## Enchanted Bluff Units 3, 4, & 5

**Water Pollution Abatement Plan** 

#### PAPE-DAWSON

September 9, 2025

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

Re:

Enchanted Bluff Units 3, 4, & 5
Water Pollution Abatement Plan

Dear Ms. Reyes:

Please find attached two (2) hard copies, one (1) digital copy of the Enchanted Bluff Units 3, 4, & 5 Water Pollution Abatement Plan. This Water Pollution Abatement Plan has been prepared in accordance with the regulations of the Texas Administrative Code (30 TAC 213) and current policies for development over the Edwards Aquifer Recharge Zone.

This Water Pollution Abatement Plan applies to an approximate 435.65-acre site as identified by the project limits. Please review the plan information for the items it is intended to address. If acceptable, please provide a written approval of the plan in order that construction may begin at the earliest opportunity.

Appropriate review fee (\$8,000) and application fee are included. If you have questions or require additional information, please do not hesitate to contact me at your earliest convenience.

Sincerely, Pape-Dawson

Brooke Lindholm, P.E.

Vice President

**Attachments** 

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## **ENCHANTED BLUFF UNITS 3, 4, & 5**

**Water Pollution Abatement Plan** 



# EDWARDS AQUIFER APPLICATION COVER PAGE (TCEQ-20705)

#### **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. <u>Edwards Aquifer applications</u> 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: <a href="http://www.tceq.texas.gov/field/eapp">http://www.tceq.texas.gov/field/eapp</a>.
- 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**

- 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:			2. Regulated Entity No.:					
3. Customer Name:		4. Cu	4. Customer No.:					
5. Project Type: (Please circle/check one)	New	Modif	ication	1	Exten	ısion	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. Sit	te (acres):		
9. Application Fee:		10. Permanent E		3MP(s	s):			
11. SCS (Linear Ft.):		12. AST/UST (No		o. Tan	ıks):			
13. County:		14. Watershed:						

#### **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 AuthorityBarton Springs/ Edwards AquiferHays TrinityPlum Creek	Barton Springs/ Edwards Aquifer	NA	
City(ies) Jurisdiction	AustinBudaDripping SpringsKyleMountain CitySan MarcosWimberleyWoodcreek	AustinBee CavePflugervilleRollingwoodRound RockSunset ValleyWest Lake Hills	AustinCedar ParkFlorenceGeorgetownJerrellLeanderLiberty HillPflugervilleRound Rock	

	San Antonio Region					
County:	Bexar	Comal	Kinney	Medina	Uvalde	
Original (1 req.)						
Region (1 req.)					_	
County(ies)						
Groundwater Conservation District(s)	Edwards Aquifer Authority Trinity-Glen Rose	Edwards Aquifer Authority	Kinney	EAA Medina	EAA Uvalde	
City(ies) Jurisdiction	Castle HillsFair Oaks RanchHelotesHill Country VillageHollywood ParkSan Antonio (SAWS)Shavano Park	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 apparent application is hereby submitted to TCEQ for administration is hereby submitted to TCEQ for administration of the state of the	
Brooke Lindholm, P.E.	
Print Name of Customer/Authorized Agent	
Broke Il	9/10/25
Signature of Customer/Authorized Agent	Date

**FOR TCEQ INTERNAL USE ONLY**					
Date(s)Reviewed:			Date Administratively Complete:		
Received From:		Correct N	Tumber of Copies:		
Received By:		Distribut	ion 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):		Payable to TCEQ (Y/N):		/N):	
Core Data Form Complete (Y/N):		Check:	Signed (Y/N):		
Core Data Form Incomplete Nos.:		Less than 90 days old (Y/N):		ld (Y/N):	

## GENERAL INFORMATION FORM (TCEQ-0587)

#### **General Information Form**

**Texas Commission on Environmental Quality** 

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

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

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

#### Signature

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

Pri	Print Name of Customer/Agent: <u>Brooke Lindholm, P.E.</u>				
Dat	te: 9/10/W				
Sig	nature of Customer/Agent:				
	Broke Jell				
Pi	roject Information				
1.	Regulated Entity Name: Enchanted Bluff Units 3, 4, & 5				
2.	County: Bexar, Comal				
3.	Stream Basin: <u>Cibolo Creek</u>				
4.	Groundwater Conservation District (If applicable): Edwards Aquifer Authority				
5.	Edwards Aquifer Zone:				
	Recharge Zone Transition Zone				
6.	Plan Type:				
	WPAP □ AST   SCS □ UST   Modification □ Exception Request				

7.	Customer (Applicant):	
	Contact Person: Mr. Lloyd A. Denton, Jr. Entity: 2020 Fl Dierks, LLC. Mailing Address: 11 Lynn Batts Lane, Ste 100 City, State: San Antonio, Texas Telephone: (210) 826-6131 Email Address: plats@bitterblue.com	Zip: <u>78218-3077</u> FAX: <u>210-828-6137</u>
3.	Agent/Representative (If any):	
	Contact Person: <u>Brooke Lindholm, P.E.</u> Entity: <u>Pape-Dawson Engineers, Inc.</u> Mailing Address: <u>2000 NW Loop 410</u> City, State: <u>San Antonio, Texas</u> Telephone: <u>(210) 375-9000</u> Email Address: <u>blindholm@pape-dawson.com</u>	Zip: <u>78213</u> FAX: <u>(210) 375-9010</u>
€.	Project Location:	
	<ul> <li>☐ The project site is located inside the city limits of the project site is located outside the city limit jurisdiction) of San Antonio.</li> <li>☐ The project site is not located within any city's</li> </ul>	s but inside the ETJ (extra-territorial
10.	The location of the project site is described bel detail and clarity so that the TCEQ's Regional st boundaries for a field investigation.	
	<u>Located appoximately 1 mile west of Blue Oak</u> <u>intersection</u>	Way and Bat Cave Road
11.	Attachment A – Road Map. A road map showing project site is attached. The project location and the map.	_
12.	Attachment B - USGS / Edwards Recharge Zon USGS Quadrangle Map (Scale: 1" = 2000') of th The map(s) clearly show:	
	<ul> <li>☑ Project site boundaries.</li> <li>☑ USGS Quadrangle Name(s).</li> <li>☑ Boundaries of the Recharge Zone (and Tran</li> <li>☑ Drainage path from the project site to the boundaries.</li> </ul>	, , ,
13.	The TCEQ must be able to inspect the project sufficient survey staking is provided on the prothe boundaries and alignment of the regulated features noted in the Geologic Assessment.	ject to allow TCEQ regional staff to locate

Survey staking will be completed by this date: when advised of TCEQ site visit
14. Attachment C – Project Description. Attached at the end of this form is a detailed narrative description of the proposed project. The project description is consistent throughout the application and contains, at a minimum, the following details:
<ul> <li>Area of the site</li> <li>Offsite areas</li> <li>Impervious cover</li> <li>Permanent BMP(s)</li> <li>Proposed site use</li> <li>Site history</li> <li>Previous development</li> <li>Area(s) to be demolished</li> </ul>
15. Existing project site conditions are noted below:
<ul> <li>Existing commercial site</li> <li>Existing industrial site</li> <li>Existing residential site</li> <li>Existing paved and/or unpaved roads</li> <li>Undeveloped (Cleared)</li> <li>Undeveloped (Undisturbed/Uncleared)</li> <li>Other:</li> </ul>
Prohibited Activities
16. $\boxtimes$ I am aware that the following activities are prohibited on the Recharge Zone and are not proposed for this project:
<ol> <li>Waste disposal wells regulated under 30 TAC Chapter 331 of this title (relating to Underground Injection Control);</li> </ol>
(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. X 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);

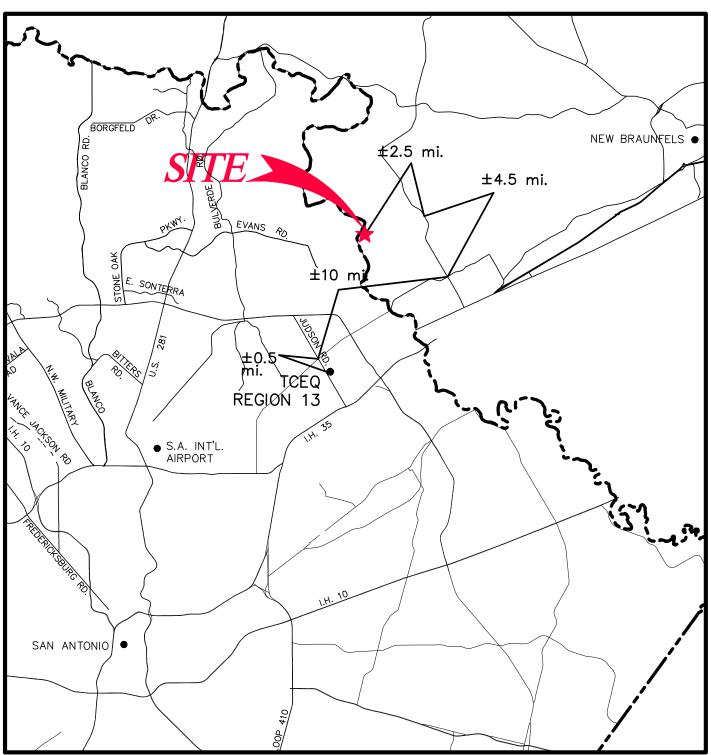
- (2) Land disposal of Class I wastes, as defined in 30 TAC §335.1; and
- (3) New municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41 (b), (c), and (d) of this title.

#### **Administrative Information**

18. 7	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:
	<ul> <li>☐ TCEQ cashier</li> <li>☐ Austin Regional Office (for projects in Hays, Travis, and Williamson Counties)</li> <li>☐ San Antonio Regional Office (for projects in Bexar, Comal, Kinney, Medina, and Uvalde Counties)</li> </ul>
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**





ENCHANTED BLUFF UNITS 3, 4, & 5

Water Pollution Abatement Plan

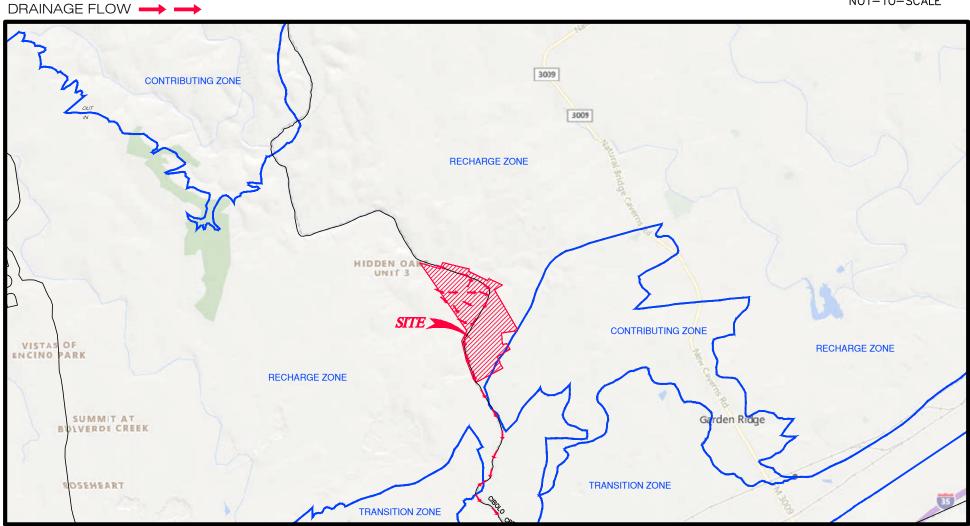
PAPE-DAWSON ENGINEERS, INC. JULY 2025 DESIGNER: JUSTICE BRANDT

ATTACHMENT A - ROAD MAP

### **ATTACHMENT B**



GENERAL LOCATION MAP - BAT CAVE, TX QUAD



ENCHANTED BLUFF UNITS 3, 4, & 5

Water Pollution Abatement Plan
ATTACHMENT B - USGS/EDWARDS RECHARGE ZONE MAP

PAPE-DAWSON ENGINEERS, INC.

