Water Pollution Abatement Plan

For

Pecan Park Commercial Building Complex

2376 Bulverde Road
Bulverde, TX 78163

Prepared By
Hill Country Civil, LLC
1042 North Park Ridge
New Braunfels, TX 78130
Blake Allison, PE

Hill Country Civil
Engineers • Consultants

Application Cover Page

Texas Commission on Environmental Quality

Edwards Aquifer Application Cover Page

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.

1. Regulated Entity Name: Pecan Park Bulverde, LLC						**2. Regulated Entity No.:**			
3. Customer Name: Clint Hoese						**4. Customer No.:**			
5. Project Type: **(Please circle/check one)**	New		Modification			Extension		Exception	
6. Plan Type: **(Please circle/check one)**	WPAP	CZP	SCS	UST	AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures
7. Land Use: **(Please circle/check one)**	Residential		Non-residential			**8. Site (acres):**		10.202	
9. Application Fee:	$6,500		**10. Permanent BMP(s):**			Batch Detention Pond			
11. SCS (Linear Ft.):	N/A		**12. AST/UST (No. Tanks):**			No Tanks			
13. County:	Comal		**14. Watershed:**			Indian Creek			

Application Distribution

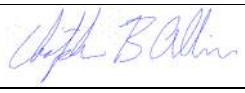
Instructions: Use the table below to determine the number of applications required. One original and one copy of the application, plus additional copies (as needed) for each affected incorporated city, county, and groundwater conservation district are required. Linear projects or large projects, which 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

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)	___Edwards Aquifer Authority ___Barton Springs/ Edwards Aquifer ___Hays Trinity ___Plum Creek	___Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	___Austin ___Buda ___Dripping Springs ___Kyle ___Mountain City ___San Marcos ___Wimberley ___Woodcreek	___Austin ___Bee Cave ___Pflugerville ___Rollingwood ___Round Rock ___Sunset Valley ___West Lake Hills	___Austin ___Cedar Park ___Florence ___Georgetown ___Jerrell ___Leander ___Liberty Hill ___Pflugerville ___Round Rock

San Antonio Region					
County:	**Bexar**	**Comal**	**Kinney**	**Medina**	**Uvalde**
Original (1 req.)	___	_X_	___	___	___
Region (1 req.)	___	_X_	___	___	___
County(ies)	___	_X_	___	___	___
Groundwater Conservation District(s)	___ Edwards Aquifer Authority ___Trinity-Glen Rose	_ _Edwards Aquifer Authority	___Kinney	___EAA ___Medina	___EAA ___Uvalde
City(ies) Jurisdiction	___Castle Hills ___Fair Oaks Ranch ___Helotes ___Hill Country Village ___Hollywood Park ___San Antonio (SAWS) ___Shavano Park	_X_Bulverde ___Fair Oaks Ranch ___Garden Ridge ___New Braunfels ___Schertz	NA	___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. Christopher B. Allison
Print Name of Customer/Authorized Agent  **1/16/2023**
Signature of Customer/Authorized Agent Date

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):	

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General Information Form

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: Christopher B. Allison

Date: 1/25/2023

Signature of Customer/Agent:

Project Information

1. Regulated Entity Name: Pecan Park Bulverde, LLC
2. County: Comal
3. Stream Basin: Indian Creek
4. Groundwater Conservation District (If applicable): N/A
5. Edwards Aquifer Zone:

   ☒ Recharge Zone
   ☐ Transition Zone

6. Plan Type:

   ☒ WPAP
   ☐ SCS
   ☐ Modification
   ☐ AST
   ☐ UST
   ☐ Exception Request

7. Customer (Applicant):

   Contact Person: Clint Hoese
   Entity: Pecan Park Bulverde, LLC
   Mailing Address: 1490 Spring Branch Road
   City, State: Spring Branch Zip: 78070
   Telephone: 210-269-3090 FAX: _____
   Email Address: youngoak@yahoo.com

8. Agent/Representative (If any):

   Contact Person: Christopher B. Allison, PE
   Entity: Hill Country Civil
   Mailing Address: 1042 Northpark Ridge
   City, State: New Braunfels Zip: 78130
   Telephone: 817-659-9078 FAX: _____
   Email Address: blake@hillcountrycivil.com

9. Project Location:

   ☒ The project site is located inside the city limits of Bulverde.
   ☐ 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.

    The tract is a 10.202 acre tract located at the intersection of Bulverde Road and Bulverde Lane, in the southeast quadrant of the intersection. The address is 2376 Bulverde Road.

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: _____

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.

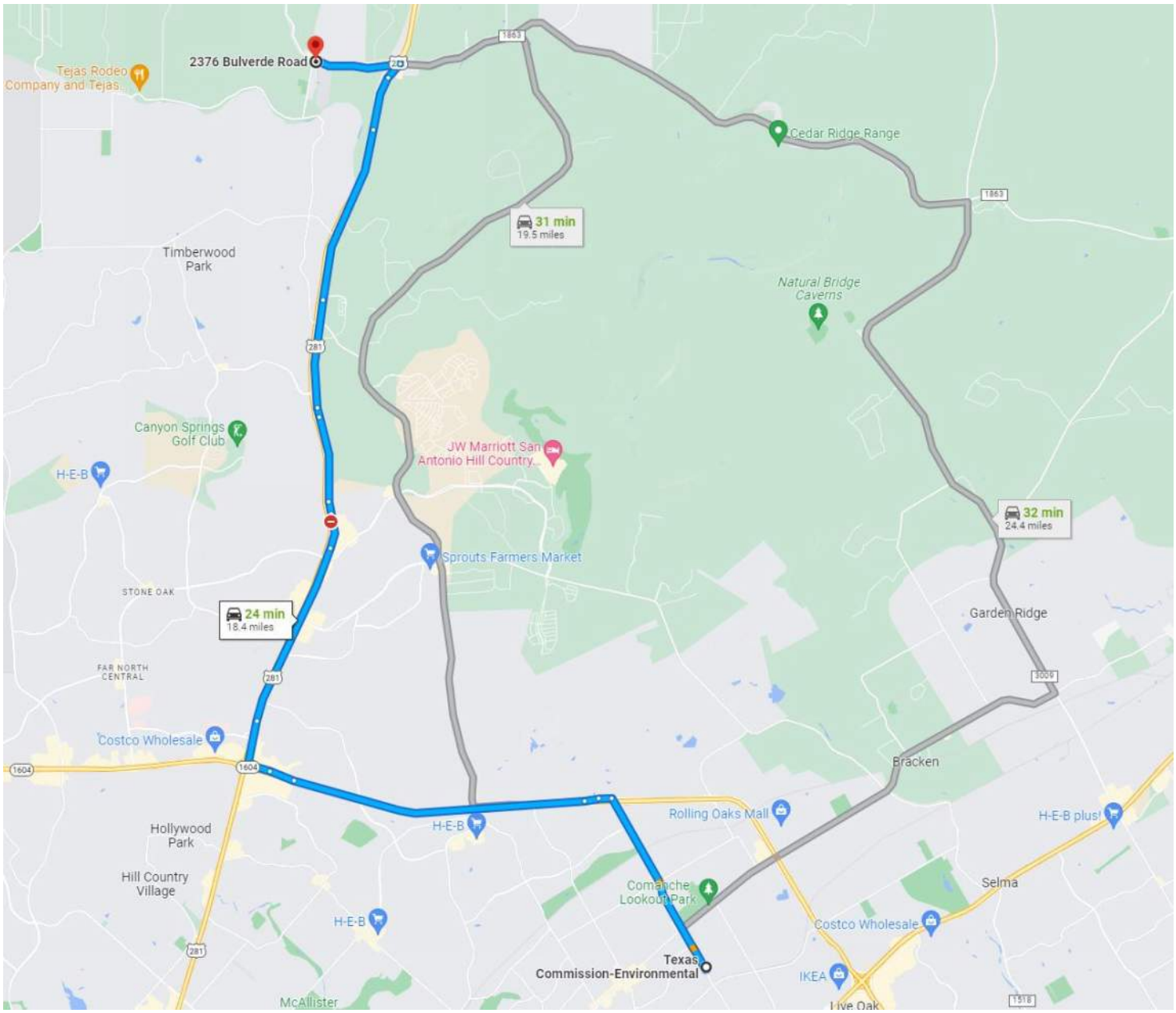
19. ☒ Application fees are due and payable at the time the application is filed. If the correct fee is not submitted, the TCEQ is not required to consider the application until the correct fee is submitted. Both the fee and the Edwards Aquifer Fee Form have been sent to the Commission's:

☐ 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: Road Map



Get on TX-1604 Loop W from Judson Rd
7 min (3.0 mi)
Continue on TX-1604 Loop W. Drive from US-281, Summit Church Rd, Overlook Pkwy and US-281 N to Bulverde. Take the Farm to Market Rd 1863 exit from US-281 N
16 min (14.2 mi)
Follow Bulverde Rd to your destination
2 min (1.1 mi) to **2376 Bulverde Rd Bulverde, TX 78163**

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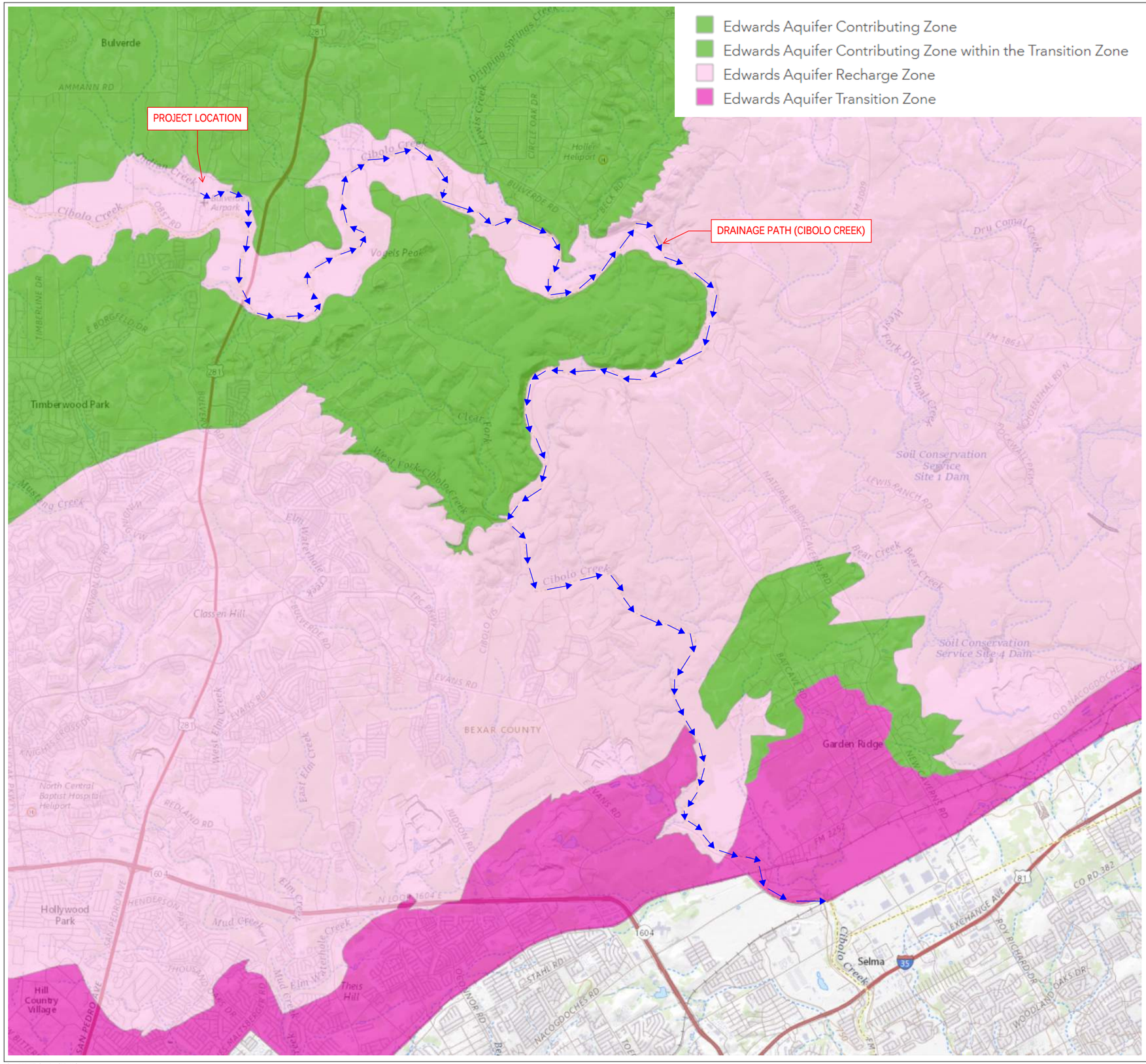

N

QUADRANGLES:

BULVERDE
BAT CAVE
SCHERTZ

Hill Country Civil
Engineers ■ Consultants

No.	Date	Revisions	App.

PECAN PARK
USGS MAP

HCC JOB No.:

DRAWN BY:

SHEET No.

OF

Copyright Hill Country Civil, LLC

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map US Topo

BULVERDE QUADRANGLE
TEXAS
7.5-MINUTE SERIES

PROJECT LOCATION

SAN ANTONIO

Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid:Universal Transverse Mercator, Zone 14R

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery.....NAIP, September 2016 - November 2016
Roads..... U.S. Census Bureau, 2015 - 2019
Names.....GNIS, 1979 - 2022
Hydrography.....National Hydrography Dataset, 2000 - 2018
Contours.....National Elevation Dataset, 2021
Boundaries.....Multiple sources; see metadata file 2019 - 2021

Wetlands.....FWS National Wetlands Inventory Not Available

MN
GN
4°6′ 73 MILS
0°17′ 5 MILS
UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
NT
Grid Zone Designation 14R

SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 1
MILES
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000
FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard.

TEXAS
QUADRANGLE LOCATION

1 Bergheim
2 Anhalt
3 Smithson Valley
4 Camp Bullis
5 Bat Cave
6 Castle Hills
7 Longhorn
8 Schertz
ADJOINING QUADRANGLES

ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

BULVERDE, TX
2022

NSN, 7643016395300
NGA REF NO.USGSX24K6180

Attachment C: Project Narrative

Pecan Park is a proposed commercial building complex located at 2376 Bulverde Road; in the southeast quadrant of the Bulverde Road and Bulverde Lane Street Intersection. The 10.202-acre property is located fully within the city limits of Bulverde and entirely inside of the Edwards Aquifer Recharge Zone and partially located inside a regulated 100-year floodplain (Zone AE) per FEMA FIRM Panel No. 48091C0380F. The site generally drains from the north to south, towards the floodplain. In accordance with 30 TAC Chapter 213, this WPAP application is being submitted for the proposed development to occur onsite.

The property has been owned by the Hoese family since the 1970's and is being developed by Pecan Park Bulverde, LLC (owned and operated by the Hoese family) for the proposed commercial building complex. It is important to note the history of the site. There is an existing retail building and warehouse located on the north side of the tract. These buildings were originally built in the 1970's and reconstructed and remolded throughout the years. There is existing asphalt paving onsite as well that provides parking for the existing buildings. There are two auxiliary storage buildings also onsite, along with a water well and storage tank that provides water service to the existing structures. The site is served by an onsite septic system that treats all wastewater generated by the existing buildings. The existing impervious cover is 2.26 acres. There was a new parking lot constructed and improved, and many of the buildings were improved during the 1990's. However, there is no present permanent BMP or WPAP on file with TCEQ for the existing development.

The site will be further developed than what is currently existing, but none of the existing facilities will be demolished or expanded. Proposed improvements include 8 new buildings, driveways, parking lots, utilities, landscaping elements and a batch detention pond for water quality treatment and detention. New development will disturb approximately 3.25 acres, of which, 1.91 acres is impervious cover. Based on the total site acreage of 10.202 acres, proposed impervious cover 1.91 acres and existing impervious cover is 2.26 acres, or a total of 4.17 acres of impervious cover. A large portion of the south portion of the site will remain undeveloped, as it is located within the 100-year floodplain.

The proposed permanent BMP to treat both the existing and proposed impervious cover is a batch detention pond, adhering to TCEQ's Technical Guidance Manual (TGM) RG-348. In order to ensure that all site generated TSS is accounted for, since the existing development currently has no BMP's for treatment, the batch detention pond is design to fully treat the 4.17 acres of impervious cover, generating 1714 lbs of TSS.

There are no adjacent tracts located upgradient of the project site, as Bulverde Road and Bulverde Lane intercept and capture runoff that would drain towards the site. Therefore, no proposed drainage interceptor channels or upsizing of the batch detention pond to treat offsite runoff are required.

Wastewater flows generated by the project will be treated by a new septic system sized to treat the new development. Potable water will be provided by Canyon Lake Water Supply Company.

No sensitive features were identified on the Geologic Assessment. However, there is an existing well onsite. This well is located inside of a well house attached to the existing warehouse structure. The well is not located in area susceptible to contamination as it is located primarily up gradient of most

stormwater flows, protected inside a wellhouse, and proposed development is occurring south of the well location.

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Geologic Assessment

Geologic Assessment

Texas Commission on Environmental Quality

For Regulated Activities on The Edwards Aquifer Recharge/transition Zones and Relating to 30 TAC §213.5(b)(3), 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. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Print Name of Geologist: Andy G. Grubbs RS PG Telephone: 512 392-3546

Date: 1-18-2023 Fax: _____

Representing: _____ (Name of Company and TBPG or TBPE registration number)

Signature of Geologist: Hays Environmental Consulting PG # 6708

RSPG

Regulated Entity Name: Clint Hoese

Project Information

1. Date(s) Geologic Assessment was performed: 1-16-2023
2. Type of Project:
   - ☑ WPAP
   - ☐ SCS
   - ☐ AST
   - ☐ UST
3. Location of Project:
   - ☒ Recharge Zone
   - ☐ Transition Zone
   - ☐ Contributing Zone within the Transition Zone

4. [X] **Attachment A - Geologic Assessment Table.** Completed Geologic Assessment Table (Form TCEQ-0585-Table) is attached.

5. [X] Soil cover on the project 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 project site, show each soil type on the site Geologic Map or a separate soils map.

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness(feet)
Lewisville	D	3.5+

** 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.

6. [X] **Attachment B – Stratigraphic Column.** A stratigraphic column showing formations, members, and thicknesses is attached. The outcropping unit, if present, should be at the top of the stratigraphic column. Otherwise, the uppermost unit should be at the top of the stratigraphic column.

7. [X] **Attachment C – Site Geology.** A narrative description of the site specific geology including any features identified in the Geologic Assessment Table, a discussion of the potential for fluid movement to the Edwards Aquifer, stratigraphy, structure(s), and karst characteristics is attached.

8. [X] **Attachment D – Site Geologic Map(s).** 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: 1" = 100 '
   Site Geologic Map Scale: 1" = 100 '
   Site Soils Map Scale (if more than 1 soil type): 1" = 800 '

9. Method of collecting positional data:

   [X] Global Positioning System (GPS) technology.
   [ ] Other method(s). Please describe method of data collection: _____

10. [X] The project site and boundaries are clearly shown and labeled on the Site Geologic Map.

11. [X] Surface geologic units are shown and labeled on the Site Geologic Map.

12. [X] Geologic or manmade features were discovered on the project 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 project site during the field investigation.

13. [X] The Recharge Zone boundary is shown and labeled, if appropriate.

14. All known wells (test holes, water, oil, unplugged, capped and/or abandoned, etc.): If applicable, the information must agree with Item No. 20 of the WPAP Application Section.

    [X] There are 1 (#) 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 Chapter 76.

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

Administrative Information

15. [X] 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.

GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: Hoese

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	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	DIP/DIR	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPOGRAPHY
						X	Y	Z								<40	>40	<1.6	>1.6	
Well	29.743	-98.453	MB	30	Lgr									0		30				valley floor

* DATUM: _____

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, Drainage, 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 Chapter 213.

Andrew G Sutton RSK

Date 1-18-2023

Sheet 1 of 1

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

Feature Location Table

All locations in WGS 84 projection

Feature ID	Lat	Long	Lat	Long
Well	29.74262	-98.45293		

RSPE

ANDREW G. GRUBBS
PROFESSIONAL GEOSCIENTIST # 6708

STATE OF TEXAS
Andrew G. Grubbs
Geology
6708
LICENSED
PROFESSIONAL GEOSCIENTIST

1-18-23

SITE SOILS

The soils mapped on the site by the U.S. Soil Conservation Service is the Lewisville soil series. These soils are in the Clay Loam Range Site and are deep well drained clayey to loamy soils formed on calcareous sediment on stream terraces. At 1 site characteristic of the area a test hole was dug and the soil types were determined. In general the soils on the surface are dark grey / black clays. Visual inspection showed the entire area is covered with deep high clay soils with no exposed bedrock.

Profile 1

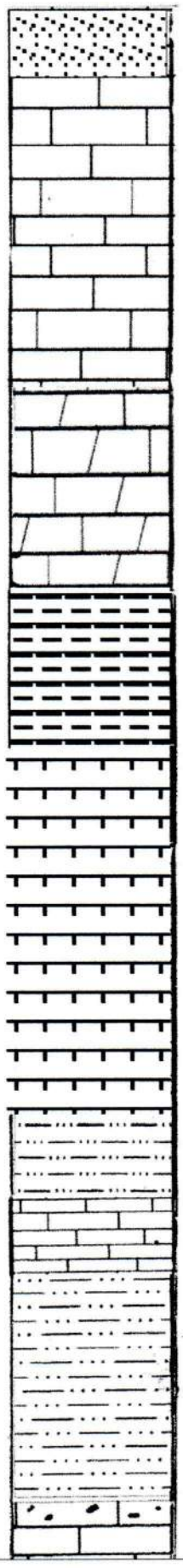
0 - 20"	black clay class IV forms ribbon 2" color 7.5YR 4/1 sticky, stains, sharp fingerprint, slight amount of very fine sand
20-40"	very dark black clay class IV forms ribbon 2" color 7.5YR 2.5/1 sticky, stains, sharp fingerprint, slight amount of very fine sand

ANDREW G. GRUBBS
PROFESSIONAL GEOSCIENTIST # 6708

1-18-23


Soils Map
Hoese
CrD
DeB
DeB
ROAD
SuB
BtG
RcD
AnA
Bulverde
LeA
KrB
LeB
SuA
LeA
GrC
GrC
KrA
BoB
LeA
Creek
Or
COUNTY
N
Hays
Environmental
Consulting
0
400
800
feet
AnA Anhalt
BoB Bolar
BtG Brackett
CrD Comfort-rock
DeB Denton
GrC Gruene
KrA Krum
KrB Krum
LeA Lewisville
LeB Lewisville
Or Oriff
SuA Sunev
SuB Sunev

Attachment B: Site Stratigraphic Column



Quaternary Recent Alluvium

Thick high Clay soils

Class IV Clay

Lower Glen Rose Limestone

Massive Bedded

Fossiliferous

Karstic

Limestones

Comanche Series

Trinity Group

Hensel Sandstone

Shales & Sandstones

Massive Bedded

Fossiliferous

Cow Creek Limestone

Karstic

Reef Limestones

Hammett Shale

shales & thin flagstones

STATE OF TEXAS
Andrew C. Grubbs
Geology
6703
PROFESSIONAL GEOLOGIST

1-18-23

SITE GEOLOGY:

Structure

This project area is west of the western edge of the Balcones Fault Zone. It lies in the floodplain of Cibolo Creek 20 miles west of New Braunfels. Faulting in this area is not as intense as the Balcones Zone but is still present and displacements cause groundwater springs in the Trinity formations to resurge on contacts. The Edwards limestone terrains are several miles to the east this site is in the stair step hill country formed on the alternating hard dolomitic limestones and soft marls of the upper Glen rose formation. This entire tract is covered by thick very high clay alluvial soils

Stratigraphy

No surface rock strata are observed here. The area is manteled by a thick cover of high clay riparian soils

Lithology

geolgic mapping by the UT-BEG and others indicate that the Loser Glen Rose formations of the upper Trinity group is present under the alluvial soils. This formation is shallow subtidal depositional environments with reefs and abundant fossil corals. Most of the porosity/permeability in this rock is a result of development of vugs and coarse grained recrystillization. Due to the tectonic history and setting between major faults fracture porosity is probably high

Water infiltrating in this area has a very low potential to percolate thru the thick high clay soil cover and flow to Comal Springs located 19.1 miles to the east southeast or to San Marcos Springs located 32.9 miles to the east northeast.

