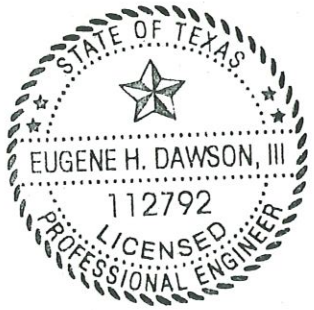
4S RANCH UNIT-6B & MUSTANG VISTA PH. 3

Contributing Zone Plan Modification Application

April 2019

4S RANCH UNIT-6B & MUSTANG VISTA PH. 3

Contributing Zone Plan Modification Application



4/24/2019

April 2019

TBPE, Firm Registration # 470 | TBPLS, Firm Registration # 10028800

PAPE-DAWSON ENGINEERS

PAPE-DAWSON ENGINEERS

April 25, 2019

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

Re: 4S Ranch Unit-6B & Mustang Vista PH. 3
Contributing Zone Plan Modification Application

Dear Ms. Butler:

Please find attached one (1) original, one (1) copy, and one (1) digital copy of the 4S Ranch Unit-6B & Mustang Vista PH. 3 Contributing Zone Plan Modification Application. This Contributing Zone Plan Modification has been prepared in accordance with the Texas Administrative Code (30 TAC 213) and current policies for development over the Edwards Aquifer Contributing Zone.

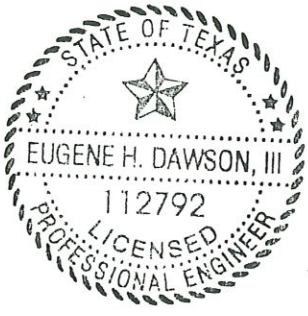
This Contributing Zone Modification applies to an approximately 33.09-acre site as identified by the project limits. Please review the plan information for the items it is intended to address. If acceptable, please provide a written approval of the plan in order that construction may begin at the earliest opportunity.

Appropriate review fees ($4,000) and fee application form are included. If you have questions or require additional information, please call our office.

Sincerely,
Pape-Dawson Engineers, Inc.

4/24/19

Trey Dawson, P.E.
Sr. Vice President



Attachments

P:\85\47\42\Word\REPORTS\CZP\CZP Letter.docx

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

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

2. This Edwards Aquifer Application Cover Page form (certified by the applicant or agent) must be included in the application and brought to the administrative review meeting.

3. Administrative reviews are scheduled with program staff who will conduct the review. Applicants or their authorized agent should call the appropriate regional office, according to the county in which the project is located, to schedule a review. The average meeting time is one hour.

4. In the meeting, the application is examined for administrative completeness. Deficiencies will be noted by staff and emailed or faxed to the applicant and authorized agent at the end of the meeting, or shortly after. Administrative deficiencies will cause the application to be deemed incomplete and returned.

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

5. If an application is received by mail, courier service, or otherwise submitted without a review meeting, the administrative review will be conducted within 30 days. The applicant and agent will be contacted with the results of the administrative review. If the application is found to be administratively incomplete, it can be retrieved from the regional office or returned by regular mail. If returned by mail, the regional office may require arrangements for return shipping.

6. If the geologic assessment was completed before October 1, 2004 and the site contains "possibly sensitive" features, the assessment must be updated in accordance with the *Instructions to Geologists* (TCEQ-0585 Instructions).

Technical Review

1. When an application is deemed administratively complete, the technical review period begins. The regional office will distribute copies of the application to the identified affected city, county, and groundwater conservation district whose jurisdiction includes the subject site. These entities and the public have 30 days to provide comments on the application to the regional office. All comments received are reviewed by TCEQ.

2. A site assessment is usually conducted as part of the technical review, to evaluate the geologic assessment and observe existing site conditions. The site must be accessible to our staff. The site boundaries should be

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

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

Mid-Review Modifications

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

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

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

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

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

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

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

1. Regulated Entity Name: 4S Ranch Unit-6B & Mustang Vista PH. 3						**2. Regulated Entity No.:** 105628622			
3. Customer Name: Lennar Homes of Texas Land and Construction, Ltd.						**4. Customer No.:** 602412207			
5. Project Type: (Please circle/check one)	New		Modification			Extension		Exception	
6. Plan Type: (Please circle/check one)	WPAP	CZP	SCS	UST	AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures
7. Land Use: (Please circle/check one)	Residential		Non-residential			**8. Site (acres):**		33.09	
9. Application Fee:	$4,000		**10. Permanent BMP(s):**			VFS & Water Quality Basins			
11. SCS (Linear Ft.):			**12. AST/UST (No. Tanks):**						
13. County:	Comal		**14. Watershed:**			Cibolo Creek			

Application Distribution

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

http://www.tceq.texas.gov/assets/public/compliance/field_ops/eapp/EAPP%20GWCD%20map.pdf

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

Austin Region			
County:	**Hays**	**Travis**	**Williamson**
Original (1 req.)	___	___	___
Region (1 req.)	___	___	___
County(ies)	___	___	___
Groundwater Conservation District(s)	___Edwards Aquifer Authority ___Barton Springs/ Edwards Aquifer ___Hays Trinity ___Plum Creek	___Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	___Austin ___Buda ___Dripping Springs ___Kyle ___Mountain City ___San Marcos ___Wimberley ___Woodcreek	___Austin ___Bee Cave ___Pflugerville ___Rollingwood ___Round Rock ___Sunset Valley ___West Lake Hills	___Austin ___Cedar Park ___Florence ___Georgetown ___Jerrell ___Leander ___Liberty Hill ___Pflugerville ___Round Rock

San Antonio Region					
County:	**Bexar**	**Comal**	**Kinney**	**Medina**	**Uvalde**
Original (1 req.)	___	✓	___	___	___
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 Hills ___Fair Oaks Ranch ___Helotes ___Hill Country Village ___Hollywood Park ___San 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 application is complete and accurate. This application is hereby submitted to TCEQ for administrative review and technical review. Trey Dawson, P.E.
Print Name of Customer/Authorized Agent
Signature of Customer/Authorized Agent — Date: 4/25/19

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

MODIFICATION TO A PREVIOUSLY APPROVED PLAN

Modification of a Previously Approved Plan

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: Trey Dawson, P.E.

Date: 4/25/19

Signature of Customer/Agent:

Project Information

1. Current Regulated Entity Name: 4S Ranch Unit-6B & Mustang Vista PH. 3
   Original Regulated Entity Name: 4S Ranch Phase 1
   Regulated Entity Number(s) (RN): 105628622
   Edwards Aquifer Protection Program ID Number(s): 13-15082002
   ☒ The applicant has not changed and the Customer Number (CN) is: 60241207
   ☐ The applicant or Regulated Entity has changed. A new Core Data Form has been provided.

2. ☒ **Attachment A: Original Approval Letter and Approved Modification Letters.** A copy of the original approval letter and copies of any modification approval letters are attached.

3. A modification of a previously approved plan is requested for (check all that apply):
   - ☐ Physical or operational modification of any water pollution abatement structure(s) including but not limited to ponds, dams, berms, sewage treatment plants, and diversionary structures;
   - ☐ Change in the nature or character of the regulated activity from that which was originally approved or a change which would significantly impact the ability of the plan to prevent pollution of the Edwards Aquifer;
   - ☒ Development of land previously identified as undeveloped in the original water pollution abatement plan;
   - ☐ Physical modification of the approved organized sewage collection system;
   - ☐ Physical modification of the approved underground storage tank system;
   - ☐ Physical modification of the approved aboveground storage tank system.

4. ☒ Summary of Proposed Modifications (select plan type being modified). If the approved plan has been modified more than once, copy the appropriate table below, as necessary, and complete the information for each additional modification.

WPAP Modification Summary	***Approved Project***	***Proposed Modification***
Acres	SEE ATTACHED	_____
Type of Development	_____	_____
Number of Residential Lots	_____	_____
Impervious Cover (acres)	_____	_____
Impervious Cover (%	_____	_____
Permanent BMPs	_____	_____
Other	_____	_____

SCS Modification Summary	***Approved Project***	***Proposed Modification***
Linear Feet	_____	_____
Pipe Diameter	_____	_____
Other	_____	_____

AST Modification Summary	*Approved Project*	*Proposed Modification*
Number of ASTs	_____	_____
Volume of ASTs	_____	_____
Other	_____	_____

UST Modification Summary	*Approved Project*	*Proposed Modification*
Number of USTs	_____	_____
Volume of USTs	_____	_____
Other	_____	_____

5. ☒ **Attachment B: Narrative of Proposed Modification**. A detailed narrative description of the nature of the proposed modification is attached. It discusses what was approved, including any previous modifications, and how this proposed modification will change the approved plan.

6. ☒ **Attachment C: Current Site Plan of the Approved Project**. A current site plan showing the existing site development (i.e., current site layout) at the time this application for modification is attached. A site plan detailing the changes proposed in the submitted modification is required elsewhere.
   - ☐ The approved construction has not commenced. The original approval letter and any subsequent modification approval letters are included as Attachment A to document that the approval has not expired.
   - ☐ The approved construction has commenced and has been completed. Attachment C illustrates that the site was constructed as approved.
   - ☐ The approved construction has commenced and has been completed. Attachment C illustrates that the site was **not** constructed as approved.
   - ☒ The approved construction has commenced and has **not** been completed. Attachment C illustrates that, thus far, the site was constructed as approved.
   - ☐ The approved construction has commenced and has **not** been completed. Attachment C illustrates that, thus far, the site was **not** constructed as approved.

7. ☐ The acreage of the approved plan has increased. A Geologic Assessment has been provided for the new acreage.
   ☒ Acreage has not been added to or removed from the approved plan.

8. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

ATTACHMENT A

Attachment A – CZP Modification Summary

CZP Modification Summary	Approved Project *(10/30/2015)*	Approved Modification *(5/4/2017)*
Acres	*87.75 of 753.6*	*22.47 of 753.6*
Type of Development	***Residential (Phase I)***	***Amenity Center***
Number of Residential Lots	*202*	*0*
Impervious Cover (acres)	*34.41*	*3.61*
Impervious Cover (%)	*39.22%*	*16.1%*
Permanent BMPs	***Two (2) water quality basins and six (6) fifteen-foot (15') engineered vegetative filter strips (VFS)***	***One (1) Batch Detention basin, one (1) fifteen-foot (15') engineered VFS, two (2) fifty-foot (50') natural VFS***
Other		

CZP Modification Summary	Approved Modification *(9/18/2017)*	Approved Modification *(11/2/2017)*
Acres	*22.47 of 753.6*	*164.94 of 753.6*
Type of Development	***WWTP***	***Residential (Phase 2)***
Number of Residential Lots	*0*	*332*
Impervious Cover (acres)	*3.61*	*37.15*
Impervious Cover (%)	*16.1%*	*22.5*
Permanent BMPs	***one (1) fifty-foot (50') natural VFS***	***One (1) sand filter basin (Basin "C"), one (1) Batch Detention basin (Basin "C"), two (2) fifteen-foot (15') engineered VFS (#7 and #8), one (1) fifteen-foot (15') engineered VFS (#5), and one (1) Water Quality Basin "B"***
Other		

CZP Modification Summary	Approved Modification *(8/3/2018)*	Approved Modification *(4/16/19)*
Acres	*92.98 of 753.6*	*8.36 of 753.6*
Type of Development	***Residential (Phase 3)***	***Soccer Field and Road***
Number of Residential Lots	*362*	
Impervious Cover (acres)	*36.75*	*1.07 (0.3 onsite)*
Impervious Cover (%)	*39.5*	*12.8*
Permanent BMPs	***One (1) existing batch detention basin (Basin "C"), one (1) proposed Batch Detention basin (Basin "D"), and one (1) existing Water Quality Basin "B"***	***One (1) existing sand filter basin (Basin "B"), one (1) fifteen-foot (15') engineered VFS***

CZP Modification Summary	Proposed Modification *(4/25/19)*
Acres	***33.09 of 753.6***
Type of Development	***Residential (Unit-6B)***
Number of Residential Lots	***78***
Impervious Cover (acres)	***12.09***
Impervious Cover (%)	***36.5***
Permanent BMPs	***one (1) existing batch detention basin (Basin "C"), and three (3) proposed fifteen-foot (15') engineered vegetative filter strips (VFS) (#9 - #11)***

Exhibit A

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

October 30, 2015

Mr. Scott Teeter
Lennar Homes of Texas Land and Construction, Ltd.
1015 Central Parkway, North, Suite 140
San Antonio, Texas 78232

Re: Edwards Aquifer, Comal County

NAME OF PROJECT: 4S Ranch Phase 1; Located approximately 1.9 miles north of the intersection of FM 1863 and Stahl Lane, Bulverde, Texas 78163
PLAN TYPE: Request for Approval of a Contributing Zone Plan (CZP); 30 Texas Administrative Code (TAC) Chapter 213 Subchapter B Edwards Aquifer
Investigation No. 1274304; Regulated Entity No. RN105628622; Additional ID No. 13-15082002

Dear Mr. Teeter:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the CZP Application for the above-referenced project submitted to the San Antonio Regional Office by Pape-Dawson Engineers, Inc. on behalf of Lennar Homes of Texas Land and Construction, Ltd. on August 20, 2015. Final review of the CZP was completed after additional material was received on October 14, 2015. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) were selected and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

PROJECT DESCRIPTION

The proposed residential project will have an area of approximately 87.75 acres. It will include clearing, grading, excavation, installation of utilities and drainage improvements, streets, sidewalks and homes. The impervious cover will be 34.41 acres (39.22 percent). Project wastewater will be disposed of by conveyance to the proposed 4S Ranch Wastewater Treatment Facility (WQ0015095001) owned by Stahl Lane LTD.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, two (2) single chamber sedimentation/filtration basins and six (6) vegetative filter strips, designed using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005), will be constructed to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 30,888 pounds of TSS generated from the 34.41 acres of impervious cover. The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project.

Watershed	Area (acres)	Impervious Cover (acres)	BMP	Required TSS Removal (lbs/yr)	Designed TSS Removal (lbs/yr)
B, C, E1, E2, H, I	31.57	14.82	Basin A	13,302	15,049
A1, A2	4.15	0.63	Overtreatment Basin A	570	-
G2, G3	3.67	1.17	Overtreatment Basin A	1,054	-
J3, J4	1.74	0.88	Overtreatment Basin B	794	-
K	2.20	0.14	Overtreatment Basin A	124	-
F	0.79	0.28	VFS 1	247	247
D3	3.27	1.10	VFS 2	989	989
K	2.20	0.63	VFS 3	569	569
L	81.22	0.44	VFS 4	396	396
M, N, O, P, Q, R, T	35.30	11.72	Basin B	10,520	11,561
R, T	9.41	1.57	VFS 5	1,409	1,409
N	6.93	0.74	VFS 6	668	668
U	4.30	0.28	Overtreatment Basin B	247	-
TOTAL	186.75	34.41		30,888	30,888

*Total project boundary area = 87.75 acres

The six VFS will be at least 15 feet wide (in the direction of flow) and will extend along the entire length of the contributing area with no gullies, rills or obstructions that will concentrate flow. The VFS will have a uniform slope of less than 20 percent, and will maintain a vegetated cover of at least 80 percent.

SPECIAL CONDITIONS

I. Within 60 days of receiving written approval of an Edwards Aquifer Protection Plan, the applicant must submit to the San Antonio Regional Office, proof of recordation of notice in the county deed records, with the volume and page number(s) of the county deed records of the county in which the property is located. A description of the property boundaries shall be included in the deed recordation in the county deed records. A suggested format (Deed Recordation Affidavit, TCEQ-0625A) that you may use to deed record the approved CZP is enclosed.

II. All permanent pollution abatement measures shall be operational prior to occupancy of the facility.

III. All sediment and/or media removed from the two water quality basins during maintenance activities shall be properly disposed of according to 30 TAC 330 or 30 TAC 335, as applicable.

IV. Please be advised that the construction of the wastewater treatment plant for this development cannot be authorized through this application. A separate CZP application must be submitted and approved prior to initiating construction of the treatment plant and associated areas.

STANDARD CONDITIONS

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

Prior to Commencement of Construction:

4. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved Contributing Zone Plan and this notice of approval shall be maintained at the project location until all regulated activities are completed.
5. Any modification to the activities described in the referenced CZP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
6. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the San Antonio Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the name of the approved plan and file number for the regulated activity, the date on which the regulated activity will commence, and the name of the prime contractor with the name and telephone number of the contact person.

7. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved Storm Water Pollution Prevention Plan (SWPPP) must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

During Construction:

8. During the course of regulated activities related to this project, the applicant or his agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.
9. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been significantly reduced. Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).
10. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.
11. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
12. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.
13. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 5, above.

After Completion of Construction:

14. Owners of permanent BMPs and measures must insure that the 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 San Antonio Regional Office within 30 days of site completion.
15. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new

property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred. A copy of the transfer of responsibility must be filed with the executive director through the San Antonio Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.

16. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Contributing Zone Plan. If the new owner intends to commence any new regulated activity on the site, a new Contributing Zone Plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.
17. A Contributing Zone Plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Contributing Zone Plan must be submitted to the San Antonio Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.
18. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Ms. Lillian Butler of the Edwards Aquifer Protection Program of the San Antonio Regional Office at (210) 403-4026.

Sincerely,

Lynn M. Bumguardner, Water Section Manager
San Antonio Region Office
Texas Commission on Environmental Quality

LMB/LIB/eg

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

cc: Ms. Cara C. Tackett, P.E., Pape-Dawson Engineers, Inc.
Mr. Roland Ruiz, Edwards Aquifer Authority
Mr. Thomas H. Hornseth, P.E., Comal County Engineer
The Honorable Bill Krawietz, City of Bulverde
TCEQ Central Records, Building F, MC 212

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

May 4, 2017

Mr. Richard Mott
Lennar Homes of Texas Land and Construction, Ltd.
1922 Dry Creek Way, Suite 101
San Antonio, Texas 78259

Re: Edwards Aquifer, Comal County

Name of Project: 4S Ranch Amenity Center; Located approximately 2,000 feet east of Mustang Vista and Stahl Lane intersection; Bulverde, Texas

Plan Type: Request for Modification of an Approved of a Contributing Zone Plan (CZP); 30 Texas Administrative Code (TAC) Chapter 213 Subchapter B; Edwards Aquifer

Edwards Aquifer Protection Program ID No.: 13000321; Regulated Entity No.: RN105628622

Dear Mr. Mott:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the CZP application for the above-referenced project submitted to the San Antonio Regional Office by Pape-Dawson Engineers, Inc. on behalf of Lennar Homes of Texas Land and Construction, Ltd. on January 4, 2017. Final review of the CZP was completed after additional material was received on February 14, 2017 and April 6, 2017. As presented to the TCEQ, the Temporary Best Management Practices (BMPs) were selected and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

BACKGROUND

4S Ranch Phase I CZP (EAPP 13-15082002) was approved October 30, 2015 for 753.6 acres. The proposed residential development was located within 87.75 acres with 34.41 acres (39.22 percent) of impervious cover. The construction included clearing, grading, excavation, installation of utilities and drainage improvement, streets, sidewalks and single family residential units. Permanent treatment included two single chamber sedimentation filtration basins and six vegetative filter strips.

PROJECT DESCRIPTION

The proposed project will have an area of approximately 22.47 acres located within the previously approved 753.6 acre tract. The 22.47 acre project area is individually platted separately within the Master Development Plan for 4S Ranch. It will include clearing, grading, excavation, installation of utilities and drainage improvements, parking, sidewalks, walking trails, an amenity center building, outdoor pool, and park with recreational pond. The impervious cover will be 3.61 acres (16.1 percent) within the 22.47 acre site. The remaining areas within this site will be maintained as greenspace. Wastewater will be disposed of by conveyance to a proposed 4S Ranch Wastewater Treatment Facility (WQ0015095001) owned by Stahl Lane, Ltd.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, one (1) batch detention, one (1) fifteen-foot engineered vegetative filter strip (VFS), and two (2) fifty-foot natural VFS, designed using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005), will be constructed to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 3,240 pounds of TSS generated from the 3.61 acres of impervious cover. The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project.

DRAINAGE AREA	BMP	WATERSHED AREA	IMPERVIOUS COVER AREA	REQUIRED TSS REMOVAL	ACTUAL TSS REMOVAL
A1	50' VFS	5.37	0.62	556	556
A2	50' VFS	14.15	0.60	539	539
A3	15' VFS	6.51	0.33	296	296
J1	Batch Detention Basin	14.82	0.00	2513	2729
J2					
J3		3.04	0.81[1]		
J4		4.82	1.10[1]		
J5					
J7		1.74	0.89		
J8					
J6	Overtreatment	6.48	0.24[3]	215	0
TOTAL		56.93	4.59	4119	4120

1. Providing treatment for existing 0.98 acres of impervious cover
2. Watershed includes offsite drainage area
3. Batch Detention Basin provides overtreatment for uncaptured impervious cover

The basin is designed with a water quality volume plus 20% additional volume for a total capacity of 19,368 cubic feet (18,459 cubic feet required); the depth for water quality volume is approximately 2.75 feet. The batch detention basin will implement a Flowmatic valve with an electric actuator in order to detain the captured runoff for the required amount of time before opening and releasing the treated stormwater. The system will be equipped with a 120V DDC logic controller and solar power battery backup that will be housed within a lockable enclosure with audio/visual alarm system.

