



# **MEYER RANCH UNIT 16**

## **Water Pollution Abatement Plan Modification**

**December 2024**



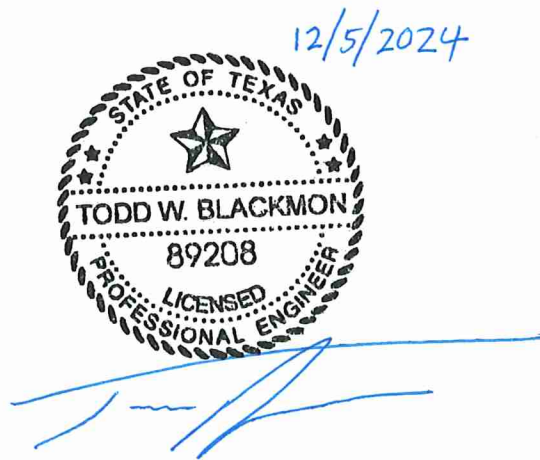
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Transportation | Water Resources | Land Development | Surveying | Environmental



# MEYER RANCH UNIT 16

## Water Pollution Abatement Plan Modification



December 2024



December 5, 2024

Ms. Monica Reyes  
Texas Commission on Environmental Quality (TCEQ)  
Region 13  
14250 Judson Road  
San Antonio, Texas 78233-4480

Re: Meyer Ranch Unit 16  
Water Pollution Abatement Plan Modification

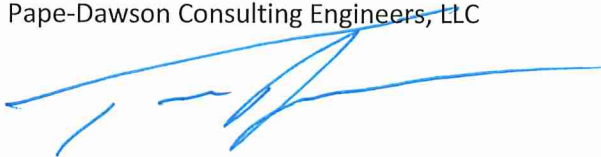
Dear Ms. Reyes:

Please find included herein the Meyer Ranch Unit 16 Water Pollution Abatement Plan Modification. This Water Pollution Abatement Plan Modification has been prepared in accordance with the regulations of the Texas Administrative Code (30 TAC 213) and current policies for development over the Edwards Aquifer Recharge Zone.

This Water Pollution Abatement Plan Modification applies to an approximate 132.49-acre site within the 250.85-acre legal limit, as identified by the project limits. Please review the plan information for the items it is intended to address. If acceptable, please provide a written approval of the plan in order that construction may begin at the earliest opportunity.

Appropriate review fees (\$8,000.00) and fee application are included. If you have questions or require additional information, please do not hesitate to contact me at your earliest convenience.

Sincerely,  
Pape-Dawson Consulting Engineers, LLC



Todd Blackmon, P.E.  
Managing Vice President, New Braunfels

Attachments

P:\300\10\27\Word\Reports\WPAP\2024 - WPAP Modification Cover Letter.docx





**EDWARDS AQUIFER  
APPLICATION COVER PAGE  
(TCEQ-20705)**



# Texas Commission on Environmental Quality

## Edwards Aquifer Application Cover Page

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### Our Review of Your Application

The Edwards Aquifer Program staff conducts an administrative and technical review of all applications. The turnaround time for administrative review can be up to 30 days as outlined in 30 TAC 213.4(e). Generally administrative completeness is determined during the intake meeting or within a few days of receipt. The turnaround time for technical review of an administratively complete Edwards Aquifer application is 90 days as outlined in 30 TAC 213.4(e). Please know that the review and approval time is directly impacted by the quality and completeness of the initial application that is received. In order to conduct a timely review, it is imperative that the information provided in an Edwards Aquifer application include final plans, be accurate, complete, and in compliance with [30 TAC 213](#).

### Administrative Review

1. [Edwards Aquifer applications](#) must be deemed administratively complete before a technical review can begin. To be considered administratively complete, the application must contain completed forms and attachments, provide the requested information, and meet all the site plan requirements. The submitted application and plan sheets should be final plans. Please submit one full-size set of plan sheets with the original application, and half-size sets with the additional copies.

To ensure that all applicable documents are included in the application, the program has developed tools to guide you and web pages to provide all forms, checklists, and guidance. Please visit the below website for assistance: <http://www.tceq.texas.gov/field/eapp>.

2. This Edwards Aquifer Application Cover Page form (certified by the applicant or agent) must be included in the application and brought to the administrative review meeting.
3. Administrative reviews are scheduled with program staff who will conduct the review. Applicants or their authorized agent should call the appropriate regional office, according to the county in which the project is located, to schedule a review. The average meeting time is one hour.
4. In the meeting, the application is examined for administrative completeness. Deficiencies will be noted by staff and emailed or faxed to the applicant and authorized agent at the end of the meeting, or shortly after. Administrative deficiencies will cause the application to be deemed incomplete and returned.

An appointment should be made to resubmit the application. The application is re-examined to ensure all deficiencies are resolved. The application will only be deemed administratively complete when all administrative deficiencies are addressed.

5. If an application is received by mail, courier service, or otherwise submitted without a review meeting, the administrative review will be conducted within 30 days. The applicant and agent will be contacted with the results of the administrative review. If the application is found to be administratively incomplete, it can be retrieved from the regional office or returned by regular mail. If returned by mail, the regional office may require arrangements for return shipping.
6. If the geologic assessment was completed before October 1, 2004 and the site contains “possibly sensitive” features, the assessment must be updated in accordance with the *Instructions to Geologists* (TCEQ-0585 Instructions).

### Technical Review

1. When an application is deemed administratively complete, the technical review period begins. The regional office will distribute copies of the application to the identified affected city, county, and groundwater conservation district whose jurisdiction includes the subject site. These entities and the public have 30 days to provide comments on the application to the regional office. All comments received are reviewed by TCEQ.
2. A site assessment is usually conducted as part of the technical review, to evaluate the geologic assessment and observe existing site conditions. The site must be accessible to our staff. The site boundaries should be



clearly marked, features identified in the geologic assessment should be flagged, roadways marked and the alignment of the Sewage Collection System and manholes should be staked at the time the application is submitted. If the site is not marked the application may be returned.

3. We evaluate the application for technical completeness and contact the applicant and agent via Notice of Deficiency (NOD) to request additional information and identify technical deficiencies. There are two deficiency response periods available to the applicant. There are 14 days to resolve deficiencies noted in the first NOD. If a second NOD is issued, there is an additional 14 days to resolve deficiencies. If the response to the second notice is not received, is incomplete or inadequate, or provides new information that is incomplete or inadequate, the application must be withdrawn or will be denied. Please note that because the technical review is underway, whether the application is withdrawn or denied **the application fee will be forfeited**.
4. The program has 90 calendar days to complete the technical review of the application. If the application is technically adequate, such that it complies with the Edwards Aquifer rules, and is protective of the Edwards Aquifer during and after construction, an approval letter will be issued. Construction or other regulated activity may not begin until an approval is issued.

### Mid-Review Modifications

It is important to have final site plans prior to beginning the permitting process with TCEQ to avoid delays.

Occasionally, circumstances arise where you may have significant design and/or site plan changes after your Edwards Aquifer application has been deemed administratively complete by TCEQ. This is considered a “Mid-Review Modification”. Mid-Review Modifications may require redistribution of an application that includes the proposed modifications for public comment.

If you are proposing a Mid-Review Modification, two options are available:

- If the technical review has begun your application can be denied/withdrawn, your fees will be forfeited, and the plan will have to be resubmitted.
- TCEQ can continue the technical review of the application as it was submitted, and a modification application can be submitted at a later time.

If the application is denied/withdrawn, the resubmitted application will be subject to the administrative and technical review processes and will be treated as a new application. The application will be redistributed to the affected jurisdictions.

Please contact the regional office if you have questions. If your project is located in Williamson, Travis, or Hays County, contact TCEQ’s Austin Regional Office at 512-339-2929. If your project is in Comal, Bexar, Medina, Uvalde, or Kinney County, contact TCEQ’s San Antonio Regional Office at 210-490-3096

Please fill out all required fields below and submit with your application.

<b>1. Regulated Entity Name:</b> Meyer Ranch Unit 16					<b>2. Regulated Entity No.:</b> 109684928				
<b>3. Customer Name:</b> CCD Meyer Ranch Land LLC					<b>4. Customer No.:</b> 605323831				
<b>5. Project Type:</b> (Please circle/check one)	New	Modification			Extension	Exception			
<b>6. Plan Type:</b> (Please circle/check one)	WPAP	CZP	SCS	UST	AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures
<b>7. Land Use:</b> (Please circle/check one)	Residential		Non-residential			<b>8. Site (acres):</b>		132.49	
<b>9. Application Fee:</b>	\$8,000.00		<b>10. Permanent BMP(s):</b>			Batch Detention Basins			
<b>11. SCS (Linear Ft.):</b>			<b>12. AST/UST (No. Tanks):</b>						
<b>13. County:</b>	Comal		<b>14. Watershed:</b>			Dry Comal Creek			



# Application Distribution

Instructions: Use the table below to determine the number of applications required. One original and one copy of the application, plus additional copies (as needed) for each affected incorporated city, county, and groundwater conservation district are required. Linear projects or large projects, which cross into multiple jurisdictions, can require additional copies. Refer to the “Texas Groundwater Conservation Districts within the EAPP Boundaries” map found at:

[http://www.tceq.texas.gov/assets/public/compliance/field\\_ops/eapp/EAPP%20GWCD%20map.pdf](http://www.tceq.texas.gov/assets/public/compliance/field_ops/eapp/EAPP%20GWCD%20map.pdf)

For more detailed boundaries, please contact the conservation district directly.

Austin Region			
County:	Hays	Travis	Williamson
Original (1 req.)	—	—	—
Region (1 req.)	—	—	—
County(ies)	—	—	—
Groundwater Conservation District(s)	<input type="checkbox"/> Edwards Aquifer Authority <input type="checkbox"/> Barton Springs/ Edwards Aquifer <input type="checkbox"/> Hays Trinity <input type="checkbox"/> Plum Creek	<input type="checkbox"/> Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	<input type="checkbox"/> Austin <input type="checkbox"/> Buda <input type="checkbox"/> Dripping Springs <input type="checkbox"/> Kyle <input type="checkbox"/> Mountain City <input type="checkbox"/> San Marcos <input type="checkbox"/> Wimberley <input type="checkbox"/> Woodcreek	<input type="checkbox"/> Austin <input type="checkbox"/> Bee Cave <input type="checkbox"/> Pflugerville <input type="checkbox"/> Rollingwood <input type="checkbox"/> Round Rock <input type="checkbox"/> Sunset Valley <input type="checkbox"/> West Lake Hills	<input type="checkbox"/> Austin <input type="checkbox"/> Cedar Park <input type="checkbox"/> Florence <input type="checkbox"/> Georgetown <input type="checkbox"/> Jerrell <input type="checkbox"/> Leander <input type="checkbox"/> Liberty Hill <input type="checkbox"/> Pflugerville <input type="checkbox"/> Round Rock

San Antonio Region					
County:	Bexar	Comal	Kinney	Medina	Uvalde
Original (1 req.)	—	✓	—	—	—
Region (1 req.)	—	✓	—	—	—
County(ies)	—	✓	—	—	—
Groundwater Conservation District(s)	<input type="checkbox"/> Edwards Aquifer Authority <input type="checkbox"/> Trinity-Glen Rose	<input checked="" type="checkbox"/> Edwards Aquifer Authority	<input type="checkbox"/> Kinney	<input type="checkbox"/> EAA <input type="checkbox"/> Medina	<input type="checkbox"/> EAA <input type="checkbox"/> Uvalde
City(ies) Jurisdiction	<input type="checkbox"/> Castle Hills <input type="checkbox"/> Fair Oaks Ranch <input type="checkbox"/> Helotes <input type="checkbox"/> Hill Country Village <input type="checkbox"/> Hollywood Park <input type="checkbox"/> San Antonio (SAWS) <input type="checkbox"/> Shavano Park	<input type="checkbox"/> Bulverde <input type="checkbox"/> Fair Oaks Ranch <input type="checkbox"/> Garden Ridge <input checked="" type="checkbox"/> New Braunfels <input type="checkbox"/> Schertz	NA	<input type="checkbox"/> San Antonio ETJ (SAWS)	NA



I certify that to the best of my knowledge, that the application is complete and accurate. This application is hereby submitted to TCEQ for administrative review and technical review.

Todd Blackmon, P.E.

Print Name of Customer/Authorized Agent

Signature of Customer/Authorized Agent

Date

12/5/2024

**\*\*FOR TCEQ INTERNAL USE ONLY\*\***

Date(s) Reviewed:		Date Administratively Complete:	
Received From:		Correct Number of Copies:	
Received By:		Distribution Date:	
EAPP File Number:		Complex:	
Admin. Review(s) (No.):		No. AR Rounds:	
Delinquent Fees (Y/N):		Review Time Spent:	
Lat./Long. Verified:		SOS Customer Verification:	
Agent Authorization Complete/Notarized (Y/N):		Fee Check:	Payable to TCEQ (Y/N):
Core Data Form Complete (Y/N):			Signed (Y/N):
Core Data Form Incomplete Nos.:			Less than 90 days old (Y/N):



**GENERAL INFORMATION  
FORM (TCEQ-0587)**



# General Information Form

## Texas Commission on Environmental Quality

For Regulated Activities on the Edwards Aquifer Recharge and Transition Zones and Relating to 30 TAC §213.4(b) & §213.5(b)(2)(A), (B) Effective June 1, 1999

**To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.**

**Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.**

## Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **General Information Form** is hereby submitted for TCEQ review. The application was prepared by:

Print Name of Customer/Agent: Todd Blackmon, P.E.

Date: 12/5/2024

Signature of Customer/Agent:



## Project Information

1. Regulated Entity Name: Meyer Ranch Unit 16
2. County: Comal
3. Stream Basin: Dry Comal Creek
4. Groundwater Conservation District (If applicable): Edwards Aquifer
5. Edwards Aquifer Zone:

☒ Recharge Zone (Contributing Zone)

☐ Transition Zone

6. Plan Type:

☒ WPAP

☐ SCS

☒ Modification

☐ AST

☐ UST

☐ Exception Request



7. Customer (Applicant):

Contact Person: James Wilson

Entity: CCD Meyer Ranch Land LLC

Mailing Address: 1751A West Diehl Road

City, State: Naperville, IL

Zip: 60563

Telephone: (630) 851-5490

FAX: \_\_\_\_\_

Email Address: jwilson@crown-chicago.com

8. Agent/Representative (If any):

Contact Person: Todd Blackmon, P.E.

Entity: Pape-Dawson Engineers, LLC

Mailing Address: 1672 Independence Drive, Suite 102

City, State: New Braunfels, Texas

Zip: 78132

Telephone: (830) 632-5633

FAX: \_\_\_\_\_

Email Address: tblackmon@pape-dawson.com

9. Project Location:

- ☐ The project site is located inside the city limits of \_\_\_\_\_.
- ☐ The project site is located outside the city limits but inside the ETJ (extra-territorial jurisdiction) of \_\_\_\_\_.
- ☒ The project site is not located within any city's limits or ETJ.

10. ☒ The location of the project site is described below. The description provides sufficient detail and clarity so that the TCEQ's Regional staff can easily locate the project and site boundaries for a field investigation.

From TCEQ regional office, proceed north on Judson Road for approximately 0.6 miles to Nacadoches Road and turn right. Travel approximately 6.0 miles to FM 3009 and turn left. Travel approximately 12.1 miles to TX-46 and turn right. Travel approximately 0.5 miles to Meyer Parkway and turn left. Proceed approximately 1.6 miles to Walker Run and turn left. Proceed approximately 0.2 miles to the project site. The site is located approximately 0.9 miles north by northwest of the intersection of S Cranes Mill Road and Incrociato intersection.

11. ☒ **Attachment A – Road Map.** A road map showing directions to and the location of the project site is attached. The project location and site boundaries are clearly shown on the map.
12. ☒ **Attachment B - USGS / Edwards Recharge Zone Map.** A copy of the official 7 ½ minute USGS Quadrangle Map (Scale: 1" = 2000') of the Edwards Recharge Zone is attached. The map(s) clearly show:
- ☒ Project site boundaries.
  - ☒ USGS Quadrangle Name(s).
  - ☒ Boundaries of the Recharge Zone (and Transition Zone, if applicable).
  - ☒ Drainage path from the project site to the boundary of the Recharge Zone.



13. ☒ **The TCEQ must be able to inspect the project site or the application will be returned.**  
Sufficient survey staking is provided on the project to allow TCEQ regional staff to locate the boundaries and alignment of the regulated activities and the geologic or manmade features noted in the Geologic Assessment.

☒ Survey staking will be completed by this date: when advised by TCEQ of site visit

14. ☒ **Attachment C – Project Description.** Attached at the end of this form is a detailed narrative description of the proposed project. The project description is consistent throughout the application and contains, at a minimum, the following details:

- ☒ Area of the site
- ☒ Offsite areas
- ☒ Impervious cover
- ☒ Permanent BMP(s)
- ☒ Proposed site use
- ☐ Site history
- ☐ Previous development
- ☐ Area(s) to be demolished

15. Existing project site conditions are noted below:

- ☐ Existing commercial site
- ☐ Existing industrial site
- ☐ Existing residential site
- ☐ Existing paved and/or unpaved roads
- ☒ Undeveloped (Cleared)
- ☒ Undeveloped (Undisturbed/Uncleared)
- ☐ Other: \_\_\_\_\_

### ***Prohibited Activities***

16. ☒ I am aware that the following activities are prohibited on the Recharge Zone and are not proposed for this project:

- (1) Waste disposal wells regulated under 30 TAC Chapter 331 of this title (relating to Underground Injection Control);
- (2) New feedlot/concentrated animal feeding operations, as defined in 30 TAC §213.3;
- (3) Land disposal of Class I wastes, as defined in 30 TAC §335.1;
- (4) The use of sewage holding tanks as parts of organized collection systems; and
- (5) New municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41(b), (c), and (d) of this title (relating to Types of Municipal Solid Waste Facilities).
- (6) New municipal and industrial wastewater discharges into or adjacent to water in the state that would create additional pollutant loading.



17. ☐ I am aware that the following activities are prohibited on the Transition Zone and are not proposed for this project:
- (1) Waste disposal wells regulated under 30 TAC Chapter 331 (relating to Underground Injection Control);
  - (2) Land disposal of Class I wastes, as defined in 30 TAC §335.1; and
  - (3) New municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41 (b), (c), and (d) of this title.

### ***Administrative Information***

18. The fee for the plan(s) is based on:

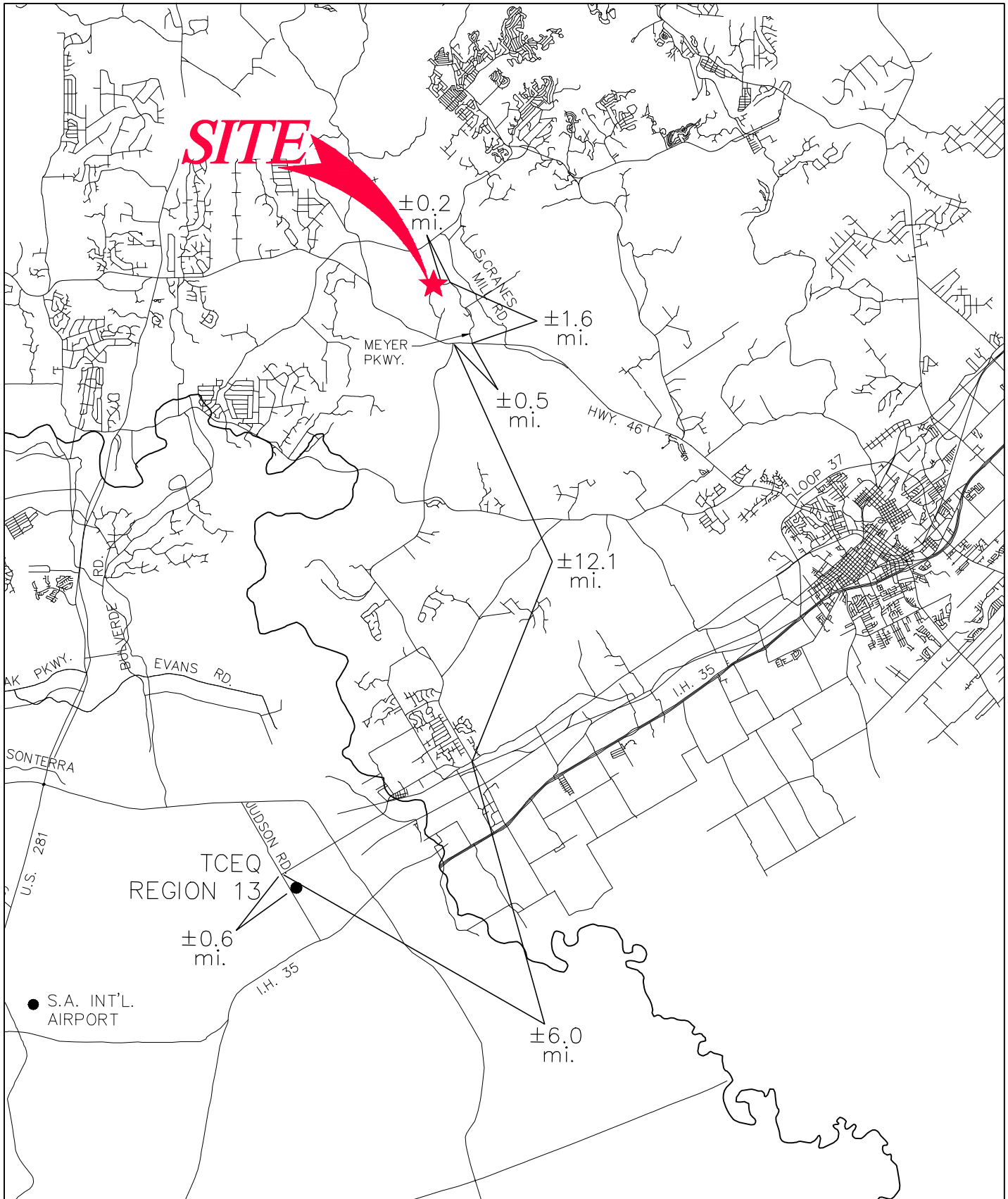
- ☒ For a Water Pollution Abatement Plan or Modification, the total acreage of the site where regulated activities will occur.
  - ☐ For an Organized Sewage Collection System Plan or Modification, the total linear footage of all collection system lines.
  - ☐ For a UST Facility Plan or Modification or an AST Facility Plan or Modification, the total number of tanks or piping systems.
  - ☐ A request for an exception to any substantive portion of the regulations related to the protection of water quality.
  - ☐ A request for an extension to a previously approved plan.
19. ☒ Application fees are due and payable at the time the application is filed. If the correct fee is not submitted, the TCEQ is not required to consider the application until the correct fee is submitted. Both the fee and the Edwards Aquifer Fee Form have been sent to the Commission's:
- ☒ TCEQ cashier
  - ☐ Austin Regional Office (for projects in Hays, Travis, and Williamson Counties)
  - ☐ San Antonio Regional Office (for projects in Bexar, Comal, Kinney, Medina, and Uvalde Counties)
20. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.
21. ☒ No person shall commence any regulated activity until the Edwards Aquifer Protection Plan(s) for the activity has been filed with and approved by the Executive Director.



**ATTACHMENT A**



**MEYER RANCH UNIT 16**  
**Comal County, Texas**  
**Water Pollution Abatement Plan Modification**



**Pape-Dawson Engineers, LLC.**

Date: Nov 01, 2024, 4:42pm User ID: ALeddy  
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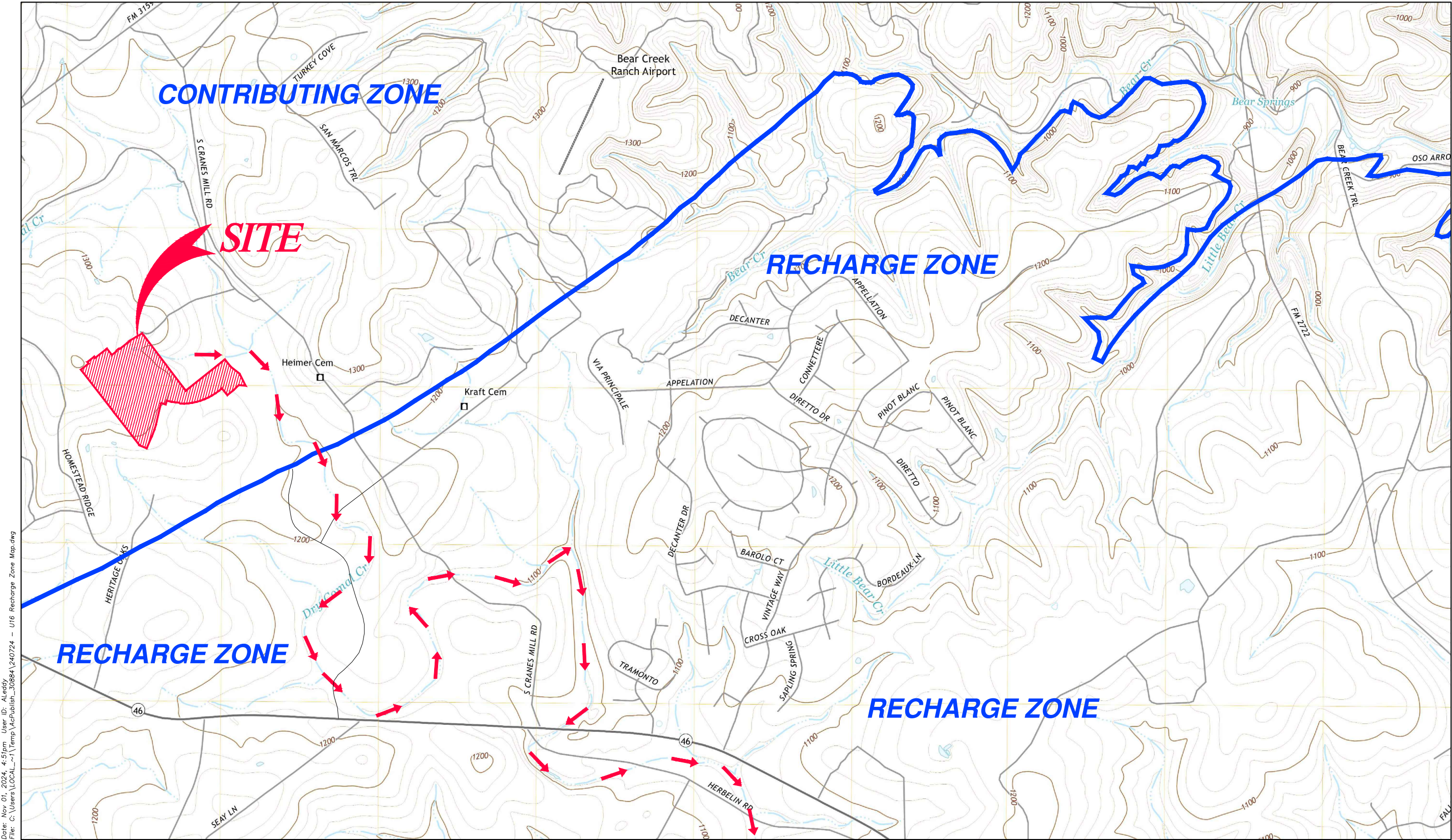
**ATTACHMENT A**  
**Road Map**



**ATTACHMENT B**



MEYER RANCH UNIT 16  
Comal County, Texas  
Water Pollution Abatement Plan Modification



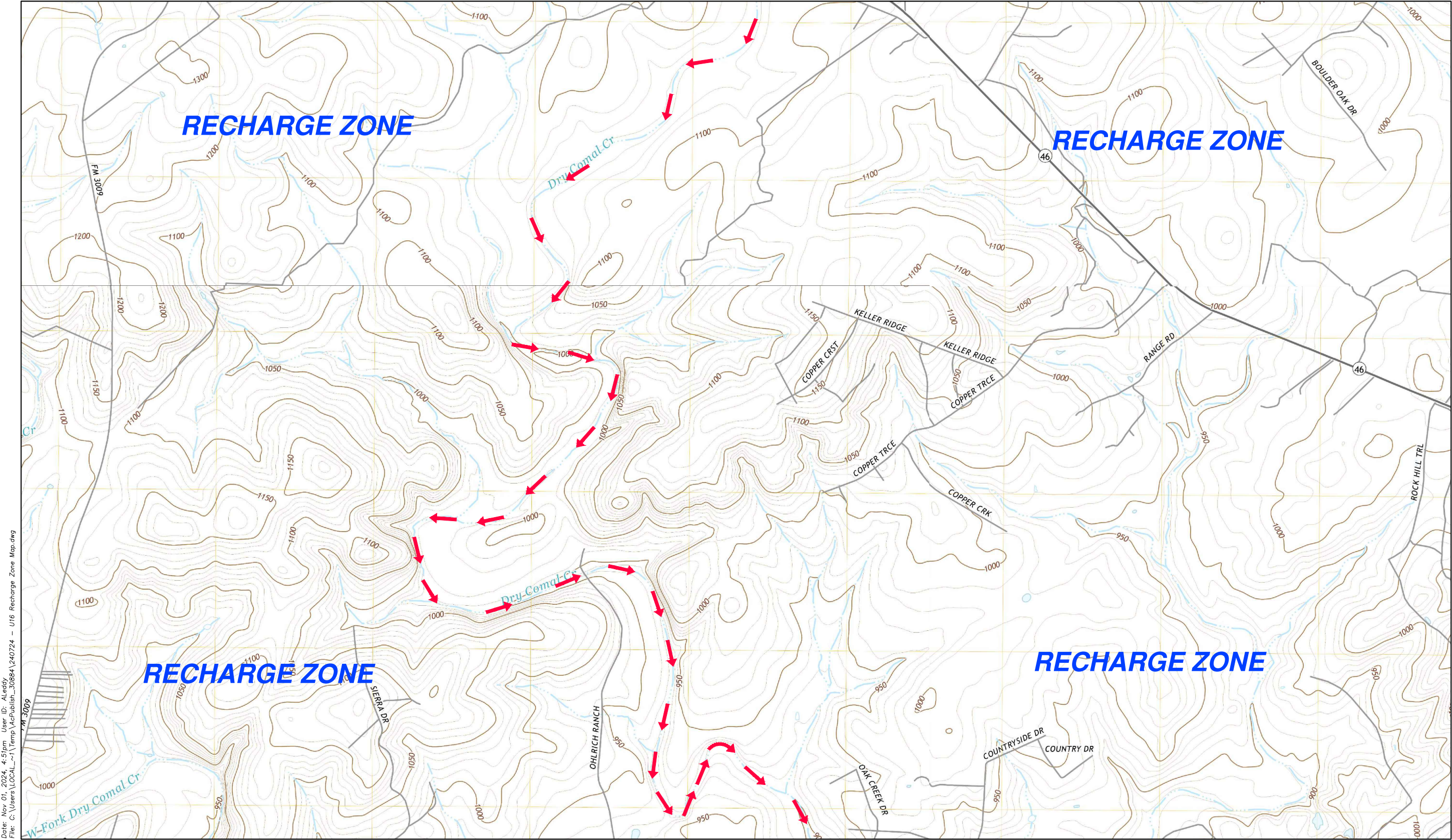
Date: Nov 01, 2024, 4:51pm User ID: ALeddy  
File: C:\Users\LOCAL~1\Temp\AcPublish\_30884\240724 - U16 Recharge Zone Map.dwg

GENERAL LOCATION MAP - NEW BRAUNFELS WEST, TX QUAD;  
NEW BRAUNFELS EAST, TX QUAD  
DRAINAGE FLOW   
Pape-Dawson Engineers, LLC

MATCHLINE See Sheet 2 of 4

USGS/EDWARDS RECHARGE ZONE MAP  
Sheet 1 Of 4  
ATTACHMENT B



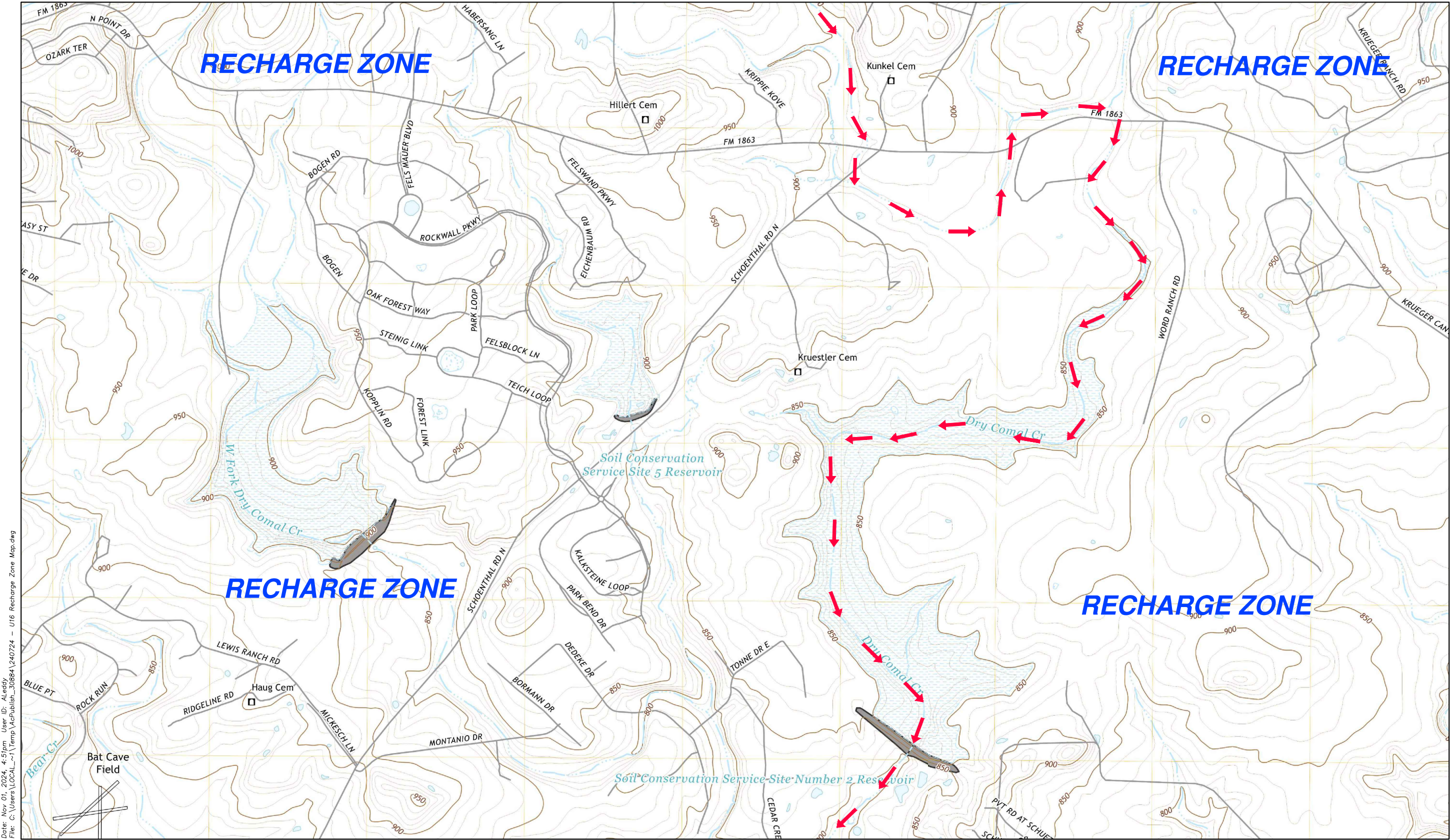


Date: Nov 01, 2024, 4:51pm User ID: ALeddy  
File: C:\Users\LOCAL\_~1\Temp\AcPublish\_30884\240724 - U16 Recharge Zone Map.dwg



MEYER RANCH UNIT 16  
Comal County, Texas  
Water Pollution Abatement Plan Modification

  
SCALE: 1" = 2000'



Date: Nov 01, 2024, 4:51pm User ID: ALeddy  
File: C:\Users\LOCAL~1\Temp\AcPublish\_30884\240724 - U16 Recharge Zone Map.dwg

GENERAL LOCATION MAP - NEW BRAUNFELS WEST, TX QUAD;  
NEW BRAUNFELS EAST, TX QUAD  
DRAINAGE FLOW   
Pape-Dawson Engineers, LLC