The entire tract was surveyed using walking transects no greater than 50' apart and all potential recharge features were located and plotted on the site geologic map. Due to the small size of the tract and its topographic setting no sensitive features were discovered during the surface survey.

Geologic studies specific to this area which were used as background include, Hill (1901) George (1948) Noyes and Young (1960) Rose, P.R.(1972) Maclay and Small (1976) Hanson and Small (1995) and Ahr (2008)

Ahr, W.M., 2008, Geology of Carbonate Reservoirs: the identification, description, and characterization of hydrocarbon reservoirs in carbonate rocks; John Wiley & Sons New Jersey, pp 277

Bills, T.V.,Jr., 1957, Geology of Waco Springs Quadrangle, Comal County, Texas. University of Texas, Austin, Master's thesis 106 P.

Bluntzer R.L., 1992, Evaluation of the Ground-Water resources of the Paleozoic and Cretaceous Aquifers in the hill country of central Texas; Texas Water Development Board Report 339, 130p.

George, W.O., 1948, Development of limestone reservoirs in Comal County, Texas: American Geophysical Union trans, v29, 503-510

Hanson, J.A., and Small, T.A., 1995, Geologic framework and Hydrogeologic Characteristics of the Edwards Aquifer Outcrop, Hays County, Texas: U.S. Geological Survey Water Resources Investigations Report 95-4265

HILL, R. T.1901. Geography and Geology of the Black and Grand Prairies. United States Geological Survey, 21st Annual Report, Part 7.

Lozo,E.F., Et Al., 1959. Symposium on the Edwards Limestone in central Texas: University of Texas, Bureau of Economic Geology Publication 5905, 235p.

Maclay, R.W., and Small, T.A., 1976 Progress report on geology of the Edwards Aquifer, San Antonio area, Texas, and preliminary interpretation of borehole geophysical and laboratory data on carbonate rocks: U.S. Geological Survey Open-File Report 76-627, 65p.

Noyes, A.P.,Jr. and Young, K.P., 1960, Geology of Purgatory Creek area, Hays and Comal Counties, Texas: Texas Jour. Sci., v.12 no1 & 2, p. 64-104

Rose, P.R. 1972, Edwards Group Surface and Subsurface, Central Texas University of Texas , Bureau of Economic Geology Report Inv. no 74. 198 p.

Stricklin, F.L.,Jr.,Smith,C.I., and Lozo,F.E., 1971, stratigraphy of Lower Cretaceous Trinity deposits of central Texas: Univ. Texas at Austin, Bur. Econ. Geology Rept. Inv. No. 71.

RSPC

ANDREW G. GRUBBS
PROFESSIONAL GEOSCIENTIST # 6708

1-18-2023

Attachment D
Site Geologic Map

RSPC
1-18-2023

soil test

water well

100' well setback

OSSF tanks

OSSF spray areas

1085

1

Lot 1
10.152 Ac.

Qra Quaternary
recent alluvium

1083

Base Flood Elevation
1083'

FEMA mapped 500 year
floodplain

1080

Qra

FEMA 100 year
Floodplain
Zone AE

1078

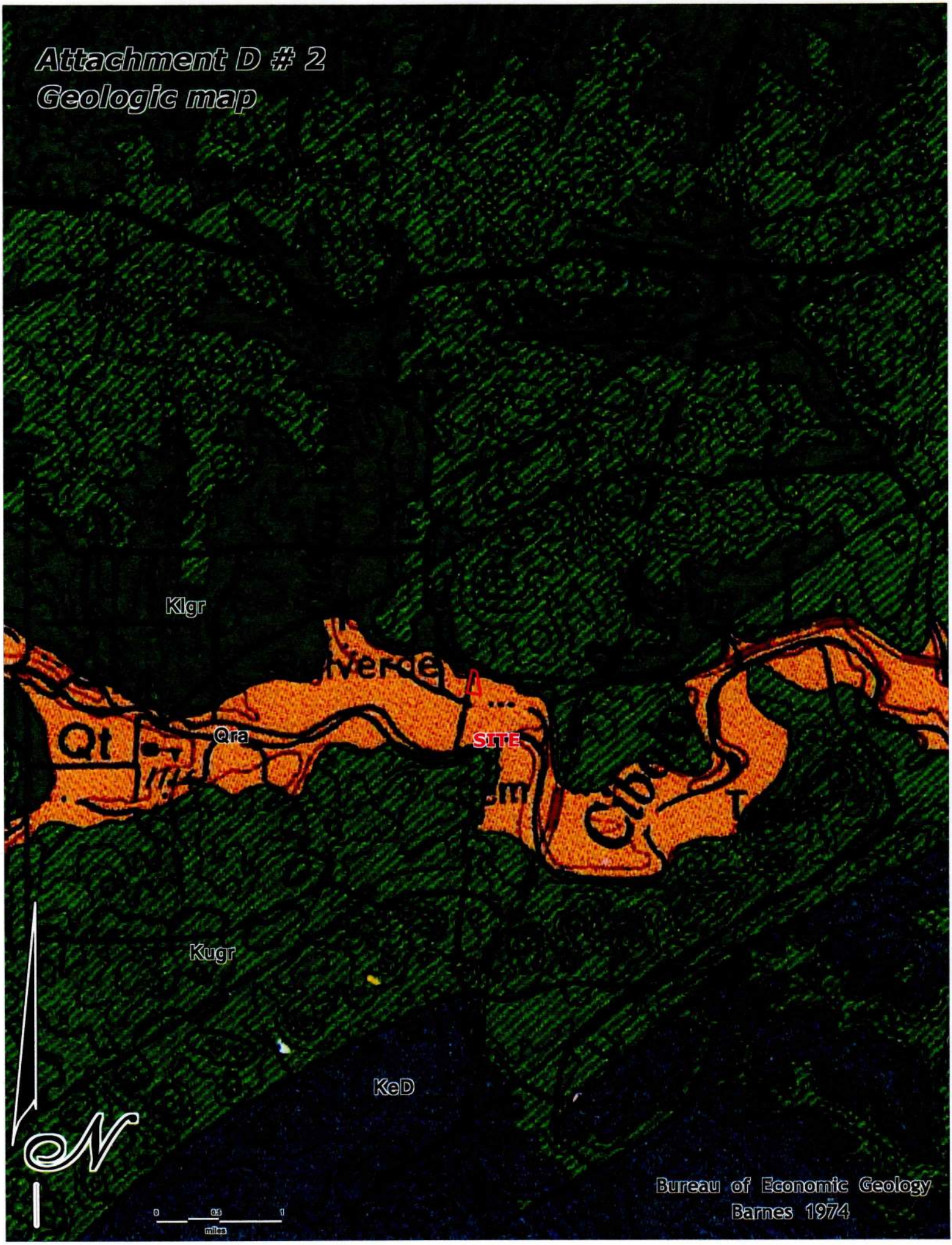
N

Contour Interval 1'

0 100 200
feet

Hays
Environmental
Consulting

Topographic Contours based on
LiDAR TNRIS 2021


Attachment D # 2
Geologic map
Klgr
Qt
Qra
SITE
Kugr
KeD
N
0
0.5
1
miles
Bureau of Economic Geology
Barnes 1974

Hill Country Civil
Engineers • Consultants

Application Form

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: Christopher B. Allison, PE

Date: 1/25/2023

Signature of Customer/Agent:

Regulated Entity Name: Pecan Park Bulverde, LLC

Regulated Entity Information

1. The type of project is:

   ☐ Residential: Number of Lots:_____
   ☐ Residential: Number of Living Unit Equivalents:_____
   ☒ Commercial
   ☐ Industrial
   ☐ Other:_____

2. Total site acreage (size of property):10.202

3. Estimated projected population:100

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	79,008	÷ 43,560 =	1.81
Parking	102,801	÷ 43,560 =	2.36
Other paved surfaces	0	÷ 43,560 =	0
Total Impervious Cover	181,645	÷ 43,560 =	4.17

Total Impervious Cover 4.17 **÷ Total Acreage** 10.202 **X 100 =** 41**% 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^2 ÷ 43,560 Ft^2/Acre = _____ acres.

10. Length of pavement area: _____ feet.

    Width of pavement area: _____ feet.
    L x W = _____ Ft^2 ÷ 43,560 Ft^2/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:

100% Domestic	_____Gallons/day
_____% Industrial	_____Gallons/day
_____% Commingled	_____Gallons/day
TOTAL gallons/day _____	

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_____.
- ☐ 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 _____ (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" = 50'.

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): FEMA FIRM Panel No. 48091C0380F, Dated September 2, 2009, Comal County

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 1 (#) 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: Factors Affecting Surface Water Quality

The list below are potential sources of pollution that may be reasonably expected to impact the quality of stormwater runoff from the site during construction.

- Hydrocarbons from asphalt paving construction
- Oil, fuel, grease and hydraulic fluid from construction equipment and automobiles
- Soil erosion due to site clearing, grading and demolition activities
- Trash, litter and construction debris from workers and construction activities
- Concrete truck washout
- Concrete/masonry
- Fertilizers
- Cleaning solvents

The list below are potential sources of pollution that may be reasonably expected to impact the quality of stormwater runoff from the site after construction or after development.

- Trash and litter typical of daily use from customers and tenants
- Oil, fuel, grease and hydraulic fluid from vehicles parked/traveling onsite
- Dirt and dust from landscape areas and vehicles
- Fertilizers
- Cleaning solvents

Attachment B: Volume and Character of Stormwater

The Pecan Park site will generate stormwater typical of a commercial development, as outlined in the City of Bulverde Drainage Criteria Manual. Runoff will increase as a result of the development for all storm events. The proposed 100-year peak stormwater discharge is approximately 119 cfs. However, the site features a proposed detention pond that will mitigate this increase in flows, and flows ultimately leaving the tract is approximately 109 cfs for the 100-year storm, which is below the 113 cfs existing condition. The runoff coefficient Curve Number (CN) changes from 78 to 83 for the project.

COMAL COUNTY

ENGINEER'S OFFICE

February 17, 2023

Heather L. Steed
Sherwood Surveying and S.U.E.
via e-mail: hsteed@sherwoodsurveying.com

Re: Pecan Park WPAP On-Site Sewage Facility Suitability Letter, within Comal County, Texas

Dear Ms. Steed:

In accordance with TAC §213.5(b)(4)(F)(ii), Comal County has found that the entire referenced site is suitable for the use of private sewage facilities and will meet the special requirements for on-site sewage facilities located on the Edwards Aquifer recharge zone as specified in TAC §285.40-42 based on the following information submitted to our office on February 16, 2023:

- The Geologic Assessment, prepared by Andrew G. Grubbs, P.G.
- The Water Pollution Abatement Plan, prepared by Hill Country Civil

According to TAC §285.42(a), if any recharge feature is discovered during construction of an OSSF, all regulated activities near the feature shall be suspended immediately. The owner shall immediately notify the TCEQ San Antonio office of the discovery of the feature. All activities regulated under TAC §213 shall not proceed near the feature until Comal County, in conjunction with the TCEQ San Antonio office, has reviewed and approved a plan proposed to protect the feature, the structural integrity of the OSSF, and the water quality of the aquifer. The plan shall be sealed, signed, and dated by a professional engineer.

If you have any questions or need additional information, please do not hesitate to contact our office.

Sincerely,

Robert Boyd, P.E.
Comal County Assistant Engineer

cc: Scott Haag, Comal County Commissioner Precinct No. 2

195 David Jonas Dr, New Braunfels, Texas, 78132 – Phone (830) 608-2090

Greg W. Johnson, P.E.

170 Hollow Oak
New Braunfels, Texas 78132
830/905-2778

February 2, 2022

Hill Country Civil
1042 Northpark Ridge
New Braunfels, Texas 78130

RE: Soil survey & OSSF compatibility
Brian Christopher Hoese & Clinton Michael Hoese
30130 Bulverde Lane
Guadalupe Herrera Survey No. 192, A206
Comal County, Texas

TYPE SOILS AND DRAINAGE

This location was surveyed for soil types and their compatibility with development and installation of a septic system for office buildings. Tested soils have high clay content and are a part of the Lewisville Silty Clay (LeA 0-1% slope)& (LeB 1-3% slope). Profile consists of a dark brown silty clay to sixty inches.

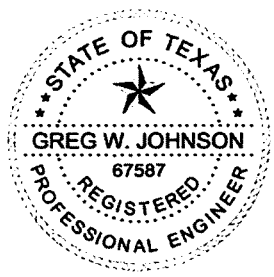
OSSF TYPES

Since the site has deep soils with a high clay content with poor soil absorption characteristics, two types of septic systems are suitable. Recommended On Site Sewage Facilities (OSSF) for this site are aerobic treatment plants with spray or drip irrigation. Adequate space is available for either of the referenced OSSF's and their respective replacement area.

The water service lot must be routed in such a way to provide a minimum of 10' separation from any part of the OSSF.

Respectfully yours,

Greg W. Johnson, P.E, F#2585



OSSF Sizing

Water usage and field requirements:

Q = 360 GPD

Q= 480 GPD

Q = 960 GPD

Drip Irrigation

A = Q/Ra Ra = 0.1 g/sf (Type IV Soil)

A = 360/0.1 = 1500 sf.

A = 480/0.1 = 4800 sf.

A = 960/0.1 = 9600 sf.

Aerobic Treatment Plant (Spray Irrigation)

A = Q / Ri Ri = 0.064 g/sf

A = 360/0.064 = 5625 sf.

A = 480/0.064 = 7500 sf.

A = 960/0.064 = 15,000 sf.

ON-SITE SEWERAGE FACILITY
SOIL EVALUATION REPORT INFORMATION

Date Soil Survey Performed: **November 21, 2022**

Site Location: **10.644 ACRES OUT OF THE GUADALUPE HERRERA SURVEY No. 192, A-206**

Proposed Excavation Depth: **N/A**

Requirements:

At least two soil excavations must be performed on the site, at opposite ends of the proposed disposal area.
Locations of soil boring or dug pits must be shown on the site drawing.
For subsurface disposal, soil evaluations must be performed to a depth of at least two feet below the proposed excavation depth. For surface disposal, the surface horizon must be evaluated.
Describe each soil horizon and identify any restrictive features on the form. Indicate depths where features appear.

SOIL BORING NUMBER **SURFACE EVALUATION**

Depth (Feet)	Texture Class	Soil Texture	Gravel Analysis	Drainage (Mottles/ Water Table)	Restrictive Horizon	Observations
0 1 2 3 **36"** 4 5	**IV**	**CLAY**	**N/A**	**NONE OBSERVED**	**LIMESTONE @ 36"**	**DRK. BROWN**

SOIL BORING NUMBER **SURFACE EVALUATION**

Depth (Feet)	Texture Class	Soil Texture	Gravel Analysis	Drainage (Mottles/ Water Table)	Restrictive Horizon	Observations
0 1 2 3 4 5	**SAME**		**AS**		**ABOVE**	

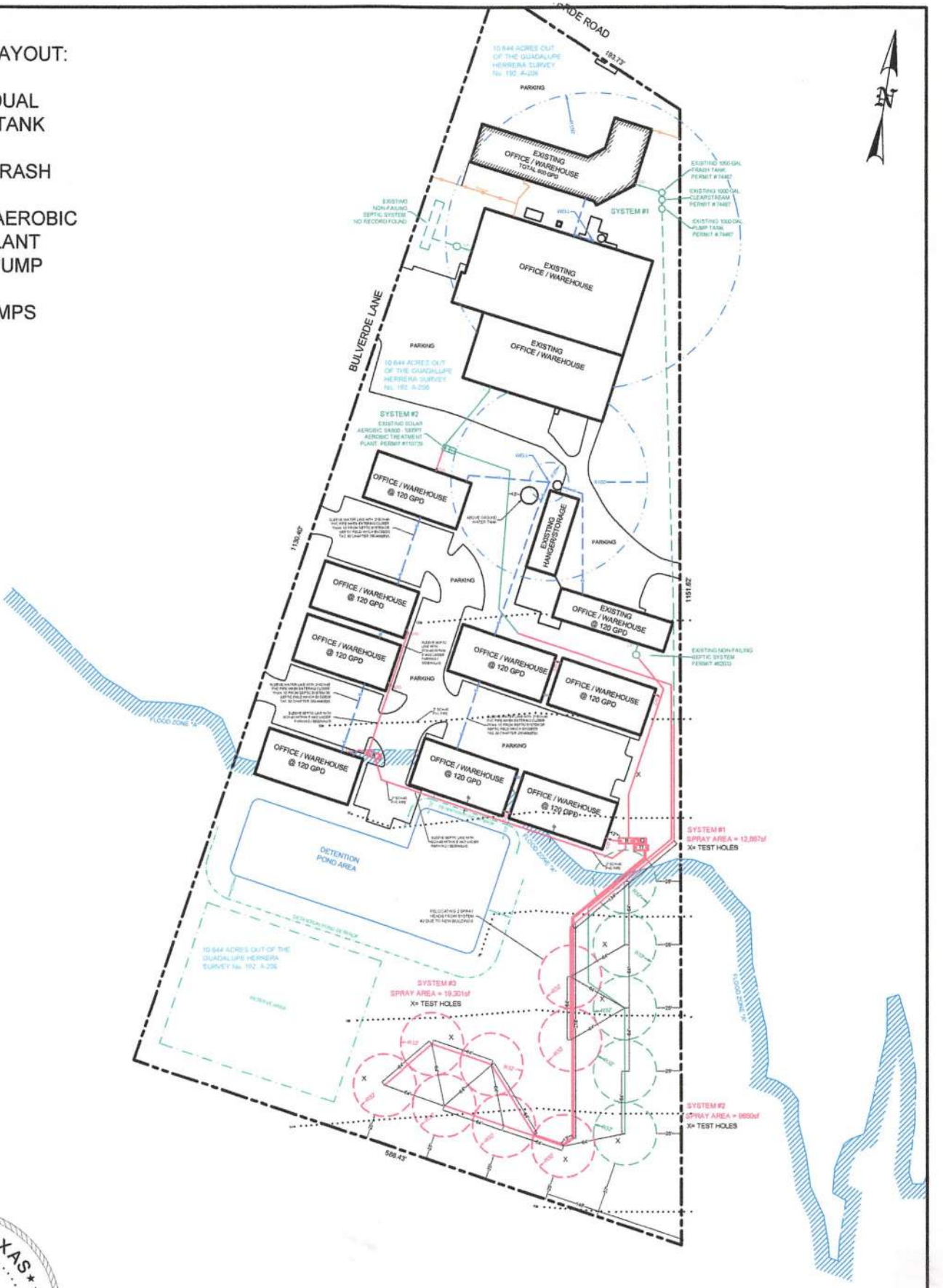
I certify that the findings of this report are based on my field observations and are accurate to the best of my ability.

Greg W. Johnson, P.E. 67587-F2585, S.E. 11561

11/21/2022
Date

SEPTIC TANK LAYOUT:

A = 1000 GAL. DUAL COMP. TRASH TANK W/PUMP
B = 1000 GAL. TRASH TANK
C = 1500 GPD AEROBIC TREATMENT PLANT
D = 2000 GAL. PUMP TANK
W/DUAL PUMPS

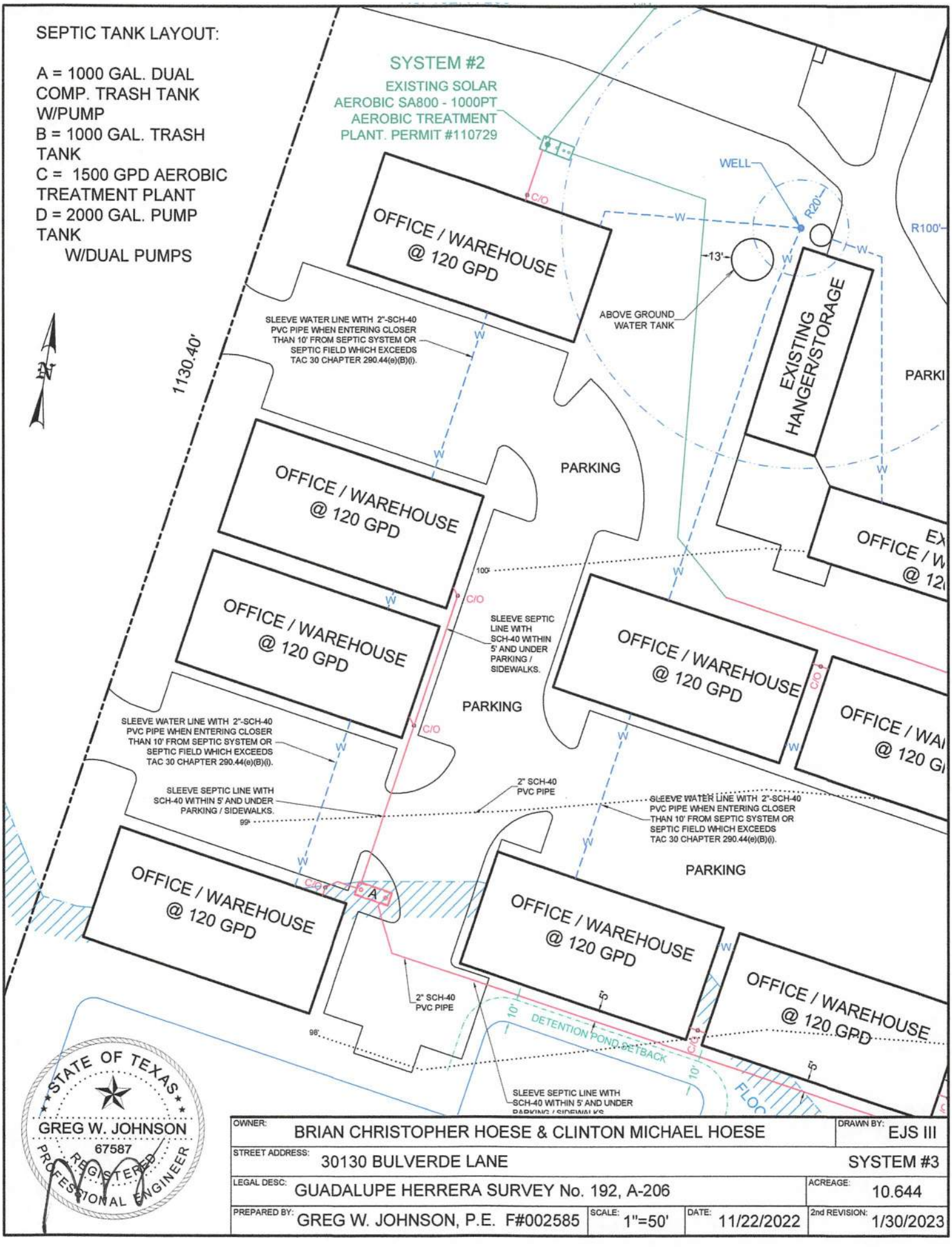


STATE OF TEXAS
GREG W. JOHNSON
67587
REGISTERED
PROFESSIONAL ENGINEER

OWNER: BRIAN CHRISTOPHER HOESE & CLINTON MICHAEL HOESE				DRAWN BY:	EJS III
STREET ADDRESS: 30130 BULVERDE LANE					SYSTEM #3
LEGAL DESC: GUADALUPE HERRERA SURVEY No. 192, A-206				ACREAGE:	10.644
PREPARED BY: GREG W. JOHNSON, P.E. F#002585	SCALE: N.T.S.	DATE: 11/22/2022		2nd REVISION:	1/30/2023