The 15-foot wide VFS will treat portions of the proposed trail system and shall have a uniform slope of less than 20-percent and vegetated cover of at least 80-percent which will extend along the entire length of the contributing area and will be free of gullies or rills that can concentrate overland flow. The contributing area shall be relatively flat to evenly distribute runoff, and the impervious cover in the direction of flow shall not exceed 72-feet.

The two natural VFS(s) will treat the TSS generated from the park/playground area and proposed trail system. The natural VFS(s) will be undisturbed natural vegetative areas with slopes that shall not exceed 10 percent and shall have no flow concentrating areas on the strip. The contributing area shall be relatively flat to evenly distribute runoff.

SPECIAL CONDITION

Within 60 days of receiving written approval of an Edwards Aquifer Protection Plan, the applicant must submit to the San Antonio Regional Office, proof of recordation of notice in the county deed records, with the volume and page number(s) of the county deed records of the county in which the property is located. A description of the property boundaries shall be included in the deed recordation in the county deed records. A suggested format (Deed Recordation Affidavit, TCEQ-0625A) that you may use to deed record the approved CZP is enclosed.

STANDARD CONDITIONS

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

Prior to Commencement of Construction:

4. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved Contributing Zone Plan and this notice of approval shall be maintained at the project location until all regulated activities are completed.
5. Any modification to the activities described in the referenced CZP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
6. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the San Antonio Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the name of the approved plan and file number for the regulated activity, the date on which the regulated activity will commence, and the name of the prime contractor with the name and telephone number of the contact person.
7. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved Storm Water Pollution Prevention Plan (SWPPP) must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality

pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

<u>During Construction:</u>

8. During the course of regulated activities related to this project, the applicant or his agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.
9. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been significantly reduced. Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).
10. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.
11. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
12. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.
13. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 5, above.

<u>After Completion of Construction:</u>

14. Owners of permanent BMPs and measures must insure that the 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 San Antonio Regional Office within 30 days of site completion.
15. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred. A copy of the transfer of responsibility must be filed with the executive director through the San Antonio Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.
16. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Contributing Zone Plan. If the new owner intends to commence any new regulated activity on the site, a new Contributing Zone Plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.

17. A Contributing Zone Plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Contributing Zone Plan must be submitted to the San Antonio Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.
18. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Ms. Lillian Butler of the Edwards Aquifer Protection Program of the San Antonio Regional Office at (210) 403-4026.

Sincerely,

Lynn Bumguardner, Water Section Manager
San Antonio Region
Texas Commission on Environmental Quality

LB/LB/cg

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

cc: Ms. Cara C. Tackett, P.E., Pape-Dawson Engineers, Inc.
The Honorable Bill Krawietz, City of Bulverde
Mr. Roland Ruiz, Edwards Aquifer Authority
Mr. Thomas H. Hornseth, P.E., Comal County
Mr. H. L. Saur, Trinity Groundwater Conservation District

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

September 18, 2017

Mr. Richard Mott
Lennar Homes of Texas Land and Construction, Ltd
1922 Dry Creek Way, Suite 101
San Antonio, Texas 78259

Re: Edwards Aquifer, Comal County

NAME OF PROJECT: 4S Ranch WWTP; Located 6000 Feet N of Intersection of Smithson Valley Rd and FM 1863; ETJ of Bulverde, Texas

TYPE OF PLAN: Request for Approval of a Contributing Zone Plan (CZP); 30 Texas Administrative Code (TAC) Chapter 213 Subchapter B Edwards Aquifer

Edwards Aquifer Protection Program ID No. 13000473; Regulated Entity No. RN106753437

Dear Mr. Mott:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the CZP Application for the above-referenced project submitted to the San Antonio Regional Office by Pape-Dawson Engineers, Inc. on behalf of Lennar Homes of Texas Land and Construction, Ltd on May 12, 2017. Final review of the CZP was completed after additional material was received on Jun 29, 2017, July 25, 2017, August 9, 2017, August 23, 2017, August 25, 2017 and September 8, 2017. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) were selected and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

BACKGROUND

A Contributing Zone Plan for Phase 1 of the 4-S Ranch was approved by TCEQ on October 30, 2015. The plan proposed clearing, grading, excavation, the installation of utilities and drainage

improvements, streets, sidewalks, and homes within an 87.75 acre site. In addition, the plan identified an area of the site where construction of a wastewater treatment facility would occur.

PROJECT DESCRIPTION

The proposed industrial project includes the construction of a wastewater treatment plant (WWTP), its infrastructure, and access roads to the plant from Smithson Valley Road on approximately 15.33 acres. Natural and engineered vegetated filter strips (VFS) will be established along the roadway and downgradient of the WWTP facilities. The impervious cover will be 2.71 acres (17.7 percent). Project wastewater will be disposed of by conveyance to the permitted 4-S Ranch Water Recycling Center owned by 633-4S Ranch Ltd., and Stahl Lane, Ltd.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, natural and engineered vegetated filter strips, designed using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005), will be constructed to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 2,433 pounds of TSS generated from the 2.71 acres of impervious cover. The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project. Compensatory treatment for 117 pounds of uncaptured TSS will be provided by Filter Basin B within sub-watersheds "C", "D", and "F" of the 4 S Ranch Phase I CZP (13-15082002).

The individual treatment measures will consist of:

Watershed	Area (acres)	Impervious Cover (acres)	BMP	Required TSS Removal (lbs/yr)	Designed TSS Removal (lbs/yr)
S	2.53	0.73	Proposed 50' VFS #1	655	655
A	1.65	0.76	Proposed 15' VFS #2	682	682
B	0.65	0.65	Proposed 15' VFS #3	583	583
C	0.07	0.07	Filter Basin B*	63	63
D	0.03	0.03	Filter Basin B*	27	27
E	0.20	0.20	Proposed 15' VFS #4	180	180
F	0.03	0.03	Filter Basin B*	27	27
G	0.12	0.12	Proposed 15' VFS #5	108	108
H	0.12	0.12	Proposed 15' VFS #6	108	108
TOTAL	5.40	2.71		2433	2433

*Lennar letter dated September 7, 2017 authorized use of Filter Basin B as TSS treatment from RN105628622 for treating load from RN106753437, 4S Ranch WWTP.

SPECIAL CONDITIONS

I. Within 60 days of receiving written approval of an Edwards Aquifer Protection Plan, the applicant must submit to the San Antonio Regional Office, proof of recordation of notice in

the county deed records, with the volume and page number(s) of the county deed records of the county in which the property is located. A description of the property boundaries shall be included in the deed recordation in the county deed records. A suggested format (Deed Recordation Affidavit, TCEQ-0625A) that you may use to deed record the approved CZP is enclosed.

II. All permanent pollution abatement measures shall be operational prior to occupancy of the facility.

III. Please be advised that construction of the wastewater treatment plant for this project cannot be authorized solely through approval of this application. Appropriate notice(s) required for the construction of the wastewater treatment plant must meet applicable requirements established by rule, authorization, statute or permit.

STANDARD CONDITIONS

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

Prior to Commencement of Construction:

4. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved Contributing Zone Plan and this notice of approval shall be maintained at the project location until all regulated activities are completed.
5. Any modification to the activities described in the referenced CZP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
6. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the San Antonio Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the name of the approved plan and file number for the regulated activity, the date on which the regulated activity will commence, and the name of the prime contractor with the name and telephone number of the contact person.
7. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved Storm Water Pollution Prevention Plan (SWPPP) must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges

from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

During Construction:

8. During the course of regulated activities related to this project, the applicant or his agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.
9. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been significantly reduced. Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).
10. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.
11. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
12. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.
13. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 5, above.

After Completion of Construction:

14. Owners of permanent BMPs and measures must insure that the 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 San Antonio Regional Office within 30 days of site completion.
15. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred. A copy of the transfer of responsibility must be filed with the executive director through the San Antonio Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.

16. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Contributing Zone Plan. If the new owner intends to commence any new regulated activity on the site, a new Contributing Zone Plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.
17. A Contributing Zone Plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Contributing Zone Plan must be submitted to the San Antonio Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.
18. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Don Vandertulip, PE, BCEE of the Edwards Aquifer Protection Program of the San Antonio Regional Office at 210-403-4057.

Sincerely,

Lynn Bumguardner, Water Section Manager
San Antonio Region
Texas Commission on Environmental Quality

LB/DV/eg

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

cc: Ms. Cara Tackett, PE, Pape-Dawson Engineers, Inc.
Mr. Roland Ruiz, Edwards Aquifer Authority
Mr. H.L. Saur, Comal Trinity Groundwater Conservation District
Mr. Thomas H. Hornseth, PE, Comal County
The Honorable Bill Krawietz, City of Bulverde

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

November 2, 2017

Mr. Richard Mott
Lennar Homes of Texas Land and Construction, Ltd.
1922 Dry Creek Way, Suite 101
San Antonio, Texas 78259

Re: Edwards Aquifer, Comal County

NAME OF PROJECT: 4S Ranch Phase 2; located approximately one mile southeast of the Mustang Vista and Stahl Lane intersection; Bulverde, Texas

TYPE OF PLAN: Request for the Approval of a Modification of an Approved Contributing Zone Plan (CZP); 30 Texas Administrative Code (TAC) Chapter 213 Subchapter B Edwards Aquifer

Regulated Entity No. RN105628622; Additional ID No. 13000510

Dear Mr. Mott:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the CZP Modification for the above-referenced project submitted to the San Antonio Regional Office by Pape-Dawson Engineers, Inc. on behalf of Lennar Homes of Texas Land and Construction, Ltd. on September 5, 2017. Final review of the CZP Modification was completed after additional material was received on October 9, 2017. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) were selected and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

BACKGROUND

The proposed 4S Ranch Phase 2 CZP Modification is a part of a larger plan of development that has two approved CZP applications included; the 4S Ranch Phase I CZP and the 4S Ranch Amenity Center CZP Modification. The 4S Ranch Phase I CZP was approved October 30, 2015 for 753.6 acres. The proposed residential development was located within 87.75 acres with 34.41 acres (39.22 percent) of impervious cover. The construction included clearing, grading, excavation, installation of utilities and drainage improvements, streets, sidewalks and single family residential units. Permanent BMPs included two single-chamber sedimentation filtration basins and six vegetative filter strips.

The 4S Ranch Amenity Center CZP Modification was approved May 4, 2017 for an area of approximately 22.47 acres located within the previously approved 753.6 acre tract. Impervious cover totaled 3.61 acres (16.1 percent). The proposed development included clearing, grading, excavation, installation of utilities and drainage improvements, parking, sidewalks, walking trails, an amenity center building, outdoor pool, and park with recreational pond. Permanent BMPs included a batch detention basin, one engineered vegetative filter strip and two natural vegetative filter strips.

PROJECT DESCRIPTION

This CZP Modification proposes residential development within an area of approximately 164.94 acres. The impervious cover is 37.15 acres (22.52 percent). The project includes clearing, grading, and excavation, installation of utilities, drainage improvements, and the construction of 332 single-family residential units with associated streets, driveways and sidewalks. Project wastewater will be disposed of by conveyance to the proposed 4S Ranch Wastewater Treatment Plant owned by Stahl Lane, Ltd.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, an existing single-chamber sedimentation filtration basin "B", a proposed single-chamber sedimentation filtration basin "C", a batch detention basin "C" and two proposed engineered vegetative filter strips (VFS), designed using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005), will treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 33,337 pounds of TSS generated from the 37.14 acres of impervious cover (IC). The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project.

The design criteria and treatment provided by the existing single-chamber sedimentation filtration basin "B" is available in the original CZP approval for Phase I dated October 30, 2015. The total capture volume of the proposed single-chamber sand filter basin "C" is 29,535 cubic feet (26,408 cubic feet required). The filtration system for the basin will consist of 4,426 square feet of sand (2,641 square feet required) meeting ASTM C-33, which is 18 inches thick and an underdrain piping system covered with a minimum two inch gravel layer.

The proposed batch detention basin "C" will have a designed water quality volume of 315,722 cubic feet (133,548 cubic feet required). The logic controller for the system will be programmed to retain stormwater for 12 hours before releasing it. The stormwater release valve will be equipped with a manual override. The system will be connected to a 120 volt power supply with a solar/battery backup unit.

The two proposed 15-foot wide VFS shall have a uniform slope of less than 20 percent and vegetated cover of at least 80 percent which will extend along the entire length of the contributing area and will be free of gullies or rills that can concentrate overland flow. The contributing area shall be relatively flat to evenly distribute runoff, and the impervious cover in the direction of flow shall not exceed 72 feet.

Please refer to Table 1 below for a summary of permanent BMP details for Phase 2 development.

Table 1 BMP Summary for Phase 2

Watershed	Previously Approved IC (acres)	Proposed IC (acres)	Total IC (acres)	BMP	Required TSS Removal (lbs/yr)	Designed TSS Removal (lbs/yr)
M	0.00	0.00	0.00	Exiting Sand Filter Basin B*	---	9,417
N	0.46	2.22	2.68		2,406	
O	1.26	0.00	1.26		1,131	
P	1.33	0.00	1.33		1,194	
Q	3.12	0.00	3.12		2,801	
R	0.06	1.15	1.21		1,086	
T	0.07	0.69	0.76		682	
X	0.00	5.21	5.21	Sand Filter Basin C**	4,676	4,820
Z	0.00	0.16	0.16	Overtreatment Sand Filter Basin C	144	---
A	0.00	25.64	25.64	Batch Detention Basin C***	23,014	23,795
Y	0.00	0.87	0.87	Overtreatment Batch Detention Basin C	781	---
R	0.76	0.00	0.76	Existing VFS #5	682	682
T	0.55	0.00	0.55	Existing VFS #5	494	494
V	0.00	0.80	0.80	Proposed VFS #7	718	718
W	0.00	0.40	0.40	Proposed VFS #8	359	359
TOTAL	7.61	37.14	44.75	---	40,168	40,285

*The existing sand filter basin B was designed to compensate for uncaptured impervious cover from watersheds C, D and F on the concurrent WWTP CZP. In the 4S Ranch Phase I CZP, basin B was also designed to compensate for watersheds J3 and J4. A batch detention basin was designed with the 4S Ranch Amenity Center CZP, which now treats watershed J3 and J4.

**The sand filter basin C was designed to compensate for uncaptured impervious cover from watershed Z.

***The batch detention basin C was designed to compensate for uncaptured impervious cover areas from watershed Y.

SPECIAL CONDITIONS

I. Within 60 days of receiving written approval of an Edwards Aquifer Protection Plan, the applicant must submit to the San Antonio Regional Office, proof of recordation of notice in the county deed records, with the volume and page number(s) of the county deed records of the county in which the property is located. A description of the property boundaries shall be included in the deed recordation in the county deed records. A suggested format (Deed Recordation Affidavit, TCEQ-0625A) that you may use to deed record the approved CZP is enclosed.

II. This modification is subject to all Special and Standard Conditions listed in the CZP approval letter dated October 30, 2015 and modification dated May 4, 2017.

III. The proposed permanent pollution abatement measures shall be operational prior to first occupancy of residences within the measure's respective drainage area.

IV. All sediment and/or media removed from the permanent pollution abatement measures during maintenance activities shall be properly disposed of according to 30 TAC 330 or 30 TAC 335, as applicable.

STANDARD CONDITIONS

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

Prior to Commencement of Construction:

4. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved Contributing Zone Plan and this notice of approval shall be maintained at the project location until all regulated activities are completed.
5. Any modification to the activities described in the referenced CZP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
6. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the San Antonio Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the name of the approved plan and file number for the regulated activity, the date on which the regulated activity will commence, and the name of the prime contractor with the name and telephone number of the contact person.
7. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved Storm Water Pollution Prevention Plan (SWPPP) must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

During Construction:

8. During the course of regulated activities related to this project, the applicant or his agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.

9. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been significantly reduced. Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).
10. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.
11. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
12. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.
13. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 5, above.

<u>After Completion of Construction:</u>

14. Owners of permanent BMPs and measures must insure that the 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 San Antonio Regional Office within 30 days of site completion.
15. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred. A copy of the transfer of responsibility must be filed with the executive director through the San Antonio Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.
16. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Contributing Zone Plan. If the new owner intends to commence any new regulated activity on the site, a new Contributing Zone Plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.
17. A Contributing Zone Plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Contributing Zone Plan must be submitted to the San

Antonio Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.

18. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Dianne Pavlicek-Mesa, P.G., of the Edwards Aquifer Protection Program of the San Antonio Regional Office at (210)403-4074.

Sincerely,

Lynn Bumguardner, Water Section Manager
San Antonio Region
Texas Commission on Environmental Quality

LB/DPM/eg

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

cc: Ms. Cara C. Tackett, P.E., Pape-Dawson Engineers, Inc.
Mr. Roland Ruiz, Edwards Aquifer Authority
Mr. Thomas H. Hornseth, P.E., Comal County Engineer
The Honorable Bill Krawietz, City of Bulverde
Mr. H. L. Saur, Comal Trinity Groundwater Conservation District

Exhibit "A"

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

August 3, 2018

Mr. Richard Mott
Lennar Homes of Texas Land and Construction, Ltd.
1922 Dry Creek Way, Ste. 101
San Antonio, Texas 78259

Re: Edwards Aquifer, Comal County

NAME OF PROJECT: 4 S Ranch Phase 3; Located approximately one mile southwest of the Mustang Vista and Stahl Lane intersection; Bulverde, Texas.

TYPE OF PLAN: Request for Modification of an Approved Contributing Zone Plan (CZP); 30 Texas Administrative Code (TAC) Chapter 213 Subchapter B Edwards Aquifer

Regulated Entity No.: RN105628622; Additional ID No.: 13000682

Dear Mr. Mott:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the CZP Modification for the above-referenced project submitted to the San Antonio Regional Office by Pape-Dawson Engineers, Inc. on behalf of Lennar Homes of Texas Land and Construction, Ltd. on May 18, 2018. Final review of the CZP Modification was completed after additional material was received on July 19, 2018. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) were selected and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

BACKGROUND

The original 4S Ranch Phase I CZP (EAPP13-15082002) was approved by letter dated October 30, 2015. The proposed residential development was located within 87.75 acres of a larger 753.6-acre site. The site was approved with 34.41 acres (39.22 percent) of impervious cover. The project included clearing, grading, excavation, installation of utilities and drainage improvements, streets, sidewalks and the construction of single family residential units.

Permanent treatment included two single chamber sedimentation filtration basins and six vegetative filter strips.

The 4S Ranch Amenity Center CZP modification was approved by letter dated May 4, 2017 for an area of approximately 22.47 acres located within the previously approved 753.6-acre tract. Impervious cover totaled 3.61 acres (16.1 percent) of the 22.47 acres site. The construction included clearing, grading, excavation, installation of utilities and drainage improvements, parking, sidewalks, walking trails, an amenity center building outdoor pool, and park with recreational pond. Permanent BMPs included a batch detention basin, one engineered vegetative filter strip and two natural vegetative filter strips.

The second CZP modification, 4S Ranch WWTP, was approved by letter dated September 18, 2017 for an area of approximately 15.33 acres located within the previously approved 753.6-acre tract. The approved impervious cover was 2.71 acres (17.7 percent) of the 15.33-acre site. The construction included a wastewater treatment plant (WWTP), its infrastructure, and access roads to the plant. Permanent BMPs included one existing filter basin (Basin "B"), one natural engineered vegetative filter strip, and five engineered vegetative filter strips.

The third CZP modification, 4S Ranch Phase 2, was approved by letter dated November 2, 2017 for an area of approximately 164.94 acres located within the previously approved 753.6-acre tract. The approved impervious cover was 37.15 acres (22.52 percent) of the 164.94-acre site. The construction included clearing, grading, excavation, installation of utilities, drainage improvements, 332 single-family residential units with associated streets, driveways and sidewalks. Permanent BMPs included two single-chamber sedimentation filtration basins, one batch detention basin and two engineered vegetative filter strips.

PROJECT DESCRIPTION

The proposed modification for the residential project will have an area of approximately 92.98 acres of the total 753.6-acre site. It will include the construction of 362 single-family residential lots, with clearing, grading, excavation, installation of utilities and drainage improvements, streets, turn lanes, sidewalks and addition of a turn lane within the right-of-way of Stahl Road. The impervious cover for this project will be 36.75 acres (39.5 percent) of the 92.98-acre project site. Project wastewater will be disposed of by conveyance to 4S Ranch Water Recycling Center owned by the Stahl Lane, Ltd.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, one new batch detention basin (Basin "D"), one existing sand filter basin (Basin "B"), and one existing batch detention basin (Basin C") designed using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005), will be constructed to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 32,987 pounds of TSS generated from the 36.75 acres of impervious cover. The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project. The individual treatment measures are described below.

Table 1 BMP Summary							
Watershed	Area (ac.)	Previously Approved IC (ac.)	Proposed IC (ac.)	Total IC (ac.)	BMP	Required TSS Removal (lbs./yr.)	Designed TSS Removal (lbs./yr.)
J	0.12	0	0	0	Proposed Batch Detention Basin "D"	0	31,910
I	77.56	0	34.56	34.56		31,021	
Y	2.07	0.87	0	0.87		781	
A	85.03	25.64	1.67	27.31	Existing Batch Detention Basin "C"	24,513	24,783
A6	1.21	0	0.3	0.3		269	
M	1.82	0	0.12	0.12	Existing Sand Filter Basin "B"	108	11,561
P	4.13	1.33	0.10	1.43		1,284	
C*	0.07	0.07	0	0.07		63	
D*	0.03	0.03	0	0.03		27	
F*	0.03	0.03	0	0.03		27	
N	6.02	2.68	0	2.68		2,406	
O	8.79	1.26	0	1.26		1,131	
Q	7.23	3.12	0	3.12		2,801	
R	5.61	1.21	0	1.21		1,086	
T	3.9	0.76	0	0.76		682	

The batch detention basin (Basin "D") will have a designed water quality volume of 184,487 cubic feet (150,953 cubic feet required). The basin is currently removing 31,910 pounds of TSS.