MATCHLINE See Sheet 4 of 4

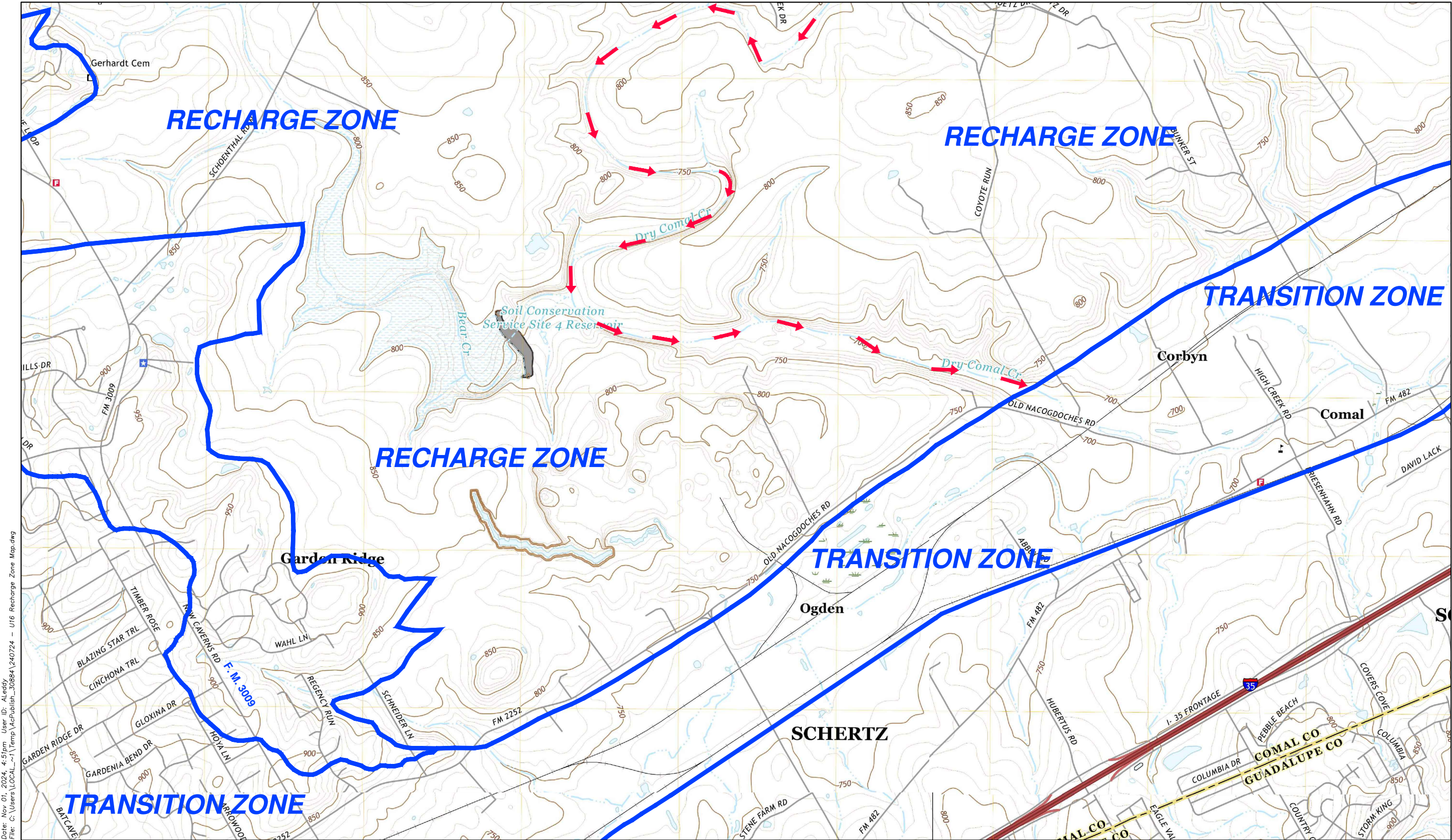
USGS/EDWARDS RECHARGE ZONE MAP  
Sheet 3 Of 4  
ATTACHMENT B



MEYER RANCH UNIT 16  
Comal County, Texas  
Water Pollution Abatement Plan Modification



MATCHLINE See Sheet 3 of 4



Date: Nov 01, 2024, 4:51pm User ID: ALeddy  
File: C:\Users\LOCAL~1\Temp\AcPublish\_30884\240724 - U16 Recharge Zone Map.dwg

GENERAL LOCATION MAP - NEW BRAUNFELS WEST, TX QUAD;  
NEW BRAUNFELS EAST, TX QUAD  
DRAINAGE FLOW    
Pape-Dawson Engineers, LLC

USGS/EDWARDS RECHARGE ZONE MAP  
Sheet 4 Of 4  
ATTACHMENT B



**ATTACHMENT C**



# **MEYER RANCH UNIT 16**

## **Water Pollution Abatement Plan Modification**

### **Attachment C – Project Description**

The Meyer Ranch Unit 16 Water Pollution Abatement Plan Modification (WPAP MOD) is a modification to the Meyer Ranch Unit 13 Water Pollution Abatement Plan Modification which was approved by the Texas Commission on Environmental Quality (TCEQ) on March 31, 2023 (EAPP ID No. 13001694). This approval granted approximately 40.87-acres of impervious cover on a 156.5-acre site for construction of 230 single-family residential homes with associated roads, driveways, sidewalks, and utilities. This modification is being proposed because the development of Meyer Ranch Unit 16 will create additional impervious areas within the WPAP boundary established by the Meyer Ranch Unit 13 Water Pollution Abatement Plan Modification report. This report identifies and describes the Proposed Best Management Practices (PBMPs) that will be used to treat runoff from the impervious areas proposed with Meyer Ranch Unit 16, including the portion that lies within the existing Meyer Ranch Unit 13 WPAP boundary. This proposed modification will not have any significant impact on the previously-approved developments.

The Meyer Ranch Unit 16 Water Pollution Abatement Plan Modification (WPAP MOD) proposes the construction of a single-family residential subdivision on approximately 132.49-acres, within the 250.85-acre legal limit, in Comal County, Texas. The site is located approximately 0.9 miles north northwest of the intersection of S Cranes Mill Rd. and Incrociato. The site is bound by Meyer Ranch Unit 13 to the south, undeveloped land to the north, large-lot, single-family residences to the east and west. The site is undeveloped and lies within the Dry Comal Creek watershed adjacent to the 100-year floodplain. There were no naturally occurring sensitive geologic features identified in the Geologic Assessment. Meyer Ranch Unit 16 lies within the Edwards Aquifer contributing zone.

This WPAP MOD proposes additional clearing, grading, excavation, installation of utilities and drainage improvements, construction of a batch detention basin, one hundred and sixty (160) single-family homes and associated streets sidewalks and driveways. Approximately 38.47 acres of impervious cover, or 29.0% of the 132.49-acre project limits, within the 250.85-acre legal limits, are proposed for construction in this WPAP MOD. The proposed Permanent Best Management Practices (PBMPs) for stormwater treatment are one (1) proposed batch detention basin and one (1) previously approved batch detention basin (Unit 13 Batch Detention Basin) (EAPP ID No 13001694), which are designed in accordance with the TCEQ's Technical Guidance Manual (TGM) RG-348 (2005) to remove 80% of the increase in Total Suspended Solids (TSS) from the site.

This project would result in an estimated Living Unit Equivalent (LUE) of 160. The contributing acreage for inflow and infiltration is 45.55 acres. The sewage flow will be disposed of by conveyance to the existing Meyer Ranch Wastewater Treatment Center, owned and operated by the CCD Meyer Ranch Land LLC (WQ0015314001).



**GEOLOGIC ASSESSMENT FORM**  
**(TCEQ-0585)**





## ***GEOLOGIC ASSESSMENT (WPAP)***

### ***MEYER TRACT*** ***+/- 737 ACRES*** ***COMAL COUNTY, TEXAS***

***FROST GEOSCIENCES, INC. PROJECT NO.: FGS-E14208***  
***JANUARY 7, 2015***

***Prepared exclusively for***

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***Randolph Todd Company, LLC***  
***4807 Spicewood Springs Road***  
***Building 2, Suite 380***  
***Austin, Texas 78759***

***Frost GeoSciences***

***Geotechnical ▪ Construction Materials***  
***Geologic ▪ Environmental***





**Frost Geosciences, Inc.**  
13402 Western Oak  
Helotes, Texas 78023  
Office (210)-372-1315  
Fax (210)-372-1318  
[www.frostgeosciences.com](http://www.frostgeosciences.com)  
**TBPE Firm Registration # F-9227**  
**TBPG Firm Registration # 50040**

January 7, 2015

Randolph Todd Company, LLC  
4807 Spicewood Springs Road  
Austin, Texas 78759

Attn: Mr. Randy Rollo

**SUBJECT:**

Geologic Assessment (WPAP)  
for the Regulated Activities / Development on the  
Edwards Aquifer Recharge / Transition Zone  
Meyer Tract  
+/- 737 Acres  
Comal County, Texas  
FGS Project N<sup>o</sup> FGS-E14208

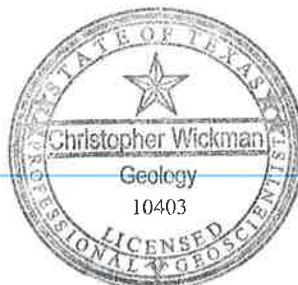
Dear Mr. Randy Rollo:

Frost GeoSciences, Inc., (FGS) is pleased to submit the enclosed Geologic Assessment completed for the above referenced Site as it relates to 30 TAC §213.5(b)(3), effective September 11, 2003. Our investigation was conducted, and this report was prepared in general accordance with the "Instructions to Geologists", TCEQ-0585-Instructions (Rev. 10-1-04).

If you have any questions regarding this report, or if Frost GeoSciences, Inc. may be of additional assistance to you on this project, please feel free to call our office. It has been a pleasure to work with you and we wish to thank you for the opportunity to be of service to you on this project. We look forward to being of continued service.

We appreciate the opportunity to perform these services for Randolph Todd Company, LLC. Please contact the undersigned if you have questions regarding this report.

Respectfully submitted,  
Frost GeoSciences, Inc.



Chris Wickman, P.G.  
Senior Geologist

Copies Submitted: (6) Mr. Randy Rollo; Randolph Todd Company, LLC  
(1) Electronic (pdf) Copy



**GEOLOGIC ASSESSMENT**

For Regulated Activities  
on The Edwards Aquifer Recharge/transition Zones  
and Relating to 30 TAC §213.5(b)(3), Effective June 1, 1999

REGULATED ENTITY NAME: Meyer Tract

TYPE OF PROJECT: ☒ WPAP ☐ AST ☐ SCS ☐ UST

LOCATION OF PROJECT: ☒ Recharge Zone ☐ Transition Zone ☒ Contributing Zone  
within the Transition Zone

**PROJECT INFORMATION**

- ☒ Geologic or manmade features are described and evaluated using the attached **GEOLOGIC ASSESSMENT TABLE**.
- Soil cover on the Site is summarized in the table below and uses the SCS Hydrologic Soil Groups\* (*Urban Hydrology for Small Watersheds, Technical Release No. 55, Appendix A, Soil Conservation Service, 1986*). If there is more than one soil type on the Site, show each soil type on the site Geologic Map or a separate soils map.

Soil Units, Infiltration Characteristics & Thickness		
Soil Name	Group*	Thickness (feet)
Anhalt clay, 1-3% slopes	D	0-2.0
Brackett-Rock outcrop-Comfort complex	C,D	0-1.0
Comfort-Rock outcrop complex, undulating	D	0-1.0
Denton silty clay, 1-3% slopes	D	0-2.0
Doss silty clay, 1-5% slopes	D	0-2.0
Eckrant-Rock outcrop complex, steep	D	0-1.0
Rumple-Comfort association	C,D	0-2

\* Soil Group Definitions  
(Abbreviated)

A. Soils having a high infiltration rate when thoroughly wetted.

B. Soils having a moderate infiltration rate when thoroughly wetted.

C. Soils having a slow infiltration rate when thoroughly wetted.

D. Soils having a very slow infiltration rate when thoroughly wetted.

- ☒ A **STRATIGRAPHIC COLUMN** is attached at the end of this form that shows formations, members, and thicknesses. The outcropping unit should be at the top of the stratigraphic column.
- ☒ A **NARRATIVE DESCRIPTION OF SITE SPECIFIC GEOLOGY** is attached at the end of this form. The description must include a discussion of the potential for fluid movement to the Edwards Aquifer, stratigraphy, structure, and karst characteristics of the site.
- ☒ Appropriate **SITE GEOLOGIC MAP(S)** are attached:

The Site Geologic Map must be the same scale as the applicant's Site Plan. The minimum scale is 1": 400'

Applicant's Site Plan Scale  
Site Geologic Map Scale  
Site Soils Map Scale (if more than 1 soil type)

1" = 400 '  
1" = 400 '  
1" = 1,000 '



6. Method of collecting positional data:

☒ Global Positioning System (GPS) technology.  
☐ Other method(s).

7. ☒ The Site is shown and labeled on the Site Geologic Map.

8. ☒ Surface geologic units are shown and labeled on the Site Geologic Map.

9. ☒ Geologic or manmade features were discovered on the Site during the field investigation. They are shown and labeled on the Site Geologic Map and are described in the attached Geologic Assessment Table.

☐ Geologic or manmade features were not discovered on the Site during the field investigation.

10. ☐ The Recharge Zone boundary is shown and labeled, if appropriate.

11. All known wells (test holes, water, oil, unplugged, capped and/or abandoned, etc.):

☒ There are 3 (#) wells present on the Site and the locations are shown and labeled. (Check all of the following that apply.)

☐ The wells are not in use and have been properly abandoned.

☐ The wells are not in use and will be properly abandoned.

☒ The wells are in use and comply with 16 TAC Chapter 76.

☐ There are no wells or test holes of any kind known to exist on the Site.

#### ADMINISTRATIVE INFORMATION

12. ☒ One (1) original and three (3) copies of the completed assessment has been provided.

Date(s) Geologic Assessment was performed: 9/5/14, 11/20/14, 12/8-9/14, 12/10/14, 12/15-16/14 & 12/23/14  
 Date(s)

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Chris Wickman, P.G.  
 Print Name of Geologist



Signature of Geologist



210-372-1315

Telephone

210-372-1318

Fax

January 7, 2015

Date

Representing: Frost Geosciences, Inc.  
 (Name of Company)

If you have questions on how to fill out this form or about the Edwards Aquifer protection program, please contact us at 210/490-3096 for projects located in the San Antonio Region or 512/339-2929 for projects located in the Austin Region.

Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512/239-3282.



**ATTACHMENT A**



## STRATIGRAPHIC COLUMN

[Hydrogeologic subdivisions modified from Maclay and Small (1976); groups, formations, and members modified from Rose (1972); lithology modified from Dunham (1962); and porosity type modified from Choquette and Pray (1970). CU, confining unit; AQ, aquifer]

Hydrogeologic subdivision		Group, formation, or member	Hydro-logic function	Thickness (feet)	Lithology	Field identification	Cavern development	Porosity/ permeability type			
Upper Cretaceous	Upper confining units	Eagle Ford Group	CU	30 – 50	Brown, flaggy shale and argillaceous limestone	Thin flagstones; petroliferous	None	Primary porosity lost/ low permeability			
		Buda Limestone	CU	40 – 50	Buff, light gray, dense mudstone	Porcelaneous limestone with calcite-filled veins	Minor surface karst	Low porosity/low permeability			
		Del Rio Clay	CU	40 – 50	Blue-green to yellow-brown clay	Fossiliferous; <i>Ilymatogyra arietina</i>	None	None/primary upper confining unit			
Lower Cretaceous	I	Edwards aquifer	Georgetown Formation	Karst AQ; not karst CU	2 – 20	Reddish-brown, gray to light tan marly limestone	Marker fossil; <i>Waconella wacoensis</i>	None	Low porosity/low permeability		
	II			Person Formation	Cyclic and marine members, undivided	AQ	80 – 90	Mudstone to packstone; <i>miliolid</i> grainstone; chert	Thin graded cycles; massive beds to relatively thin beds; crossbeds	Many subsurface; might be associated with earlier karst development	Laterally extensive; both fabric and not fabric/water-yielding
	III		Leached and collapsed members, undivided		AQ	70 – 90	Crystalline limestone; mudstone to grainstone; chert; collapsed breccia	Bioturbated iron-stained beds separated by massive limestone beds; stromatolitic limestone	Extensive lateral development; large rooms	Majority not fabric/one of the most permeable	
	IV		Kainer Formation		Regional dense member	CU	20 – 24	Dense, argillaceous mudstone	Wispy iron-oxide stains	Very few; only vertical fracture enlargement	Not fabric/low permeability; vertical barrier
	V				Grainstone member	AQ	50 – 60	<i>Miliolid</i> grainstone; mudstone to wackestone; chert	White crossbedded grainstone	Few	Not fabric/ recrystallization reduces permeability
	VI			Kirschberg evaporite member	AQ	50 – 60	Highly altered crystalline limestone; chalky mudstone; chert	Boxwork voids, with neospar and travertine frame	Probably extensive cave development	Majority fabric/one of the most permeable	
	VII			Dolomitic member	AQ	110 – 130	Mudstone to grainstone; crystalline limestone; chert	Massively bedded light gray, <i>Toucasia</i> abundant	Caves related to structure or bedding planes	Mostly not fabric; some bedding plane-fabric/water-yielding	
	VIII		Basal nodular member	Karst AQ; not karst CU	50 – 60	Shaly, nodular limestone; mudstone and <i>miliolid</i> grainstone	Massive, nodular and mottled, <i>Exogyra texana</i>	Large lateral caves at surface; a few caves near Cibola Creek	Fabric; stratigraphically controlled/large conduit flow at surface; no permeability in subsurface		
	Lower confining unit	Upper member of the Glen Rose Limestone	CU; evaporite beds AQ	350 – 500	Yellowish tan, thinly bedded limestone and marl	Stair-step topography; alternating limestone and marl	Some surface cave development	Some water production at evaporite beds/relatively impermeable			



**ATTACHMENT B**



**GEOLOGIC ASSESSMENT TABLE**

**PROJECT NAME: Meyer Tract**

**PROJECT NUMBER: FGS-E14208**

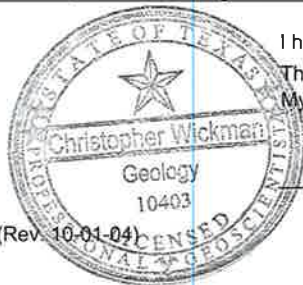
LOCATION			FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING			
1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12	
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATIO N	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)	TOPOGRAPHY		
						X	Y	Z													
						X	Y	Z		10						<40	>40	<1.6	>1.6		
S-1	29 47' 4.85"	-98 17' 41.82"	O <sup>FR</sup>	5	Kek	70	30	-	-	-	1-2	0.5-1	OF	5	10	10		YES			HILLSIDE
S-2	29 47' 1.75"	-98 17' 39.34"	O <sup>FR</sup>	5	Kek	50	25	-	-	-	1-2	0.25-0.5	OF	10	15	15		YES			HILLSIDE
S-3	29 47' 1.21"	-98 17' 38.54"	O <sup>FR</sup>	5	Kek	40	25	-	-	-	2-3	0.25-0.5	OF	10	15	15		YES			HILLSIDE
S-4	29 47' 6.68"	-98 17' 34.01"	SC	20	Kek	1	1	1.5	-	-	-	-	OF	10	30	30		YES			HILLSIDE
S-5	29 47' 4.92"	-98 17' 34.4"	SC	20	Kek	1	1	1.5	-	-	-	-	OF	10	30	30		YES			HILLSIDE
S-6	29 47' 2.47"	-98 17' 33.94"	SC	20	Kek	0.5	0.5	1.5	-	-	-	-	OF	10	30	30		YES			HILLSIDE
S-7	29 47' 9.96"	-98 17' 33.5"	SH	20	Kek	3	7	2	-	-	-	-	FC	15	35	35		YES			HILLSIDE
S-8	29 47' 9.53"	-98 17' 32.86"	SH	20	Kek	5	7	4	-	-	-	-	FC	20	40		40	YES			HILLSIDE
S-9	29 47' 11"	-98 17' 33.25"	SH	20	Kek	3	3	2	-	-	-	-	FC	15	35	35		YES			HILLSIDE
S-10	29 47' 11.54"	-98 17' 33.11"	SH	20	Kek	4	4.5	4	-	-	-	-	C	25	45		45	YES			HILLSIDE
S-11	29 47' 12.41"	-98 17' 32.55"	SH	20	Kek	5	4	3	-	-	-	-	FC	25	45		45	YES			HILLSIDE
S-12	29 47' 8.34"	-98 17' 30.23"	SH	20	Kek	20	20	1.5	-	-	-	-	OF	20	40		40	YES			HILLSIDE
S-13	29 47' 15.25"	-98 17' 31.42"	SH	20	Kek	0.5	0.5	0.5	-	-	-	-	CF	15	35	35		YES			HILLSIDE
S-14	29 47' 13.09"	-98 17' 28.18"	SC	20	Kek	1	1	1	-	-	-	-	CF	10	30	30		YES			HILLSIDE

Datum: NAD 27

2A TYPE	TYPE	2B POINTS
C	Cave	30
SC	Solution cavity	20
SF	Solution-enlarged fracture(s)	20
F	Fault	20
O	Other natural bedrock features	5
MB	Manmade feature in bedrock	30
SW	Swallow hole	30
SH	Sinkhole	20
CD	Non-karst closed depression	5
Z	Zone, clustered or aligned features	30

8A INFILLING
N None, exposed bedrock
C Coarse - cobbles, breakdown, sand, gravel
O Loose or soft mud or soil, organics, leaves, sticks, dark colors
F Fines, compacted clay-rich sediment, soil profile, gray or red colors
V Vegetation. Give details in narrative description
FS Flowstone, cements, cave deposits
X Other materials

12 TOPOGRAPHY
Cliff, Hilltop, Hillside, Floodplain, Streambed



I have read, I understood, and I have followed the Texas Commission on Environmental Quality's Instructions to Geologists.  
The information presented here complies with that document and is a true representation of the conditions observed in the field.  
My signature certifies that I am qualified as a geologist as defined by 30 TAC 213.

*Chris Wickman*

Chris Wickman, P.G.

Date January 7, 2015

TCEQ-0585-Table (Rev. 10-01-04)

Sheet 1 of 7

FGS Project N° FGS-E14208

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**GEOLOGIC ASSESSMENT TABLE**
**PROJECT NAME: Meyer Tract**
**PROJECT NUMBER: FGS-E14208**

LOCATION			FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING		
1A	1B *	1C*	2A	2B	3	4			5	6	7	8A	8B	9	10		11	12		
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATIO N	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY	CATCHMENT AREA (ACRES)	TOPOGRAPHY		
						X	Y	Z		10						<40	>40	<1.6	>1.6	
S-15	29 47' 6.07"	-98 17' 29.47"	SC	20	Kek	1.5	1	1	-	-	-	-	OF	10	30	30		YES		HILLSIDE
S-16	29 47' 5.93"	-98 17' 29.33"	SC	20	Kek	1.5	1	1.5	-	-	-	-	OF	10	30	30		YES		HILLSIDE
S-17	29 47' 0.20"	-98 17' 25.94"	SC	20	Kek	1	1	2	-	-	-	-	OF	10	30	30		YES		HILLSIDE
S-18	29 47' 3.44"	-98 17' 28.21"	O <sup>FR</sup>	5	Kek	50	75	-	-	-	1-2/2	0.5-1.0	OF	10	15	15		YES		HILLSIDE
S-19	29 47' 2.9"	-98 17' 25.98"	O <sup>FR</sup>	5	Kek	75	50	-	40NE	10	1-2	0.25-0.5	OF	10	25	25		YES		HILLSIDE
S-20	29 47' 2.29"	-98 17' 27.64"	SC	20	Kek	1.5	1	2.0	-	-	-	-	OF	10	30	30		YES		HILLSIDE
S-21	29 47' 17.56"	-98 17' 23.06"	O <sup>FR</sup>	5	Kek	50	60	-	45NE	10	1-2	0.1-0.25	OF	10	25	25		YES		STREAMBED
S-22	29 47' 15.36"	-98 17' 21.95"	SC	20	Kek	1.5	2	1.5	-	-	-	-	C	20	40		40	YES		FLOODPLAIN
S-23	29 47' 7.76"	-98 17' 24.07"	SC	20	Kek	1	1	1.5	-	-	-	-	OF	10	30	30		YES		HILLSIDE
S-24	29 47' 8.66"	-98 17' 24.18"	SH	20	Kek	3	3	1	-	-	-	-	OF	15	35	35		YES		HILLSIDE
S-25	29 47' 10.07"	-98 17' 23.89"	CD	5	Kek	4	3	1	-	-	-	-	OF	15	20	20		YES		FLOODPLAIN
S-26	29 47' 14.39"	-98 17' 23.78"	SC	20	Kek	0.5	0.5	1.0	-	-	-	-	OF	5	25	25		YES		FLOODPLAIN
S-27	29 47' 16.84"	-98 17' 16.66"	SC	20	Kek	2	2	1.5	-	-	-	-	15	35	35	35		YES		HILLSIDE
S-28	29 47' 16.73"	-98 17' 16.4"	SF	20	Kek	4	1	2.5	-	-	-	-	15	35	35	35		YES		HILLSIDE

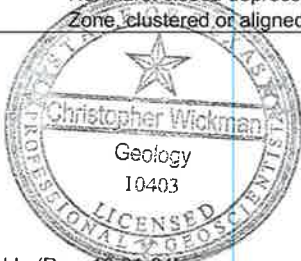
**Datum: NAD 27**

2A TYPE	TYPE	2B POINTS
C	Cave	30
SC	Solution cavity	20
SF	Solution-enlarged fracture(s)	20
F	Fault	20
O	Other natural bedrock features	5
MB	Manmade feature in bedrock	30
SW	Swallow hole	30
SH	Sinkhole	20
CD	Non-karst closed depression	5
Z	Zone, clustered or aligned features	30

8A INFILLING
N None, exposed bedrock
C Coarse - cobbles, breakdown, sand, gravel
O Loose or soft mud or soil, organics, leaves, sticks, dark colors
F Fines, compacted clay-rich sediment, soil profile, gray or red colors
V Vegetation. Give details in narrative description
FS Flowstone, cements, cave deposits
X Other materials

**12 TOPOGRAPHY**

Cliff, Hilltop, Hillside, Floodplain, Streambed



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Date January 7, 2015

TCEQ-0585-Table (Rev. 10-01-04)

Sheet 2 of 7

FGS Project N° FGS-E14208

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**GEOLOGIC ASSESSMENT TABLE**

**PROJECT NAME: Meyer Tract**

**PROJECT NUMBER: FGS-E14208**

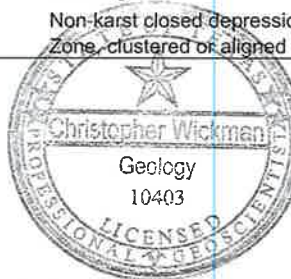
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						X	Y	Z												
						X	Y	Z		10						<40	>40	<1.6	>1.6	
S-29	29 47' 13.63"	-98 17' 14.1"	SC	20	Kek	2	2	2	-	-	-	-	OFC	10	30	30		YES		HILLSIDE
S-30	29 47' 12.66"	-98 17' 19.9"	SC	20	Kek	1	1.5	1	-	-	-	-	CF	20	40		40	YES		HILLSIDE
S-31	29 47' 12.84"	-98 17' 19.57"	SF	20	Kek	6	2	1	-	-	-	-	OF	20	40		40	YES		HILLSIDE
S-32	29 47' 12.88"	-98 17' 19.79"	SC	20	Kek	2	3	1	-	-	-	-	OF	15	35	35		YES		HILLSIDE
S-33	29 47' 7.8"	-98 17' 8.22"	SC	20	Kek	1	1	0.5	-	-	-	-	OF	5	25	25		YES		HILLSIDE
S-34	29 47' 5.53"	-98 17' 8.84"	SC	20	Kek	1.5	1.5	1	-	-	-	-	OF	10	30	30		YES		HILLSIDE
S-35	29 47' 4.52"	-98 17' 20.4"	O <sup>FR</sup>	5	Kek	15	60	-	-	-	1-2	0.1-0.25	OF	15	20	20		YES		STREAMBED
S-36	29 47' 5.03"	-98 17' 11.62"	SC	20	Kek	2	0.75	1	-	-	-	-	OF	10	30	30		YES		HILLSIDE
S-37	29 47' 3.91"	-98 17' 16.4"	O <sup>FVR</sup>	5	Kek	30	60	-	70 NE	10	3-5	0.1-0.25	OFC	15	30	30		YES		FLOODPLAIN
S-38	29 47' 3.16"	-98 17' 18.42"	O <sup>FR</sup>	5	Kek	25	40	-	-	-	1-2	0.1-0.25	OFC	10	15	15		YES		FLOODPLAIN
S-39	29 47' 2.9"	-98 17' 16.73"	O <sup>FR</sup>	5	Kek	50	60	-	-	-	1-2	0.1-0.25	OFC	15	20	20		YES		STREAMBED
S-40	29 47' 3.19"	-98 17' 13.7"	O <sup>FR</sup>	5	Kek	15	10	-	65 NE	10	1-2	0.1-0.2	OFC	15	30	30		YES		STREAMBED
S-41	29 47' 3.12"	-98 17' 10.93"	SC	20	Kek	1	1	1	-	-	-	-	OFC	10	30	30		YES		HILLSIDE
S-42	29 47' 2.15"	-98 17' 17.12"	SC	20	Kek	1	0.5	2	-	-	-	-	OFC	10	30	30		YES		HILLSIDE

Datum: NAD 27

2A TYPE	TYPE	2B POINTS
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*Chris Wickman*  
Chris Wickman, P.G.

Date January 7, 2015



**GEOLOGIC ASSESSMENT TABLE**

**PROJECT NAME: Meyer Tract**

**PROJECT NUMBER: FGS-E14208**

LOCATION			FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING		
1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATIO N	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)	TOPOGRAPHY	
						X	Y	Z												
						X	Y	Z		10						<40	>40	<1.6	>1.6	
S-43	29 47' 1.46"	-98 17' 5.17"	SC	20	Kek	1	1	1.5	-	-	-	-	OF	5	25	25		YES		HILLSIDE
S-44	29 47' 0.53"	-98 17' 4.92"	SC	20	Kek	2	3	1	-	-	-	-	OF	10	30	30		YES		HILLSIDE
S-45	29 46' 59.92"	-98 17' 7.12"	SC	20	Kek	1	1	1.5	-	-	-	-	OF	10	30	30		YES		HILLSIDE
S-46	29 46' 57.32"	-98 17' 11.83"	SC	20	Kek	1	0.5	1	-	-	-	-	OF	5	25	25		YES		FLOODPLAIN
S-47	29 46' 58.48"	-98 17' 6.29"	SC	20	Kek	1	1	1.5	-	-	-	-	OF	10	30	30		YES		HILLSIDE
S-48	29 46' 55.96"	-98 17' 4.02"	SC	20	Kek	1	1.5	1	-	-	-	-	OF	10	30	30		YES		HILLSIDE
S-49	29 46' 56.35"	-98 17' 20.15"	SC	20	Kek	1	1	1	-	-	-	-	OF	10	30	30		YES		HILLSIDE
S-50	29 46' 54.52"	-98 17' 19.14"	SH	20	Kek	5	7	4	-	-	-	-	FC	20	40		40	YES		HILLSIDE
S-51	29 46' 47.06"	-98 17' 18.02"	SC	20	Kek	2	0.5	1	-	-	-	-	OFC	10	30	30		YES		HILLSIDE
S-52	29 46' 43.93"	-98 17' 16.22"	SH	20	Kek	7	7	4	-	-	-	-	C	25	45		45	YES		HILLSIDE
S-53	29 46' 44.44"	-98 17' 16.19"	SC	20	Kek	1	2	4	-	-	-	-	FC	20	40		40	YES		HILLSIDE
S-54	29 46' 44.36"	-98 17' 16.48"	SC	20	Kek	1	1	3	-	-	-	-	C	20	40		40	YES		HILLSIDE
S-55	29 46' 55.67"	-98 17' 14.24"	SC	20	Kek	2	1.5	1.5	-	-	-	-	OFC	10	30	30		YES		FLOODPLAIN
S-56	29 46' 48.54"	-98 17' 13.92"	SC	20	Kek	2	0.5	0.75	-	-	-	-	OFC	5	25	25		YES		HILLSIDE

Datum: NAD 27

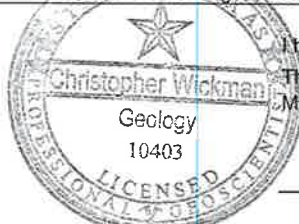
2A TYPE	TYPE	2B POINTS
C	Cave	30
SC	Solution cavity	20
SF	Solution-enlarged fracture(s)	20
F	Fault	20
O	Other natural bedrock features	5
MB	Manmade feature in bedrock	30
SW	Swallow hole	30
SH	Sinkhole	20
CD	Non-karst closed depression	5
Z	Zone, clustered or aligned features	30

**8A INFILLING**

N	None, exposed bedrock
C	Coarse - cobbles, breakdown, sand, gravel
O	Loose or soft mud or soil, organics, leaves, sticks, dark colors
F	Fines, compacted clay-rich sediment, soil profile, gray or red colors
V	Vegetation. Give details in narrative description
FS	Flowstone, cements, cave deposits
X	Other materials

**12 TOPOGRAPHY**

Cliff, Hilltop, Hillside, Floodplain, Streambed



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*Chris Wickman*

Chris Wickman, P.G.

Date January 7, 2015

TCEQ-0585-Table (Rev. 10-01-04)

Sheet 4 of 7

FGS Project No FGS-E14208

7



**GEOLOGIC ASSESSMENT TABLE**

**PROJECT NAME: Meyer Tract**

**PROJECT NUMBER: FGS-E14208**

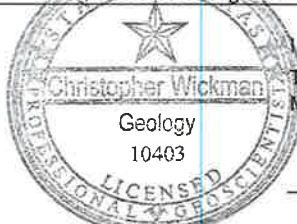
LOCATION			FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING			
1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12	
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATIO N	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)	TOPOGRAPHY		
						X	Y	Z													
						X	Y	Z		10						<40	>40	<1.6	>1.6		
S-57	29 46' 44.11"	-98 17' 13.45"	SC	20	Kek	2	0.5	1	-	-	-	-	OFC	5	25	25		YES		HILLSIDE	
S-58	29 46' 50.34"	-98 17' 13.06"	SC	20	Kek	1	0.5	1	-	-	-	-	OFC	5	25	25		YES		HILLSIDE	
S-59	29 46' 44.58"	-98 17' 7.84"	SC	20	Kek	2	1	1	-	-	-	-	OFC	15	35	35		YES		HILLSIDE	
S-60	29 46' 44.76"	-98 17' 10.9"	SC	20	Kek	0.5	0.5	1	-	-	-	-	OF	5	25	25		YES		HILLSIDE	
S-61	29 46' 43.32"	-98 17' 15.47"	SH	20	Kek	3	3	4	-	-	-	-	FC	20	40		40	YES		HILLSIDE	
S-62	29 46' 50.84"	-98 17' 33.65"	SC	20	Kek	2	1	3	-	-	-	-	C	40	40		40	YES		HILLSIDE	
S-63	29 46' 51.38"	-98 17' 34.12"	SC	20	Kek	0.5	0.75	1	-	-	-	-	OF	10	30	30		YES		HILLSIDE	
S-64	29 46' 43.82"	-98 17' 31.78"	SC	20	Kek	1	0.5	0.75	-	-	-	-	FC	10	30	30		YES		HILLSIDE	
S-65	29 46' 45.37"	-98 17' 58.58"	SC	20	Kek	2	1	1.5	-	-	-	-	OF	10	30	30		YES		HILLSIDE	
S-66	29 46' 47.82"	-98 17' 4.06"	SC	20	Kek	1	0.5	0.5	-	-	-	-	FC	5	25	25		YES		HILLSIDE	
S-67	29 46' 55.09"	-98 17' 0.02"	SC	20	Kek	1	1	2	-	-	-	-	OF	10	30	30		YES		HILLSIDE	
S-68	29 47' 0.2"	-98 17' 20.08"	SC	20	Kek	1	0.5	1	-	-	-	-	FC	10	30	30		YES		HILLSIDE	
S-69	29 47' 0.46"	-98 17' 22.63"	MB	30	Kek	0.5	0.5	?	-	-	-	-	X	5	35	35		YES		HILLSIDE	
S-70	29 47' 0.2"	-98 17' 26.48"	SC	20	Kek	2	1	1	-	-	-	-	OF	10	30	30		YES		HILLSIDE	

Datum: NAD 27

2A TYPE	TYPE	2B POINTS
C	Cave	30
SC	Solution cavity	20
SF	Solution-enlarged fracture(s)	20
F	Fault	20
O	Other natural bedrock features	5
MB	Manmade feature in bedrock	30
SW	Swallow hole	30
SH	Sinkhole	20
CD	Non-karst closed depression	5
Z	Zone, clustered or aligned features	30

8A INFILLING	
N	None, exposed bedrock
C	Coarse - cobbles, breakdown, sand, gravel
O	Loose or soft mud or soil, organics, leaves, sticks, dark colors
F	Fines, compacted clay-rich sediment, soil profile, gray or red colors
V	Vegetation. Give details in narrative description
FS	Flowstone, cements, cave deposits
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12 TOPOGRAPHY	
	Cliff, Hilltop, Hillside, Floodplain, Streambed



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*Chris Wickman*  
 Chris Wickman, P.G.