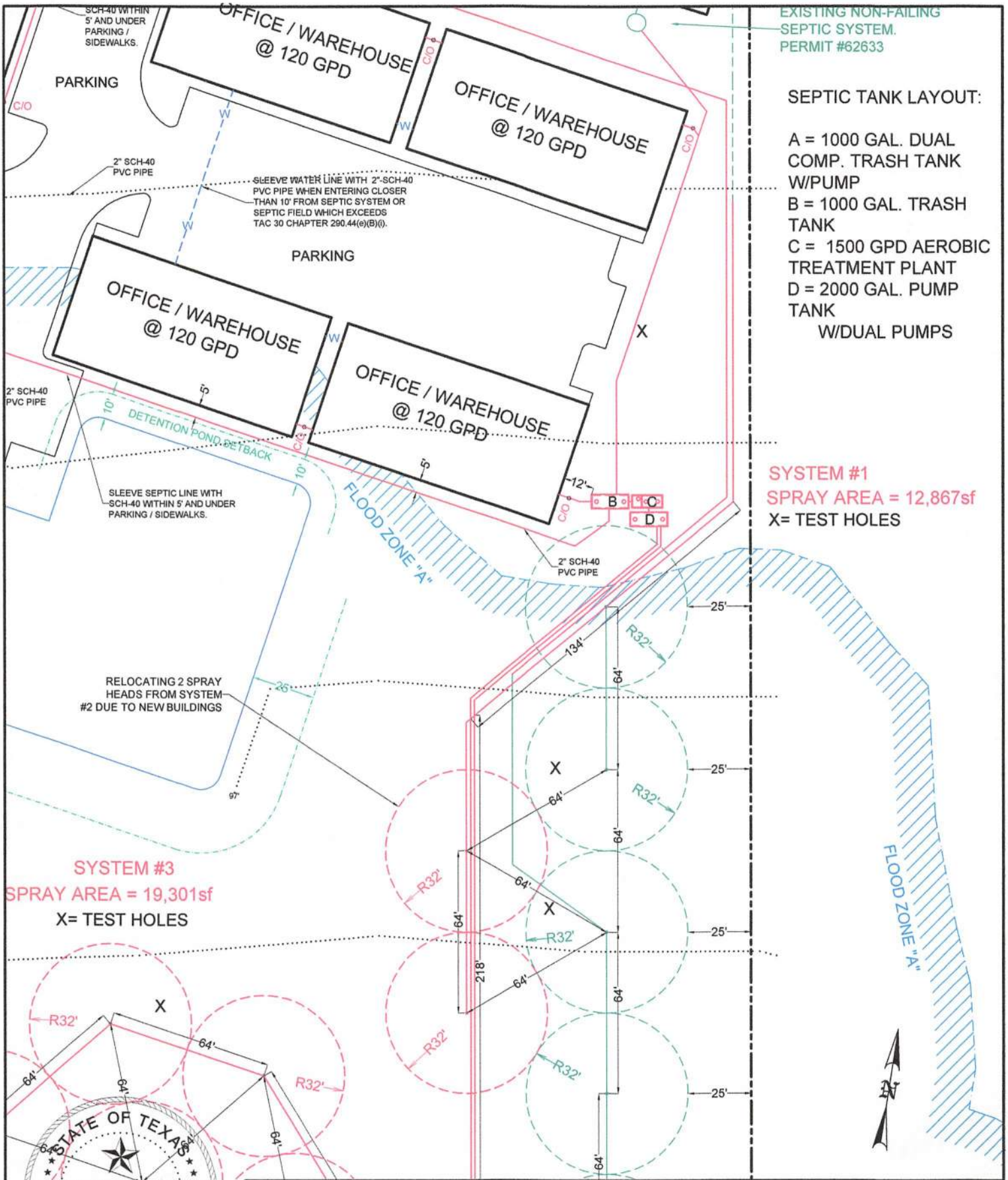
SEPTIC TANK LAYOUT:

A = 1000 GAL. DUAL COMP. TRASH TANK W/PUMP
B = 1000 GAL. TRASH TANK
C = 1500 GPD AEROBIC TREATMENT PLANT
D = 2000 GAL. PUMP TANK
W/DUAL PUMPS



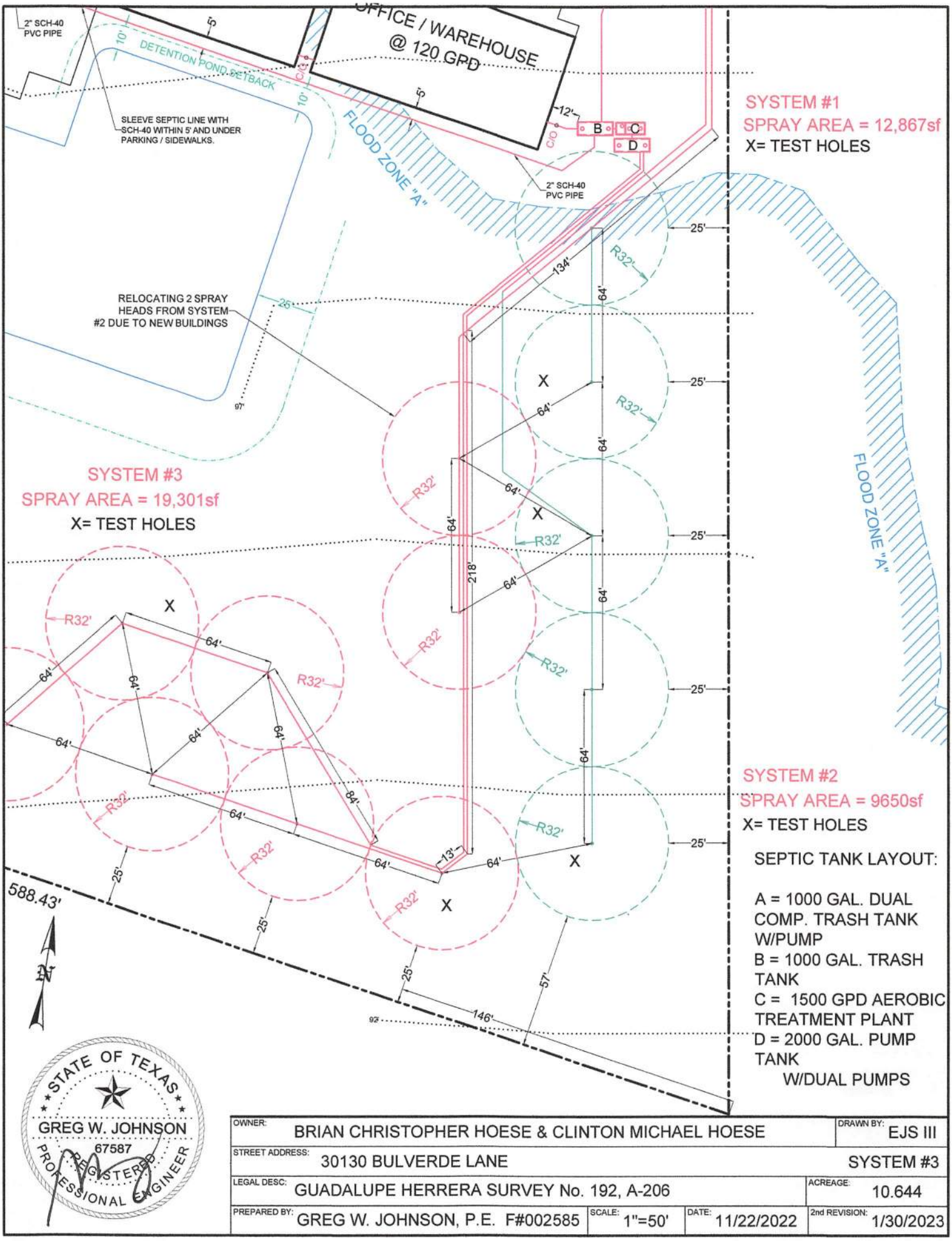
STATE OF TEXAS
GREG W. JOHNSON
67587
REGISTERED PROFESSIONAL ENGINEER

OWNER:	BRIAN CHRISTOPHER HOESE & CLINTON MICHAEL HOESE			DRAWN BY:	EJS III
STREET ADDRESS:	30130 BULVERDE LANE				SYSTEM #3
LEGAL DESC:	GUADALUPE HERRERA SURVEY No. 192, A-206			ACREAGE:	10.644
PREPARED BY:	GREG W. JOHNSON, P.E. F#002585	SCALE: 1"=50'	DATE: 11/22/2022	2nd REVISION:	1/30/2023

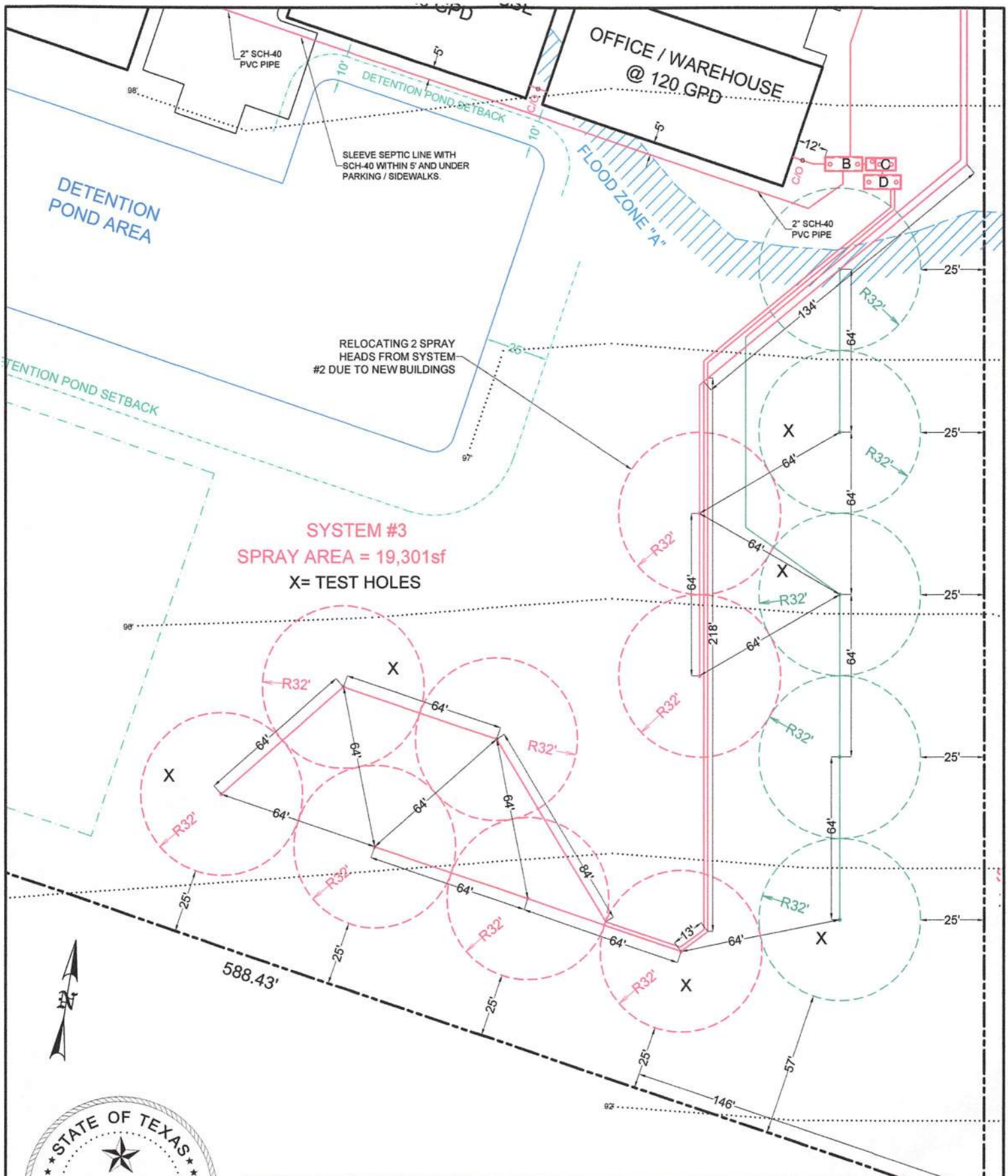


STATE OF TEXAS
GREG W. JOHNSON
67587
REGISTERED
PROFESSIONAL ENGINEER

OWNER:	BRIAN CHRISTOPHER HOESE & CLINTON MICHAEL HOESE			DRAWN BY:	EJS III
STREET ADDRESS:	30130 BULVERDE LANE				SYSTEM #3
LEGAL DESC:	GUADALUPE HERRERA SURVEY No. 192, A-206			ACREAGE:	10.644
PREPARED BY:	GREG W. JOHNSON, P.E. F#002585	SCALE: 1"=50'	DATE: 11/22/2022	2nd REVISION:	1/30/2023



OWNER: BRIAN CHRISTOPHER HOESE & CLINTON MICHAEL HOESE				DRAWN BY: EJS III
STREET ADDRESS: 30130 BULVERDE LANE				SYSTEM #3
LEGAL DESC: GUADALUPE HERRERA SURVEY No. 192, A-206				ACREAGE: 10.644
PREPARED BY: GREG W. JOHNSON, P.E. F#002585	SCALE: 1"=50'	DATE: 11/22/2022	2nd REVISION: 1/30/2023	



STATE OF TEXAS
GREG W. JOHNSON
67587
REGISTERED
PROFESSIONAL ENGINEER

OWNER:	BRIAN CHRISTOPHER HOESE & CLINTON MICHAEL HOESE			DRAWN BY:	EJS III
STREET ADDRESS:	30130 BULVERDE LANE				SYSTEM #3
LEGAL DESC:	GUADALUPE HERRERA SURVEY No. 192, A-206			ACREAGE:	10.644
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Temporary Stormwater Section

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: Christopher B. Allison

Date: 1/25/2023

Signature of Customer/Agent:

Regulated Entity Name: Pecan Park Bulverde, LLC

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: _____

   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: Indian 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: Spill Response Actions

Contractors working onsite with materials which could potentially cause pollution shall implement the following measures to prevent stormwater pollution.

Education of Employees or Subcontractors Who Handle Materials Which Can Cause Pollution

- Employees should know what a "significant spill" is for each material they use, and what is the appropriate response for "significant" and "insignificant" spills. Employees should also be aware of when a spill must be reported to the TCEQ. Information is available in 30 TAC 327.4 and 40 CFR 302.4.
- Educate employees and subcontractors on the potential dangers to humans and the environment from spills and leaks, and provide training in spill prevention and cleanup. Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).
- Establish a continuing education program to indoctrinate new employees, who will use or handle potential pollutants.
- Provide for a superintendent or representative to oversee and enforce proper spill prevention and control measures.

General Measures

- To the extent that work can be accomplished safely, spills of oil, petroleum products, and substances listed under 40 CFR part 110,117, and 302, and sanitary and septic wastes should be contained and cleaned up immediately.
- Store hazardous materials and waste in covered containers and protect from vandalism.
- Place spill cleanup materials where it will be readily accessible.
- Spills should be covered and protected from stormwater runoff during rainfall to the extent that it doesn't compromise clean-up activities.
- Do not bury spills onsite.
- Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose in conformance with the provisions in applicable BMP"s.
- Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with applicable regulations.
- Contain contaminated water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.
- Place Material Safety Data Sheets (MSDS), as well as proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.

- Keep waste storage areas clean, well-organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function

Cleanup

- Clean up leaks and spills immediately, or as soon as it is safely practical.
- Use a rag for small spills on paved surfaces, a damp mop for general cleanup, and absorbent materials for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be disposed of as hazardous waste.
- Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly.

Minor Spills

- Minor spills such as small quantities of oil, gasoline, paint, etc, should be controlled by the first responder at the discovery of the spill.
- Use absorbent materials on small spills rather than hosing down or burying the spill.
- Absorbent materials should be promptly removed and disposed of properly.
- Follow the practice below for a minor spill:
    - Contain the spread of the spill.
    - Recover spilled materials.
    - Clean the contaminated area and properly dispose of contaminated materials.

Semi-Significant Spills

Semi-significant spills may also be controlled by the first responder along with the aid of other personnel such as labors and the foreman, etc. This response may require the cessation of all other activities.

Spills should be cleaned up immediately, or as soon as safely practical

- Contain spread of the spill.
- Notify the project foreman immediately.
- If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling absorbent materials and do not let the spill spread widely.
- If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
- If the spill occurs during rain, cover spill with tarps or other materials to prevent contaminating runoff.

Significant/Hazardous Spills

- 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.
- For spills of federal reportable quantities, in conformance with the requirements in 40CFR parts 110, 119 and 302, the contractor should notify the National Response Center at (800) 424-8802.
- Notification should first be made by telephone and followed up with a written report. The services of a spill contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staff have arrived at the job site.
- Other agencies which may need to be contacted include, but are not limited to, City, Police Department, County Sheriff Office, Fire Departments, etc.

Vehicle and Equipment Maintenance

- If maintenance must occur onsite, use a designated area and a secondary containment, located away from drainage courses, to prevent the runoff of stormwater and the runoff of spills.
- Regularly inspect onsite vehicles and equipment for leaks and repair immediately. Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles onsite.
- Always use secondary containment, such as drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
- Place drip pans or absorbent materials under paving equipment when not in use.
- Use absorbent materials on small spills rather than hosing down or burying the spill.
- Remove the absorbent materials promptly and dispose of properly.
- Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around.
- Oil filters disposed of in trashcans or dumpsters can leak oil and pollute stormwater. Place the oil filter in a funnel over a waste oil recycled. As the oil supplier or recycler about recycling oil filters.
- Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries even if you think all the acid has drained out. If you drop a battery, treat as if it cracked. Put into the containment area until you are sure it is not leaking.
- If fueling must occur on site, used designated areas, located away from drainage courses, to prevent the runoff of stormwater and the runoff of spills.
- Discourage "topping off" on fuel tanks.
- Always use secondary containment, such as drain pan, when fueling to catch spill/leaks.

Attachment B: Potential Sources of Contamination

Asphalt products used on this project

- Preventative measures
    - 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 forecasted rain.

Oil, grease fuel and hydrocarbon fluid contamination from construction equipment and vehicle drippings.

- Preventative measures
    - Vehicle maintenance, when possible, will be performed within the construction staging area.
    - Construction vehicles and equipment shall be checked regularly for leaks and repaired immediately.

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.

- Preventative measures
    - Contractor to incorporate regular safety meetings, a discussion of spill prevention and appropriate disposal procedures.
    - Contractor's superintendent or representative overseer shall enforce proper spill prevention and control measures.
    - Hazardous material and waste shall be stored in covered containers and protected from vandalism.
    - A stockpile of spill cleanup materials shall be stored on site where it will be readily available.

Miscellaneous trash and litter from construction workers and material wrappings.

- Preventative measures
    - Trash containers will be placed throughout the site to encourage proper trash disposal.

Construction Debris

- Preventative measures
    - Construction debris will be monitored daily by the site contractor. Debris will be collected weekly and placed in disposal bins. Situations requiring immediate attention will be addressed on a case-by-case basis.

Spills/ Overflow of waste from portable toilets

- Preventative measures
    - Portable toilets will be placed away from high traffic vehicular areas and storm drain inlets.
    - Portable toilets will be placed on a level ground surface.
    - Portable toilets will be inspected regularly for leaks and will be serviced and sanitized at time intervals that will maintain sanitary conditions.

Attachment C: Sequence of Major Construction Activities

The sequence of major construction activities that will disturb earth/soil of the proposed site will be completed in two stages. Initially, the site will cleared, and grubbed of existing vegetation to prepare for the proposed site plan. This stage will include installation of temporary erosion controls. Temporary controls include temporary construction entrance, silt fence, and concrete washout pit. The second stage will include the construction of buildings, parking, drives, utilities, batch detention basin, landscaping, and site cleanup. Once the site is fully stabilized with vegetation back in place, the temporary erosion controls may be removed. Both stages will disturb approximately 3.25 acres of land.

Attachment D: Temporary Best Management Practices and Measures

7a 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.

There is no significant upgradient stormwater that flows across the site. Bulverde Road to the north intercepts most of the stormwater, along with Bulverde Lane to the east.

7b 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 preparations 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:

- Erection of silt fence along downgradient boundary of construction activities for temporary erosion and sedimentation controls.
- Installation of stabilized construction entrance/exits to reduce the dispersion of sediment from the site.
- Installation of concrete truck washout.
- Installation of construction staging areas.

7c 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 controlling and slowing the flow of runoff from the construction site. By utilizing silt fence staged down gradient and along flow paths, will allow sediment and suspended solids to settle out of stormwater flows and be captured onsite. By containing the sediment and suspended solids within the site, they will not enter the aquifer, surface streams and/or sensitive features that may exist downstream of the site.

7d 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. The BMPs are providing settlement of suspended solids and containment onsite, but stormwater flows will continue on their natural drainage path. Features discovered during construction will be reported and assessed in accordance with applicable regulations.

Attachment F: Structural Practices

The structural practices listed below are shown on the Erosion Control Plans and are listed on Attachment D of the Temporary Controls Section of the WPAP.

- A stabilized construction entrance with washout pit will be constructed at all locations where vehicular traffic enters and leaves the site. This will reduce sediments which leave the site and are tracked or fall onto adjacent roadways. Currently there are two proposed stabilized construction entrance locations.

- A concrete truck washout will be located next to the south stabilized construction entrance to prevent pollutants to stormwater from concrete waste.

- Silt fencing will be installed adjacent to any drainage way which receives sheet flow from upgradient-disturbed areas and along the side slope perimeter of disturbed areas.

- Sandbags filled with washed pea gravel will be used at storm drainage inlets prior to stabilization of the drainage areas.

Attachment I: Inspection and Maintenance for BMPs

The following list of items outlines and dictates Inspection and Maintenance for BMPs practices. Inspection and maintenance guidelines come from TCEQ RG-348.

In addition to these measures the contractor will be subject to the provisions of the TCEQ General Permit Number TXR 150000 relating to discharges from construction activities.

Temporary Construction Entrance/Exit

1. The entrance should be maintained in a condition which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repairs and/or cleanout of any measures used to trap sediment.
2. All sediment spilled, dropped, washed, or tracked onto public rights-of-way should be removed immediately by contractor.
3. When necessary, wheels should be cleaned to remove sediment prior to entrance on to public right-of-way.
4. When washing is required, it should be done on an area stabilized with crushed stone that drains into an approved sediment trap or sediment basin
5. All sediment should be prevented from entering any storm drain, ditch, or water course by using approved methods.