The batch detention basin (Basin "C") will have a designed water quality volume of 398,750 cubic feet (131,430 cubic feet required). The basin is currently removing 24,783 pounds of TSS.

The single chamber sedimentation/filtration basin (Basin B") will have a designed water quality volume of 112,931 cubic feet (56,094 cubic feet required), and a sand filter area of 9,199 square feet (5,610 square feet required). The basin is designed to remove 11,561 pounds of TSS.

SPECIAL CONDITIONS

I. Within 60 days of receiving written approval of an Edwards Aquifer Protection Plan, the applicant must submit to the San Antonio Regional Office, proof of recordation of notice in the county deed records, with the volume and page number(s) of the county deed records of the county in which the property is located. A description of the property boundaries shall be included in the deed recordation in the county deed records. A suggested format (Deed Recordation Affidavit, TCEQ-0625A) that you may use to deed record the approved CZP is enclosed.

II. This modification is subject to all Special and Standard Conditions listed in the CZP approval letter dated October 30, 2015, May 4, 2017, September 18, 2017, and November 2, 2017.

III. The permanent pollution abatement measures shall be operational prior to first occupancy or use of any facility within the measure's respective drainage area.

IV. All sediment and/or media removed from the water quality basins during maintenance activities shall be properly disposed of according to 30 TAC 330 or 30 TAC 335, as applicable.

STANDARD CONDITIONS

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

Prior to Commencement of Construction:

4. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved Contributing Zone Plan and this notice of approval shall be maintained at the project location until all regulated activities are completed.
5. Any modification to the activities described in the referenced CZP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
6. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the San Antonio Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the name of the approved plan and file number for the regulated activity, the date on which the regulated activity will commence, and the name of the prime contractor with the name and telephone number of the contact person.
7. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved Storm Water Pollution Prevention Plan (SWPPP) must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

During Construction:

8. During the course of regulated activities related to this project, the applicant or his agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.

9. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been significantly reduced. Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).
10. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.
11. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
12. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.
13. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 5, above.

<u>After Completion of Construction:</u>

14. Owners of permanent BMPs and measures must insure that the 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 San Antonio Regional Office within 30 days of site completion.
15. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred. A copy of the transfer of responsibility must be filed with the executive director through the San Antonio Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.
16. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Contributing Zone Plan. If the new owner intends to commence any new regulated activity on the site, a new Contributing Zone Plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.
17. A Contributing Zone Plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Contributing Zone Plan must be submitted to the

San Antonio Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.

18. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Ms. Monica Reyes of the Edwards Aquifer Protection Program of the San Antonio Regional Office at 210-403-4012.

Sincerely,

Lynn Bumguardner, Water Section Manager
San Antonio Region
Texas Commission on Environmental Quality

LB/MR/eg

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

cc: Ms. Cara Tackett, P.E., Pape-Dawson Engineers, Inc.
Mr. Thomas Hornseth, P.E., Comal County
Mr. Roland Ruiz, Edwards Aquifer Authority
Mr. H.L. Saur, Comal Trinity GCD
The Honorable Bill Krawietz, City of Bulverde

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

April 16, 2019

Mr. Brian Barron
Lennar Homes of Texas Land and Construction, Ltd.
1922 Dry Creek Way, Suite 101
San Antonio, Texas 78259

Re: Edwards Aquifer, Comal County

NAME OF PROJECT: 4S Ranch Soccer Fields and US Highway 281 Improvements; Located approximately 9,093 linear feet north of FM1863 and Stahl Lane; Bulverde, Texas

TYPE OF PLAN: Request for Modification of an Approved Contributing Zone Plan (CZP); 30 Texas Administrative Code (TAC) Chapter 213 Subchapter B Edwards Aquifer

Regulated Entity No. RN105628622; Additional ID No. 13000841

Dear Mr. Barron:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the CZP Modification for the above-referenced project submitted to the San Antonio Regional Office by Pape-Dawson Engineers, Inc. on behalf of Lennar Homes of Texas Land and Construction, Ltd. on February 7, 2019. Final review of the CZP Modification was completed after additional material was received on April 9, 2019. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) were selected and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

BACKGROUND

The original CZP for 4S Ranch Phase 1 (13-15082002) was approved by letter dated October 30, 2015 and had project area of 87.75 acres within a larger 753.6-acre site. The project included clearing, grading, excavation, installation of utilities and drainage improvements, streets, sidewalks, and homes. The impervious cover was approved to be 34.41 acres (39.22 percent). Two single chamber sedimentation/filtration basins and six engineered vegetative filter strips (VFS's) were approved to treat stormwater generated by the project.

A CZP modification for 4S Ranch Amenity Center (13000321) was approved by letter dated May 4, 2017 and had a project area of 22.47 acres within the overall 753.6-acre site. The project included clearing, grading, excavation, installation of utilities and drainage improvements, parking, sidewalks, walking trails, and amenity center building, outdoor pool, and park with

recreational pond. The impervious cover was approved to be 3.61 acres (16.1 percent) within the 22.47 acres. One batch detention basin, one engineered VFS, and two natural VFS were approved to treat stormwater generated by the project.

A separate CZP for 4S Ranch WWTP (RN106753437, 13000473) was approved by letter dated September 18, 2017 and had a project area of 15.33 acres with 2.71 acres (17.7 percent) of impervious cover. The project utilized sand filter basin "B", originally approved by the 4S Ranch Phase 1 CZP, to treat 117 pounds of TSS generated from 0.13 acres of uncaptured impervious cover.

A second CZP modification for 4S Ranch Phase 2 (13000510) was approved by letter dated November 2, 2017 and had a project area of 164.94 acres within the overall 753.6-acre site. The project included clearing, grading, excavation, installation of utilities, drainage improvements, and the construction of 332 single-family residential units with associated streets, driveways, and sidewalks. The existing sand filter basin "B", a new sand filter basin "C", a new batch detention basin "C", and two new engineered VFS's were approved to treat stormwater generated by the project.

A third CZP modification for 4S Ranch Phase 3 (13000682) was approved by letter dated August 3, 2018 and had a project area of 92.98 acres within the overall 753.6-acre site. The project included the construction of 362 single-family residential lots, with clearing, grading, excavation, installation of utilities and drainage improvements, streets, turn lanes, sidewalks and addition of a turn lane within the right-of-way of Stahl Road. The impervious cover was approved to be 36.75 acres (39.5 percent) within the 92.98 acres. One new batch detention basin "D", the sand filter basin "B", and the existing batch detention basin "C" was approved to treat stormwater generated by the project.

PROJECT DESCRIPTION

The proposed project will have a total area of approximately 8.36 acres, with 5.76 acres within the overall 753.6-acre 4S development and 2.60 acres within the US Highway 281 right-of-way. It will include clearing, grading, excavation, installation of utilities and drainage improvements, turn lanes, sidewalks, and sport fields with associated parking within the 5.76 acres of the 4S development. The project proposes turn lane improvements within the 2.60 acres of the US Highway 281 right-of-way. The total amount of new impervious cover will be 1.07 acres (12.80 percent) within the total 8.36 acres. There will be 0.30 acres of impervious cover within the 5.76 acres (2.51 percent) and 0.77 acres of impervious cover within the 2.60 acres (29.62 percent). No wastewater will be generated by the current project.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, one new engineered VFS and the previously approved sand filter basin "B", designed using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005), will be utilized to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 958 pounds of TSS generated from the 1.07 acres of new impervious cover. The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project.

Sand filter basin "B" is a single chamber sedimentation/filtration basin designed to have a water quality volume of 112,931 cubic feet (81,296 cubic feet required) and a sand filter area of 9,199 square feet (8,130 square feet).

Treatment Summary Table					
Watershed	Drainage Area (acres)	Impervious Cover (acres)	BMP	Required TSS Removal (lbs/yr)	Provided TSS Removal (lbs/yr)
J9*	5.34	0.00	Uncaptured	0	0
J10*	0.42	0.30	Eng. VFS	271	271
J11*	1.17	0.46	Uncaptured***	411	0
J12*	1.43	0.31	Uncaptured***	276	0
M, N, O, P, R, R, T**	37.50	10.58	Sand Filter Basin "B"	9,498	10,302
C, D, F**	0.13	0.13	Uncaptured***	117	0
Total	45.99	11.78	-	10,573	10,573

*Watersheds affected by the current submittal.
**Watersheds approved by previous WPAP submittal and subsequent modifications.
***Overtreatment provided for by sand filter basin "B"

SPECIAL CONDITIONS

I. This modification is subject to all Special and Standard Conditions listed in the CZP approval letter dated October 30, 2015, and subsequent modifications dated May 4, 2017, November 2, 2017, and August 3, 2018.

II. All permanent pollution abatement measures shall be operational prior to occupancy of the facilities within their respective drainage areas.

III. All sediment and/or media removed from the water quality basin during maintenance activities shall be properly disposed of according to 30 TAC 330 or 30 TAC 335, as applicable.

STANDARD CONDITIONS

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

Prior to Commencement of Construction:

4. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved Contributing Zone Plan and this notice of approval shall be maintained at the project location until all regulated activities are completed.
5. Any modification to the activities described in the referenced CZP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
6. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to

the San Antonio Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the name of the approved plan and file number for the regulated activity, the date on which the regulated activity will commence, and the name of the prime contractor with the name and telephone number of the contact person.

7. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved Storm Water Pollution Prevention Plan (SWPPP) must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

During Construction:

8. During the course of regulated activities related to this project, the applicant or his agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.
9. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been significantly reduced. Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).
10. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.
11. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
12. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.
13. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 5, above.

After Completion of Construction:

14. Owners of permanent BMPs and measures must insure that the 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 San Antonio Regional Office within 30 days of site completion.
15. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred. A copy of the transfer of responsibility must be filed with the executive

director through the San Antonio Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.

16. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Contributing Zone Plan. If the new owner intends to commence any new regulated activity on the site, a new Contributing Zone Plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.
17. A Contributing Zone Plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Contributing Zone Plan must be submitted to the San Antonio Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.
18. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Mr. Joshua Vacek of the Edwards Aquifer Protection Program of the San Antonio Regional Office at 210-403-4028.

Sincerely,

Robert Sadlier, Section Manager
Edwards Aquifer Protection Program
Texas Commission on Environmental Quality

RCS/jv

Enclosures: Change in Responsibility for Maintenance of Permanent BMPs, Form TCEQ-10263

cc: Mr. Trey Dawson, P.E., Pape-Dawson Engineers, Inc.
Mr. Thomas Hornseth, P.E., Comal County Engineer
Mr. Roland Ruiz, Edwards Aquifer Authority
Mr. H. L. Saur, Comal Trinity Groundwater Conservation District
The Honorable Bill Krawietz, City of Bulverde

ATTACHMENT B

Attachment B –Modification Summary

This Contributing Zone Plan Modification (CZP MOD) for 4S Ranch Unit-6B & Mustang Vista PH. 3, proposes the construction of a single-family residential unit on 33.09 acres. The project site is located within the extraterritorial jurisdiction of the City of Bulverde in Comal County, Texas. The site was previously used as a ranch which is partially developed with previously-cleared portions for agricultural uses. The site is located entirely over the Edwards Aquifer Contributing Zone. The proposed 33.09-acre project area is part of a larger planned development on a 753.6-acre tract.

This CZP proposes clearing, grading, excavation, installation of utilities and drainage improvements, streets, sidewalks, and homes. There are a total of 78 single-family residential lots proposed for construction ranging from 2,900 – 4,100 square feet (SF) of impervious cover per lot for the house pad, driveway, sidewalk, and some with a concrete patio. Approximately 12.09 acres of impervious cover are proposed for this project or 36.5% of the 33.09-acre site. As part of this application there is a proposed widening of a 0.4-acre section of road previously-approved with 4S Ranch WWTP (EAPP # 13000473) which has been accounted in Batch Detention basin (Basin "C") as overtreatment since a portion of VFS #2 will be removed. This plan does not propose any modification to the previously-approved Water Quality Basins. A technical letter will be submitted to update the 4S Ranch WWTP (EAPP # 13000473) for the watershed and impervious cover update.

The permanent BMPs for this CZP are one (1) existing batch detention basin (Basin "C"), and three (3) proposed fifteen-foot (15') engineered vegetative filter strip (VFS) (#9 - #11) which have been designed in accordance with the TCEQ's Technical Guidance Manual (TGM) RG-348 (2005) to remove 80% of the increase in Total Suspended Solids (TSS) from the site. See TSS Treatment Summary Table for details.

Since this project is located entirely over the Edwards Aquifer Contributing Zone, a Geological Assessment was not conducted and is not required by 30 TAC 213 regulations. Therefore, no naturally-occurring sensitive features are known to exist on the site.

*Potable water will be supplied by the Canyon Lake Water Supply Company (CLWSC). The proposed development will generate approximately 18,720gallons per day (average flow) of domestic wastewater (1 edu/lot*240gpd/edu*78 lots = 18,720 gpd). Wastewater will be disposed of by conveyance to the 4S Ranch Wastewater Treatment facility (WQ0015095001) owned by Stahl Lane, Ltd.*

ATTACHMENT C

PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TEXAS 78213 | PHONE: 210.375.9000 FAX: 210.375.9010
TEXAS BOARD OF PROFESSIONAL ENGINEERS, FIRM REGISTRATION # 470

4S RANCH UNIT-6B AND MUSTANG VISTA PH. 3

BULVERDE, TEXAS

EXISTING CONDITIONS EXHIBIT

JOB NO. 8547-42
DATE APRIL 2019
DESIGNER JA
CHECKED JA
DRAWN RO
SHEET 1 of 1

ATTACHMENT C

Date: Apr 17, 2019, 8:02am User ID: ROlivarez
File: P:\85\47\42\DESIGN\ENVIRONMENTAL\EC8547742.dwg

CONTRIBUTING ZONE PLAN APPLICATION (TCEQ-10257)

Contributing Zone Plan Application

Texas Commission on Environmental Quality

for Regulated Activities on the Contributing Zone to the Edwards Aquifer and Relating to 30 TAC §213.24(1), 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 **Contributing Zone Plan Application** is hereby submitted for TCEQ review and Executive Director approval. The application was prepared by:

Print Name of Customer/Agent: Trey Dawson, P.E.

Date: 4/25/19

Signature of Customer/Agent:

Regulated Entity Name: 4S Ranch Unit-6B & Mustang Vista PH. 3

Project Information

1. County: Comal
2. Stream Basin: Cibolo Creek
3. Groundwater Conservation District (if applicable): Comal Trinity
4. Customer (Applicant):

   Contact Person: Richard Mott/Brian Barron
   Entity: Lennar Homes of Texas Land and Construction, Ltd.
   Mailing Address: 1922 Dry Creek Way, Suite 101
   City, State: San Antonio, Texas Zip: 78259
   Telephone: (210) 403-6200 Fax: _____
   Email Address: Richard.Mott@lennar.com

5. Agent/Representative (If any):

Contact Person: Trey Dawson, P.E.
Entity: Pape-Dawson Engineers, Inc.
Mailing Address: 2000 NW Loop 410
City, State: San Antonio, Texas Zip: 78213
Telephone: (210) 375-9000 Fax: (210) 375-9010
Email Address: TreyDawson@pape-dawson.com

6. Project Location:

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

7. ☒ The location of the project site is described below. Sufficient detail and clarity has been provided so that the TCEQ's Regional staff can easily locate the project and site boundaries for a field investigation.

From TCEQ's regional office, travel approximately 2.5 miles north on Judson Road to Loop 1604. Turn left onto Loop 1604 and travel approximately 5 miles to U.S. Hwy 281. Exit toward onto U.S. 281N and travel north approximately 9.3 miles to exit for FM 1863/Bulverde. Turn right on FM 1863 E and travel approximately 2.3 miles, then turn left on Stahl Lane. Travel 1.6 miles north on Stahl Lane to 4S Ranch subdivision. The project site is located approximately 1.5 miles east of Mustang Vista and Stahl Lane, Bulverde, TX .

8. ☒ **Attachment A - Road Map**. A road map showing directions to and the location of the project site is attached. The map clearly shows the boundary of the project site.

9. ☒ **Attachment B - USGS Quadrangle Map**. A copy of the official 7 ½ minute USGS Quadrangle Map (Scale: 1" = 2000') is attached. The map(s) clearly show:

☒ Project site boundaries.
☒ USGS Quadrangle Name(s).

10. ☒ **Attachment C - Project Narrative**. A detailed narrative description of the proposed project is attached. The project description is consistent throughout the application and contains, at a minimum, the following details:

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

☐ Area(s) to be demolished

11. Existing project site conditions are noted below:

☐ Existing commercial site
☐ Existing industrial site
☐ Existing residential site
☐ Existing paved and/or unpaved roads
☒ Undeveloped (Cleared)
☒ Undeveloped (Undisturbed/Not cleared)
☐ Other: _____

12. The type of project is:

☒ Residential: # of Lots: 78
☐ Residential: # of Living Unit Equivalents: _____
☐ Commercial
☐ Industrial
☐ Other: _____

13. Total project area (size of site): 33.09 Acres

Total disturbed area: 33.09 Acres

14. Estimated projected population: 234 (assumed 3 persons/lot)

15. The amount and type of impervious cover expected after construction is complete is shown below:

Table 1 - Impervious Cover

Impervious Cover of Proposed Project	*Sq. Ft.*	*Sq. Ft./Acre*	*Acres*
Structures/Rooftops	297,517	÷ 43,560 =	6.83
Parking	212,573	÷ 43,560 =	4.88
Other paved surfaces	16,520	÷ 43,560 =	0.38
Total Impervious Cover	526,610	÷ 43,560 =	12.09

Total Impervious Cover 12.09 ÷ **Total Acreage** 33.09 **X 100 =** 36.5**% Impervious Cover**

16. ☒ **Attachment D - Factors Affecting Surface Water Quality**. A detailed description of all factors that could affect surface water quality is attached. If applicable, this includes the location and description of any discharge associated with industrial activity other than construction.

17. ☒ Only inert materials as defined by 30 TAC 330.2 will be used as fill material.

For Road Projects Only

Complete questions 18 - 23 if this application is exclusively for a road project.

☒ N/A

18. Type of project:

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

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

☐ Concrete
☐ Asphaltic concrete pavement
☐ Other: _____

20. Right of Way (R.O.W.):

Length of R.O.W.: _____ feet.
Width of R.O.W.: _____ feet.
L x W = _____Ft^2 ÷ 43,560 Ft^2/Acre = _____ acres.

21. Pavement Area:

Length of pavement area: _____ feet.
Width of pavement area: _____ feet.
L x W = _____Ft^2 ÷ 43,560 Ft^2/Acre = _____ acres.
Pavement area _____ acres ÷ R.O.W. area _____ acres x 100 = _____% impervious cover.

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

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

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

Stormwater to be generated by the Proposed Project

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

Wastewater to be generated by the Proposed Project

25. ☐ Wastewater is to be discharged in the contributing zone. Requirements under 30 TAC §213.6(c) relating to Wastewater Treatment and Disposal Systems have been satisfied.

☒ N/A

26. Wastewater will be disposed of by:

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

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

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

☒ Sewage Collection System (Sewer Lines):

The sewage collection system will convey the wastewater to the 4S Ranch (name) Treatment Plant. The treatment facility is:

☒ Existing.
☐ Proposed.

☐ N/A

Permanent Aboveground Storage Tanks(ASTs) ≥ 500 Gallons

Complete questions 27 - 33 if this project includes the installation of AST(s) with volume(s) greater than or equal to 500 gallons.

☒N/A

27. Tanks and substance stored:

Table 2 - Tanks and Substance Storage

AST Number	*Size (Gallons)*	*Substance to be Stored*	*Tank Material*
1			
2			
3			

AST Number	*Size (Gallons)*	*Substance to be Stored*	*Tank Material*
4			
5			

Total x 1.5 = _____ Gallons

28. ☐ The AST will be placed within a containment structure that is sized to capture one and one-half (1 1/2) times the storage capacity of the system. For facilities with more than one tank system, the containment structure is sized to capture one and one-half (1 1/2) times the cumulative storage capacity of all systems.

☐ **Attachment G - Alternative Secondary Containment Methods**. Alternative methods for providing secondary containment are proposed. Specifications showing equivalent protection for the Edwards Aquifer are attached.

29. Inside dimensions and capacity of containment structure(s):

Table 3 - Secondary Containment

Length (L)(Ft.)	*Width(W)(Ft.)*	*Height (H)(Ft.)*	*L x W x H = (Ft3)*	*Gallons*

Total: _____ Gallons

30. Piping:

☐ All piping, hoses, and dispensers will be located inside the containment structure.
☐ Some of the piping to dispensers or equipment will extend outside the containment structure.
☐ The piping will be aboveground
☐ The piping will be underground

31. ☐ The containment area must be constructed of and in a material impervious to the substance(s) being stored. The proposed containment structure will be constructed of: _____.