Date January 7, 2015



## GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: Meyer Tract

PROJECT NUMBER: FGS-E14208

LOCATION			FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING		
1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATIO N	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY	CATCHMENT AREA (ACRES)		TOPOGRAPHY	
						X	Y	Z		10						<40	>40	<1.6	>1.6	
S-71	29 47' 0.28"	-98 17' 37.39"	SC	20	Kek	0.5	0.5	0.5	-	-	-	-	OFC	15	35	35		YES		STREAMBED
S-72	29 46' 56.24"	-98 17' 33.58"	O <sup>FR</sup>	5	Kek	30	35	-	45 NE	10	1-2	0.25-0.5	OF	15	30	30		YES		STREAMBED
S-73	29 46' 57.76"	-98 17' 28.57"	SC	20	Kek	1	1	2.5	-	-	-	-	OF	5	25	25		YES		HILLSIDE
S-74	29 46' 54.77"	-98 17' 18.49"	SC	20	Kek	1	1	1	-	-	-	-	FC	10	30	30		YES		HILLSIDE
S-75	29 46' 54.59"	-98 17' 18.49"	SC	20	Kek	1.5	1	3	-	-	-	-	OFC	20	40		40	YES		HILLSIDE
S-76	29 46' 54.59"	-98 17' 18.49"	SC	20	Kek	2	1.5	3	-	-	-	-	C	25	45		45	YES		HILLSIDE
S-77	29 46' 54.23"	-98 17' 18.49"	SC	20	Kek	1	0.5	5	-	-	-	-	C	20	40		40	YES		FLOODPLAIN
S-78	29 46' 54.88"	-98 17' 28.39"	SC	20	Kek	2	0.5	1	-	-	-	-	OFC	10	30	30		YES		HILLSIDE
S-79	29 46' 30.65"	-98 17' 10.68"	SC	20	Kek	1.5	1	1.5	-	-	-	-	C	10	30	30		YES		HILLSIDE
S-80	29 46' 30.47"	-98 17' 10.72"	SC	20	Kek	0.25	0.25	1.5	-	-	-	-	OFC	10	30	30		YES		HILLSIDE
S-81	29 46' 36.7"	-98 17' 17.66"	SH	20	Kek	2.5	2	1	-	-	-	-	OC	10	30	30		YES		HILLSIDE
S-82	29 46' 36.73"	-98 17' 17.56"	SC	20	Kek	1	0.5	1	-	-	-	-	FC	5	25	25		YES		HILLSIDE
S-83	29 46' 40.51"	-98 17' 16.3"	SC	20	Kek	0.5	0.5	1	-	-	-	-	OFC	10	30	30		YES		HILLSIDE
S-84	29 46' 40.51"	-98 17' 16.3"	SC	20	Kek	0.5	0.5	0.5	-	-	-	-	OFC	10	30	30		YES		HILLSIDE

Datum: NAD 27

2A TYPE	TYPE	2B POINTS
C	Cave	30
SC	Solution cavity	20
SF	Solution-enlarged fracture(s)	20
F	Fault	20
O	Other natural bedrock features	5
MB	Manmade feature in bedrock	30
SW	Swallow hole	30
SH	Sinkhole	20
CD	Non-karst closed depression	5
Z	Zone, clustered or aligned features	30

## 8A INFILLING

N	None, exposed bedrock
C	Coarse - cobbles, breakdown, sand, gravel
O	Loose or soft mud or soil, organics, leaves, sticks, dark colors
F	Fines, compacted clay-rich sediment, soil profile, gray or red colors
V	Vegetation. Give details in narrative description
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Chris Wickman, P.G.

Date January 7, 2015

TCEQ-0585-Table (Rev. 10-01-04)

Sheet 6 of 7

FGS Project N° FGS-E14208



**GEOLOGIC ASSESSMENT TABLE**
**PROJECT NAME: Meyer Tract**
**PROJECT NUMBER: FGS-E14208**

LOCATION			FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING		
1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATIO N	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)	TOPOGRAPHY	
						X	Y	Z								<40	>40		<1.6	>1.6
S-85	29 46' 38.21"	-98 17' 16.51"	SC	20	Kek	1	1	1	-	-	-	-	OFC	10	30	30		YES		HILLSIDE
S-86	29 46' 40.33"	-98 17' 19.25"	SH	20	Kek	5	2	3	-	-	-	-	OFC	20	40		40	YES		HILLSIDE
S-87	29 46' 39.29"	-98 17' 17.02"	SC	20	Kek	1.5	1	1	-	-	-	-	OFC	10	30	30		YES		HILLSIDE
S-88	29 46' 42.71"	-98 17' 18.53"	SC	20	Kek	0.5	0.5	1	-	-	-	-	OFC	10	30	30		YES		HILLSIDE
	29 46' 42.71"	-98 17' 18.53"	SC	20	Kek	0.5	0.5	1	-	-	-	-	OFC	10	30	30		YES		HILLSIDE
S-89	29 46' 41.95"	-98 17' 16.33"	SC	20	Kek	1	0.5	0.5	-	-	-	-	OFC	5	25	25		YES		HILLSIDE
S-90	29 46' 26.51"	-98 17' 14.82"	O <sup>FR</sup>	5	Kek	25	40	-	-	-	1-2	0.1-0.5	OFC	20	25	25		YES		STREAMBED
S-91	29 46' 32.48"	-98 17' 16.01"	SC	20	Kek	1	1	0.5	-	-	-	-	OFC	10	30	30		YES		HILLSIDE
S-92	29 47' 12.62"	-98 17' 37.75"	F	20	Kek	-	-	-	-	-	-	-	-	10	30	30		YES		HILLSIDE
S-93	29 46' 46.81"	-98 17' 9.28"	F	20	Kek	-	-	-	-	-	-	-	-	10	30	30		YES		HILLSIDE

Datum: NAD 27

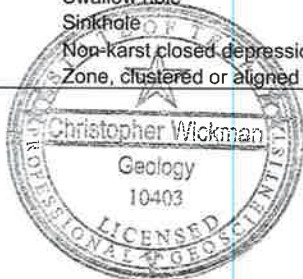
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Chris Wickman, P.G.

Date January 7, 2015



**ATTACHMENT C**



## LOCATION

The Site is located in the northwestern corner of U.S. Highway 46 and South Cranes Mill Road in Comal County, Texas. An overall view of the area is shown on copies of the site plan, a street map, the U.S.G.S. Topographic Map, the Bexar County Watersheds Map, the Edwards Aquifer Recharge Zone and Contributing Zone Map, the FIRM Map, the Bureau of Economic Geology Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle, U.S. Geological Survey Water Resources Investigations 95-4030 Map, a 2012 aerial photograph at a scale of 1"=1,000', a 2012 aerial photograph at a scale of 1"=1,000', and a 1962 aerial photograph at a scale of 1"=1,000', Figures 1 through 9 in Appendix A.

## METHODOLOGY

The Geologic Assessment was performed by Mr. Chris Wickman, P.G., Senior Geologist with Frost GeoSciences, Mr. Jeff Frost, Project Manager and Mr. Trey Hunter Inc. Mr. Wickman is a Licensed Professional Geoscientist in the State of Texas (License # 10403).

Frost GeoSciences, Inc. researched the geology of the area surrounding the northwestern corner of the intersection of U.S. Highway 46 and South Cranes Mill Road. The research included, but was not limited to, the Geologic Atlas of Texas, San Antonio Sheet, FEMA maps, Edwards Aquifer Recharge Zone Maps, U.S.G.S. 7.5 Minute Quadrangle Maps, the Bureau of Economic Geology-Geologic Atlas of Texas, the Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle, the U.S.G.S. Water-Resources Investigations Report 95-4030, and the U.S.D.A. Soil Survey of Bexar County, Texas.

After reviewing the available information, a field investigation was performed to identify any geologic or man-made potential recharge features. A transect spacing of approximately 50 feet, or less depending on vegetation thickness, was used to inspect the project area. A 2012 aerial photograph, in conjunction with a hand held Garmin GPS 72H Global Positioning System with an Estimated Potential Error ranging from 10 to 14 feet, was used to navigate around the property and identify the locations of potential recharge features, as recommended in the "Instructions to Geologists", TCEQ-0585-Instructions (Rev. 10-1-04). The locations of any potential recharge features noted in the field were marked with blue and white flagging. The flagging is numbered with the same potential recharge feature (PRF) I.D. # that is used on the Site Geologic Map. The Site Geologic Map, indicating the limits of the Site, and the locations of potential recharge features and rock outcrops noted on the Site, is included in Appendix C. A copy of a 2012 Aerial Photograph at an approximate scale of 1"=1,000' indicating the limits of the Site, and the locations of potential recharge features and rock outcrops noted on the Site, is included on Figure 10 in Appendix A. The Geologic Assessment Form TCEQ-0585, (Rev. 10-1-10), Stratigraphic Column, and the Geologic Assessment Table have been filled with the appropriate information for this Site and are included on pages 1-10 of this report.



## RESEARCH & OBSERVATIONS

### 7.5 Minute Quadrangle Map Review

According to the U.S.G.S. 7.5 Minute Quadrangle Map, Smithson Valley, Texas Sheet (1994), the elevation across the Site ranges from 1130 to 1280 feet above mean sea level. The Site has a total relief of approximately 150 feet. Runoff from the Site flows to the northeast, east and southeast the Site and to the east, southeast and south into the Dry Comal Creek. South Cranes Mill Road is located along the eastern property line of the Site and U.S. Highway 46 is located south of the Site. The intersection of South Cranes Mill Road and U.S. Highway 46 is located immediately southwest of the Site. A copy of the U.S.G.S. 7.5 Minute Quadrangle Map indicating the location of the Site is included on Figure 3 in Appendix A.

### Recharge/Transition Zone

According to the Edwards Aquifer Recharge and Contributing Zone Map (1994) and the Official Edwards Aquifer Recharge Zone Map, Smithson Valley, Texas Sheet (1994), the southern portion of the Site is located on the Edwards Aquifer Recharge Zone and the northern portion of the Site is located on the Contributing Zone of the Edwards Aquifer. A copy of the Edwards Aquifer Recharge and Contributing Zone Map indicating the location of the Site is included on Figure 4 in Appendix A.

### 100-Year Floodplain

The special flood hazard area as defined by the FEMA Flood Insurance Rate Map is the area subject to flooding by the 1% annual chance flood. The majority of the Site is located in Zone X (unshaded), which is not designated a special flood hazard area according to the FEMA National Flood Insurance Program Flood Insurance Rate Map, Panel 245 of 505, for incorporated areas of Comal County, Texas, Community Panel Number 48091C0245F, effective September 2, 2009. However, the areas along the Upper Dry Comal Creek and Upper Dry Comal Tributary 26, crossing the central and southern portions of the Site, are located within the special flood hazard areas, Zone A. According to the FEMA Flood Insurance Rate Map Legend, Zone X (unshaded) is defined as areas determined to be outside the 0.2% annual chance floodplain. Special flood hazard area Zone A is defined as areas within the Special Flood Hazard Area where no base flood elevations have been determined. A copy of the above referenced FIRM panel indicating the location of the Site is included on Figure 5 in Appendix A.

### Soils

According to the United States Department of Agricultural (USDA) Natural Resources Conservation Service (NRCS) Soil Survey of Comal County (1984), the Site is located on the following soils: A copy of the 1984 aerial photo (approximate scale: 1"=1000') from the U.S.D.A. Soil Survey of Comal County, Texas indicating the location of the Site and the soil types is included on Figure 6 in Appendix A.

- **Anhalt clay, 1 to 3 percent slopes (AnB)** is a moderately deep, gently sloping soil. It is usually found on slightly concave foot slopes on uplands. Typically, the surface layer is dark reddish gray in color, has a neutral pH, and is about 23" thick. The subsoil extends to a depth of approximately 32", is a dark reddish brown, and has a neutral pH. Below the



subsoil is fractured and indurated limestone. The soil is well drained, surface runoff is medium, and the permeability is very slow. The hazard from water erosion is moderate in nature and the available water capacity is low. This soil has a USDA Texture Classification of clay. The Unified Classification is CH. The AASHTO Classification is A-7-6. This soil has an average permeability <0.06 inches/hour.

- **Brackett-Rock outcrop-Comfort complex (BtD)** consists of shallow, loamy and clayey soils and rock outcrops on uplands in the Edwards Plateau Land Resource Area. The Brackett Soil makes up 30 to 60 percent of the complex, but on the average it makes up 50 percent. Rock Outcrops make up 10 to 40 percent of the complex, but the average is 20 percent. The Comfort Soil makes up 10 to 20 percent, but the average is 15 percent. Typically, the surface layer of the Brackett Soil is grayish brown gravelly clay loam about 6 inches thick. The subsoil extends to a depth of 17 inches. It is very pale brown and pale yellow gravelly clay loam. The underlying material is weakly cemented limestone interbedded with thin layers of indurated limestone. The soil is moderately alkaline and calcareous throughout. Typically, the areas of Rock Outcrop consist of exposures of limestone bedrock. There is some soil material in the narrow fractures in the rock. In some areas, however, the rock is flat and is covered by soil material as much as 3 inches thick. Typically, the surface layer of the Comfort Soil is dark brown extremely stony clay about 4 inches thick. The subsoil extends to a depth of 11 inches. It is dark reddish brown extremely stony clay. The underlying material is indurated fractured limestone. The soil is moderately alkaline and noncalcareous throughout. The soils in this complex are well drained. Surface runoff is medium to rapid. Permeability is moderately slow in the Brackett Soil and slow in the Comfort Soil. The available water capacity is very low. Water erosion is a severe hazard. The Brackett soil has a USDA Texture Classification of gravelly clay loam and weathered bedrock. The Unified Classification is CL SC and/or GC. The AASHTO Classification is A-6, A-4 and A-7-6. This soil has an average permeability from 0.2 to 0.6 inches/hour. The Comfort soil has a USDA Texture Classification of extremely stony clay, stony clay, very stony clay, and weathered bedrock. The Unified Classification is CH, GC, SC, and CL. The AASHTO Classification is A-2-7 and A-7-6. This soil has an average permeability from 0.06-0.2 inches/hour.
- **Comfort-Rock outcrop complex, undulating (CrD)** consists of shallow, clayey soils and Rock outcrops on the side slopes, hilltops, and ridge-tops in the uplands area of the Edwards Plateau. This soil complex is composed of the Comfort extremely stony clay (~49% to ≥95% of the complex), the Rock outcrop (5-36% of the complex), and small amounts of the Rumble, Purves, Eckert, and Real soils. Typically, the surface layer of the Comfort soil is dark brown extremely stony clay about 6" thick. Stones and cobbles (some as much as 4' across) cover approximately 45% of the surface. The subsoil extends to a depth of 13". It's a dark reddish brown extremely stony clay. The underlying



material is indurated fractured limestone. The soil is mildly alkaline and non-calcareous throughout. The soil is well drained, surface runoff is slow to medium, permeability is slow, and the available water capacity is very low. Water erosion is a slight hazard. Typically, the Rock outcrop is dolomitic limestone that is barren of soil except in narrow fractures in the rock. Some areas may have as much as 3" of soil on top of the outcrop. The Comfort soil has a USDA Texture Classification of extremely stony clay, stony clay, very stony clay, and weathered bedrock. The Unified Classification is CH, GC, SC, and CL. The AASHTO Classification is A-2-7 and A-7-6. This soil has an average permeability from 0.06-0.2 inches/hour.

- **Denton silty clay, 1 to 3 percent slopes (DeB)** is a moderately deep, gently sloping soil located on valley slopes on uplands in the Edwards Plateau. Typically, the surface layer is dark grayish brown silty clay approximately 14" thick. The underlying layer extends to a depth of 25" and is dark brown silty clay. The subsoil extends to a depth of 33". It is light yellowish brown silty clay. The underlying material to a depth of 36" is light brown and reddish yellow silty clay. It is underlain by fractured limestone interbedded with calcareous clayey marl. The soil is moderately alkaline and calcareous throughout. This is a well-drained and slowly permeable soil. Runoff is medium. The available water capacity is medium and erosion is a slight hazard. This soil has a USDA Texture Classification of silty clay, clay, silty clay loam and weathered bedrock. The Unified Classification is CH or CL. The AASHTO Classification is A-7-6. This soil has an average permeability from 0.06 to 0.2 inches/hour.
- **Doss silty clay, 1 to 5 percent slopes (DoC)** consists of gently sloping soil on the uplands. Typically, this soil has a dark grayish brown silty clay surface layer about 9 inches thick. The subsoil, to 18 inches, is a yellowish brown clay loam. Approximately 50% of the subsoil is calcium carbonate (lime). The underlying material to a depth of 24" is weakly cemented limestone and marl. The soil is moderately alkaline and calcareous throughout; however, a few areas have a non-calcareous surface layer. This soil is well drained. It has a low available water capacity. Permeability is moderately slow. Runoff is medium. Erosion is a moderate hazard. This soil has a USDA Texture Classification of silty clay, clay loam and weathered bedrock. The Unified Classification is CL or CH. The AASHTO Classification is A-7-6. This soil has an average permeability from 0.2 to 0.6 inches/hour.
- **Eckrant-Rock outcrop complex, steep (ErG)** consists of shallow, clayey soils and Rock outcrop on uplands in the Edwards Plateau Land Resource Area. Slopes are convex and range from 8 to 30 percent. The mapped areas consist of long, narrow slopes on high hills and ridges and along escarpments. The areas range from 50 to 2,000 acres in size. Eckrant soil makes up 50 to 80 percent of the complex, but on the average it makes up 70 percent. Rock outcrop makes up 9 to 30 percent, but averages about 20 percent. The



soils and Rock outcrop are in areas so small or so intricately mixed that it was not practical to map them separately at the scale used. Typically, the surface layer of the Eckrant soil is very dark gray extremely stony clay about 10 inches thick. It is about 35 percent, by volume, cobbles and stones in the upper part and about 75 percent, by volume, stones in the lower part. The underlying layer is indurated fractured limestone. The soil is moderately alkaline and noncalcareous throughout. Typically, Rock outcrop consists of barren exposures of indurated limestone. In a few areas as much as 4 inches of clayey soil material overlies the bedrock, and dark colored clay is in cracks and fractures. The Eckrant soil is well-drained. Surface runoff is rapid. Permeability is moderately slow, and the available water capacity is very low. The rooting zone is shallow. Water erosion is a severe hazard. This soil has a USDA Texture Classification of extremely stony clay and unweathered bedrock. The Unified Classification is GC, SC and CH. The AASHO Classification is A-6-7 and A-2-7. This soil has an average permeability from 0.2 to 0.6 inches/hour.

- **Rumple-Comfort association undulating (RUD)** consists of shallow and moderately deep soils on uplands in the Edwards Plateau Land Resource Area. The surface layer of the Rumple Soil is dark reddish brown very cherty clay loam about 10 inches thick. Rounded chert and limestone cobbles and gravel cover about 20 percent of the surface. The subsoil to a depth of 14 inches is dark reddish-brown very cherty clay, and to a depth of 28 inches it is dark reddish-brown extremely stony clay. The underlying material is indurated fractured limestone. The Comfort Soil is dark brown, neutral, extremely stony clay about 7 inches thick. The subsoil to a depth of 12 inches is dark reddish-brown, mildly alkaline, extremely stony clay. The underlying material is indurated fractured limestone. The soil is noncalcareous throughout. The soils in this association are well drained. Surface runoff is medium, but varies due to the occurrence of caves, fracture zones, and sinks. Permeability is moderately slow. Water erosion is a moderate hazard. This Rumple soil has a USDA Texture Classification of very cherty clay loam, very cherty clay, extremely stony clay and unweathered bedrock. The Unified Classification is GC, CL or SC. The AASHO Classification is A-2-6, A-6 and A-2-7. This soil has an average permeability from 0.2 to 0.6 inches/hour. The Comfort soil has a USDA Texture Classification of extremely stony clay, stony clay, very stony clay, and weathered bedrock. The Unified Classification is CH, GC, SC, and CL. The AASHO Classification is A-2-7 and A-7-6. This soil has an average permeability from 0.06-0.2 inches/hour.



### Narrative Description of the Site Geology

Based on a visual inspection of the ground surface, the overall potential for fluid flow from the Site into the Edwards Aquifer appears to be low to intermediate. The locations of the Potential Recharge Features are identified on the 2012 aerial photograph on Figure 10 in Appendix A, and on the Site Geologic Map provided in Appendix C. Color photos of the Site and some of the potential recharge features are included in Appendix B.

Potential Recharge Features S-1, S-2, S-3, S-18, S-19, S-21, S-35, S-37, S-38, S-39, S-40, S-72 and S-90 are broad flat areas of exposed fractured limestone outcrops located on a vegetated hillsides and broad shallow streambeds. Grass and other vegetation were observed growing between the fractures of a few of the outcrops observed during the site reconnaissance. The outcrops of fractured limestone had fractures occurring in a density that ranges from 1 to 3 per foot with widths ranging from less than 1 inch to 3 inches. Several of the observed outcrops (S-19, S-21, S-37, S-40 and S-72) appeared to have a dominant trend ranging between 40 and 70 degrees northeast. The fractures were in-filled with fine sediments and fine gravels. Grass and other vegetation were observed growing between the fractures of a few of the outcrops observed during the site reconnaissance. Frost GeoSciences, Inc. rates the features as low on Figure 1 of the TCEQ-0585-Instructions (Rev. 10-01-04). The outcrops score 15 to 30 on the sensitivity scale, column 10 in the Geologic Assessment Table on Pages 4 through 10 of this report. Frost GeoSciences, Inc. does not consider the outcrops to be sensitive features.

Potential Recharge Features S-4 through S-6, S-14 through S-17, S-20, S-23, S-26, S-27, S-29, S-32, S-33, S-34, S-36, S-41 through S-49, S-51, S-55 through S-60, S-63 through S-68, S-70, S-71, S-73, S-74, S-78, S-80, S-82 through S-87, S-89, and S-91 are solution cavities of varying dimensions that are filled in with clay, sand and leaves. The solution cavities occur on hillsides located under and between limestone rock ledges and at the bases of trees. Many of the features appeared to be the result of vegetation growth lifting and/or splitting the limestone boulders. In addition, the majority of these solution cavities appeared to have been excavated by burrowing animals. Frost GeoSciences rates these features as low on figure 1 of the TNRCC-0585-Instructions (Rev. 5-01-02). These features score 25 to 35 points on the sensitivity scale, column 10 in the Geologic Assessment Table on pages 4 through 10 of this report. Frost GeoSciences, Inc. does not consider these solution cavities to be sensitive features.

Potential Recharge Features S-7, S-9, S-13, S-24, S-40, S-79 and S-81 appear to be small areas of collapsed limestone resulting in sink holes. These sink holes were observed located across the Site in dense clusters of vegetation. The collapsed areas are infilled with clay, sand and limestone boulders. The areas were probed and appear to have clay lined bottoms. No obvious visual indications of water channels or drainage paths were observed leading into these collapsed areas. Frost GeoSciences, Inc. rates the features as low on Figure 1 of the TCEQ-0585-Instructions (Rev. 10-01-04). These features score a 35 on the sensitivity scale, column 10 in the Geologic Assessment Table on Page 5 of this report. Frost GeoSciences, Inc. does not consider the sink holes to be sensitive features.



Potential Recharge Features S-8, S-10, S-11, S-50, S-52, S-61 and S-86 appear to be additional sink holes. These sink holes were observed located in dense clusters of vegetation. The collapsed areas are infilled with large gravel and limestone boulders. The openings of the observed sink holes ranged in size from 3 to 5 feet in width and 3 to 7 feet in length. The depth of the sink holes were visually inspected and probed with a machete, depths were estimated 3 to 4 feet deep. An additional, broad bowl shaped area (PRF #S-12) was observed in the central portion of the Site. The circular area was about 20 feet in diameter and about 1.5 feet deep with a small cavity located in the center of the bowl. The bowl shaped depression may have been the result of the sapping of fine soils. Frost GeoSciences, Inc. rates the features as intermediate on Figure 1 of the TCEQ-0585-Instructions (Rev. 10-01-04). These features score 40 to 45 on the sensitivity scale, column 10 in the Geologic Assessment Table on Page 4 of this report. Frost GeoSciences, Inc. considers the sink holes to be sensitive features.

Potential Recharge Features S-22, S-30, S-53, S-54, S-75, S-76, and S-77 are solution cavities of varying dimensions that were either filled in with gravel, small boulders and leaves or little to no infilling except clay and sand at the bottom. The solution cavities were observed occurring on hillsides located under and between limestone rock ledges and at the bases of trees. Frost GeoSciences rates these features as intermediate on figure 1 of the TNRCC-0585-Instructions (Rev. 5-01-02). These features score 40 to 45 points on the sensitivity scale, column 10 in the Geologic Assessment Table on pages 4 through 10 of this report. Frost GeoSciences, Inc. considers these solution cavities to be sensitive features.

Potential Recharge Feature S-25 is a non-karst closed depression. The closed depression appears to be an excavation. The bottom of the excavation appeared to be clay and grass. A mound of soil was observed adjacent to the excavation. Frost GeoSciences rates this feature as low on figure 1 of the TNRCC-0585-Instructions (Rev. 5-01-02). The feature scores a 20 on the sensitivity scale, column 10 in the Geologic Assessment Table on page 5 of this report. Frost GeoSciences, Inc. does not consider this closed depression to be sensitive features.

Potential Recharge Feature S-28 is an apparent solution enlarged fracture located between several limestone boulders. The fracture may have been the result of vegetation opening the fracture that allowed for soil erosion caused from runoff. The feature is approximately 4 feet long, 1 foot wide and 2.5 feet deep. The cavity is filled with clay, fine soil and leaves. Frost GeoSciences rates the feature as low on figure 1 of the TNRCC-0585-Instructions (Rev. 5-01-02). The feature scores 35 points on the sensitivity scale, column 10 in the Geologic Assessment Table on page 5 of this report. Frost GeoSciences, Inc. does not consider this to be a sensitive feature.

Potential Recharge Feature S-31 is an apparent solution enlarged fracture located in a densely vegetated cluster of persimmon and other shrubs. The fracture is approximately 6 feet long and 2 foot wide. The cavity was visually inspected and probed with a machete and appeared to be 1 foot deep. The cavity is filled with fine soil and leaves. Frost GeoSciences rates the feature as intermediate on figure 1 of the TNRCC-0585-Instructions (Rev. 5-01-02). The feature scores 40 points



on the sensitivity scale, column 10 in the Geologic Assessment Table on page 6 of this report. Frost GeoSciences, Inc. considers this to be a sensitive feature.

Potential Recharge Feature S-69 is a water-well. The well appears to be in operation. The current owner of the Site stated the water well was used to provide water to the on-site livestock. The water well was housed within a small shed with an adjacent circular concrete livestock tank. FGS personnel could not access the shed to further inspect the water well. Two additional water wells were observed on the Site. These wells are located in the central and northern portions of the Site. The water well observed in the northern portion of the Site did not appear to be on operation. Frost GeoSciences rates the feature as low on figure 1 of the TNRCC-0585-Instructions (Rev. 5-01-02). The feature scores a 35 on the sensitivity scale, column 10 in the Geologic Assessment Table on pages 4 of this report.

Potential Recharge Feature S-88 is a solution cavity consisting of two associated openings. The first opening was about 0.5 feet wide, 0.5 feet long and 1 foot deep. The second opening was of equivalent size. The openings appeared to be infilled with fine soils and leaves. PRF #S-88 was observed occurring on a hillside located in dense vegetative cover. Frost GeoSciences rates this feature as low on figure 1 of the TNRCC-0585-Instructions (Rev. 5-01-02). This feature scores 30 points on the sensitivity scale, column 10 in the Geologic Assessment Table on page 10 of this report. Frost GeoSciences, Inc. does not consider this solution cavity to be a sensitive feature.

PRF # S-92 and S-93 were faults identified on the geologic map crossing the central and southern portions of the Site. The Geologic Map of the New Braunfels Quadrangle identifies three faults. An additional fault was identified in the northern portion of the Site. The fault crossing the central portion of the Site marks the boundary of Contributing Zone with the Recharge Zone. The fault crossing the northern portion of the Site is located within the Contributing Zone and the fault located in the southern portion of the Site is within the Recharge Zone. Obvious visual indications of the faults were not observed at the time of the site reconnaissance; however, minor evidence of these faults, (i.e. lithology changes and fractured limestone outcrops observed in the vicinity of the faults) were observed in the central portion of the Site. Based on review of the geologic maps of the area, the upwardly displaced formation to the north of the central fault is Cretaceous Upper Glen Rose limestone and the downward displaced formations, to the south of the fault, is the Edwards Kainer limestone. Based on the absence of direct visual evidence of the faults due to thick soil cover and vegetation, Frost GeoSciences, Inc. rates these features as low on Figure 1 of the TCEQ-0585-Instructions (Rev. 10-01-04). The features score a 30 on the sensitivity scale, column 10 in the Geologic Assessment Table on page 10 of this report.

Two apparent springs were observed in the Contributing Zone on the central and northern portions of the Site. The springs were observed in intermittent stream channels. The springs were not flowing at the time of the site reconnaissance. The spring in the northern portion of the Site appeared to be impounded and standing water was observed within the small impounded pond.



The Site is covered by moderately dense stand of vegetative cover with numerous open grassy areas. Site visit photos indicating the condition of the property at the time of the on-site inspection are included in Appendix B. Overall vegetation on the Site consists of ashe juniper (*Juniperus ashei*), live oak (*Quercus virginiana*), and cedar elm (*Ulmus crassifolia*), with Texas persimmon (*Diospyros texana*), agarita (*Berberis trifoliolata*), yucca (*Yucca treculeana*), and prickly pear cactus (*Opuntia lindheimeri*). The variations in the vegetative cover on the property are visible in the 2012 aerial photo on Figures 8 and 9 in Appendix A. A copy of the site layout indicating the boundary of the Site and the elevations is included on the Site Geologic Map in Appendix C of this report.

According to the Bureau of Economic Geology, Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle (2000), the majority of the northern and southern portions of the Site are located on the Cretaceous Edwards Kainer Limestone (Kk) with some small outcrop areas of the Cretaceous Walnut formation located in the northeast corner of the Site and along the northeastern Site boundary. The central portion of the Site is located on the Cretaceous Lower Glen Rose formation (Kgru) and the Cretaceous Walnut Formation (Kw).

According to the site plan provided by Flores Engineers, the surveyed elevations on the Site range from 1132 to 1274 feet. According to this survey, the total relief on the Site is approximately 142 feet. A copy of the site plan indicating the boundary of the Site and the elevations is included on the Site Plan on Figure 1 in Appendix A and the Site Geologic Map in Appendix C of this report.

Edwards Kainer Limestone consists of massively bedded limestone, dolomitic limestone, dolomite and lesser argillaceous limestone. The formation is light gray with abundant fossils of *Toucasia*. Karst features within this member are typically related to structure or bedding planes. Overall thickness ranges from 110 to 130 feet. Please refer to Figure 7 for a geologic map of the Site and surrounding area.

Walnut Formation consists of limestone, marl, and dolomitic limestone. This formation is often referred to as the Basal Nodular Member of the Edwards Kainer Limestone and is a lower confining unit of the Edwards Aquifer. Fossils of *Exogyra texana* are common. Some honeycomb porosity exists. Overall thickness ranges from 30 to 50 feet.

Upper member of the Glen Rose Limestone is the lower confining unit for the Edwards Aquifer and consists of yellowish tan, thinly bedded limestone and marl. Stairstep topography results from alternating layers of limestone and marl. Surface cavern development can occur within this formation but is often hindered by the marly seams. Overall thickness ranges from 300 to 500 feet.



## BEST MANAGEMENT PRACTICES

Based on a visual inspection of the ground surface, the overall potential for fluid flow from the Site into the Edwards Aquifer appears to range from low to moderate. The potential always exists to encounter solution cavities within the subsurface during excavating activities. Frost GeoSciences, Inc. is of the opinion that it is very important for construction personnel to be informed of the potential to encounter cavities in the subsurface that lack a surface expression. Construction personnel should also be informed of the proper protocol to follow in the event a karst feature is encountered during the development of the Site.

## DISCLAIMER

This report has been prepared in general accordance with the "Instructions to Geologists", TCEQ-0585-Instructions (Rev. 10-1-04) by a Licensed Texas Professional Geoscientist. All areas of the Site were carefully inspected for features that could contribute to the recharge of the Edwards Aquifer, however, this survey cannot preclude the presence of subsurface karst features that lack surface expression. This report is not intended to be a definitive investigation of all possible geologic or karst features at this site. All conclusions, opinions, and recommendations for Best Management Practices (BMP's) in this report are based on information obtained while researching the project, and on the site conditions at the time of our field investigation.

This report has been prepared for the exclusive use of Randolph Todd Company, LLC. This report is based on available known records, a visual inspection of the Site, and the work generally accepted for a Geologic Assessment for Regulated Activities / Developments on the Edwards Aquifer Recharge / Transition Zone, relating to 30 TAC §213.5(b)(3), effective June 1, 1999.

## REFERENCES

1. USGS - 7.5 Minute Topographic Quadrangle of Smithson Valley, Texas, 1994
2. Edwards Aquifer Recharge Zone and Contributing Zone Map, 1994
3. Official Edwards Aquifer Recharge Zone Map, Smithson Valley, Texas, 1994
4. Stein, W.G. and Ozuna, G.B., 1995, Geologic Framework and Hydrogeologic Characteristics of the Edwards Aquifer Recharge Zone, Bexar County, Texas, U.S. Geological Survey Water Resources Investigations 95-4030.
5. Barnes, V.L., 1983, Geologic Atlas of Texas Sheet, Bureau of Economic Geology and University of Texas at Austin, Geologic Atlas of Texas.

