

# Current Status of Meadow Lake Dam Repairs

As of April 2026, progress continues on the planning, engineering, permitting for the Meadow Lake Dam Repairs. The preliminary field work– surveying, concrete structural testing, geotechnical (drilling, sampling, lab testing), plan review– is complete. The engineering firm, GEI, has completed hydrological and hydraulic studies for TCEQ review, and TCEQ is currently reviewing these engineering reports. Based on the field work, GEI has provided a dam stability report which is positive. Considerable consideration (i.e. time) has been given to dam stability and any impact associated with overtopping and dam failure. The construction plans are approximately 90% complete and will be submitted for permitting following TCEQ's response to hydraulic analysis.

In conjunction with the engineering, the Meadow Lake WCID is also coordinating with: GVEC regarding electric service to the upgraded dam gates, US Army Corps of Engineers in an effort to obtain low interest rate financing (in lieu of issuing bonds), and GBRA regarding to transfer of the dam to the Meadow Lake WCID.

## Field Investigation, Planning

- Survey and inspection of existing infrastructure - **Complete**
  
- Concrete testing and Ground Penetrating Radar - **Complete**  
Concrete Condition Assessment (GEI 2/24/25)

# Technical Memorandum

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**Via Email:** Jrobbins2005@gmail.com  
**To:** Mr. Jacy Robbins, Meadow Lake Water Control and Improvements District 1  
**From:** Sean B. Brady  
**Date:** February 24, 2025  
**Re:** Concrete Condition Assessment  
Meadow Lake - Nolte Dam Repairs  
Meadow Lake, Texas  
**Project No.** 2405255

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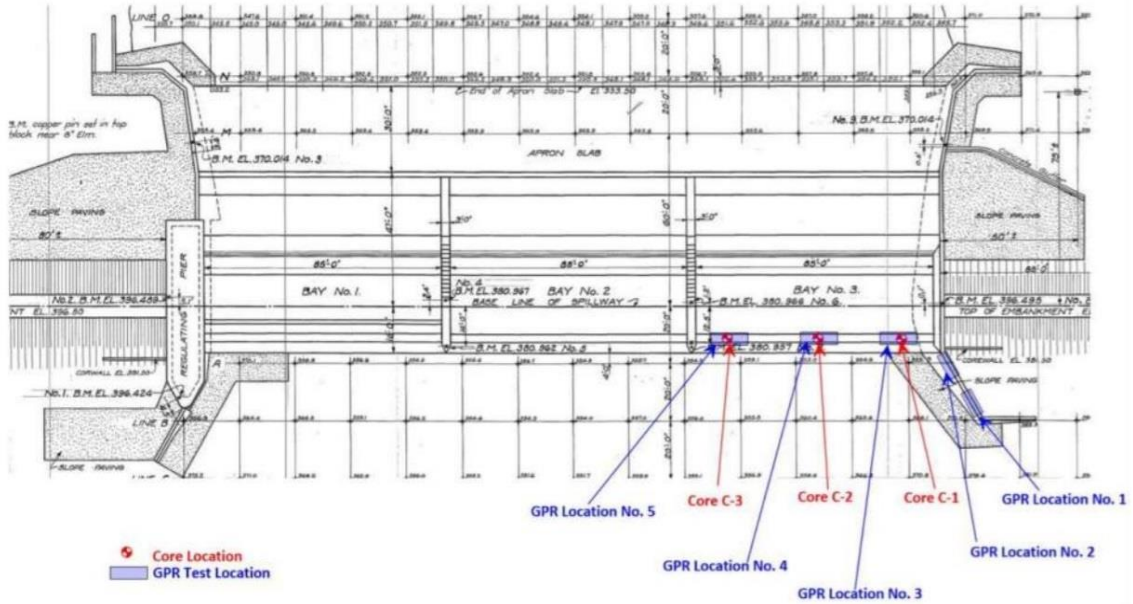
## Structural Investigations

Nondestructive techniques were employed in our structural assessment of the Nolte Dam Bay No. 1 (northernmost bay). GEI surveyed the primary dam basin apron curb and left retaining wall to determine steel reinforcing spacing and concrete coverage on December 2nd and 3rd, 2024. Ground Penetrating Radar (GPR) was utilized to attempt to determine the location of the reinforcement in the existing structure, as described below. Concrete coring was also performed to test for concrete compressive strength at select locations on the dam downstream edge of the basin apron.