JULY 2025 DESIGNER: JUSTICE BRANDT

### **ATTACHMENT C**

### ENCHANTED BLUFF UNITS 3, 4, & 5 Water Pollution Abatement Plan

#### **Attachment C - Project Description**

The Enchanted Bluff Units 3, 4, & 5 Water Pollution Abatement Plan (WPAP) proposes the construction of a single-family residential subdivision on approximately 435.65 acres within the City of San Antonio ETJ, in Bexar County and Comal County, Texas. The site is located approximately 1 mile west of Blue Oak Way and Bat Cave Road Intersection. The site is undeveloped, lies within the Edwards Aquifer Recharge Zone, and has the Cibolo Creek 100-year floodplain traverse through the property. There were two naturally occurring sensitive geological features identified in the Geologic Assessment. Construction personnel will be educated to be aware of the features and their respective buffers. Absolutely no disturbance of any kind will take place within the proposed buffers as noted on the plan sheets.

This WPAP proposes clearing, grading, excavation, installation of utilities and drainage improvements, construction of 166 single-family homes with driveways, patios, and streets. Approximately 45.92 acres of impervious cover, or 10.54% of the 435.65-acre project limits, are proposed for construction in this WPAP. Please see the Treatment Summary table attached with this application. The overall impervious cover proposed is less than 20% and, in accordance with 30 TAC Chapter 213.5 (b)(4)(D)(ii)(III), the use of permanent best management practices (BMPS) is not required. Therefore, we are requesting a waiver from the executive director for the exemption from PBMPS.

Potable water service is to be provided by the San Antonio Water System (SAWS). The proposed development will generate approximately 33,200 gallons per day (average flow) of domestic wastewater based on the assumption of 200 gpd per home (200 gpd x 166 homes x 1 EDU/home). Wastewater will be disposed of by onsite sewage facility /septic as detailed in Attachment F of this application.

## GEOLOGIC ASSESSMENT FORM (TCEQ-0585)

#### 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: Henry E. Stultz III, P.G.	Telephone: <b>210-375-9000</b>
Date: July 8, 2025	Fax: <b>210-375-9090</b>
Representing: Pape-Dawson Engineers, Inc., TBP	G registration number 50351
Signature of Geologist:	-A992399
1833	P. HENRY STULTZ III L. GEOLOGY
Regulated Entity Name:Enchanted Bluff	- CENSED.
Project Information	Market Contraction
1. Date(s) Geologic Assessment was performed:_	April 11 - June 24, 2025
2. Type of Project:	
<ul><li>WPAP</li><li>☐ SCS</li><li>3. Location of Project:</li></ul>	☐ AST ☐ UST
Recharge Zone Transition Zone Contributing Zone within the Transition Zone	ne

- 4. Attachment A Geologic Assessment Table. Completed Geologic Assessment Table (Form TCEQ-0585-Table) is attached.
- 5. 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

Characteristics and Thickness				
Soil Name	Group*	Thickness(feet)		
Eckrant cobbly clay, 1-8% slopes (TaB)	D	1-2		
Eckrant-Rock outcrop association, 8- 30% slopes (TaD)	D	1-2		
Comfort-Rock outcrop complex, 1-8% slopes (CrD)	D	1-2		
Eckrant-Rock outcrop association, 8- 30% slopes (ErG)	D	1-2		
Krum clay, 1-3% slopes (KrB)	С	6+		

Soil Name	Group*	Thickness(feet)
Krum clay, 3-5% slopes (KrC)	С	6+
Medlin, warm- Eckrant association, 1-8% slopes (MEC)	D	6+
Orif soils, moist, 0-3% slopes, frequently flooded (Or)	A	6+

- \* 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. 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. 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.		<b>Attachment D – Site Geologic Map(s)</b> . 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" = <u>300'</u> Site Geologic Map Scale: 1" = <u>300'</u> Site Soils Map Scale (if more than 1 soil type): 1" = <u>1000'</u>
9.	Me	ethod of collecting positional data:
		Global Positioning System (GPS) technology. Other method(s). Please describe method of data collection:
10		The project site and boundaries are clearly shown and labeled on the Site Geologic Map.
11		Surface geologic units are shown and labeled on the Site Geologic Map.
12.		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		The Recharge Zone boundary is shown and labeled, if appropriate.
14.		known wells (test holes, water, oil, unplugged, capped and/or abandoned, etc.): If plicable, the information must agree with Item No. 20 of the WPAP Application Section.
		There are two (2) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)  The wells are not in use and have been properly abandoned.  The wells are not in use and will be properly abandoned.  The wells are in use and comply with 16 TAC Chapter 76.  There are no wells or test holes of any kind known to exist on the project site.
A	dn	ninistrative Information
15.		Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

## ATTACHMENT A Geologic Assessment Table

GEOLOGIC ASSESSMENT TABLE								PROJECT NAME: Enchanted Bluff												
LOCATION						FEA	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	DIMEN	SIONS (F	EET)	TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENS	SITIVITY	TY CATCHMENT AREA (ACRES)		TOPOGRAPHY
						Х	Υ	Z		10					P-U.	<40	<u>&gt;40</u>	<1.6	<u>&gt;1.6</u>	
S-1	29.65653°	-98.35180°	F	20	Kep	1800			N78°E				F, FS	5	25	Х			Х	Hillside, Floodplain
S-2	29.65565°	-98.35030°	F	20	Kep	1800			N52°E	10			F, FS	5	35	Χ			Х	Hillside, Floodplain
S-3	29.65397°	-98.34369°	F	20	Kep	3000			N54°E	10			F, FS	5	35	Х			Х	Hillside, Floodplain
S-4	29.65339°	-98.34296°	F	20	Kep	3400			N33°E				F, FS	5	25	Χ			Х	Floodplain
S-5	29.64500°	-98.34264°	F	20	Kdr, Kgt, Kep	4000			N41°E	10			F, FS	5	35	Х			Х	Hillside, Floodplain
S-6	29.64300°	-98.33525°	F	20	Kbu, Kdr, Kgt, Kep	4200			N73°E	10			F, FS	5	35	Х			Х	Hillside, Floodplain
S-7	29.65401°	-98.35214°	SC	20	Kep	2	2	1					F, O	10	30	Χ		Х		Hillside
S-8	29.65441°	-98.34919°	SC	20	Kep	1	1	2					F	10	30	Χ		Х		Hillside
S-9	29.65435°	-98.34575°	SC	20	Kep	.5	.3	5					F, O	20	40		Χ	Х		Floodplain
S-10	29.64501°	-98.34571°	SC	20	Kep	1.5	1.5	2					F	20	40		Χ	Х		Floodplain
S-11	29.64141°	-98.34577°	MB	30	Kep			unk					N, X	20	50		Х	Х		Floodplain
S-12	29.63964°	-98.34279°	CD	5	Kgt	10	10	2					F	5	10	Х			Х	Drainage
S-13	29.64118°	-98.33945°	MB	30	Kdr	8	8	35					N, X	5	35	Χ		Х		Hillside
S-14	29.64077°	-98.33890°	CD	5	Kdr	175	115	7					F	5	10	Х			Х	Hillside

<sup>\*\*</sup> DATUM: NAD 83



2A TYPE	TYPE	2B POINTS
С	Cave	30
SC	Solution cavity	20
SF	Solution-enlarged fracture(s)	20
F	Fault	20
0	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
С	Coarse - cobbles, breakdown, sand, gravel
0	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
Х	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.

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Date July 8, 2025

Sheet 1 of 1

**ATTACHMENT A** 

## ATTACHMENT B Stratigraphic Column

#### **ENCHANTED BLUFF**

#### **Geologic Assessment (TCEQ-0585)**

#### <u>Attachment B – Stratigraphic Column</u>

Period	Epoch	Group	Formation	Member	Thickness	Lithology	Hydro- logic Unit	Hydro- stratigraphic Unit	Hydrologic Function	Porosity	Cavern Development
	ceous	ta	Buda Limestone		40–50	Buff to light gray, dense nodular mudstone and wackestone containing calcite-filled veins and bluish dendrites; porcelaneous limestone that weathers from a smooth gray to grayish white; nodular surface has a conchoidal fracture; commonly contains iron nodules, iron staining, and shell frags	Upper confining unit to the Edwards aquifer		Confining	FR	Minor surface karst
	Late Cretaceous	Washita	Del Rio Clay	1	40–50	Fossiliferous blue-green to yellow-brown clay with thin beds of packstone; contains iron nodules; <i>llymatogyra</i> arietina	Upper o		Confining	None	None
			George- town	-	20–30	Reddish-brown, gray to light tan, shaley mudstone and wackestone; commonly contains black dendrites, iron nodules, and iron staining; often fossiliferous with Plesioturrilites brazoensis, Waconella wacoensis common		1	Confining	МО	None
				Cyclic and marine, undivided	80–90	Pelletal limestone; ranges from chalk to mudstone and miliolid grainstone; thin to massive beds; some crossbedding evident; a packstone containing large caprinids is present near contact with the overlying Georgetown Formations; chert is common as beds and large nodules		П	Aquifer	MO, BU, VUG, BP, FR, CV	Many subsurface; might be associated with earlier karst development
Cretaceous			Person	Leached and collapsed, undivided	70–90	Hard, dense, recrystallized limestone;mudstone, wackestone, packstone, and grainstone; contains chert as beds and large nodules; heavily bioturbated with ironstained beds; often stromatolitic; <i>Toucasia</i> sp. Often found above contact with the underlying regional dense member; <i>Montastrea roemeriana</i> and oysters rare		III	Aquifer	BU, VUG, FR, BP, BR, CV	Extensive lateral development; large rooms
				Regional dense	20–24	Dense, shaly limestone; oyster shell mudstone and iron wackestone; wispy iron staining; chert nodules rarer than in the rest of the chert-bearing Edwards Group		IV	Confining	FR, CV	Very few; only vertical fracture enlargement
	Early Cretaceous	Edwards		Grainstone	40–50	Hard, dense limestone that consists mostly of a tightly cemented miliolid skeletal fragment grainstone; contains interspersed chalky mudstone and wackestone; chert as beds and nodules; crossbedding and ripple marks are common primarily at the contact with the overlying regional dense bed	Edwards Aquifer	V	Aquifer	IP, IG, BU, FR, BP, CV	Few
	E			Kirsch-berg Evaporite	40–50	Highly altered crystalline limestone and chalky mudstone with occasional grainstone associated with tidal channels; chert as beds and nodules, boxwork molds are common, matrix recrystallized to a coarse grain spar; intervals of collapse breccia and travertine deposits		VI	Aquifer	IG, MO, VUG, FR, BR, CV	Probably extensive cave development
			Kainer	Dolomitic	90–120	Hard, dense to granular, dolomitic limestone; chert as beds and nodules (absent in lower 20 ft); <i>Toucasia</i> sp. abundant; lower three-fourths composed of sucrosic dolomites and grainstones with hard, dense limestones interspersed; upper one-fourth composed mostly of hard, dense mudstone, wackestone, packstone, grainstone, and recrystallized dolomites with bioturbated beds		VII	Aquifer	IP, IC, IG, MO, BU, VUG, FR, BP, CV	Cave development as shafts with minor horizontal extent
				Basal nodular	40–50	Moderately hard, shaly, nodular, burrowed mudstone to miliolid grainstone that also contains dolomite; contains dark, spherical textural features known as black rotund bodies; Ceratostreon texana, Caprina sp., miliolids, and gastropods		VIII	Aquifer, confining unit in areas without caves	IP, MO, BU, BP, FR, CV	Large lateral caves at surface

Source: Clark, Golab, and Morris (2016); Cavern development modified from Stein and Ozuna (1995). Porosity types - Fabric selective: IP, interparticle porosity; IG, intergranular porosity; IC, intercrystalline porosity; SH, shelter porosity; MO, moldic porosity; BU, burrowed porosity; EF, fenestral; BP, bedding plane porosity. Not fabric selective: FR, fracture porosity; CH, channel porosity; BR, breccia; VUG, vug porosity; CV, cave porosity.



## ATTACHMENT C Site Geology

#### <u>Attachment C – Site Geology</u>

#### **SUMMARY**

The Enchanted Bluff site is located approximately 1 mile southwest of the intersection of Bat Cave Road and Blue Oak way in Comal County, Texas. The site consists of approximately 283-acres located in Comal County and 165-acres located in Bexar County.