32. ☐ **Attachment H - AST Containment Structure Drawings.** A scaled drawing of the containment structure is attached that shows the following:

☐ Interior dimensions (length, width, depth and wall and floor thickness).
☐ Internal drainage to a point convenient for the collection of any spillage.
☐ Tanks clearly labeled
☐ Piping clearly labeled

☐ Dispenser clearly labeled

33. ☐ Any spills must be directed to a point convenient for collection and recovery. Spills from storage tank facilities must be removed from the controlled drainage area for disposal within 24 hours of the spill.

    ☐ In the event of a spill, any spillage will be removed from the containment structure within 24 hours of the spill and disposed of properly.

    ☐ In the event of a spill, any spillage will be drained from the containment structure through a drain and valve within 24 hours of the spill and disposed of properly. The drain and valve system are shown in detail on the scaled drawing.

Site Plan Requirements

Items 34 - 46 must be included on the Site Plan.

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

    Site Plan Scale: 1" = 200'.

35. 100-year floodplain boundaries:

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

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

    The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): FEMA (Flood Insurance Rate Map for Comal County, Texas, and Incorporated areas) Panel Number 48091C0220F, dated September 2, 2009.

36. ☒ 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, etc. are shown on the site plan.

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

37. ☒ A drainage plan showing all paths of drainage from the site to surface streams.

38. ☒ The drainage patterns and approximate slopes anticipated after major grading activities.

39. ☒ Areas of soil disturbance and areas which will not be disturbed.

40. ☒ Locations of major structural and nonstructural controls. These are the temporary and permanent best management practices.

41. ☒ Locations where soil stabilization practices are expected to occur.

42. ☐ Surface waters (including wetlands).

☒ N/A

43. ☐ Locations where stormwater discharges to surface water.

☒ There will be no discharges to surface water.

44. ☒ Temporary aboveground storage tank facilities.

☐ Temporary aboveground storage tank facilities will not be located on this site.

45. ☐ Permanent aboveground storage tank facilities.

☒ Permanent aboveground storage tank facilities will not be located on this site.

46. ☒ Legal boundaries of the site are shown.

Permanent Best Management Practices (BMPs)

Practices and measures that will be used during and after construction is completed.

47. ☒ Permanent BMPs and measures must be implemented to control the discharge of pollution from regulated activities after the completion of construction.

☐ N/A

48. ☒ 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

49. ☒ 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

50. 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.

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

- ☐ **Attachment I - 20% or Less Impervious Cover Waiver.** The site will be used for multi-family residential developments, schools, or small business sites and has 20% or less impervious cover. A request to waive the requirements for other permanent BMPs and measures is attached.
- ☐ The site will be used for multi-family residential developments, schools, or small business sites but has more than 20% impervious cover.
- ☒ The site will not be used for multi-family residential developments, schools, or small business sites.

52. ☒ **Attachment J - 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.

53. ☒ **Attachment K - BMPs for On-site Stormwater.**

- ☒ A description of the BMPs and measures that will be used to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff from the site is attached.
- ☐ Permanent BMPs or measures are not required to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff, and an explanation is attached.

54. ☒ **Attachment L - BMPs for Surface Streams.** A description of the BMPs and measures that prevent pollutants from entering surface streams is attached.

☐ N/A

55. ☒ **Attachment M - Construction Plans.** Construction plans and design calculations for the proposed permanent BMPs and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer, and are signed, sealed, and dated. Construction plans for the proposed permanent BMPs and measures are attached and include: Design calculations, TCEQ Construction Notes, all proposed structural plans and specifications, and appropriate details.

☐ N/A

56. ☒ **Attachment N - Inspection, Maintenance, Repair and Retrofit Plan.** A site and BMP specific plan for the inspection, maintenance, repair, and, if necessary, retrofit of the permanent BMPs and measures is attached. The plan fulfills all of the following:

☒ Prepared and certified by the engineer designing the permanent BMPs and measures
☒ Signed by the owner or responsible party
☒ Outlines specific procedures for documenting inspections, maintenance, repairs, and, if necessary, retrofit.
☒ Contains a discussion of record keeping procedures

☐ N/A

57. ☐ **Attachment O - Pilot-Scale Field Testing Plan.** Pilot studies for BMPs that are not recognized by the Executive Director require prior approval from the TCEQ. A plan for pilot-scale field testing is attached.

☒ N/A

58. ☒ **Attachment P - 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 result in water quality degradation.

☐ N/A

Responsibility for Maintenance of Permanent BMPs and Measures after Construction is Complete.

59. ☒ 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.

60. ☒ 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.

Administrative Information

61. ☒ 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.

62. ☒ Any modification of this Contributing Zone Plan may require TCEQ review and Executive Director approval prior to construction, and may require submission of a revised application, with appropriate fees.

63. ☒ The site description, controls, maintenance, and inspection requirements for the storm water pollution prevention plan (SWPPP) developed under the EPA NPDES general permits for stormwater discharges have been submitted to fulfill paragraphs 30 TAC §213.24(1-5) of the technical report. All requirements of 30 TAC §213.24(1-5) have been met by the SWPPP document.

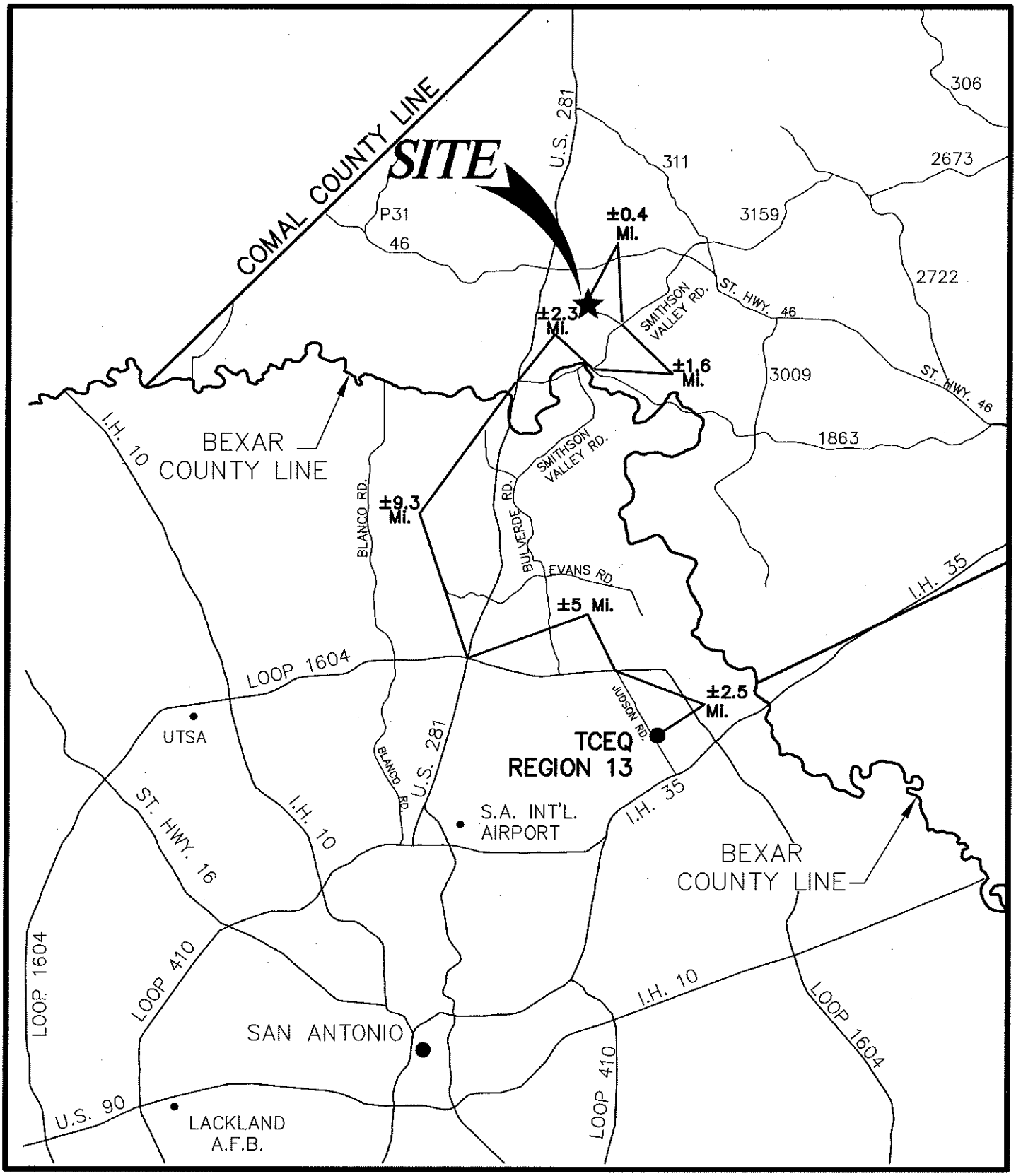
☒ The Temporary Stormwater Section (TCEQ-0602) is included with the application.

ATTACHMENT A

4S RANCH UNIT-6B AND MUSTANG VISTA PH. 3
Contributing Zone Plan

N

NOT TO SCALE



Pape-Dawson Engineers, Inc.

Date: Apr 17, 2019, 8:12am User ID: ROlivarez
File: P:\85\47\42\DESIGN\ENVIRONMENTAL\RMB54742.dwg

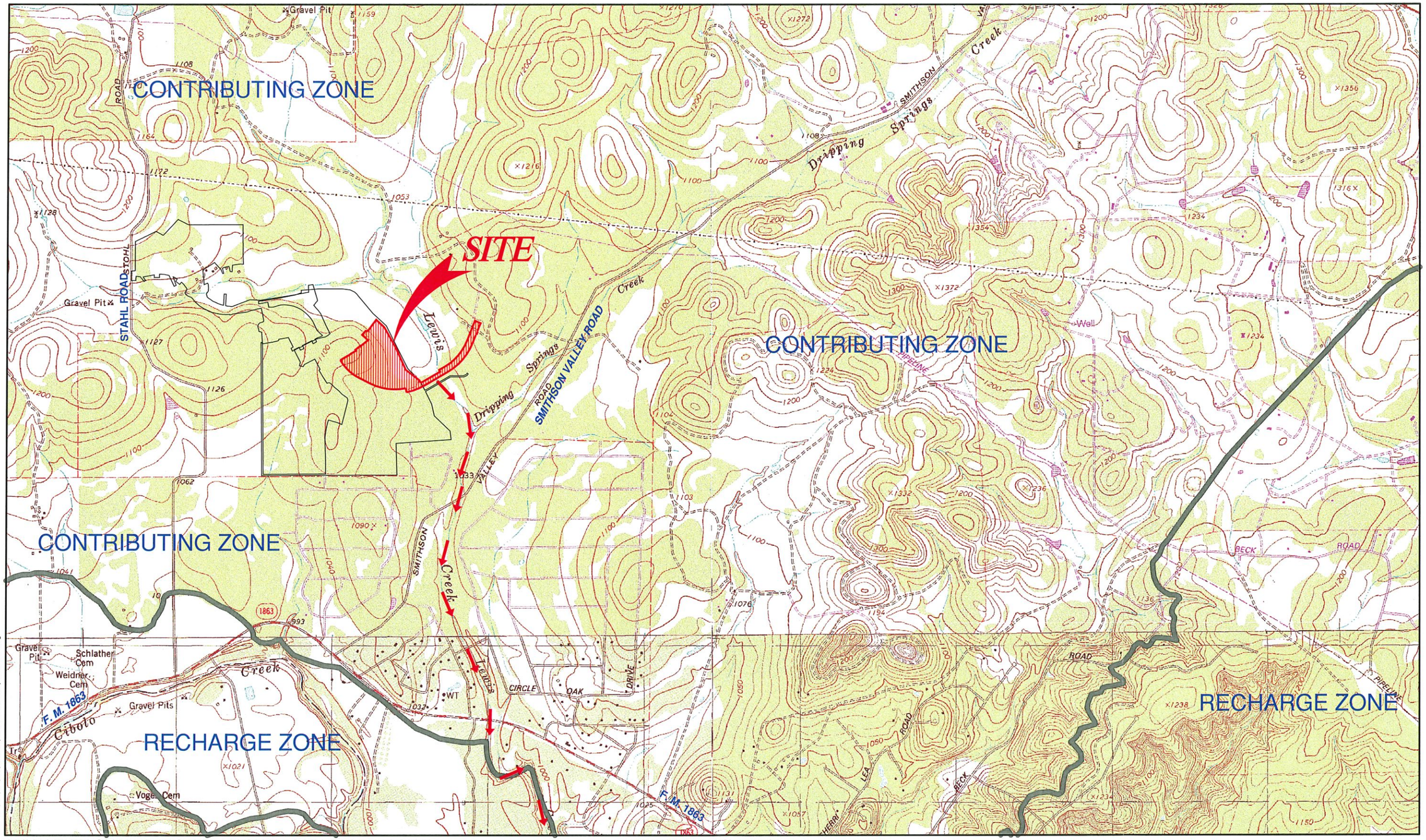
ATTACHMENT A
Road Map

ATTACHMENT B

4S RANCH UNIT-6B AND MUSTANG VISTA PH. 3
Contributing Zone Plan

N

SCALE: 1" = 2000'



Date: Apr 17, 2019, 8:45am User ID: ROlivarez
File: P:\851\47\42\DESIGN\ENVIRONMENTAL\QDB54742.dwg

ANHALT, TX QUAD; BATCAVE, TX QUAD; BULVERDE TX QUAD;
LONGHORN, TX QUAD; SCHERTZ, TX QUAD; SMITHSON VALLEY, TX QUAD

DRAINAGE FLOW → →

Pape–Dawson Engineers, Inc.

MATCHLINE See Sheet 2 of 4

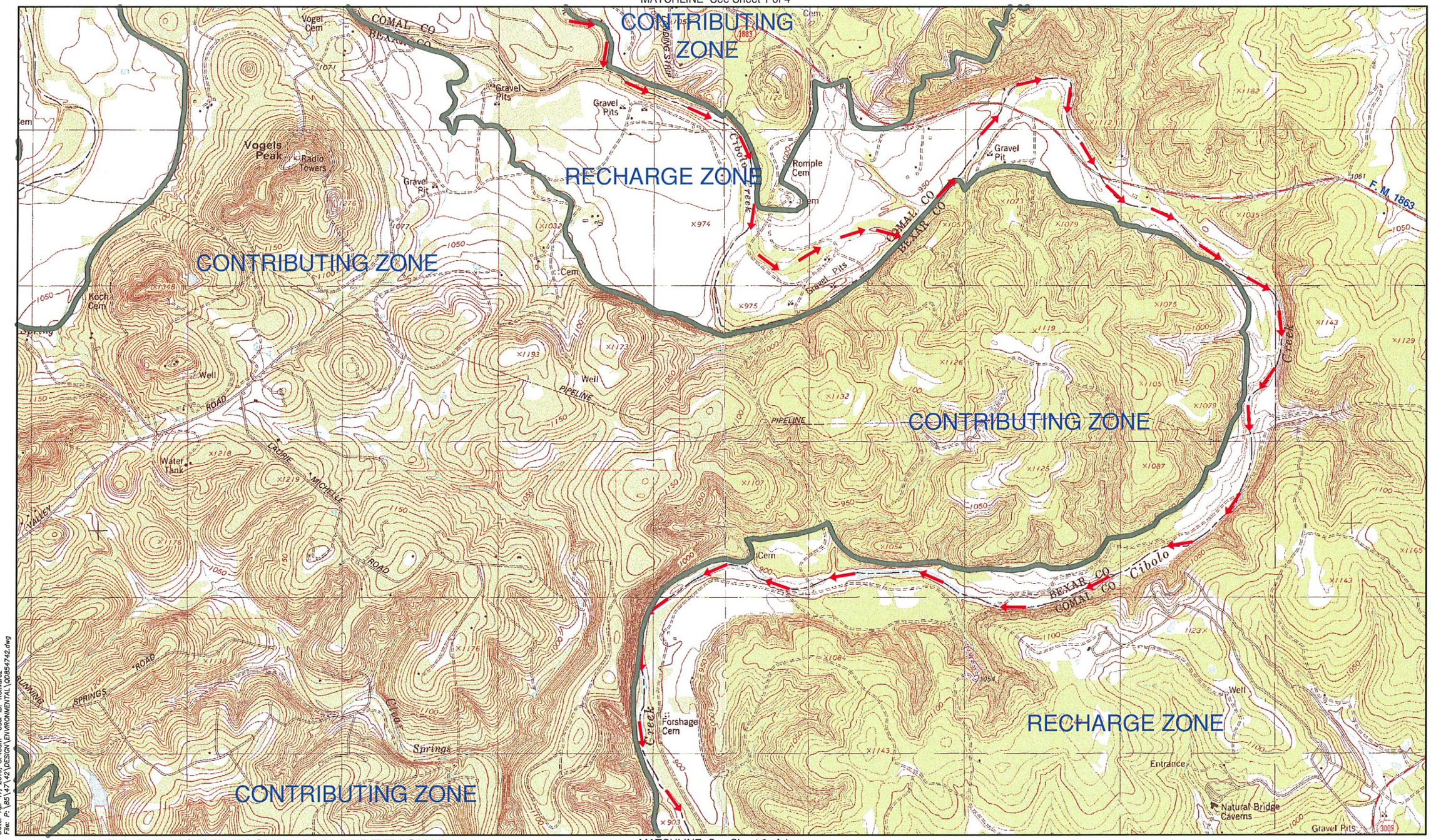
USGS/EDWARDS RECHARGE ZONE MAP
Sheet 1 Of 4
ATTACHMENT B

4S RANCH UNIT-6B AND MUSTANG VISTA PH. 3
Contributing Zone Plan

N

SCALE: 1" = 2000'

MATCHLINE See Sheet 1 of 4



Date: Apr 17, 2019, 8:45am User ID: ROlivarez
File: P:\851\47\42\DESIGN\ENVIRONMENTAL\QB854742.dwg

ANHALT, TX QUAD; BATCAVE, TX QUAD; BULVERDE TX QUAD;
LONGHORN, TX QUAD; SCHERTZ, TX QUAD; SMITHSON VALLEY, TX QUAD

DRAINAGE FLOW → →

Pape–Dawson Engineers, Inc.

MATCHLINE See Sheet 3 of 4

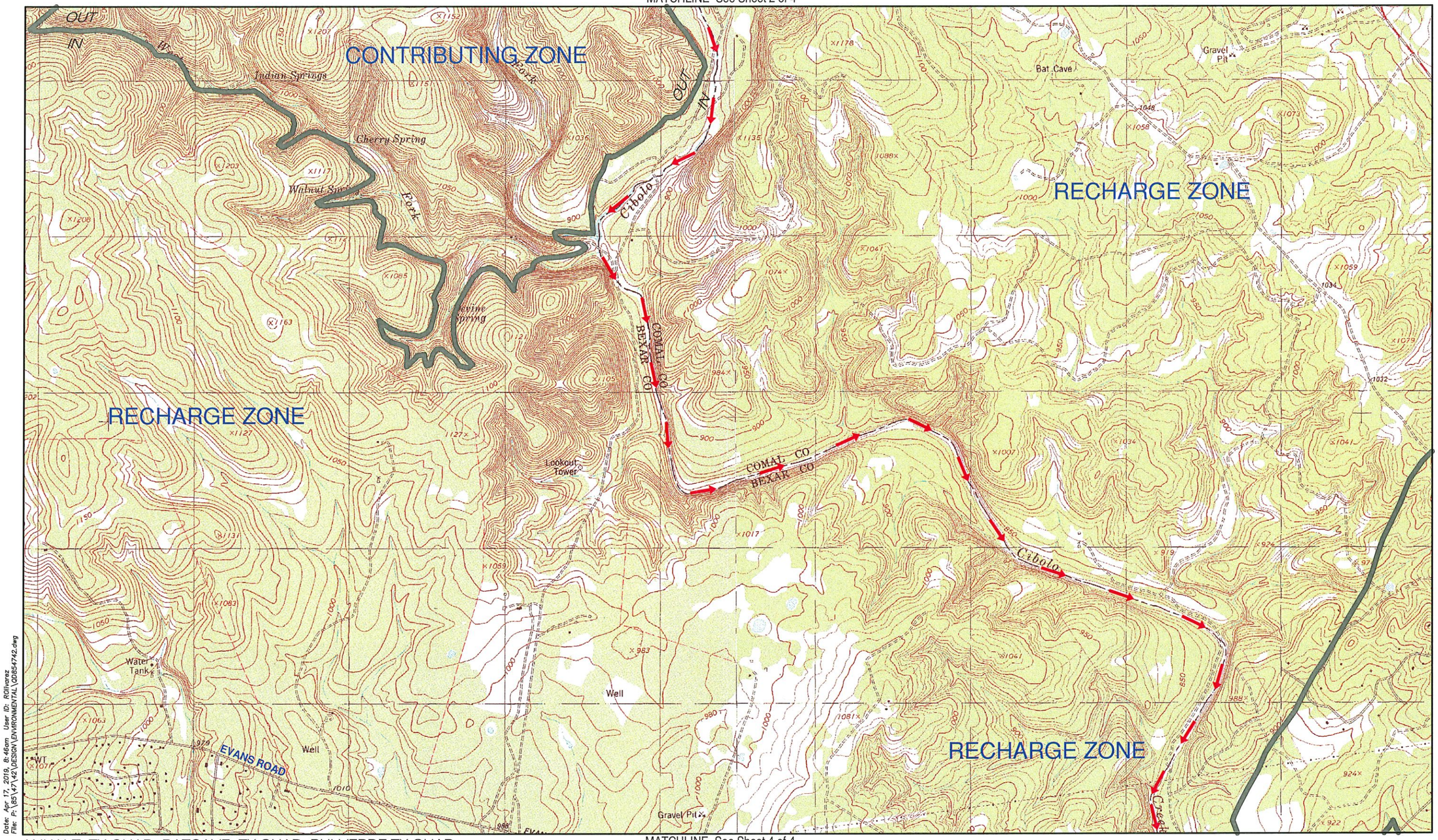
USGS/EDWARDS RECHARGE ZONE MAP
Sheet 2 Of 4
ATTACHMENT B

4S RANCH UNIT-6B AND MUSTANG VISTA PH. 3
Contributing Zone Plan

N

SCALE: 1" = 2000'

MATCHLINE See Sheet 2 of 4



MATCHLINE See Sheet 4 of 4

Date: Apr 17, 2019, 8:46am User ID: ROlivarez
File: P:\85\47\42\DESIGN\ENVIRONMENTAL\QD854742.dwg

ANHALT, TX QUAD; BATCAVE, TX QUAD; BULVERDE TX QUAD;
LONGHORN, TX QUAD; SCHERTZ, TX QUAD; SMITHSON VALLEY, TX QUAD

DRAINAGE FLOW → →

Pape–Dawson Engineers, Inc.