Figure No. 1 illustrates the locations and coverage of the GPR profiles and concrete cores performed at Nolte Dam Bay No. 3 on December 2nd and 3rd, 2025. Prior to the survey was started, GEI attempted to pump standing water out of the stilling basin to access the concrete slab and drains. However, the volume of water coming into the stilling basin from the bypass piping was greater than the portable pump GEI supplied was capable of removing from the basin. Therefore, a condition assessment of the concrete was not possible along the downstream side of the dam face and basin slab due to the active flow of water within the basin.

Concrete Condition Assessment  
Meadow Lake - Nolte Dam Repairs  
2405255  
Meadow Lake, Texas

**Figure 1. NDT Testing Locations**



- Geotechnical Report - Complete
- Dam Stability Report - **Complete**

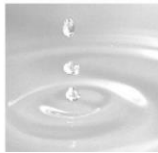


**Gravity Stability Analysis Report  
Nolte Dam Modifications**  
Meadow Lake, Texas

**Submitted to:**  
Mr. Jacy Robbins  
Meadow Lake Water Control and Improvements District 1  
4301 Bull Creek Road, Suite 150  
Austin, TX 78731

**Submitted by:**  
GEI Consultants, Inc.  
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March 2026  
Project No. 2405225



Mark Guirguis, P.E. (TX)  
Senior Structural Engineer

Peter Trocha, P.E. (IL)  
Senior Professional

Gravity Stability Analysis Report  
Nolte Dam Modifications  
Meadow Lake, Texas  
March 2026

**Executive Summary**

Nolte Dam (TX01599) forms the impoundment known as Meadow Lake, and it is located along the Guadalupe River, south of Seguin, TX. The dam was completed in 1930, and it consists of a concrete primary spillway with three 85-foot-wide bays controlled by 12.7-foot-high roof-weir service gates, an electrical generating plant, a 2,000-foot-long embankment, and an 820-foot-long emergency spillway. The embankments adjacent to the primary spillway are retained by reinforced concrete cantilever retaining walls. Due to the age of the existing spillway and condition of the gates, the existing spillway structure will be partially infilled with concrete and a new Obermeyer gate system will be installed.

This report presents the gravity stability analyses of static load cases for a typical bay of the new spillway and four sections of the existing right retaining wall, in general accordance with the current TCEQ *Design and Construction Guidelines for Dams in Texas*. The analyses included evaluation of sliding, overturning, and bearing pressure. Floatation was also evaluated for the spillway. The spillway was analyzed for three load cases: Load Case I (Usual) – Normal Operating Condition, Load Case IA (Usual) – Maintenance Condition with Stop Logs, and Load Case II (Extreme) – Flood Discharge (IDF = PMF). The retaining wall sections were analyzed for five load cases: Load Case I (Usual) – Normal Operating Condition, Load Case IA (Usual) – Dry Condition, Load Case II (Extreme) – Flood Discharge (IDF = PMF), Load Case IIA (Extreme) – Rapid Drawdown (Instant), and Load Case IIA (Extreme) – Rapid Drawdown (5 Hours after Drop of Pool)

The spillway was assumed to be founded on a layer of shallow residuum with an interface friction angle of 35°, while the retaining wall was assumed to be founded on either fill or shallow residuum having an interface friction angle of 32°. A concrete-foundation interface cohesive strength of 200 psf was assumed for all analyses. The efficiency of foundation drains beneath the spillway and wall drains in the retaining wall was considered in the analyses. Active Coulomb earth pressures with soil internal cohesion were assumed for backfill material behind the retaining wall.

The spillway met the sliding, overturning, bearing pressure, and floatation evaluation criteria for all analyzed load cases under baseline conditions ( $\phi = 35^\circ$ ,  $c = 200$  psf, 0% drains), except for sliding under the Normal Operating Condition. To reach the target factor of safety against sliding of 2.0 for the Normal Operating Condition, either an interface friction angle of 38.5° or a drain efficiency of 6% is required. If a lower target factor of safety of 1.5 is used without interface cohesion, the required friction angle and drain efficiencies are also 38.5° or 6%. We consider the required drain efficiencies to be reasonable, indicating the spillway has adequate stability for these load cases. We recommend that the drains be cleaned and inspected during construction.

The gravity stability analyses indicated that the sliding, overturning, and bearing pressure stability of the retaining wall met the stability evaluation criteria in all cases and wall sections, except wall section H in sliding for the Normal Operating Condition with 0% wall drains. The calculated factor of safety against sliding for this load case was 1.47 vs. a required factor of safety of 1.5. If wall drains are considered to be 100% effective, the factor of safety against sliding increases to 2.32 for this wall section. We consider the retaining wall to have adequate stability under the analyzed load cases. However, due to apparent historic rotation of the wall, we recommend that a monitoring program be implemented for the upstream and downstream sections of wall to identify and track any new movement.

