

# Lubbock County Project Updates

July 8, 2024



An aerial photograph of the McMillan Dam. The dam's concrete spillway is in the foreground, sloping down towards the right. Large black letters are painted on the concrete, reading "KEEP OUT OF AREA". To the left of the spillway, there is a concrete wall and a chain-link fence. The reservoir is to the right of the spillway, with green algae or reeds growing in the water. The background shows a line of trees and a small building.

# McMillan Dam



# Data Collection

- Environmental Field Work – completed May 2024
- Geotechnical Field Work - complete May 2024
- Survey Deliverable – complete June 2024







# Monitoring

Upright piezometer completion at embankment toe. Used to determine existing phreatic (water) surface through the embankment and head pressure (uplift) at the toe of slope. Data will inform seepage and slope stability analysis during design.





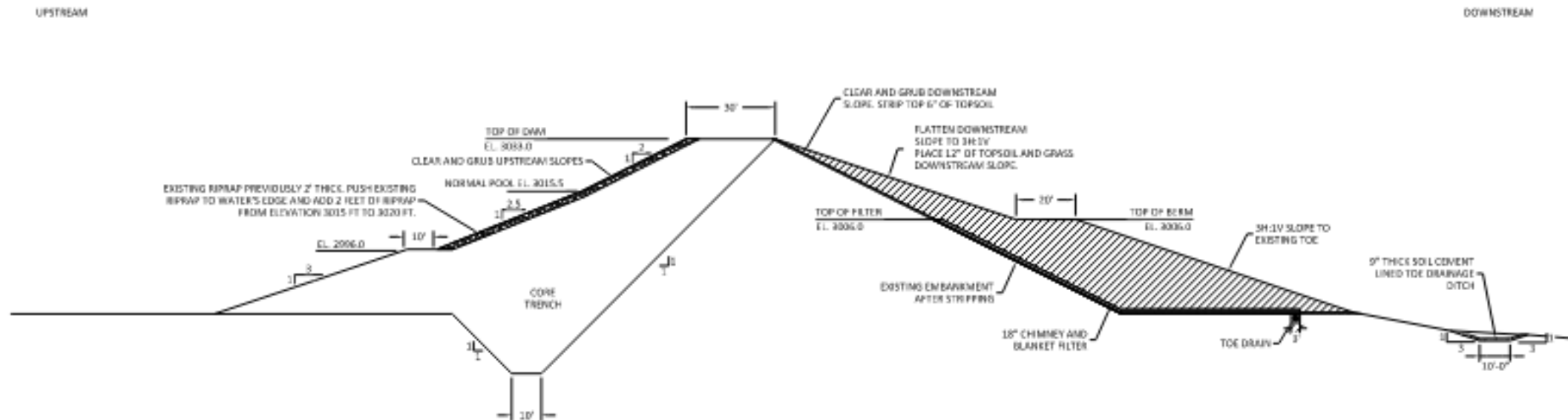
# Monitoring

Piezometer surface completion on embankment crest. Used to determine existing phreatic (water) surface through the embankment. Can be used long term to monitor water levels through embankment.



# Testing and Design

- Geotechnical Lab Testing - anticipated August 2024
- 60% Submittal – anticipated September 2024







Horseshoe Bend





# Horseshoe Bend

## Data Collection

Site Visit Completed: October  
6<sup>th</sup>/October 24<sup>th</sup>

Drone imagery taken

Received original plan set





# Site Observations

FNI observed that the 7'x 7' inlet was clogged with sediment buildup and debris. There was evidence of ongoing erosion/sedimentation from the upstream field



Adjacent to the roadway there was erosion and undermining of the concrete gutters.