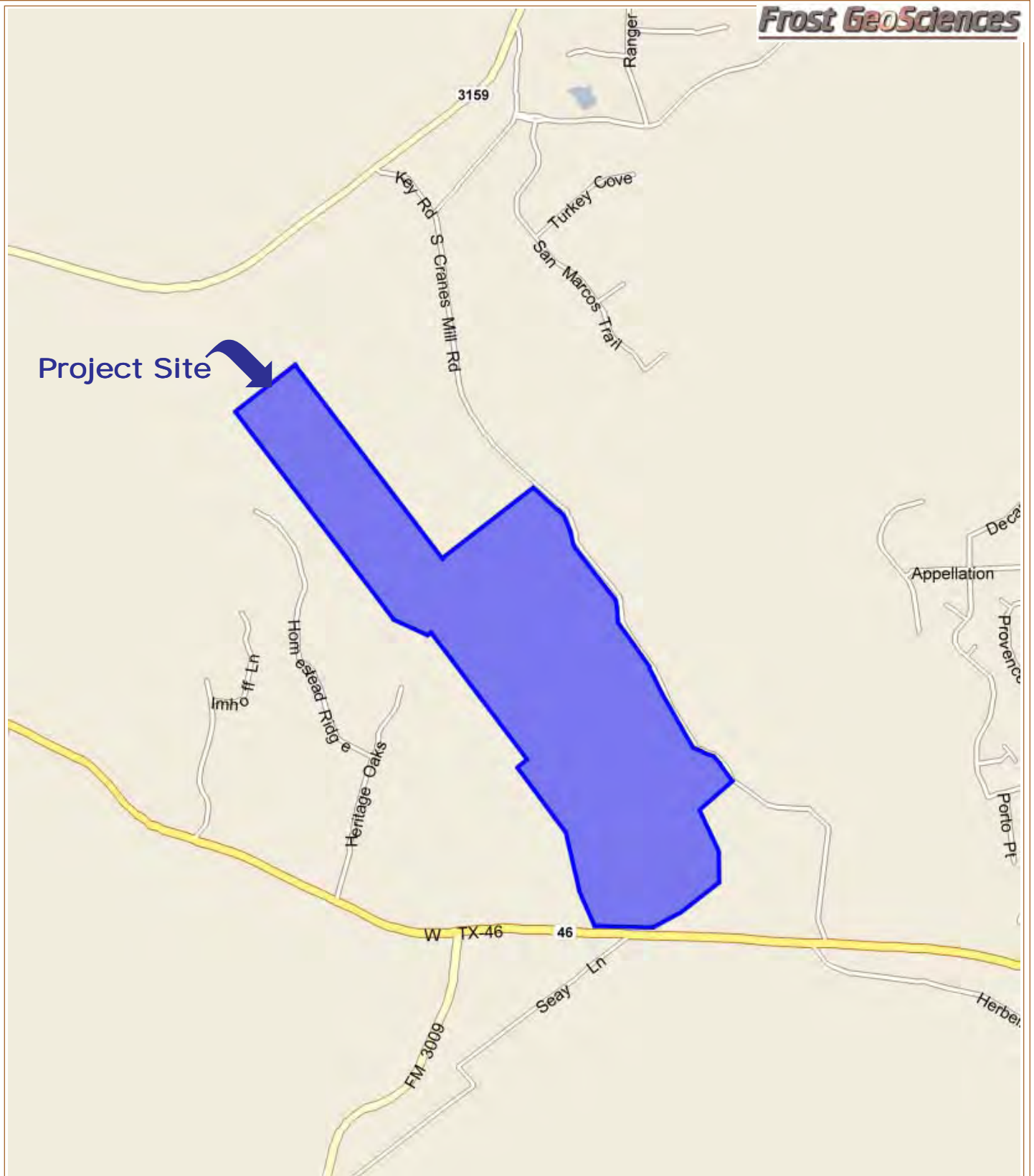


6. Federal Emergency Management Agency, Federal Insurance Administration, National Flood Insurance Program, Flood Insurance Map, Community Panel Number 48091C0245F, dated September 2, 2009.
7. United States Department of Agriculture Soil Conservation Service Soil Survey of Comal County 1984.
8. TCEQ-0585-Instructions (Rev. 10-1-04), "Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zone".
9. Collins, Edward, W., 2000, Geologic Map of the New Braunfels 30 X 60 Minute Quadrangle, Bureau of Economic Geology, The University of Texas at Austin, Texas.



**ATTACHMENT D**





**PROJECT NAME:**

Geologic Site Assessment (WPAP)  
for Regulated Activities / Development on the  
Edwards Aquifer Recharge / Transition Zone  
Meyer Tract  
Comal County, Texas

**Street Map**

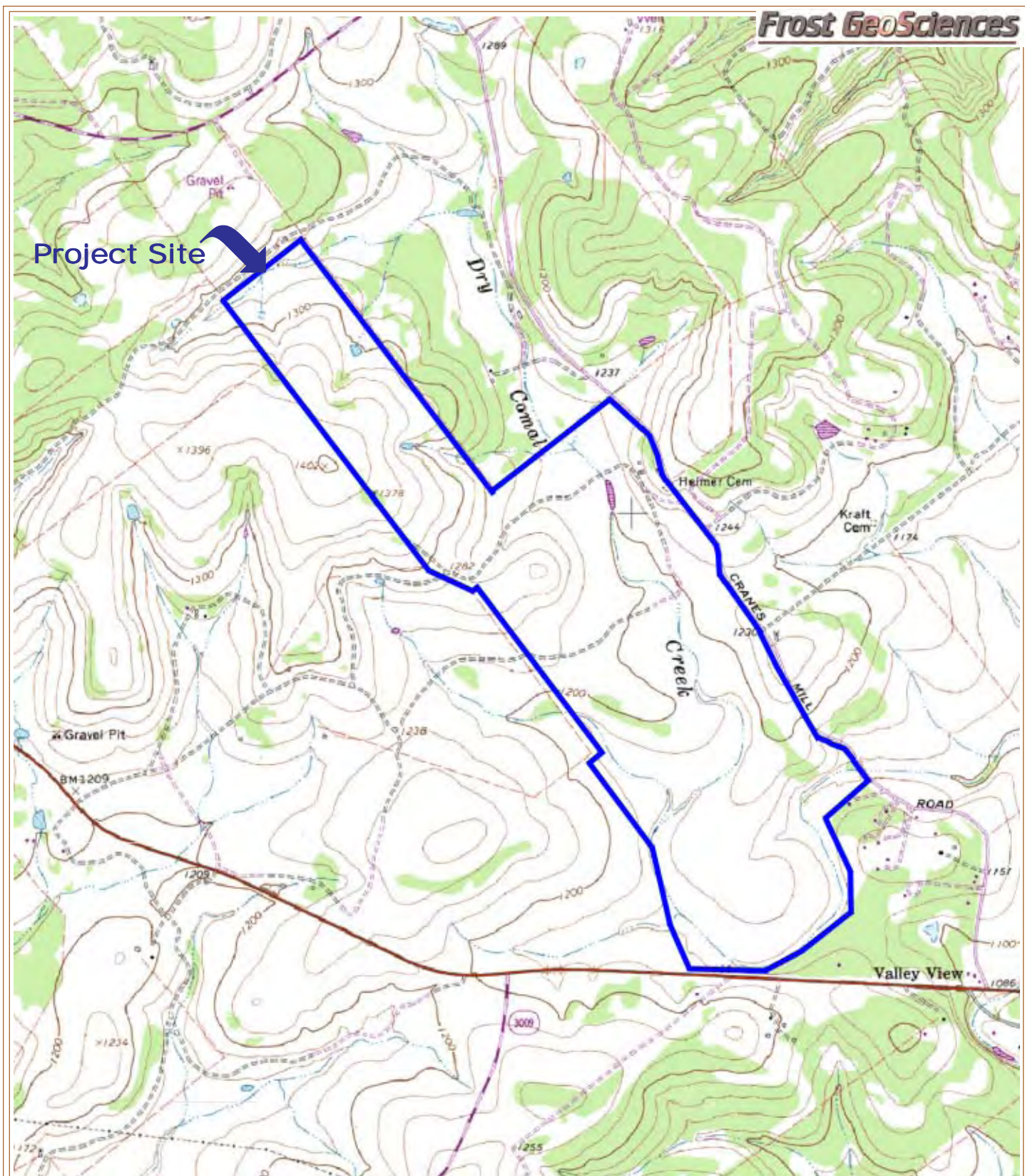
**PROJECT NO.:**

FGS-E14208

**DATE:**

January 7, 2015





**PROJECT NAME:**

Geologic Site Assessment (WPAP)  
for Regulated Activities / Development on the  
Edwards Aquifer Recharge / Transition Zone  
Meyer Tract  
Comal County, Texas

U.S.G.S. 7.5 Minute Quadrangle Map  
Smithson Valley, Texas (1994)

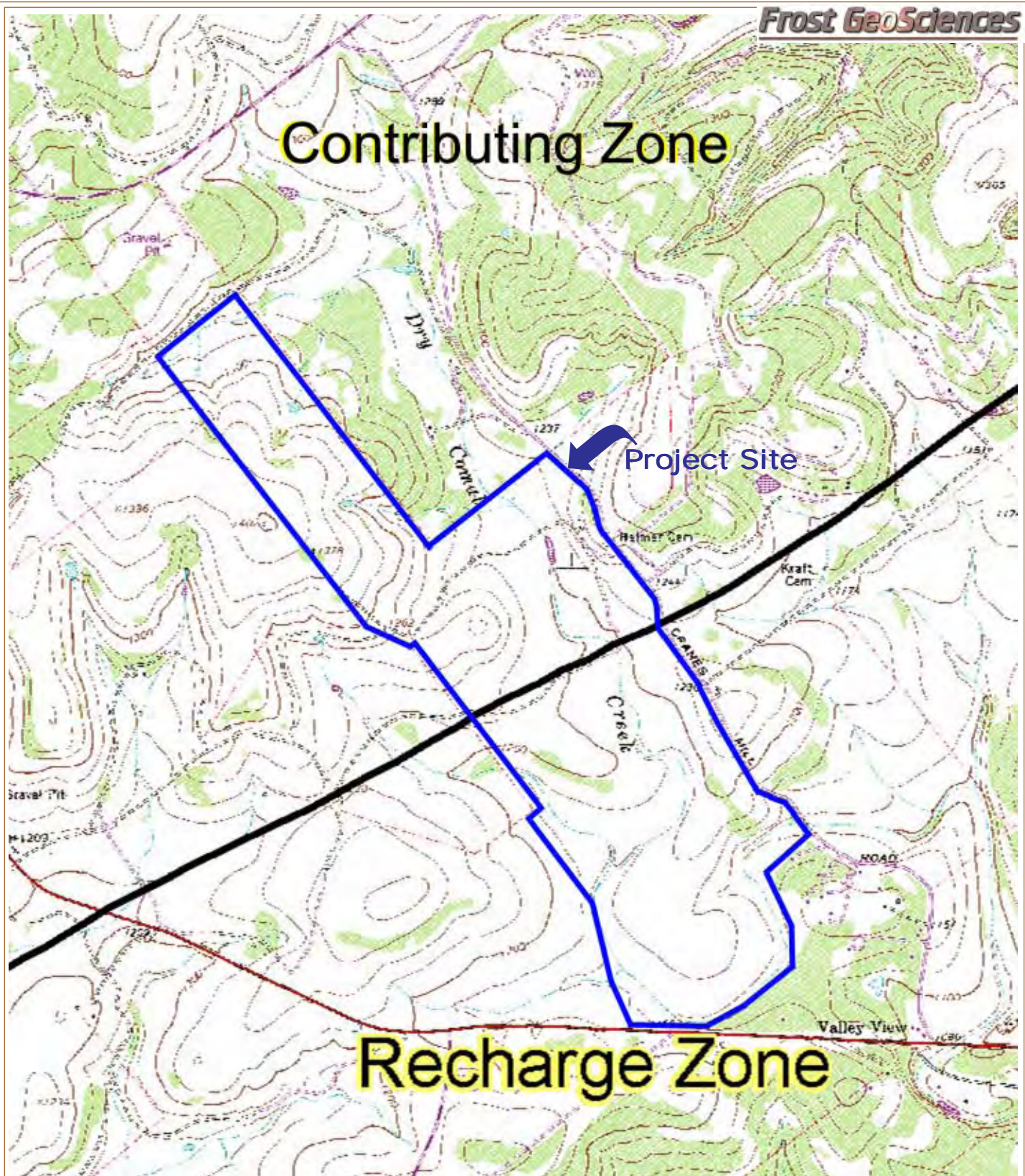
**PROJECT NO.:**

FGSE-E14208

**DATE:**

January 7, 2015



**PROJECT NAME:**

Geologic Site Assessment (WPAP)  
for Regulated Activities / Development on the  
Edwards Aquifer Recharge / Transition Zone  
Meyer Tract  
Comal County, Texas

EAA-Edwards Aquifer Recharge and Contributing  
Zone Map, Smithson Valley, Texas Quadrangle  
(1999)

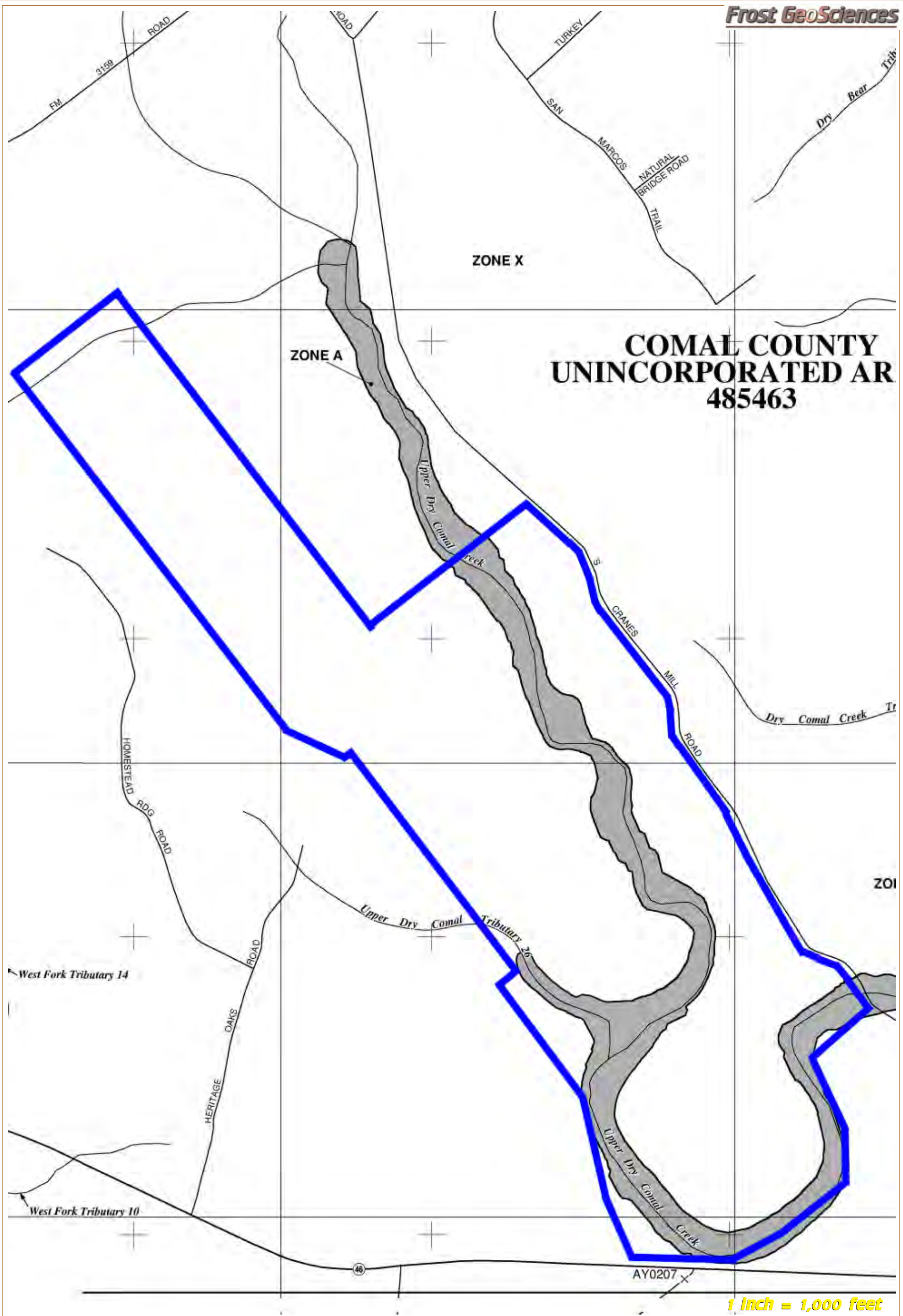
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FGS-E14208

**DATE:**

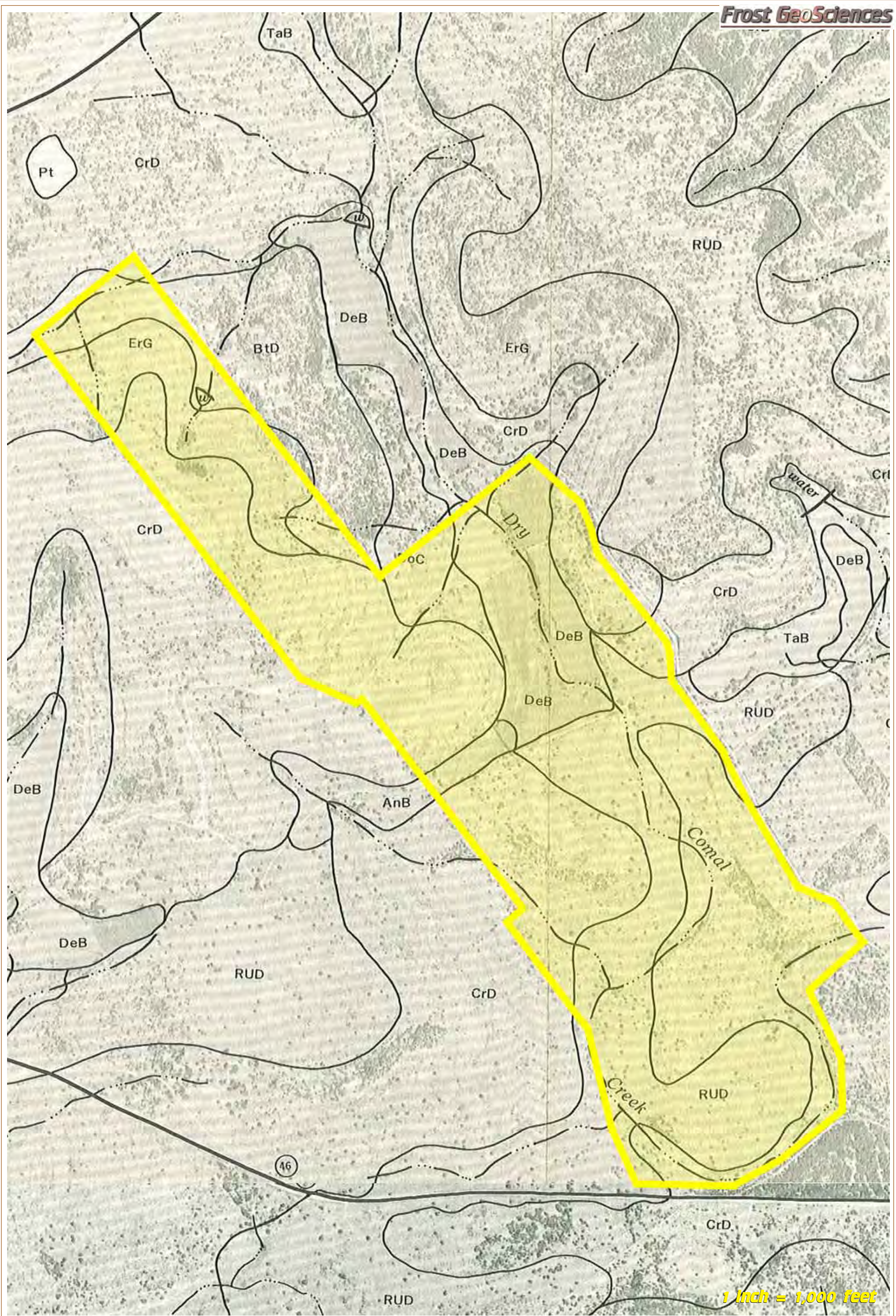
January 7, 2015





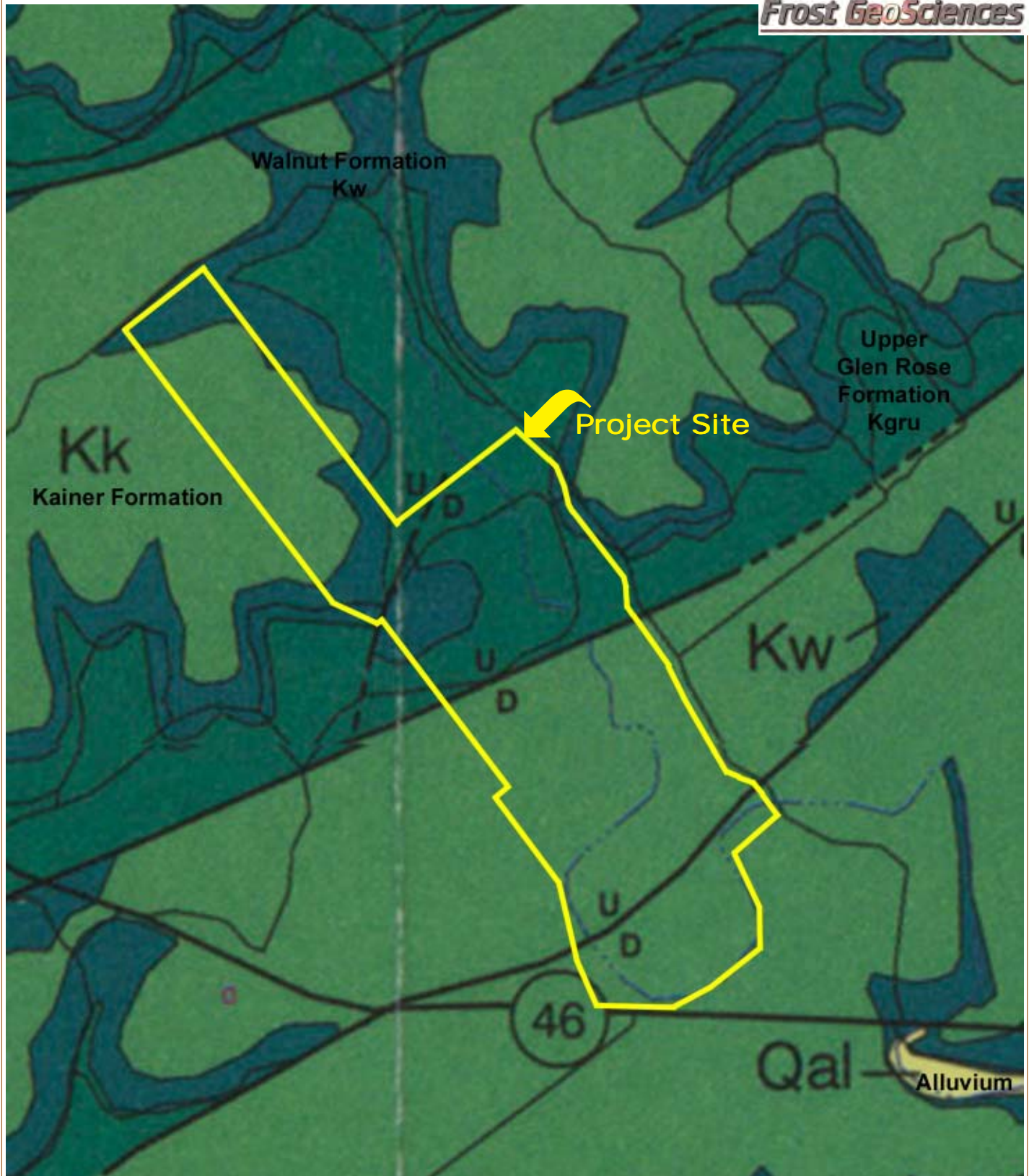
<b>PROJECT NAME:</b> Geologic Site Assessment (WPAP) for Regulated Activities / Development on the Edwards Aquifer Recharge / Transition Zone Meyer Tract Comal County, Texas		Flood Insurance Rate Map (FIRM) Community Panel #s 48187C0245F Revised 9/29/2009	
<b>PROJECT NO.:</b> FGS-E14208		<b>DATE:</b> January 7, 2015	





<b>PROJECT NAME:</b> Geologic Site Assessment (WPAP) for Regulated Activities / Development on the Edwards Aquifer Recharge / Transition Zone Meyer Tract Comal County, Texas		<b>Soils Map</b> United States Department of Agriculture Soil Survey of Comal and Hays County, Texas (1984)	
<b>PROJECT NO.:</b> FGS-E14208		<b>DATE:</b>	January 7, 2015





**PROJECT NAME:**  
 Geologic Site Assessment (WPAP)  
 for Regulated Activities / Development on the  
 Edwards Aquifer Recharge / Transition Zone  
 Meyer Tract  
 Comal County, Texas

Bureau of Economic Geology  
 Geologic Map of the New Braunfels 30 X 60  
 Minute Quadrangle (2000)

**PROJECT NO.:**  
 FGS-E14208

**DATE:**  
 January 7, 2015

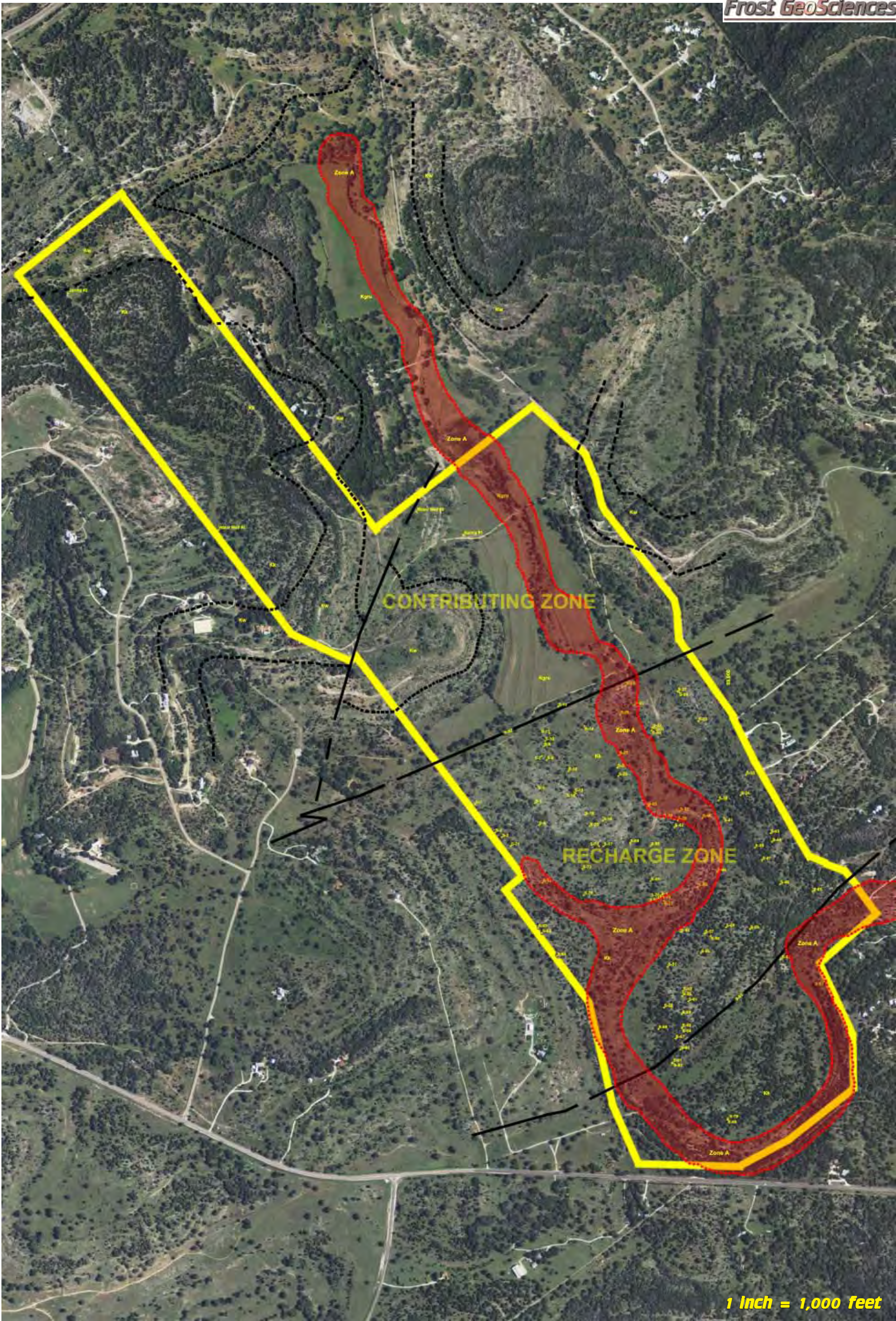


**Geologic Site Assessment (WPAP)  
for Regulated Activities / Development on the  
Edwards Aquifer Recharge / Transition Zone  
Meyer Tract  
Comal County, Texas**

**PROJECT NO.:** FGS-E14208

**DATE:** January 7, 2015





<b>PROJECT NAME:</b> Geologic Site Assessment (WPAP) for Regulated Activities / Development on the Edwards Aquifer Recharge / Transition Zone Meyer Tract Comal County, Texas	2012 Aerial Photograph with PRFs National Agricultural Imagery Program	
	<b>PROJECT NO.:</b> FGS-E14208	<b>DATE:</b> January 7, 2015





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Environmental & Geologic Consulting  
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# Site Geologic Map

Geologic Site Assessment (WPAP)  
for Regulated Activities / Development on the  
Edwards Aquifer Recharge / Transition Zone  
for the  
Meyer Tract  
Comal County, Texas

Frost GeoSciences, Inc. Control # FGS-14208

## Legend

- Fill

-

Fill Material

Qal

-

Alluvium

Kau

-

Austin Chalk

Kef

-

Eagle Ford Shale

Kbu

-

Buda Limestone

Kdr

-

Del Rio Clay

Kgl

-

Georgetown Limestone

Kep

-

Edwards Person Limestone

Kek

-

Edwards Kainer Limestone

Kw

-

Walnut Formation

Kgru

-

Upper Glen Rose Formation

S-#

-

Potential Recharge Feature (PRF)

-

Formation Contact

-

100-Year Floodplain - Zone A

-

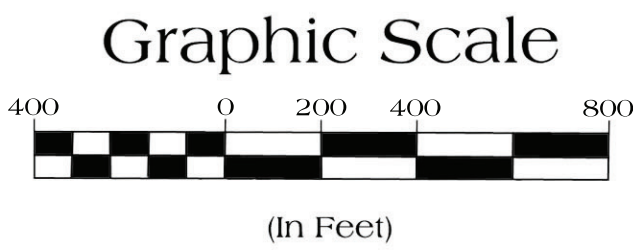
100-Year Floodplain - Zone AE

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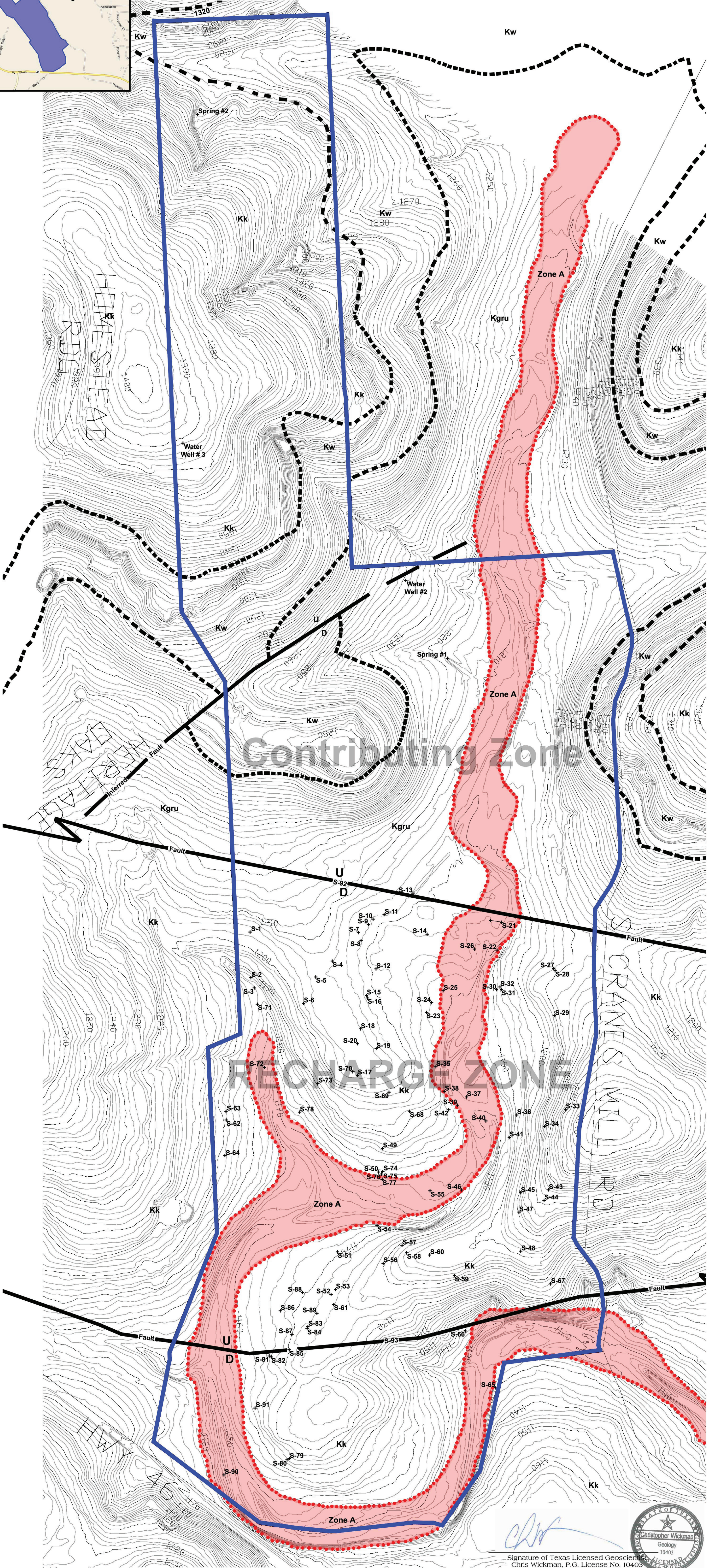
Other Flood Hazard Area - Zone X (shaded)

Floodplain Information Obtained From  
FIRM: Flood Insurance Rate Map  
Comal County, Texas: Panel # 48091C0245F, Revised 9/2/2009

Fault Information Obtained From:  
Bureau of Economic Geology, Geologic Atlas of Texas, San Antonio Sheet (1983)  
U.S. Geological Survey, Water Resources Investigations Report 95-4030 (1995)  
Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle (2000)



1 inch = 400 feet  
Representative Fraction 1:4800  
Contour Interval - 2 feet



Signature of Texas Licensed Geoscientist  
Chris Wickman, P.G. License No. 10403

STATE OF TEXAS

Geology

10403

Chris Wickman



**MODIFICATION OF A  
PREVIOUSLY APPROVED  
WATER POLLUTION  
ABATEMENT PLAN (TCEQ-  
0590)**



# Modification of a Previously Approved Plan

## Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Transition Zone and Relating to 30 TAC 213.4(j), Effective June 1, 1999

***To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.***

***Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.***

## Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This request for a **Modification of a Previously Approved Plan** is hereby submitted for TCEQ review and executive director approval. The request was prepared by:

Print Name of Customer/Agent: Todd Blackmon, P.E.

Date: 12/5/2024

Signature of Customer/Agent:



## Project Information

1. Current Regulated Entity Name: Meyer Ranch Unit 16  
Original Regulated Entity Name: Meyer Ranch Unit 13  
Regulated Entity Number(s) (RN): 109684928  
Edwards Aquifer Protection Program ID Number(s): 13001694  
☒ The applicant has not changed and the Customer Number (CN) is: 605323831  
☐ The applicant or Regulated Entity has changed. A new Core Data Form has been provided.
2. ☒ **Attachment A: Original Approval Letter and Approved Modification Letters.** A copy of the original approval letter and copies of any modification approval letters are attached.



3. A modification of a previously approved plan is requested for (check all that apply):
- ☐ Physical or operational modification of any water pollution abatement structure(s) including but not limited to ponds, dams, berms, sewage treatment plants, and diversionary structures;
  - ☐ Change in the nature or character of the regulated activity from that which was originally approved or a change which would significantly impact the ability of the plan to prevent pollution of the Edwards Aquifer;
  - ☒ Development of land previously identified as undeveloped in the original water pollution abatement plan;
  - ☐ Physical modification of the approved organized sewage collection system;
  - ☐ Physical modification of the approved underground storage tank system;
  - ☐ Physical modification of the approved aboveground storage tank system.
4. ☒ Summary of Proposed Modifications (select plan type being modified). If the approved plan has been modified more than once, copy the appropriate table below, as necessary, and complete the information for each additional modification.