## Engineering

- Hydrology and Hydraulic Reports - **Complete & Submitted**. TCEQ reports that the technical review is complete, and a response letter is expected within the next 2 weeks. It is anticipated that TCEQ will concur with GEI's assessment of Nolte Dam's low hazard rating.



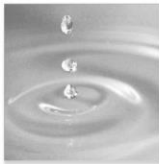
**Meadow Lake – Nolte Dam Repairs  
Technical Memorandum, Hydraulic  
Analysis**

Guadalupe County, TX

Submitted to:  
Meadow Lake Water Control and Improvements District 1  
4301 Bull Creek Road, Suite 150  
Austin, TX 78731

Prepared by:  
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TBPE # F-6986

December 2025  
GEI Project 2405235



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*Monica Malone*  
Monica Malone, PE, CFM  
Senior Water Resources Engineer



**Executive Summary**

Nolte Dam is a “run-of-the-river” type hydropower dam on the Guadalupe River, located about three miles south-southeast of Seguin, Texas. The Dam is owned and operated by the Guadalupe-Blanco River Authority (GBRA) and is under the regulatory jurisdiction of the Texas Commission on Environmental Quality (TCEQ) Dam Safety Program. The dam is currently classified as intermediate-size and high-hazard.

This report presents the results of a hydraulic study performed by GEI Consultants, Inc. (GEI) to determine the impacts on Nolte Dam from a probable maximum flood (PMF), as well as statistical design storms with return periods of 10, 25, 50, 100, 500 and 1000-years. Hydrologic analysis was previously described in a separate river hydrologic report, which is appended to this report. Based on a calibrated HEC-HMS model, a PMF of 762,963 cfs is estimated at the dam location. Per TCEQ recommendations and Texas Administrative Code (TAC), the design flood is estimated to be 75.2% of the PMF.

Nolte Dam is a 43.6-foot-high earthen dam with a 255-foot-long (three bays, each 85-foot long) concrete service spillway on the south side, and an 860-foot-long earthen emergency spillway along the northern stretch of the dam. The normal storage capacity of Meadow Lake is 1,339-acre-feet as estimated based on available USGS topographic LiDAR and GVHS bathymetry.

Hydraulic modeling predicts that the emergency spillway is not activated up to a 25-year flood. A 50-year flood results in dam crest overtopping by 2.5 feet, a 100-year flood by 5.5 feet and so on. A PMF routing predicted about 25.8% of the PMF passing over the dam’s spillways.

Breach analyses for sunny-day, barely overtopping and peak design flood failures are conducted and compared to the corresponding no-breach conditions. This comparison, based on analysis of thirty four breach scenarios, proves that a breach of Nolte Dam has a maximum impact of 0.44 feet rise in water surface at any of the downstream structures and main/secondary highways.

Therefore, based on this study, it is recommended that Nolte Dam may be reclassified as intermediate-size, low-hazard dam.

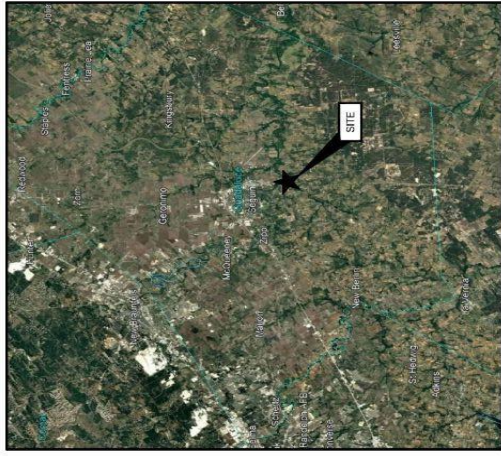
- Construction Plans - 90% complete assuming a low hazard rating. If Nolte Dam is deemed significant hazard rated by TCEQ, then additional anchoring will be necessary and added to the plans. The construction plans will be complete within the next 4 weeks and submitted to TCEQ for a 4-8 week review. Following this plan review, bid packages will be prepared, and the construction bid process will begin.