Silt Fence

1. Inspect all fencing weekly, and after any rainfall.
2. Remove sediment when buildup reaches 6 inches.
3. Replace any torn fabric or install a second line of fencing parallel to the torn section.
4. Replace or repair any sections crushed or collapsed during construction activity. If a section of fence is obstructing vehicular access, consider relocating it to a spot to where it will provide equal protection, but will not obstruct vehicles. A triangular filter dike may be preferable to a silt fence at common vehicle access points.
5. When construction is complete, the sediment should be disposed of in a manner that will not cause additional siltation and the prior location of the silt fence should be revegetated. The fence itself should be disposed of in an approved landfill.

Inlet Protection Barrier

1. Inspections should be made weekly and after each rainfall. Repair or replacement should be made promptly as needed by the contractor.
2. Remove sediment when buildup reaches a depth of 3 inches. Removed sediment should be deposited in a suitable area and in such a manner that it will not erode.
3. Check placement of devices to prevent gaps between device and curb.
4. Inspect filter fabric and patch or replace if torn or missing.
5. Structures should be removed, and the area stabilized only after the remaining drainage area has been properly stabilized.

Attachment J: Schedule of Interim and Permanent Soil Stabilization Practices

Onsite construction activities shall be conducted in accordance with the Erosion Control Plan for the project which includes the provisions of the TPDES General Permit TXR150000.

Interim on-site stabilization measures will include minimizing soil disturbances by exposing the smallest practical area of land required for the shortest duration and maximizing the use of natural vegetation. All disturbed soil will be stabilized as per project specifications in accordance with of TCEQ Technical Guidance Manual RG-348 (2005).

Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. Where the initiation of stabilization measures by the 14th day after construction activity temporarily or permanently cease is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable. Where construction activity on a portion of the site has temporarily ceased, and earth disturbing activities will be resumed within 21 days, temporary stabilization measures do not have to be initiated on that portion of the site. In areas experiencing droughts where the initiation of stabilization measures by the 14th day after construction activity has temporarily or permanently ceased is preclude by seasonal arid conditions, stabilization measures shall be initiated as soon as practicable.

Interim Stabilization Measures will include one or more of the following methods.

1. Temporary Vegetation
2. Installation of blankets or matting material
3. Hydraulic Mulch
4. Sod

The interim and permanent stabilization will be installed in accordance with the standard specifications for the county or city having jurisdiction over the project, whichever is more stringent. If the governing entity does not have specifications for these items, the work shall be completed in compliance with the procedures and specifications outlined in the current Technical Guidance Manual published by the TCEQ.

Permanent Stabilization measures will include one or more of the following methods.

1. Permanent Vegetation including landscape planting with trees, shrubs, or ground cover.
2. Installation of blankets or matting material
3. Hydromulch
4. Grass Sodding
5. Rock or concrete riprap

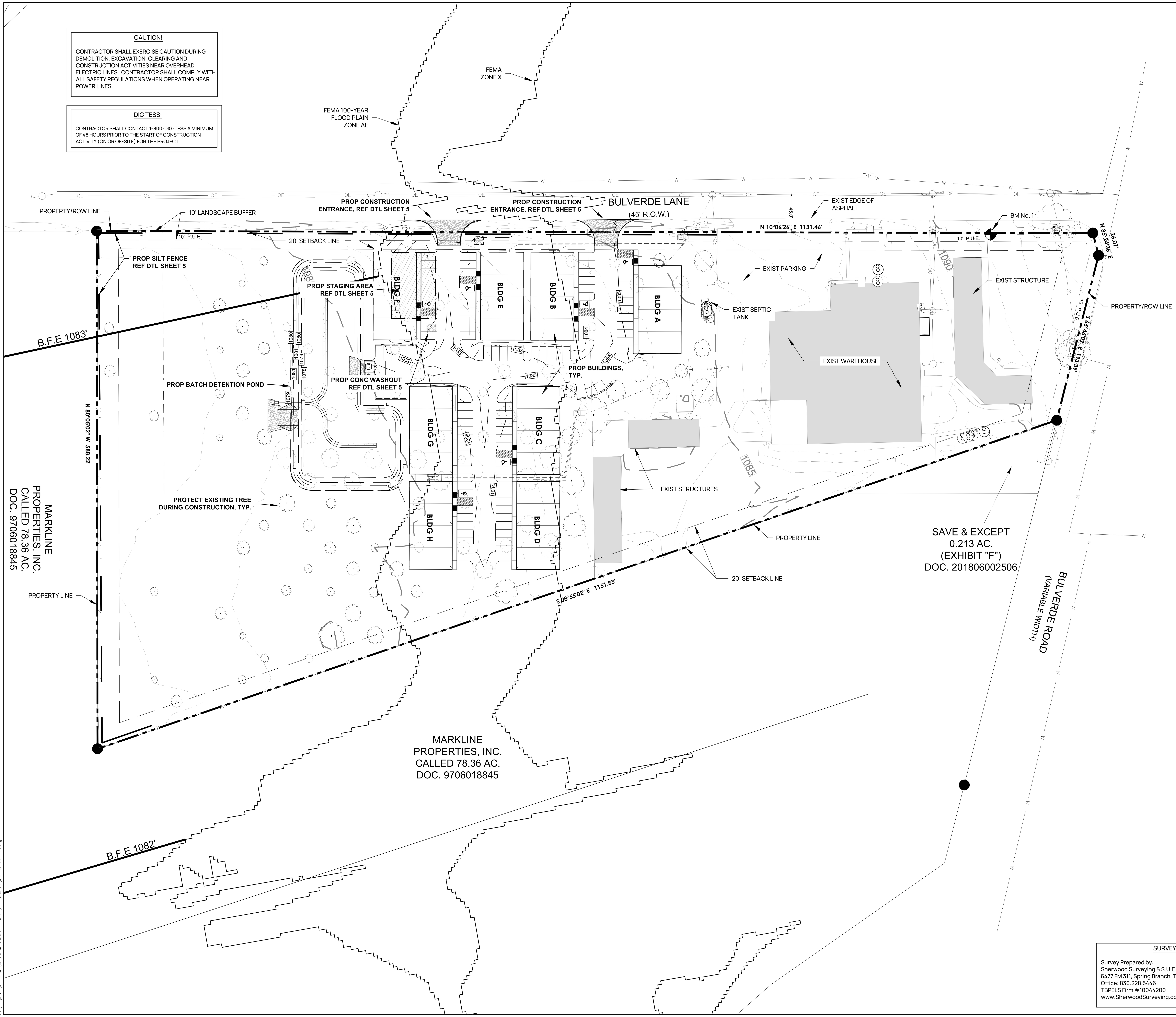
A copy of the Erosion Control Plan is attached.

CAUTION!

CONTRACTOR SHALL EXERCISE CAUTION DURING DEMOLITION, EXCAVATION, CLEARING AND CONSTRUCTION ACTIVITIES NEAR OVERHEAD ELECTRIC LINES. CONTRACTOR SHALL COMPLY WITH ALL SAFETY REGULATIONS WHEN OPERATING NEAR POWER LINES.

DIG TESS:

CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION ACTIVITY (ON OR OFFSITE) FOR THE PROJECT.



LEGEND

- PROPERTY BOUNDARY
- LOT LINE
- EASEMENT LINE
- SITE BENCHMARK
- PROPERTY CORNER
- GAS LINE
- OVERHEAD ELECTRIC LINE
- FENCE LINE
- EXISTING TREE
- SIGN
- POWER POLE
- SILT FENCE
- STABILIZED CONSTRUCTION ENTRANCE
- STAGING AREA
- CONCRETE WASHOUT PIT

EROSION CONTROL PLAN NOTES:

1. CONTRACTOR SHALL FILE STORM WATER POLLUTION PREVENTION PLAN WITH THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY AND POST A SITE NOTICE AT LEAST 48 HOURS PRIOR TO START OF CONSTRUCTION.
2. CONTRACTOR SHALL FILE THE NOTICE OF INTENT AND NOTICE OF TERMINATION WITH THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY PRIOR TO START OF CONSTRUCTION AND AT THE END OF THE PROJECT.
3. ALL STRUCTURAL BMP'S SHALL BE INSTALLED PRIOR TO START OF ANY DISTURBANCE OR CONSTRUCTION ACTIVITY ONSITE, INCLUDING BUT NOT LIMITED TO EXCAVATION, CLEARING, GRUBBING, OR GRADING.
4. CONTRACTOR SHALL INSTALL BMP'S AS REQUIRED BY PHASE FOR THE PROJECT OR AS SPECIFICALLY INDICATED PER PLAN. ALL PHASING OR ADJUSTMENTS TO THE EROSION CONTROL PLAN SHALL TAKE IN TO ACCOUNT UP-GRADIENT STORM WATER FLOWS FOR PLACEMENT OF BMP'S.
5. CONTRACTOR SHOULD IN BEST EFFORT, ONLY DISTURB AREAS WHERE CONSTRUCTION ACTIVITY IS REQUIRED IN AN EFFORT TO REDUCE POTENTIAL OF STORM WATER POLLUTION RUNOFF FROM THE SITE.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING AND INSPECTING STRUCTURAL BMP'S DAILY AND ESPECIALLY AFTER STORM EVENTS TO ENSURE BMP'S ARE FUNCTIONING PROPERLY. THE CONTRACTOR MAY MODIFY CONTROLS AS REQUIRED TO PREVENT SEDIMENT RUNOFF DOWNSTREAM IMPACTS.
7. CONTRACTOR SHALL USE DUST CONTROL MEASURES DURING CONSTRUCTION SUCH AS IRRIGATION TRUCKS AND MULCHING AS REQUIRED.
8. CONTRACTOR SHALL CLEAN UP ANY SEDIMENTATION RUNOFF OR SPOILS THAT MIGRATE ONTO ADJACENT ROADWAYS AFTER A STORM EVENT OR AS REQUIRED BY THE LOCAL INSPECTOR.
9. CONTRACTOR SHALL SEED OR SOD DISTURBED AREAS WITH BERMUDA GRASS OR SOME OTHER FORM OF HARD GRASS AS SOON AS POSSIBLE TO AVOID SOIL RUNOFF AFTER CONSTRUCTION IN THAT AREA IS COMPLETED.
10. TREES PROPOSED TO BE PRESERVED SHALL BE PROTECTED DURING CONSTRUCTION AND MUST MEET THE FOLLOWING CRITERIA:
    - 10.1. MINIMUM OF 50% OF THE CRITICAL ROOT ZONE MUST BE PRESERVED AT NATURAL GRADE, WITH NATURAL GROUND COVER.
    - 10.2. CUT OR FILL IS LIMITED TO 4-INCHES FROM THE $\frac{1}{2}$ CRITICAL ROOT ZONE TO THE $\frac{1}{4}$ CRITICAL ROOT ZONE.
    - 10.3. NO CUT OR FILL IS PERMITTED WITHIN THE $\frac{1}{4}$ CRITICAL ROOT ZONE.
11. BMP'S MAY ONLY BE REMOVED ONCE THE SITE ACHIEVES 80% RE-VEGETATION IN DISTURBED AREAS.

SURVEY NOTE

Survey Prepared by:
Sherwood Surveying & S.U.E
6477 FM 311, Spring Branch, TX 78070
Office: 830.228.5446
TBPELS Firm #10044200
www.SherwoodSurveying.com

LEGAL DESCRIPTION

10.644 acres, more or less, out of Survey No. 192, Guadalupe Herrera Abstract Number 206, Comal County, TX, described in document #201806002586 MPRCCT.

BENCHMARK

1. BM No. 1: CP-BM MAG NAIL ELEV: 1091.39'
   X: 2141957.48 Y: 13818316.59

Hill Country Civil
Engineers • Consultants
Texas Firm License No. F-22872
1042 Northpark Ridge, New Braunfels, TX 78130
Phone: 817-659-9078 or 210-378-4953
www.hillcountrycivil.com

STATE OF TEXAS
CHRISTOPHER B. ALLISON
131240
LICENSED PROFESSIONAL ENGINEER
01/25/2023

No.	Date	Revisions	App.

PECAN PARK

BULVERDE, TEXAS

HCC JOB No.: 001-08

DRAWN BY.: CBA/RC

EROSION CONTROL PLAN

SHEET No.

4

OF 16

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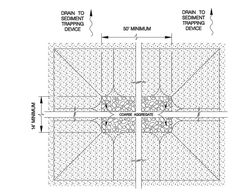
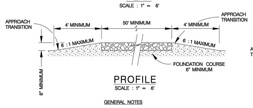


PLAN
SCALE : 1" = 6'

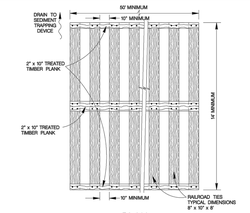


PROFILE
SCALE : 1" = 6'

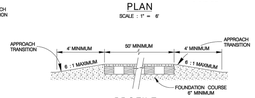
GENERAL NOTES

1. THE LENGTH OF THE TYPE 1 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS, BUT NOT LESS THAN 50'.
2. THE COARSE AGGREGATE SHOULD BE OPEN GRADED WITH A SIZE OF 4" TO 8".
3. THE APPROACH TRANSITIONS SHOULD BE NO STEEPER THAN 6 : 1 AND CONSTRUCTED AS DIRECTED BY THE ENGINEER.
4. THE CONSTRUCTION EXIT FOUNDATION COURSE SHALL BE FLEXIBLE BASE, BITUMINOUS CONCRETE, PORTLAND CEMENT CONCRETE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.
5. THE CONSTRUCTION EXIT SHALL BE GRADED TO ALLOW DRAINAGE TO A SEDIMENT TRAPPING DEVICE.
6. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

CONSTRUCTION EXIT – TYPE 1



PLAN
SCALE : 1" = 6'

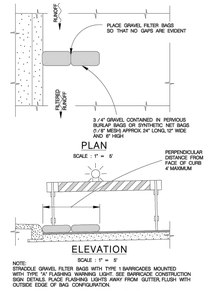


PROFILE
SCALE : 1" = 6'

GENERAL NOTES

1. THE LENGTH OF THE TYPE 2 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS, BUT NOT LESS THAN 50'.
2. THE TREATED TIMBER PLANKS SHALL BE ATTACHED TO THE RAILROAD TIES WITH TWO 3/4" DIA LAG BOLTS. OTHER FASTNERS MAY BE USED AS APPROVED BY THE ENGINEER.
3. THE TREATED TIMBER PLANKS SHALL BE #2 GRADE MIN., AND SHOULD BE FREE FROM LARGE AND LOOSE KNOTS.
4. THE APPROACH TRANSITIONS SHOULD BE NO STEEPER THAN 6 : 1 AND CONSTRUCTED AS DIRECTED BY THE ENGINEER.
5. THE CONSTRUCTION EXIT FOUNDATION COURSE SHALL BE FLEXIBLE BASE, BITUMINOUS CONCRETE, PORTLAND CEMENT CONCRETE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.
6. THE CONSTRUCTION EXIT SHOULD BE GRADED TO ALLOW DRAINAGE TO A SEDIMENT TRAPPING DEVICE.
7. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

CONSTRUCTION EXIT – TYPE 2

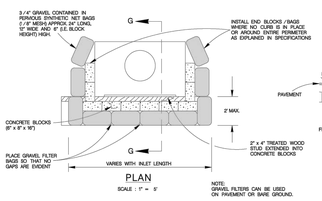


PLAN
SCALE : 1" = 5'

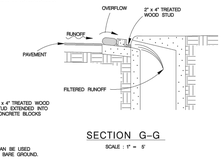
ELEVATION
SCALE : 1" = 5'

NOTE:
STRADDLE GRAVEL FILTER BAGS WITH TYPE 1 BARRICADES MOUNTED WITH TYPE "A" FLASHING WARNING LIGHT. SEE BARRICADE CONSTRUCTION SIGN DETAILS. PLACE FLASHING LIGHTS AWAY FROM GUTTER FLUSH WITH OUTSIDE EDGE OF BAG CONFIGURATION.

GRAVEL FILTER BAGS



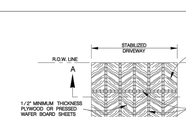
PLAN
SCALE : 1" = 5'



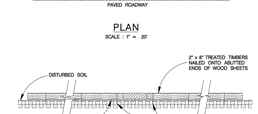
SECTION G–G
SCALE : 1" = 5'

NOTE:
GRAVEL FILTERS CAN BE USED ON PAVEMENT OR BARE GROUND.

CURB INLET GRAVEL FILTER



PLAN
SCALE : 1" = 20'

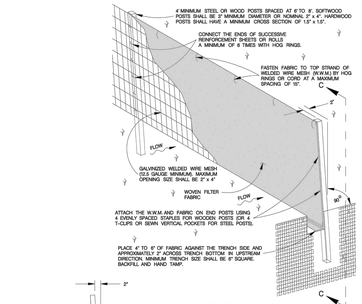


SECTION A–A
SCALE : 1" = 2'

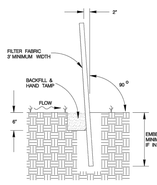
GENERAL NOTES

1. THE LENGTH OF THE TYPE 3 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.
2. THE TYPE 3 CONSTRUCTION EXIT MAY BE CONSTRUCTED FROM OPEN GRADED CRUSHED STONE WITH A SIZE OF 2 TO 4 INCHES SPREAD A MINIMUM OF 4 INCHES THICK TO THE LIMITS SHOWN ON THE PLANS.
3. THE TREATED TIMBER PLANKS SHALL BE #2 GRADE MIN., AND SHOULD BE FREE FROM LARGE AND LOOSE KNOTS.
4. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

CONSTRUCTION EXIT – TYPE 3



ISOMETRIC VIEW
SCALE : 1" = 2'



SECTION C–C
SCALE : 1" = 2'

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A SEDIMENT CONTROL FENCE MAY BE CONSTRUCTED NEAR THE DOWNSTREAM PERIMETER OF A DISTURBED AREA ALONG A CONTOUR TO INTERCEPT SEDIMENT FROM OVERLAND RUN-OFF. A 2 YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE TO BE FILTERED.

SEDIMENT CONTROL FENCE SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 100 GPM /FT SQUARED. SEDIMENT CONTROL FENCE IS NOT RECOMMENDED TO CONTROL EROSION FROM A DRAINAGE AREA LARGER THAN 2 ACRES.

GENERAL NOTES

1. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

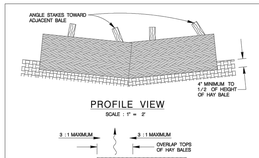
TEMPORARY SEDIMENT CONTROL FENCE

JANUARY 2005

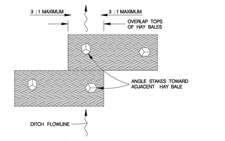
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 1

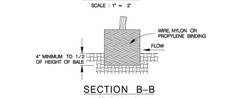
_____% SUBMITTAL; PROJECT NO.:_____ DATE:_____
DRWN. BY: V. VASQUEZ DSGN. BY:_____ CHKD. BY:_____ SHEET NO.:____OF____



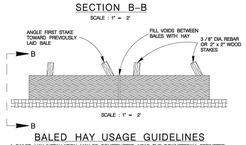
PROFILE VIEW
SCALE : 1" = 2'



PLAN VIEW
SCALE : 1" = 2'



SECTION B–B
SCALE : 1" = 2'



SCALE : 1" = 2'

BALED HAY USAGE GUIDELINES

A BALED HAY INSTALLATION MAY BE CONSTRUCTED NEAR THE DOWNSTREAM PERIMETER OF A DISTURBED AREA ALONG A CONTOUR TO INTERCEPT SEDIMENT FROM OVERLAND RUNOFF. A TWO YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE THRU HAY. BALED HAY BARRIERS SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 5 GPM /FT SQUARED. THE CROSS SECTIONAL AREA, BALED HAY MAY BE USED AT THE FOLLOWING LOCATIONS:

1. WHERE THE RUNOFF APPROACHING THE BALED HAY FLOWS OVER DISTURBED SOIL FOR LESS THAN 100'. IF THE SLOPE OF THE DISTURBED SOIL EXCEEDS 10 %, THE LENGTH OF SLOPE UPSTREAM OF THE BALED HAY SHOULD BE LESS THAN 50'.
2. WHERE THE INSTALLATION WILL BE REQUIRED FOR LESS THAN 3 MONTHS.
3. WHERE THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 1/4 ACRE.

FOR BALED HAY INSTALLATIONS IN SMALL DITCHES, THE FOLLOWING ADDITIONAL CONDITIONAL CONSIDERATIONS APPLY:

1. THE DITCH SIDESLOPES SHOULD BE GRADED AS FLAT AS POSSIBLE TO MAXIMIZE THE DRAINAGE FLOW RATE THRU THE HAY.
2. THE DITCH SHOULD BE GRADED LARGE ENOUGH TO CONTAIN THE OVERLAPPING DRAINAGE WHEN SEDIMENT HAS FILLED TO THE TOP OF THE BALED HAY.

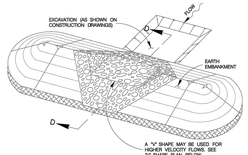
BALES SHOULD BE REPLACED USUALLY EVERY 2 MONTHS OR MORE OFTEN DURING WET WEATHER WHEN LOSS OF STRUCTURAL INTERGRITY IS ACCELERATED.

GENERAL NOTES

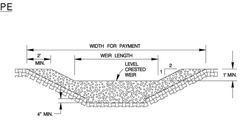
1. HAY BALES SHALL BE A MINIMUM OF 30" IN LENGTH AND WEIGH A MINIMUM OF 50 LBS.
2. HAY BALES SHALL BE BOUND BY EITHER WIRE OR NYLON OR POLYPROPYLENE STRING. THE BALES SHALL BE COMPOSED ENTIRELY OF VEGETABLE MATTER.
3. HAY BALES SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4" AND, WHERE POSSIBLE, ONE-HALF THE HEIGHT OF THE BALE.
4. HAY BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES. THE BALES SHALL BE PLACED WITH BINDINGS PARALLEL TO THE GROUND.
5. HAY BALES SHALL BE SECURELY ANCHORED IN PLACE WITH 3 /8" DIA REBAR OR 2" x 2" WOOD STAKES DRIVEN THROUGH THE BALES. THE FIRST STAKE SHALL BE ANGLED TOWARDS THE PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER.
6. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

BALED HAY FOR EROSION CONTROL

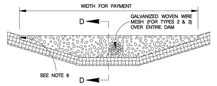
TYPE 1 FILTER DAM AT TOE OF SLOPE
SCALE : 1" = 10'



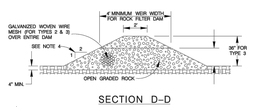
TYPE 1 & 2 FILTER DAM AT SEDIMENT TRAP
SCALE : 1" = 10'



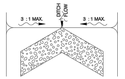
PROFILE OF TYPE 1 & 2 FILTER DAM AT SEDIMENT TRAP
SCALE : 1" = 6'



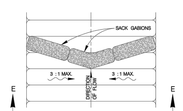
TYPE 1, 2 & 3 FILTER DAM AT CHANNEL SECTIONS
SCALE : 1" = 6'



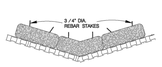
SECTION D–D
SCALE : 1" = 6'



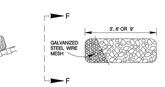
"V" SHAPE PLAN VIEW
NOT TO SCALE



PLAN VIEW
SCALE : 1" = 10'



SECTION E–E
SCALE : 1" = 10'



TYPE 4 SACK GABION DETAIL
SCALE : 1" = 6'

SECTION F–F
SCALE : 1" = 6'

TYPE 4 FILTER DAM AT DITCHES & SMALLER CHANNELS PLAN VIEW

ROCK FILTER DAMS

ROCK FILTER DAM USAGE GUIDELINES

ROCK FILTER DAMS SHOULD BE CONSTRUCTED DOWNSTREAM FROM DISTURBED AREAS TO INTERCEPT SEDIMENT FROM OVERLOAD RUNOFF AND /OR CONCENTRATED FLOW. THE DAMS SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 85 GPM /FT SQUARED OF CROSS SECTIONAL AREA. A 2 YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE.