<b><i>WPAP Modification</i></b>	<b><i>Approved Project</i></b>	<b><i>Proposed Modification</i></b>
<b><i>Summary</i></b>		
Acres	<u>156.5</u>	<u>132.49</u>
Type of Development	<u>Residential</u>	<u>Residential</u>
Number of Residential Lots	<u>230</u>	<u>160</u>
Impervious Cover (acres)	<u>40.87</u>	<u>38.47</u>
Impervious Cover (%)	<u>26.1</u>	<u>29.0</u>
Permanent BMPs	<u>Batch Detention</u>	<u>Batch Detention</u>
Other	<u>N/A</u>	<u>N/A</u>

<b><i>SCS Modification</i></b>	<b><i>Approved Project</i></b>	<b><i>Proposed Modification</i></b>
<b><i>Summary</i></b>		
Linear Feet	_____	_____
Pipe Diameter	_____	_____
Other	_____	_____



**AST Modification  
Summary**

**Approved Project**

**Proposed Modification**

Number of ASTs

\_\_\_\_\_

\_\_\_\_\_

Volume of ASTs

\_\_\_\_\_

\_\_\_\_\_

Other

\_\_\_\_\_

\_\_\_\_\_

**UST Modification  
Summary**

**Approved Project**

**Proposed Modification**

Number of USTs

\_\_\_\_\_

\_\_\_\_\_

Volume of USTs

\_\_\_\_\_

\_\_\_\_\_

Other

\_\_\_\_\_

\_\_\_\_\_

5. ☒ **Attachment B: Narrative of Proposed Modification.** A detailed narrative description of the nature of the proposed modification is attached. It discusses what was approved, including any previous modifications, and how this proposed modification will change the approved plan.
6. ☒ **Attachment C: Current Site Plan of the Approved Project.** A current site plan showing the existing site development (i.e., current site layout) at the time this application for modification is attached. A site plan detailing the changes proposed in the submitted modification is required elsewhere.
- ☐ The approved construction has not commenced. The original approval letter and any subsequent modification approval letters are included as Attachment A to document that the approval has not expired.
- ☐ The approved construction has commenced and has been completed. Attachment C illustrates that the site was constructed as approved.
- ☐ The approved construction has commenced and has been completed. Attachment C illustrates that the site was **not** constructed as approved.
- ☒ The approved construction has commenced and has **not** been completed. Attachment C illustrates that, thus far, the site was constructed as approved.
- ☐ The approved construction has commenced and has **not** been completed. Attachment C illustrates that, thus far, the site was **not** constructed as approved.
7. ☐ The acreage of the approved plan has increased. A Geologic Assessment has been provided for the new acreage.
- ☒ Acreage has not been added to or removed from the approved plan.
8. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.



**ATTACHMENT A**



Jon Niermann, *Chairman*  
Emily Lindley, *Commissioner*  
Bobby Janecka, *Commissioner*  
Erin E. Chancellor, *Interim Executive Director*



## TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

*Protecting Texas by Reducing and Preventing Pollution*

March 31, 2023

Mr. James Wilson  
CCD Meyer Ranch Land, LLC.  
1715A West Diehl Road  
Naperville, Illinois 60563

Re: Edwards Aquifer, Comal County

NAME OF PROJECT: Meyer Ranch Unit 13; Located approximately 0.6-miles west of S. Cranes Mill Road and Incrociato Intersection; Comal County, Texas

TYPE OF PLAN: Request for Modification of an Approved Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer

Regulated Entity No. RN109684928; Additional ID No. 13001694

Dear Mr. Wilson:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the WPAP Modification application for the above-referenced project submitted to the San Antonio Regional Office by Pape-Dawson, Inc. on behalf of CCD Meyer Ranch Land, LLC. on January 23, 2023. Final review of the WPAP was completed after additional material was received on March 22, 2023. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) were selected and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

### BACKGROUND

The Meyer Ranch Phases 1 through 5 WPAP that was approved by letter dated October 30, 2017 (EAPP ID 13000427). The residential project was approved for approximately 28.92-acres of impervious cover within a 365.56-acre site for 220-single family homes with associated roads, drives and utilities.

Meyer Ranch Unit 11 and Unit 12 WPAPMOD was approved letter dated January 7, 2023 (14001423-13001424). The WPAPMOD approved for constructing 235 single-family homes and associated grading, excavating, and installation of associated utilities and streets. The approved impervious cover was 40.41-acres (31.8 percent) on a 127-acres site and is treated by four (4) batch detention basins and five (5) vegetative filter strips.



### PROJECT DESCRIPTION

The proposed single-family residential project will have an area of approximately 156.5-acres. It will include the construction of 230 single-family lots, grading, excavation and installation of associated streets and utilities. The impervious cover will be 40.87-acres (26.1 percent). Project wastewater will be disposed of by conveyance to the existing Meyer Ranch Wastewater Treatment Center, owned and operated by the CCD Meyer Ranch Land, LLC.

### PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, one proposed Batch Detention Basin and five (5) existing Batch Detention basins (EAPP# 14001423-13001424), designed using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005), will be constructed to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 36,685 pounds of TSS generated from the 40.87-acres of impervious cover. The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project.

### GEOLOGY

The site is located within the Kainer Formation of the Edwards Group and the Upper member of the Glen Rose Limestone. A site investigation conducted on March 9, 2023 revealed the site was generally as described in the geologic assessment. The geologic assessment indicates that no sensitive, natural geologic features were identified on the site.

### SPECIAL CONDITIONS

- I. This modification is subject to all Special and Standard Conditions listed in the WPAP approval letter dated October 30, 2017, and January 7, 2022.
- II. All permanent pollution abatement measures shall be operational prior to occupancy of the facilities.
- III. All sediment and/or media removed from the water quality basin during maintenance activities shall be properly disposed of according to 30 TAC 330 or 30 TAC 335, as applicable.

### STANDARD CONDITIONS

1. Pursuant to Chapter 7 Subchapter C of the Texas Water Code, any violations of the requirements in 30 TAC Chapter 213 may result in administrative penalties.
2. The holder of the approved Edwards Aquifer protection plan must comply with all provisions of 30 TAC Chapter 213 and all best management practices and measures contained in the approved plan. Additional and separate approvals, permits, registrations and/or authorizations from other TCEQ Programs (i.e., Stormwater, Water Rights, UIC) can be required depending on the specifics of the plan.
3. In addition to the rules of the Commission, the applicant may also be required to comply with state and local ordinances and regulations providing for the protection of water quality.

#### Prior to Commencement of Construction:

4. Within 60 days of receiving written approval of an Edwards Aquifer Protection Plan, the applicant must submit to the San Antonio Regional Office, proof of recordation of notice in the county deed records, with the volume and page number(s) of the county deed records of



the county in which the property is located. A description of the property boundaries shall be included in the deed recordation in the county deed records. A suggested form (Deed Recordation Affidavit, TCEQ-0625) that you may use to deed record the approved WPAP is enclosed.

5. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved WPAP and this notice of approval shall be maintained at the project location until all regulated activities are completed.
6. Modification to the activities described in the referenced WPAP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
7. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the San Antonio Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the date on which the regulated activity will commence, the name of the approved plan and program ID number for the regulated activity, and the name of the prime contractor with the name and telephone number of the contact person. The executive director will use the notification to determine if the approved plan is eligible for an extension.
8. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved WPAP, must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established, and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.
9. All borings with depths greater than or equal to 20 feet must be plugged with non-shrink grout from the bottom of the hole to within three (3) feet of the surface. The remainder of the hole must be backfilled with cuttings from the boring. All borings less than 20 feet must be backfilled with cuttings from the boring. All borings must be backfilled or plugged within four (4) days of completion of the drilling operation. Voids may be filled with gravel.

During Construction:

10. During the course of regulated activities related to this project, the applicant or agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.
11. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 6, above.
12. If any sensitive feature (caves, solution cavities, sink holes, etc.) is discovered during construction, all regulated activities near the feature must be suspended immediately. The applicant or his agent must immediately notify the San Antonio Regional Office of the discovery of the feature. Regulated activities near the feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the feature and the aquifer from potentially adverse impacts to water quality. The plan must be sealed, signed, and dated by a Texas Licensed Professional Engineer.
13. No well exists on site. All water wells, including injection, dewatering, and monitoring wells must be in compliance with the requirements of the Texas Department of Licensing and



Regulation under Title 16 TAC Chapter 76 (relating to Water Well Drillers and Pump Installers) and all other locally applicable rules, as appropriate.

14. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.
15. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.
16. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
17. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.

After Completion of Construction:

18. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the San Antonio Regional Office within 30 days of site completion.
19. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. The regulated entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred. A copy of the transfer of responsibility must be filed with the executive director through San Antonio Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.
20. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Edwards Aquifer protection plan. If the new owner intends to commence any new regulated activity on the site, a new Edwards Aquifer protection plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.
21. An Edwards Aquifer protection plan approval or extension will expire, and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Edwards Aquifer protection plan must be submitted to the San Antonio Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.
22. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.



Mr. James Wilson

Page 5

March 31, 2023

information, please contact Mr. Drew Evans, PG of the Edwards Aquifer Protection Program of the San Antonio Regional Office at (210) 403-4053.

Sincerely,



Lillian Butler, Section Manager  
Edwards Aquifer Protection Program  
Texas Commission on Environmental Quality

LIB/de

Enclosures: Deed Recordation Affidavit, Form TCEQ-0625  
Change in Responsibility for Maintenance of Permanent BMPs, Form TCEQ-10263

cc: Mr. Dennis Rion, P.E., Pape-Dawson Engineers, Inc.



**ATTACHMENT B**



## **MEYER RANCH UNIT 16**

### **Water Pollution Abatement Plan Modification**

#### **Attachment B – Narrative of Proposed Modification**

The Meyer Ranch Unit 16 Water Pollution Abatement Plan Modification (WPAP MOD) is a modification to the Meyer Ranch Unit 13 Water Pollution Abatement Plan Modification which was approved by the Texas Commission on Environmental Quality (TCEQ) on March 31, 2023 (EAPP ID No. 13001694). This approval granted approximately 40.87-acres of impervious cover on a 156.5-acre site for construction of 230 single-family residential homes with associated roads, driveways, sidewalks, and utilities. This proposed modification will not have any significant impact on the previously approved developments. No modifications to previously approved PBMPs are proposed.

The Meyer Ranch Unit 16 Water Pollution Abatement Plan Modification (WPAP MOD) proposes the construction of a single-family residential subdivision on approximately 79.97-acres in Comal County, Texas. The site is located approximately 0.9 miles north northwest of the intersection of S Cranes Mill Rd. and Incrociato. The site is bound by Meyer Ranch Unit 13 to the south, undeveloped land to the north, and large-lot, single-family residences to the east and west. The site is undeveloped and lies within the Dry Comal Creek watershed adjacent to the 100-year floodplain. There were no naturally occurring sensitive geologic features identified in the Geologic Assessment.

This WPAP MOD proposes additional clearing, grading, excavation, installation of utilities and drainage improvements, construction of a batch detention basin, one hundred and sixty (160) single-family homes and associated streets sidewalks and driveways. Approximately 38.47 acres of impervious cover, or 29.0% of the 132.49-acre project limits, within the 250.85-acre legal limits, are proposed for construction in this WPAP MOD. The proposed Permanent Best Management Practices (PBMPs) for stormwater treatment are one (1) proposed batch detention basin and one (1) previously approved batch detention basin (Unit 13 Basin 1) (EAPP ID No 13001694), which are designed in accordance with the TCEQ's Technical Guidance Manual (TGM) RG-348 (2005) to remove 80% of the increase in Total Suspended Solids (TSS) from the site.



**ATTACHMENT C**



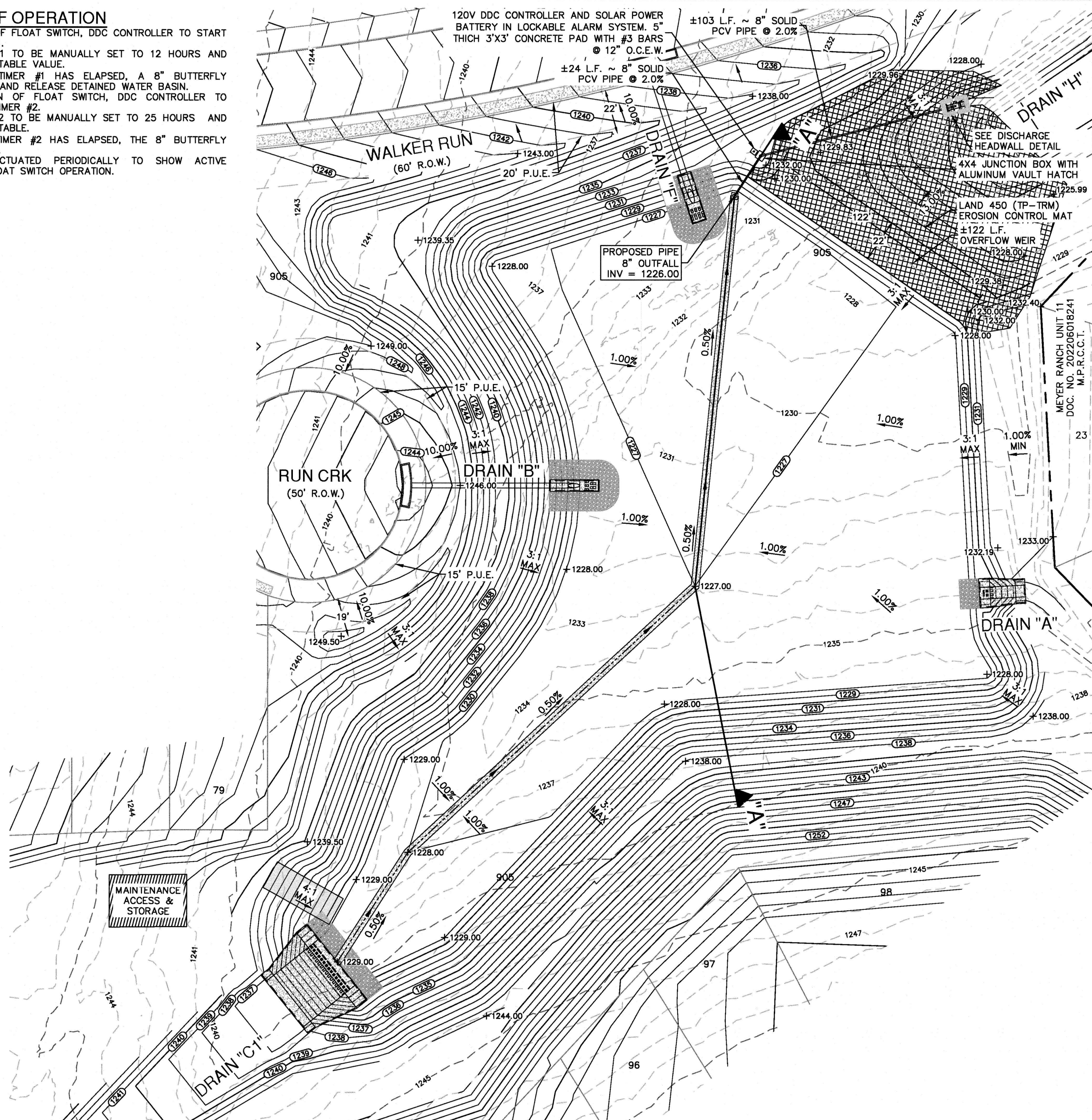
1. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. THE LOCATION OF EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
2. ALL CONCRETE FOR TxDOT DRAINAGE STRUCTURES SHALL MEET TxDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
3. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
4. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
5. EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING. 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF NEW BRUNSWICK WILL ACCEPT.
6. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL DATA AND ADVISE THE CONTRACTOR OF ANY RECOMMENDATIONS FOR THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL BE IN ACCORDANCE WITH THE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH THE TRENCH AND SHIELDING PERMITS AND THE ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRICAL, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. IF ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE OWNER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS MINIMUM 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

1. UPON COMPLETION OF CONSTRUCTION, AND IN ACCORDANCE WITH TCEQ REGULATIONS, ALL PERMANENT BMP'S MUST BE CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER.
2. ALL AREAS DISTURBED AS PART OF CONSTRUCTION OF BASIN SHALL BE REVEGETATED PRIOR TO COMPLETION.
3. BASIN HAS BEEN DESIGNED USING TSS REMOVAL AND BMP SIZING CALCULATIONS AS PER THE TCEQ TGM RG-348 (2005).
4. BASIN PLAN DEPICTS MINIMUM INTERIOR DIMENSIONS (LENGTH, WIDTH & HEIGHT FOR TCEQ REVIEW & APPROVAL.
5. BASIN DRAWDOWN IS CONTROLLED BY THE 8" PVC PIPE. BASIN DRAWDOWN WILL OCCUR IN APPROXIMATELY 22 HOURS.
6. CONTRACTOR TO SET THE VALVE POSITION TO FULLY OPEN.

1. UPON ACTIVATION OF FLOAT SWITCH, DDC CONTROLLER TO START DETENTION TIMER #1.
2. DETENTION TIMER #1 TO BE MANUALLY SET TO 12 HOURS AND TO BE ADJUSTABLE.
3. WHEN DETENTION TIMER #1 HAS ELAPSED, A 8" BUTTERFLY VALVE IS TO OPEN AND RELEASE DETAINED WATER BASIN.
4. UPON DEACTIVATION OF FLOAT SWITCH, DDC CONTROLLER TO START DETENTION TIMER #2.
5. DETENTION TIMER #2 TO BE MANUALLY SET TO 25 HOURS AND TO BE ADJUSTABLE.
6. WHEN DETENTION TIMER #2 HAS ELAPSED, THE 8" BUTTERFLY VALVE IS TO CLOSE.
7. VALVE TO BE ACTUATED PERIODICALLY TO SHOW ACTIVE REGARDLESS OF FLOAT SWITCH OPERATION.



PROJECT LIMITS

100 YR FLOODPLAIN

EXISTING CONTOUR

PROPOSED CONTOUR

PROPOSED WATER

PROPOSED SEWER

PROPOSED STORM DRAIN

650

W

SS

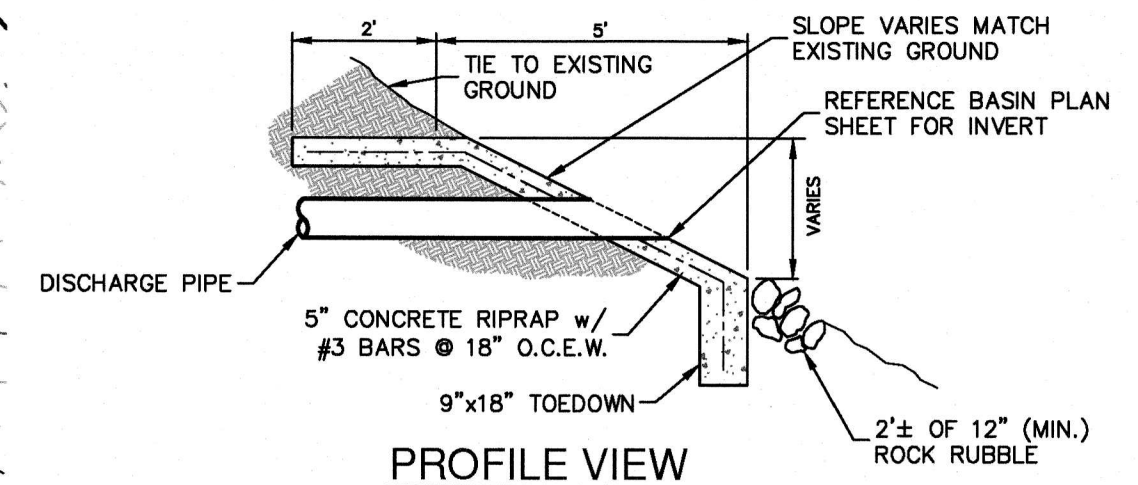
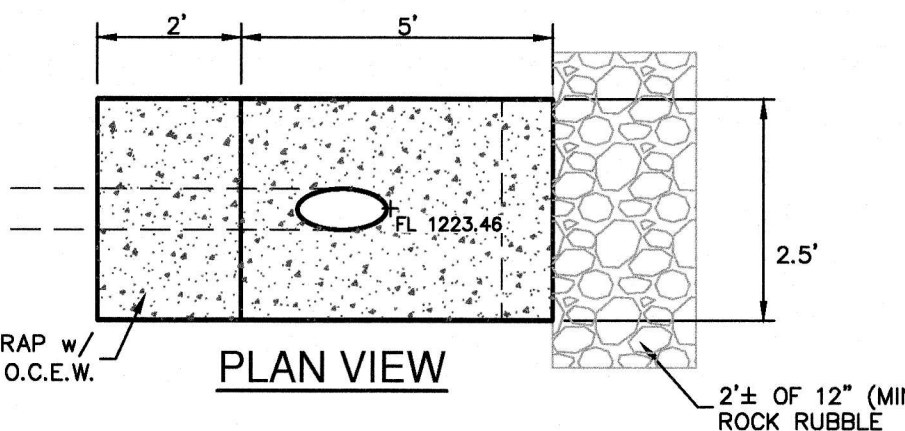
The plan view shows a horizontal section of the site. At the top, a solid line represents the project limits. Below it, a dashed line indicates the 100-year floodplain. A series of dashed lines represent existing contours, with one labeled '650'. A solid line represents the proposed contour. A horizontal line labeled 'W' indicates the proposed water line. A horizontal line labeled 'SS' indicates the proposed sewer line, with a circular manhole symbol. The proposed storm drain is shown as a thick black line with two rectangular structures, likely manholes or catch basins, located near the bottom right of the plan.

FLOW ARROW

GAS, ELECTRIC, TELEPHONE &  
CABLE TELEVISION EASEMENT

CURLEX SINGLE NET EROSION  
CONTROL BLANKETS

LANDLOK 450 EROSION CONTROL  
MAT



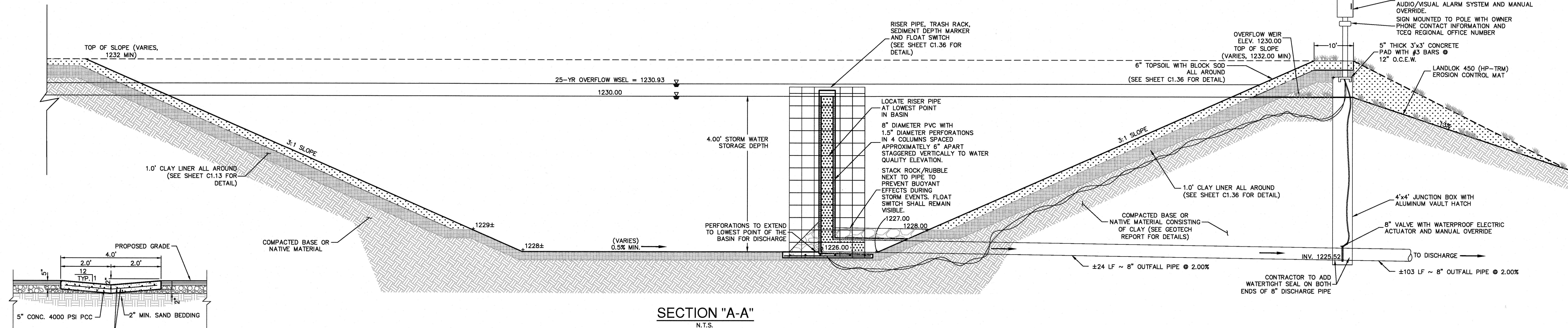
NOT-TO-SCALE

SCALE: 1" = 40'

0' 40' 80' 120'

A horizontal scale bar with four segments. The first segment (0 to 40 feet) is divided into four equal parts, each with a black and white checkerboard pattern. The second segment (40 to 80 feet) is solid black. The third segment (80 to 120 feet) is solid white. The fourth segment (120 to 160 feet) is solid black. Vertical tick marks are at 0, 40, 80, and 120 feet. The text "SCALE: 1" = 40'" is centered above the first segment.
$$\begin{aligned} Q_{25} &= (C_w)(L)(h)^{\frac{3}{2}} \\ Q_{25} &= 295.4 \text{ cfs} \\ C &= 2.70 \\ L &= 122 \text{ ft} \\ 295.4 &= (2.70)(122)(h)^{\frac{3}{2}} \\ h &= 0.93 \text{ ft} \end{aligned}$$

BASIN WATERSHED AREA	=	2,738,617 SF (62.91 AC.)
RUN OFF DEPTH	=	1.38 IN
REQUIRED CAPTURE VOLUME	=	163,679 CF
BASIN STORM WATER DEPTH	=	4.00 FT
BASIN CAPTURE VOLUME	=	170,637 CF



SECTION "A-A"  
N.T.S.

THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE POLLUTION ABATEMENT SIZING AND TREATMENT REQUIREMENTS OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S EDWARDS AQUIFER TECHNICAL GUIDANCE MANUAL.

THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF POLLUTION ABATEMENT ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.

EXHIBIT 5

PLAT NO. \_\_\_\_\_  
JOB NO. 30010-20  
DATE DECEMBER 2022  
DESIGNER CL  
CHECKED HE DRAWN BH  
SHEET C1.23



**PAPE-DAWSON  
ENGINEERS**

**MEYER RANCH UNIT 13**  
**COMAL COUNTY, TEXAS**

BASIN 1 PLAN

FOR PERMIT

FOR PERMIT



SUMMARY OF PERMANENT POLLUTION ABATEMENT MEASURES

1. TEMPORARY BMPs WILL BE MAINTAINED UNTIL THE SITE IMPROVEMENTS ARE COMPLETED AND THE SITE HAS BEEN STABILIZED, INCLUDING SUFFICIENT VEGETATION BEING ESTABLISHED.
2. DURING CONSTRUCTION, TO THE EXTENT PRACTICABLE, CONTRACTOR SHALL MINIMIZE THE AREA OF SOIL DISTURBANCE. AREAS OF DISTURBED SOIL SHALL BE REVEGETATED TO STABILIZE SOIL USING SOLID SOD IN A STAGGERED PATTERN. SEE DETAIL ON TEMPORARY POLLUTION ABATEMENT DETAIL SHEET AND REFER TO SECTION 1.3.11 IN TCEQ'S TECHNICAL GUIDANCE MANUAL RG-348 (2005). SOD SHOULD BE USED IN CHANNELS AND ON SLOPES >15%. THE CONTRACTOR MAY SUBSTITUTE THE USE OF SOD WITH THE PLACEMENT OF TOP SOIL AND FRILABLE SEED BED WITH A PROTECTIVE MATTING OR HYDRAULIC MULCH ALONG WITH WATERING UNTIL VEGETATION IS ESTABLISHED. APPLICATIONS AND PRODUCTS SHALL BE THOSE APPROVED BY TxDOT AS OF FEBRUARY 2001 AND IN COMPLIANCE WITH TGM RG-348 (2005) GUIDELINES. IRRIGATION MAY BE REQUIRED IN ORDER TO ESTABLISH SUFFICIENT VEGETATION.
3. FOR DISTURBED AREAS WHERE INSUFFICIENT SOIL EXISTS TO ESTABLISH VEGETATION, CONTRACTOR SHALL PLACE A MINIMUM OF 6" OF TOPSOIL PRIOR TO REVEGETATION.
4. PERMANENT BMPs FOR THIS SITE INCLUDE ONE (1) PROPOSED BATCH DETENTION BASIN AND FOUR (4) EXISTING BATCH DETENTION BASINS. ALL PERMANENT BMPs HAVE BEEN DESIGNED TO REMOVE AT LEAST 80% OF THE INCREASED TOTAL SUSPENDED SOLIDS (TSS) FOR THE 145.79 ACRES IN ACCORDANCE WITH THE TCEQ'S TECHNICAL GUIDANCE MANUAL (TGM) RG-348 (2005).
5. TYPICAL PROPOSED SLOPES ON THIS PROJECT RANGE FROM APPROXIMATELY 1% TO 30%.

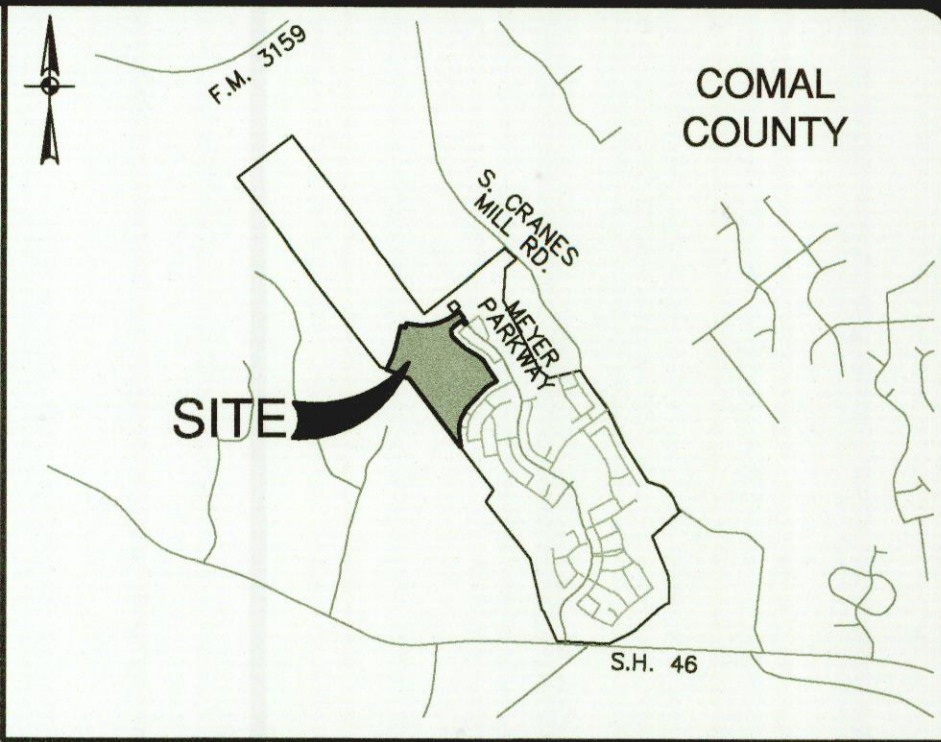
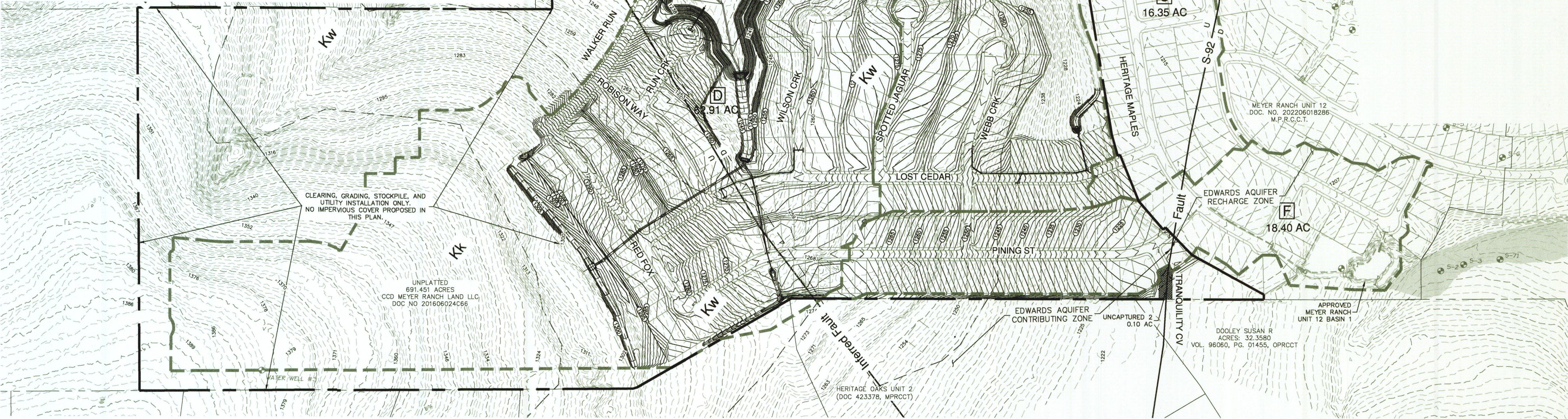
PERMANENT POLLUTION ABATEMENT MEASURES

1. SILT FENCING AND ROCK BERMS, WHERE APPROPRIATE, WILL BE MAINTAINED UNTIL THE ROADWAY, UTILITY, DRAINAGE IMPROVEMENTS, AND BUILDING CONSTRUCTION ARE COMPLETED.
2. ENERGY DISSIPATORS (TO HELP REDUCE EROSION) WILL BE PROVIDED AT POINTS OF CONCENTRATED DISCHARGE WHERE EXCESSIVE VELOCITIES MAY BE ENCOUNTERED.
3. THIS PROJECT DOES NOT INCLUDE THE INSTALLATION OF ABOVE GROUND STORAGE TANKS (AST) WITH VOLUME(S) GREATER THAN OR EQUAL TO 500 GALLONS.
4. DRAINAGE PATTERNS ARE ILLUSTRATED BY FLOW ARROWS. SLOPES VARY THROUGHOUT THE SITE; TYPICAL SLOPES IN THIS PROJECT WILL RANGE FROM 1% TO 30%.

PROJECT LIMITS  
(156.5 ACRES)

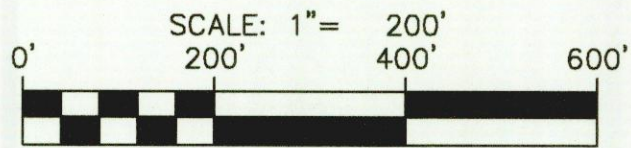
Treatment Summary by Watershed

Watershed	Total Watershed Area (ac.)	Previously Approved Impervious cover (ac.)	Proposed Impervious Cover (ac.)	Total Impervious Cover Treated (ac.)	PBMP	Required TSS Removal Annually (lbs)	TSS Removed Annually (lbs)
A	7.64	4.46	0.51	4.97	Approved Batch Detention Basin "Unit 11 Basin 1"	4,461	4,764
B	31.13	6.71	13.52	20.23	Approved Batch Detention Basin "Unit 11 Basin 2"	18,158	18,334
C	16.35	9.39	1.00	10.39	Approved Batch Detention Basin "Unit 11 Basin 3"	9,326	9,312
D	62.91		20.53	20.53	Proposed Batch Detention Basin "Unit 13 Basin 1"	18,428	20,587
F	18.40	7.02	4.94	11.96	Approved Batch Detention Basin "Unit 12 Basin 1"	10,735	10,839
UNCAP	0.37		0.37	0.37	overtreatment	332	
TOTAL	136.80	27.58	40.87	68.45		61,441	63,836



LOCATION MAP

NOT-TO-SCALE



LEGEND

- PROJECT LIMITS  
EXISTING CONTOUR  
PROPOSED GRADING  
100 YR FLOODPLAIN  
DRAINAGE AREA BOUNDARY  
PROPOSED DIRECTION OF FLOW  
WATERSHED DESIGNATION  
100-YR INUNDATION AREA  
UNCAPTURED AREA  
POTENTIAL RECHARGE FEATURE  
EDWARDS KAINER LIMESTONE  
WALNUT FORMATION  
UPPER GLEN ROSE FORMATION  
FORMATION CONTACT

PAPE-DAWSON  
ENGINEERS

MEYER RANCH UNIT 13  
COMAL COUNTY, TEXAS  
WATER POLLUTION ABATEMENT PLAN MODIFICATION  
PERMANENT WATER POLLUTION ABATEMENT PLAN

PLAT NO. \_\_\_\_\_  
JOB NO. 30010-20  
DATE DECEMBER 2022  
DESIGNER CL  
CHECKED DRAWN WV  
SHEET 1 OF 1

EXHIBIT 3

FOR PERMIT



**WATER POLLUTION  
ABATEMENT PLAN  
APPLICATION FORM (TCEQ-  
0584)**



# Water Pollution Abatement Plan Application

## Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(b), Effective June 1, 1999

***To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.***

***Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.***

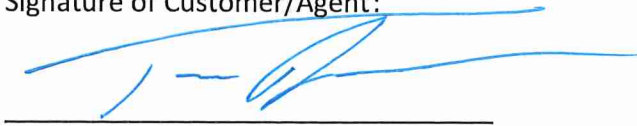
## Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Water Pollution Abatement Plan Application Form** is hereby submitted for TCEQ review and Executive Director approval. The form was prepared by:

Print Name of Customer/Agent: Todd Blackmon, P.E.

Date: 12/5/2024

Signature of Customer/Agent:



Regulated Entity Name: Meyer Ranch Unit 16

## Regulated Entity Information

1. The type of project is:

- ☒ Residential: Number of Lots: 160
- ☐ Residential: Number of Living Unit Equivalents: \_\_\_\_\_
- ☐ Commercial
- ☐ Industrial
- ☐ Other: \_\_\_\_\_

2. Total site acreage (size of property): 132.49

3. Estimated projected population: 640 (4 people per lot)

4. The amount and type of impervious cover expected after construction are shown below:



**Table 1 - Impervious Cover Table**

Impervious Cover of Proposed Project	Sq. Ft.	Sq. Ft./Acre	Acres
Structures/Rooftops	1,195,722	÷ 43,560 =	27.45
Parking		÷ 43,560 =	
Other paved surfaces	480,031	÷ 43,560 =	11.02
Total Impervious Cover	1,675,753	÷ 43,560 =	38.47

**Total Impervious Cover 38.47 ÷ Total Acreage 132.49 X 100 = 29.0% Impervious Cover**

5. ☒ **Attachment A - Factors Affecting Surface Water Quality.** A detailed description of all factors that could affect surface water and groundwater quality that addresses ultimate land use is attached.
6. ☒ Only inert materials as defined by 30 TAC §330.2 will be used as fill material.