## **Other Items & Next Steps**

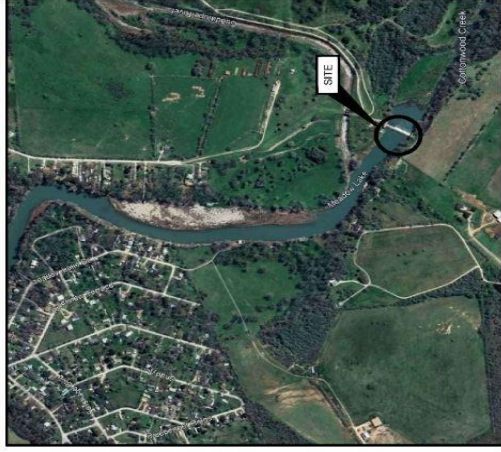
- Coordinating with GVEC on the routing of 3-phase power - In process
- U.S. Army Corpse of Engineers (USACE) Loan Package - Submitted
- USACE Permitting - GEI is coordinating with USACE on permitting type as most of the work is within the footprint of the existing dam, but there is some maintenance along the canal that needs to be completed. A USACE permit is needed for the work within the canal area, and it is currently anticipated that this work can be permitted via an existing nation-wide permit. If a project specific permit is required, permitting time will be approximately 8-10 weeks.
- Project bids - As the plans are completed, GEI and the WCID will prepare a bid package and contract package. At that time, the project timeline can be updated based on procurement lead times (Obermeyer gate manufacturing, tower crane delivery, etc...) and construction schedules.
- Coordinating with GBRA regarding ownership transfer of Nolte Dam.

# MEADOW LAKE SPILLWAY MODIFICATIONS

MEADOW LAKE SPILLWAY REPAIR  
NOLTE LS RD, SEGUIN, TX



GUADALUPE COUNTY MAP  
(NOT TO SCALE)



SITE LOCATION MAP  
(NOT TO SCALE)

## SHEET INDEX

Sheet Number	Sheet Title
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G-02	NOTES (SHEET 1 OF 2)
G-03	NOTES (SHEET 2 OF 2)
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C-01	EXISTING CONDITIONS SITE PLAN
C-02	EXISTING CONDITIONS SPILLWAY PLAN
C-03	EXISTING CONDITIONS CONTROL BUILDING PLAN
C-04	EXISTING CONDITIONS SPILLWAY LONGITUDINAL SECTION
C-05	EXISTING CONDITIONS SPILLWAY TRANSVERSE SECTIONS (SHEET 1 OF 2)
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S-10	CONCRETE REPAIR DETAILS
S-11	DRILLED SHAFT DETAILS
S-12	DRILLED SHAFT DETAILS - 2
M-01	MECHANICAL SPILLWAY PLAN
M-02	MECHANICAL CONTROL BUILDING EQUIPMENT PLAN

PREPARED FOR:  
MEADOW LAKE WATER CONTROL  
AND IMPROVEMENTS DISTRICT 1  
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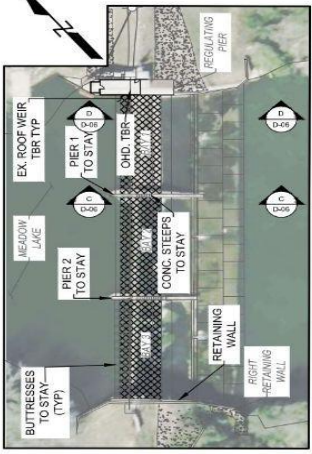
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SHEET NO.  
**DRAFT**