Based on the results of the field survey conducted in accordance with *Instructions for Geologists for Geologic Assessments in the Edwards Aquifer Recharge/Transition Zones (TCEQ-0585 Instructions),* two naturally occurring sensitive features were identified on site. No springs were identified on site. Cibolo Creek traverses through the property. The creek was not flowing on any of the days when assessment was being conducted. The overall potential for fluid migration to the Edwards Aquifer for the site is low.

#### **SITE GEOLOGY**

As observed through field evidence, the geologic formations which outcrop at the surface within the subject site are the leached and collapsed (Keplc) and cyclic and marine (Kepcm) members of the Person formation, the Georgetown (Kgt) formation, the Del Rio Clay (Kdr) formation, and the Buda Limestone (Kbu). These observations are mostly consistent with published sources, however deviations to published sources were identified. These deviations are mostly observed in the location and amount of vertical displacement of faults. Descriptions and details of the formations identified on the site are listed below.

- The Keplc is characterized by interbedded, iron-stained, massive and bioturbated limestone with abundant chert. Karst development within the Keplc is generally characterized by large sinkholes.
   Caves often develop as large horizontal rooms.
- The Kepcm is characterized by a mudstone to pack stone miliolid grainstone, and chert. Karst
  development within the Kepcm is characterized by small sinkholes and caves developed as vertical
  shafts as well as lateral rooms.
- The Kgt formation is characterized by reddish-brown to light tan marly limestone. Karst development within the Kgt generally does not occur.
- The Kdr is a blue-green to yellow-brown waxy clay. Karst development within the Kdr does not occur.
- The Kbu is characterized by buff, light gray, dense mudstone. Karst development in the Kbu is generally minor.

The predominant trend of faults in the vicinity of the site is approximately N60°E, based on faults identified during the previous mapping of the area. Six (6) faults were identified on the site. Major topographical features, including the flow orientation of Cibolo Creek, were associated with several of these faults. Although no direct conduits were observed at the intersection of the faults and the creek, microfractures along fault traces may be pathways for infiltration, especially in exposed bedrock along the creek bed.

#### **FEATURE DESCRIPTIONS:**

A description of the features observed onsite is provided below. Site photographs are attached following this section.

#### Features S-1, S-2, S-3, and S-4

Features S-1, S-2, S-3, and S-4 are an intraformational faults within the Kep. They were identified by observations within outcrops, review of aerial photography and published maps. Lack of evidence of enhanced permeability and the presence of fine-grained soil cover suggest a low probability for rapid infiltration.

#### Feature S-5

Feature S-5 is an interformational fault that juxtaposes the Kep to the northwest with the Kbu, Kdr, Kgt and Kep to the southeast. Major structural deformation of bedding planes were observed along exposed outcrops of this fault. It was identified by observations within outcrops, review of aerial photography and published maps. Lack of evidence of enhanced permeability and the presence of fine-grained soil cover suggest a low probability for rapid infiltration.

#### Feature S-6

Feature S-6 is primarily an intraformational fault with a small amount of vertical displacement. It was identified by observations within outcrops, review of aerial photography and published maps. Lack of evidence of enhanced permeability and the presence of fine-grained soil cover suggest a low probability for rapid infiltration.

#### Features S-7 and S-8

Features S-7 and S-8 are solution cavities that have been opportunistically burrowed by animals. Fine and organic soil fill the feature. A small catchment area and the fine soil infilling plugging the feature suggest a low probability for rapid infiltration.

#### Features S-9 and S-10

Features S-9 and S-10 are solution cavities within the floodplain. Fine and organic soil fill the features. The position of the features within the floodplain suggests an intermediate probability for rapid infiltration.

#### Feature S-11

Feature S-11 is a water well beneath a windmill. The surface completion was observed one inch below the ground surface which fed into a nearby water tank. However, the well was not open at the surface. The well was observed on the 1953 *Bat Cave, TX* topographic map but was not identified on the Texas Water Development Board (TWBD) Groundwater Database Viewer. The unknown age, integrity of casings, and location of surface completion suggest an intermediate probability for rapid infiltration.

#### Feature S-12

Feature S-12 is a non-karst closed depression within the soil horizon caused by drainage around vegetation. The non-karst origin suggests a low probability for rapid infiltration.

#### Feature S-13

Feature S-13 is a hand dug well within the Del Rio Clay. The well is lined with masonry. The non-karst origin suggests a low probability for rapid infiltration.

#### Feature S-14

Feature S-14 is a man-made closed-depression identified as a large pond of water created by an earthen dam. The feature is located within the soil horizon and has a non-karst origin. Water was standing in this depression at the time of the site visit. The non-karst origin and ponding of water suggest a low probability for rapid infiltration.

#### **REFERENCES**

Clark, A.K., Golab, J.A., Morris, R.R., and Pedraza, D.E., 2023, Geologic framework and hydrostratigraphy of the Edwards and Trinity aquifers within northern Bexar and Comal Counties, Texas: U.S. Geological Survey Scientific Investigations Map 3510, 1 sheet, scale 1:24,000, 24-p. pamphlet, https://doi.org/10.3133/sim3510

Nationwide Environmental Title Research, LLC. Historical Aerials, HistoricAerials.com. https://www.historicaerials.com/viewer, April 11, 2025.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. http://websoilsurvey.sc.egov.usda.gov/, April 11, 2025.

Stein, W.G., and Ozuna, G.B., 1995, Geologic framework and hydrogeologic characteristics of the Edwards Aquifer recharge zone, Bexar County, Texas: U.S. Geological Survey Water-Resources Investigations Report 95–4030, 8 p.

Texas Water Development Board, Wells in TWDB Groundwater Database Viewer, https://www3.twdb.texas.gov/apps/waterdatainteractive/groundwaterdataviewer, April 11, 2025.

Stein, W.G., and Ozuna, G.B., 1995, Geologic framework and hydrogeologic characteristics of the Edwards Aquifer recharge zone, Bexar County, Texas: U.S. Geological Survey Water-Resources Investigations Report 95–4030, 8 p.

Texas Water Development Board, Wells in TWDB Groundwater Database Viewer, https://www3.twdb.texas.gov/apps/waterdatainteractive/groundwaterdataviewer, April 11, 2025.

U.S. Geologic Survey, 1953, (USGS), Bat Cave, TX Quadrangle, USGS, Denver, Colorado.

U.S. Geological Survey, 2020, National Water Information System data, https://waterdata.usgs.gov/nwis/, April 11, 2025

Photo No.

**Date**: 4/30/2025

Description:

View of Cibolo Creek.



Photo No.

**Date:** 6/24/2025

Description:

View of Feature S-1; fault.

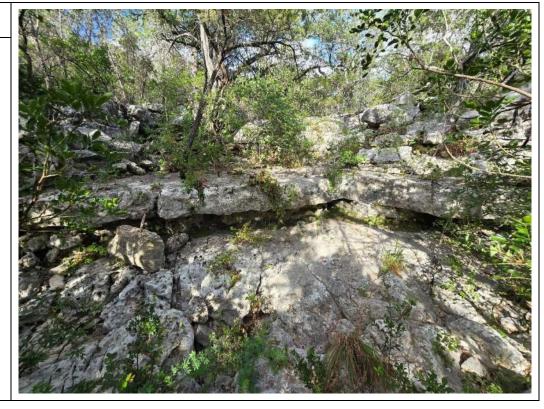


Photo No.

**Date**: 6/24/2025

Description:

View of Feature S-3; fault.



Photo No.

**Date:** 6/24/2025

Description:

View of Feature S-4; fault.



Photo No.

**Date**: 5/15/2025

Description:

View of Feature S-7; solution cavity.



Photo No.

**Date**: 5/20/2025

Description:

View of Feature S-8; solution cavity.



Photo No.

**Date**: 5/20/2025

Description:

View of Feature S-9; solution cavity.



Photo No.

**Date**: 6/24/2025

Description:

View of Feature S-10; solution cavity.



## **ENCHANTED BLUFF Geologic Assessment**

Photo No.

**Date:** 5/13/2025

Description:

View of Feature S-11; water well at ground surface.

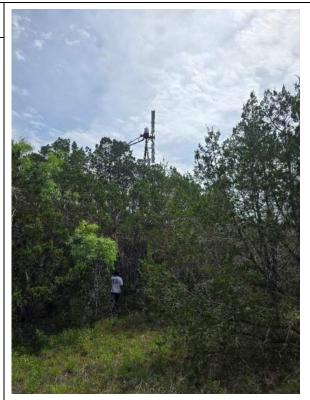


Photo No.

**Date:** 5/13/2025

Description:

View of Feature S-11; windmill.



## **ENCHANTED BLUFF Geologic Assessment**

Photo No.