### ***For Road Projects Only***

**Complete questions 7 - 12 if this application is exclusively for a road project.**

7. Type of project:

- ☐ TXDOT road project.
- ☐ County road or roads built to county specifications.
- ☐ City thoroughfare or roads to be dedicated to a municipality.
- ☐ Street or road providing access to private driveways.

8. Type of pavement or road surface to be used:

- ☐ Concrete
- ☐ Asphaltic concrete pavement
- ☐ Other: \_\_\_\_\_

9. Length of Right of Way (R.O.W.): \_\_\_\_\_ feet.

Width of R.O.W.: \_\_\_\_\_ feet.

L x W = \_\_\_\_\_ Ft<sup>2</sup> ÷ 43,560 Ft<sup>2</sup>/Acre = \_\_\_\_\_ acres.

10. Length of pavement area: \_\_\_\_\_ feet.

Width of pavement area: \_\_\_\_\_ feet.

L x W = \_\_\_\_\_ Ft<sup>2</sup> ÷ 43,560 Ft<sup>2</sup>/Acre = \_\_\_\_\_ acres.

Pavement area \_\_\_\_\_ acres ÷ R.O.W. area \_\_\_\_\_ acres x 100 = \_\_\_\_\_% impervious cover.

11. ☐ A rest stop will be included in this project.

☐ A rest stop will not be included in this project.



12. ☐ Maintenance and repair of existing roadways that do not require approval from the TCEQ Executive Director. Modifications to existing roadways such as widening roads/adding shoulders totaling more than one-half (1/2) the width of one (1) existing lane require prior approval from the TCEQ.

### ***Stormwater to be generated by the Proposed Project***

13. ☒ **Attachment B - Volume and Character of Stormwater.** A detailed description of the volume (quantity) and character (quality) of the stormwater runoff which is expected to occur from the proposed project is attached. The estimates of stormwater runoff quality and quantity are based on the area and type of impervious cover. Include the runoff coefficient of the site for both pre-construction and post-construction conditions.

### ***Wastewater to be generated by the Proposed Project***

14. The character and volume of wastewater is shown below:

<u>100%</u> Domestic	<u>33,600</u> Gallons/day
<u>      </u> % Industrial	<u>      </u> Gallons/day
<u>      </u> % Commingled	<u>      </u> Gallons/day
TOTAL gallons/day <u>33,600 (160 LUE x 210 gpd/LUE)</u>	

15. Wastewater will be disposed of by:

☐ On-Site Sewage Facility (OSSF/Septic Tank):

☐ **Attachment C - Suitability Letter from Authorized Agent.** An on-site sewage facility will be used to treat and dispose of the wastewater from this site. The appropriate licensing authority's (authorized agent) written approval is attached. It states that the land is suitable for the use of private sewage facilities and will meet or exceed the requirements for on-site sewage facilities as specified under 30 TAC Chapter 285 relating to On-site Sewage Facilities.

☐ Each lot in this project/development is at least one (1) acre (43,560 square feet) in size. The system will be designed by a licensed professional engineer or registered sanitarian and installed by a licensed installer in compliance with 30 TAC Chapter 285.

☒ Sewage Collection System (Sewer Lines):

☐ Private service laterals from the wastewater generating facilities will be connected to an existing SCS.

☐ Private service laterals from the wastewater generating facilities will be connected to a proposed SCS.

☒ The SCS was previously submitted on not required within the contributing zone.

☐ The SCS was submitted with this application.

☐ The SCS will be submitted at a later date. The owner is aware that the SCS may not be installed prior to Executive Director approval.



☒ The sewage collection system will convey the wastewater to the Meyer Ranch Water (name) Treatment Plant. The treatment facility is:

☒ Existing.

☐ Proposed.

16. ☒ All private service laterals will be inspected as required in 30 TAC §213.5.

## **Site Plan Requirements**

**Items 17 – 28 must be included on the Site Plan.**

17. ☒ The Site Plan must have a minimum scale of 1" = 400'.

Site Plan Scale: 1" = 200'.

18. 100-year floodplain boundaries:

☐ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.

☒ No part of the project site is located within the 100-year floodplain.

The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): DFIRM (Digital Flood Insurance Rate Map for Comal County, Texas and Incorporated Areas) Panel No. 48091C0245F, Dated 09.02.2009

19. ☒ The layout of the development is shown with existing and finished contours at appropriate, but not greater than ten-foot contour intervals. Lots, recreation centers, buildings, roads, open space, etc. are shown on the plan.

☐ The layout of the development is shown with existing contours at appropriate, but not greater than ten-foot intervals. Finished topographic contours will not differ from the existing topographic configuration and are not shown. Lots, recreation centers, buildings, roads, open space, etc. are shown on the site plan.

20. All known wells (oil, water, unplugged, capped and/or abandoned, test holes, etc.):

☒ There are 2 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply)

☐ The wells are not in use and have been properly abandoned.

☒ The wells are not in use and will be properly abandoned.

☐ The wells are in use and comply with 16 TAC §76.

☐ There are no wells or test holes of any kind known to exist on the project site.

21. Geologic or manmade features which are on the site:

☒ All sensitive geologic or manmade features identified in the Geologic Assessment are shown and labeled.

☐ No sensitive geologic or manmade features were identified in the Geologic Assessment.



☐ **Attachment D - Exception to the Required Geologic Assessment.** A request and justification for an exception to a portion of the Geologic Assessment is attached.

- 22. ☒ The drainage patterns and approximate slopes anticipated after major grading activities.
- 23. ☒ Areas of soil disturbance and areas which will not be disturbed.
- 24. ☒ Locations of major structural and nonstructural controls. These are the temporary and permanent best management practices.
- 25. ☒ Locations where soil stabilization practices are expected to occur.
- 26. ☐ Surface waters (including wetlands).
  - ☒ N/A
- 27. ☐ Locations where stormwater discharges to surface water or sensitive features are to occur.
  - ☒ There will be no discharges to surface water or sensitive features.
- 28. ☒ Legal boundaries of the site are shown.

### ***Administrative Information***

- 29. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.
- 30. ☒ Any modification of this WPAP will require Executive Director approval, prior to construction, and may require submission of a revised application, with appropriate fees.



**ATTACHMENT A**



## MEYER RANCH UNIT 16

### Water Pollution Abatement Plan Modification

#### Attachment A – Factors Affecting Water Quality

Potential sources of pollution that may reasonably be expected to affect the quality of storm water discharges from the site during construction include:

- Soil erosion due to the clearing of the site;
- Oil, grease, fuel and hydraulic fluid contamination from construction equipment and vehicle drippings;
- Hydrocarbons from asphalt paving operations;
- Miscellaneous trash and litter from construction workers and material wrappings;
- Concrete truck washout.
- Potential overflow/spills from portable toilets

Potential sources of pollution that may reasonably be expected to affect the quality of storm water discharges from the site after development include:

- Oil, grease, fuel and hydraulic fluid contamination from vehicle drippings;
- Dirt and dust which may fall off vehicles; and
- Miscellaneous trash and litter.



**ATTACHMENT B**



## **MEYER RANCH UNIT 16**

### **Water Pollution Abatement Plan Modification**

#### **Attachment B – Volume and Character of Stormwater**

Stormwater runoff will increase as a result of this development. For a 25-year storm event, the overall project will generate approximately 350 cfs. The runoff coefficient for the site changes from approximately 0.41 before development to 0.77 after development. Values are based on the Rational Method using runoff coefficients per the City of New Braunfels Drainage and Erosion Control Design Manual.



**TEMPORARY STORMWATER  
SECTION (TCEQ-0602)**



# Temporary Stormwater Section

## Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(b)(4)(A), (B), (D)(I) and (G); Effective June 1, 1999

***To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.***

***Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.***

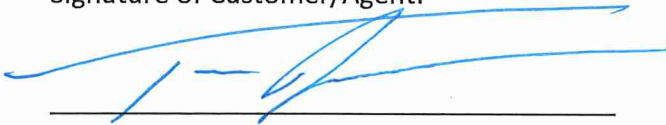
## Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Temporary Stormwater Section** is hereby submitted for TCEQ review and executive director approval. The application was prepared by:

Print Name of Customer/Agent: Todd Blackmon, P.E.

Date: 12/5/2024

Signature of Customer/Agent:



Regulated Entity Name: Meyer Ranch Unit 16

## Project Information

### Potential Sources of Contamination

*Examples: Fuel storage and use, chemical storage and use, use of asphaltic products, construction vehicles tracking onto public roads, and existing solid waste.*

1. Fuels for construction equipment and hazardous substances which will be used during construction:

☒ The following fuels and/or hazardous substances will be stored on the site: Construction Staging Area

These fuels and/or hazardous substances will be stored in:

- ☒ Aboveground storage tanks with a cumulative storage capacity of less than 250 gallons will be stored on the site for less than one (1) year.



- ☐ Aboveground storage tanks with a cumulative storage capacity between 250 gallons and 499 gallons will be stored on the site for less than one (1) year.
- ☐ Aboveground storage tanks with a cumulative storage capacity of 500 gallons or more will be stored on the site. An Aboveground Storage Tank Facility Plan application must be submitted to the appropriate regional office of the TCEQ prior to moving the tanks onto the project.
- ☐ Fuels and hazardous substances will not be stored on the site.
- 2. ☒ **Attachment A - Spill Response Actions.** A site specific description of the measures to be taken to contain any spill of hydrocarbons or hazardous substances is attached.
- 3. ☒ Temporary aboveground storage tank systems of 250 gallons or more cumulative storage capacity must be located a minimum horizontal distance of 150 feet from any domestic, industrial, irrigation, or public water supply well, or other sensitive feature.
- 4. ☒ **Attachment B - Potential Sources of Contamination.** A description of any activities or processes which may be a potential source of contamination affecting surface water quality is attached.

### ***Sequence of Construction***

- 5. ☒ **Attachment C - Sequence of Major Activities.** A description of the sequence of major activities which will disturb soils for major portions of the site (grubbing, excavation, grading, utilities, and infrastructure installation) is attached.
  - ☒ For each activity described, an estimate (in acres) of the total area of the site to be disturbed by each activity is given.
  - ☒ For each activity described, include a description of appropriate temporary control measures and the general timing (or sequence) during the construction process that the measures will be implemented.
- 6. ☒ Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: Dry Comal Creek

### ***Temporary Best Management Practices (TBMPs)***

*Erosion control examples: tree protection, interceptor swales, level spreaders, outlet stabilization, blankets or matting, mulch, and sod. Sediment control examples: stabilized construction exit, silt fence, filter dikes, rock berms, buffer strips, sediment traps, and sediment basins. Please refer to the Technical Guidance Manual for guidelines and specifications. All structural BMPs must be shown on the site plan.*

- 7. ☒ **Attachment D – Temporary Best Management Practices and Measures.** TBMPs and measures will prevent pollution of surface water, groundwater, and stormwater. The construction-phase BMPs for erosion and sediment controls have been designed to retain sediment on site to the extent practicable. The following information is attached:



- ☒ A description of how BMPs and measures will prevent pollution of surface water, groundwater or stormwater that originates upgradient from the site and flows across the site.
  - ☒ A description of how BMPs and measures will prevent pollution of surface water or groundwater that originates on-site or flows off site, including pollution caused by contaminated stormwater runoff from the site.
  - ☒ A description of how BMPs and measures will prevent pollutants from entering surface streams, sensitive features, or the aquifer.
  - ☒ A description of how, to the maximum extent practicable, BMPs and measures will maintain flow to naturally-occurring sensitive features identified in either the geologic assessment, TCEQ inspections, or during excavation, blasting, or construction.
8. ☒ The temporary sealing of a naturally-occurring sensitive feature which accepts recharge to the Edwards Aquifer as a temporary pollution abatement measure during active construction should be avoided.
- ☐ **Attachment E - Request to Temporarily Seal a Feature.** A request to temporarily seal a feature is attached. The request includes justification as to why no reasonable and practicable alternative exists for each feature.
- ☒ There will be no temporary sealing of naturally-occurring sensitive features on the site.
9. ☒ **Attachment F - Structural Practices.** A description of the structural practices that will be used to divert flows away from exposed soils, to store flows, or to otherwise limit runoff discharge of pollutants from exposed areas of the site is attached. Placement of structural practices in floodplains has been avoided.
10. ☒ **Attachment G - Drainage Area Map.** A drainage area map supporting the following requirements is attached:
- ☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin will be provided.
  - ☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a smaller sediment basin and/or sediment trap(s) will be used.
  - ☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin or other equivalent controls are not attainable, but other TBMPs and measures will be used in combination to protect down slope and side slope boundaries of the construction area.
  - ☐ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. A smaller sediment basin and/or sediment trap(s) will be used in combination with other erosion and sediment controls within each disturbed drainage area.



- ☒ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. Erosion and sediment controls other than sediment basins or sediment traps within each disturbed drainage area will be used.
11. ☐ **Attachment H - Temporary Sediment Pond(s) Plans and Calculations.** Temporary sediment pond or basin construction plans and design calculations for a proposed temporary BMP or measure have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information must be signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed temporary BMPs and measures are attached.
- ☒ N/A
12. ☒ **Attachment I - Inspection and Maintenance for BMPs.** A plan for the inspection of each temporary BMP(s) and measure(s) and for their timely maintenance, repairs, and, if necessary, retrofit is attached. A description of the documentation procedures, recordkeeping practices, and inspection frequency are included in the plan and are specific to the site and/or BMP.
13. ☒ All control measures must be properly selected, installed, and maintained in accordance with the manufacturer's specifications and good engineering practices. If periodic inspections by the applicant or the executive director, or other information indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations.
14. ☒ If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain).
15. ☐ Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50%. A permanent stake will be provided that can indicate when the sediment occupies 50% of the basin volume.
16. ☒ Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).

## ***Soil Stabilization Practices***

*Examples: establishment of temporary vegetation, establishment of permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, or preservation of mature vegetation.*

17. ☒ **Attachment J - Schedule of Interim and Permanent Soil Stabilization Practices.** A schedule of the interim and permanent soil stabilization practices for the site is attached.



18. ☒ Records must be kept at the site of the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
19. ☒ Stabilization practices must be initiated as soon as practicable where construction activities have temporarily or permanently ceased.

### ***Administrative Information***

20. ☒ All structural controls will be inspected and maintained according to the submitted and approved operation and maintenance plan for the project.
21. ☒ If any geologic or manmade features, such as caves, faults, sinkholes, etc., are discovered, all regulated activities near the feature will be immediately suspended. The appropriate TCEQ Regional Office shall be immediately notified. Regulated activities must cease and not continue until the TCEQ has reviewed and approved the methods proposed to protect the aquifer from any adverse impacts.
22. ☒ Silt fences, diversion berms, and other temporary erosion and sediment controls will be constructed and maintained as appropriate to prevent pollutants from entering sensitive features discovered during construction.



**ATTACHMENT A**



## **MEYER RANCH UNIT 16**

### **Water Pollution Abatement Plan Modification**

#### **Attachment A – Spill Response Actions**

In the event of an accidental leak or spill:

- Spill must be contained and cleaned up immediately.
- Spills will not be merely buried or washed with water.
- Contractor shall take action to contain spill. Contractor may use sand or other absorbent material stockpiled on site to absorb spill. Absorbent material should be spread over the spill area to absorb the spilled product.
- In the event of an uncontained discharge the contractor shall utilize onsite equipment to construct berms downgradient of the spill with sand or other absorbent material to contain and absorb the spilled product.
- Spill containment/absorbent materials along with impacted media must be collected and stored in such a way so as not to continue to affect additional media (soil/water). Once the spill has been contained, collected material should be placed on poly or plastic sheeting until removed from the site. The impacted media and cleanup materials should be covered with plastic sheeting and the edges weighed down with paving bricks or other similarly dense objects as the material is being accumulated. This will prevent the impacted media and cleanup materials from becoming airborne in windy conditions or impacting runoff during a rain event. The stockpiled materials should not be located within an area of concentrated runoff such as along a curb line or within a swale.
- Contaminated soils and cleanup materials will be sampled for waste characterization. When the analysis results are known the contaminated soils and cleanup materials will be removed from the site and disposed in a permitted landfill in accordance with applicable regulations.
- The contractor will be required to notify the owner, who will in turn contact TCEQ to notify them in the event of a significant hazardous/reportable quantity spill. Additional notifications as required by the type and amount of spill will be conducted by owner or owner's representative.

In the event of an accidental significant or hazardous spill:

The contractor will be required to report significant or hazardous spills in reportable quantities to:

- Notify the TCEQ by telephone as soon as possible and within 24 hours at 512-339-2929 (Austin) or 210-490-3096 (San Antonio) between 8 AM and 5 PM. After hours, contact the Environmental Release Hotline at 1-800-832-8224. It is the contractor's responsibility to have all emergency phone numbers at the construction site. [https://www.tceq.texas.gov/response/spills/spill\\_rq.html](https://www.tceq.texas.gov/response/spills/spill_rq.html)
- For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor should notify the National Response Center at (800) 424-8802.



## **MEYER RANCH UNIT 16**

### **Water Pollution Abatement Plan Modification**

- Notification should first be made by telephone and followed up with a written report.
- The services of a spills contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site.
- Other agencies which may need to be consulted include, but are not limited to, the City Police Department, County Sheriff Office, Fire Departments, etc.
- Contaminated soils will be sampled for waste characterization. When the analysis results are known the contaminated soils will be removed from the site and disposed in a permitted landfill in accordance with applicable regulations.

Additional guidance can be obtained from TCEQ's Technical Guidance Manual (TGM) RG-348 (2005) Section 1.4.16. Contractor shall review this section.



**ATTACHMENT B**



# MEYER RANCH UNIT 16

## Water Pollution Abatement Plan Modification

### Attachment B – Potential Sources of Contamination

Other potential sources of contamination during construction include:

Potential Source	Preventative Measure
Asphalt products used on this project.	<ul style="list-style-type: none"> <li>After placement of asphalt, emulsion or coatings, the contractor will be responsible for immediate cleanup should an unexpected rain occur. For the duration of the asphalt product curing time, the contractor will maintain standby personnel and equipment to contain any asphalt wash-off should an unexpected rain occur. The contractor will be instructed not to place asphalt products on the ground within 48 hours of a forecasted rain.</li> </ul>
Oil, grease, fuel, and hydraulic fluid contamination from construction equipment and vehicle dripping.	<ul style="list-style-type: none"> <li>Vehicle maintenance when possible, will be performed within the construction staging area.</li> <li>Construction vehicles and equipment shall be checked regularly for leaks and repaired immediately.</li> </ul>
Accidental leaks or spills of oil, petroleum products, and substances listed under 40 CFR parts 110, 117, and 302 used or stored temporarily on site.	<ul style="list-style-type: none"> <li>Contractor to incorporate into regular safety meetings, a discussion of spill prevention and appropriate disposal procedures.</li> <li>Contractor's superintendent or representative overseer shall enforce proper spill prevention and control measures.</li> <li>Hazardous materials and wastes shall be stored in covered containers and protected from vandalism.</li> <li>A stockpile of spill cleanup materials shall be stored on site where it will be readily accessible.</li> </ul>
Miscellaneous trash and litter from construction workers and material wrappings.	<ul style="list-style-type: none"> <li>Trash containers will be placed throughout the site to encourage proper trash disposal.</li> </ul>
Construction debris.	<ul style="list-style-type: none"> <li>Construction debris will be monitored daily by contractor. Debris will be collected weekly and placed in disposal bins. Situations requiring immediate attention will be addressed on a case-by-case basis.</li> </ul>
Spills/Overflow of waste from portable toilets	<ul style="list-style-type: none"> <li>Portable toilets will be placed away from high-traffic vehicular areas and storm drain inlets.</li> <li>Portable toilets will be placed on a level ground surface.</li> <li>Portable toilets will be inspected regularly for leaks and will be serviced and sanitized at time intervals that will maintain sanitary conditions.</li> </ul>



**ATTACHMENT C**



## **MEYER RANCH UNIT 16**

### **Water Pollution Abatement Plan Modification**

#### **Attachment C – Sequence of Major Activities**

The sequence of major activities which disturb soil during construction on this site will be divided into two stages. The first is site preparation that will include clearing and grubbing of vegetation where applicable as well as installation of TBMPs. This will disturb approximately 132.49 acres. The second is construction that will include construction of sewer manholes, pipe, backfilling, removal of excess material, construction of homes, associated roads, driveways, sidewalks, batch detention basin, landscaping and site cleanup. This will disturb approximately 132.49 acres. Home construction will be based on market demand and may not be concurrent with civil infrastructure.



**ATTACHMENT D**



## MEYER RANCH UNIT 16

### Water Pollution Abatement Plan Modification

#### Attachment D – Temporary Best Management Practices and Measures

- a. A description of how BMPs and measures will prevent pollution of surface water, groundwater or stormwater that originates upgradient from the site and flows across the site.

***Upgradient, undeveloped runoff will be intercepted by an earthen channel, and routed around the site. All TBMPs are adequate for the drainage areas they serve.***

- b. A description of how BMPs and measures will prevent pollution of surface water or groundwater that originates on-site or flows off site, including pollution caused by contaminated stormwater runoff from the site.

***Site preparation, which is the initiation of all activity on the project, will disturb the largest amount of soil. Therefore, before any of this work can begin, the clearing and grading contractor will be responsible for the installation of all on-site control measures. The methodology for pollution prevention of on-site stormwater will include: (1) erection of silt fences along the downgradient boundary of construction activities for temporary erosion and sedimentation controls, (2) installation of rock berms with silt fencing downgradient from areas of concentrated stormwater flow for temporary erosion control, (3) Installation of gravel bags and drain inlet protection at inlets and downgradient areas of construction activities for sediment control (4) installation of stabilized construction entrance/exit(s) to reduce the dispersion of sediment from the site, and (5) installation of construction staging area(s).***

***Prior to the initiation of construction, all previously installed control measures will be repaired or reestablished for their designed or intended purpose. This work, which is the remainder of all activity on the project, may also disturb additional soil. The construction contractor will be responsible for the installation of all remaining on-site control measures that includes installation of the concrete truck washout pit(s), as construction phasing warrants.***

***Temporary measures are intended to provide a method of slowing the flow of runoff from the construction site in order to allow sediment and suspended solids to settle out of the runoff. By containing the sediment and solids within the site, they will not enter surface streams and/or sensitive features.***

- c. A description of how BMPs and measures will prevent pollutants from entering surface streams, sensitive features, or the aquifer.

***Temporary measures are intended to provide a method of slowing the flow of runoff from the construction site in order to allow sediment and suspended solids to settle out of the runoff. By containing the sediment and solids within the site, they will not enter surface streams and/or sensitive features.***



## MEYER RANCH UNIT 16

### Water Pollution Abatement Plan Modification

- d. A description of how, to the maximum extent practicable, BMPs and measures will maintain flow to naturally-occurring sensitive features identified in either the geologic assessment, TCEQ inspections, or during excavation, blasting, or construction.

***BMP measures utilized in this plan are intended to allow stormwater to continue downstream after passing through the BMPs. This will allow stormwater runoff to continue downgradient to streams or features that may exist downstream of the site.***



**ATTACHMENT F**



## **MEYER RANCH UNIT 16**

### **Water Pollution Abatement Plan Modification**

#### **Attachment F – Structural Practices**

The following structural measures will be installed prior to the initiation of site preparation activities:

- Erection of silt fences along the downgradient boundary of construction activities and rock berms with silt fence for secondary protection, as located on Exhibit 1 and illustrated in Exhibit 2.
- Installation of gravel bags and drain inlet protection at inlets and downgradient areas of construction activities, as located on Exhibit 1 and illustrated in Exhibit 2.
- Installation of stabilized construction entrance/exit(s) and construction staging area(s), as located on Exhibit 1, and illustrated on Exhibit 2.

The following structural measures will be installed at the initiation of construction activities or as appropriate based on the construction sequencing:

- Installation of concrete truck washout pit(s), as required and located on Exhibit 1 and illustrated on Exhibit 2.



**ATTACHMENT G**



## **MEYER RANCH UNIT 16**

### **Water Pollution Abatement Plan**

#### **Attachment G – Drainage Area Map**

No more than ten (10) acres will be disturbed within a common drainage area at one time as construction of civil infrastructure (utilities, roads, drainage, etc.) will precede home building construction. All TBMPs utilized are adequate for the drainage areas served.



**ATTACHMENT I**



## **MEYER RANCH UNIT 16**

### **Water Pollution Abatement Plan Modification**

#### **Attachment I - Inspections**

Designated and qualified person(s) shall inspect Pollution Control Measures weekly and within 24 hours after a storm event. An inspection report that summarizes the scope of the inspection, names and qualifications of personnel conducting the inspection, date of the inspection, major observations, and actions taken as a result of the inspection shall be recorded and maintained as part of Storm Water TPDES data for a period of three years after the Notice of Termination (NOT) has been filed. A copy of the Inspection Report Form is provided in this Storm Water Pollution Prevention Plan.

As a minimum, the inspector shall observe: (1) significant disturbed areas for evidence of erosion, (2) storage areas for evidence of leakage from the exposed stored materials, (3) structural controls (rock berm outlets, silt fences, drainage swales, etc.) for evidence of failure or excess siltation (over 6 inches deep), (4) vehicle exit point for evidence of off-site sediment tracking, (5) vehicle storage areas for signs of leaking equipment or spills, (6) concrete truck rinse-out pit for signs of potential failure, (7) embankment, spillways, and outlet of sediment basin (where applicable) for erosion damage, and (8) sediment basins (where applicable) for evidence that basin has accumulated 50% of its volume in silt. Deficiencies noted during the inspection will be corrected and documented within seven calendar days following the inspection or before the next anticipated storm event if practicable.

Contractor shall review Sections 1.3 and 1.4 of TCEQ's Technical Guidance Manual for additional BMP inspection and maintenance requirements.



# MEYER RANCH UNIT 16

## Water Pollution Abatement Plan Modification

Pollution Prevention Measure	Inspected in Compliance	Corrective Action Required	
		Description (use additional sheet if necessary)	Date Completed
<b>Best Management Practices</b>			
Natural vegetation buffer strips			
Temporary vegetation			
Permanent vegetation			
Sediment control basin			
Silt fences			
Rock berms			
Gravel filter bags			
Drain inlet protection			
Other structural controls			
Vehicle exits (off-site tracking)			
Material storage areas (leakage)			
Equipment areas (leaks, spills)			
Concrete washout pit (leaks, failure)			
General site cleanliness			
Trash receptacles			
<b>Evidence of Erosion</b>			
Site preparation			
Roadway or parking lot construction			
Utility construction			
Drainage construction			
Building construction			
<b>Major Observations</b>			
Sediment discharges from site			
BMPs requiring maintenance			
BMPs requiring modification			
Additional BMPs required			

\_\_\_\_\_ A brief statement describing the qualifications of the inspector is included in this SWP3.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

"I further certify I am an authorized signatory in accordance with the provisions of 30 TAC §305.128."

\_\_\_\_\_  
Inspector's Name

\_\_\_\_\_  
Inspector's Signature

\_\_\_\_\_  
Date



# MEYER RANCH UNIT 16

## Water Pollution Abatement Plan Modification

### PROJECT MILESTONE DATES

Date when major site grading activities begin:

<u>Construction Activity</u>	<u>Date</u>
Installation of BMPs	

Dates when construction activities temporarily or permanently cease on all or a portion of the project:

<u>Construction Activity</u>	<u>Date</u>

Dates when stabilization measures are initiated:

<u>Stabilization Activity</u>	<u>Date</u>
Removal of BMPs	



**ATTACHMENT J**



## **MEYER RANCH UNIT 16**

### **Water Pollution Abatement Plan**

#### **Attachment J - Schedule of Interim and Permanent Soil Stabilization Practices**

Interim on-site stabilization measures, which are continuous, will include minimizing soil disturbances by exposing the smallest practical area of land required for the shortest period of time and maximizing use of natural vegetation. As soon as practical, all disturbed soil will be stabilized as per project specifications in accordance with pages 1-35 to 1-60 of TCEQ's Technical Guidance Manual (TGM) RG-348 (2005). Mulching, netting, erosion blankets and seeding are acceptable.

Stabilization measures will be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and except as provided below, will be initiated no more than fourteen (14) days after the construction activity in that portion of the site has temporarily or permanently ceased. Where construction activity on a portion of the site is temporarily ceased, and earth disturbing activities will be resumed within twenty-one (21) days, temporary stabilization measures do not have to be initiated on that portion of site. In areas experiencing droughts where the initiation of stabilization measures by the 14<sup>th</sup> day after construction activity has temporarily or permanently ceased is precluded by seasonably arid conditions, stabilization measures must be initiated as soon as practicable.



**PERMANENT STORMWATER  
SECTION (TCEQ-0600)**



# Permanent Stormwater Section

## Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(b)(4)(C), (D)(ii), (E), and (5), Effective June 1, 1999

**To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.**

**Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.**

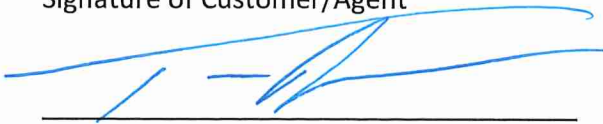
## Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Permanent Stormwater Section** is hereby submitted for TCEQ review and executive director approval. The application was prepared by:

Print Name of Customer/Agent: Todd Blackmon, P.E.

Date: 12/5/2024

Signature of Customer/Agent



Regulated Entity Name: Meyer Ranch Unit 16

## Permanent Best Management Practices (BMPs)

**Permanent best management practices and measures that will be used during and after construction is completed.**

1. ☒ Permanent BMPs and measures must be implemented to control the discharge of pollution from regulated activities after the completion of construction.  
☐ N/A
2. ☒ These practices and measures have been designed, and will be constructed, operated, and maintained to insure that 80% of the incremental increase in the annual mass loading of total suspended solids (TSS) from the site caused by the regulated activity is removed. These quantities have been calculated in accordance with technical guidance prepared or accepted by the executive director.  
☒ The TCEQ Technical Guidance Manual (TGM) was used to design permanent BMPs and measures for this site.



☐ A technical guidance other than the TCEQ TGM was used to design permanent BMPs and measures for this site. The complete citation for the technical guidance that was used is: \_\_\_\_\_

☐ N/A

3. ☒ Owners must insure that permanent BMPs and measures are constructed and function as designed. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the appropriate regional office within 30 days of site completion.

☐ N/A

4. Where a site is used for low density single-family residential development and has 20 % or less impervious cover, other permanent BMPs are not required. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC §213.4(g) (relating to Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.

☐ The site will be used for low density single-family residential development and has 20% or less impervious cover.

☐ The site will be used for low density single-family residential development but has more than 20% impervious cover.

☒ The site will not be used for low density single-family residential development.

5. The executive director may waive the requirement for other permanent BMPs for multi-family residential developments, schools, or small business sites where 20% or less impervious cover is used at the site. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC §213.4(g) (relating to Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.

☐ **Attachment A - 20% or Less Impervious Cover Waiver.** The site will be used for multi-family residential developments, schools, or small business sites and has 20% or less impervious cover. A request to waive the requirements for other permanent BMPs and measures is attached.

☐ The site will be used for multi-family residential developments, schools, or small business sites but has more than 20% impervious cover.

☒ The site will not be used for multi-family residential developments, schools, or small business sites.

6. ☒ **Attachment B - BMPs for Upgradient Stormwater.**



- ☒ A description of the BMPs and measures that will be used to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site is attached.
- ☐ No surface water, groundwater or stormwater originates upgradient from the site and flows across the site, and an explanation is attached.
- ☐ Permanent BMPs or measures are not required to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site, and an explanation is attached.
7. ☒ **Attachment C - BMPs for On-site Stormwater.**
- ☒ A description of the BMPs and measures that will be used to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff from the site is attached.
- ☐ Permanent BMPs or measures are not required to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff, and an explanation is attached.
8. ☒ **Attachment D - BMPs for Surface Streams.** A description of the BMPs and measures that prevent pollutants from entering surface streams, sensitive features, or the aquifer is attached. Each feature identified in the Geologic Assessment as sensitive has been addressed.
- ☐ N/A
9. ☒ The applicant understands that to the extent practicable, BMPs and measures must maintain flow to naturally occurring sensitive features identified in either the geologic assessment, executive director review, or during excavation, blasting, or construction.
- ☒ The permanent sealing of or diversion of flow from a naturally-occurring sensitive feature that accepts recharge to the Edwards Aquifer as a permanent pollution abatement measure has not been proposed.
- ☐ **Attachment E - Request to Seal Features.** A request to seal a naturally-occurring sensitive feature, that includes, for each feature, a justification as to why no reasonable and practicable alternative exists, is attached.
10. ☒ **Attachment F - Construction Plans.** All construction plans and design calculations for the proposed permanent BMP(s) and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer, and are signed, sealed, and dated. The plans are attached and, if applicable include:
- ☒ Design calculations (TSS removal calculations)
- ☒ TCEQ construction notes
- ☒ All geologic features
- ☒ All proposed structural BMP(s) plans and specifications
- ☐ N/A



11. ☒ **Attachment G - Inspection, Maintenance, Repair and Retrofit Plan.** A plan for the inspection, maintenance, repairs, and, if necessary, retrofit of the permanent BMPs and measures is attached. The plan includes all of the following:
- ☒ Prepared and certified by the engineer designing the permanent BMPs and measures
  - ☒ Signed by the owner or responsible party
  - ☒ Procedures for documenting inspections, maintenance, repairs, and, if necessary retrofit
  - ☒ A discussion of record keeping procedures
- ☐ N/A
12. ☐ **Attachment H - Pilot-Scale Field Testing Plan.** Pilot studies for BMPs that are not recognized by the Executive Director require prior approval from the TCEQ. A plan for pilot-scale field testing is attached.
- ☒ N/A
13. ☒ **Attachment I - Measures for Minimizing Surface Stream Contamination.** A description of the measures that will be used to avoid or minimize surface stream contamination and changes in the way in which water enters a stream as a result of the construction and development is attached. The measures address increased stream flashing, the creation of stronger flows and in-stream velocities, and other in-stream effects caused by the regulated activity, which increase erosion that results in water quality degradation.
- ☐ N/A

### ***Responsibility for Maintenance of Permanent BMP(s)***

***Responsibility for maintenance of best management practices and measures after construction is complete.***

14. ☒ The applicant is responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred.
- ☐ N/A
15. ☒ A copy of the transfer of responsibility must be filed with the executive director at the appropriate regional office within 30 days of the transfer if the site is for use as a multiple single-family residential development, a multi-family residential development, or a non-residential development such as commercial, industrial, institutional, schools, and other sites where regulated activities occur.
- ☐ N/A



**ATTACHMENT B**



## **MEYER RANCH UNIT 16**

### **Water Pollution Abatement Plan Modification**

#### **Attachment B – BMPs for Upgradient Stormwater**

All upgradient, undeveloped areas will be routed around the site by earthen drain channels.

The proposed Permanent Best Management Practices (PBMPs) for stormwater treatment are one (1) proposed batch detention basin and one (1) existing batch detention basin (EAPP ID No. 13001694) which are designed in accordance with the TCEQ's Technical Guidance Manual (TGM) RG-348 (2005) to remove 80% of the increase in Total Suspended Solids (TSS) from the site.



**ATTACHMENT C**



## **MEYER RANCH UNIT 16**

### **Water Pollution Abatement Plan Modification**

#### **Attachment C – BMPs for On-Site Stormwater**

The proposed Permanent Best Management Practices (PBMPs) for stormwater treatment are one (1) proposed batch detention basin and one (1) existing batch detention basin (EAPP ID No. 13001694) which are designed in accordance with the TCEQ's Technical Guidance Manual (TGM) RG-348 (2005) to remove 80% of the increase in Total Suspended Solids (TSS) from the site.



**ATTACHMENT D**



## **MEYER RANCH UNIT 16**

### **Water Pollution Abatement Plan Modification**

#### **Attachment D – BMPs for Surface Streams**

There are no surface streams on, or near, the project limits.