GEI PROJECT NO. 2405255

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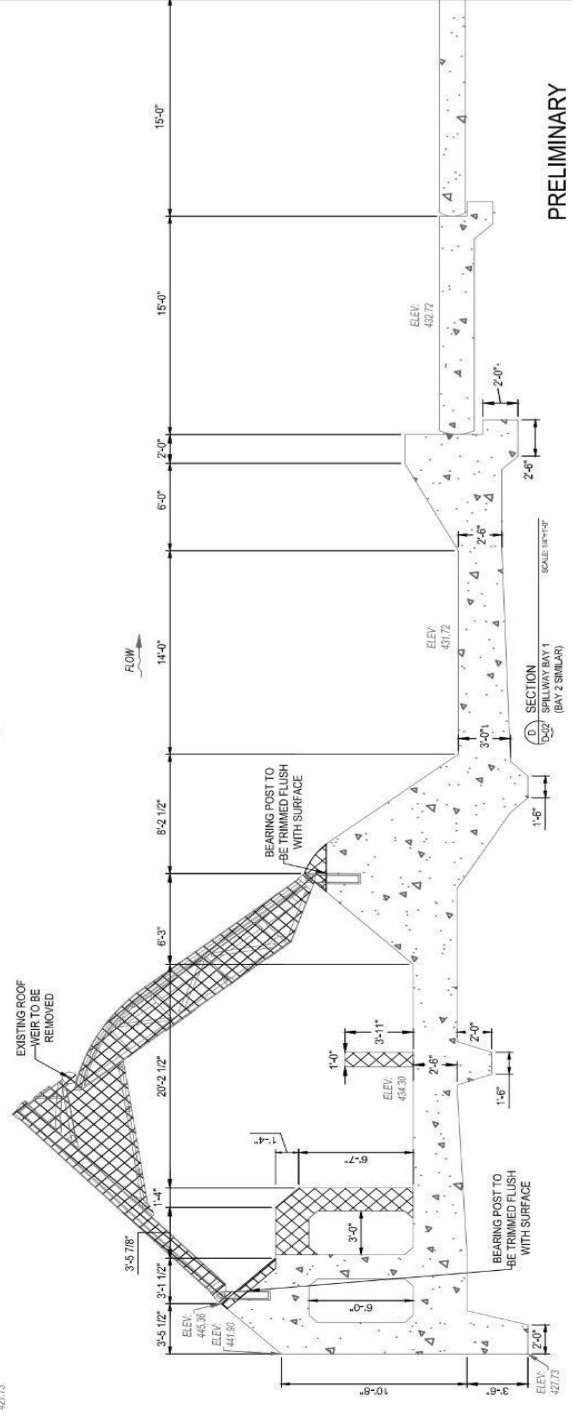
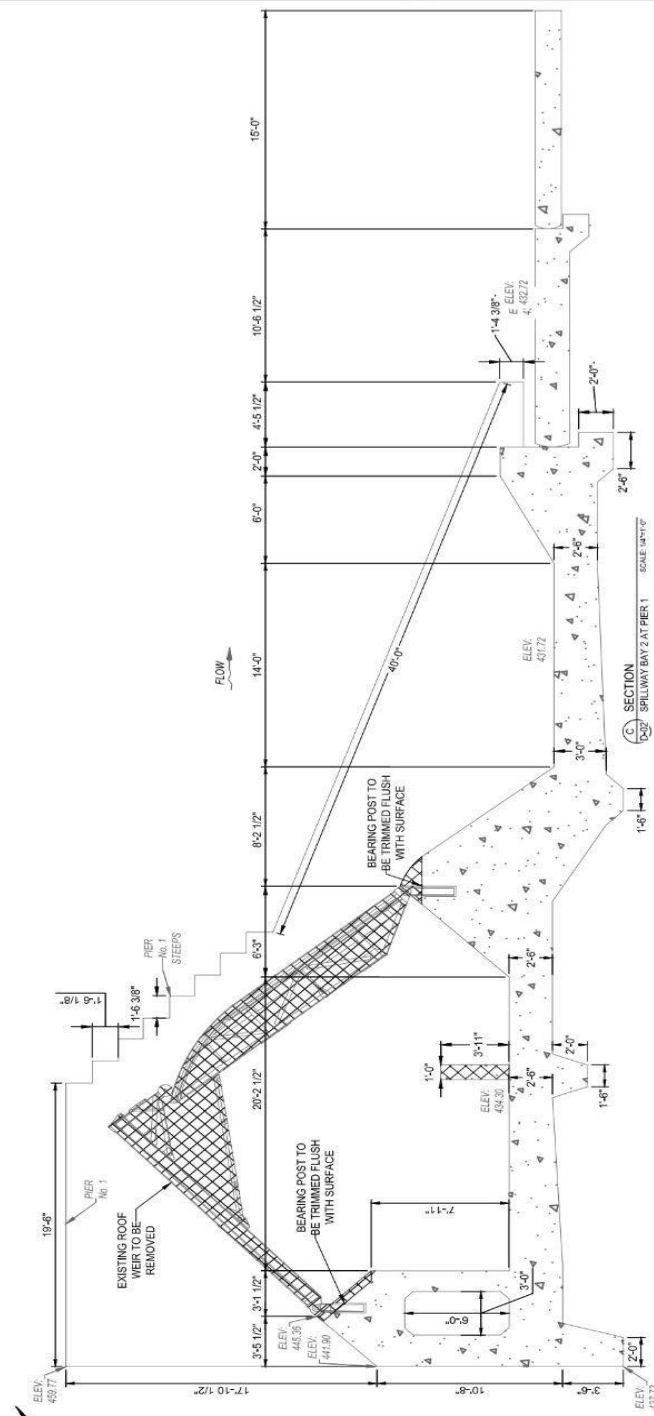