TYPE 1 (90" HIGH WITH NO WIRE MESH) :

TYPE 1 MAY BE USED AT THE TOE OF SLOPES AROUND INLETS IN SMALL DITCHES AND AT THE TOE OF SLOPES ALONG ROADS. TYPE 1 MAY BE USED IN DRAINAGE AREAS OF 5 ACRES OR LESS. TYPE 1 MAY NOT BE USED IN CONCENTRATED HIGH VELOCITY FLOWS (APPROXIMATELY 8 FT./SEC OR MORE) IN WHICH AGGREGATE WASH OUT MAY OCCUR. SANDBAGS MAY BE USED AT THE EMBEDDED FOUNDATION (4" DEEP MIN.) FOR BETTER FILTERING EFFICIENCY OF LOW FLOWS IF CALLED FOR ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

TYPE 2 (90" HIGH WITH WIRE MESH) :

TYPE 2 MAY BE USED IN DITCHES AND AT DIKE OR SWALE OUTLETS.

TYPE 3 (90" HIGH WITH WIRE MESH) :

TYPE 3 MAY BE USED IN STREAM FLOW AND SHOULD BE SECURED TO THE STREAM BED.

TYPE 4 (SACK GABIONS) :

TYPE 4 MAY BE USED IN DITCHES AND SMALLER CHANNELS TO FORM AN EROSION CONTROL DAM.

GENERAL NOTES

1. IF SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER, FILTER DAMS SHOULD BE PLACED NEAR THE TOE OF SLOPES WHERE EROSION IS ANTICIPATED, UPSTREAM AND /OR DOWNSTREAM OF DRAINAGE STRUCTURES, AND IN ROADWAY DITCHES AND CHANNELS TO COLLECT SEDIMENT.
2. MATERIALS (AGGREGATE, WIRE MESH, SANDBAGS, ETC.) SHALL BE AS INDICATED BY THE SPECIFICATION FOR ROCK FILTER DAMS FOR EROSION AND SEDIMENTATION CONTROL.
3. THE ROCK FILTER DAM DIMENSIONS SHALL BE AS INDICATED ON THE STORM WATER POLLUTION PREVENTION PLANS.
4. SIDE SLOPES SHOULD BE 2 :1 OR FLATTER. DAMS WITHIN THE SAFETY ZONE SHALL HAVE SIDE SLOPES OF 4 : 1 OR FLATTER.
5. MAINTAIN A MINIMUM OF 1' BETWEEN TOP OF ROCK FILTER DAM WEIR AND TOP OF EMBANKMENT FOR FILTER DAMS AT SEDIMENT TRAPS.
6. FILTER DAMS SHOULD BE EMBEDDED A MINIMUM OF 4" INTO THE EXISTING GROUND.
7. THE SEDIMENT TRAP FOR PONDING OF SEDIMENT LADEN RUNOFF SHALL BE OF THE DIMENSIONS SHOWN ON THE PLANS.
8. ROCK FILTER DAM TYPES 2 & 3 SHALL BE SECURED WITH 20 GAUGE GALVANIZED WOVEN WIRE MESH WITH 1" DIAMETER HEXAGONAL OPENINGS. THE AGGREGATE SHALL BE PLACED ON THE MESH TO THE HEIGHT AND SLOPES SPECIFIED. THE MESH SHALL BE FOLDED AT THE UPSTREAM SIDE OVER THE AGGREGATE AND TIGHTLY SECURED TO ITSELF ON THE DOWNSTREAM SIDE USING WIRE TIES OR HOG RINGS. THE MESH ON THE TOP OF THE DAM SHALL BE SECURED OR STAKED TO THE STREAM BED PRIOR TO AGGREGATE PLACEMENT.
9. SACK GABIONS SHOULD BE STAKED DOWN WITH 3 /4" DIA REBAR STAKES.
10. FLOW OUTLET SHOULD BE ONTO A STABILIZED AREA (VEGETATION, ROCK, ETC.).
11. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

GENERAL NOTES

JANUARY 2005

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 2

_____% SUBMITTAL; PROJECT NO.:_____ DATE:_____
DRWN. BY: V. VASQUEZ DSGN. BY:_____ CHKD. BY:_____ SHEET NO.:____OF____

Texas Commission on Environmental Quality - Water Pollution Abatement Plan -General Construction Notes

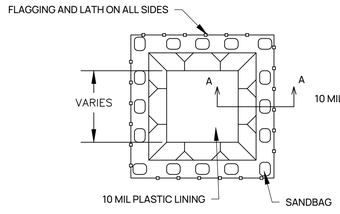
Edwards Aquifer Protection Program Construction Notes – Legal Disclaimer:

The following/listed "construction notes" are intended to be advisory in nature only and do not constitute an approval or conditional approval by the Executive Director (ED), nor do they constitute a comprehensive listing of rules or conditions to be followed during construction. Further actions may be required to achieve compliance with TCEQ regulations found in Title 30, Texas Administrative Code (TAC), Chapters 213 and 217, as well as local ordinances and regulations providing for the protection of water quality. Additionally, nothing contained in the following/listed "construction notes" restricts the powers of the ED, the commission or any other governmental entity to prevent, correct, or curtail activities that result or may result in pollution of the Edwards Aquifer or hydrologically connected surface waters. The holder of any Edwards Aquifer Protection Plan containing "construction notes" is still responsible for compliance with Title 30, TAC, Chapters 213 or any other applicable TCEQ regulation, as well as all conditions of an Edwards Aquifer Protection Plan through all phases of plan implementation. Failure to comply with any condition of the ED's approval, whether or not in contradiction of any "construction notes," is a violation of TCEQ regulations and any violation is subject to administrative rules, orders, and penalties as provided under Title 30, TAC § 213.10 (relating to Enforcement). Such violations may also be subject to civil penalties and injunction. The following/listed "construction notes" in no way represent an approved exception by the ED to any part of Title 30 TAC, Chapters 213 and 217, or any other TCEQ applicable regulation.

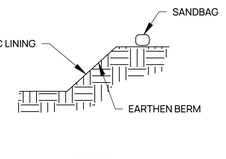
1. A written notice of construction must be submitted to the TCEQ regional office at least 48 hours prior to the start of any regulated activities. This notice must include:
   - the name of the approved project;
   - the activity start date; and
   - the contact information of the prime contractor.
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
6. plans and manufacturers specifications. If inspections indicate 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.
7. Any sediment that escapes 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.
8. Sediment must be removed from the sediment traps or sedimentation basins not later than TCEQ-0592 (Rev. July 15, 2015) Page 2 of 2 when it occupies 50% of the basin's design capacity.
9. Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from being discharged offsite. All spoils (excavated material) generated from the project site must be stored on-site with proper E&S controls. For storage or 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 any approved Edward 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.

Austin Regional Office
12100 Park 35 Circle, Building A
Austin, Texas 78753-1808
Phone (512) 339-2929
Fax (512) 339-3795

San Antonio Regional Office
14250 Judson Road
San Antonio, Texas 78233-4480
Phone (210) 490-3096
Fax (210) 545-4329



PLAN VIEW
N.T.S.



SECTION A-A
N.T.S.

NOTES

1. REFERENCE EROSION CONTROL PLAN. FIELD LOCATION AND LAYOUT TO BE ADJUSTED BY CONTRACTOR OUT IN FIELD, OR AS CONSTRUCTION PROGRESS.

CONCRETE WASHOUT DETAIL

N.T.S.

SURVEY NOTE

Survey Prepared by:
Sherwood Surveying & S.U.E
6477 FM 311, Spring Branch, TX 78070
Office: 830.228.5446
TBPELS Firm #10044200
www.SherwoodSurveying.com

LEGAL DESCRIPTION

10.644 acres, more or less, out of Survey No. 192, Guadalupe Herrera Abstract Number 206, Comal County, TX, described in document #201806002586 MPRCCT.

BENCHMARK

1. BM No. 1: CP-BM MAG NAIL ELEV: 1091.39'
   X: 2141957.48 Y: 13818316.59

Hill Country Civil
Engineers ◆ Consultants
16242 Huntington Ridge, San Antonio, TX 78232
Phone 817-609-8078 or 210-378-4353
www.HillCountryCivil.com

CHRISTOPHER B. ALLISON
131240
LICENSED
PROFESSIONAL ENGINEER
01/25/2023

No.	Date	Revisions	App.

PECAN PARK
BULVERDE, TEXAS

HCC JOB No.: 001-08 DRAWN BY: CBA/RC

EROSION CONTROL PLAN

SHEET No.
4
OF 16

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P:\Projects\001 M&S\08 Pecan Park\ – CAD\2 – Sheets\001-08 SWPPP.dwg

Hill Country Civil
Engineers • Consultants

Permanent Stormwater Section

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.

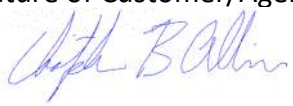
Signature

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: Christopher B. Allison, PE

Date: 1/25/2023

Signature of Customer/Agent



Regulated Entity Name: Pecan Park Bulverde, LLC

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: BMPs for Upgradient Stormwater

Upgradient stormwater flows are intercepted by Bulverde Road to the North of the subject tract and by Bulverde Lane to the West. Therefore, there is no significant upgradient flows that come onto the site and no proposed BMPs are planned specifically for upgradient flows. The proposed onsite batch detention pond is sized to treat all onsite flows and impervious cover.

Attachment C: BMPs for On-Site Stormwater

Proposed on-site BMPs include one (1) Batch Detention Pond designed in accordance with TCEQ's Technical Guidance Manual (TGM) RG-348. The batch pond will be designed as an online facility. For online facilities the principal and emergency spillways must be sized to provide 1.0 foot of freeboard during the 25-year event and to safely pass the flow from the 100-year storm. The water quality volume required in the pond is 3,614 cuft or 0.083 ac-ft. The overall volume of the pond is 1.37 acre-ft. Both the 25-year and 100-year storm events are contained within the pond. The batch detention pond is sized to treat a total of 1,804 lbs of TSS generated by the site.

Batch Detention basins capture and temporarily detain the water quality volume from a storm event, for a period of 12-48 hours, using an automated controller and valve. The batch detention outfall details and logic controls can be found on the attached Construction Drawings, reference the Batch Detention Pond Detail Sheets.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Pecan Park
Date Prepared: 1/25/2023

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 =	Comal	
Total project area included in plan * =	10.20	acres
Predevelopment impervious area within the limits of the plan * =	2.26	acres
Total post-development impervious area within the limits of the plan* =	4.17	acres
Total post-development impervious cover fraction * =	0.41	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	1714	lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = 1

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

Drainage Basin/Outfall Area No. = 1

Total drainage basin/outfall area =	8.24	acres
Predevelopment impervious area within drainage basin/outfall area =	2.26	acres
Post-development impervious area within drainage basin/outfall area =	4.17	acres
Post-development impervious fraction within drainage basin/outfall area =	0.51	
$L_{M\ THIS\ BASIN}$ =	1714	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Batch 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
Batch Detention

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 =	8.24	acres
A_I =	4.17	acres
A_P =	4.07	acres
L_R =	4399	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 1714 lbs.

F = 0.39

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 =	0.28	inches
Post Development Runoff Coefficient =	0.36	
On-site Water Quality Volume =	3011	cubic feet

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

Off-site area draining to BMP =	0.00	acres
Off-site Impervious cover draining to BMP =	0.00	acres
Impervious fraction of off-site area =	0	
Off-site Runoff Coefficient =	0.00	
Off-site Water Quality Volume =	0	cubic feet
Storage for Sediment =	602	
Total Capture Volume (required water quality volume(s) x 1.20) =	3614	cubic feet 0.08 Acre-ft

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.

7. Retention/Irrigation System Designed as Required in RG-348 Pages 3-42 to 3-46

Required Water Quality Volume for retention basin = NA cubic feet

Irrigation Area Calculations:

Soil infiltration/permeability rate =	0.1	in/hr	**Enter determined permeability rate or assumed value of 0.1**
Irrigation area =	NA	square feet	
	NA	acres	

8. Extended Detention Basin System Designed as Required in RG-348 Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin = NA cubic feet

9. Filter area for Sand Filters Designed as Required in RG-348 Pages 3-58 to 3-63

9A. Full Sedimentation and Filtration System

Water Quality Volume for sedimentation basin =	NA	cubic feet	
Minimum filter basin area =	NA	square feet	
Maximum sedimentation basin area =	NA	square feet	**For minimum water depth of 2 feet**
Minimum sedimentation basin area =	NA	square feet	**For maximum water depth of 8 feet**

9B. Partial Sedimentation and Filtration System

Water Quality Volume for combined basins =	NA	cubic feet	
Minimum filter basin area =	NA	square feet	
Maximum sedimentation basin area =	NA	square feet	**For minimum water depth of 2 feet**
Minimum sedimentation basin area =	NA	square feet	**For maximum water depth of 8 feet**

10. Bioretention System Designed as Required in RG-348 Pages 3-63 to 3-65

Required Water Quality Volume for Bioretention Basin = NA cubic feet

11. Wet Basins Designed as Required in RG-348 Pages 3-66 to 3-71

Required capacity of Permanent Pool = **NA** cubic feet **Permanent Pool Capacity is 1.20 times the WQV**
Required capacity at WQV Elevation = **NA** cubic feet **Total Capacity should be the Permanent Pool Capacity plus a second WQV.**

12. Constructed Wetlands Designed as Required in RG-348 Pages 3-71 to 3-73

Required Water Quality Volume for Constructed Wetlands = **NA** cubic feet

13. AquaLogic™ Cartridge System Designed as Required in RG-348 Pages 3-74 to 3-78

**** 2005 Technical Guidance Manual (RG-348) does not exempt the required 20% increase with maintenance contract with AquaLogic™.**

Required Sedimentation chamber capacity = **NA** cubic feet
Filter canisters (FCs) to treat WQV = **NA** cartridges
Filter basin area (RIA_F) = **NA** square feet

14. Stormwater Management StormFilter® by CONTECH

Required Water Quality Volume for Contech StormFilter System = **NA** cubic feet

THE SIZING REQUIREMENTS FOR THE FOLLOWING BMPs / LOAD REMOVALS ARE BASED UPON FLOW RATES - NOT CALCULATED WATER QUALITY VOLUMES

15. Grassy Swales Designed as Required in RG-348 Pages 3-51 to 3-54

Design parameters for the swale:

Drainage Area to be Treated by the Swale = A = 1.87 acres
Impervious Cover in Drainage Area = 0.15 acres
Rainfall intensity = i = 1.1 in/hr
Swale Slope = 0.01 ft/ft
Side Slope (z) = 3
Design Water Depth = y = 0.33 ft
Weighted Runoff Coefficient = C = 0.36

A_{CS} = cross-sectional area of flow in Swale = 2.09 sf
P_W = Wetted Perimeter = 7.37 feet
R_H = hydraulic radius of flow cross-section = A_{CS}/P_W = 0.28 feet
n = Manning's roughness coefficient = 0.2

15A. Using the Method Described in the RG-348

Manning's Equation: $Q = \frac{1.49}{n} A_{CS} R_H^{2/3} S^{0.5}$

$b = \frac{0.134 \times Q}{V^{1.67} S^{0.5}} - zy$ = 5.26 feet

Q = CiA = 0.75 cfs

To calculate the flow velocity in the swale:

V (Velocity of Flow in the swale) = Q/A_{CS} = 0.36 ft/sec

To calculate the resulting swale length:

L = Minimum Swale Length = V (ft/sec) * 300 (sec) = 107.24 feet

If any of the resulting values do not meet the design requirement set forth in RG-348, the design parameters must be modified and the solver rerun.

15B. Alternative Method using Excel Solver

Design Q = CiA = 0.75 cfs

Manning's Equation Q = 0.76 cfs Error 1 = -0.01
Swale Width= 6.00 ft

Instructions are provided to the right (green comments).

Flow Velocity 0.36 ft/s
Minimum Length = 107.24 ft

Instructions are provided to the right (blue comments).

Design Width = 6 ft
Design Discharge = 0.76 cfs Error 2 = -0.01
Design Depth = 0.33 ft
Flow Velocity = 0.32 cfs
Minimum Length = 97.48 ft

If any of the resulting values do not meet the design requirement set forth in RG-348, the design parameters may be modified and the solver rerun.
If any of the resulting values still do not meet the design requirement set forth in RG-348, widening the swale bottom value may not be possible.

16. Vegetated Filter Strips Designed as Required in RG-348 Pages 3-55 to 3-57

There are no calculations required for determining the load or size of vegetative filter strips.
The 80% removal is provided when the contributing drainage area does not exceed 72 feet (direction of flow) and the sheet flow leaving the impervious cover is directed across 15 feet of engineered filter strips with maximum slope of 20% or across 50 feet of natural vegetation with a maximum slope of 10%. There can be a break in grade as long as no slope exceeds 20%.

If vegetative filter strips are proposed for an interim permanent BMP, they may be sized as described on Page 3-56 of RG-348.

17. Wet Vaults Designed as Required in RG-348 Pages 3-30 to 3-32 & 3-79

Required Load Removal Based upon Equation 3.3 = **NA** lbs

First calculate the load removal at 1.1 in/hour

RG-348 Page 3-30 Equation 3.4: $Q = CiA$

C = runoff coefficient for the drainage area = 0.34 **C = Runoff Coefficient = 0.546 (IC)^2 + 0.328 (IC) + 0.03**
i = design rainfall intensity = 1.1 in/hour
A = drainage area in acres = 1 acres

Q = flow rate in cubic feet per second = 0.37 cubic feet/sec

RG-348 Page 3-31 Equation 3.5: $V_{OR} = Q/A$

Q = Runoff rate calculated above = 0.37 cubic feet/sec
A = Water surface area in the wet vault = 150 square feet

V_{OR} = Overflow Rate = 0.00 feet/sec

Percent TSS Removal from Figure 3-1 (RG-348 Page 3-31) = 53 percent

Load removed by Wet Vault = #VALUE! lbs

If a bypass occurs at a rainfall intensity of less than 1.1 in/hours
Calculate the efficiency reduction for the actual rainfall intensity rate

Actual Rainfall Intensity at which Wet Vault bypass Occurs = 0.5 in/hour

Fraction of rainfall treated from Figure 3-2 RG-348 Page 3-32 = 0.75 percent
Efficiency Reduction for Actual Rainfall Intensity = 0.83 percent

Resultant TSS Load removed by Wet Vault = #VALUE! lbs

18. Permeable Concrete Designed as Required in RG-348 Pages 3-79 to 3-83

PERMEABLE CONCRETE MAY ONLY BE USED ON THE CONTRIBUTING ZONE

To solve for bottom width of the trapezoidal swale (b) using the Excel solver:
Excel can simultaneously solve the "Design Q" (C217) vs "Manning's Q" (C219) by varying the "Swale Width" (C220).
The required "Swale Width" occurs when the "Design Q" = "Manning's Q"

First, highlight Cell F219 (Error 1 value). The equation showing in the fx screen for Cell F219 should be "= C217-C219"
Then click on "Tools" and "Solver". The "Solver Parameters" screen pops up.
The value in the "Set Target cell" should be F219 "Error 1 ="
The value in the "By Changing Cells" should be C220 "Swale Width"
Click on solve.

The resulting "Swale Width" must be less than 10 feet to meet the requirements of the TGM.
If the resulting "Swale Width" exceeds 10 feet then the design parameters must be revised and the solver run again.

If there is not the option for "Solver" under "Tools"
Click on "Tools" and "Add Ins" and then check "Solver Add-in"
Then proceed as instructed above.

If you would like to increase the bottom width of the trapezoidal swale (b):
Excel can simultaneously solve the "Design Q" (C217) vs "Design Discharge" (C232) by varying the "Design Depth" (C233).
The required "Design Depth" for a 10-foot bottom width occurs when the "Design Q" (C217) = the "Design Discharge" (C232).

First set the desired bottom width in Cell C231.
Highlight Cell F232. The equation showing in the fx screen for Cell F232 should be "= C217-C232"

Click on "Tools" and "Solver". The "Solver Parameters" screen pops up.
The value in the "Set Target cell" should be F232 "Error 2"
The value in the "By Changing Cells" should be C233 "Design Depth"
Click on solve.

The resulting "Design Depth" must be equal to or less than 0.33 feet to meet the requirements of the TGM.
If the resulting "Design Depth" exceeds 0.33 feet then the design parameters must be revised and the solver run again.
First set the desired bottom width in Cell C231.
Highlight Cell F232. The equation showing in the fx screen for Cell F232 should be "= C217-C232"
The value in the "Set Target cell" should be F232 "Error 2"
The value in the "By Changing Cells" should be C233 "Design Depth"
Click on solve.

The resulting "Design Depth" must be equal to or less than 0.33 feet to meet the requirements of the TGM.
If the resulting "Design Depth" exceeds 0.33 feet then the design parameters must be revised and the solver run again.

19. BMPs Installed in a Series Designed as Required in RG-348 Pages 3-32

Michael E. Barrett, Ph.D., P.E. recommended that the coefficient for E_2 be changed from 0.5 to 0.65 on May 3, 2006

$E_{TOT} = [1 - ((1 - E_1) \times (1 - 0.65E_2) \times (1 - 0.25E_3))] \times 100 =$ 93.36 percent NET EFFICIENCY OF THE BMPs IN THE SERIES

EFFICIENCY OF FIRST BMP IN THE SERIES = $E_1 =$ 85.00 percent

EFFICIENCY OF THE SECOND BMP IN THE SERIES = $E_2 =$ 70.00 percent

EFFICIENCY OF THE THIRD BMP IN THE SERIES = $E_3 =$ 75.00 percent

THEREFORE, THE NET LOAD REMOVAL WOULD BE:
(A_I AND A_P VALUES ARE FROM SECTION 3 ABOVE)

$L_R = E_{TOT} \times P \times (A_I \times 34.6 \times A_P \times 0.54) =$ 4512.76 lbs

20. Stormceptor

Required TSS Removal in BMP Drainage Area= **NA** lbs
Impervious Cover Overtreatment= 0.0000 ac
TSS Removal for Uncaptured Area = 0.00 lbs

BMP Sizing

Effective Area = NA EA
Calculated Model Size(s) = #N/A
Actual Model Size (if multiple values provided in Calculated Model Size or if you are choosing a larger model size) = 0 Model Size

Surface Area = #N/A ft^2
Overflow Rate = #VALUE! V_o
Rounded Overflow Rate = #VALUE! V_o
BMP Efficiency % = #VALUE! %
L_R Value = #VALUE! lbs

TSS Load Credit = #VALUE! lbs

Is Sufficient Treatment Available? (TSS Credit > TSS Uncapt.) #VALUE!

TSS Treatment by BMP (LM + TSS Uncapt.) = #VALUE!