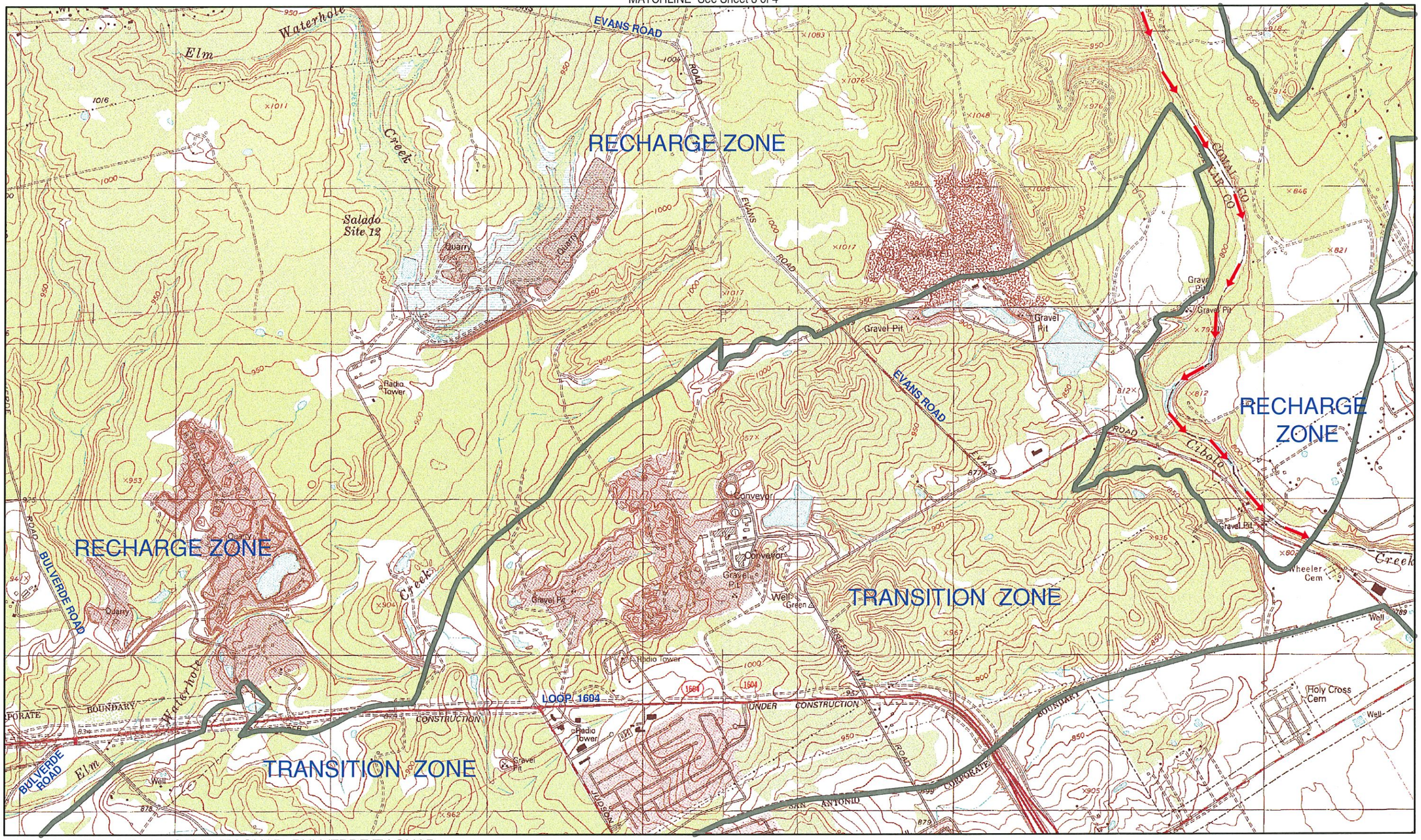
USGS/EDWARDS RECHARGE ZONE MAP
Sheet 3 Of 4
ATTACHMENT B

4S RANCH UNIT-6B AND MUSTANG VISTA PH. 3
Contributing Zone Plan

N

SCALE: 1" = 2000'

MATCHLINE See Sheet 3 of 4



ANHALT, TX QUAD; BATCAVE, TX QUAD; BULVERDE TX QUAD;
LONGHORN, TX QUAD; SCHERTZ, TX QUAD; SMITHSON VALLEY, TX QUAD

DRAINAGE FLOW → →

Pape–Dawson Engineers, Inc.

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

Date: Apr 17, 2019, 8:46am User ID: ROlivarez
File: P:\851\47\42\DESIGN\ENVIRONMENTAL\QD854742.dwg

ATTACHMENT C

Attachment C – Project Narrative

This Contributing Zone Plan Modification (CZP MOD) for 4S Ranch Unit-6B & Mustang Vista PH. 3, proposes the construction of a single-family residential unit on 33.09 acres. The project site is located within the extraterritorial jurisdiction of the City of Bulverde in Comal County, Texas. The site was previously used as a ranch which is partially developed with previously-cleared portions for agricultural uses. The site is located entirely over the Edwards Aquifer Contributing Zone. The proposed 33.09-acre project area is part of a larger planned development on a 753.6-acre tract.

This CZP proposes clearing, grading, excavation, installation of utilities and drainage improvements, streets, sidewalks, and homes. There are a total of 78 single-family residential lots proposed for construction ranging from 2,900 – 4,100 square feet (SF) of impervious cover per lot for the house pad, driveway, sidewalk, and some with a concrete patio. Approximately 12.09 acres of impervious cover are proposed for this project or 36.5% of the 33.09-acre site. As part of this application there is a proposed widening of a 0.4-acre section of road previously-approved with 4S Ranch WWTP (EAPP # 13000473) which has been accounted in Batch Detention basin (Basin "C") as overtreatment since a portion of VFS #2 will be removed. This plan does not propose any modification to the previously-approved Water Quality Basins. For specific history of modifications of the 4S Subdivision please refer to the Modification section.

The permanent BMPs for this CZP are one (1) existing batch detention basin (Basin "C"), and three (3) proposed fifteen-foot (15') engineered vegetative filter strip (VFS) (#9 - #11) which have been designed in accordance with the TCEQ's Technical Guidance Manual (TGM) RG-348 (2005) to remove 80% of the increase in Total Suspended Solids (TSS) from the site. See TSS Treatment Summary Table for details.

Since this project is located entirely over the Edwards Aquifer Contributing Zone, a Geological Assessment was not conducted and is not required by 30 TAC 213 regulations. Therefore, no naturally-occurring sensitive features are known to exist on the site.

*Potable water will be supplied by the Canyon Lake Water Supply Company (CLWSC). The proposed development will generate approximately 18,720gallons per day (average flow) of domestic wastewater (1 edu/lot*240gpd/edu*78 lots = 18,720 gpd). Wastewater will be disposed of by conveyance to the 4S Ranch Wastewater Treatment facility (WQ0015095001) owned by Stahl Lane, Ltd.*

ATTACHMENT D

Attachment D– Factors Affecting Surface 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 E

Attachment E– Volume and Character of Stormwater

Stormwater runoff will increase as a result of this development. For a 25-year storm event, the overall project will generate approximately 165 cfs. The runoff coefficient for the site changes from approximately 0.47 before development to 0.77 after development. Values are based on the Rational Method using runoff coefficients per the City of Bulverde building Code.

ATTACHMENT J

Attachment J – BMPs for Upgradient Stormwater

Upgradient stormwater from undeveloped as well as existing developed areas within the overall 4S Ranch subdivision will cross the project limits.

The permanent BMPs for this CZP are one (1) existing batch detention basin (Basin "C"), and three (3) proposed fifteen-foot (15') engineered vegetative filter strip (VFS) (#9 - #11) which have been designed in accordance with the TCEQ's Technical Guidance Manual (TGM) RG-348 (2005) to remove 80% of the increase in Total Suspended Solids (TSS) from the site.

ATTACHMENT K

Attachment K – BMPs for Onsite Stormwater

The permanent BMPs for this CZP are one (1) existing batch detention basin (Basin "C"), and three (3) proposed fifteen-foot (15') engineered vegetative filter strip (VFS) (#9 - #11) which have been designed in accordance with the TCEQ's Technical Guidance Manual (TGM) RG-348 (2005) to remove 80% of the increase in Total Suspended Solids (TSS) from the site.

ATTACHMENT L

Attachment L – BMPs for Surface Streams

The permanent BMPs for this CZP are one (1) existing batch detention basin (Basin "C"), and three (3) proposed fifteen-foot (15') engineered vegetative filter strip (VFS) (#9 - #11) which have been designed in accordance with the TCEQ's Technical Guidance Manual (TGM) RG-348 (2005) to remove 80% of the increase in Total Suspended Solids (TSS) from the site.

ATTACHMENT M

Attachment M – Construction Plans

Please refer to the Exhibits Section of this application for the Contributing Zone Plan Site Plans. No new structural PBMPs are proposed in this CZP.

ATTACHMENT N

PERMANENT POLLUTION ABATEMENT MEASURES
MAINTENANCE SCHEDULE AND MAINTENANCE PROCEDURES

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

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

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

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

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

Richard Mott, ~~Director of Land Development~~ AUTHORIZED AGENT
Lennar Homes of Texas Land and Construction, Ltd.

4/11/19
Date

INSPECTION AND MAINTENANCE SCHEDULE FOR PERMANENT POLLUTION ABATEMENT MEASURES

Recommended Frequency	Task to be Performed													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
After Rainfall	√							√	√	√				
Biannually*	√	√	√	√	√	√	√	√	√	√				

**At least one biannual inspection must occur during or immediately after a rainfall event.*
√Indicates maintenance procedure that applies to this specific site

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

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

Task No. & Description	*Included in this project*	
1. Check Depth of Vegetation	~~Yes~~	No
2. Check Depth of Silt Deposit in Basin	~~Yes~~	No
3. Removal of Debris and Trash	~~Yes~~	No
4. Cut-off Valve	~~Yes~~	No
5. Inlet Splash Pad	~~Yes~~	No
6. Underdrain System	~~Yes~~	No
7. Structural Integrity	~~Yes~~	No
8. Discharge Pipe	~~Yes~~	No
9. Drawdown Time	~~Yes~~	No
10. Vegetated Filter Strips	Yes	~~No~~
11. For Pump Stations	~~Yes~~	No
12. For Pump Stations	~~Yes~~	No
13. For Pump Stations	~~Yes~~	No
14. Visually Inspect Security Fencing for Damage or Breach	~~Yes~~	No
15. Recordkeeping Procedures for Inspections, Maintenance, Repairs, and Retrofits	~~Yes~~	No

MAINTENANCE PROCEDURES FOR PERMANENT POLLUTION ABATEMENT MEASURES

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

1. Check Depth of Vegetation. Vegetation in the basin shall not exceed 18-inches in depth. When vegetation needs to be cut, it shall be cut to an approximately 4-inch height. *A written record will be kept of inspection results and maintenance performed.*

2. Check Depth of Silt Deposit in Basin. Top of cleanouts shall be set 4-inches above sand layer. When silt has accumulated to top of cleanouts, the silt shall be removed. The top two (2) inches of the sand media shall also be removed and replaced with clean silica-based washed sand meeting ASTM C33 specifications [0.0165 inch (#40 sieve) to 0.0469 inch (#16 sieve)]. Silt/sediment shall be cleared from the inlet structure at least every year and from the basin at least every five (5) years. Any sand discolored as a result of apparent impact by petroleum hydrocarbon or hazardous materials should also be removed and replace. *A written record will be kept of inspection results and maintenance performed.*

3. Removal of Debris and Trash. The basin and inlet structure shall be checked for the accumulation of debris and trash such as brush, limbs, leaves, paper cups, aluminum cans, plastic bottles etc. Accumulated trash and debris shall be raked or collected from the basin and inlet structure and disposed of properly. *A written record will be kept of inspection results and maintenance performed.*

4. Cut-off Valve. The cut-off valve shall be turned to confirm full opening and full closure. Prior to operating the valve, the valve setting shall be checked to determine the position to which the valve is to be returned (which should limit drawdown time of the basin between 24-hours and 48-hours). Count should be kept of number of turns to open and close the valve so that the valve can be reset to the starting position. Defects in the operation of the cut-off valve shall be corrected within 7 working days. *A written record will be kept of inspection results and maintenance performed.*

5. Inlet Splash Pad. The filter area around the inlet splash pad shall be checked for erosion and for the condition of the rock rubble. Erosion or disturbance of the rock rubble should be corrected by removing the rock rubble, restoring missing sand media to appropriate depth and replacement of the rock rubble. If the condition persists in subsequent inspections, the size of the rock rubble should be increased. Rubble should be placed to a density that minimizes the amount of exposed sand between the rock rubble. Deficiencies should be corrected within seven working days. *A written record will be kept of inspection results and maintenance performed.*

6. Underdrain System. The underdrain system shall be visually inspected for the accumulation of silt in the pipe system. The pipe clean-outs shall have the caps removed and visually inspected for accumulation of silt deposits. If silt deposits appear to have accumulated so as to significantly reduce the drain capacity of the pipes then maintenance shall be performed. When silt deposits have accumulated to the stage described above, the clean-outs and drainpipes can be flushed with a high-pressure water flushing process. Clean-out caps must be replaced onto the clean-outs after maintenance so as to avoid the possibility of short circuiting the filtering process. Sediment accumulation at outlet pipe or in wet well due to flushing shall be removed and disposed of properly. *A written record will be kept of inspection results and maintenance performed.*

7. Structural Integrity. In addition to Items 1 through 6, the following are measures which should be reviewed during a check of structural integrity:
   - Observe the height of the confining berm for visible signs of erosion or potential breach. Signs of erosion should be identified and repaired immediately. Corrective measures include but are not limited to addition of topsoil or appropriate soil material so as to restore the original berm height of the sand filter basin. Restored areas shall be protected through placement of solid block sod.
   - Sand filter media will be inspected for signs of erosion. If erosion is identified, the area will be repaired by adding additional sand.

- Bypass of filter process. This condition can manifest itself in several ways. One way is by visually inspecting the clean-outs for accumulation of silt as described in Item 6. Significant accumulations of silt could be a sign of a torn filter fabric. Observations should be made over several inspection cycles to determine whether the condition persists. A second non-intrusive way of making observations for structural condition would be to visually look for collapsed or depressed areas along the edge of the filter media interface with basin side slope. If condition exists, corrective action should be performed within 15 working days. Removal of sand and replacement of filter fabric and/or pipe and gravel may be necessary. *A written record should be kept of inspection results and corrective measures taken.*

8. Discharge Pipe. The basin discharge pipe shall be checked for accumulation of silt, debris or other obstructions which could block flow. Soil accumulations, vegetative overgrowth and other blockages should be cleared from the pipe discharge point. Erosion at the point of discharge shall be monitored. If erosion occurs, the addition of rock rubble to disperse the flow should be accomplished. *A written record should be kept of inspection results and corrective measures taken.*

9. Drawdown Time. This characteristic can be a sign of the need for maintenance. The minimum drawdown time is 24 hours. If drawdown time is less than 24 hours, the gate valve shall be checked and partially closed to limit the drawdown time. Extensive drawdown time greater than 48 hours may indicated blockage of the sand media, the underdrain system and/or the discharge pipe. Corrective actions should be performed and completed within 15 working days. *A written record of the inspection findings and corrective actions performed should be made.*

10. Vegetated Filter Strips. Vegetation height for native grasses shall be limited to no more than 18-inches. When vegetation exceeds that height, the filter strip shall be cut to a height of approximately 4 inches. Turf grass shall be limited to a height of 4-inches with regular maintenance that utilizes a mulching mower. Trash and debris shall be removed from filter strip prior to cutting. Check filter strip for signs of concentrated flow and erosion. Areas of filter strip showing signs of erosion shall be repaired by scarifying the eroded area, reshaping, regrading and placement of solid block sod over the affected area. *A written record of the inspection findings and corrective actions performed should be made.*

11. For Pump Stations. Check wet well discharge pipe to confirm flow through the pump system. If flow is not present, allow sufficient time for pump to cycle on and off. If flow does not occur, the wet well should be checked for the level of water. The wet well should be opened and the on/off float switches should be moved up and down to activate the pump. If the pump does not start, a repair technician shall be called in to repair the malfunction within 5 working days. *A written record of the inspection findings and corrective actions performed should be made.*

12. For Pump Stations. Check the wet well for accumulation for trash, debris and silt. Trash and debris shall be removed and disposed of properly. Silt depth can be checked by probing the bottom of the wet well with a stick or PVC pipe. Silt accumulations should be removed when silt collects to a depth of three (3) inches over the entire wet well bottom. Silt can be removed by vacuum pump method. If silt buildup continues, underdrain system shall be inspected. *A written record will be kept of inspection results and maintenance performed.*

13. For Pump Stations. Visually check aboveground pump wiring and connections for damage. Damaged or loose connections should be repaired within 5 working days. *A written record will be kept of inspection results and maintenance performed.*

14. Visually Inspect Security Fencing for Damage or Breach. Check maintenance access gates for proper operation. Damage to fencing or gates shall be repaired within 5 working days. *A written record will be kept of inspection results and maintenance performed.*

15. Recordkeeping Procedures for Inspections, Maintenance, Repairs, and Retrofits.

- Written records shall be kept by the party responsible for maintenance or a designated representative.
- Written records shall be retained for a minimum of five years.

ATTACHMENT P

Attachment P - Measures for Minimizing Surface Stream Contamination

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

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: Trey Dawson, P.E.

Date: 4/25/19

Signature of Customer/Agent:

Regulated Entity Name: 4S Ranch Unit-6B & Mustang Vista PH. 3

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: located within the construction staging area in compliance with 30TAC§213.

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

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

☐ Aboveground storage tanks with a cumulative storage capacity between 250 gallons and 499 gallons will be stored on the site for less than one (1) year.

☐ Aboveground storage tanks with a cumulative storage capacity of 500 gallons or more will be stored on the site. An Aboveground Storage Tank Facility Plan application must be submitted to the appropriate regional office of the TCEQ prior to moving the tanks onto the project.

☐ Fuels and hazardous substances will not be stored on the site.

2. ☒ **Attachment A - Spill Response Actions**. A site specific description of the measures to be taken to contain any spill of hydrocarbons or hazardous substances is attached.

3. ☒ Temporary aboveground storage tank systems of 250 gallons or more cumulative storage capacity must be located a minimum horizontal distance of 150 feet from any domestic, industrial, irrigation, or public water supply well, or other sensitive feature.

4. ☒ **Attachment B - Potential Sources of Contamination**. A description of any activities or processes which may be a potential source of contamination affecting surface water quality is attached.

Sequence of Construction

5. ☒ **Attachment C - Sequence of Major Activities**. A description of the sequence of major activities which will disturb soils for major portions of the site (grubbing, excavation, grading, utilities, and infrastructure installation) is attached.

   ☒ For each activity described, an estimate (in acres) of the total area of the site to be disturbed by each activity is given.

   ☒ For each activity described, include a description of appropriate temporary control measures and the general timing (or sequence) during the construction process that the measures will be implemented.

6. ☒ Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: Cibolo Creek

Temporary Best Management Practices (TBMPs)

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

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

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

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

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

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

8. ☒ The temporary sealing of a naturally-occurring sensitive feature which accepts recharge to the Edwards Aquifer as a temporary pollution abatement measure during active construction should be avoided.

   ☐ **Attachment E - Request to Temporarily Seal a Feature**. A request to temporarily seal a feature is attached. The request includes justification as to why no reasonable and practicable alternative exists for each feature.

   ☒ There will be no temporary sealing of naturally-occurring sensitive features on the site.

9. ☒ **Attachment F - Structural Practices**. A description of the structural practices that will be used to divert flows away from exposed soils, to store flows, or to otherwise limit runoff discharge of pollutants from exposed areas of the site is attached. Placement of structural practices in floodplains has been avoided.