**KEY PLAN**

**HATCH LEGEND**

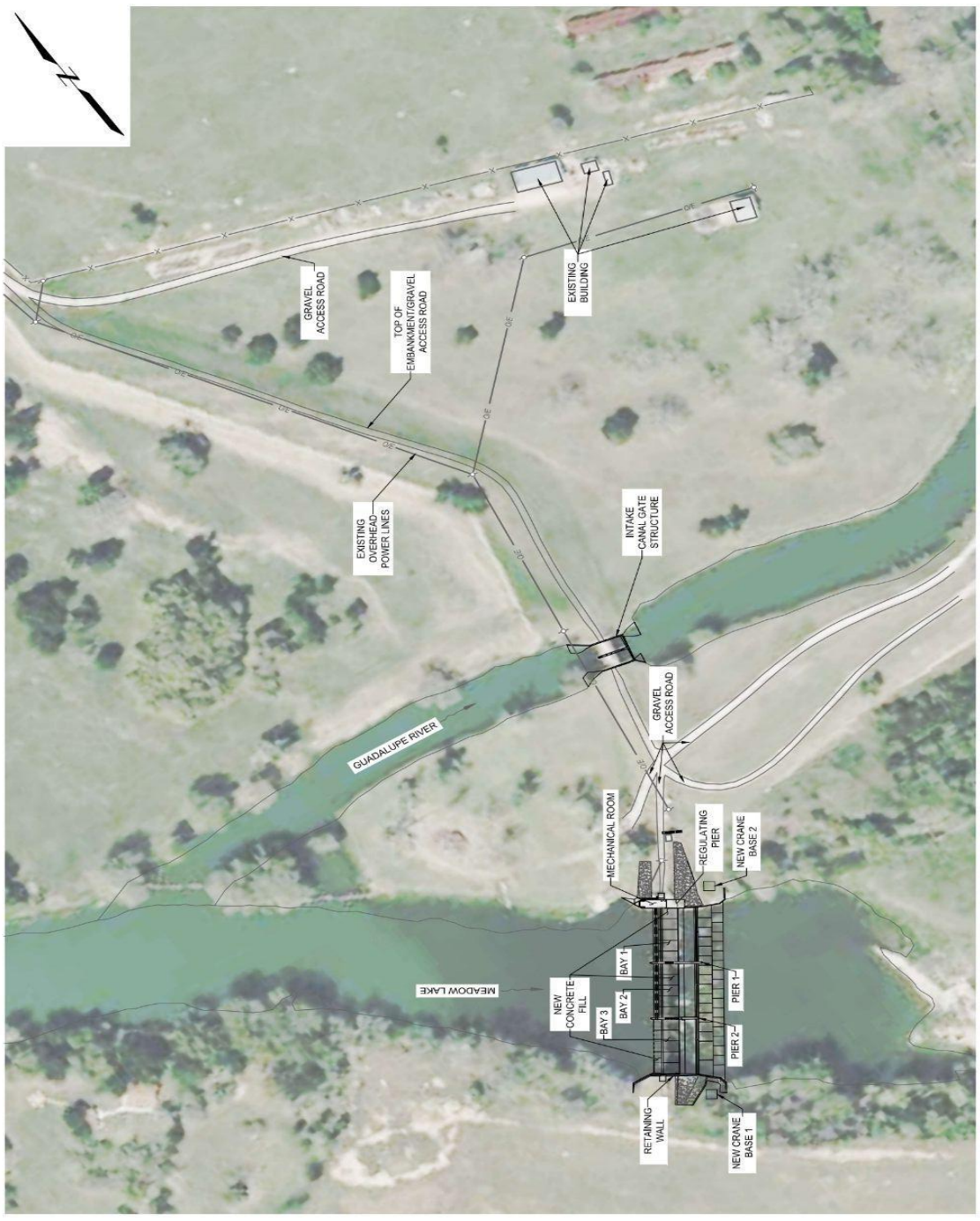


DEMOLITION



**PRELIMINARY  
NOT FOR CONSTRUCTION**

Attention: 1" = 1' If this scale has not been indicated, check for the 1" then drawing is not original scale.	<b>DRAFT</b>	Designer: IMG Drawn: YMS Checked: CK Approved: ##### P.E. No.: ## GEI Project: 2405235	<p>GEI CONSULTANTS 6600 W. BRIDGES BLVD. SUITE 150 DALLAS, TEXAS 75244 PH: 972.522.5200</p>	MEADOW LAKE WATER CONTROL AND IMPROVEMENTS DISTRICT 1 4301 BULL CREEK ROAD, SUITE 150 AUSTIN, TEXAS 78731	<b>MEADOW LAKE/NOLTE DAM MODIFICATIONS</b>  <b>SEGUN, TX</b>	SHEET NAME <b>DEMOLITION SPILLWAY TRANSVERSE SECTIONS (SHEET 2 OF 2)</b>	SHEET NO. <b>D-06</b>
		NO. DATE 0 8/15/2025					