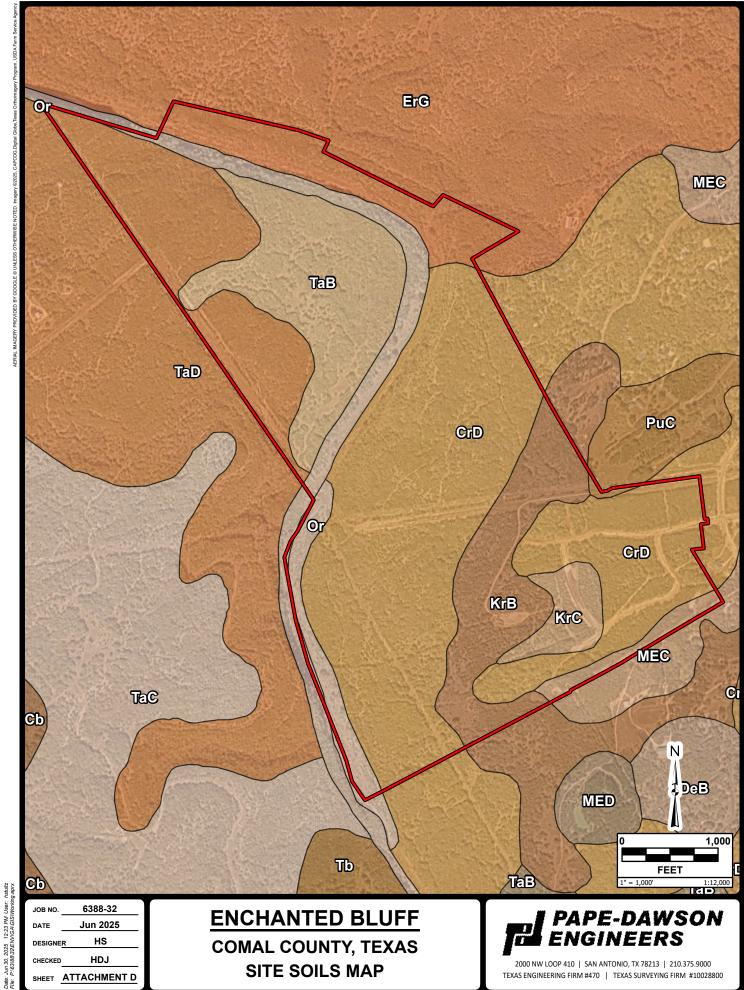
**Date**: 4/30/2025

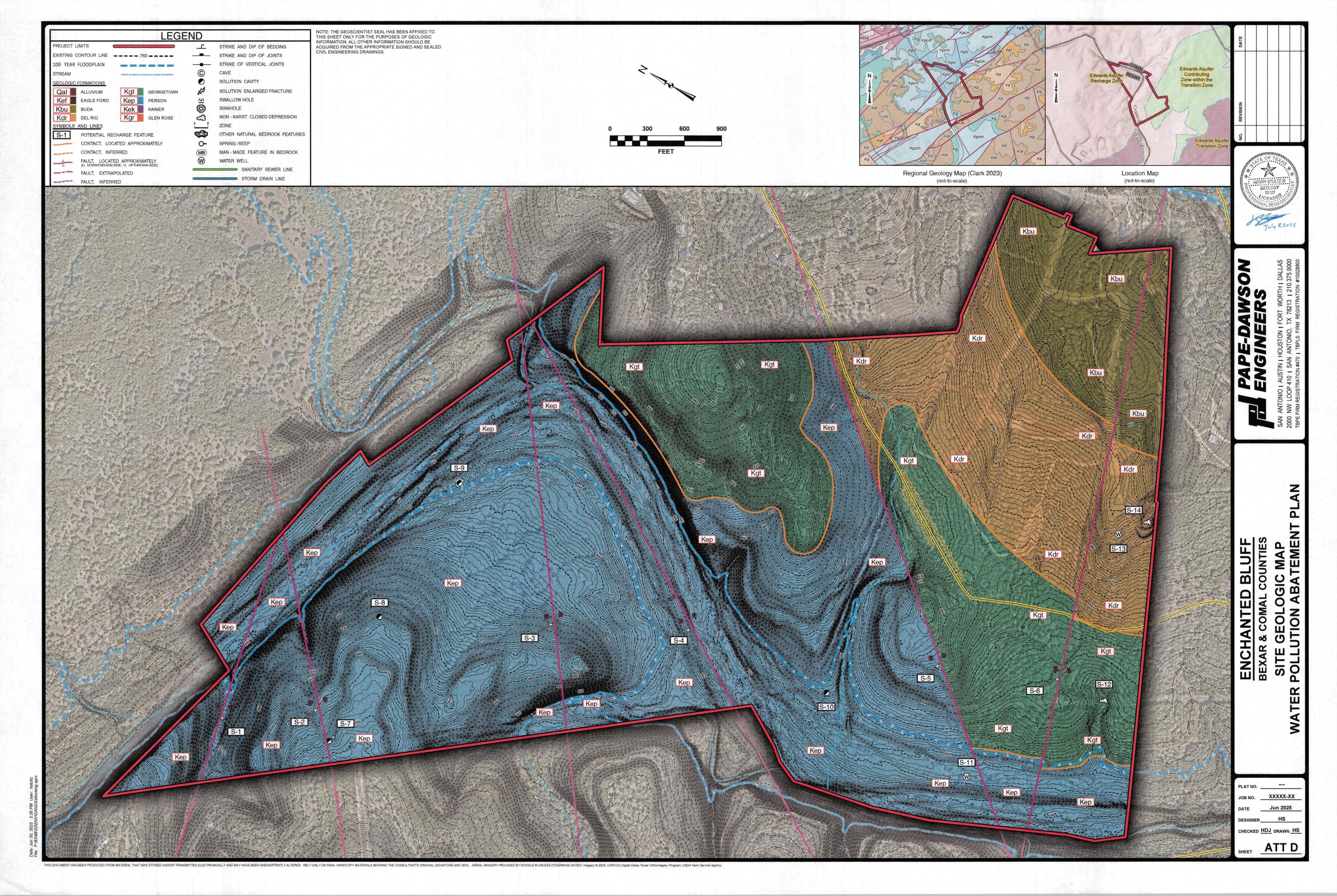
Description:

View of Feature S-13; hand dug well.



# ATTACHMENT D Site Geologic Map(s)





# WATER POLLUTION ABATEMENT PLAN APPLICATION FORM (TCEQ0584)

### **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 the Edwards nitted for TCEQ

	requested concerning the proposed regulated activities and methods to protect a Aquifer. This <b>Water Pollution Abatement Plan Application Form</b> is hereby submareview and Executive Director approval. The form was prepared by:		
	Print Name of Customer/Agent: <u>Brooke Lindholm, P.E.</u> Date:		
	Signature of Customer/Agent:		
	But Di		
	Regulated Entity Name: Enchanted Bluff Units 3, 4, & 5		
Regulated Entity Information			
	1. The type of project is:		
	Residential: Number of Lots: <u>166</u> Residential: Number of Living Unit Equivalents: Commercial Industrial Other:		
	2. Total site acreage (size of property):435.65		

- 3. Estimated projected population: 664
- 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	747,000	÷ 43,560 =	17.15
Parking	985,762.80	÷ 43,560 =	22.63
Other paved surfaces	267,260	÷ 43,560 =	6.14
Total Impervious Cover	2,000,022.8	÷ 43,560 =	45.92

Total Impervious Cover  $45.92 \div$  Total Acreage  $435.65 \times 100 = 10.54\%$  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:
	<ul> <li>TXDOT road project.</li> <li>County road or roads built to county specifications.</li> <li>City thoroughfare or roads to be dedicated to a municipality.</li> <li>Street or road providing access to private driveways.</li> </ul>
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. $L \times W = Ft^2 \div 43,560 Ft^2/Acre = acres.$
10.	Length of pavement area: feet.
	Width of pavement area: feet. L x W = $Ft^2 \div 43,560 Ft^2/Acre = acres$ . Pavement area acres $\div$ 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.
Stor	mwater to be generated by the Proposed Project
13. 🔀	<b>Attachment B - Volume and Character of Stormwater</b> . 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.
Was	tewater to be generated by the Proposed Project
14. Th	e character and volume of wastewater is shown below:
	00 % DomesticGallons/day_ % Industrial_ Gallons/day_ % Commingled_ Gallons/dayTOTAL gallons/day 33,200
15. Wa	astewater will be disposed of by:
	On-Site Sewage Facility (OSSF/Septic Tank):
Attachment C - Suitability Letter from Authorized Agent. An on-site sewar will be used to treat and dispose of the wastewater from this site. The applicensing authority's (authorized agent) written approval is attached. It states the land is suitable for the use of private sewage facilities and will meet on the requirements for on-site sewage facilities as specified under 30 TAC Correlating to On-site Sewage Facilities.  Each lot in this project/development is at least one (1) acre (43,560 square size. The system will be designed by a licensed professional engineer or resanitarian and installed by a licensed installer in compliance with 30 TAC Correlations.	
	Sewage Collection System (Sewer Lines):
	<ul> <li>Private service laterals from the wastewater generating facilities will be connected to an existing SCS.</li> <li>Private service laterals from the wastewater generating facilities will be connected to a proposed SCS.</li> </ul>
	<ul> <li>The SCS was previously submitted on</li> <li>The SCS was submitted with this application.</li> <li>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.</li> </ul>

	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.
Si	te Plan Requirements
Itei	ms 17 – 28 must be included on the Site Plan.
17.	$\square$ The Site Plan must have a minimum scale of 1" = 400'.
	Site Plan Scale: 1" = <u>1000</u> '.
18.	100-year floodplain boundaries:
	<ul> <li>Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.</li> <li>No part of the project site is located within the 100-year floodplain.</li> <li>The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s):</li> </ul>
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 $\underline{2}$ (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply)
	<ul> <li>The wells are not in use and have been properly abandoned.</li> <li>The wells are not in use and will be properly abandoned.</li> <li>The wells are in use and comply with 16 TAC §76.</li> </ul>
	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:
	<ul> <li>All sensitive geologic or manmade features identified in the Geologic Assessment are shown and labeled.</li> <li>No sensitive geologic or manmade features were identified in the Geologic Assessment.</li> </ul>
	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).
$\boxtimes$	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.
Adm	ninistrative 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**

#### **Attachment A - Factors Affecting Water Quality**

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

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

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

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

## **ATTACHMENT B**

#### Attachment B - Volume and Character of Stormwater

Stormwater runoff will increase because of this development. For a 25-year storm event, the overall project will generate approximately 162.5 cfs. The runoff coefficient for the site changes from approximately 0.53 before development to 0.64 after development. Values are based on the Rational Method using runoff coefficients per the City of San Antonio Unified Development Code.

## **ATTACHMENT C**



February 11, 2021

Ms. Brooke Lindholm, P.E. Pape Dawson Engineers, Inc. 2000 NW Loop 410 San Antonio, TX 78213

Re: Enchanted Bluff Suitability Letter within Comal County Texas

Dear Ms. Lindholm:

In accordance with TAC §213.24(8)(B), Comal County has found that the entire referenced site is suitable for the use of private sewage facilities and will meet the requirements for on-site sewage facilities.

If you have any questions or need additional information, please contact our office.

Sincerely.

Robert Boyd, P.E.

Comal County Assistant Engineer

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

# TEMPORARY STORMWATER SECTION (TCEQ-0602)

#### **Temporary Stormwater Section**

**Texas Commission on Environmental Quality** 

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

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

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

#### Signature

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

Print Name of Customer/Agent: Brooke Lindholm, P.E.		
Date: 9/1/25		
Signature of Customer/Agent:		
But IT		

Regulated Entity Name: Enchanted Bluff Units 3,4, & 5

#### Project Information

#### **Potential Sources of Contamination**

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

1.	Fuels for construction equipment and hazardous substances which will be used during
	construction:
	The following fuels and/or hazardous substances will be stored on the site: Construction
	Staging Area
	These fuels and/or hazardous substances will be stored in:

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

	<ul> <li>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.</li> <li>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.</li> </ul>
	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.
Se	equence 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.
	<ul> <li>For each activity described, an estimate (in acres) of the total area of the site to be disturbed by each activity is given.</li> <li>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.</li> </ul>
6.	Name the receiving water(s) at or near the site which will be disturbed or which will

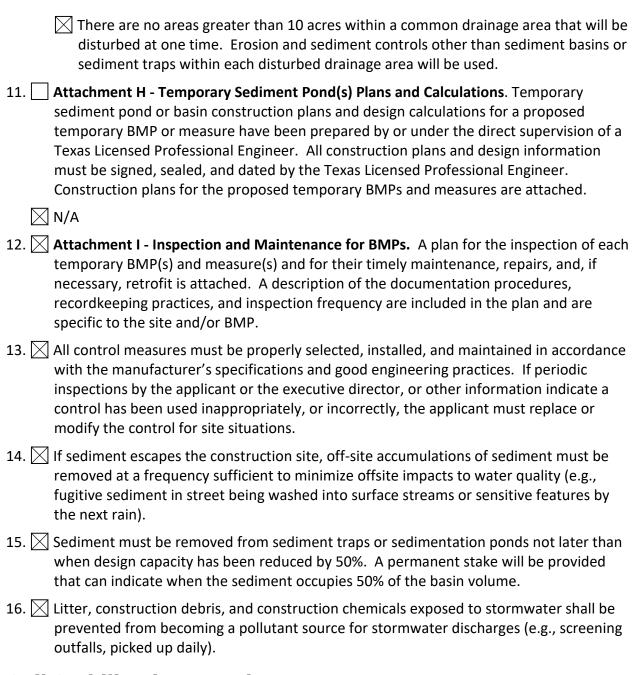
#### Temporary Best Management Practices (TBMPs)

receive discharges from disturbed areas of the project: Cibolo Creek

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.



#### 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**

#### **Attachment A - Spill Response Actions**

In the event of an accidental leak or spill:

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

In the event of an accidental significant or hazardous spill:

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

- Notify the TCEQ by telephone as soon as possible and within 24 hours at 512-339-2929 (Austin) or 210-490-3096 (San Antonio) between 8 AM and 5 PM. After hours, contact the Environmental Release Hotline at 1-800-832-8224. It is the contractor's responsibility to have all emergency phone numbers at the construction site.
- For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor should notify the National Response Center at (800) 424-8802.
- Notification should first be made by telephone and followed up with a written report.

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

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

## **ATTACHMENT B**

Other potential sources of contamination during construction include:	:
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Attachment B - Potential Sources of Contamination		
Other potential sources of contemination during construction include:		
Other potential sources of contamination during construction include:  Potential Source  Asphalt products used on this proj		
D	Asphalt products used on this project.	
Preventative Measure	After placement of asphalt, emulsion or	
	coatings, the contractor will be responsible	
	for immediate cleanup should an unexpected	
	rain occur. For the duration of the asphalt	
	product curing time, the contractor will	
	maintain standby personnel and equipment to	
	contain any asphalt wash-off should an	
	unexpected rain occur. The contractor will be	
	instructed not to place asphalt products on	
	the ground within 48 hours of a forecasted	
B : :: 10	rain.	
Potential Source ●	Oil, grease, fuel and hydraulic fluid	
	contamination from construction equipment	
5 M	and vehicle dripping.	
Preventative Measure	Vehicle maintenance when possible will be	
	performed within the construction staging	
	area.	
•	Construction vehicles and equipment shall be	
	checked regularly for leaks and repaired	
5	immediately.	
Potential Source ●	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 Measure	Contractor to incorporate into regular safety	
	meetings, a discussion of spill prevention and	
	appropriate disposal procedures.	
•	Contractor's superintendent or	
	representative overseer shall enforce proper	

- representative overseer shall enforce proper spill prevention and control measures.
- Hazardous materials and wastes 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 accessible.