10. ☒ **Attachment G - Drainage Area Map**. A drainage area map supporting the following requirements is attached:

    ☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin will be provided.

    ☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a smaller sediment basin and/or sediment trap(s) will be used.

    ☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin or other equivalent controls are not attainable, but other TBMPs and measures will be used in combination to protect down slope and side slope boundaries of the construction area.

    ☐ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. A smaller sediment basin and/or sediment trap(s) will be used in combination with other erosion and sediment controls within each disturbed drainage area.

☒ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. Erosion and sediment controls other than sediment basins or sediment traps within each disturbed drainage area will be used.

11. ☐ **Attachment H - Temporary Sediment Pond(s) Plans and Calculations**. Temporary sediment pond or basin construction plans and design calculations for a proposed temporary BMP or measure have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information must be signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed temporary BMPs and measures are attached.

☒ N/A

12. ☒ **Attachment I - Inspection and Maintenance for BMPs.** A plan for the inspection of each temporary BMP(s) and measure(s) and for their timely maintenance, repairs, and, if necessary, retrofit is attached. A description of the documentation procedures, recordkeeping practices, and inspection frequency are included in the plan and are specific to the site and/or BMP.

13. ☒ All control measures must be properly selected, installed, and maintained in accordance with the manufacturer's specifications and good engineering practices. If periodic inspections by the applicant or the executive director, or other information indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations.

14. ☒ If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain).

15. ☐ Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50%. A permanent stake will be provided that can indicate when the sediment occupies 50% of the basin volume.

16. ☒ Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).

Soil Stabilization Practices

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

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

18. ☒ Records must be kept at the site of the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.

19. ☒ Stabilization practices must be initiated as soon as practicable where construction activities have temporarily or permanently ceased.

Administrative Information

20. ☒ All structural controls will be inspected and maintained according to the submitted and approved operation and maintenance plan for the project.

21. ☐ If any geologic or manmade features, such as caves, faults, sinkholes, etc., are discovered, all regulated activities near the feature will be immediately suspended. The appropriate TCEQ Regional Office shall be immediately notified. Regulated activities must cease and not continue until the TCEQ has reviewed and approved the methods proposed to protect the aquifer from any adverse impacts.

22. ☒ Silt fences, diversion berms, and other temporary erosion and sediment controls will be constructed and maintained as appropriate to prevent pollutants from entering sensitive features discovered during construction.

ATTACHMENT A

Spill Response Actions

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

Attachment B – Potential Sources of Contamination

Other potential sources of contamination during construction include:

Potential Source
- *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 rain.*

Potential Source
- *Oil, grease, fuel and hydraulic fluid contamination from construction equipment 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 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 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.*
Preventive Measure	■	*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.*
Potential Source	•	*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 TBMP's as illustrated on Exhibit 1, clearing and grubbing of vegetation where applicable. This will disturb approximately 33.09-acres. The second is construction that will include construction of streets, bridge, and sidewalks, homes, new pavement area, landscaping and site cleanup. This will disturb approximately 33.09-acres. Home construction will be based on market demand and not concurrent with civil infrastructure.

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.

Upgradient stormwater from undeveloped as well as existing developed areas within the overall 4S subdivision. All TBMPs are adequate for the drainage areas served.

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 includes: (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) placement of gravel filter bags along the downgradient boundary of construction activities for temporary erosion and sedimentation controls, (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 as construction phasing warrants that include installation of the concrete truck washout pit(s) and placement of gravel filter bags for use in inlet protection and to prevent sediment migration off-site.

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 the aquifer, surface streams and/or sensitive features that may exist downstream of the site.

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

As this site is entirely over the Edwards Aquifer Contributing Zone, a Geologic Assessment was not conducted and is not required; therefore, no sensitive features were identified. There are no surface streams on or immediately adjacent to the site.

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.

Since the project is located entirely over the Edwards Contributing Zone, a Geologic Assessment was not conducted and is not required by 30 TAC 213 regulations. Therefore, no naturally-occurring sensitive features are known to exist on the site. 30 TAC 213(f)(2) only applies to projects over the Edwards Recharge Zone.

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.*
- *Placement of gravel filter bags along the downgradient boundary 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 gravel filter bags, concrete truck washout pit(s), as required and located on Exhibit 1 and illustrated on Exhibit 2.*

ATTACHMENT G

Attachment G – Drainage Area Map

No more than ten (10) acres will be disturbed within a common drainage area at one time. Other TBMPs are to be utilized for sediment control and all are adequate for the drainage areas served.

ATTACHMENT I

Attachment I – Inspection and Maintenance for BMPs

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 date of the inspection. 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.

Pollution Prevention Measure	Inspected	Corrective Action	
		Description	Date Completed
General			
Revegetation			
Erosion/sediment controls			
Vehicle exits			
Material areas			
Equipment areas			
Concrete rinse			
Construction debris			
Trash receptacles			
Infrastructure			
Roadway clearing			
Utility clearing			
Roadway grading			
Utility construction			
Drainage construction			
Roadway base			
Roadway surfaces			
Site cleanups			
Building			
Clearing for building			
Foundation grading			
Utility construction			
Foundation construction			
Building construction			
Site grading			
Site cleanup			

****Indicate N/A where measure does not apply.***

By my signature below, I certify that all items are acceptable and the project site is in compliance with SWPPP.

Inspector's Name _____ Inspector's Signature _____

Name of Owner/Operator (Firm) _____ Date _____

Note: Inspector is to attach a brief statement of his qualifications to this report.

PROJECT MILESTONE DATES

Date when major site grading activities begin:

Construction Activity	Date

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	Date

ATTACHMENT J

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 14th day after construction activity has temporarily or permanently ceased is precluded by seasonably arid conditions, stabilization measures must be initiated as soon as practicable.

AGENT AUTHORIZATION FORM (TCEQ-0599)

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

I ***Brian Barron***,
Print Name

Vice President,
Title - Owner/President/Other

of ***Lennar Homes of Texas Land and Construction, Ltd.***,
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

April 5th, 2019
Date

THE STATE OF Texas §

County of Bexar §

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

GIVEN under my hand and seal of office on this 5th day of April, 2019.

RENESE COLLIER
Notary Public, State of Texas
Comm. Expires 05-15-2021
Notary ID 125299461

Renese Collier
NOTARY PUBLIC

Renese Collier
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 5/15/21

APPLICATION FEE FORM
(TCEQ-0574)

Application Fee Form

Texas Commission on Environmental Quality

Name of Proposed Regulated Entity: 4S Ranch Unit-6B & Mustang Vista PH. 3
Regulated Entity Location: Approx. 1.5 miles East of Mustang Vista and Stahl Lane, Bulverde, TX
Name of Customer: Lennar Homes of Texas Land and Construction, Ltd.
Contact Person: Richard Mott/Brian Barron Phone: (210) 403-6200
Customer Reference Number (if issued):CN 602412207
Regulated Entity Reference Number (if issued):RN 105628622

Austin Regional Office (3373)

☐ Hays ☐ Travis ☐ Williamson

San Antonio Regional Office (3362)

☐ Bexar ☐ Medina ☐ Uvalde
☒ Comal ☐ Kinney

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

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

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

Site Location (Check All That Apply):

☐ Recharge Zone ☒ Contributing Zone ☐ Transition Zone

Type of Plan	*Size*	*Fee Due*
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	33.09 Acres	$ 4,000
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	Acres	$
Sewage Collection System	L.F.	$
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	Tanks	$
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Signature: _____ Date: 4/25/19

Application Fee Schedule

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program 30 TAC Chapter 213 (effective 05/01/2008)

Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

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

Organized Sewage Collection Systems and Modifications

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

Underground and Aboveground Storage Tank System Facility Plans and Modifications

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

Exception Requests

Project	*Fee*
Exception Request	$500

Extension of Time Requests

Project	*Fee*
Extension of Time Request	$150

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)* ☐ Other

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN 602412207		RN 105628622

SECTION II: Customer Information

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

☐ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership

☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

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

Lennar Homes of Texas Land and Construction, Ltd.

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*

11. Type of Customer: ☐ Corporation ☐ Individual Partnership: ☐ General ☐ Limited

Government: ☐ City ☐ County ☐ Federal ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

12. Number of Employees
☐ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated?
☒ Yes ☐ No

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

☒ Owner ☐ Operator ☐ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ Voluntary Cleanup Applicant ☐ Other:

15. Mailing Address:

1922 Dry Creek Way
Suite 101

City	State	ZIP	ZIP + 4
San Antonio	TX	78259	1840

16. Country Mailing Information *(if outside USA)*	17. E-Mail Address *(if applicable)*
	Richard.Mott@lennar.com

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

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)*

☐ New Regulated Entity ☐ Update to Regulated Entity Name ☒ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated in order to meet TCEQ 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.)*

4S Ranch Unit-6B & Mustang Vista PH. 3

23. Street Address of the Regulated Entity: *(No PO Boxes)*	Not yet assigned						
	City		**State**		**ZIP**		**ZIP + 4**
24. County	Comal						

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:	Approx 1.5 miles east of Mustang Vista and Stahl Lane intersection

26. Nearest City	**State**	**Nearest ZIP Code**
Bulverde	Texas	78163

27. Latitude (N) In Decimal:			**28. Longitude (W) In Decimal:**		
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
29	45	56.96	98	23	47.4

29. Primary SIC Code (4 digits)	**30. Secondary SIC Code** (4 digits)	**31. Primary NAICS Code** (5 or 6 digits)	**32. Secondary NAICS Code** (5 or 6 digits)
1521	1611	236115	237110

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

One phase of a single-family residential subdivision

34. Mailing Address:	1922 Dry Creek Way							
	Suite 101							
	City	San Antonio	**State**	TX	**ZIP**	78259	**ZIP + 4**	1840

35. E-Mail Address:	Richard.Mott@lennar.com

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(210)403- 6200		( ) -

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

☐ Dam Safety	☐ Districts	■ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Waste Water	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

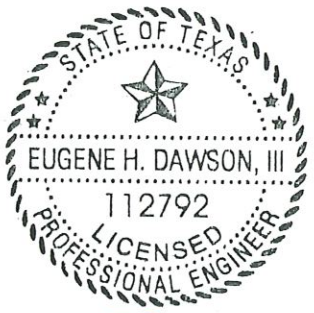
SECTION IV: Preparer Information

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

SECTION V: Authorized Signature

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

Company:	Pape-Dawson Engineers, Inc.	**Job Title:**	Sr. Vice President
Name *(In Print)* :	Trey Dawson, P.E.	**Phone:**	(210) 375 9000
Signature:		**Date:**	4/25/19



4/24/2019

POLLUTANT LOAD AND REMOVAL CALCULATIONS

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: 4S RANCH WWTP
Date Prepared: 4/24/2019

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

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

where:

$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

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

County =	Comal	
Total project area included in plan * =	33.09	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	12.09	acres
Total post-development impervious cover fraction * =	0.37	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	10852	lbs.

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

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

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

Drainage Basin/Outfall Area No. = 50' VFS

Total drainage basin/outfall area =	2.12	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.56	acres
Post-development impervious fraction within drainage basin/outfall area =	0.26	
$L_{M\ THIS\ BASIN}$ =	503	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 percent

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

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

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

where:

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

A_C =	2.12	acres
A_I =	0.56	acres
A_P =	1.56	acres
L_R =	567	lbs

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: 4S RANCH
Date Prepared: 4/24/2019

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used i

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to

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

where:

$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

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

County =	**Comal**	
Total project area included in plan * =	**33.09**	acres
Predevelopment impervious area within the limits of the plan * =	**0.00**	acres
Total post-development impervious area within the limits of the plan* =	**12.09**	acres
Total post-development impervious cover fraction * =	**0.37**	
P =	**33**	inches

$L_{M\ TOTAL\ PROJECT}$ = **10852** lbs.

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

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

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

Drainage Basin/Outfall Area No. = VFS #2-WWTP

Total drainage basin/outfall area =	**0.81**	acres
Predevelopment impervious area within drainage basin/outfall area =	**0.00**	acres
Post-development impervious area within drainage basin/outfall area =	**0.36**	acres
Post-development impervious fraction within drainage basin/outfall area =	**0.44**	
$L_{M\ THIS\ BASIN}$ =	**323**	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = **Vegetated Filter Strips**
Removal efficiency = **85** percent

Aqualogic Car
Bioretention
Contech Storr
Constructed V
Extended Det
Grassy Swale
Retention / Irri
Sand Filter
Stormceptor
Vegetated Filt
Vortechs
Wet Basin
Wet Vault

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

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

where:

A_C = Total On-Site drainage area in the BMP catchment area
A_I = Impervious area proposed in the BMP catchment area
A_P = Pervious area remaining in the BMP catchment area
L_R = TSS Load removed from this catchment area by the proposed BM

A_C =	**0.81**	acres
A_I =	**0.36**	acres
A_P =	**0.45**	acres
L_R =	**356**	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = **356** lbs.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: MV PH3 & 4S RAN
Date Prepared: 4/24/2019

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the sp

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

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

where:

$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

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

County =	Comal	
Total project area included in plan * =	33.09	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	12.09	acres
Total post-development impervious cover fraction * =	0.37	
P =	33	inches

$L_{M\ TOTAL\ PROJECT}$ = **10852** lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **11**

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

Drainage Basin/Outfall Area No. = VFS #9

Total drainage basin/outfall area =	1.11	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.48	acres
Post-development impervious fraction within drainage basin/outfall area =	0.43	
$L_{M\ THIS\ BASIN}$ =	431	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = **Vegetated Filter Strips**
Removal efficiency = 85 percent

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

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

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

where:

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

A_C =	1.11	acres
A_I =	0.48	acres
A_P =	0.63	acres
L_R =	475	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = **475** lbs.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: MV PH3 & 4S RAN
Date Prepared: 4/24/2019

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the sp

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

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

where:

$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

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

County =	Comal	
Total project area included in plan * =	33.09	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	12.09	acres
Total post-development impervious cover fraction * =	0.37	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	10852	lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = 11

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

Drainage Basin/Outfall Area No. = VFS # 10

Total drainage basin/outfall area =	1.69	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.70	acres
Post-development impervious fraction within drainage basin/outfall area =	0.41	
$L_{M\ THIS\ BASIN}$ =	628	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 percent

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

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

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

where:

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

A_C =	1.69	acres
A_I =	0.70	acres
A_P =	0.99	acres
L_R =	694	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 694 lbs.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: MV PH3 & 4S RAN
Date Prepared: 4/24/2019

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spre

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

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

where:

$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of ir
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

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

County =	Comal	
Total project area included in plan * =	33.09	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	12.09	acres
Total post-development impervious cover fraction * =	0.37	
P =	33	inches

$L_{M\ TOTAL\ PROJECT}$ = 10852 lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = 11

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

Drainage Basin/Outfall Area No. = VFS #11

Total drainage basin/outfall area =	0.98	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.40	acres
Post-development impervious fraction within drainage basin/outfall area =	0.41	
$L_{M\ THIS\ BASIN}$ =	359	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 percent

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

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

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

where:

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

A_C =	0.98	acres
A_I =	0.40	acres
A_P =	0.58	acres
L_R =	397	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 397 lbs.

F = 1.00

4S RANCH UNIT-6B & MUSTANG VISTA PHASE 3 TSS TREATMENT SUMMARY

WATERSHED	WATERSHED AREA (ACRES)	COMBINED WATERSHED AREA (ACRES)	4S RANCH PHASE 1 IMPERVIOUS COVER (ACRES)	4S RANCH PHASE 2 IMPERVIOUS COVER (ACRES)	4S RANCH PHASE 2 WWTP (ACRES)	4S RANCH PHASE 3 IMPERVIOUS COVER (ACRES)	4S RANCH PHASE 3 LIFT STATION (ACRES)	4S Ranch Unit-6B & Mustang Vista Phase III	TOTAL IMPERVIOUS COVER (ACRES)	COMBINED TOTAL IMPERVIOUS COVER (ACRES)	BMP	REQUIRED TSS REMOVAL (LBS./YR)	DESIGNED TSS REMOVAL (LBS./YR)
M	1.82		0.00	0.00	0.00	0.12	0.00	0.00	0.12			108	
N	6.02		0.46	2.22	0.00	0.00	0.00	0.00	2.68			2,406	
O	8.79		1.26	0.00	0.00	0.00	0.00	0.00	1.26			1,131	
P	4.13	37.50	1.33	0.00	0.00	0.10	0.00	0.00	1.43	10.58	EXISTING WATER QUALITY BASIN "B" (4S RANCH, PHASE 1 CZP EAPP #1274304)[1]	1,284	10,302
Q	7.23		3.12	0.00	0.00	0.00	0.00	0.00	3.12			2,801	
R	5.61		0.06	1.15	0.00	0.00	0.00	0.00	1.21			1,086	
T	3.90		0.07	0.69	0.00	0.00	0.00	0.00	0.76			682	
X	11.12	N/A	0.00	5.21	0.00	0.00	0.00	0.00	5.21	N/A	EXISTING SAND FILTER BASIN "C"(4S RANCH, PHASE 2 CZP EAPP # 13000510)[2]	4,676	4,820
Z	0.39	N/A	0.00	0.16	0.00	0.00	0.00	0.00	0.16	N/A	OVERTREATMENT SAND FILTER BASIN "C" (4S RANCH, PHASE 2 CZP EAPP # 13000510)	144	
A	91.03	91.03	0.00	25.64	0.00	1.67	0.00	5.04	32.35	32.35	EXISTING BATCH DETENTION BASIN "C" (4S RANCH, PHASE 2 CZP EAPP # 13000510)[3]	29,037	34,045
R	N/A	N/A	0.76	0.00	0.00	0.00	0.00	0.00	0.76	N/A	EXISTING 15' VFS #5 (4S RANCH, PHASE 1 CZP EAPP #1274304)	682	682
T	N/A	N/A	0.55	0.00	0.00	0.00	0.00	0.00	0.55	N/A	EXISTING 15' VFS #5 (4S RANCH, PHASE 1 CZP EAPP #1274304)	494	494
U	11.87	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	NO IMPERVIOUS COVER IN THIS WATERSHED	-	-
V	2.03	N/A	0.00	0.80	0.00	0.00	0.00	0.00	0.80	N/A	EXISTING 15' VFS #7 (4S RANCH, PHASE 2 CZP EAPP # 13000510)	718	718
W	0.89	N/A	0.00	0.40	0.00	0.00	0.00	0.00	0.40	N/A	EXISTING 15' VFS #8 (4S RANCH, PHASE 2 CZP EAPP # 13000510)	359	359
S	2.12	N/A	0.00	0.00	0.56	0.00	0.00	0.00	0.56	N/A	EXISTING 50' VFS #1 (4S RANCH WWTP CZP EAPP #13000473)[4]	503	567
A-WWTP[6]	0.81	N/A	0.00	0.00	0.36	0.00	0.00	0.00	0.36	N/A	EXISTING 15' VFS #2 (4S RANCH WWTP CZP EAPP #13000473)	323	356
BB	7.26	N/A	0.00	0.00	0.00	0.00	0.00	3.28	3.28	N/A	OVERTREATMENT BATCH DETENTION BASIN "C"(4S RANCH, PHASE 2 CZP EAPP # 13000510)	2,944	
AA	1.11	N/A	0.00	0.00	0.00	0.00	0.00	0.48	0.48	N/A	PROPOSED 15' VFS #9	431	475
AB	1.69	N/A	0.00	0.00	0.00	0.00	0.00	0.70	0.70	N/A	PROPOSED 15' VFS #10	628	694
AC	0.98	N/A	0.00	0.00	0.00	0.00	0.00	0.40	0.40	N/A	PROPOSED 15' VFS #11	359	397
AD	0.40	N/A	0.00	0.00	0.00	0.00	0.00	0.16	0.16	N/A	OVERTREATMENT BATCH DETENTION BASIN "C"(4S RANCH, PHASE 2 CZP EAPP # 13000510)	144	
AE	0.71	N/A	0.00	0.00	0.00	0.00	0.00	0.39	0.39	N/A	N/A[5]		
AF	3.69	N/A	0.00	0.00	0.31	0.00	0.00	1.53	1.84	N/A	OVERTREATMENT BATCH DETENTION BASIN "C" (4S RANCH, PHASE 2 CZP EAPP # 13000510)	1,652	
AG	0.63	N/A	0.00	0.00	0.09	0.00	0.00	0.10	0.19	N/A	OVERTREATMENT PROPOSED VFS #9, VFS #10, VFS #11 & EXISTING VFS #2 (4S RANCH WWTP CZP EAPP #13000473)	171	-
I	77.95		0.00	0.00	0.00	34.56	0.00	0.00	34.56			31,021	
J	0.12	80.14	0.00	0.00	0.00	0.00	0.12	0.00	0.12	35.55	EXISTING BATCH DETENTION BASIN "D" (4S RANCH, PHASE 3 CZP EAPP #13000682)	108	31,910
Y	2.07		0.00	0.87	0.00	0.00	0.00	0.00	0.87			781	
K (OFFSITE)	17.16	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	-	-	-
A6	1.21	N/A	0.00	0.00	0.00	0.30	0.00	0.00	0.30	N/A	OVERTREATMENT BATCH DETENTION BASIN "C"(4S RANCH, PHASE 2 CZP EAPP #13000510)	269	
TOTAL	272.74	N/A	7.60	37.15	1.32	36.75	0.12	12.09	95.03	N/A		84,940	85,818

1. WATER QUALITY BASIN "B" (4S RANCH, PHASE 1 CZP EAPP #1274304) OVERTREATS 63 LBS/YR, 27 LBS/YR, AND 27 LBS/YR FOR WATERSHEDS C, E, AND F, RESPECTIVELY, ASSOCIATED WITH THE 4S RANCH WWTP CZP (EAPP # 13000473).
2. EXISTING SAND FILTER BASIN "C" (4S RANCH, PHASE 2 CZP EAPP # 13000510) OVERTREATS UNCAPTURED IMPERVIOUS COVER FROM WATERSHED Z (4S RANCH, PHASE 2 CZP EAPP # 13000510).
3. EXISTING BATCH DETENTION BASIN "C" NO LONGER OVERTREATS UNCAPTURED IMPERVIOUS COVER FROM WATERSHED Y (4S RANCH, PHASE 2 CZP EAPP # 13000510). THIS WATERSHED NOW DRAINS TO EXISTING BATCH DETENTION BASIN "D". (EAPP #13000682)
4. A PORTION OF THE IMPERVIOUS COVER FROM WATERSHED "S" IS NO LONGER INCLUDED IN THIS WATERSHED. THE PREVIOUS IMPERVIOUS COVER FOR THAT WATERSHED WAS 0.73 ACRES AND NOW IT IS 0.56 ACRES.
5. IMPERVIOUS COVER WITHIN DRAINAGE AREA "AE" IS NOT COUNTED SINCE THIS AREA IS FOR THE PROPOSED BRIDGE SIDWALK DRAINS WITHIN THE BRIDGE ARE DESIGNED TO CAPTURE THE STORMWATER BEFORE IT LEAVES THIS DRAINAGAE AREA.
6. A TOTAL OF 0.76 ACRES OF IMPERVIOUS COVER WAS PREVIOUSLY APPROVED FOR WATERSHED A-WWTP WITH THE 4S RANCH WWTP CZP (EAPP #13000473).