On the outlet side (east) of the roadway, an incised gully has formed between the roadway and the west gabion wall of the outfall structure



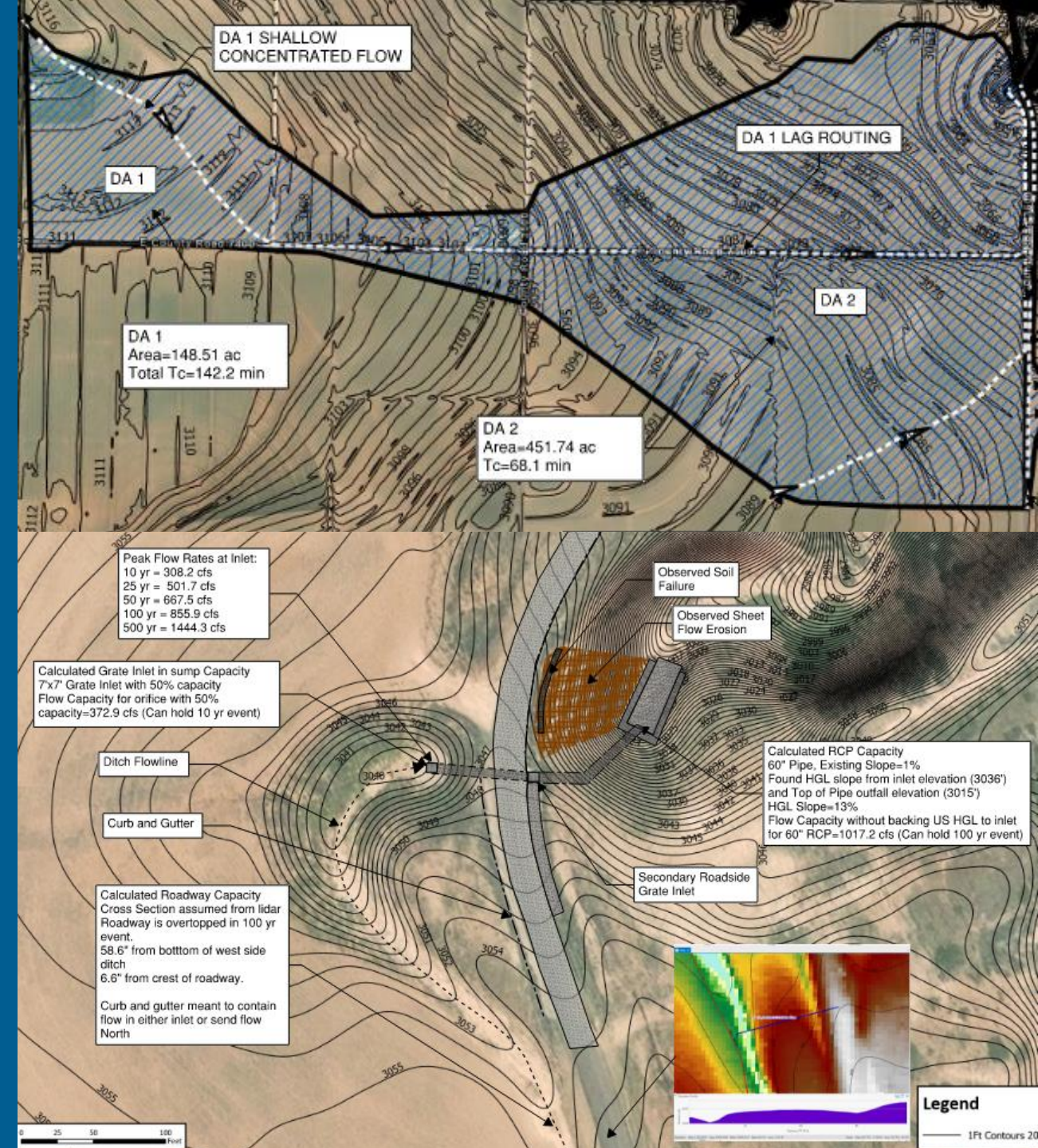
# H&H Analysis

Drainage areas and longest flow paths were determined.

Peak flow rates were found using HEC-HMS

FNI concluded that the existing infrastructure is inlet controlled.

It was determined that the erosion protection at the outfall and downstream of the gabion flume is insufficient for the flows coming out of the pipe.