21. Vortech

Required TSS Removal in BMP Drainage Area= **NA** lbs
Impervious Cover Overtreatment= 0.0000 ac
TSS Removal for Uncaptured Area = 0.00 lbs

BMP Sizing

Effective Area = NA EA
Calculated Model Size(s) = #N/A

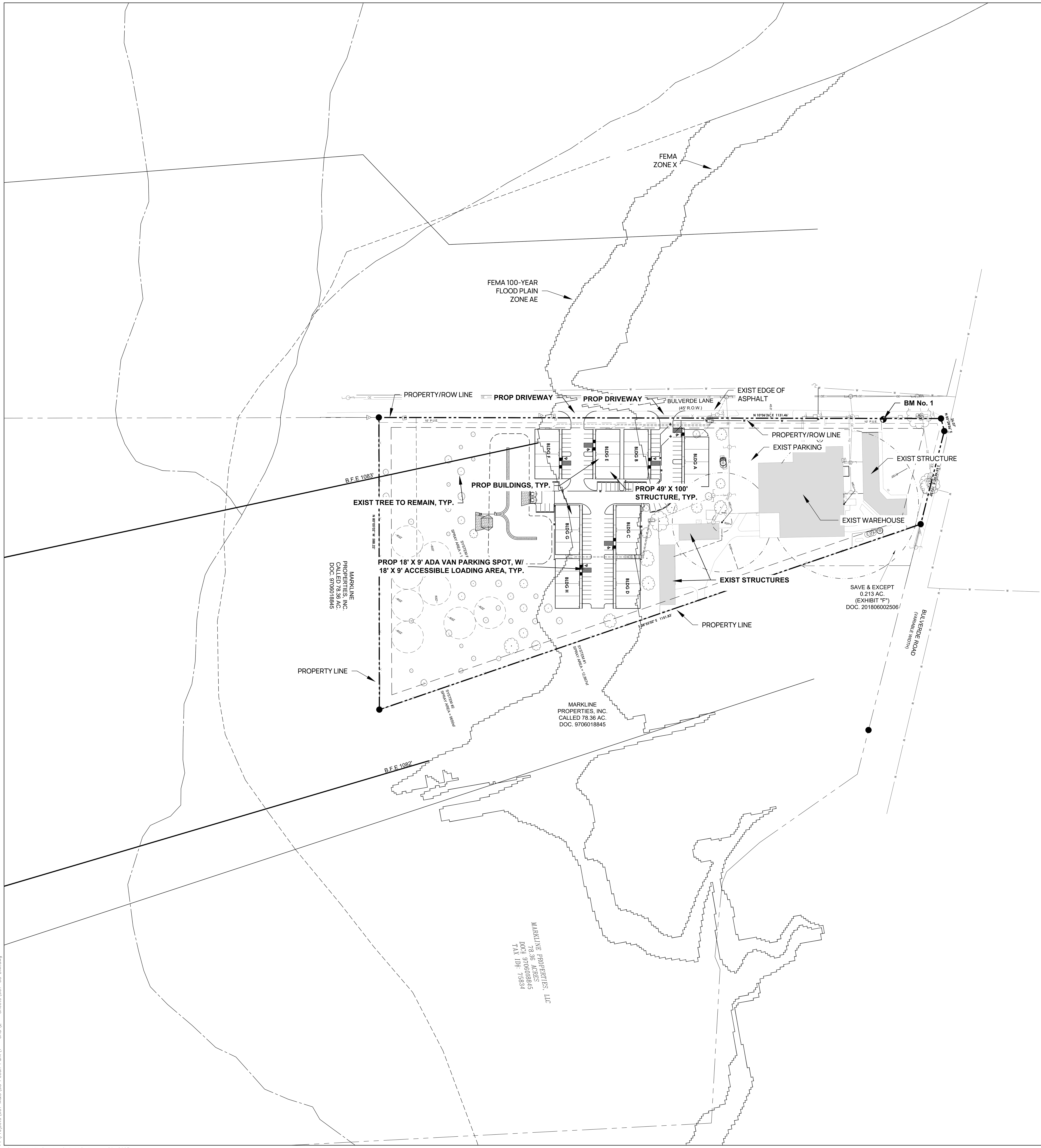
Actual Model Size (if choosing larger model size) = Vx1000 Pick Model Size

Surface Area = 7.10 ft^2
Overflow Rate = #VALUE! V_o
Rounded Overflow Rate = #VALUE! V_o
BMP Efficiency % = #VALUE! %
L_R Value = #VALUE! lbs

TSS Load Credit = #VALUE! lbs

Is Sufficient Treatment Available? (TSS Credit > TSS Uncapt.) #VALUE!

TSS Treatment by BMP (LM + TSS Uncapt.) = #VALUE!



N

0 50 100 200

SCALE: 1"=100'

LEGEND

- PROPERTY BOUNDARY
- LOT LINE
- EASEMENT LINE
- SITE BENCHMARK
- PROPERTY CORNER
- GAS LINE
- OVERHEAD ELECTRIC LINE
- FENCE LINE
- EXISTING TREE
- SIGN
- POWER POLE

SITE PLAN NOTES

1. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LOCAL BUILDING, SAFETY, AND INSPECTION REGULATIONS.
2. CONTRACTOR SHALL KEEP A COPY OF APPROVED CONSTRUCTION DRAWINGS ONSITE AT ALL TIMES.
3. PROPERTY LIES IN SHADED ZONE "X", AND ZONE AE AS DELINEATED ON THE FLOOD INSURANCE RATE MAP FOR COMAL COUNTY, TEXAS AND INCORPORATED AREAS, MAP NO. 48091C0380F, MAP EFFECTIVE SEPTEMBER 2, 2009.
4. ALL DIMENSIONS SHOWN ARE TO FACE OF CURB OR EDGE OF PAVEMENT UNLESS STATED OTHERWISE.
5. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL COORDINATE WITH LOCAL TV, ELECTRIC, GAS, WATER, SEWER AND PHONE PROVIDERS AS REQUIRED TO PROVIDE SERVICE TO THE PROJECT SITE.
6. CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION ACTIVITY (ON OR OFFSITE) FOR THE PROJECT.
7. ALL RAMPS, ACCESSIBLE PATHS, AND ACCESSIBLE PARKING SPOTS SHALL BE IN COMPLIANCE WITH THE LATEST TEXAS ACCESSIBILITY STANDRS (TAS).
8. WHEELSTOPS SHALL BE PRE-CAST CONCRETE AND AND 6' IN LENGTH, OR AS SPECIFICALLY CALLED OUT ON PLANS. FURTHERMORE, WHEELSTOPS SHALL BE DOWELED IN PLACE A MINIMUM OF 12" INTO PAVEMENT AND BASE SECTION.
9. CONTRACTOR SHALL COORDINATE WITH ELECTRICAL ENGINEER OR LIGHTING CONSULTANT FOR LAYOUT OF PARKING LOT LIGHTS.
10. ALL DUMPSTER PADS AND APRONS SHALL BE CONSTRUCTED OF 6" REINFORCED CONCRETE PAVEMENT, WITH #4 BARS, 18" O.C.E.W.
11. DUMPSTER'S SHALL BE SCREENED FROM PUBLIC RIGHT-OF-WAY AND ADJACENT PROPERTIES. SCREENING SHALL BE A MINIMUM OF 7' TALL. GATES TO ACCESS DUMPSTER'S SHALL BE A MINIMUM OF 12' WIDE.
12. NO GEOTECHNICAL SOILS REPORT WAS PROVIDED TO HCC. ALL PAVEMENT RECOMMENDATIONS SHOULD BE CONFIRMED WITH A SOILS ENGINEER PRIOR TO CONSTRUCTION AND ARE BASED ON AREA STANDARDS. HCC IS NOT RESPONSIBLE FOR PAVEMENT DESIGN OR ANY DEFICIENCIES DUE TO PROPOSED PAVEMENT SECTION.
    12.1. ALL PROPOSED PARKING AREAS AND DRIVES SHALL BE COMPRISED OF 6" COMPACTED LIME STABILIZED SUBGRADE, 6" OF BASE AND 2" HMAC.

PECAN PARK - SITE SUMMARY TABLE

ZONING:	C2 Commercial	
EXISTING USE:	GENERAL OFFICE/RETAIL	
PROPOSED USE:	GENERAL OFFICE/RETAIL	
SITE AREA:	10.202 ACRES	
EXISTING IMPERVIOUS COVER:	2.26 ACRES	
No. OF EXISTING BUILDINGS:	4	
EXISTING BUILDING COVERAGE:	39,808	
No. OF PROPOSED BUILDINGS:	8	
PROPOSED BUILDING COVERAGE:	39,200 SF	
	REQUIRED/ALLOWED:	PROVIDED:
BUILDING HEIGHT:	35'	17'
PROPOSED IMPERVIOUS COVER:	2.04 ACRES	1.91 ACRES
PARKING: (Assumed Contractor's Office, 3 employees per office, 8 buildings with 4 offices)	96	101
ADA PARKING:	5	5
VAN PARKING:	1	5

SURVEY NOTE

Survey Prepared by:
Sherwood Surveying & S.U.E
6477 FM 311, Spring Branch, TX 78070
Office: 830.228.5446
TBPELS Firm #10044200
www.SherwoodSurveying.com

LEGAL DESCRIPTION

10.644 acres, more or less, out of Survey No. 192, Guadalupe Herrera Abstract Number 206, Comal County, TX, described in document #201806002586 MPRCCT.

BENCHMARK

1. BM No. 1: CP-BM MAG NAIL ELEV: 1091.39'
   X: 2141957.48 Y: 13818316.59

Hill Country Civil
Engineers • Consultants

STATE OF TEXAS
CHRISTOPHER B. ALLISON
131240
LICENSED
PROFESSIONAL ENGINEER
02/20/2023

No.	Date	Revisions	App.

PECAN PARK
BULVERDE, TEXAS
HCC JOB No.: 001-08
DRAWN BY: CBA/RC

OVERALL SITE PLAN

SHEET No.
6
OF 16

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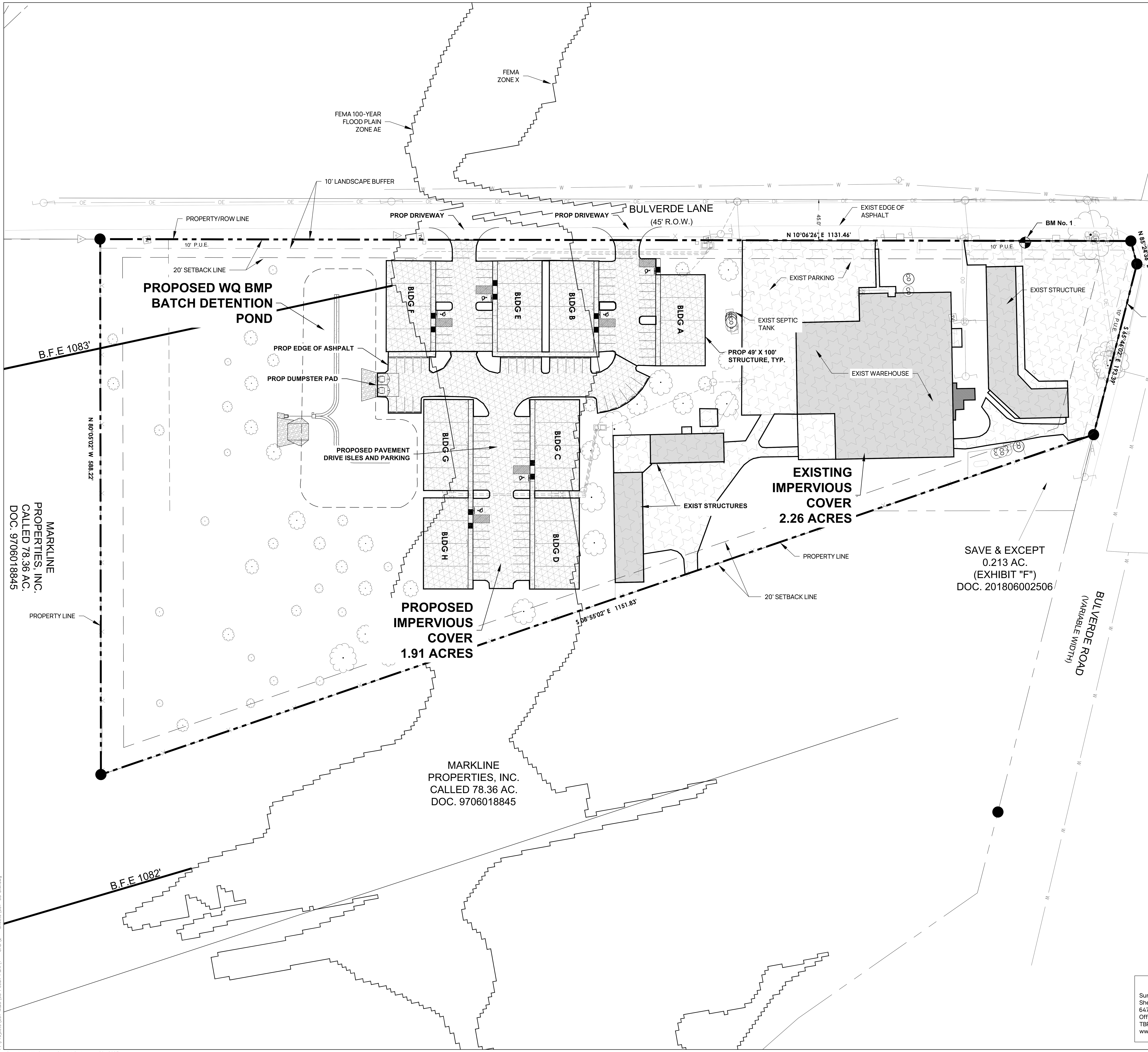

0 25 50 100
SCALE: 1"=50'

LEGEND

- PROPERTY BOUNDARY
- LOT LINE
- EASEMENT LINE
- SITE BENCHMARK
- PROPERTY CORNER
- GAS LINE
- OVERHEAD ELECTRIC LINE
- FENCE LINE
- EXISTING TREE
- SIGN
- POWER POLE
- PROPOSED IMPERVIOUS COVER
- EXISTING IMPERVIOUS COVER

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STATE OF TEXAS
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01/25/2023

No.	Date	Revisions	App.

PECAN PARK
BULVERDE, TEXAS
HCC JOB No.: 001-08
DRAWN BY: CBA/RC

WATER QUALITY IMPERVIOUS COVER PLAN

SHEET No.
8
OF 16

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TRENCH EXCAVATION SAFETY PROTECTION

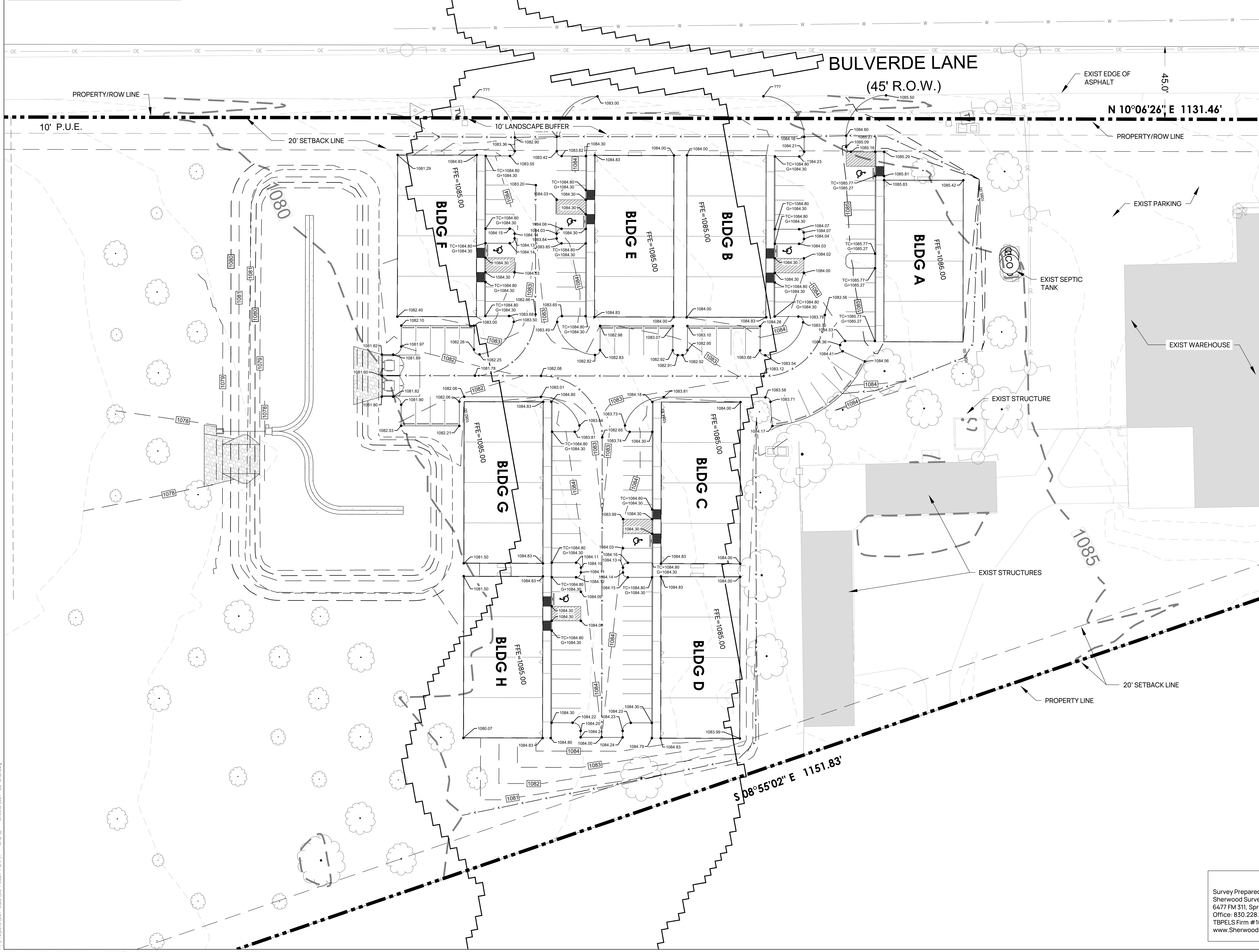
CONTRACTOR, SUB-CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE, OR STRUCTURAL/GEOTECHNICAL/SAFETY EQUIPMENT CONSULTANT, SHALL REVIEW THESE PLANS AND GEOTECHNICAL REPORT, THE INSTALLATION SITES WITHIN THE PROJECT AREA IN ORDER TO IMPLEMENT CONTRACTORS TRENCH EXCAVATION SAFETY PROTECTION PLAN, SYSTEMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM OSHA STANDARDS, SPECIFICALLY , CONTRACTOR AND/OR RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PLAN IN ACCORDANCE WITH OSHA REGULATIONS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND/OR AROUND THE EXPOSED TRENCH EXCAVATION.

CAUTION!

CONTRACTOR SHALL EXERCISE CAUTION DURING DEMOLITION, EXCAVATION, CLEARING AND CONSTRUCTION ACTIVITIES NEAR OVERHEAD ELECTRIC LINES. CONTRACTOR SHALL COMPLY WITH ALL SAFETY REGULATIONS WHEN OPERATING NEAR POWER LINES.

DIG TESS:

CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION ACTIVITY (ON OR OFFSITE) FOR THE PROJECT.



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- SIGN
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- 600.00 PROPOSED SPOT ELEVATION
- PROPOSED DRAINAGE SWALE

GRADING NOTES

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2. CONTRACTOR SHALL PROTECT EXISTING FACILITIES TO REMAIN INCLUDING BUT NOT LIMITED TO STRUCTURES, PAVEMENT, TREES, FENCES LANDSCAPING, UTILITIES, ETC. ALL EXISTING FACILITIES SHALL BE IN ORIGINAL OR BETTER CONDITION AT THE COMPLETION OF THE PROJECT.

3. DURING CONSTRUCTION, CONTRACTOR SHALL MAINTAIN UNRESTRICTED DRAINAGE. NO PONDING OF STORM DRAINAGE SHALL BE PERMITTED IN AREAS OF PREPARED SUBGRADE OR EXCAVATION, EMBANKMENT. IF PONDING SHOULD OCCUR, CONTRACTOR SHALL IMMEDIATELY PUMP OUT OR GRAVITY DRAIN PONDING WATER OUT OF IMPACTED AREAS. IF ANY DAMAGE OCCURRED TO SUBGRADE, BUILDING PAD OR EXCAVATION AREAS, THE SOILS MUST BE DRIED OUT, REMOVED, REPLACED AND RE-COMPACTED.

4. DISTURBED AREAS (CONSTRUCTION AREAS) SHALL BE STRIPPED OF VEGETATION, LOOSE TOPSOIL, ORGANICS, BRUSH AND DEBRIS. AFTERWARDS, THE EXPOSED SUBGRADE SHALL SHALL BE PROOF ROLLED WITH A MINIMUM 20 TON PNEUMATIC ROLLER. ANY WEAK AREAS DETECTED SHALL BE REMOVED AND REPLACED WITH SUITABLE SOILS OF SIMILAR TYPE (CLASSIFICATION, MOISTURE CONTENT AND DENSITY).

5. IF REQUIRED TO MODIFY EXISTING GRADE, FILL MATERIALS SHOULD BE PLACED ON PREPARED SURFACES IN LIFTS NOT EXCEED 8 INCHES (LOOSE MEASURE), WITH COMPACTED THICKNESS NOT TO EXCEED 6 INCHES OR AS INDICATED IN SITE GEOTECHNICAL REPORT. FILL SHALL BE COMPACTED TO OPTIMUM MOISTURE CONTENT OR UP TO +3 PERCENTAGE POINTS OF OPTIMUM MOISTURE CONTENT TO A MINIMUM OF 95% MAXIMUM DENSITY AS DETERMINED BY TXDOT, TEX-114-E OR AS DESCRIBED IN THE SITE GEOTECHNICAL REPORT.

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10. ALL SPOT ELEVATIONS ARE TO EDGE OF PAVEMENT/GUTTER LINE OF CURB, FINISHED GRADE, FINISHED GRADE ADJACENT TO WALLS UNLESS OTHERWISE SPECIFIED AS BELOW

HP	HIGH POINT
LP	LOW POINT
ME	MATCH EXISTING
TC	TOP OF CURB AT BACK
TS	TOP OF STRUCTURE
TW	TOP OF WALL
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FFE	FINISHED FLOOR ELEVATION

11. STORM SEWER PIPE SHALL BE HIGH DENSITY POLYETHYLENE (HDPE) PIPE, OR AS CALLED OUT ON PLANS. HDPE PIPE SHALL BE ADS TYPE N-12, WATER TIGHT.

12. ALL ADA PARKING STALLS, WALKING AISLES AND PATHWAYS SHALL NOT EXCEED 2% SLOPE IN ANY DIRECTION. RAMPS SHALL NOT EXCEED 8.033% SLOPE.

SURVEY NOTE

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No.	Date	Revisions	App.