The proposed Permanent Best Management Practices (PBMPs) for stormwater treatment are one (1) proposed batch detention basin and one (1) existing batch detention basin (EAPP ID No. 13001694) which are designed in accordance with the TCEQ's Technical Guidance Manual (TGM) RG-348 (2005) to remove 80% of the increase in Total Suspended Solids (TSS) from the site.



**ATTACHMENT F**



## **MEYER RANCH UNIT 16**

### **Water Pollution Abatement Plan Modification**

#### **Attachment F – Construction Plans**

Please refer to the batch detention basin plans, and the Exhibits Section of this application for the Water Pollution Abatement Site Plan.



**ATTACHMENT G**



## MEYER RANCH UNIT 16

### Permanent Stormwater Section (TCEQ-0600)

#### PERMANENT POLLUTION ABATEMENT MEASURES MAINTENANCE SCHEDULE AND MAINTENANCE PROCEDURES


This document has been prepared to provide a description and schedule for the performance of maintenance on permanent pollution abatement measures. Maintenance measures to be performed will be dependent on what permanent pollution abatement measures are incorporated into the project. The project specific water pollution abatement plan should be reviewed to determine what permanent pollution abatement measures are incorporated into a project.

It should also be noted that the timing and procedures presented herein are general guidelines, adjustment to the timing and procedures may have to be made depending on project specific characteristics as well as weather related conditions but may not be altered without TCEQ approval.

Where a project is occupied by the owner, the owner may provide for maintenance with his own skilled forces or contract for recommended maintenance of Permanent Best Management Practices. Where a project is occupied or leased by a tenant, the owner shall require tenants to contract for such maintenance services either through a lease agreement, property owners' association covenants, or other binding document.

I understand that I am responsible for maintenance of the Permanent Pollution Abatement Measures included in this project until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property or ownership is transferred.

I, the owner, have read and understand the requirements of the attached Maintenance Plan and Schedule.

  
James Wilson, Authorized Agent  
CCD Meyer Ranch Land LLC  
By: HC Austin Meyer LLC, as manager  
By: HC Austin LLC, as sole member

  
Date



# MEYER RANCH UNIT 16

## Permanent Stormwater Section (TCEQ-0600)

### INSPECTION AND MAINTENANCE SCHEDULE FOR PERMANENT POLLUTION ABATEMENT MEASURES

Recommended Frequency	Task to be Performed												
	1	2	3	4	5	6	7	8	9	10	11	12	13
After Rainfall	√							√			√		√
Biannually*	√	√	√	√	√	√	√	√	√	√	√	√	√

*\*At least one biannual inspection must occur during or immediately after a rainfall event.*

*√Indicates maintenance procedure that applies to this specific site.*

See description of maintenance task to be performed on the following pages. Frequency of maintenance tasks may vary depending on amount of rainfall and other weather related conditions but may not be altered without TCEQ approval.

*A written record should be kept of inspection results and maintenance performed.*

<b><u>Task No. &amp; Description</u></b>	<b><u>Included in this project</u></b>	
1. Mowing	Yes	No
2. Litter and Debris Removal	Yes	No
3. Erosion Control	Yes	<del>No</del>
4. Level Sensor	Yes	<del>No</del>
5. Nuisance Control	Yes	<del>No</del>
6. Structural Repairs and Replacement	Yes	<del>No</del>
7. Discharge Pipe	Yes	<del>No</del>
8. Detention and Drawdown Time	Yes	<del>No</del>
9. Sediment Removal	Yes	<del>No</del>
10. Logic Controller	Yes	<del>No</del>
11. Vegetated Filter Strips	Yes	<del>No</del>
12. Visually Inspect Security Fencing for Damage or Breach	Yes	<del>No</del>
13. Recordkeeping for Inspections, Maintenance, and Repairs	Yes	<del>No</del>



## MEYER RANCH UNIT 16

### Permanent Stormwater Section (TCEQ-0600)

#### MAINTENANCE PROCEDURES FOR PERMANENT POLLUTION ABATEMENT MEASURES

**Note:** Additional guidance can be obtained from TCEQ's Technical Guidance Manual (TGM) RG-348 (2005) Section 3.5.

Inspections. Inspections should take place a minimum of twice a year. One inspection should take place during wet weather to determine if the basin is meeting the target detention time of 12 hours and a drawdown time of no more than 48 hours. The remaining inspections should occur between storm events so that manual operation of the valve and controller can be verified. The level sensor in the basin should be inspected and any debris or sediment in the area should be removed. The outlet structure and the trash screen should be inspected for signs of clogging. Debris and sediment should be removed from the orifice and outlet(s) as described in previous sections. Debris obstructing the valve should be removed. During each inspection, erosion areas inside and downstream of this BMP should be identified and repaired/revegetated immediately. *A written record should be kept of inspection results and corrective measures taken*

1. Mowing. The basin, basin side-slopes, and embankment of the basin must be mowed to prevent woody growth and control weeds. A mulching mower should be used, or the grass clippings should be caught and removed. Mowing should take place at least twice a year, or more frequently if vegetation exceeds 18 inches in height. More frequent mowing to maintain aesthetic appeal may be necessary in landscaped areas.
2. Litter and Debris Removal. Litter and debris removal should take place at least twice a year, as part of the periodic mowing operations and inspections. Debris and litter should be removed from the surface of the basin. Particular attention should be paid to floatable debris around the outlet structure. The outlet should be checked for possible clogging or obstructions and any debris removed.
3. Erosion control. The basin side slopes and embankment all may periodically suffer from slumping and erosion. To correct these problems, corrective action, such as regrading and revegetation, may be necessary. Correction of erosion control should take place whenever required based on the periodic inspections.
4. Level Sensor. The level sensor in the basin should be inspected and any debris or sediment in the area should be removed. Litter and debris removal should take place at least twice a year, as part of the periodic mowing operations and inspections. Debris and litter should be removed from the surface of the basin.
5. Nuisance Control. Standing water or soggy conditions may occur in the basin. Some standing water may occur after a storm event since the valve may close with 2 to 3 inches of water in the basin. Some flow into the basin may also occur between storms due to spring flow and residential water use that enters the storm sewer system. Twice a year, the facility should be evaluated in terms of nuisance control (insects, weeds, odors, algae, etc.).
6. Structural Repairs and Replacement. With each inspection, any damage to structural elements of the basin (pipes, concrete drainage structures, retaining walls, etc.) should be identified and



## MEYER RANCH UNIT 16

### Permanent Stormwater Section (TCEQ-0600)

repaired immediately. An example of this type of repair can include patching of cracked concrete, sealing of voids, removal of vegetation from cracks and joints. The various inlet/outlet structures in a basin will eventually deteriorate and must be replaced. *A written record should be kept of inspection results and corrective measures taken*

7. Discharge Pipe. The basin discharge pipe shall be checked for accumulation of silt, debris or other obstructions which could block flow. Soil accumulations, vegetative overgrowth and other blockages should be cleared from the pipe discharge point. Erosion at the point of discharge shall be monitored. If erosion occurs, the addition of rock rubble to disperse the flow should be accomplished. *A written record should be kept of inspection results and corrective measures taken*
8. Detention and Drawdown Time. One inspection should take place during wet weather to determine if the basin is meeting the target detention time of 12 hours and a drawdown time of no more than 48 hours. This characteristic can be a sign of the need for maintenance. The minimum drawdown time is 24 hours. If drawdown time is less than 24 hours, the actuator valve shall be checked and partially closed to limit the drawdown time. Extensive drawdown time greater than 48 hours may indicate blockage of the discharge pipe. Corrective actions should be performed and completed within 15 working days. *A written record of the inspection findings and corrective actions performed should be made.*
9. Sediment Removal. A properly designed batch detention basin will accumulate quantities of sediment over time. The accumulated sediment can detract from the appearance of the facility and reduce the pollutant removal performance of the facility. The sediment also tends to accumulate near the outlet structure and can interfere with the level sensor operation. Sediment shall be removed from the basin at least every 5 years, when sediment depth exceeds 6 inches, when the sediment interferes with the level sensor or when the basin does not drain within 48 hours. Care should be taken not to compromise the basin lining during maintenance.
10. Logic Controller. The Logic Controller should be inspected as part of the twice yearly investigations. Verify that the external indicators (active, cycle in progress) are operating properly by turning the controller off and on, and by initiating a cycle by triggering the level sensor in the basin. The valve should be manually opened and closed using the open/close switch to verify valve operation and to assist in inspecting the valve for debris. The solar panel should be inspected and any dust or debris on the panel should be carefully removed. The controller and all other circuitry and wiring should be inspected for signs of corrosion, damage from insects, water leaks, or other damage. At the end of the inspection, the controller should be reset.
11. Vegetated Filter Strips. Vegetation height for native grasses shall be limited to no more than 18-inches. When vegetation exceeds that height, the filter strip shall be cut to a height of approximately 4 inches. Turf grass shall be limited to a height of 4-inches with regular maintenance that utilizes a mulching mower. Trash and debris shall be removed from filter strip prior to cutting. Check filter strip for signs of concentrated flow and erosion. Areas of filter strip showing signs of erosion shall be repaired by scarifying the eroded area, reshaping, regrading



## MEYER RANCH UNIT 16

### Permanent Stormwater Section (TCEQ-0600)

and placement of solid block sod over the affected area. *A written record of the inspection findings and corrective actions performed should be made*

12. Visually Inspect Security Fencing for Damage or Breach. Check maintenance access gates for proper operation. Damage to fencing or gates shall be repaired within 5 working days. *A written record should be kept of inspection results and maintenance performed.*
13. Recordkeeping Procedures for Inspections, Maintenance, Repairs, and Retrofits.
  - Written records shall be kept by the party responsible for maintenance or a designated representative.
  - Written records shall be retained for a minimum of five years.



**ATTACHMENT I**



## **MEYER RANCH UNIT 16**

### **Water Pollution Abatement Plan Modification**

#### **Attachment I – Measures for Minimizing Surface Stream Contamination**

Any points where discharge from the site is concentrated and erosive velocities exist will include appropriately sized energy dissipators to reduce velocities to non-erosive levels.



**AGENT AUTHORIZATION FORM**  
**(TCEQ-0599)**



**Agent Authorization Form**  
For Required Signature  
Edwards Aquifer Protection Program  
Relating to 30 TAC Chapter 213  
Effective June 1, 1999

I James Wilson,  
Print Name  
Authorized Agent,  
Title - Owner/President/Other  
of CCD Meyer Ranch Land LLC,  
Corporation/Partnership/Entity Name  
have authorized Pape-Dawson Consulting Engineers, LLC  
Print Name of Agent/Engineer  
of Pape-Dawson Consulting Engineers, LLC  
Print Name of Firm

to represent and act on the behalf of the above named Corporation, Partnership, or Entity for the purpose of preparing and submitting this plan application to the Texas Commission on Environmental Quality (TCEQ) for the review and approval consideration of regulated activities.

I also understand that:

1. The applicant is responsible for compliance with 30 Texas Administrative Code Chapter 213 and any condition of the TCEQ's approval letter. The TCEQ is authorized to assess administrative penalties of up to \$10,000 per day per violation.
2. For those submitting an application who are not the property owner, but who have the right to control and possess the property, additional authorization is required from the owner.
3. Application fees are due and payable at the time the application is submitted. The application fee must be sent to the TCEQ cashier or to the appropriate regional office. The application will not be considered until the correct fee is received by the commission.
4. A notarized copy of the Agent Authorization Form must be provided for the person preparing the application, and this form must accompany the completed application.
5. No person shall commence any regulated activity on the Edwards Aquifer Recharge Zone, Contributing Zone or Transition Zone until the appropriate application for the activity has been filed with and approved by the Executive Director.



SIGNATURE PAGE:

[Signature]  
Applicant's Signature

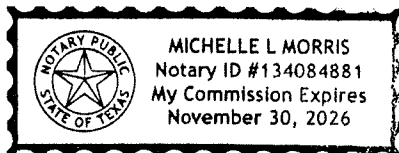
12/5/2024  
Date

THE STATE OF Texas §

County of Comal §

BEFORE ME, the undersigned authority, on this day personally appeared James Wilson known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that (s)he executed same for the purpose and consideration therein expressed.

GIVEN under my hand and seal of office on this 5 day of December, 2024



[Signature]  
NOTARY PUBLIC  
Michelle Morris  
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: Nov. 30, 2026



**APPLICATION FEE FORM**  
**(TCEQ-0574)**



# Application Fee Form

## Texas Commission on Environmental Quality

Name of Proposed Regulated Entity: Meyer Ranch Unit 16

Regulated Entity Location: Approximately 0.9 miles north northwest of the intersection of S  
Cranes Mill Rd. and Incrociato intersection

Name of Customer: CCD Meyer Ranch land LLC

Contact Person: James Wilson

Phone: 630-851-5490

Customer Reference Number (if issued): CN 605323831

Regulated Entity Reference Number (if issued): RN 109684928

### Austin Regional Office (3373)

☐ Hays

☐ Travis

☐ Williamson

### San Antonio Regional Office (3362)

☐ Bexar

☐ Medina

☐ Uvalde

☒ Comal

☐ Kinney

Application fees must be paid by check, certified check, or money order, payable to the **Texas Commission on Environmental Quality**. Your canceled check will serve as your receipt. **This form must be submitted with your fee payment.** This payment is being submitted to:

☐ Austin Regional Office

☐ San Antonio Regional Office

☐ Mailed to: TCEQ - Cashier

☒ Overnight Delivery to: TCEQ - Cashier

Revenues Section

12100 Park 35 Circle

Mail Code 214

Building A, 3rd Floor

P.O. Box 13088

Austin, TX 78753

Austin, TX 78711-3088

(512)239-0357

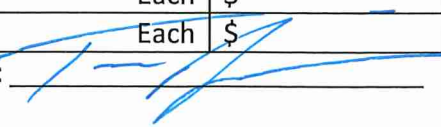
### Site Location (Check All That Apply):

☒ Recharge Zone

☒ Contributing Zone

☐ Transition Zone

<i>Type of Plan</i>	<i>Size</i>	<i>Fee Due</i>
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	\$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	250.85 Acres	\$ 8,000.00
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	Acres	\$
Sewage Collection System	L.F.	\$
Lift Stations without sewer lines	Acres	\$
Underground or Aboveground Storage Tank Facility	Tanks	\$
Piping System(s)(only)	Each	\$
Exception	Each	\$
Extension of Time	Each	\$

Signature: 



Date: 12/5/2024

## Application Fee Schedule

Texas Commission on Environmental Quality

Edwards Aquifer Protection Program 30 TAC Chapter 213 (effective 05/01/2008)

### ***Water Pollution Abatement Plans and Modifications***

#### ***Contributing Zone Plans and Modifications***

<b><i>Project</i></b>	<b><i>Project Area in Acres</i></b>	<b><i>Fee</i></b>
One Single Family Residential Dwelling	< 5	\$650
Multiple Single Family Residential and Parks	< 5	\$1,500
	5 < 10	\$3,000
	10 < 40	\$4,000
	40 < 100	\$6,500
	100 < 500	\$8,000
	≥ 500	\$10,000
Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur)	< 1	\$3,000
	1 < 5	\$4,000
	5 < 10	\$5,000
	10 < 40	\$6,500
	40 < 100	\$8,000
	≥ 100	\$10,000

#### ***Organized Sewage Collection Systems and Modifications***

<b><i>Project</i></b>	<b><i>Cost per Linear Foot</i></b>	<b><i>Minimum Fee- Maximum Fee</i></b>
Sewage Collection Systems	\$0.50	\$650 - \$6,500

#### ***Underground and Aboveground Storage Tank System Facility Plans and Modifications***

<b><i>Project</i></b>	<b><i>Cost per Tank or Piping System</i></b>	<b><i>Minimum Fee- Maximum Fee</i></b>
Underground and Aboveground Storage Tank Facility	\$650	\$650 - \$6,500

#### ***Exception Requests***

<b><i>Project</i></b>	<b><i>Fee</i></b>
Exception Request	\$500

#### ***Extension of Time Requests***

<b><i>Project</i></b>	<b><i>Fee</i></b>



<b><i>Project</i></b>	<b><i>Fee</i></b>
Extension of Time Request	\$150



**CORE DATA FORM**  
**(TCEQ-10400)**





TCEQ Use Only

# TCEQ Core Data Form

For detailed instructions regarding completion of this form, please read the Core Data Form Instructions or call 512-239-5175.

## SECTION I: General Information

<b>1. Reason for Submission</b> (If other is checked please describe in space provided.)		
<input checked="" type="checkbox"/> New Permit, Registration or Authorization (Core Data Form should be submitted with the program application.)		
<input type="checkbox"/> Renewal (Core Data Form should be submitted with the renewal form)		<input type="checkbox"/> Other
<b>2. Customer Reference Number (if issued)</b>	<a href="#">Follow this link to search for CN or RN numbers in Central Registry**</a>	<b>3. Regulated Entity Reference Number (if issued)</b>
CN 605232831		RN 109684928

## SECTION II: Customer Information

<b>4. General Customer Information</b>		<b>5. Effective Date for Customer Information Updates</b> (mm/dd/yyyy)			
<input type="checkbox"/> New Customer		<input type="checkbox"/> Update to Customer Information		<input type="checkbox"/> Change in Regulated Entity Ownership	
<input type="checkbox"/> Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)					
<b>The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).</b>					
<b>6. Customer Legal Name</b> (If an individual, print last name first: eg: Doe, John)				<i>If new Customer, enter previous Customer below:</i>	
CCD Meyer Ranch Land LLC					
<b>7. TX SOS/CPA Filing Number</b>		<b>8. TX State Tax ID</b> (11 digits)		<b>9. Federal Tax ID</b> (9 digits)	<b>10. DUNS Number</b> (if applicable)
<b>11. Type of Customer:</b>		<input type="checkbox"/> Corporation		<input type="checkbox"/> Individual	
		<input type="checkbox"/> Partnership: <input type="checkbox"/> General <input type="checkbox"/> Limited			
Government: <input type="checkbox"/> City <input checked="" type="checkbox"/> County <input type="checkbox"/> Federal <input type="checkbox"/> State <input type="checkbox"/> Other		<input type="checkbox"/> Sole Proprietorship		<input type="checkbox"/> Other:	
<b>12. Number of Employees</b>		<b>13. Independently Owned and Operated?</b>			
<input type="checkbox"/> 0-20 <input type="checkbox"/> 21-100 <input type="checkbox"/> 101-250 <input type="checkbox"/> 251-500 <input type="checkbox"/> 501 and higher		<input type="checkbox"/> Yes <input type="checkbox"/> No			
<b>14. Customer Role</b> (Proposed or Actual) – as it relates to the Regulated Entity listed on this form. Please check one of the following					
<input checked="" type="checkbox"/> Owner <input type="checkbox"/> Operator <input type="checkbox"/> Owner & Operator					
<input type="checkbox"/> Occupational Licensee <input type="checkbox"/> Responsible Party <input type="checkbox"/> Voluntary Cleanup Applicant <input type="checkbox"/> Other:					
<b>15. Mailing Address:</b>					
1751A West Diehl Road					
City		Naperville		State	IL
ZIP		60563		ZIP + 4	
<b>16. Country Mailing Information</b> (if outside USA)				<b>17. E-Mail Address</b> (if applicable)	
				jwilson@crowm-chicago.com	
<b>18. Telephone Number</b>		<b>19. Extension or Code</b>		<b>20. Fax Number</b> (if applicable)	
( 630 ) 851-5490				( ) -	

## SECTION III: Regulated Entity Information

<b>21. General Regulated Entity Information</b> (If 'New Regulated Entity' is selected below this form should be accompanied by a permit application)	
<input type="checkbox"/> New Regulated Entity <input type="checkbox"/> Update to Regulated Entity Name <input checked="" type="checkbox"/> Update to Regulated Entity Information	
<b>The Regulated Entity Name submitted may be updated in order to meet TCEQ Agency Data Standards (removal of organizational endings such as Inc, LP, or LLC).</b>	
<b>22. Regulated Entity Name</b> (Enter name of the site where the regulated action is taking place.)	
Meyer Ranch Unit 16	



23. Street Address of the Regulated Entity: (No PO Boxes)							
	City		State		ZIP		ZIP + 4
24. County							

**Enter Physical Location Description if no street address is provided.**

25. Description to Physical Location:	Approximately 0.9 miles north northwest of the intersection of S Cranes Mill Rd. and Incrociato					
26. Nearest City	State				Nearest ZIP Code	
New Braunfels	TX				78132	
27. Latitude (N) In Decimal:	29.792319		28. Longitude (W) In Decimal:	98.301197		
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds	
29	47	32.35	98	18	4.31	
29. Primary SIC Code (4 digits)	30. Secondary SIC Code (4 digits)		31. Primary NAICS Code (5 or 6 digits)		32. Secondary NAICS Code (5 or 6 digits)	
1521	1611		236115		237310	
33. What is the Primary Business of this entity? (Do not repeat the SIC or NAICS description.)						
Single-Family Residential Construction						
34. Mailing Address:	1751A West Diehl Rd					
	City	Naperville	State	IL	ZIP	60563
35. E-Mail Address:	jwilson@crown-chicago.com					
36. Telephone Number		37. Extension or Code		38. Fax Number (if applicable)		
( 630 ) 851-5490				( ) -		

**39. TCEQ Programs and ID Numbers** Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

<input type="checkbox"/> Dam Safety	<input type="checkbox"/> Districts	<input checked="" type="checkbox"/> Edwards Aquifer	<input type="checkbox"/> Emissions Inventory Air	<input type="checkbox"/> Industrial Hazardous Waste
<input type="checkbox"/> Municipal Solid Waste	<input type="checkbox"/> New Source Review Air	<input type="checkbox"/> OSSF	<input type="checkbox"/> Petroleum Storage Tank	<input type="checkbox"/> PWS
<input type="checkbox"/> Sludge	<input type="checkbox"/> Storm Water	<input type="checkbox"/> Title V Air	<input type="checkbox"/> Tires	<input type="checkbox"/> Used Oil
<input type="checkbox"/> Voluntary Cleanup	<input type="checkbox"/> Waste Water	<input type="checkbox"/> Wastewater Agriculture	<input type="checkbox"/> Water Rights	<input type="checkbox"/> Other:

#### **SECTION IV: Preparer Information**

40. Name:	Jean Autrey, P.E., CESSWI	41. Title:	Program Manager
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
( 210 ) 375-9000		( 210 ) 375-9010	jautrey@pape-dawson.com

#### **SECTION V: Authorized Signature**

**46.** By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	Pape-Dawson Consulting Engineers, LLC	Job Title:	Managing Vice President
Name (In Print):	Todd Blackmon, P.E.	Phone:	( 830 ) 632- 5633
Signature:		Date:	12/5/2024



# **POLLUTANT LOAD AND REMOVAL CALCULATIONS**



**Meyer Ranch Unit 16**

**Treatment Summary by Watershed**

Watershed	Total Watershed Area (ac.)	Previously Approved Impervious Cover (ac.)*	Proposed Impervious Cover to Treat (ac.)	Total Impervious Cover (ac.)	PBMP	Required TSS Removal Annually (lbs.)	TSS Removed Annually (lbs.)
A	39.00		23.23	23.23	Batch Detention Basin "1"	20,851	21,000
OFFSITE A	1.04				Batch Detention Basin "1"	0	0
B	62.10	20.53	15.07	35.60	Unit 13 Batch Detention Basin (EAPP ID 13001694)	31,955	32,000
OFFSITE B	0.51				Unit 13 Batch Detention Basin (EAPP ID 13001694)	0	0
UNCAPTURED AREA 1	0.25		0.17	0.17	Overtreatment	153	0
<b>Total</b>	<b>102.90</b>	<b>20.53</b>	<b>38.47</b>	<b>59.00</b>	<b>-</b>	<b>52,959</b>	<b>53,000</b>

\*Approved in a 62.91-ac watershed for Meyer Ranch Unit 13 (EAPP ID No. 13001694).

**Water Quality Basin Summary**

Basin	Designed Capture Volume (cf)	Required Volume (cf)	**Current Designed TSS (lbs)	Watershed (ac)	Impervious Cover (ac)
Basin 1	114,726	97,930	21,000	40.04	23.23
Unit 13 Basin	170,637	150,034	32,000	62.61	35.60

\*\* Basins have been oversized to account for future development which may not be accounted for ultimate development in chart TS!



Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: **Meyer Ranch Unit 16 - Basin 1**

Date Prepared: **12/6/2024**

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.

Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.

Characters shown in red are data entry fields.

Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

**1. The Required Load Reduction for the total project:**

Calculations from RG-348

Pages 3-27 to 3-30

Page 3-29 Equation 3.3:  $L_M = 27.2(A_N \times P)$

where:

$L_{M \text{ TOTAL PROJECT}}$  = Required TSS removal resulting from the proposed development = 80% of increased load

$A_N$  = Net increase in impervious area for the project

$P$  = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	<b>Comal</b>	
Total project area included in plan * =	<b>132.49</b>	acres
Predevelopment impervious area within the limits of the plan* =	<b>0.00</b>	acres
Total post-development impervious area within the limits of the plan* =	<b>38.47</b>	acres
Total post-development impervious cover fraction * =	<b>0.29</b>	
P =	<b>33</b>	inches

$L_{M \text{ TOTAL PROJECT}}$  = **34531** lbs.

\* The values entered in these fields should be for the total project area.

Number of drainage basins / outfalls areas leaving the plan area = **2**

12/5/2024



A large, stylized handwritten signature in black ink, appearing to read "Todd W. Blackmon", written over the bottom right portion of the professional seal.



**2. Drainage Basin Parameters (This information should be provided for each basin)**

Drainage Basin/Outfall Area No. = **Basin 1**

Total drainage basin/outfall area = **39.00** acres  
Predevelopment impervious area within drainage basin/outfall area = **0.00** acres  
Post-development impervious area within drainage basin/outfall area = **23.23** acres  
Post-development impervious fraction within drainage basin/outfall area = **0.60**  
 $L_{M \text{ THIS BASIN}} = 20851$  lbs.

**3. Indicate the proposed BMP Code for this basin.**

Proposed BMP = **Extended Detention**  
Removal efficiency = **91** percent

Aqualogic Cartridge Filter  
Bioretention  
Contech StormFilter  
Constructed Wetland  
Extended Detention  
Grassy Swale  
Retention / Irrigation  
Sand Filter  
Stormceptor  
Vegetated Filter Strips  
Vortechs  
Wet Basin  
Wet Vault

**4. Calculate Maximum TSS Load Removed ( $L_R$ ) for this Drainage Basin by the selected BMP Type.**

RG-348 Page 3-33 Equation 3.7:  $L_R = (\text{BMP efficiency}) \times P \times (A_i \times 34.6 + A_p \times 0.54)$

where:

$A_C$  = Total On-Site drainage area in the BMP catchment area  
 $A_i$  = Impervious area proposed in the BMP catchment area  
 $A_p$  = Pervious area remaining in the BMP catchment area  
 $L_R$  = TSS Load removed from this catchment area by the proposed BMP

$A_C = 39.00$  acres  
 $A_i = 23.23$  acres  
 $A_p = 15.77$  acres  
 $L_R = 24393$  lbs

**5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area**

Desired  $L_{M \text{ THIS BASIN}} = 21000$  lbs.

$F = 0.86$

**6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area**

Calculations from RG-348

Pages 3-34 to 3-36

Rainfall Depth = **1.38** inches  
Post Development Runoff Coefficient = **0.42**  
On-site Water Quality Volume = **81504** cubic feet

Calculations from RG-348 Pages 3-36 to 3-37

Off-site area draining to BMP = **1.04** acres  
Off-site Impervious cover draining to BMP = **0.00** acres  
Impervious fraction of off-site area = **0.00**  
Off-site Runoff Coefficient = **0.02**  
Off-site Water Quality Volume = **104** cubic feet

Storage for Sediment = **16322**  
Total Capture Volume (required water quality volume(s)  $\times 1.20$ ) = **97930** cubic feet

The following sections are used to calculate the required water quality volume(s) for the selected BMP.  
The values for BMP Types not selected in cell C45 will show NA.



Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.

Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.

Characters shown in red are data entry fields.

Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

**1. The Required Load Reduction for the total project:**

Calculations from RG-348

Pages 3-27 to 3-30

Page 3-29 Equation 3.3:  $L_M = 27.2(A_N \times P)$

where:

$L_M$  TOTAL PROJECT = Required TSS removal resulting from the proposed development = 80% of increased load

$A_N$  = Net increase in impervious area for the project

P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	<b>Comal</b>	
Total project area included in plan * =	<b>132.49</b>	acres
Predevelopment impervious area within the limits of the plan * =	<b>0.00</b>	acres
Total post-development impervious area within the limits of the plan * =	<b>38.47</b>	acres
Total post-development impervious cover fraction * =	<b>0.29</b>	
P =	<b>33</b>	inches

$L_M$  TOTAL PROJECT = **34531** lbs.

\* The values entered in these fields should be for the total project area.

Number of drainage basins / outfalls areas leaving the plan area = **2**

12/5/2024





**2. Drainage Basin Parameters (This information should be provided for each basin):**

Drainage Basin/Outfall Area No. = **Unit 13 Basin**

Total drainage basin/outfall area = **62.10** acres  
Predevelopment impervious area within drainage basin/outfall area = **0.00** acres  
Post-development impervious area within drainage basin/outfall area = **35.60** acres  
Post-development impervious fraction within drainage basin/outfall area = **0.57**  
 $L_{M \text{ THIS BASIN}}$  = **31955** lbs.

**3. Indicate the proposed BMP Code for this basin.**

Proposed BMP = **Extended Detention**  
Removal efficiency = **91** percent

Aqualogic Cartridge Filter  
Bioretention  
Contech StormFilter  
Constructed Wetland  
Extended Detention  
Grassy Swale  
Retention / Irrigation  
Sand Filter  
Stormceptor  
Vegetated Filter Strips  
Vortechs  
Wet Basin  
Wet Vault

**4. Calculate Maximum TSS Load Removed ( $L_R$ ) for this Drainage Basin by the selected BMP Type.**

RG-348 Page 3-33 Equation 3.7:  $L_R = (\text{BMP efficiency}) \times P \times (A_i \times 34.6 + A_p \times 0.54)$

where:

$A_C$  = Total On-Site drainage area in the BMP catchment area  
 $A_i$  = Impervious area proposed in the BMP catchment area  
 $A_p$  = Pervious area remaining in the BMP catchment area  
 $L_R$  = TSS Load removed from this catchment area by the proposed BMP

$A_C$  = **62.10** acres  
 $A_i$  = **35.60** acres  
 $A_p$  = **26.50** acres  
 $L_R$  = **37419** lbs

**5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area**

Desired  $L_{M \text{ THIS BASIN}}$  = **32000** lbs.

$F$  = **0.86**

**6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area.**

Calculations from RG-348

Pages 3-34 to 3-36

Rainfall Depth = **1.38** inches  
Post Development Runoff Coefficient = **0.40**  
On-site Water Quality Volume = **124978** cubic feet

Calculations from RG-348 Pages 3-36 to 3-37

Off-site area draining to BMP = **0.51** acres  
Off-site Impervious cover draining to BMP = **0.00** acres  
Impervious fraction of off-site area = **0.00**  
Off-site Runoff Coefficient = **0.02**  
Off-site Water Quality Volume = **51** cubic feet

Storage for Sediment = **25006**

Total Capture Volume (required water quality volume(s) x 1.20) = **150034** cubic feet

The following sections are used to calculate the required water quality volume(s) for the selected BMP.  
The values for BMP Types not selected in cell C45 will show NA.



**EXHIBITS**



TEXAS COMMISSION ON ENVIRONMENTAL  
QUALITY WATER POLLUTION ABATEMENT PLAN  
GENERAL CONSTRUCTION NOTES

1. A WRITTEN NOTICE OF CONSTRUCTION MUST BE SUBMITTED TO THE TCEQ REGIONAL OFFICE AT LEAST 48 HOURS PRIOR TO THE START OF ANY REGULATED ACTIVITIES. THIS NOTICE MUST INCLUDE:
  - THE NAME OF THE APPROVED PROJECT;
  - THE ACTIVITY START DATE; AND
  - THE CONTACT INFORMATION OF THE PRIME CONTRACTOR.
2. ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROJECT MUST BE PROVIDED WITH COMPLETE COPIES OF THE APPROVED WATER POLLUTION ABATEMENT PLAN (WPAP) AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTORS ARE REQUIRED TO KEEP ON-SITE COPIES OF THE APPROVED PLAN AND APPROVAL LETTER.
3. IF ANY SENSITIVE FEATURE(S) (CAVES, SOLUTION CAVITY, SINK HOLE, ETC.) IS DISCOVERED DURING CONSTRUCTION, ALL REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MUST BE SUSPENDED IMMEDIATELY. THE APPROPRIATE TCEQ REGIONAL OFFICE MUST BE IMMEDIATELY NOTIFIED OF ANY SENSITIVE FEATURES ENCOUNTERED DURING CONSTRUCTION. CONSTRUCTION ACTIVITIES MAY NOT BE RESUMED UNTIL THE TCEQ HAS REVIEWED AND APPROVED THE APPROPRIATE PROTECTIVE MEASURES IN ORDER TO PROTECT ANY SENSITIVE FEATURE AND THE EDWARDS AQUIFER FROM POTENTIALLY ADVERSE IMPACTS TO WATER QUALITY.
4. NO TEMPORARY OR PERMANENT HAZARDOUS SUBSTANCE STORAGE TANK SHALL BE INSTALLED WITHIN 150 FEET OF A WATER SUPPLY SOURCE, DISTRIBUTION SYSTEM, WELL OR SENSITIVE FEATURE.
5. PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITY, ALL TEMPORARY EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES MUST BE PROPERLY INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE APPROVED PLANS AND MANUFACTURER'S SPECIFICATIONS. IF INSPECTIONS INDICATED A CONTROL HAS BEEN USED INAPPROPRIATELY, OR INCORRECTLY, THE APPLICANT MUST REPLACE OR MODIFY THE CONTROL FOR SITE SITUATIONS. THESE CONTROLS MUST REMAIN IN PLACE UNTIL THE DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED.
6. ANY SEDIMENT THAT ESCAPED THE CONSTRUCTION SITE MUST BE COLLECTED AND PROPERLY DISPOSED OF BEFORE THE NEXT RAIN EVENT TO ENSURE IT IS NOT WASHED INTO SURFACE STREAMS, SENSITIVE FEATURES, ETC.
7. SEDIMENT MUST BE REMOVED FROM THE SEDIMENT TRAPS OR SEDIMENTATION BASINS NOT LATER THAN WHEN IT OCCUPIES 50% OF THE BASIN'S DESIGN CAPACITY.
8. LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORMWATER SHALL BE PREVENTED FROM BEING DISCHARGED OFFSITE.
9. ALL SPOILS (EXCAVATED MATERIAL) GENERATED FROM THE PROJECT SITE MUST BE STORED ON-SITE WITH PROPER E&S CONTROLS FOR STORAGE OF DISPOSAL OF SPOILS AT ANOTHER SITE ON THE EDWARDS AQUIFER RECHARGE ZONE, THE OWNER OF THE SITE MUST RECEIVE APPROVAL OF A WATER POLLUTION ABATEMENT PLAN FOR THE PLACEMENT OF FILL MATERIAL OR MASS GRADING PRIOR TO THE PLACEMENT OF SPOILS AT THE OTHER SITE.