# Horseshoe Bend Alternative Analysis



# All Alternatives: Downstream Stabilization

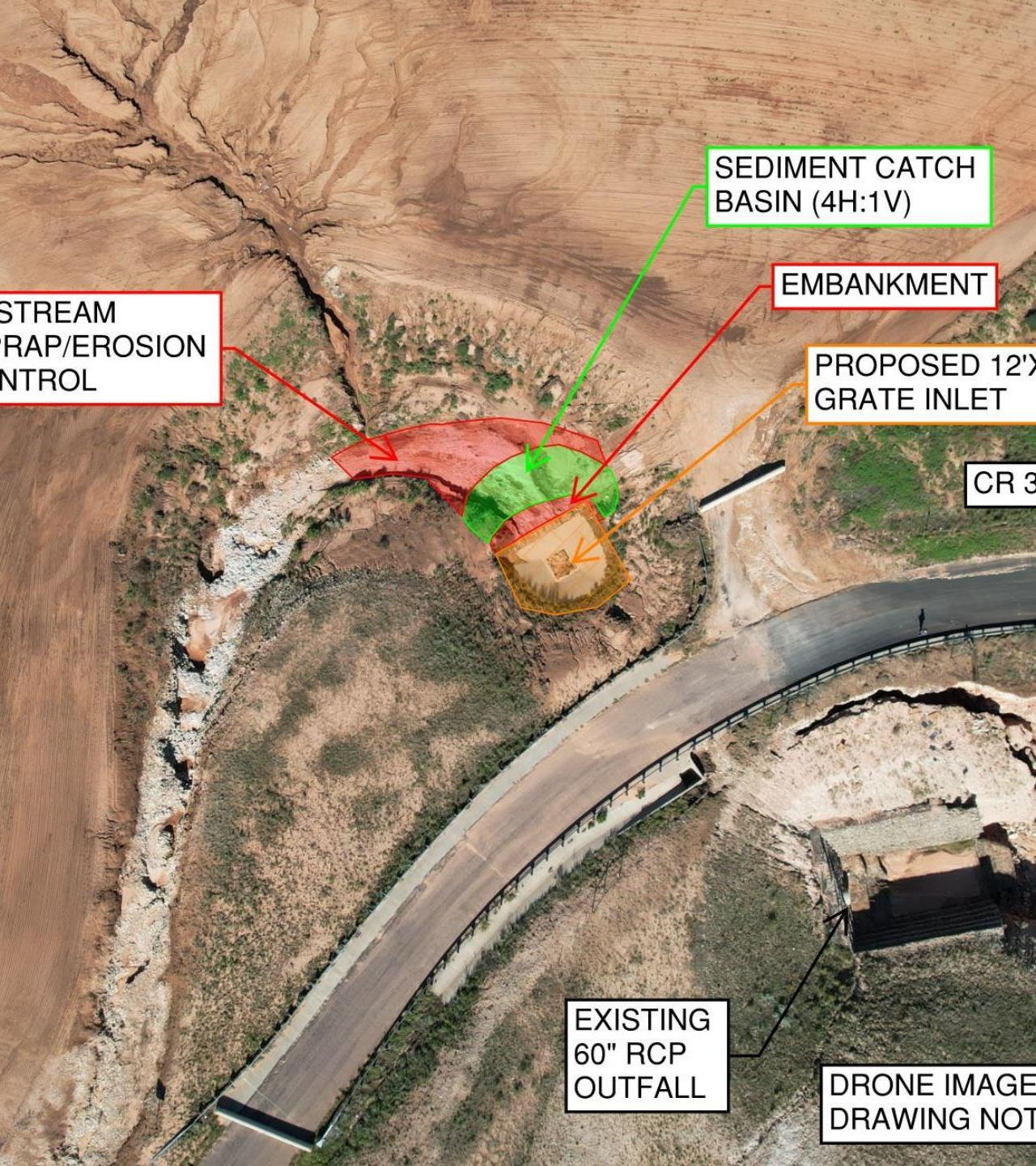
To mitigate headcut erosion install trapezoidal check dams along the receiving drainage channel every 200-300'

3 needed

Sacrificial – reduce rate of headcut erosion and prolong the life of the outlet flume and plunge pool







# Alternative 1: Storm Drain Option

Upgrade inlet to 12' x 12' to provide additional capacity.

Introduce a sediment catch basin upstream of inlet to capture debris and reduce clogging in inlet.

Structural rehabilitation along East side of CR 3600, including repair of gully.

Energy dissipation and erosion protection downstream of outfall.