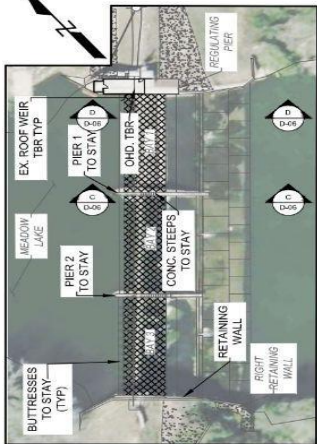


**HATCH LEGEND**  
 NEW CONCRETE

**SITE PLAN**  
 STRUCTURAL MODIFICATIONS  
 0 90 180  
 SCALE: FEET

**PRELIMINARY  
 NOT FOR CONSTRUCTION**

<b>DRAFT</b>	Designator: MG Drawer: YMS Checker: CK Approver: ##### P.E. No: ## GEI Project: 2465255	 <b>MEADOW LAKE WATER CONTROL AND IMPROVEMENTS DISTRICT 1</b> 4301 BULL CREEK ROAD, SUITE 150 AUSTIN, TEXAS 78731	<b>MEADOW LAKE/NOLTE DAM MODIFICATIONS</b>  <b>SEGUN, TX</b>	SHEET NAME <b>STRUCTURAL MODIFICATIONS SITE PLAN</b>	SHEET NO. <b>S-01</b>
	Attention: 1" If the scale bar does not match the drawing, the drawing is not original scale.	NO DATE 0 8/15/2025 60% SUBMITTAL ISSUE/REVISION CTK APP	MEADOW LAKE WATER CONTROL AND IMPROVEMENTS DISTRICT 1 4301 BULL CREEK ROAD, SUITE 150 AUSTIN, TEXAS 78731 GEI Consultants 5000 W. BRIDGES BLVD., SUITE 100 FORT WORTH, TEXAS 76102-0100 (817) 332-6200		