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: MV PH3 &
Date Prepared: 4/24/2019

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used i

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to

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

where:

$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

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

County =	Comal	
Total project area included in plan * =	33.09	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	12.09	acres
Total post-development impervious cover fraction * =	0.37	
P =	33	inches

$L_{M\ TOTAL\ PROJECT}$ = **10852** lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **11**

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

Drainage Basin/Outfall Area No. = **BATCH C**

Total drainage basin/outfall area =	**91.03**	acres
Predevelopment impervious area within drainage basin/outfall area =	**0.00**	acres
Post-development impervious area within drainage basin/outfall area =	**32.35**	acres
Post-development impervious fraction within drainage basin/outfall area =	**0.36**	
$L_{M\ THIS\ BASIN}$ =	**29037**	lbs.

3. Indicate the proposed BMP Code for this basin.

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

Aqualogic Car
Bioretention
Contech Storr
Constructed V
Extended Det
Grassy Swale
Retention / Irri
Sand Filter
Stormceptor
Vegetated Filt
Vortechs
Wet Basin
Wet Vault

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

RG-348 Page 3-33 Equation 3.7: L_R = (BMP efficiency) x P x (A_I x 34.6 + A_P x 0.54)

where:

A_C = Total On-Site drainage area in the BMP catchment area
A_I = Impervious area proposed in the BMP catchment area
A_P = Pervious area remaining in the BMP catchment area
L_R = TSS Load removed from this catchment area by the proposed BM

A_C = **91.03** acres

A_I =	**32.35**	acres
A_P =	**58.68**	acres
L_R =	**34564**	lbs

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

Desired $L_{M\ THIS\ BASIN}$ =	**34045**	lbs.
F =	**0.98**	

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348

Rainfall Depth =	**3.33**	inches
Post Development Runoff Coefficient =	**0.29**	
On-site Water Quality Volume =	**314168**	cubic feet

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

Off-site area draining to BMP =	**0.00**	acres
Off-site Impervious cover draining to BMP =	**0.00**	acres
Impervious fraction of off-site area =	**0**	
Off-site Runoff Coefficient =	**0.00**	
Off-site Water Quality Volume =	**0**	cubic feet
Storage for Sediment =	**62834**	
Total Capture Volume (required water quality volume(s) x 1.20) =	**377001**	cubic feet

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

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

Required Water Quality Volume for retention basin =	**NA**	cubic feet

Irrigation Area Calculations:

Soil infiltration/permeability rate =	**0.1**	in/hr	Enter determined permeability rat
Irrigation area =	**NA**	square feet	
	NA	acres	

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

Required Water Quality Volume for extended detention basin = **377001** cubic feet

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

9A. Full Sedimentation and Filtration System

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

9B. Partial Sedimentation and Filtration System

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

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

Required Water Quality Volume for Bioretention Basin = **NA** cubic feet

EXHIBITS

WRITTEN CONSENT TO CORPORATE ACTION BY BOARD OF DIRECTORS OF LENNAR TEXAS HOLDING COMPANY

JUNE 30, 2016

The undersigned, being all of the members of the Board of Directors of LENNAR TEXAS HOLDING COMPANY, a Texas corporation (the "Corporation"), do hereby unanimously agree and consent, pursuant to the provisions of the Texas Business Corporation Act, to the adoption of, and do hereby adopt, the following resolutions:

RESOLVED, that **Brian Scott Teeter** is hereby removed from his position as Authorized Agent of the Corporation effective June 30, 2016;

RESOLVED, that **Bryan Sims** is hereby removed from his position as Authorized Agent of the Corporation effective June 30, 2016;

RESOLVED, that without limitation upon the power of the Board of Directors of the Corporation by resolution to confer the same or similar authority upon other officers and individuals from time to time, and without limiting any authority otherwise conferred on directors and vice presidents, **RICHARD MOTT** shall have the power and authority in the name and on behalf of this Corporation to execute and deliver development subcontractor agreements, bond agreements, utility agreements, permitting applications and any other necessary documents in connection with the operations of the Corporation.

RESOLVED, that for the purpose of executing and delivering any and all instruments under the authority granted herein, **RICHARD MOTT** shall be and is hereby constituted an **Authorized Agent** of the Corporation and, any action taken or done pursuant to the authority herein granted shall be an act of the Corporation and binding upon it.

This Written Consent may be executed in counterpart signature pages, and all so executed shall constitute one Written Consent. A facsimile or PDF of a signature to this Written Consent shall be deemed and treated for all purposes of execution to be as valid as an original signature thereto.

IN WITNESS WHEREOF, the undersigned have executed this Written Consent effective as of the date first written above.

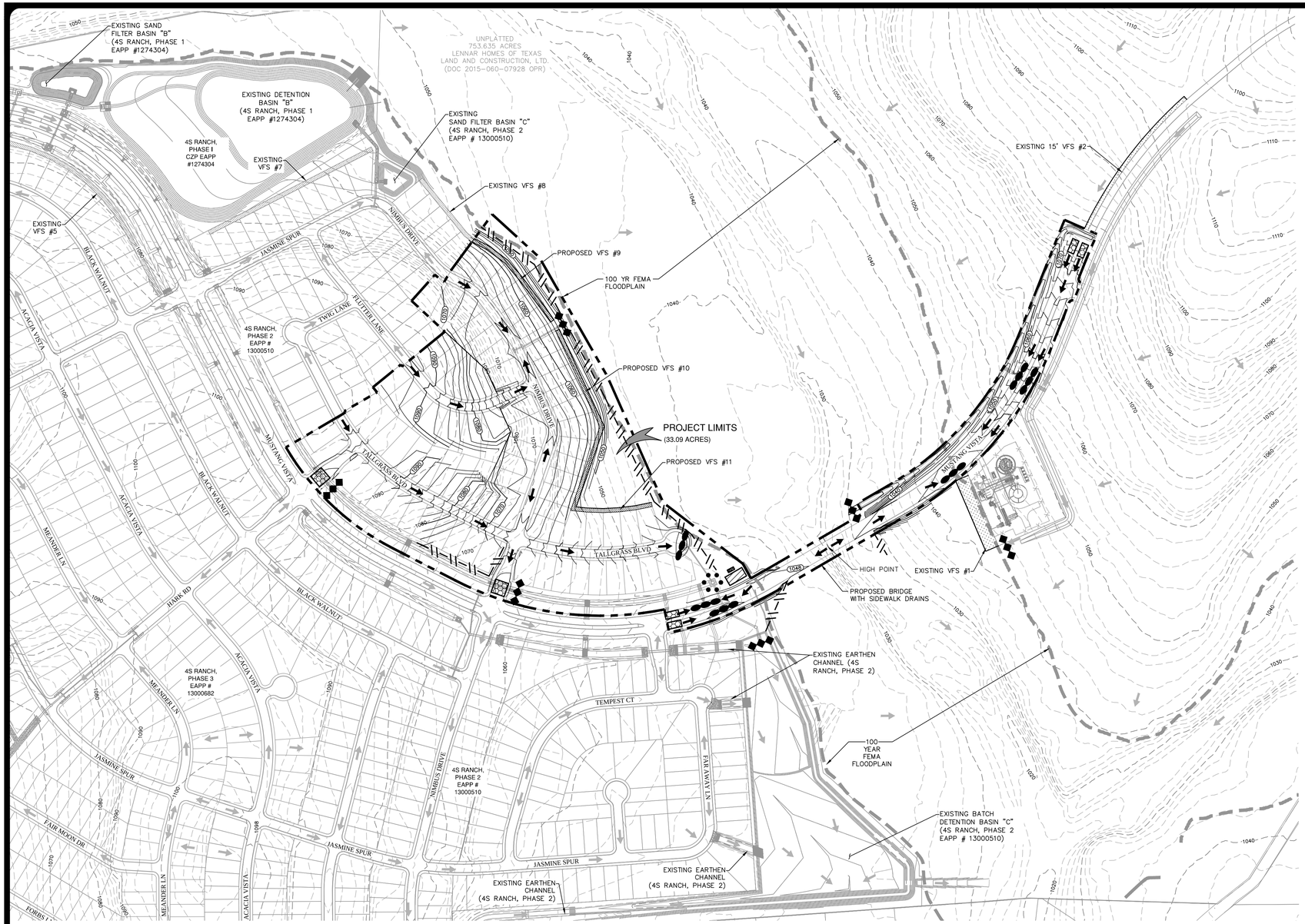
DIRECTORS:

DocuSigned by:
Mark Sustana
147E737ED065476...

Mark Sustana

DocuSigned by:
Diane Bessette
0E1FEF43CCEE4DB...

Diane Bessette



SCALE: 1" = 200'

0' 200' 400' 600'

LEGEND

- PROJECT LIMITS
- EXISTING CONTOUR — 976
- PROPOSED CONTOUR — 970
- FLOW ARROW (EXISTING)
- FLOW ARROW (PROPOSED)
- SILT FENCE
- ROCK BERM
- GRAVEL FILTER BAGS
- GRATE INLET PROTECTION
- SEDIMENT CONTROL ROLLS
- LIMITS OF DISTURBED AREA
- STABILIZED CONSTRUCTION ENTRANCE/EXIT (FIELD LOCATE)
- CONSTRUCTION EQUIPMENT, VEHICLE & MATERIALS STORAGE AREA (FIELD LOCATE)
- CONCRETE TRUCK WASH-OUT PIT (FIELD LOCATE)

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
CONTRIBUTING ZONE PLAN
GENERAL CONSTRUCTION NOTES

1. WRITTEN CONSTRUCTION NOTIFICATION SHOULD BE PROVIDED TO THE APPROPRIATE TCEQ REGIONAL OFFICE NO LATER THAN 48 HOURS PRIOR TO COMMENCEMENT OF THE REGULATED ACTIVITY. INFORMATION SHOULD INCLUDE THE DATE ON WHICH THE REGULATED ACTIVITY WILL COMMENCE, THE NAME OF THE APPROVED PLAN FOR THE REGULATED ACTIVITY, AND THE NAME OF THE PRIME CONTRACTOR WITH THE NAME AND TELEPHONE NUMBER OF THE CONTACT PERSON.

2. ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROJECT SHOULD BE PROVIDED WITH COMPLETE COPIES OF THE APPROVED CONTRIBUTING ZONE PLAN AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTOR(S) SHOULD KEEP COPIES OF THE APPROVED PLAN AND APPROVAL LETTER ON-SITE.

3. NO TEMPORARY ABOVEGROUND HYDROCARBON AND HAZARDOUS SUBSTANCE STORAGE TANK SYSTEM MAY BE INSTALLED WITHIN 150 FEET OF A DOMESTIC, INDUSTRIAL, IRRIGATION, OR PUBLIC WATER SUPPLY WELL.

4. PRIOR TO COMMENCING CONSTRUCTION, ALL TEMPORARY EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES MUST BE PROPERLY SELECTED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND GOOD ENGINEERING PRACTICES. CONTROLS SPECIFIED IN THE SWPPP SECTION OF THE APPROVED EDWARDS AQUIFER CONTRIBUTING ZONE PLAN ARE REQUIRED DURING CONSTRUCTION. IF INSPECTIONS INDICATE A CONTROL HAS BEEN USED INAPPROPRIATELY, OR INCORRECTLY, THE APPLICANT MUST REPLACE OR MODIFY THE CONTROL FOR SITE SITUATIONS. THE CONTROLS MUST REMAIN IN PLACE UNTIL DISTURBED AREAS ARE REVEGETATED AND THE AREAS HAVE BECOME PERMANENTLY STABILIZED.

5. IF SEDIMENT ESCAPES THE CONSTRUCTION SITE, OFF-SITE ACCUMULATIONS OF SEDIMENT MUST BE REMOVED AT A FREQUENCY SUFFICIENT TO MINIMIZE OFFSITE IMPACTS TO WATER QUALITY (E.G., FUGITIVE SEDIMENT IN STREET BEING WASHED INTO SURFACE STREAMS OR SENSITIVE FEATURES BY THE NEXT RAIN).

6. SEDIMENT MUST BE REMOVED FROM SEDIMENT TRAPS OR SEDIMENTATION PONDS NOT LATER THAN WHEN DESIGN CAPACITY HAS BEEN REDUCED BY 50%. A PERMANENT STAKE MUST BE PROVIDED THAT CAN INDICATE WHEN THE SEDIMENT OCCUPIES 50% OF THE BASIN VOLUME.

7. LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORMWATER SHALL BE PREVENTED FROM BECOMING A POLLUTANT SOURCE FOR STORMWATER DISCHARGES (E.G., SCREENING OUTFALLS, PICKED UP DAILY).

8. ALL SPOILS (EXCAVATED MATERIAL) GENERATED FROM THE PROJECT SITE AND STORED ON-SITE MUST HAVE PROPER E&S CONTROLS INSTALLED.

9. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, AND CONSTRUCTION ACTIVITIES WILL NOT RESUME WITHIN 21 DAYS. WHEN THE INITIATION OF STABILIZATION MEASURES BY THE 14TH DAY IS PRECLUDED BY WEATHER CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE.

10. THE FOLLOWING RECORDS SHOULD BE MAINTAINED AND MADE AVAILABLE TO THE TCEQ UPON REQUEST: THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR; THE DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE; AND THE DATES WHEN STABILIZATION MEASURES ARE INITIATED.

11. THE HOLDER OF ANY APPROVED CONTRIBUTING ZONE PLAN MUST NOTIFY THE APPROPRIATE REGIONAL OFFICE IN WRITING AND OBTAIN APPROVAL FROM THE EXECUTIVE DIRECTOR PRIOR TO INITIATING ANY OF THE FOLLOWING:

A. ANY PHYSICAL OR OPERATIONAL MODIFICATION OF ANY BEST MANAGEMENT PRACTICES OR STRUCTURE(S), INCLUDING BUT NOT LIMITED TO TEMPORARY OR PERMANENT PONDS, DAMS, BERMS, SILT FENCES, AND DIVERSIONARY STRUCTURES;

B. ANY CHANGE IN THE NATURE OR CHARACTER OF THE REGULATED ACTIVITY FROM THAT WHICH WAS ORIGINALLY APPROVED;

C. ANY CHANGE THAT WOULD SIGNIFICANTLY IMPACT THE ABILITY TO PREVENT POLLUTION OF THE EDWARDS AQUIFER AND HYDROLOGICALLY CONNECTED SURFACE WATER; OR

D. ANY DEVELOPMENT OF LAND PREVIOUSLY IDENTIFIED IN A CONTRIBUTING ZONE PLAN AS UNDEVELOPED.

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

GENERAL NOTES

1. DO NOT DISTURB VEGETATED AREAS (TREES, GRASS, WEEDS, BRUSH, ETC.) ANY MORE THAN NECESSARY FOR CONSTRUCTION.

2. LOCATIONS OF CONSTRUCTION ENTRANCE/EXITS, CONCRETE WASHOUT PITS, AND CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARDS TO BE DETERMINED IN THE FIELD.

3. STORM WATER POLLUTION PREVENTION CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED EFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS EXHIBIT AND SIGNED AND DATED BY THE RESPONSIBLE PARTY.

4. RESTRICT ENTRY/EXIT TO THE PROJECT SITE TO DESIGNATED LOCATIONS BY USE OF ADEQUATE FENCING, IF NECESSARY.

5. ALL STORM WATER POLLUTION PREVENTION CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITIONS AT ALL TIMES.

6. CONTRACTOR, TO THE EXTENT PRACTICAL, SHALL MINIMIZE THE AMOUNT OF AREA DISTURBED. AS SOON AS PRACTICAL, ALL DISTURBED SOIL THAT WILL NOT BE COVERED BY IMPERVIOUS COVER SUCH AS PARKWAY AREAS, EASEMENT AREAS, EMBANKMENT SLOPES, ETC. WILL BE STABILIZED PER APPLICABLE PROJECT SPECIFICATIONS.

7. BEST MANAGEMENT PRACTICES MAY BE INSTALLED IN STAGES TO COINCIDE WITH THE DISTURBANCE OF UPGRADIENT AREAS.

8. BEST MANAGEMENT PRACTICES MAY BE REMOVED IN STAGES ONCE THE WATERSHED FOR THAT PORTION CONTROLLED BY THE BEST MANAGEMENT PRACTICES HAS BEEN STABILIZED.

9. ALL TEMPORARY BMPs WILL BE REMOVED ONCE WATERSHED IS STABILIZED.

10. MUD OR DIRT INADVERTENTLY TRACKED OFF-SITE AND ONTO EXISTING STREETS SHALL BE REMOVED IMMEDIATELY BY HAND OR MECHANICAL BROOM SWEEPING.

11. PRIOR TO INITIATION OF SUBSEQUENT PHASES OF CONSTRUCTION, TEMPORARY BMPS INCLUDING SILT FENCING, CONSTRUCTION ENTRANCE/EXIT, CONCRETE WASHOUT PIT, AND CONSTRUCTION STAGING AREA SHALL BE FIELD LOCATED AS APPROPRIATE FOR THE AREA OF CONSTRUCTION.

12. TEMPORARY POLLUTION ABATEMENT MEASURES SHOWN ON THE PLAN ARE FOR THE OVERALL DEVELOPMENT. TEMPORARY BMPS MAY REQUIRE ADJUSTMENT BASED ON PHASING OF CONSTRUCTION OF THE DEVELOPMENT. RECORDS OF ADJUSTMENTS AND REVISIONS SHALL BE MAINTAINED AS APPROPRIATE.

13. TEMPORARY BMPS SHOWN ON THIS SHEET ARE FOR GRAPHICAL PURPOSES AND MAY NOT BE TO SCALE. BMPS SHALL BE LOCATED WITHIN THE PROJECT LIMITS.

14. UPON COMPLETION OF THE PROJECT AND BEFORE FINAL PAYMENT IS ISSUED, CONTRACTOR SHALL REMOVE ALL SEDIMENT AND EROSION CONTROL MEASURES.

15. CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION SEQUENCING AND REMOVAL OF TEMPORARY POLLUTION ABATEMENT MEASURES THAT CONFLICT WITH SITE IMPROVEMENTS SUCH AS LANDSCAPING AND FENCES SO AS TO PREVENT SEDIMENT FROM ESCAPING THE PROJECT SITE.

TEMPORARY BMP MODIFICATIONS

DATE	SIGNATURE	DESCRIPTION

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

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

EXHIBIT 1

NO. | REVISION | DATE

STATE OF TEXAS
EUGENE H. DAWSON III
112792
LICENSED
PROFESSIONAL ENGINEER
4/22/19

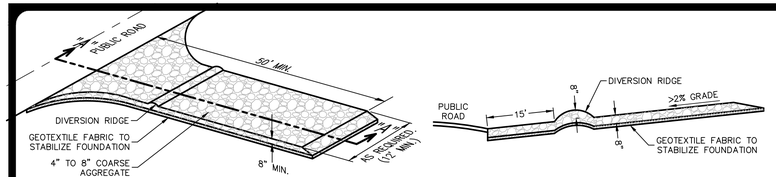
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

4S RANCH UNIT-6B & MUSTANG VISTA PH. 3
BULVERDE, TEXAS
CONTRIBUTING ZONE PLAN

TEMPORARY POLLUTION PREVENTION PLAN

PLAT NO.
JOB NO. 8547-42
DATE APRIL 2019
DESIGNER DW
CHECKED BS DRAWN DW
SHEET 1 OF 1

Date: Apr 22, 2019, 2:48pm User ID: DWright
File: P:\8547\47\42\DESIGN\ENVIRONMENTAL\TM8547742.dwg



SCHEMATIC OF TEMPORARY CONSTRUCTION ENTRANCE/EXIT

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

MATERIALS

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 8–INCHES.