10. IF PORTIONS OF THE SITE WILL HAVE A TEMPORARY OR PERMANENT CEASE IN CONSTRUCTION ACTIVITY LASTING LONGER THAN 14 DAYS, SOIL STABILIZATION IN THOSE AREAS SHALL BE INITIATED AS SOON AS POSSIBLE PRIOR TO THE 14TH DAY OF INACTIVITY. IF ACTIVITY WILL RESUME PRIOR TO THE 21ST DAY, STABILIZATION MEASURES ARE NOT REQUIRED. IF DROUGHT CONDITIONS OR INCLEMENT WEATHER PREVENT ACTION BY THE 14TH DAY, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS POSSIBLE.
11. THE FOLLOWING RECORDS SHALL BE MAINTAINED AND MADE AVAILABLE TO THE TCEQ UPON REQUEST:
  - THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR;
  - THE DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE; AND
  - THE DATES WHEN STABILIZATION MEASURES ARE INITIATED.
12. THE HOLDER OF THE APPROVED EDWARDS AQUIFER PROTECTION PLAN MUST NOTIFY THE APPROPRIATE REGIONAL OFFICE IN WRITING AND OBTAIN APPROVAL FROM THE EXECUTIVE DIRECTOR PRIOR TO INITIATING ANY OF THE FOLLOWING:
  - A. ANY PHYSICAL OR OPERATIONAL MODIFICATION OF ANY WATER POLLUTION ABATEMENT STRUCTURE(S), INCLUDING BUT NOT LIMITED TO PONDS, DAMS, BERMS, SEWAGE TREATMENT PLANTS, AND DIVERSIONARY STRUCTURES;
  - B. ANY CHANGE IN THE NATURE OR CHARACTER OF THE REGULATED ACTIVITY FROM THAT WHICH WAS ORIGINALLY APPROVED OR A CHANGE WHICH WOULD SIGNIFICANTLY IMPACT THE ABILITY OF THE PLAN TO PREVENT POLLUTION OF THE EDWARDS AQUIFER;
  - C. ANY DEVELOPMENT OF LAND PREVIOUSLY IDENTIFIED AS UNDEVELOPED IN THE ORIGINAL WATER POLLUTION ABATEMENT PLAN.

SAN ANTONIO REGIONAL OFFICE  
14250 JUDSON ROAD  
SAN ANTONIO, TEXAS 78233-4480  
PHONE (210) 490-3096  
FAX (210) 545-4329

SWPPP LEGEND

- PROJECT LIMITS  
EXISTING CONTOUR  
PROPOSED CONTOUR  
FLOW ARROW (EXISTING)  
FLOW ARROW (PROPOSED)  
SILT FENCE  
ROCK BERM  
GRAVEL FILTER BAGS  
GRATE INLET PROTECTION  
SEDIMENT CONTROL ROLLS  
FORMATION CONTACT  
100' SANITARY SEWER ENVELOPE  
STABILIZED CONSTRUCTION ENTRANCE/EXIT (FIELD LOCATE)  
CONSTRUCTION EQUIPMENT, VEHICLE & MATERIALS STORAGE AREA (FIELD LOCATE)  
CONCRETE TRUCK WASH-OUT PIT (FIELD LOCATE)  
FAULT, LOCATED APPROXIMATELY (D, downthrown side; U, upthrown side)  
POTENTIAL RECHARGE FEATURE  
EDWARDS KAINER LIMESTONE  
WALNUT FORMATION LIMESTONE  
UPPER GLEN ROSE FORMATION

GENERAL NOTES

1. DO NOT DISTURB VEGETATED AREAS (TREES, GRASS, WEEDS, BRUSH, ETC.) ANY MORE THAN NECESSARY FOR CONSTRUCTION.
2. CONSTRUCTION ENTRANCE/EXIT LOCATION, CONCRETE WASH-OUT PIT, AND CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARD TO BE DETERMINED IN THE FIELD.
3. STORM WATER POLLUTION PREVENTION CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED EFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS EXHIBIT AND SIGNED AND DATED BY THE RESPONSIBLE PARTY.
4. RESTRICT ENTRY/EXIT TO THE PROJECT SITE TO DESIGNATED LOCATIONS BY USE OF ADEQUATE FENCING, IF NECESSARY.
5. ALL STORM WATER POLLUTION PREVENTION CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITIONS AT ALL TIMES.
6. FOR A COMPLETE LISTING OF TEMPORARY STORM WATER POLLUTION PREVENTION CONTROLS REFER TO THE TPDES STORM WATER POLLUTION PREVENTION PLAN.
7. STORM WATER POLLUTION PREVENTION STRUCTURES SHOULD BE CONSTRUCTED WITHIN THE SITE BOUNDARIES. SOME OF THESE FEATURES MAY BE SHOWN OUTSIDE THE SITE BOUNDARIES ON THIS PLAN FOR VISUAL CLARITY.
8. AS SOON AS PRACTICAL, ALL DISTURBED SOIL THAT WILL NOT BE COVERED BY IMPERVIOUS COVER SUCH AS PARKWAY AREAS, EASEMENT AREAS, EMBANKMENT SLOPES, ETC. WILL BE STABILIZED PER APPLICABLE PROJECT SPECIFICATIONS.
9. BEST MANAGEMENT PRACTICES MAY BE INSTALLED IN STAGES TO COINCIDE WITH THE DISTURBANCE OF UPGRADEMENT AREAS.
10. BEST MANAGEMENT PRACTICES MAY BE REMOVED IN STAGES ONCE THE WATERSHED FOR THAT PORTION CONTROLLED BY THE BEST MANAGEMENT PRACTICES HAS BEEN STABILIZED IN ACCORDANCE WITH TPDES REQUIREMENTS.
11. UPON COMPLETION OF THE PROJECT, INCLUDING SITE STABILIZATION, AND BEFORE FINAL PAYMENT IS ISSUED, CONTRACTOR SHALL REMOVE ALL SEDIMENT AND EROSION CONTROL MEASURES, PAYING SPECIAL ATTENTION TO ROCK BERMS IN DRAINAGE FEATURES.
12. WHERE VEGETATED FILTER STRIPS ARE INDICATED, CONTRACTOR SHALL VERIFY THAT SUFFICIENT VEGETATION EXISTS. OTHERWISE, CONTRACTOR SHALL PLACE SILT FENCING IN LIEU OF VEGETATED FILTER STRIP.

TEMPORARY POLLUTION  
ABATEMENT NOTES

1. CONSTRUCTION OF CIVIL INFRASTRUCTURE AND DRAINAGE STRUCTURES MAY PRECEDE CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR PLACING SILT FENCE ALONG THE DOWN GRADIENT SIDE OF THE DISTURBED AREA PERPENDICULAR TO THE DRAINAGE FLOW.
2. ROCK BERMS SHALL BE PLACED IN AREAS WHERE DRAINAGE FLOW IS CONCENTRATED DUE TO NATURAL CONDITIONS OR CONSTRUCTION ACTIVITIES SUCH AS DRAINAGE STRUCTURES. THESE BERMS WILL BE MAINTAINED UNTIL THEY ARE NO LONGER NEEDED OR UNTIL THEY ARE REPLACED WITH PERMANENT POLLUTION ABATEMENT MEASURES.
3. THIS PROJECT DOES NOT INCLUDE THE INSTALLATION OF ABOVE GROUND STORAGE TANKS (AST) WITH VOLUMES GREATER THAN OR EQUAL TO 500 GALLONS.
4. DRAINAGE PATTERNS ARE ILLUSTRATED BY FLOW ARROWS. SLOPES VARY THROUGHOUT THE SITE; TYPICAL SLOPES IN THIS PROJECT WILL RANGE FROM 1% TO 30%.
5. THE NATURE OF CONSTRUCTION IS SUCH THAT IT IS DIFFICULT TO PREDICT AREAS THAT WILL BE DISTURBED AND RE-VEGETATED. THE CONSTRUCTION PLANS INCLUDE A NOTE ON EXHIBIT 3 WHICH WILL REQUIRE THE CONTRACTOR TO RE-VEGETATE DISTURBED AREAS WITH SEEDING, HYDROMULCH, OR SOD AND SPRINKLING. ALL IMPERVIOUS COVER AREAS WILL BE DISTURBED.

TEMPORARY BMP MODIFICATIONS

DATE	SIGNATURE	DESCRIPTION

THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE POLLUTION ABATEMENT SIZING AND TREATMENT REQUIREMENTS OF THE TCEQ'S EDWARDS AQUIFER TECHNICAL GUIDANCE MANUAL.

THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF THE POLLUTION ABATEMENT ONLY. ALL OTHER CIVIL ENGINEERING-RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.

EXHIBIT 1

MEYER RANCH UNIT 16  
COMAL COUNTY, TEXAS  
WATER POLLUTION ABATEMENT PLAN MODIFICATION  
TEMPORARY WATER POLLUTION ABATEMENT PLAN

PLAT NO.  
JOB NO. 30010-27  
DATE DECEMBER 2024  
DESIGNER CL  
CHECKED HFW DRAWN AL  
SHEET 1 OF 1

FOR PERMIT











DRAINAGE & GRADING NOTES:

1. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
2. ALL CONCRETE FOR TxDOT DRAINAGE STRUCTURES SHALL MEET TxDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
3. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
4. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
5. EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING. 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF NEW BRAUNFELS WILL ACCEPT.
6. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE, AND FIBER OPTIC LINES, SITE LIGHTING, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

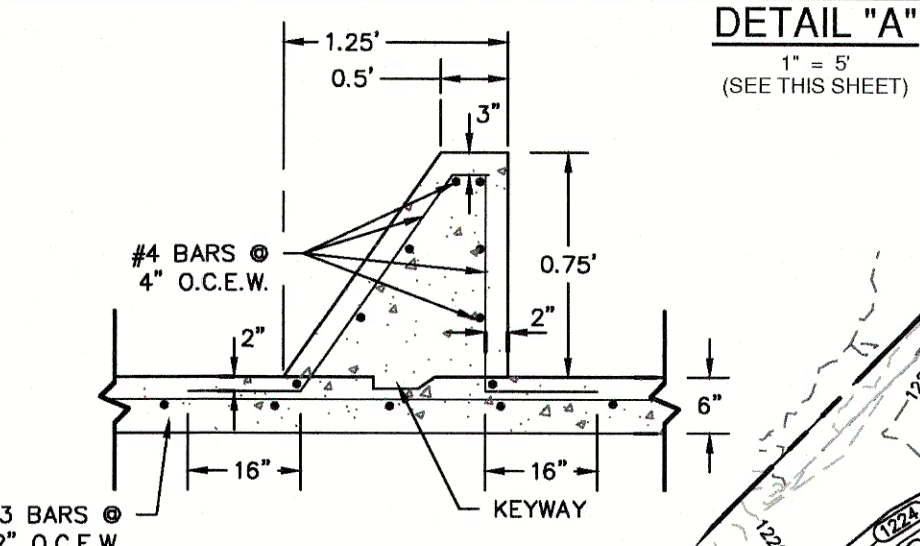
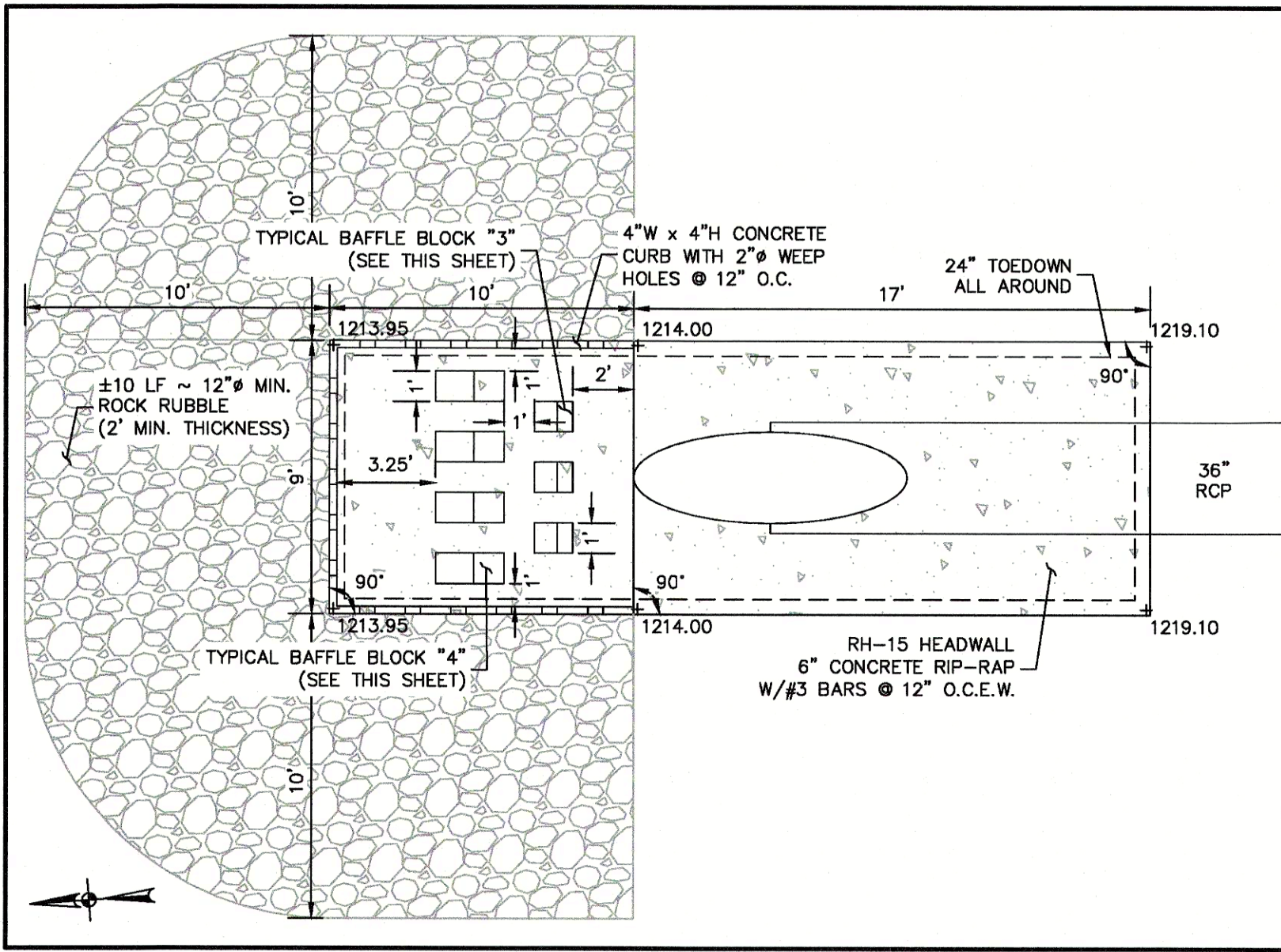
NOTES

1. UPON COMPLETION OF CONSTRUCTION, AND IN ACCORDANCE WITH TCEQ REGULATIONS, ALL PERMANENT BMP'S MUST BE CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER.
2. ALL AREAS DISTURBED AS PART OF CONSTRUCTION OF BASIN SHALL BE REVEGETATED PRIOR TO COMPLETION.
3. BASIN HAS BEEN DESIGNED USING TSS REMOVAL AND BMP SIZING CALCULATIONS AS PER THE TCEQ TGM RG-348 (2005).
4. BASIN PLAN DEPICTS MINIMUM INTERIOR DIMENSIONS (LENGTH, WIDTH & HEIGHT FOR TCEQ REVIEW & APPROVAL.
5. BASIN DRAWDOWN IS CONTROLLED BY THE 6" PVC PIPE. BASIN DRAWDOWN WILL OCCUR IN APPROXIMATELY 29 HOURS.

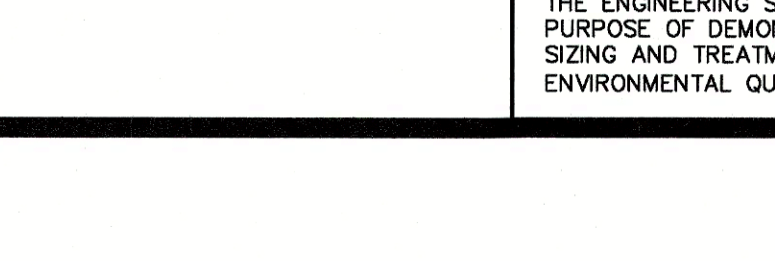
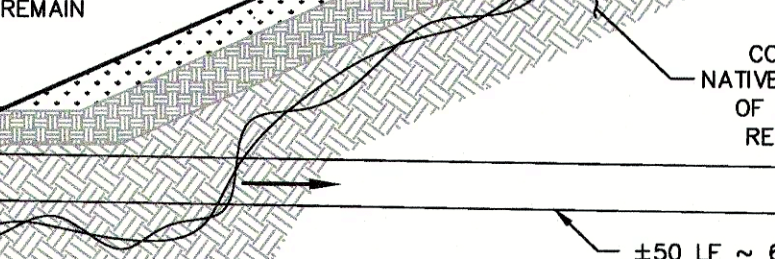
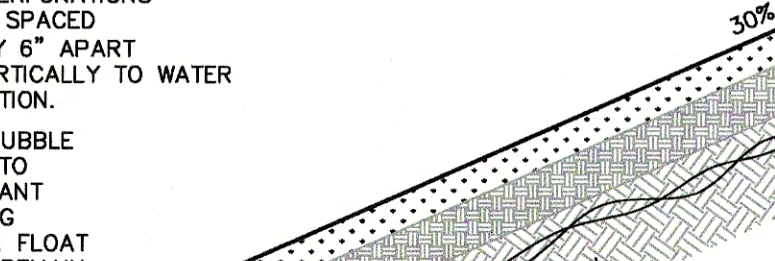
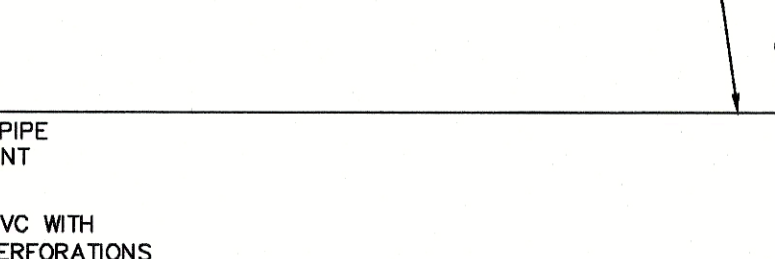
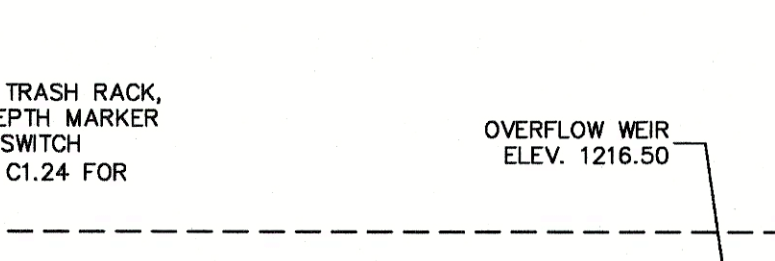
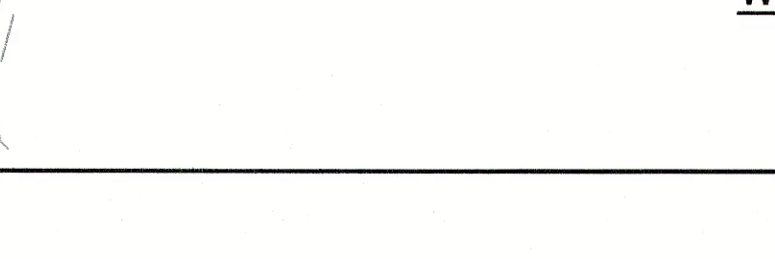
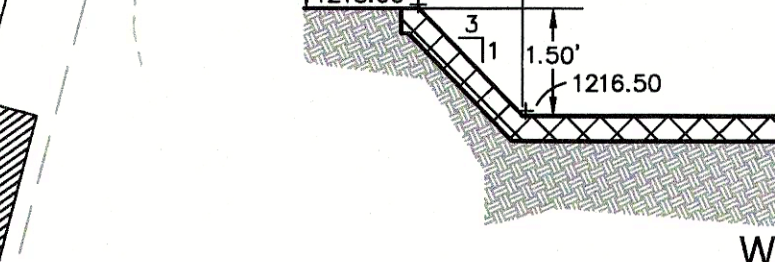
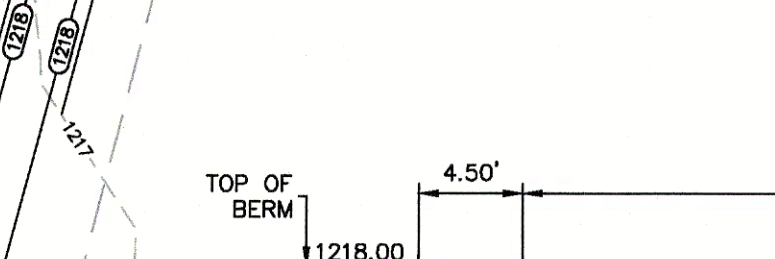
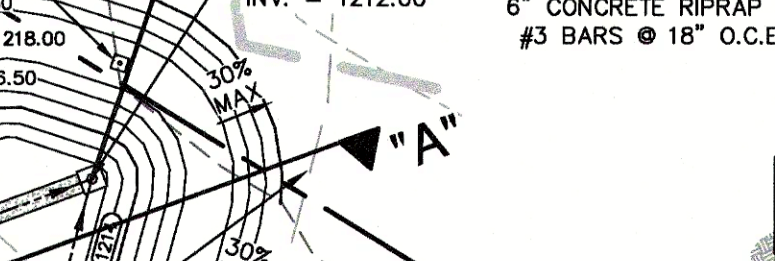
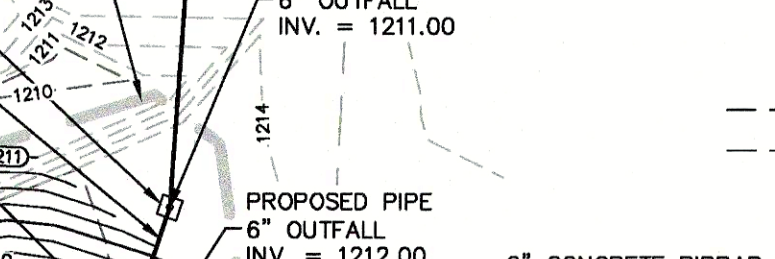
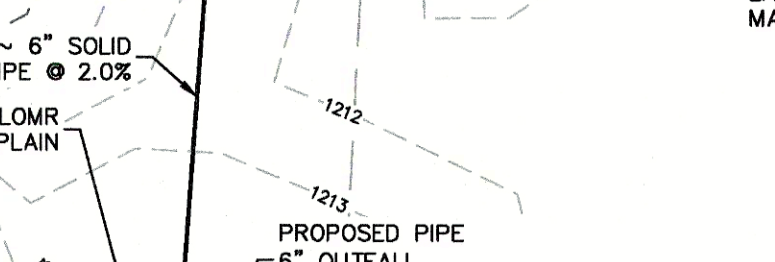
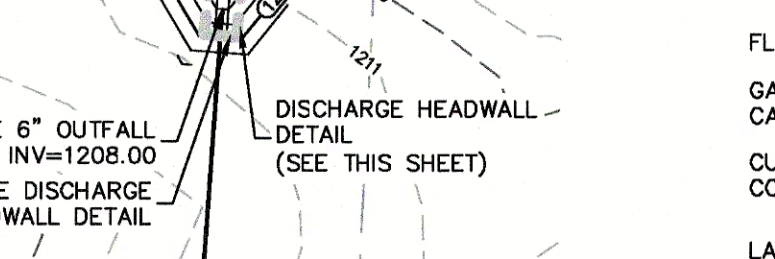
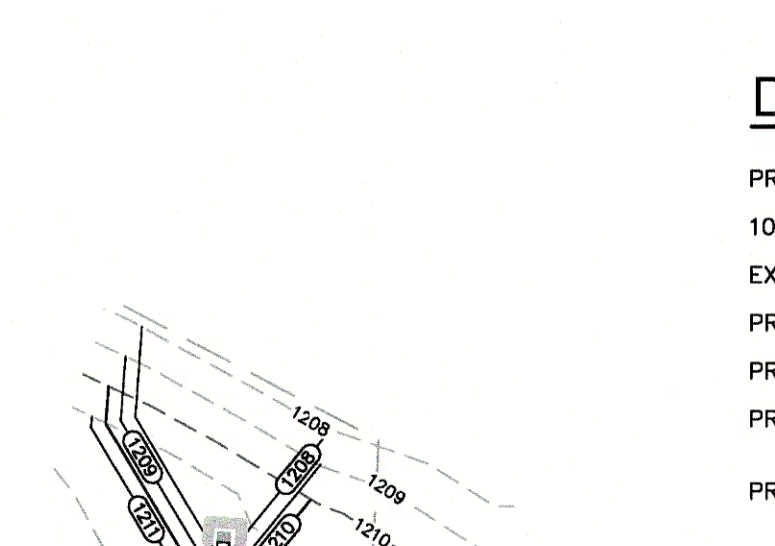
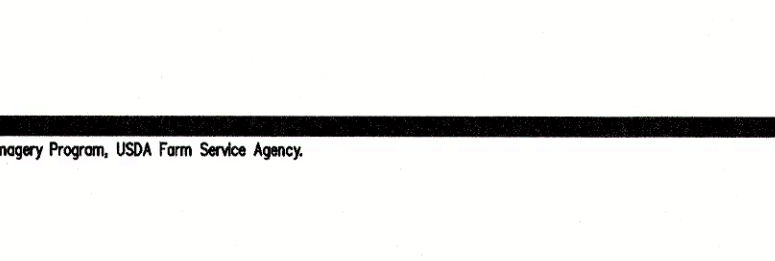
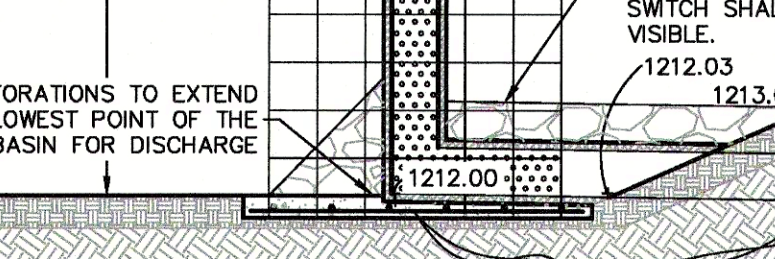
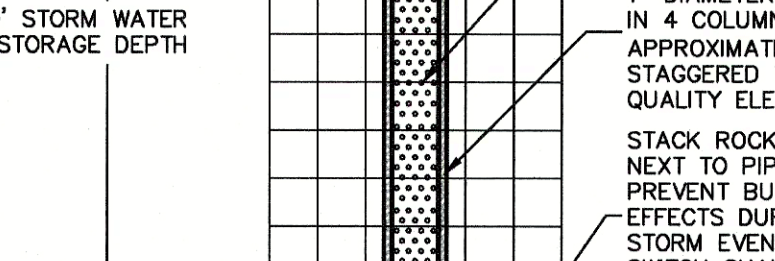
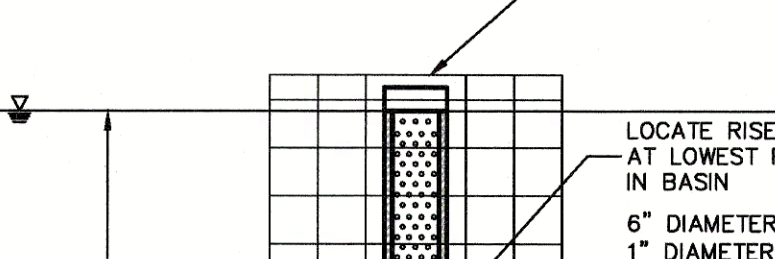
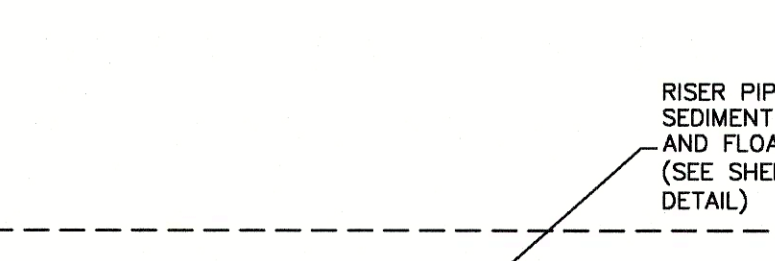
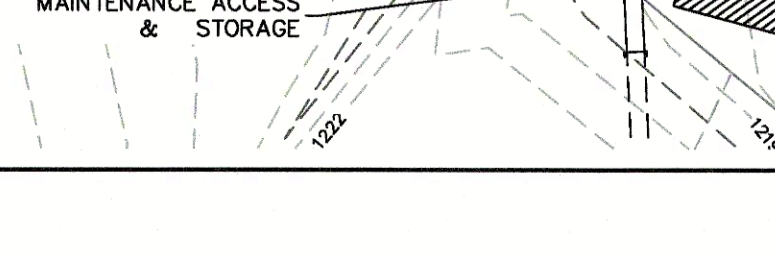
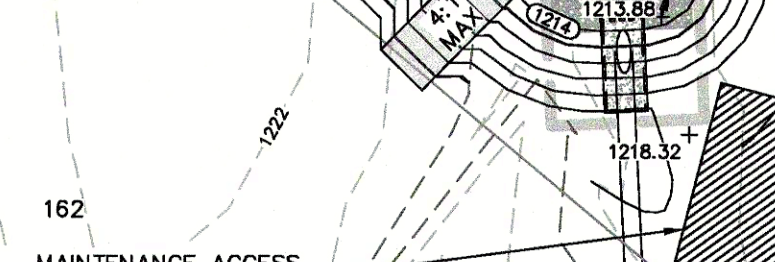
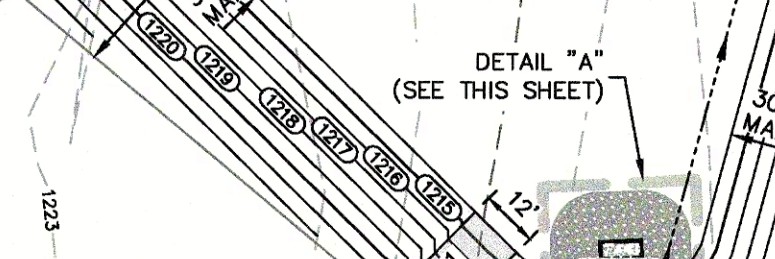
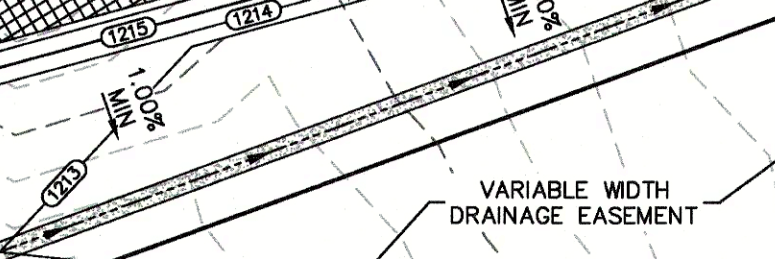
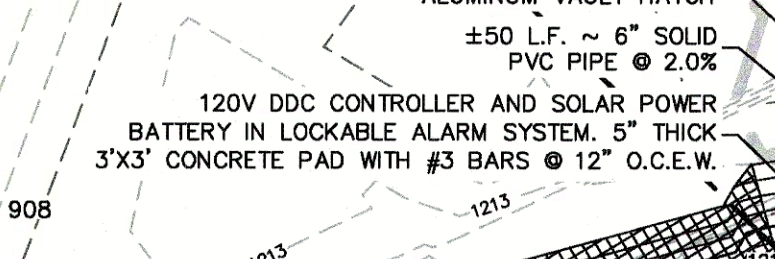
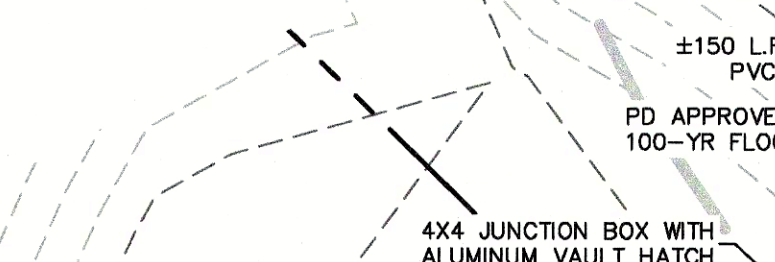
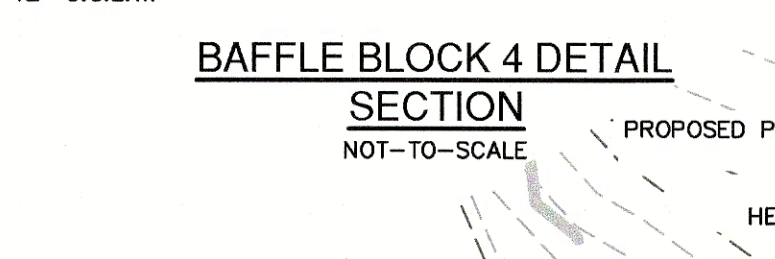
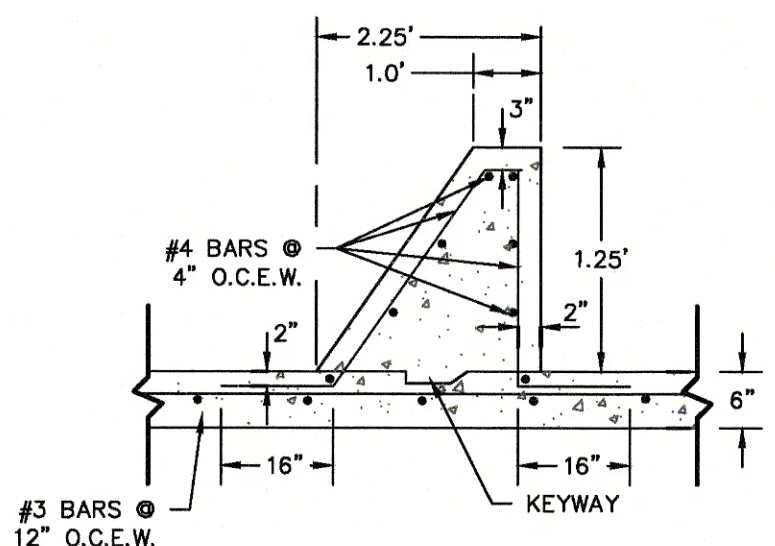
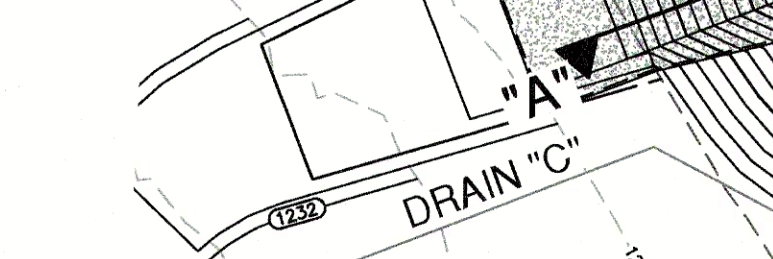
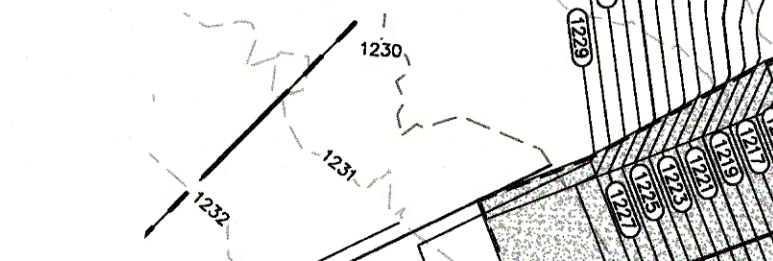
SEQUENCE OF OPERATION

1. UPON ACTIVATION OF FLOAT SWITCH, DDC CONTROLLER TO START DETENTION TIMER #1.
2. DETENTION TIMER #1 TO BE MANUALLY SET TO 12 HOURS AND TO BE USER ADJUSTABLE VALUE.
3. WHEN DETENTION TIMER #1 HAS ELAPSED, A 6" BUTTERFLY VALVE IS TO OPEN AND RELEASE DETAINED WATER BASIN.
4. UPON DEACTIVATION OF FLOAT SWITCH, DDC CONTROLLER TO START DETENTION TIMER #2.
5. DETENTION TIMER #2 TO BE MANUALLY SET TO 29 HOURS MINIMUM AND 48 HOURS MAXIMUM AND TO BE USER ADJUSTABLE.
6. WHEN DETENTION TIMER #2 HAS ELAPSED, THE 6" BUTTERFLY VALVE IS TO CLOSE.
7. VALVE TO BE ACTUATED PERIODICALLY TO SHOW ACTIVE REGARDLESS OF FLOAT SWITCH OPERATION.

M.A.S NOTE:  
STAGING AREA REQUIREMENT (800 SQ.FT.)  
IS SATISFIED BY UTILIZING THE AREA  
ADJACENT TO THE BASIN AS DESIGNATED  
IN THE PLAN VIEW ABOVE.



BAFFLE BLOCK 3 DETAIL  
SECTION  
NOT-TO-SCALE



DRAINAGE LEGEND