Potential Source Miscellaneous trash and litter from construction workers and material wrappings.

Preventive Measure Trash containers will be placed throughout the site to encourage proper trash disposal. Potential Source Construction debris.

Construction debris will be monitored daily by contractor. Debris will be collected weekly
and placed in disposal bins. Situations
requiring immediate attention will be
addressed on a case by case basis.
Spills/Overflow of waste from portable

toilets

Preventative Measure 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**

#### Attachment C - Sequence of Major Activities

The sequence of major activities which disturb soil during construction on this site will be divided into two stages. The first is site preparation that will include installation of TBMPs as shown on Exhibit 1 and clearing and grubbing of vegetation where applicable. This will disturb approximately 23.31 acres. The second is construction that will include construction of homes with associated streets and sidewalks and construction of new pavement area, landscaping and site cleanup. This will disturb approximately 23.31 acres.

## **ATTACHMENT D**

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

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

Due to site topography, no upgradient water will cross the site. All TBMPs are adequate for the drainage areas they serve.

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

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

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

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

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

Sensitive features within the project limits will be protected by the proposed TBMPs within this plan. Construction personnel will be educated to be aware of the features and their respective buffers. Absolutely no disturbance of any kind will take place within the proposed buffers as noted on the plan sheets.

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

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

Sensitive features within the project limits will be protected by the proposed TBMPs within this plan. Construction personnel will be educated to be aware of the features and their respective buffers. Absolutely no disturbance of any kind will take place within the proposed buffers as noted on the plan sheets.

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

## **ATTACHMENT F**

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

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

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

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

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

# **ATTACHMENT G**

## ENCHANTED BLUFF UNITS 3, 4, & 5 Water Pollution Abatement Plan

### Attachment G - Drainage Area Map

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

## **ATTACHMENT I**

## ENCHANTED BLUFF UNITS 3, 4, & 5 Water Pollution Abatement Plan

### **INSPECTIONS**

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

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

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

# ENCHANTED BLUFF UNITS 3, 4, & 5 Water Pollution Abatement Plan

Pollution	ے.	Corrective Action Required	
Prevention			
Measure	nspected Complianc	Description	Date
	<u> </u>	(use additional sheet if necessary)	Completed
<b>Best Management Practices</b>			
Natural vegetation buffer strips			
Temporary vegetation			
Permanent vegetation			
Sediment control basin			
Silt fences			
Rock berms			
Gravel filter bags			
Drain inlet protection			
Other structural controls			
Vehicle exits (off-site tracking)			
Material storage areas (leakage)			
Equipment areas (leaks, spills)			
Concrete washout pit (leaks, failure)			
General site cleanliness			
Trash receptacles			
Evidence of Erosion			
Site preparation			
Roadway or parking lot construction			
Utility construction			
Drainage construction			
Building construction			
Major Observations			
Sediment discharges from site			
BMPs requiring maintenance			
BMPs requiring modification			
Additional BMPs required			
"I certify under penalty of law that this document ar system designed to assure that qualified personnel pror persons who manage the system, or those persons of my knowledge and belief, true, accurate, and com the possibility of fine and imprisonment for knowing	nd all attach roperly gath directly res plete. I am violations."	er and evaluate the information submitted. Based oponsible for gathering the information, the informatio aware there are significant penalties for submitting f	vision in accordance with a on my inquiry of the person on submitted is, to the best
"I further certify I am an authorized signatory in accor	raance with	the provisions of 30 TAC 9305.128."	
Inspector's Name	Inspector	's Signature Date	
•			

## ENCHANTED BLUFF UNITS 3, 4, & 5 Water Pollution Abatement Plan

### **PROJECT MILESTONE DATES**

Date when major site grading activities begin: **Construction Activity** <u>Date</u> Installation of BMPs Dates when construction activities temporarily or permanently cease on all or a portion of the project: Construction Activity **Date** Dates when stabilization measures are initiated: **Stabilization Activity** <u>Date</u>

Removal of BMPs

# **ATTACHMENT J**

## ENCHANTED BLUFF UNITS 3, 4, & 5 Water Pollution Abatement Plan

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

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

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

# PERMANENT STORMWATER SECTION (TCEQ-0600)

### **Permanent Stormwater Section**

**Texas Commission on Environmental Quality** 

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

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

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

### Signature

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

Print Name of Customer/Agent: <u>Brooke Lindholm, P.E.</u> Date: <u>Afroles</u> Signature of Customer/Agent
But I
Regulated Entity Name: Enchanted Bluff Units 3, 4, & 5
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 multifamily 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.
	<ul> <li>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.</li> <li>☐ The site will be used for multi-family residential developments, schools, or small business sites but has more than 20% impervious cover.</li> <li>☐ The site will not be used for multi-family residential developments, schools, or small</li> </ul>
	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.
		<ul> <li>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.</li> <li>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.</li> </ul>
8.		<b>Attachment D - BMPs for Surface Streams</b> . 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		<b>Attachment F - Construction Plans</b> . 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:
		<ul> <li>□ Design calculations (TSS removal calculations)</li> <li>□ TCEQ construction notes</li> <li>□ All geologic features</li> </ul>
	$\square$	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:
	<ul> <li>Prepared and certified by the engineer designing the permanent BMPs and measures</li> <li>Signed by the owner or responsible party</li> <li>Procedures for documenting inspections, maintenance, repairs, and, if necessary retrofit</li> </ul>
	A discussion of record keeping procedures
$\succeq$	] 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.
$\geq$	] 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.
$\geq$	] N/A
Res	ponsibility for Maintenance of Permanent BMP(s)
_	nsibility for maintenance of best management practices and measures after action 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.
$\boxtimes$	] N/A

# AGENT AUTHORIZATION FORM (TCEQ-0599)

### Agent Authorization Form

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

1	Lloyd A Denton, Jr.	
	Print Name	
	President	
	Title - Owner/President/Other	
of	2020 FL Dierks, LLC.	
	Corporation/Partnership/Entity Name	
have authorized	Pape-Dawson Engineers, Inc.	
	Print Name of Agent/Engineer	
of	Pape-Dawson Engineers, Inc.	
	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		09. /6.2. Date	5
THE STATE OF TEXAS §			
County of Blxal §			
BEFORE ME, the undersigned aut to me to be the person whose nar me that (s)he executed same for the	me is subscribed to the	foregoing instrument,	
GIVEN under my hand and seal of	office on this log day	of September 2	025
DAWN D. FREUDENRICH Notary Public, State of Texas Comm. Expires 07-17-2026 NOTARY ID #. 13164622-7	NOTARY PUBLIC  Typed or Printed Nat	cudenn ch	

MY COMMISSION EXPIRES: 1-17-2026

# APPLICATION FEE FORM (TCEQ-0574)

## **Application Fee Form**

Texas Commission on Environmental Quality  Name of Proposed Regulated Entity: Enchanted Bluff Units 3, 4, & 5  Regulated Entity Location: 0.28 miles west of Garden N Dr and Bat Cave Rd Intersection			
Name of Customer: 2020 FL Dierks, Contact Person: Lloyd A. Denton, Jr. Customer Reference Number (if issu	. Phor	e: <u>(210) 828-6131</u>	
Regulated Entity Reference Number (Massin Regional Office (3373)		<u>3454</u>	
_	□ <b>-</b> ·		11:
Hays San Antonio Regional Office (3362)	Travis	WI	lliamson
Bexar     Bexar	Medina	Uv	alde
Comal	Kinney		
Application fees must be paid by ch Commission on Environmental Qua form must be submitted with your	ality. Your canceled o	check will serve as your	receipt. <b>This</b>
Austin Regional Office	⊠s	an Antonio Regional O	ffice
☐ Mailed to: TCEQ - Cashier		Overnight Delivery to: T	CEQ - Cashier
Revenues Section	1	.2100 Park 35 Circle	
Mail Code 214	, E	Building A, 3rd Floor	
P.O. Box 13088	A	Austin, TX 78753	
Austin, TX 78711-3088	(	512)239-0357	
Site Location (Check All That Apply	y):		
Recharge Zone	Contributing Zone	Transi	tion Zone
Type of Plan		Size	Fee Due
Water Pollution Abatement Plan, C	ontributing Zone		
Plan: One Single Family Residential	Dwelling	Acres	\$
Water Pollution Abatement Plan, C	_		
Plan: Multiple Single Family Resider	ntial and Parks	435.65 Acres	\$ 8,000
Water Pollution Abatement Plan, C	ontributing Zone		
Plan: Non-residential		Acres	\$
Sewage Collection System		L.F.	\$
Lift Stations without sewer lines		Acres	\$
Underground or Aboveground Stor	age Tank Facility	Tanks	\$
Piping System(s)(only)		Each	\$
Exception		Each	\$
Extension of Time		Each	\$
Signature: Broke Al	Date	9/10/25	

### **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	\$1,500
	5 < 10	\$3,000
	10 < 40	\$4,000
	40 < 100	\$6,500
	100 < 500	\$8,000
	≥ 500	\$10,000
Non-residential (Commercial, industrial, institutional,	< 1	\$3,000
multi-family residential, schools, and other sites	1 < 5	\$4,000
where regulated activities will occur)	5 < 10	\$5,000
	10 < 40	\$6,500
	40 < 100	\$8,000
	≥ 100	\$10,000

Organized Sewage Collection Systems and Modifications

organized seriage concection systems and recations		
	Cost per Linear	Minimum Fee-
Project	Foot	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

# CORE DATA FORM (TCEQ-10400)



**TCEQ Core Data Form** 

TCEQ Use Only	

For detailed instructions regarding completion of 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)												
2. Customer	Referenc	e Number <i>(if iss</i>	sued)	Follow this link to search 3. Regulated Entity Reference Number (if					if issued)			
CN 6058	59255		for CN or RN Central R									
SECTION II: Customer Information												
4. General C	ustomer l	nformation	5. Effective I	Date for Customer Information Updates (mm/dd/yyyy)								
										rrent 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:												
2020 FL Dierks, LLC.												
7. TX SOS/CI			8. TX State 1	Γax ID (11 digi	ts)		!	9. Feder	al Tax ID (9 digits)	10. DUNS Number (if applicable)		
08038447	78		32076816	852				85-414	2616			
11. Type of C		Individ	ual		Pa	rtnership: 🔲 Gener	ral 🛛 Limited					
Government:	☐ City ☐ 0	County 🔲 Federal 🗆	☐ State ☐ Other		Sole P	roprieto	rshi	р	Other:			
<b>12. Number  ○</b> 0-20	of Employ 21-100	ees 101-250	251-500	501 aı	nd high	er		13. Inde <sub>l</sub> ⊠ Yes	pendently Owned	and Opera	ted?	
14. Custome	r Role (Pro	pposed or Actual) -	- as it relates to t	he Regulated	Entity li	isted on	this f	form. Plea	se check one of the	following		
⊠Owner		Opera	tor	O	wner &	Operat	tor					
Occupatio	nal Licens	ee Respo	nsible Party	□ V	oluntar	y Clean	up A	Applicant	Other:			
45 M. W.	11 Lyı	nn Batts Lane	2									
15. Mailing Address:	Ste 10	0										
	City	San Antonio	0	State	TX		ZIP	782	18	ZIP + 4	3077	
16. Country	Mailing In	formation (if outsi	ide USA)			17. E-Mail Address (if applicable)						
				laddiedenton@bitterblue.com								
18. Telephon	e Numbe		19. Extension or Code				20. Fax Number (if applicable)					
(210)82	(210) 828-6137											
SECTION III: Regulated Entity Information												
21. General Regulated Entity Information (If 'New Regulated Entity" is selected below this form should be accompanied by a permit application)												
The Regulated Entity Name submitted may be updated in order to meet TCEQ Agency Data Standards (removal												
of organizational endings such as Inc, LP, or LLC).												
22. Regulated Entity Name (Enter name of the site where the regulated action is taking place.)												
Enchanted Bluff Units 3, 4, & 5												