PECAN PARK
BULVERDE, TEXAS
HCC JOB No.: 001-08
DRAWN BY: CBA/RC

GRADING PLAN

SHEET No.
11
OF 16

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TRENCH EXCAVATION SAFETY PROTECTION

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DIG TESS:

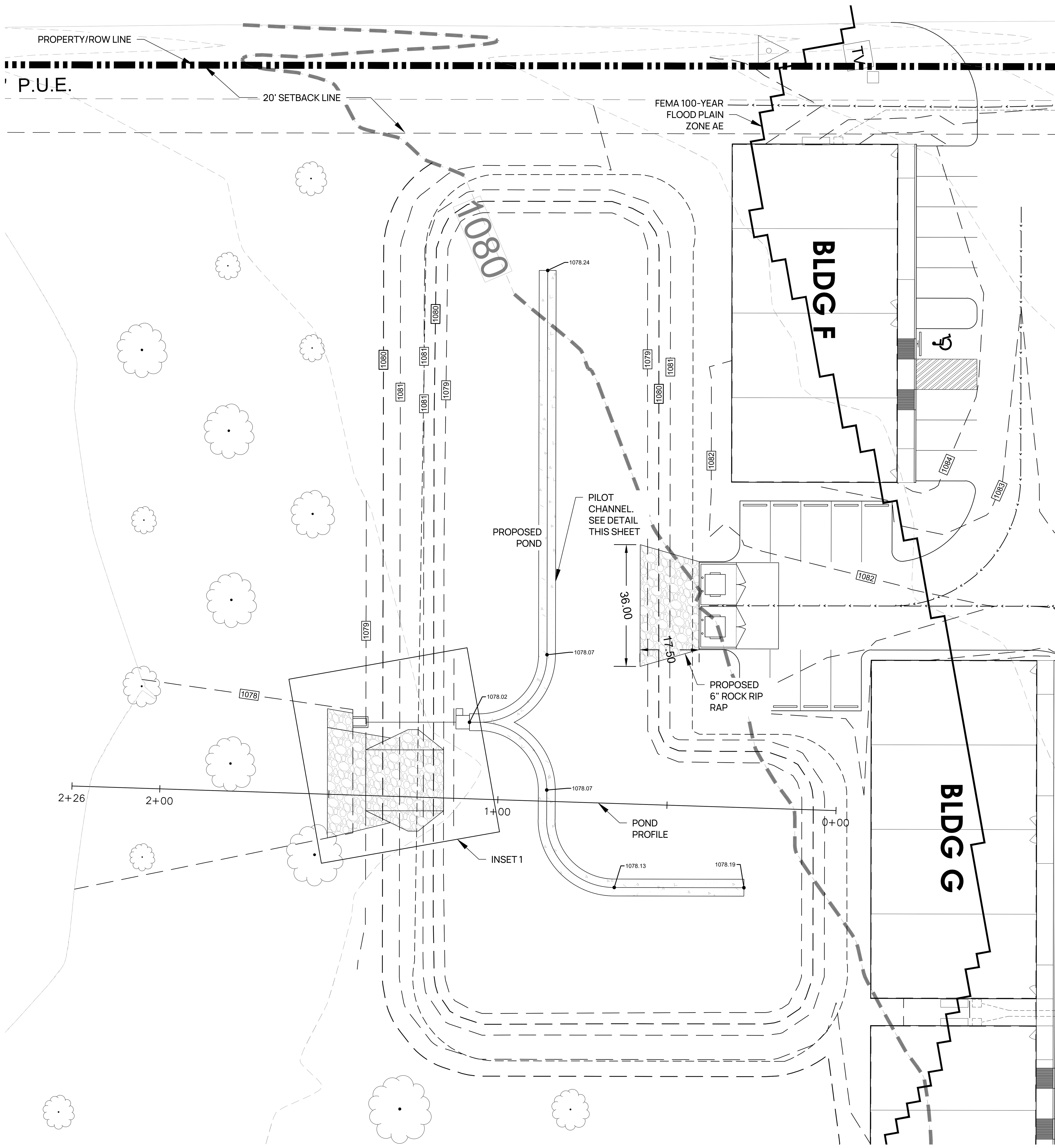
CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION ACTIVITY (ON OR OFFSITE) FOR THE PROJECT.

Stage (ft)	Elevation (ft)	Incremental Storage (cuft)	Total Storage (cuft)	Discharge (cfs)
0	1,078.00	0.00	0.00	0.00
1	1,079.00	17,839.00	17,839.00	0.16
2	1,080.00	19,862.00	37,700.00	23.79
3	1,081.00	21,936.00	59,636.00	122.65

POND STAGE STORAGE

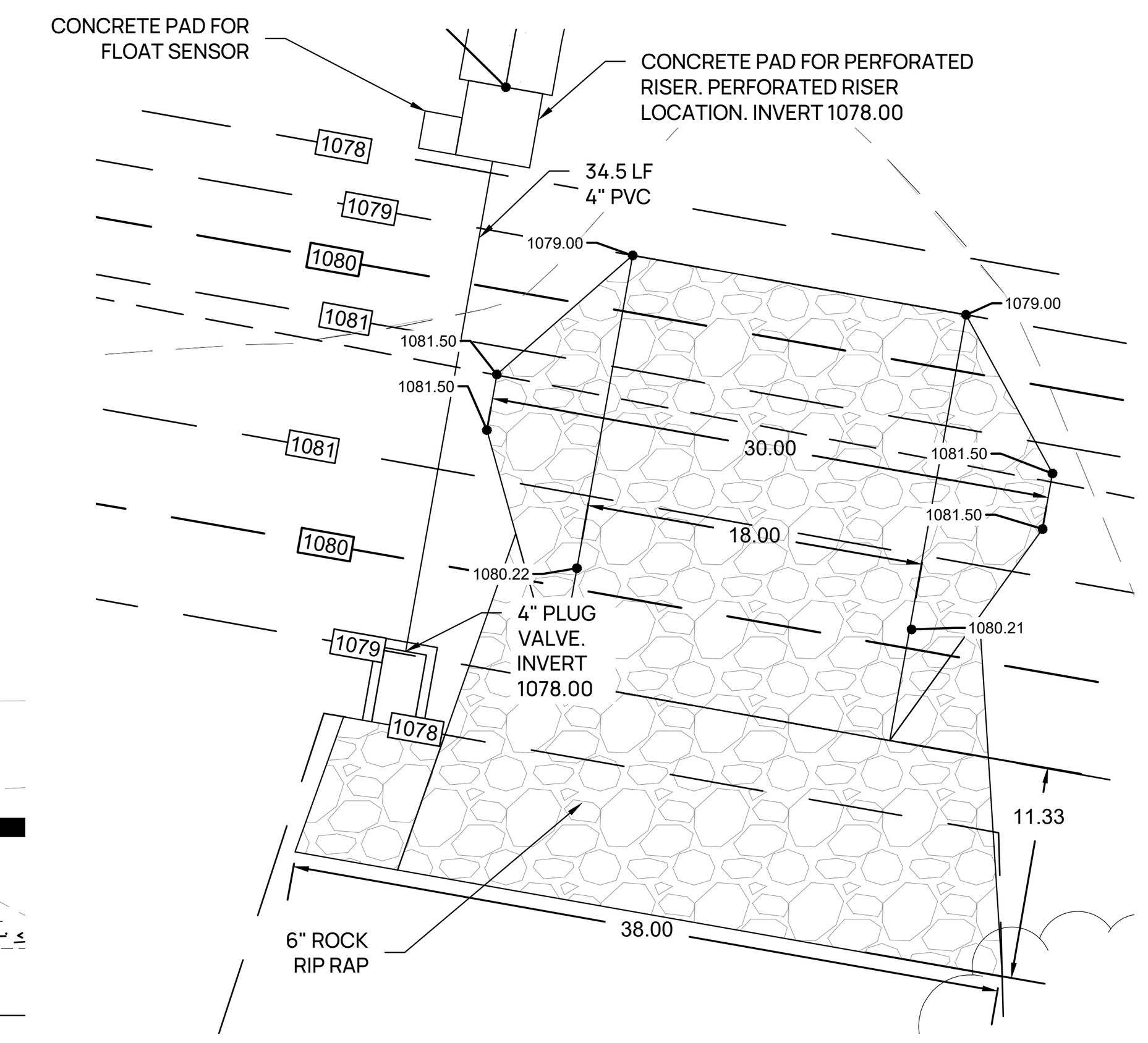
NOTES

1. WATER QUALITY ELEVATION IS SET AT 1,079'



DETENTION POND PLAN

1"=20'

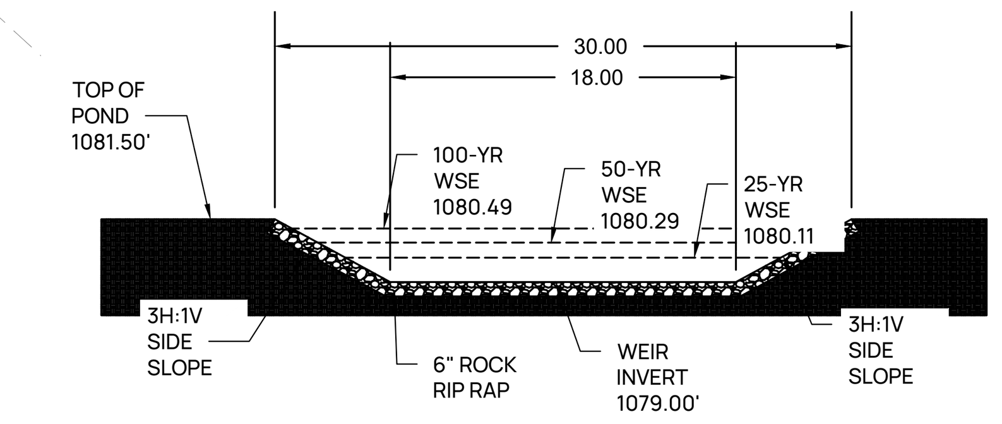


INSET 1

1"=10'

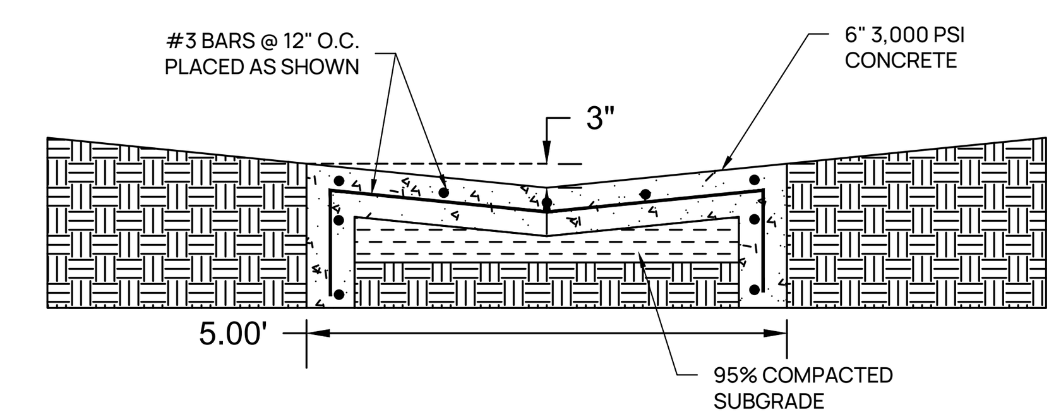
NOTES

1. ROCK RIP RAP EMBEDMENT DEPTH SHALL BE 1.5 TIMES THE DIAMETER OF THE ROCK.
2. REFER TO DETENTION POND DETAIL SHEET FOR ADDITIONAL INFORMATION ON POND OUTFALL DESIGN.



WEIR CROSS-SECTION

N.T.S.

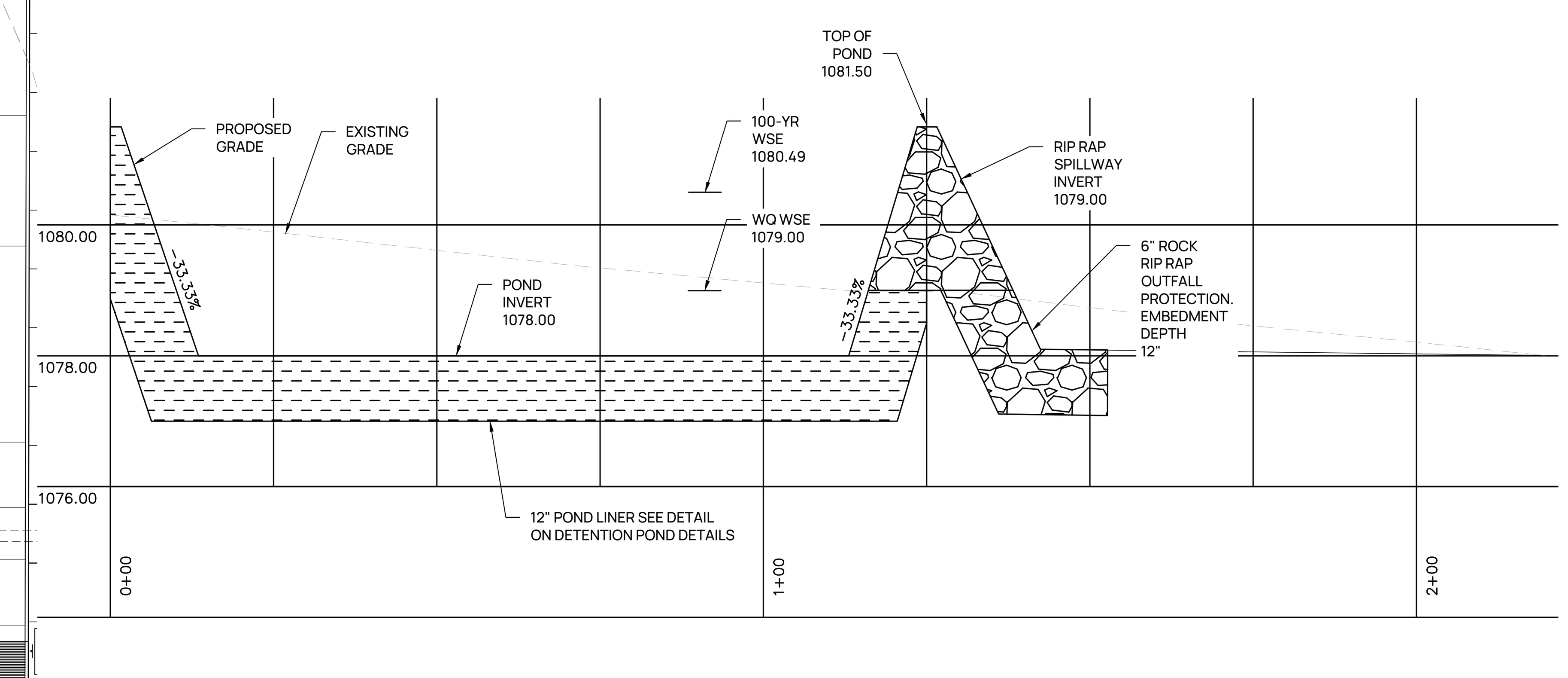


CONCRETE PILOT CHANNEL

N.T.S.

NOTES

1. GROOVE CONTRACTION JOINTS SHALL BE SPACED 10 FT. ON CENTERS, WITH $\frac{1}{2}$" ELASTOMERIC EXPANSION JOINTS AT EVERY 50 FT.



POND PROFILE

SCALE H: 1"=20' V: 1"=2'

SCALE: 1"=20'

LEGEND

- PROPERTY BOUNDARY
- LOT LINE
- EASEMENT LINE
- SITE BENCHMARK
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PECAN PARK
BULVERDE, TEXAS
HCC JOB No.: 001-08
DRAWN BY.: CBA/RC

BATCH DETENTION POND PLAN

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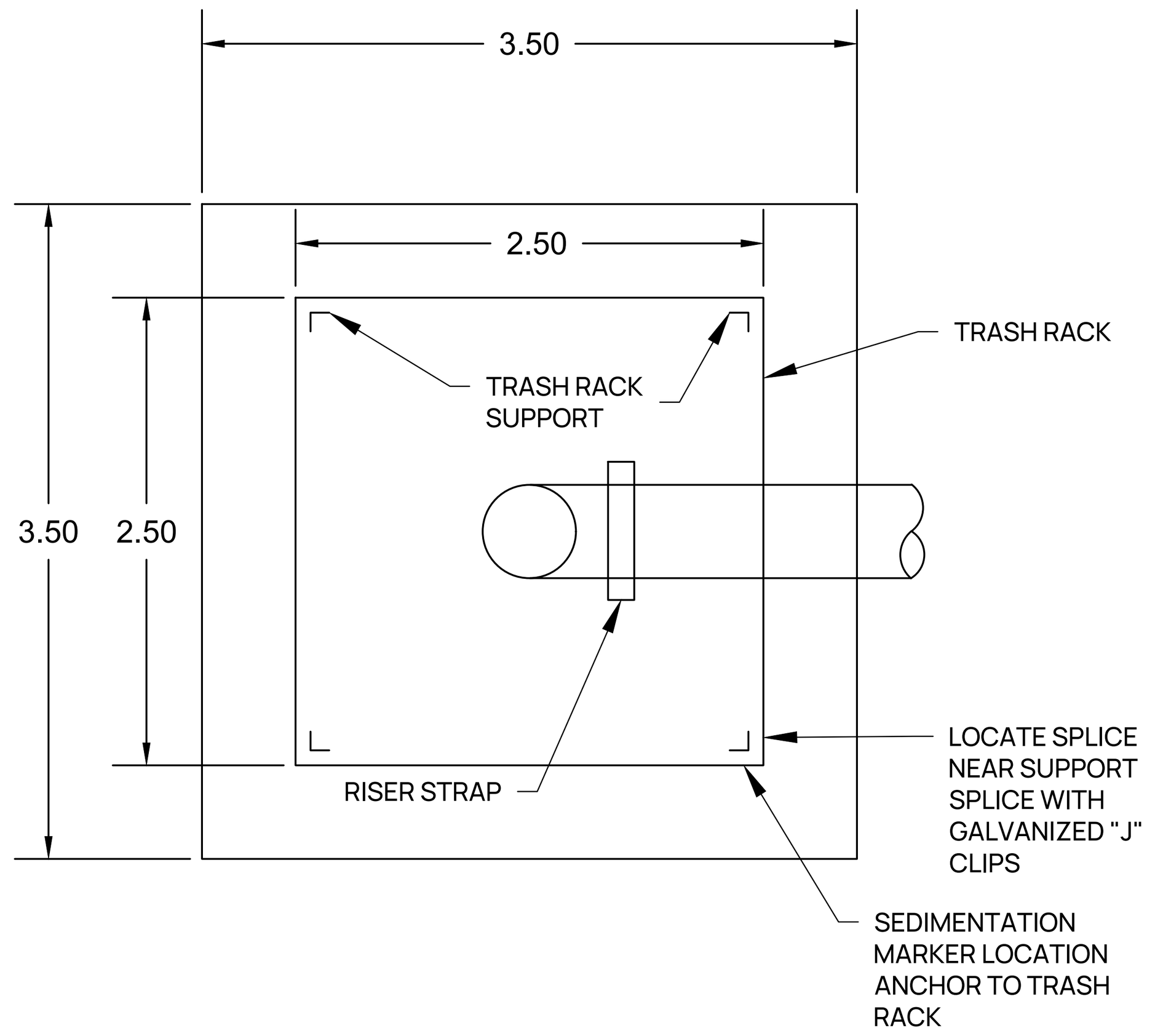
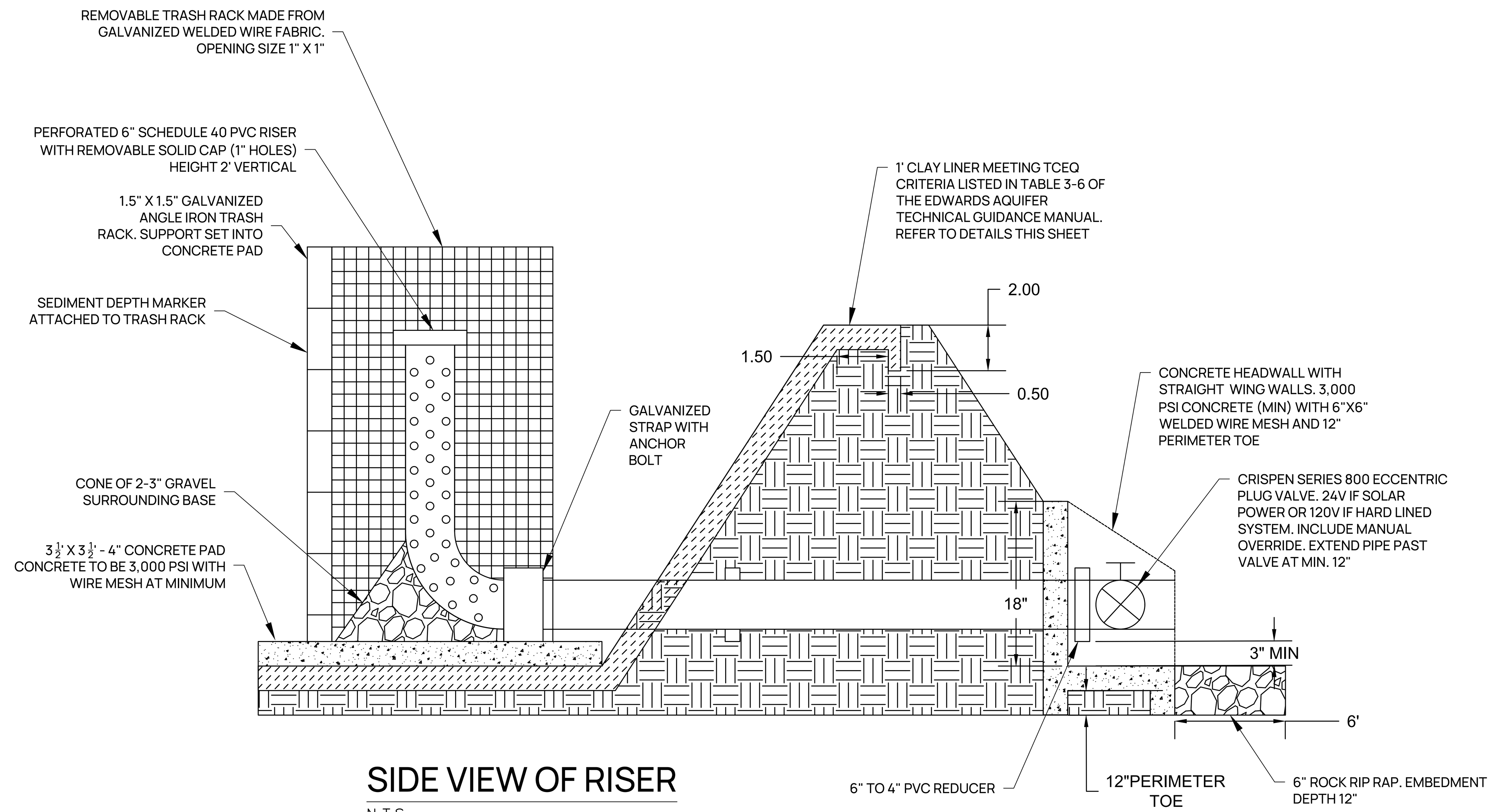


PLAN VIEW OF RISER

N.T.S.