**\$5,500,000 cost estimate**





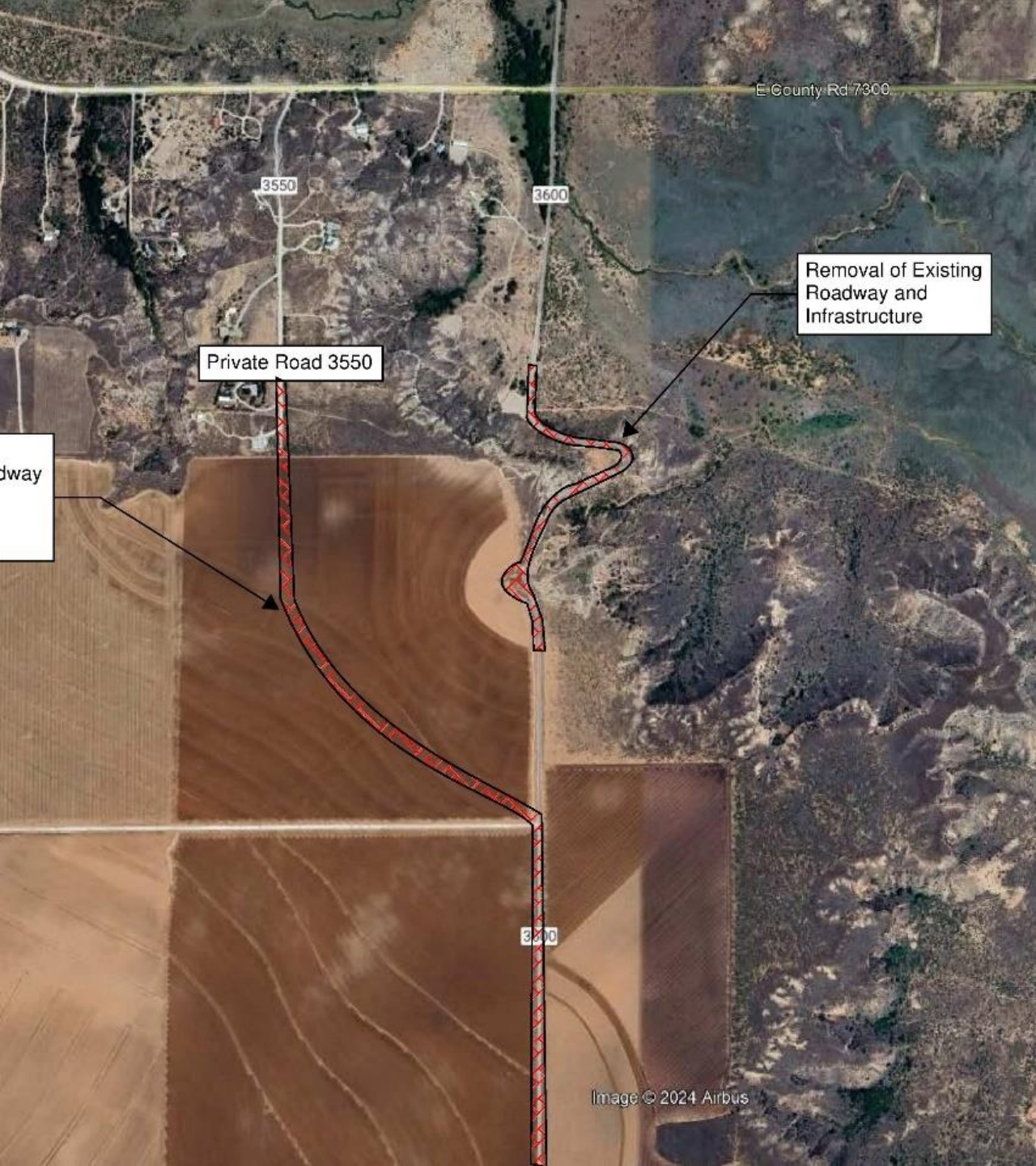
# Alternative 2: Restore Culvert Option

Replace existing inlet structure and pipe with a 10' x 10' box culvert and replacement paving. Improve roadside drainage infrastructure upstream of culvert to prevent erosion at proposed improvements.

Structural rehabilitation along East side of CR 3600, including repair of gully.

Energy dissipation and erosion protection downstream of outfall.





# Alternative 3: Realign Roadway

Realignment of CR 3600 to follow  
Private Road 3350

Close CR 3600

Requires land acquisition

**\$25,000,000 cost estimate**



Questions?