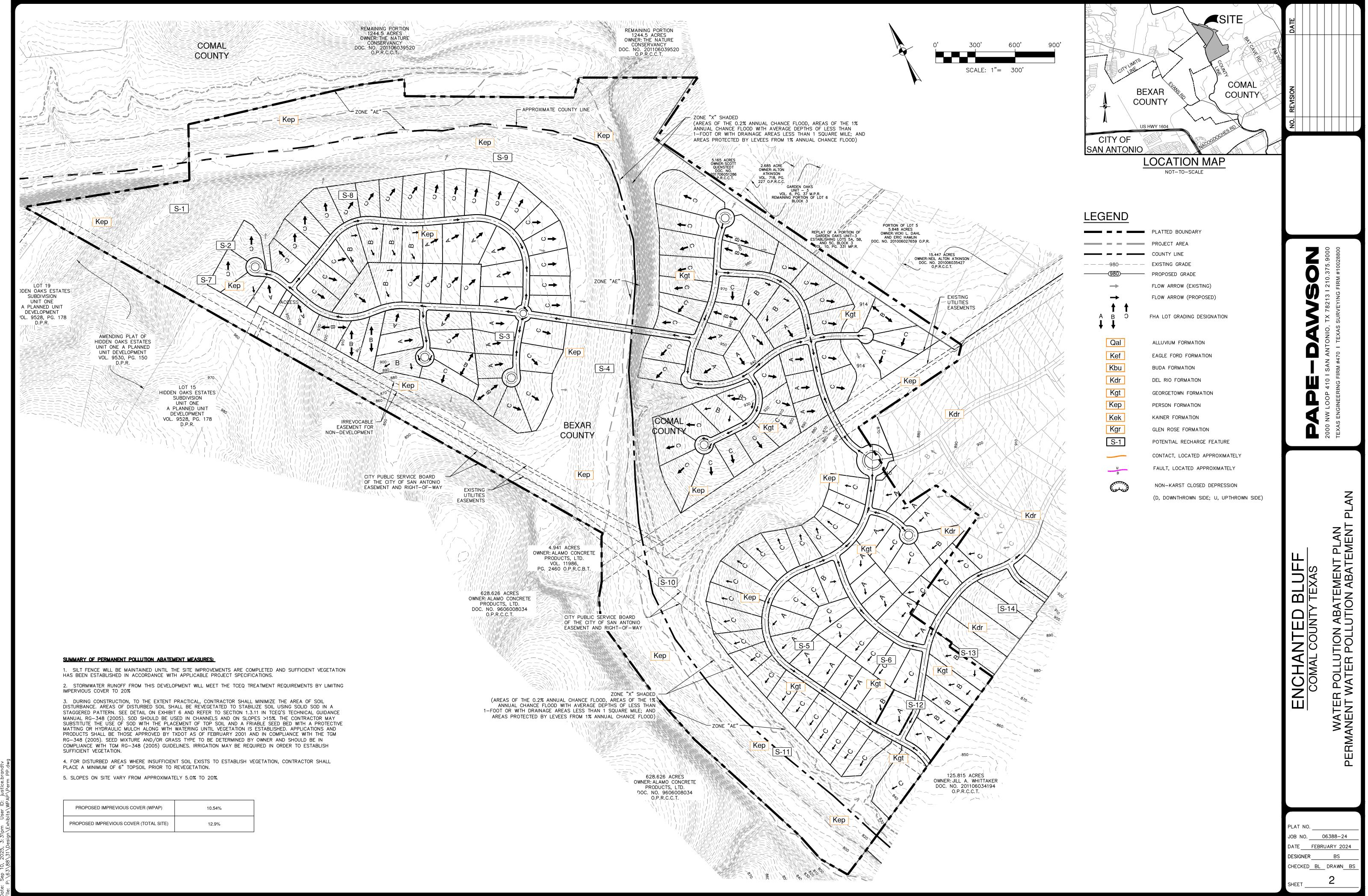
TCEQ-10400 (02/21) Page 1 of 2

23. Street Address	ACC 180.000													
the Regulated Ent	tity:					ı					1			
[NOTO BOXCO]	С	ity			State		ZII	Р			ZIP + 4			
24. County	24. County													
Enter Physical Location Description if no street address is provided.														
25. Description to Physical Location		Approximately 1 mile west of Blue Oak Way and Bat Cave Road intersection												
											rest ZIP Code			
San Antonio TX											782	266		
27. Latitude (N) In	Decimal	17078		28.	28. Longitude (W) In			nal:	-98.3282	07				
Degrees	M	linutes		Seconds			ees		Min	utes		Seconds		
29			38		49.5		98			19	9	41.6		
29. Primary SIC C	ode (4 digi	its) 30.	Second	ary SIC (	Code (4 digits)	<b>31. Prim</b> : <b>(</b> 5 or 6 dig	Primary NAICS Code r 6 digits)			32. Secondary NAICS Code (5 or 6 digits)				
1521		16	23			236115	5			2371	10			
	33. What is the Primary Business of this entity? (Do not repeat the SIC or NAICS description.)													
Construction of	of a sing	gle-fan	nily res	identia	l developmer	nt								
						11 Ly	nn Ba	atts Lane						
34. Mailing Address:						;	Suite	100						
Address:		City	San	Antonio	State	TX		ZIP	782	218	ZIP + 4	3077		
35. E-Mail Ad	ddress:					laddied	enton	@bitterbl	ue.com		_lL			
36. 7	Telephone	e Numbe	r		37. Extensio	n or Code	9		38.	ax Num	ber (if appl	icable)		
(	210 ) 828	3-6131							( ) -					
39. TCEQ Programs form. See the Core Date	and ID N a Form inst	lumbers tructions fo	Check all or addition	Programs	and write in the perce.	rmits/registr	ation i	numbers th	at will be	affected b	y the updates	submitted on this		
☐ Dam Safety		☐ Distric				ifer		] Emissions	Inventory Air		☐ Industria	Industrial Hazardous Waste		
☐ Municipal Solid W	/aste	☐ New Source Review Air			OSSF		☐ Petroleum \$			Tank	☐ PWS			
Sludge		☐ Storm	Water		☐ Title V Air		Tires				Used Oi	Used Oil		
		<b>—</b>				1 11								
☐ Voluntary Cleanu	p	Waste	Water		Wastewater Agriculture			Water Rights			Other:			
SECTION IV	: Pren	arer I	nform	ation										
40. Bryon 9	Spielma					41. Title	11. Title: Project Manager							
Ivallie:			do	44 Eov	Number	/E E	Moil /							
42. Telephone Number 43. Ext./Code 44. Fax Number 45. E-Mail A														
(210) 375-9000   2715   ( ) -   bspielman@pape-dawson.com														
<b>SECTION V: 46.</b> By my signature signature authority to identified in field 39.	below, I o	certify, to	the best	of my kı										
							lob Title: Vice President							
Name (In Print):	Brooke L					1 JOB III		Phone: (210)375-900			9000			
Signature:	Bu	h	M						Date		9/18/	25		

## **EXHIBITS**



HIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. RELY ONLY ON FINAL HARDCOPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL AERIAL IMAGERY PROVIDED BY GOOGLE® UNLESS OTHERWISE NOTED. Imagery © 2016,CAPCOG,Digital Globe,Texas Orthorimagery Program, USDA Farm Service Agency.



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### SCHEMATIC OF TEMPORARY CONSTRUCTION ENTRANCE/EXIT

1. THE AGGREGATE SHOULD CONSIST OF 4-INCH TO 8-INCH WASHED STONE OVER A STABLE FOUNDATION AS SPECIFIED IN THE PLAN. 2. THE AGGREGATE SHOULD BE PLACED WITH A MINIMUM THICKNESS OF

3. THE GEOTEXTILE FABRIC SHOULD BE DESIGNED SPECIFICALLY FOR USE AS A SOIL FILTRATION MEDIA WITH AN APPROXIMATE WEIGHT OF 6 OZ/YD2, A MULLEN BURST RATING OF 140 LB/IN2, AND AN EQUIVALENT OPENING SIZE GREATER THAN A NUMBER 50 SIEVE.

4. IF A WASHING FACILITY IS REQUIRED, A LEVEL AREA WITH A MINIMUM OF 4-INCH DIAMETER WASHED STONE OR COMMERCIAL ROCK SHOULD BE INCLUDED IN THE PLANS. DIVERT WASTEWATER TO A SEDIMENT TRAP OR

### INSTALLATION

SEDIMENT TRAP OR BASIN.

DRAINAGE

CORRECTLY.

**MATERIALS** 

OF 36 HOURS.

SHOOT GROWTH AND THATCH.

SITE PREPARATION

1. AVOID CURVES ON PUBLIC ROADS AND STEEP SLOPES. VEGETATION AND OTHER OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA. GRADE CROWN FOUNDATION FOR POSITIVE DRAINAGE.

THE MINIMUM WIDTH OF THE ENTRANCE/EXIT SHOULD BE 12 FEET OR THE FULL WIDTH OF EXIT ROADWAY, WHICHEVER IS GREATER.

3. THE CONSTRUCTION ENTRANCE SHOULD BE AT LEAST 50 FEET LONG. 4. IF THE SLOPE TOWARD THE ROAD EXCEEDS 2%, CONSTRUCT A RIDGE, 6-INCHES TO 8-INCHES HIGH WITH 3:1 (H:V) SIDE SLOPES, ACROSS THE FOUNDATION APPROXIMATELY 15 FEET FROM THE ENTRANCE TO DIVERT RUNOFF AWAY FROM THE PUBLIC ROAD.

5. PLACE GEOTEXTILE FABRIC AND GRADE FOUNDATION TO IMPROVE STABILITY, ESPECIALLY WHERE WET CONDITIONS ARE ANTICIPATED.

6. PLACE STONE TO DIMENSIONS AND GRADE SHOWN ON PLANS. LEAVE

8. INSTALL PIPE UNDER PAD AS NEEDED TO MAINTAIN PROPER PUBLIC ROAD

SURFACE SMOOTH AND SLOPE FOR DRAINAGE. 7. DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE STONE PAD TO A

## SECTION "A-A" OF A CONSTRUCTION ENTRANCE/EXIT

GEOTEXTILE FABRIC TO

STABILIZE FOUNDATION

## COMMON TROUBLE POINTS

# 1. INADEQUATE RUNOFF CONTROL-SEDIMENT WASHES ONTO PUBLIC ROAD.

2. STONE TOO SMALL OR GEOTEXTILE FABRIC ABSENT, RESULTS IN MUDDY CONDITION AS STONE IS PRESSED INTO SOIL. . PAD TOO SHORT FOR HEAVY CONSTRUCTION TRAFFIC-EXTEND PAD BEYOND

THE MINIMUM 50-FOOT LENGTH AS NECESSARY. 4. PAD NOT FLARED SUFFICIENTLY AT ROAD SURFACE, RESULTS IN MUD BEING TRACKED ON TO ROAD AND POSSIBLE DAMAGE TO ROAD.

5. UNSTABLE FOUNDATION - USE GEOTEXTILE FABRIC UNDER PAD AND/OR IMPROVE FOUNDATION DRAINAGE.

### INSPECTION AND MAINTENANCE GUIDELINES 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 REPAIR 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.

PRIOR TO ENTRANCE ONTO 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

3. WHEN NECESSARY, WHEELS SHOULD BE CLEANED TO REMOVE SEDIMENT

WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC. 5. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE BY USING APPROVED METHODS.

CORRECT

INCORRECT

SOD INSTALLATION

USE PEGS OR STAPLES TO FASTEN SOD

FIRMLY - AT THE ENDS OF STRIPS AND

THE STRIPS ARE LONG. WHEN READY TO

IN THE CENTER, OR EVERY 3-4 FEET IF

# WOVEN WIR SHEATHING

ISOMETRIC PLAN VIEW

### ROCK BERMS

THE PURPOSE OF A ROCK BERM IS TO SERVE AS A CHECK DAM IN AREAS OF CONCENTRATED FLOW, TO INTERCEPT SEDIMENT-LADEN RUNOFF, DETAIN THE SEDIMENT AND RELEASE THE WATER IN SHEET FLOW. THE ROCK BERM SHOULD BE USED WHEN THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 5 ACRES. ROCK BERMS ARE USED IN AREAS WHERE THE VOLUME OF RUNOFF IS TOO GREAT FOR A SILT FENCE TO CONTAIN. THEY ARE LESS EFFECTIVE FOR SEDIMENT REMOVAL THAN SILT FENCES, PARTICULARLY FOR FINE PARTICLES, BUT ARE ABLE TO WITHSTAND HIGHER FLOWS THAN A SILT FENCE. AS SUCH, ROCK BERMS ARE OFTEN USED IN AREAS OF CHANNEL FLOWS (DITCHES, GULLIES, ETC.). ROCK BERMS ARE MOST EFFECTIVE AT REDUCING BED LOAD IN CHANNELS AND SHOULD NOT BE SUBSTITUTED FOR OTHER EROSION AND SEDIMENT CONTROL MEASURES FARTHER UP THE WATERSHED.