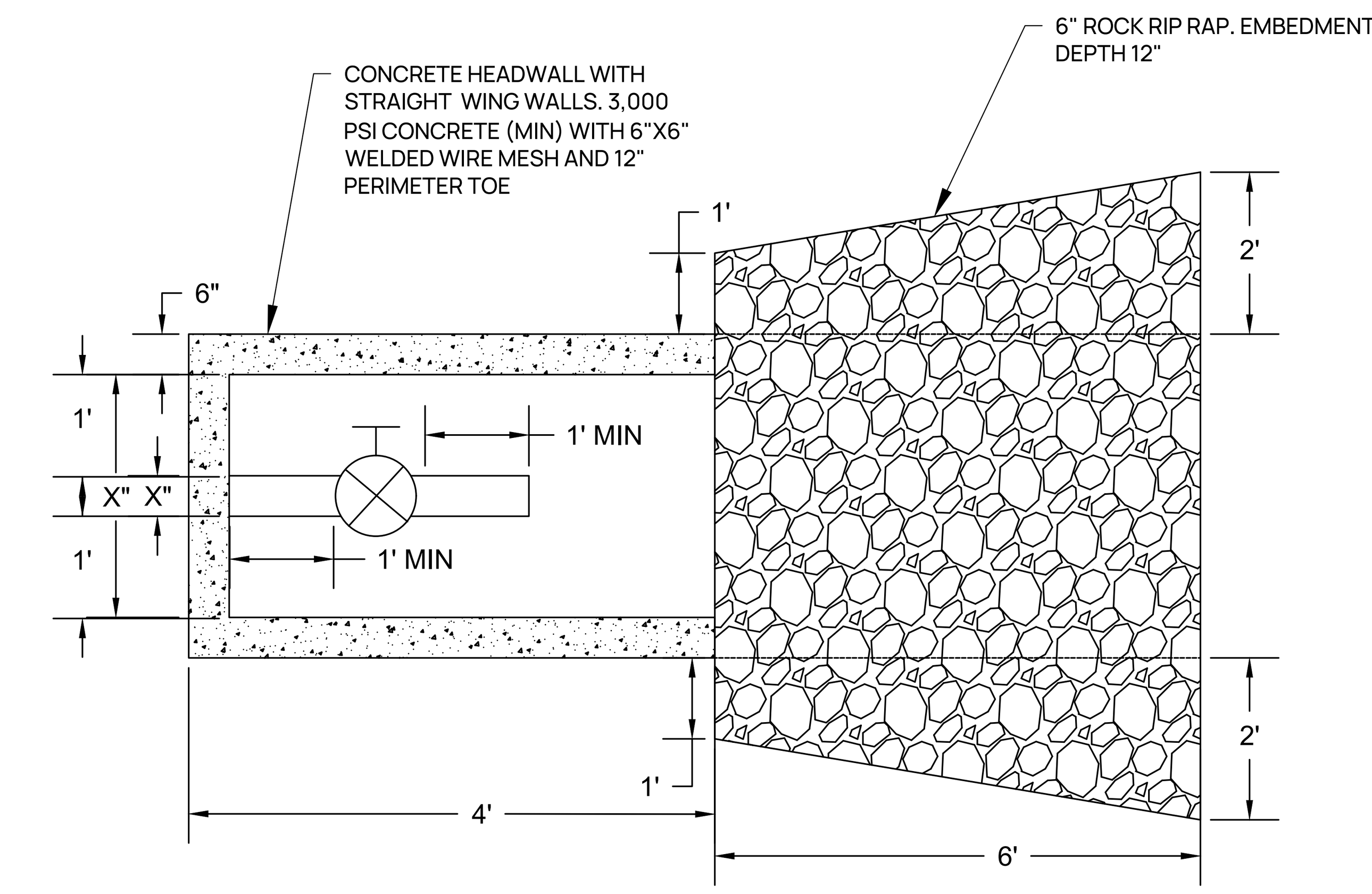


SIDE VIEW OF RISER

N.T.S.

NOTES

1. CLAY LINER TO MEET SPECIFICATIONS FOUND IN THE TCEQ RG-348 SECTION 3.4.2 BASIN LINING REQUIREMENTS. A GEOTEXTILE LINER MAY BE USED IN PLACE OF THE CLAY LINER. ADDITIONAL SPECS PROVIDED ON THIS SHEET.

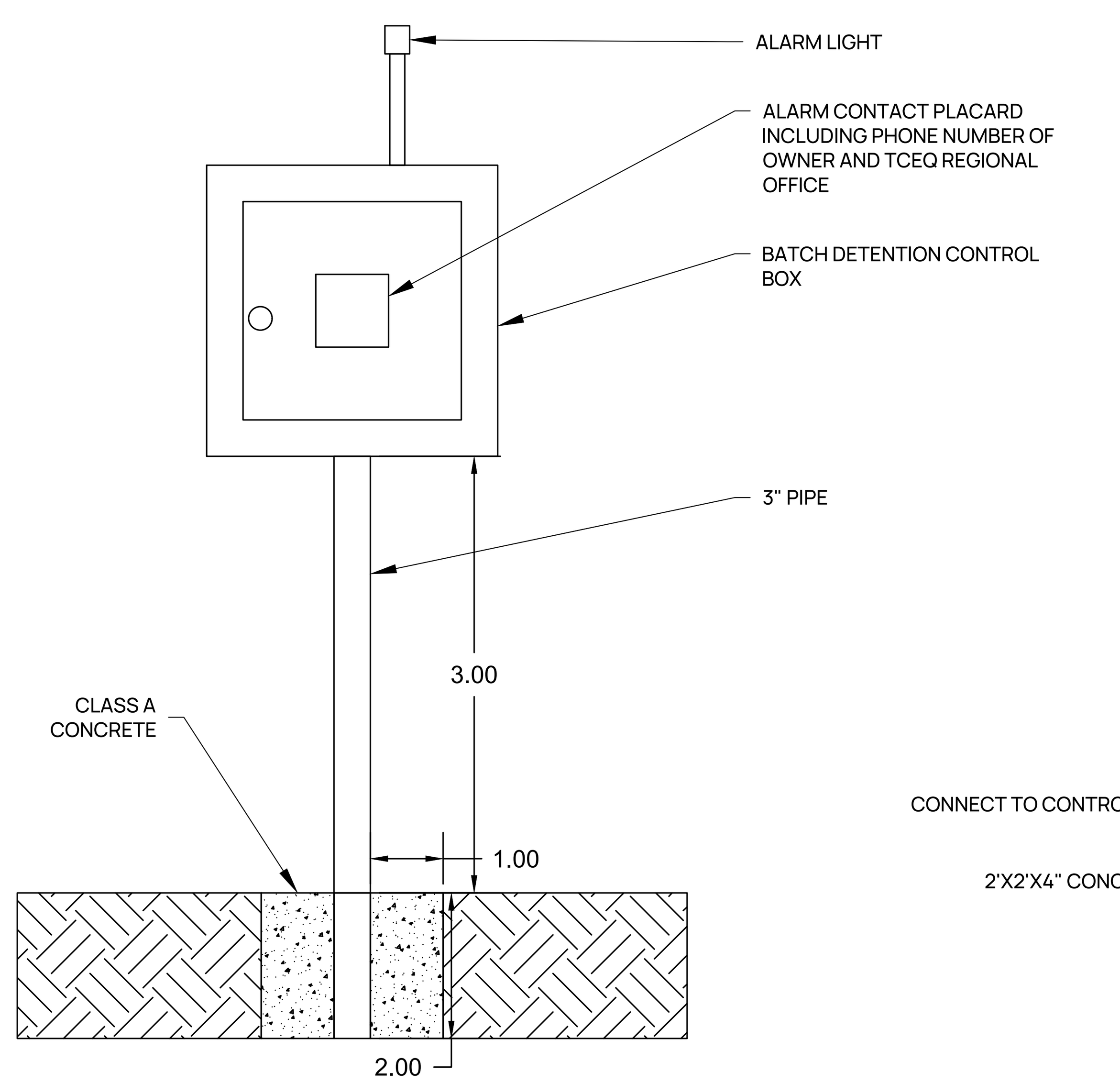


HEADWALL AND RIP RAP DETAIL

N.T.S.

NOTES

1. ROCK RIP RAP APRON SIZES SHOWN ARE MINIMUM. ADDITIONAL RIP RAP MAY BE INSTALLED IF DESIRED.

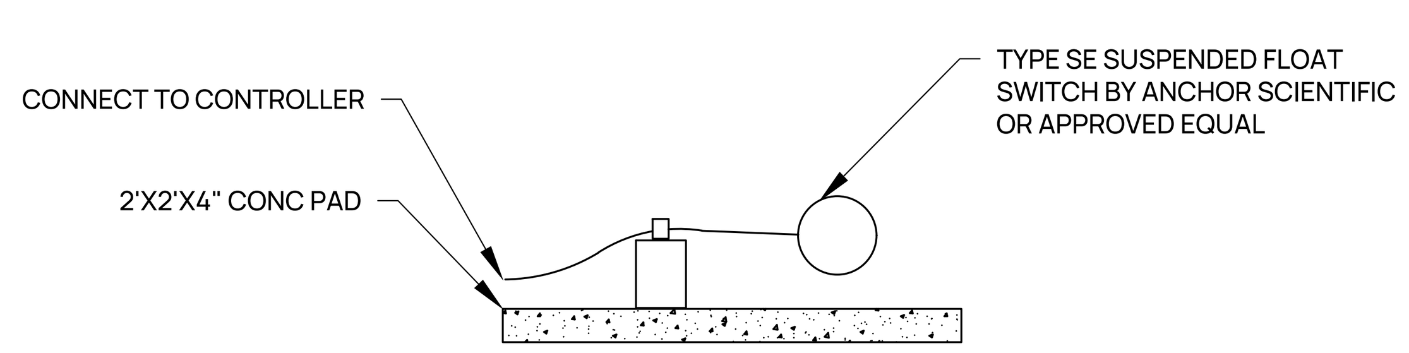


BATCH DETENTION CONTROL BOX

N.T.S.

NOTES

1. 120 VAC LINE OR 24V SOLAR POWER TO BE PROVIDED TO BOX LOCATION
2. ALL CABLES TO BE PROTECTED BY CONDUIT AND BURIED TO PREVENT DAMAGE DURING MAINTENANCE ACTIVITIES
3. THE SYSTEM SHOULD BE PROGRAMMED TO BEGIN DRAINING THE STORMWATER RUNOFF FROM THE BASIN 12 HOURS AFTER THE FIRST STORMWATER RUNOFF IS SENSED BY THE FLOAT VALVE. THE SYSTEM SHOULD BE PROGRAMMED TO HAVE THE VALVE REMAIN OPEN FOR TWO HOURS AFTER THE LEVEL SENSOR INDICATES THE BASIN IS EMPTY TO ALLOW ANY REMAINING SHALLOW WATER TO BE DISCHARGED. THE SYSTEM SHOULD PROVIDE THE FOLLOWING: A TEST SEQUENCE, BE ABLE TO DEAL WITH LOW BATTERY/POWER OUTAGES, AN ON/OFF/RESET SWITCH, MANUAL OPEN/CLOSE SWITCHES (MAINTENANCE/SPILL), CLEARLY VISIBLE EXTERNAL INDICATOR TO INDICATE A CYCLE IS IN PROGRESS, AND ABILITY TO EXERCISE THE VALVE TO PREVENT SEIZING.
4.



FLOAT SENSOR

N.T.S.

NOTES

1. FLOAT SWITCH TO HAVE A MAXIMUM ACTIVATION DIFFERENTIAL OF APPROXIMATELY 3.5 INCHES

3.4.2 Basin Lining Requirements

Impermeable liners should be used for water quality basins (retention, extended detention, sand filters, wet ponds and constructed wetlands) located over the recharge zone and in areas with the potential for groundwater contamination. Impermeable liners may be clay, concrete or geomembrane. If geomembrane is used, suitable geotextile fabric should be placed on the top and bottom of the membrane for puncture protection and the liners covered with a minimum of 6 inches of compacted topsoil. The topsoil should be stabilized with appropriate vegetation. Clay liners should meet the specifications in Table 3-6 and have a minimum thickness of 12 inches.

Table 3-6 Clay Liner Specifications (COA, 2004)

Property	Test Method	Unit	Specification
Permeability	ASTM D-2434	cm/sec	1 x 10^{-6}
Plasticity Index of Clay	ASTM D-423 & D-424	%	Not less than 15
Liquid Limit of Clay	ASTM D-2216	%	Not less than 30
Clay Particles Passing	ASTM D-422	%	Not less than 30
Clay Compaction	ASTM D-2216	%	95% of Standard Proctor Density

If a geomembrane liner is used it should have a minimum thickness of 30 mils and be ultraviolet resistant. The geotextile fabric (for protection of geomembrane) should be nonwoven geotextile fabric and meet the specifications in Table 3-7.

Table 3-7 Geotextile Fabric Specifications (COA, 2004)

Property	Test Method	Unit	Specification (min)
Unit Weight		oz/yd^2	8
Filtration Rate		in/sec	0.08
Puncture Strength	ASTM D-751*	lb	125
Mullen Burst Strength	ASTM D-751	psi	400
Tensile Strength	ASTM D-1682	lb	200
Equiv. Opening Size	US Standard Sieve	No.	80

*modified

Installation methods for geomembrane liners vary according to the site requirements. Figure 3-13 shows a typical installation on an earthen slope with the top of the liner keyed in above the maximum water level of the basin. Figure 3-14 presents an example of geomembrane liner attached to the exterior of a concrete or rock wall. The "liquid membrane" shown in the figure is a hot fluid-applied, rubberized asphalt typically used for waterproofing and roofing applications, such as Hydrotech 6125 or equivalent.

BASIN LINER REQUIREMENTS

SURVEY NOTE

Survey Prepared by:
Sherwood Surveying & S.U.E
6477 FM 311, Spring Branch, TX 78070
Office: 830.228.5446
TBPELS Firm #10044200
www.SherwoodSurveying.com

LEGAL DESCRIPTION

10.644 acres, more or less, out of Survey No. 192, Guadalupe Herrera Abstract Number 206, Comal County, TX, described in document #201806002586 MPRCCT.

BENCHMARK

1. BM No. 1: CP-BM MAG NAIL ELEV: 1091.39' X: 2141957.48 Y: 13818316.59

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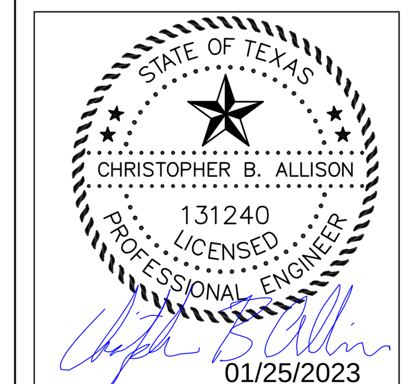

No. | Date | Revisions | App.

PECAN PARK
BULVERDE, TEXAS
HCC JOB No.: 001-08
DRAWN BY: CBA/RC

BATCH DETENTION POND DETAILS

SHEET No.
13
OF 16

Copyright Hill Country Civil, LLC January 29, 2023

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Agent Authorization

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

I Clint Hoese,
Print Name

Owner,
Title - Owner/President/Other

of Pecan Park Bulverde, LLC,
Corporation/Partnership/Entity Name

have authorized Christopher B. Allison, PE
Print Name of Agent/Engineer

of Hill Country Civil 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:

Applicant's Signature

2-15-23
Date

THE STATE OF Texas §

County of Comal §

BEFORE ME, the undersigned authority, on this day personally appeared Clinton House 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 15th day of February 2023.

AZUCENA E CORDOVA
Notary Public
State of Texas
ID #13328138-5
My Comm. Expires 8/19/2025

NOTARY PUBLIC

Azucena E. Cordova
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 8-19-2025

Owner Authorization Form

Texas Commission on Environmental Quality
for Required Signature
Edwards Aquifer Protection Program
Relating to 30 TAC Chapter 213
Effective June 1, 1999

Land Owner Authorization

I, Clint Hoese of Clinton M Hoese
Land Owner Signatory Name — Land Owner Name (Legal Entity or Individual)

am the owner of the property located at
2376 Bulverde Rd. Bulverde, TX. 78163 ; A-206 SUR-192 G HERRERA, ACRES 10.202
Legal description of the property referenced in the application

and am duly authorized in accordance with §213.4(c)(2) and §213.4(d)(1) or §213.23(c)(2) and §213.23(d) relating to the right to submit an application, signatory authority, and proof of authorized signatory.

I do hereby authorize Pecan Park Bulverde, LLC
Applicant Name (Legal Entity or Individual)

to conduct Commercial Development
Description of the proposed regulated activities

at 2376 Bulverde Rd. Bulverde, TX. 78163 .
Precise location of the authorized regulated activities

Land Owner Acknowledgement

I understand that Clinton M Hoese
Land Owner Name (Legal Entity or Individual)

Is ultimately responsible for compliance with the approved or conditionally approved Edwards Aquifer protection plan and any special conditions of the approved plan through all phases of plan implementation even if the responsibility for compliance and the right to possess and control the property referenced in the application has been contractually assumed by another legal entity. I further understand that any failure to comply with any condition of the executive director's approval is a violation is subject to administrative rule or orders and penalties as provided under §213.10 (relating to Enforcement). Such violation may also be subject to civil penalties and injunction.

Land Owner Signature

Land Owner Signature

2-7-23
Date

THE STATE OF § TX

County of § Comal

BEFORE ME, the undersigned authority, on this day personally appeared Clinton M. Hoese 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 7 day of February

ALEXANDRIA DONNELLY
Notary Public
State of Texas
ID # 13169566-4
My Comm. Expires 09/14/2026

NOTARY PUBLIC

Alexandria Donnelly
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 9/14/2026

Attached: (Mark all that apply)

- ☐ Lease Agreement
- ☐ Signed Contract
- ☐ Deed Recorded Easement
- ☐ Other legally binding document

Applicant Acknowledgement

I, Clint Hoese of Pecan Park Bulverde, LLC

Applicant Signatory Name — Applicant Name (Legal Entity or Individual)

acknowledge that Clinton M. Hoese

Land Owner Name (Legal Entity or Individual)

has provided Pecan Park Bulverde, LLC

Applicant Name (Legal Entity or Individual)

with the right to possess and control the property referenced in the Edwards Aquifer protection plan.

I understand that Pecan Park Bulverde, LLC

Applicant Name (Legal Entity or Individual)

is contractually responsible for compliance with the approved or conditionally approved Edwards Aquifer protection plan and any special conditions of the approved plan through all phases of plan implementation. I further understand that failure to comply with any condition of the executive director's approval is a violation is subject to administrative rule or orders and penalties as provided under §213.10 (relating to Enforcement). Such violation may also be subject to civil penalties and injunction.

Applicant Signature

Applicant Signature — Date: 2-7-22

THE STATE OF § TX

County of § Comal

BEFORE ME, the undersigned authority, on this day personally appeared Clinton M. Hoese 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 7 day of February

ALEXANDRIA DONNELLY
Notary Public
State of Texas
ID # 13169566-4
My Comm. Expires 09/14/2026

NOTARY PUBLIC

Alexandria Donnelly

Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 9/14/2026

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Application Fee Form

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: Pecan Park Bulverde, LLC
Regulated Entity Location: 2376 Bulverde Road, Bulverde, TX
Name of Customer: Clint Hoese
Contact Person: Christopher B. Allison Phone: 817-659-9078
Customer Reference Number (if issued):CN Not Issued
Regulated Entity Reference Number (if issued):RN Not Issued

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
☐ Mailed to: TCEQ - Cashier
Revenues Section
Mail Code 214
P.O. Box 13088
Austin, TX 78711-3088

☒ San Antonio Regional Office
☐ Overnight Delivery to: TCEQ - Cashier
12100 Park 35 Circle
Building A, 3rd Floor
Austin, TX 78753
(512)239-0357

Site Location (Check All That Apply):

☒ Recharge Zone ☐ Contributing Zone ☐ Transition Zone

Type of Plan	***Size***	***Fee Due***
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	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	10.202 Acres	$ 6,500
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: 1/25/23

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

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

Organized Sewage Collection Systems and Modifications

Project	*Cost per Linear Foot*	*Minimum Fee-Maximum Fee*
Sewage Collection Systems	$0.50	$650 - $6,500

Underground and Aboveground Storage Tank System Facility Plans and Modifications

Project	*Cost per Tank or Piping System*	*Minimum Fee-Maximum Fee*
Underground and Aboveground Storage Tank Facility	$650	$650 - $6,500

Exception Requests

Project	*Fee*
Exception Request	$500

Extension of Time Requests

Project	*Fee*
Extension of Time Request	$150

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Core Data Form

TCEQ Use Only

TCEQ Core Data Form

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

SECTION I: General Information

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

SECTION II: Customer Information

4. General Customer Information	**5. Effective Date for Customer Information Updates** (mm/dd/yyyy)	1/15/2023

New Customer Update to Customer Information Change in Regulated Entity Ownership
Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

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).

6. Customer Legal Name *(If an individual, print last name first: eg: Doe, John)*	*If new Customer, enter previous Customer below:*
Pecan Park Bulverde LLC	

7. TX SOS/CPA Filing Number	**8. TX State Tax ID** (11 digits)	**9. Federal Tax ID** (9 digits)	**10. DUNS Number** *(if applicable)*
0804314824	~~32138229~~ 32054373201	92-1382296	

11. Type of Customer:	Corporation	Individual	Partnership: General Limited
Government: City County Federal Local State Other		Sole Proprietorship	Other: LLC

12. Number of Employees	**13. Independently Owned and Operated?**
0-20 21-100 101-250 251-500 501 and higher	**Yes** **No**

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

Owner Occupational Licensee	Operator Responsible Party	Owner & Operator VCP/BSA Applicant	Other: ____

15. Mailing Address:	Pecan Park Bulverde LLC							
	1490 Spring Branch Road							
	City	Spring Branch	**State**	TX	**ZIP**	78070	**ZIP + 4**	

16. Country Mailing Information *(if outside USA)*	**17. E-Mail Address** *(if applicable)*

18. Telephone Number	**19. Extension or Code**	**20. Fax Number** *(if applicable)*

(210) 269-3090		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected, a new permit application is also required.)*							
New Regulated Entity Update to Regulated Entity Name Update to Regulated Entity Information							
The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).							
22. Regulated Entity Name *(Enter name of the site where the regulated action is taking place.)*							
Pecan Park Bulverde							
23. Street Address of the Regulated Entity: *(No PO Boxes)*							
	2376 Bulverde Road						
	City Bulverde	**State**	TX	**ZIP**	78163	**ZIP + 4**	
24. County	Comal						
If no Street Address is provided, fields 25-28 are required.							
25. Description to Physical Location:							
26. Nearest City				**State**		**Nearest ZIP Code**	
Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).							
27. Latitude (N) In Decimal:				**28. Longitude (W) In Decimal:**			
Degrees	Minutes		Seconds	Degrees		Minutes	Seconds
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)		
6552	6552		53112		53112		
33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*							
Commercial Real Estate Developers, Owner							
34. Mailing Address:							
	1490 Spring Branch Road						
	City Spring Branch	**State**	TX	**ZIP**	78070	**ZIP + 4**	
35. E-Mail Address:	youngoak@yahoo.com						
36. Telephone Number			**37. Extension or Code**		**38. Fax Number** *(if applicable)*		
(210) 269-3090					( ) -		

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.

Dam Safety	Districts	Edwards Aquifer	Emissions Inventory Air	Industrial Hazardous Waste

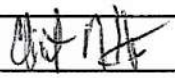
Municipal Solid Waste	New Source Review Air	OSSF	Petroleum Storage Tank	PWS
Sludge	Storm Water	Title V Air	Tires	Used Oil
Voluntary Cleanup	Wastewater	Wastewater Agriculture	Water Rights	Other:

SECTION IV: Preparer Information

40. Name:	Christopher B. Allison, PE	41. Title:	Managing Partner
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(817) 659-9078		( ) -	blake@hillcountrycivil.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:	Pecan Park Bulverde	Job Title:	Owner	
Name *(In Print)*:	Clint Hoese		Phone:	(210) 269- 3090
Signature:			Date:	1-11-23