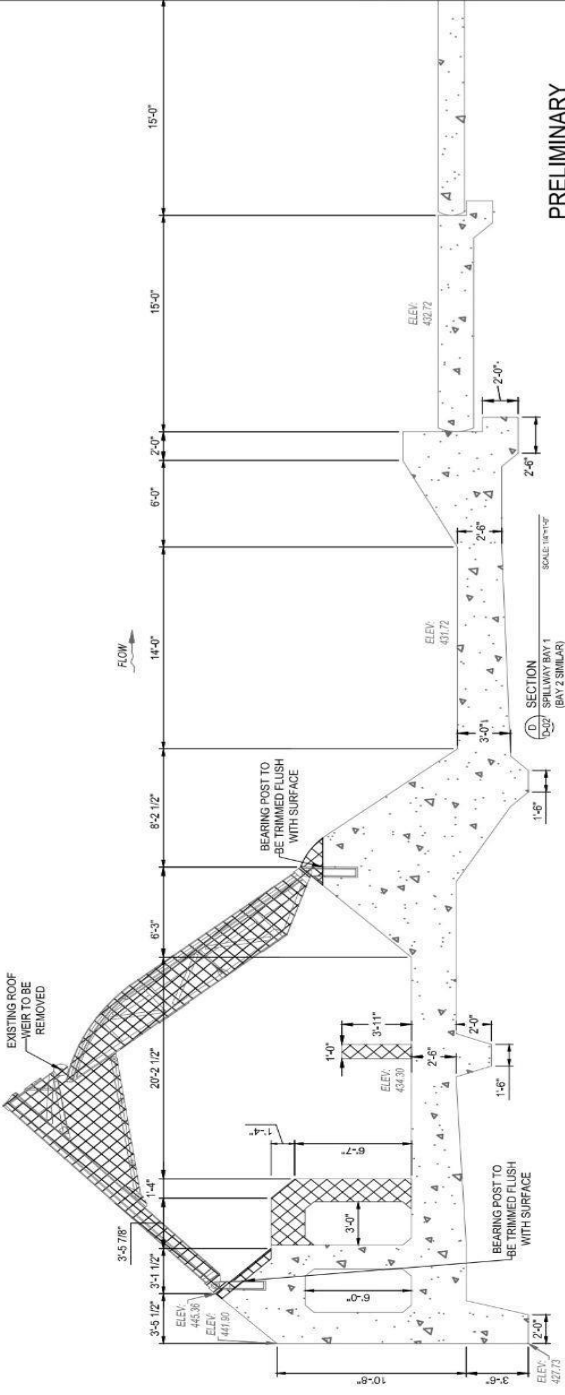
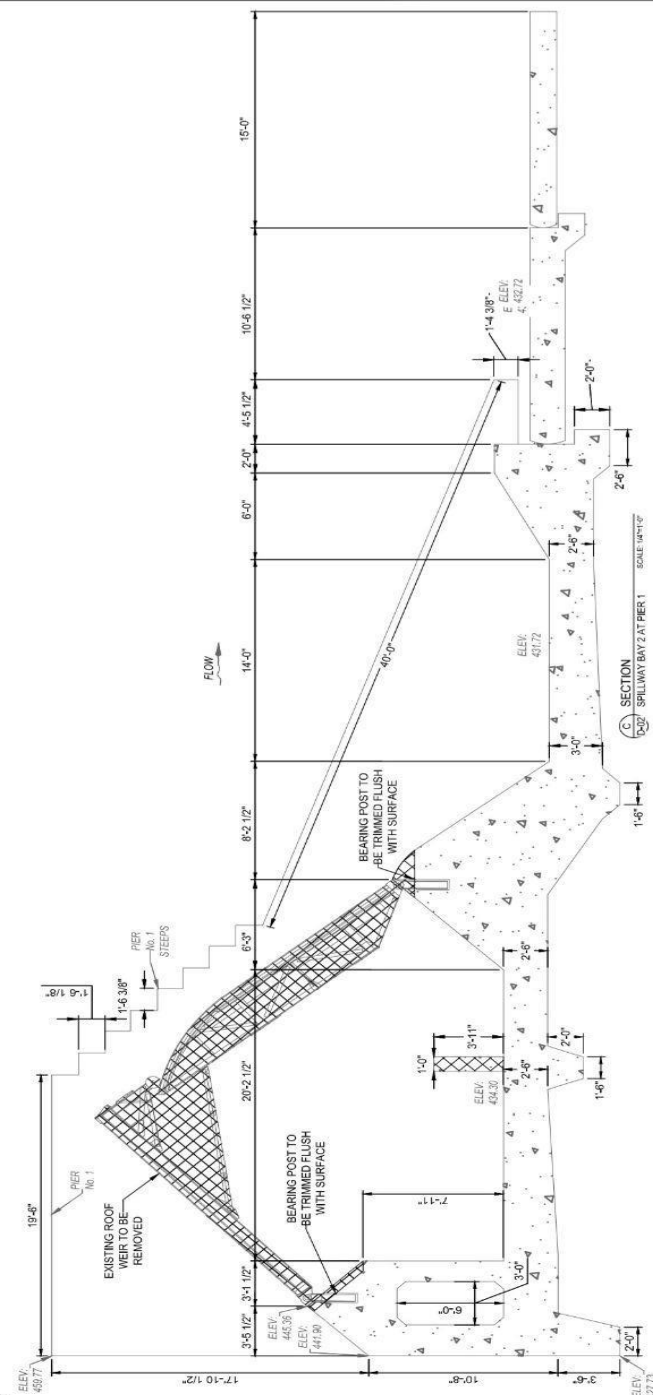


**KEY PLAN**

**HATCH LEGEND**



DEMOLITION



**PRELIMINARY  
NOT FOR CONSTRUCTION**

DESIGNED: MG	DRAWN: YMS	CHECKED: CK	APPROVED: #####	P.E. NO: ##	GEI Project: 2405255
MEADOW LAKE WATER CONTROL AND IMPROVEMENTS DISTRICT 1 4301 BULL CREEK ROAD, SUITE 150 AUSTIN, TEXAS 78731	<p><b>MEADOW LAKE/NOLTE DAM MODIFICATIONS SEGUIN, TX</b></p>				
SHEET NAME		SHEET NO.		D-06	
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DESIGNED: MG	DRAWN: YMS	CHECKED: CK	APPROVED: #####	P.E. NO: ##	GEI Project: 2405255
<p><b>DRAFT</b></p>					
<p>Attention: 1" = 1'-0" scale bar does not measure 1" then drawing is not original scale.</p>					

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