### INSPECTION AND MAINTENANCE GUIDELINES . INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL BY THE RESPONSIBLE PARTY. FOR INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY

INSPECTIONS SHOULD BE MADE. 2. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES

AND DISPOSE OF THE ACCUMULATED SILT IN AN APPROVED MANNER THAT WILL NOT CAUSE ANY ADDITIONAL SILTATION.

3. REPAIR ANY LOOSE WIRE SHEATHING.

4. THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION 5. THE BERM SHOULD BE REPLACED WHEN THE STRUCTURE CEASES TO

FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS,

6. THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

# **SECTION "A-A"**

## **MATERIALS**

THE BERM STRUCTURE SHOULD BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM OPENING OF 1 INCH AND A MINIMUM WIRE DIAMETER OF 20 GAUGE GALVANIZED AND SHOULD BE SECURED WITH SHOAT

WOVEN WIRE SHEATHING

2. CLEAN, OPEN GRADED 3-INCH TO 5-INCH DIAMETER ROCK SHOULD BE USED, EXCEPT IN AREAS WHERE HIGH VELOCITIES OR LARGE VOLUMES OF FLOW ARE EXPECTED, WHERE 5-INCH TO 8-INCH DIAMETER ROCKS MAY BE

INSTALLATION 1. LAY OUT THE WOVEN WIRE SHEATHING PERPENDICULAR TO THE FLOW LINE. THE SHEATHING SHOULD BE 20 GAUGE WOVEN WIRE MESH WITH 1 INCH

2. BERM SHOULD HAVE A TOP WIDTH OF 2 FEET MINIMUM WITH SIDE SLOPES BEING 2:1 (H:V) OR FLATTER. 3. PLACE THE ROCK ALONG THE SHEATHING AS SHOWN IN THE DIAGRAM TO

A HEIGHT NOT LESS THAN 18" 4. WRAP THE WIRE SHEATHING AROUND THE ROCK AND SECURE WITH TIE WIRE SO THAT THE ENDS OF THE SHEATHING OVERLAP AT LEAST 2 INCHES. AND THE BERM RETAINS ITS SHAPE WHEN WALKED UPON.

5. BERM SHOULD BE BUILT ALONG THE CONTOUR AT ZERO PERCENT GRADE OR AS NEAR AS POSSIBLE.

6. THE ENDS OF THE BERM SHOULD BE TIED INTO EXISTING UPSLOPE GRADE AND THE BERM SHOULD BE BURIED IN A TRENCH APPROXIMATELY 3 TO 4 INCHES DEEP TO PREVENT FAILURE OF THE CONTROL.

### COMMON TROUBLE POINTS

. INSUFFICIENT BERM HEIGHT OR LENGTH (RUNOFF QUICKLY ESCAPES OVER THE TOP OR AROUND THE SIDES OF BERM).

2. BERM NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND ONE SIDE).

## **ROCK BERM DETAIL**

NOT-TO-SCALE

### STEEL FENCE POST MAX. 6' SPACING, SILT FENCE $\overline{}$ MIN. EMBEDMENT = 1' (MIN. HEIGHT 24" (SEE INSTALLATION NOTE 1) ABOVE EXISTING GROUND) WIRE MESH BACKING SUPPORT COMPACTED EARTH 4X4~W1.4xW1.4 MIN. OR ROCK BACKFILL ALLOWABLE TYPICAL CHAIN LINK FENCE FABRIC IS ACCEPTABLE

ISOMETRIC PLAN VIEW

SILT FENCE DETAIL

NOT-TO-SCALE

## STABILIZED CONSTRUCTION ENTRANCE/EXIT DETAIL

NOT-TO-SCALE

100TS OR GRASS BLADES.

HEALTHY; MOWED AT A 2"-3"

CUTTING HEIGHT

GRASS SHOULD BE GREEN AND

THATCH- GRASS CLIPPINGS AND

DEAD LEAVES, UP TO 1/2" THICK

ROOT ZONE - SOIL AND ROOTS.

CONSERVATION, 1992)

REDUCE ROOT BURNING AND DIEBACK.

# LAY SOD IN A STAGGERED PATTERN. BUTT THE STRIPS TIGHTLY AGAINST EACH OTHER. DO NOT LEAVE SPACES AND DO NOT

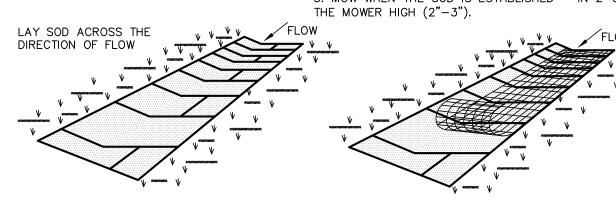
OVERLAP. A SHARPENED MASON'S TROWEL IS A HANDY TOOL FOR TUCKING DOWN THE ENDS AND TRIMMING PIECES.

AUTOMATIC SOD CUTTER MUST BE MATCHED



1. ROLL SOD IMMEDIATELY TO ACHIEVE FIRM CONTACT WITH THE SOIL.

2. WATER TO A DEPTH OF 4" AS NEEDED. WATER WELL AS SOON AS THE SOD IS LAID. 3. MOW WHEN THE SOD IS ESTABLISHED - IN 2-3 WEEKS. SET



1. SOD SHOULD BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3/4" INCH

(± 1/4" INCH) AT THE TIME OF CUTTING. THIS THICKNESS SHOULD EXCLUDE

2. PIECES OF SOD SHOULD BE CUT TO THE SUPPLIER'S STANDARD WIDTH AND

LENGTH. WITH A MAXIMUM ALLOWABLE DEVIATION IN ANY DIMENSION OF 5%.

STANDARD SIZE SECTIONS OF SOD SHOULD BE STRONG ENOUGH TO

SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN

4. SOD SHOULD BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD

. PRIOR TO SOIL PREPARATION, AREAS TO BE SODDED SHOULD BE BROUGHT

ROOTS. BRUSH, WIRE, GRADE STAKES AND OTHER OBJECTS THAT WOULD

FERTILIZE ACCORDING TO SOIL TESTS. FERTILIZER NEEDS CAN BE

DETERMINED BY A SOIL TESTING LABORATORY OR REGIONAL RECOMMENDATIONS

IN CRITICAL AREAS, SECURE SOD WITH NETTING. USE STAPLES.

### MOW, DRIVE PEGS OR STAPLES FLUSH WITH THE GROUND. GENERAL INSTALLATION (VA. DEPT. OF

SOD SHOULD NOT BE CUT OR LAID IN EXCESSIVELY WET OR DRY WEATHER. SOD ALSO SHOULD NOT BE LAID ON SOIL SURFACES THAT ARE FROZEN. 2. DURING PERIODS OF HIGH TEMPERATURE, THE SOIL SHOULD BE LIGHTLY

IRRIGATED IMMEDIATELY PRIOR TO LAYING THE SOD, TO COOL THE SOIL AND

THE FIRST ROW OF SOD SHOULD BE LAID IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO AND BUTTING TIGHTLY AGAINST EACH OTHER. LATERAL JOINTS SHOULD BE STAGGERED TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. CARE SHOULD BE EXERCISED TO ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE DRYING OF THE ROOTS (SEE FIGURE ABOVE).

4. ON SLOPES 3:1 OR GREATER, OR WHEREVER EROSION MAY BE A PROBLEM, SOD SHOULD BE LAID WITH STAGGERED JOINTS AND SECURED BY STAPLING OR OTHER APPROVED METHODS. SOD SHOULD BE INSTALLED WITH THE LENGTH PERPENDICULAR TO THE SLOPE (ON CONTOUR).

THE SURFACE SHOULD BE CLEARED OF ALL TRASH, DEBRIS AND OF ALL 5. AS SODDING OF CLEARLY DEFINED AREAS IS COMPLETED, SOD SHOULD BE ROLLED OR TAMPED TO PROVIDE FIRM CONTACT BETWEEN ROOTS AND SOIL. 6. AFTER ROLLING, SOD SHOULD BE IRRIGATED TO A DEPTH SUFFICIENT THAT THE UNDERSIDE OF THE SOD PAD AND THE SOIL 4 INCHES BELOW THE SOD IS THOROUGHLY WET.

> 7. UNTIL SUCH TIME A GOOD ROOT SYSTEM BECOMES DEVELOPED, IN THE ABSENCE OF ADEQUATE RAINFALL, WATERING SHOULD BE PERFORMED AS OFTEN AS NECESSARY TO MAINTAIN MOIST SOIL TO A DEPTH OF AT LEAST 4

> 8. THE FIRST MOWING SHOULD NOT BE ATTEMPTED UNTIL THE SOD IS FIRMLY ROOTED, USUALLY 2-3 WEEKS. NOT MORE THAN ONE THIRD OF THE GRASS LEAF SHOULD BE REMOVED AT ANY ONE CUTTING.

### INSPECTION AND MAINTENANCE GUIDELINES SOD SHOULD BE INSPECTED WEEKLY AND AFTER EACH RAIN EVENT TO

LOCATE AND REPAIR ANY DAMAGE.

2. DAMAGE FROM STORMS OR NORMAL CONSTRUCTION ACTIVITIES SUCH AS TIRE RUTS OR DISTURBANCE OF SWALE STABILIZATION SHOULD BE REPAIRED AS SOON AS PRACTICAL.

## SOD INSTALLATION DETAIL

NOT-TO-SCALE

## SILT FENCE

STAPLE

A SILT FENCE IS A BARRIER CONSISTING OF GEOTEXTILE FABRIC SUPPORTED BY METAL POSTS TO PREVENT SOIL AND SEDIMENT LOSS FROM A SITE. WHEN PROPERLY USED, SILT FENCES CAN BE HIGHLY EFFECTIVE AT CONTROLLING SEDIMENT FROM DISTURBED AREAS. THEY CAUSE RUNOFF TO POND, ALLOWING HEAVIER SOLIDS TO SETTLE OUT. IF NOT PROPERLY INSTALLED, SILT FENCES ARE NOT LIKELY TO BE EFFECTIVE.

THE PURPOSE OF A SILT FENCE IS TO INTERCEPT AND DETAIN WATER-BORN SEDIMENT FROM UNPROTECTED AREAS OF A LIMITED EXTENT. SILT FENCE IS USED DURING THE PERIOD OF CONSTRUCTION NEAR THE PERIMETER OF A DISTURBED AREA TO INTERCEPT SEDIMENT WHILE ALLOWING WATER TO PERCOLATE THROUGH. THIS FENCE SHOULD REMAIN IN PLACE UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. SILT FENCE SHOULD NOT BE USED WHERE THERE IS A CONCENTRATION OF WATER IN A CHANNEL OR DRAINAGE WAY. IF CONCENTRATED FLOW OCCURS AFTER INSTALLATION, CORRECTIVE ACTION MUST BE TAKEN SUCH AS PLACING A ROCK BERM IN THE AREAS OF CONCENTRATED FLOW.

SILT FENCING WITHIN THE SITE MAY BE TEMPORARILY MOVED DURING THE DAY TO ALLOW CONSTRUCTION ACTIVITY PROVIDED IT IS REPLACED AND PROPERLY ANCHORED TO THE GROUND AT THE END OF THE DAY. SILT FENCES ON THE PERIMETER OF THE SITE OR AROUND DRAINAGE WAYS SHOULD NOT BE MOVED AT ANY TIME.

