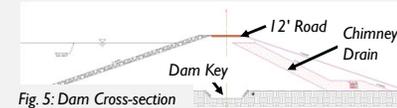


Fig. 5: Dam cross-section

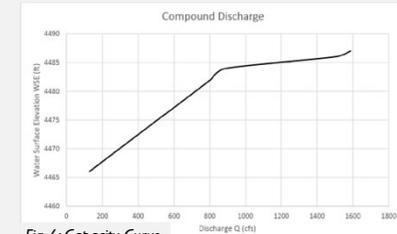


Fig. 6: Capacity Curve

## Support

NTS Engineering would not have been successful in its design without the help of several individuals. Those individuals are noted below.

- Supporters
- Johnny Prettyman
  - Dr. Blake Tullis
  - Dan Allan
  - Dr. John Rice
  - Prof. Austin Ball