### **MATERIALS**

SILT FENCE MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE, OR POLYAMIDE WOVEN OR NONWOVEN FABRIC. THE FABRIC SHOULD BE 36 INCHES, WITH A MINIMUM UNIT WEIGHT OF 4.5 OZ/YD, MULLEN BURST STRENGTH EXCEEDING 190 LB/IN2, ULTRAVIOLET STABILITY EXCEEDING 70%, AND MINIMUM APPARENT OPENING SIZE OF U.S. SIEVE NUMBER 30.

2. FENCE POSTS SHOULD BE MADE OF HOT ROLLED STEEL, AT LEAST 4 FEET LONG WITH TEE OR Y-BAR CROSS SECTION, SURFACE PAINTED OR GALVANIZED, MINIMUM WEIGHT 1.25 LB/FT, AND BRINDELL HARDNESS

WOVEN WIRE BACKING TO SUPPORT THE FABRIC SHOULD BE GALVANIZED 2" X 4" WELDED WIRE, 12 GAUGE MINIMUM.

### INSTALLATION

. STEEL POSTS, WHICH SUPPORT THE SILT FENCE, SHOULD BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POSTS MUST BE EMBEDDED A MINIMUM OF 1-FOOT DEEP AND SPACED NOT MORE THAN 8 FEET ON CENTER. WHERE WATER CONCENTRATES, THE MAXIMUM SPACING SHOULD BE 6 FEET.

2. LAY OUT FENCING DOWN-SLOPE OF DISTURBED AREA, FOLLOWING THE CONTOUR AS CLOSELY AS POSSIBLE. THE FENCE SHOULD BE SITED SO THAT THE MAXIMUM DRAINAGE AREA IS 1/4 ACRE/100 FEET OF FENCE.

3. THE TOE OF THE SILT FENCE SHOULD BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWN-SLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (E.G., PAVEMENT OR ROCK OUTCROP), WEIGHT FABRIC FLAP WITH 3 INCHES OF PEA GRAVEL ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.

4. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL

5. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST. THERE SHOULD BE A 3-FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.

6. SILT FENCE SHOULD BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

## COMMON TROUBLE POINTS

FENCE NOT INSTALLED ALONG THE CONTOUR CAUSING WATER TO CONCENTRATE AND FLOW OVER THE FENCE.

2. FABRIC NOT SEATED SECURELY TO GROUND (RUNOFF PASSING UNDER FENCE).

3. FENCE NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING

AROUND SIDES). 4. FENCE TREATING TOO LARGE AN AREA, OR EXCESSIVE CHANNEL FLOW (RUNOFF OVERTOPS OR COLLAPSES FENCE).

### INSPECTION AND MAINTENANCE GUIDELINES 1. INSPECT ALL FENCING WEEKLY, AND AFTER RAINFALL.

2. REMOVE SEDIMENT WHEN BUILDUP REACHES 6 INCHES.

3. REPLACE TORN FABRIC OR INSTALL A SECOND LINE OF FENCING PARALLEL TO THE TORN SECTION.

REPLACE OR REPAIR SECTIONS CRUSHED OR COLLAPSED IN THE COURSE OF CONSTRUCTION ACTIVITY. IF A SECTION OF FENCE IS OBSTRUCTING VEHICULAR ACCESS, CONSIDER RELOCATING IT TO A SPOT 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.

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.

# PIT DETAIL

VARIES CURB INLET FILTER FABRIC-**PLAN VIEW** SAND BAGS WITH WASHED PEA ---GRAVEL FILLER CURB INLET 2"x 4"-W1.4x W1.4 -WIRE MESH SUPPORTING FABRIC SEE GRAVEL FILTER\_ BAG DETAIL FILTER FABRIC-SECTION "A-A

## **GENERAL NOTES**

A MANNER THAT IT WILL NOT ERODE.

CONTRACTOR TO INSTALL 2"x4"-W1.4xW1.4 WIRE MESH SUPPORTING FILTER FABRIC OVER THE INLET OPENING. FABRIC MUST BE SECURED TO WIRE BACKING WITH CLIPS OR WIRE TIES AT THIS LOCATION. SAND BAGS FILLED WITH WASHED PEA GRAVEL SHOULD BE PLACED ON TOP OF WIRE MESH ON TOP OF THE INLET AS SHOWN ON THIS DETAIL TO HOLD WIRE MESH IN PLACE. SANDBAGS FILLED WITH WASHED PEA GRAVEL SHOULD ALSO BE PLACED ALONG THE GUTTER AS SHOWN ON THIS DETAIL TO HOLD WIRE MESH IN PLACE. SAND BAGS TO BE STACKED TO FORM A CONTINUOUS BARRIER AROUND INLETS.

2. THE BAGS SHOULD BE TIGHTLY ABUTTED AGAINST EACH OTHER TO PREVENT RUNOFF FROM FLOWING BETWEEN THE BAGS.

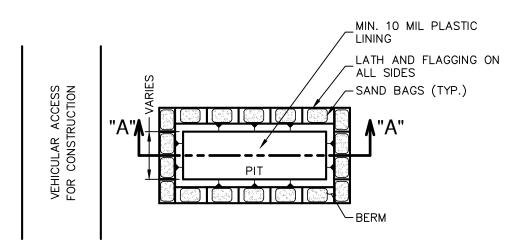
### INSPECTION AND MAINTENANCE GUIDELINES 1. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL. REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED BY THE

CONTRACTOR. 2. REMOVE SEDIMENT WHEN BUILDUP REACHES A DEPTH OF 3 INCHES. REMOVED SEDIMENT SHOULD BE DEPOSITED IN A SUITABLE AREA AND IN SUCH

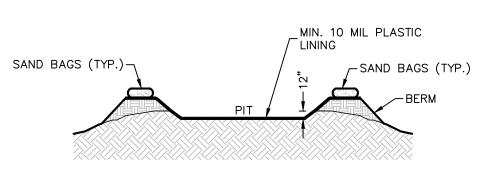
3. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND

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.

## BAGGED GRAVEL CURB INLET PROTECTION DETAIL



**PLAN VIEW** 



### GENERAL NOTES

DETAIL ABOVE ILLUSTRATES MINIMUM DIMENSIONS. PIT CAN BE INCREASED IN SIZE DEPENDING ON EXPECTED FREQUENCY OF USE.

WASHOUT PIT SHALL BE LOCATED IN AN AREA EASILY ACCESSIBLE TO CONSTRUCTION TRAFFIC.

**SECTION "A-A'** 

WASHOUT PIT SHALL NOT BE LOCATED IN AREAS SUBJECT TO INUNDATION FROM STORM WATER RUNOFF. LOCATE WASHOUT AREA AT LEAST 50 FEET FROM SENSITIVE FEATURES, STORM DRAINS, OPEN DITCHES OR WATER BODIES.

TEMPORARY CONCRETE WASHOUT FACILITY SHOULD BE CONSTRUCTED WITH SUFFICIENT QUANTITY AND VOLUME TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS.

### **MATERIALS**

PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10 MIL IN POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL.

### MAINTENANCE

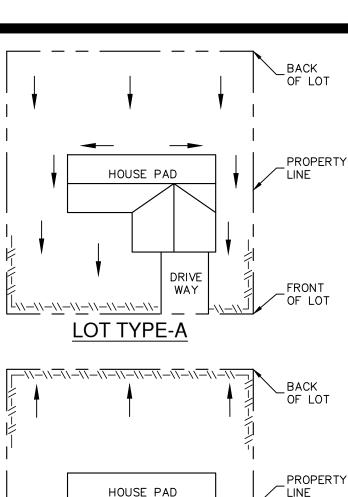
WHEN TEMPORARY CONCRETE WASHOUT FACILITIES ARE NO LONGER REQUIRED FOR THE WORK, THE HARDENED CONCRETE SHOULD BE REMOVED AND DISPOSED OF. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT

FACILITIES SHOULD BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED

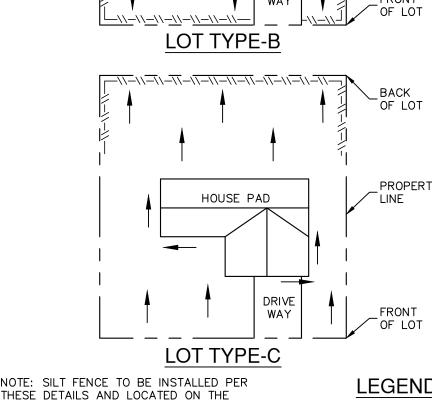
HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCES CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE BACKFILLED AND REPAIRED.

# CONCRETE TRUCK WASHOUT

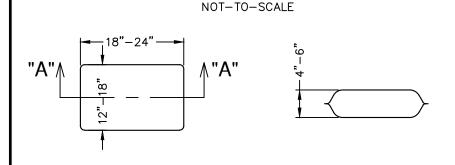
NOT-TO-SCALE



FRONT WAY LOT TYPE-B



DOWNGRADIENT SIDE OF EACH LOT LINE -\\-\\-\\- SILT FENCE OR LIMITS OF CLEARING AS GENERALLY SHOWN ON THE OVERALL SITE PLAN. TYPICAL HOUSE LOT LAYOUTS



PLAN VIEW

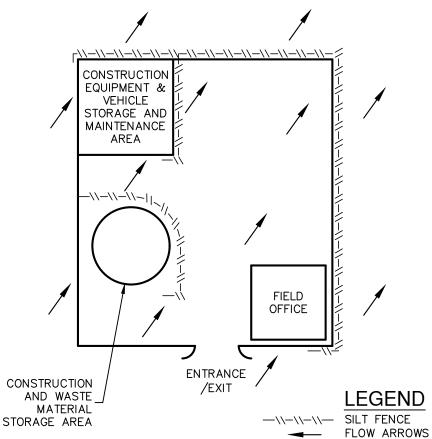
 THE FILTER BAG MATERIAL SHALL BE MADE OF POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN FABRIC, MIN. UNIT WEIGHT OF 4 OUNCES/SY, HAVE A MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70%.

**SECTION "A-A"** 

THE FILTER BAG SHALL BE FILLED WITH CLEAN, MEDIUM WASHED PEA GRAVEL TO COARSE GRAVEL (0.31 TO 0.75 INCH DIAMETER). SAND SHALL NOT BE USED TO FILL THE FILTER BAGS.

# GRAVEL FILTER BAG DETAIL

NOT-TO-SCALE



### **CONSTRUCTION STAGING AREA** NOT-TO-SCALE

THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE TPDES-STORM WATER POLLUTION PREVENTION PLAN (SWP3) REGULATIONS.

THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF THE SWP3 ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.

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IS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. RELY ONLY ON FINAL HARDCOPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL AERIAL IMAGERY PROVIDED BY GOOGLE® UNLESS OTHERWISE NOTED. Imagery © 2016,CAPCOG,Digital Globe,Texas Orthoimagery Program, USDA Farm Service Agency.

CAN BE MADE BY COUNTY AGRICULTURAL EXTENSION AGENTS. FERTILIZER SHOULD BE WORKED INTO THE SOIL TO A DEPTH OF 3 INCHES WITH A DISC, SPRINGTOOTH HARROW OR OTHER SUITABLE EQUIPMENT. ON SLOPING LAND, THE FINAL HARROWING OR DISCING OPERATION SHOULD BE ON THE CONTOUR.

TO FINAL GRADE IN ACCORDANCE WITH THE APPROVED PLAN.

INTERFERE WITH PLANTING, FERTILIZING OR MAINTENANCE OPERATIONS.

TORN OR UNEVEN PADS SHOULD NOT BE ACCEPTABLE.

SUSPENDED FROM A FIRM GRASP ON ONE END OF THE SECTION.

INSTALLATION IN CHANNELS SOD STRIPS IN WATERWAYS SHOULD BE LAID PERPENDICULAR TO THE DIRECTION OF FLOW. CARE SHOULD BE TAKEN TO BUTT ENDS OF STRIPS

# TIGHTLY (SEE FIGURE ABOVE).

AFTER ROLLING OR TAMPING, SOD SHOULD BE PEGGED OR STAPLED TO RESIST WASHOUT DURING THE ESTABLISHMENT PERIOD. MESH OR OTHER NETTING MAY BE PEGGED OVER THE SOD FOR EXTRA PROTECTION IN CRITICAL