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 BASIN.

INSTALLATION

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

2. 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 SURFACE SMOOTH AND SLOPE FOR DRAINAGE.

7. DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE STONE PAD TO A SEDIMENT TRAP OR BASIN.

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

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.

3. 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

1. THE ENTRANCE SHOULD BE MAINTAINED IN A CONDITION, WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND 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.

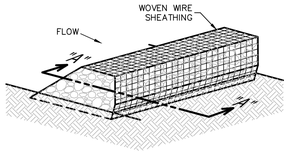
3. WHEN NECESSARY, WHEELS SHOULD BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT–OF–WAY.

4. WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

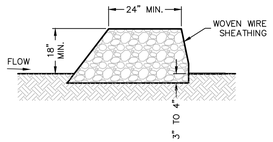
5. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE BY USING APPROVED METHODS.

STABILIZED CONSTRUCTION ENTRANCE/EXIT DETAIL

NOT–TO–SCALE



ISOMETRIC PLAN VIEW



SECTION "A-A"

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

1. 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, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.

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

MATERIALS

1. 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 RINGS.

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 USED.

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 OPENINGS.

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.

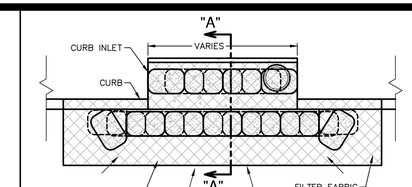
COMMON TROUBLE POINTS

1. 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



PLAN VIEW

SECTION "A-A"

GENERAL NOTES

1. 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 A MANNER THAT IT WILL NOT ERODE.

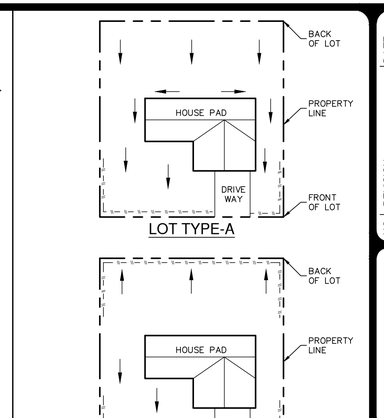
3. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.

4. INSPECT FILTER FABRIC AND PATCH OR REPLACE IF TORN OR MISSING.

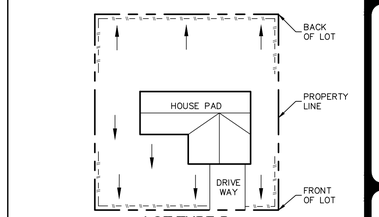
5. STRUCTURES SHOULD BE REMOVED AND THE AREA STABILIZED ONLY AFTER THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

BAGGED GRAVEL CURB INLET PROTECTION DETAIL

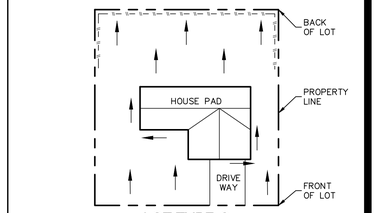
NOT–TO–SCALE



LOT TYPE-A



LOT TYPE-B



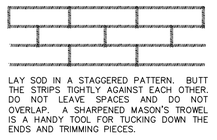
LOT TYPE-C

NOTE: SILT FENCE TO BE INSTALLED PER THESE DETAILS AND LOCATED ON THE DOWNGRADIENT SIDE OF EACH LOT LINE OR LIMITS OF CLEARING AS GENERALLY SHOWN ON THE OVERALL SITE PLAN.

LEGEND
SILT FENCE
DRAINAGE FLOW

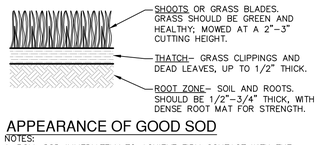
TYPICAL HOUSE LOT LAYOUTS

NOT–TO–SCALE



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.

BUTTING – ANGLED ENDS CAUSED BY THE AUTOMATIC SOD CUTTER MUST BE MATCHED CORRECTLY.

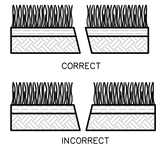


APPEARANCE OF GOOD SOD

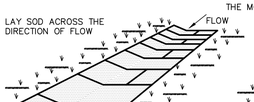
NOTES:
1. ROLL SOD IMMEDIATELY TO ACHIEVE FIRM CONTACT WITH THE SOIL.

2. WATER TO A DEPTH OF 4" AS NEEDED. WATER WELL AS SOON AS THE SOD IS LAID.

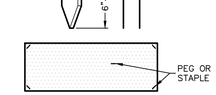
3. MOW WHEN THE SOD IS ESTABLISHED – IN 2–3 WEEKS. SET THE MOWER HIGH (2"–3").



SOD INSTALLATION



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



USE PEGS OR STAPLES TO FASTEN SOD FIRMLY – AT THE ENDS OF STRIPS AND IN THE CENTER, OR EVERY 3–4 FEET IF THE STRIPS ARE LONG. WHEN READY TO MOW, DRIVE PEGS OR STAPLES FLUSH WITH THE GROUND.

MATERIALS

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 SHOOT GROWTH AND THATCH.

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%. TORN OR UNEVEN PADS SHOULD NOT BE ACCEPTABLE.

3. STANDARD SIZE SECTIONS OF SOD SHOULD BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED FROM A FIRM GRASP ON ONE END OF THE SECTION.

4. SOD SHOULD BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS.

SITE PREPARATION

1. PRIOR TO SOIL PREPARATION, AREAS TO BE SODDED SHOULD BE BROUGHT TO FINAL GRADE IN ACCORDANCE WITH THE APPROVED PLAN.

2. THE SURFACE SHOULD BE CLEARED OF ALL TRASH, DEBRIS AND OF ALL ROOTS, BRUSH, WIRE, GRADE STAKES AND OTHER OBJECTS THAT WOULD INTERFERE WITH PLANTING, FERTILIZING OR MAINTENANCE OPERATIONS.

3. FERTILIZE ACCORDING TO SOIL TESTS. FERTILIZER NEEDS CAN BE DETERMINED BY A SOIL TESTING LABORATORY OR REGIONAL RECOMMENDATIONS 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.

INSTALLATION IN CHANNELS

1. 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).

2. 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 AREAS.

GENERAL INSTALLATION (VA. DEPT. OF CONSERVATION, 1992)

1. 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 REDUCE ROOT BURNING AND DIEBACK.

3. 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).

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 INCHES.

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.

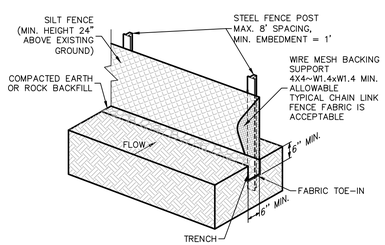
INSPECTION AND MAINTENANCE GUIDELINES

1. 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



ISOMETRIC PLAN VIEW

SILT FENCE

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

1. 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 EXCEEDING 140.

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

INSTALLATION

1. 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 ¼ 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

1. 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.

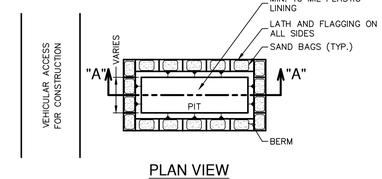
3. REPLACE TORN FABRIC OR INSTALL A SECOND LINE OF FENCING PARALLEL TO THE TORN SECTION.

4. 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.

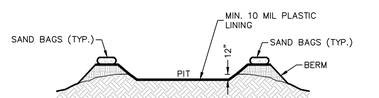
5. WHEN CONSTRUCTION IS COMPLETE, THE SEDIMENT SHOULD BE DISPOSED OF IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTATION AND THE PRIOR LOCATION OF THE SILT FENCE SHOULD BE REVEGETATED. THE FENCE ITSELF SHOULD BE DISPOSED OF IN AN APPROVED LANDFILL.

SILT FENCE DETAIL

NOT–TO–SCALE



PLAN VIEW



SECTION "A-A"

GENERAL NOTES

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

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

3. WASHOUT PIT SHALL NOT BE LOCATED IN AREAS SUBJECT TO INUNDATION FROM STORM WATER RUNOFF.

4. LOCATE WASHOUT AREA AT LEAST 50 FEET FROM SENSITIVE FEATURES, STORM DRAINS, OPEN DITCHES OR WATER BODIES.

5. 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

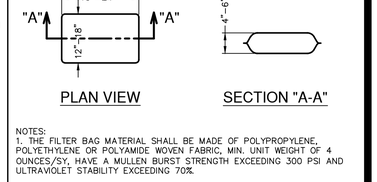
1. WHEN TEMPORARY CONCRETE WASHOUT FACILITIES ARE NO LONGER REQUIRED FOR THE WORK, THE HARDENED CONCRETE SHOULD BE REMOVED AND DISPOSED OF.

2. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF.

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

CONCRETE TRUCK WASHOUT PIT DETAIL

NOT–TO–SCALE



PLAN VIEW

SECTION "A-A"

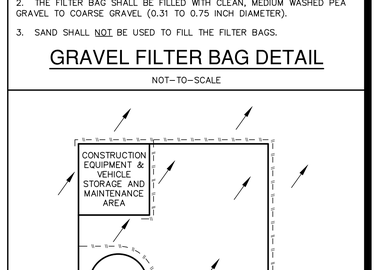
NOTES:
1. THE FILTER BAG MATERIAL SHALL BE MADE OF POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN FABRIC, MIN. UNIT WEIGHT OF 4 OUNCES/SY, HAVE A MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70%.

2. THE FILTER BAG SHALL BE FILLED WITH CLEAN, MEDIUM WASHED PEA GRAVEL TO COARSE GRAVEL (0.31 TO 0.75 INCH DIAMETER).

3. SAND SHALL NOT BE USED TO FILL THE FILTER BAGS.

GRAVEL FILTER BAG DETAIL

NOT–TO–SCALE



LEGEND
SILT FENCE
FLOW ARROWS

CONSTRUCTION STAGING AREA

NOT–TO–SCALE

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

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

EXHIBIT 2

DATE
NO. REVISION

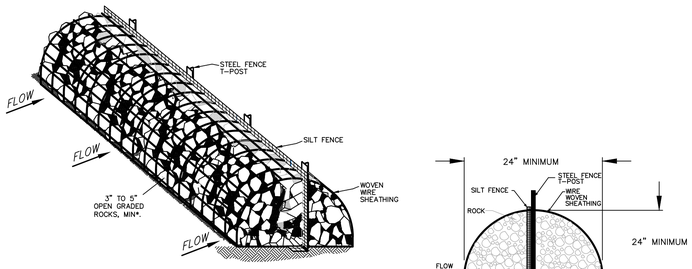
EUGENE H. DAWSON III
112792
LICENSED PROFESSIONAL ENGINEER
4/22/19

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

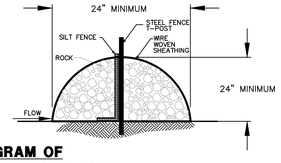
4S RANCH UNIT-6B & MUSTANG VISTA PH. 3
BULVERDE, TEXAS
CONTRIBUTING ZONE PLAN
TEMPORARY POLLUTION ABATEMENT PLAN DETAILS

PLAT NO.
JOB NO. 8547-42
DATE APRIL 2019
DESIGNER DW
CHECKED BS DRAWN DW
SHEET 1 OF 2

Date: Apr 25, 2019, 8:40am User ID: DWright
File: P:\8547.42\DESIGN\ENVIRONMENTAL\TMD7854742.dwg



*SEE NOTE 3 OF INSTALLATION SECTION



SCHEMATIC DIAGRAM OF HIGH SERVICE ROCK BERM (LCRA, 1998)

GENERAL NOTES:

- A high service rock berm should be designated in areas of important environmental significance such as in steep canyons or above permanent springs, pools, recharge features, or other environmentally sensitive areas that may require a higher level of protection. The drainage area to this device should not exceed 5 acres and the slope should be less than 30%.

MATERIALS:

1. Silt fence material should be polypropylene, polyethylene or polyamide woven or nonwoven fabric. The fabric width should be 36 inches, with a minimum unit weight of 4.5 oz/yd, mullen burst strength exceeding 190 lb/in^2, ultraviolet stability exceeding 70%, and minimum apparent opening size of U.S. Sieve No. 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 nominal weight 1.25 lb/ft^2, and Brindell hardness exceeding 140. Rebar (either #5 or #6) may also be used to anchor the berm.
3. Woven wire backing to support the fabric should be galvanized 2" x 4" welded wire, 12 gauge minimum.
4. 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 rings.
5. Clean, open graded 3– to 5– inch diameter rock should be used, except in areas where high velocities or large volumes of flow are expected, where 5– to 8– inch diameter rocks maybe used.

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 openings.
2. Install the silt fence along the center of the proposed berm placement, as with a normal silt fence described in Section 2.4.3.
3. Place the rock along the sheathing on both sides of the silt fence as shown in the diagram (Figure 1–29), to a height not less than 24 inches. Clean, open graded 3" to 5" diameter rock should be used, except in areas where high velocities or large volumes of flow are expected, where 5" to 8" diameter rock may be used.
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. The high service rock berm should be removed when the site is revegetated or otherwise stabilized or it may remain in place as a permanent BMP if drainage is adequate.

COMMON TROUBLE POINTS:

1. Insufficient berm height or length (runoff quickly escapes over top or around sides of berm).
2. Berm not installed perpendicular to flow line (runoff escaping around one side).
3. Internal silt fence not anchored securely to ground (high flows displacing berm).
4. When installed in streambeds, they often result in diversion scour, so their use in this setting is not recommended.

INSPECTION AND MAINTENANCE GUIDELINES:

1. Inspection should be made weekly and after each rainfall by the responsible party. For installations in streambeds, additional daily inspections should be made on rock berm.
2. Remove sediment and other debris when buildup reaches 6 inches and dispose of the accumulated silt in an approved manner.
3. Repair any loose wire sheathing.
4. The berm should be reshaped as needed during inspections.
5. The berm should be replaced when the structure ceases to function as intended due to silt accumulation among the rocks, washout, construction traffic damage, etc.
6. The rock berm should be left in place until all upstream areas are stabilized and accumulated silt removed.

HIGH SERVICE ROCK BERM DETAIL

NOT–TO–SCALE

NO.	REVISION	DATE

STATE OF TEXAS
EUGENE H. DAWSON III
112792
LICENSED
PROFESSIONAL ENGINEER
4/22/19

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

4S RANCH UNIT-6B & MUSTANG VISTA PH. 3

BULVERDE, TEXAS
CONTRIBUTING ZONE PLAN

TEMPORARY POLLUTION ABATEMENT PLAN DETAILS

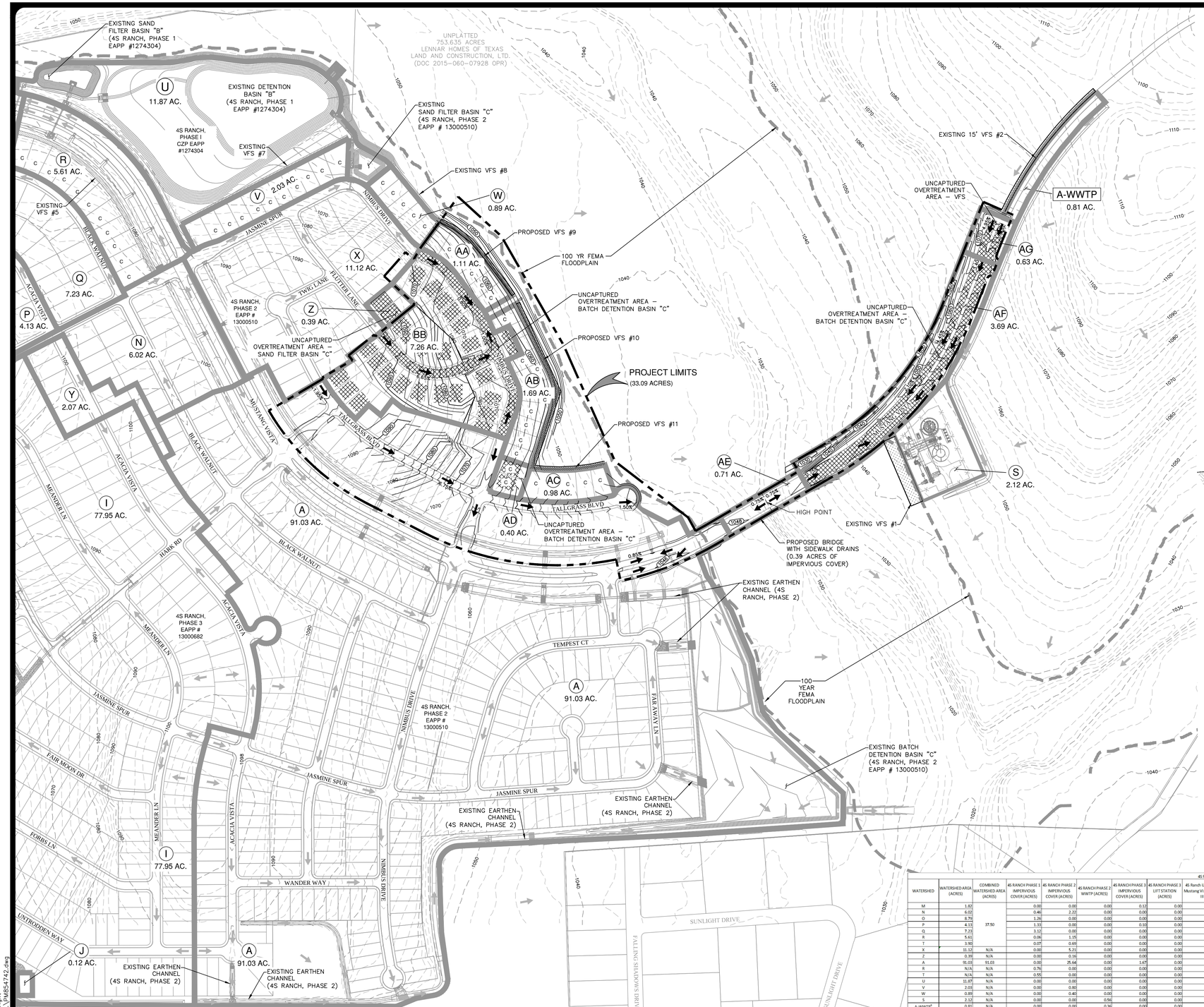
THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE POLLUTION ABATEMENT SIZING AND TREATMENT REQUIREMENTS OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S EDWARDS AQUIFER TECHNICAL GUIDANCE MANUAL.

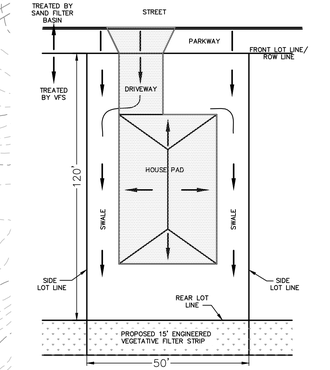
THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF POLLUTION ABATEMENT ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.

EXHIBIT 2A

PLAT NO.
JOB NO. 8547–42
DATE APRIL 2019
DESIGNER DW
CHECKED BS DRAWN DW
SHEET 2 OF 2

Date: Apr 25, 2019, 8:41am User ID: DWright
File: P:\85\47\42\DESIGN\ENVIRONMENTAL\TMD7854742.dwg

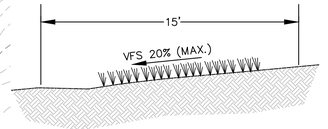




TYPICAL LOT DRAINAGE DETAIL FOR FHA TYPE C LOTS

Not to Scale

NOTE:
ROOF DRAINAGE PATTERN IS APPROXIMATE AND SUBJECT TO CHANGE BASED ON FINAL HOUSE PAD DESIGN. HOWEVER RUNOFF FROM DRIVEWAY, ROOF OR OTHER IMPERVIOUS SURFACES WITHIN THE LOT WILL NOT FLOW ACROSS MORE THAN 72' OF IMPERVIOUS SURFACE BEFORE REACHING THE PROPOSED 15' ENGINEERED VEGETATIVE FILTER STRIP. FINAL LOT GRADING TO ALLOW FOR SHEET FLOW OVER VEGETATIVE FILTER STRIP.



ENGINEERED VEGETATIVE FILTER STRIP DETAIL

LEGEND

- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR (1040)
- PROPOSED 2' CONTOUR
- PROPOSED 10' CONTOUR (1040)
- WATERSHED (A)
- EXISTING DIRECTION OF FLOW
- PROPOSED DIRECTION OF FLOW
- WATERSHED AREA BOUNDARY
- PROJECT BOUNDARY
- VEGETATIVE FILTER STRIP (VFS)
- OVERTREATMENT AREA
- FHA TYPE C LOT (SEE THIS SHEET FOR DETAIL) C
- 100 YR FEMA FLOODPLAIN

SCALE: 1"= 200'

0' 200' 400' 600'

PERMANENT POLLUTION ABATEMENT MEASURES:

1. PERMANENT BMP'S FOR THIS SITE INCLUDE ONE SAND FILTER BASIN AND ONE BATCH DETENTION BASIN. THESE PERMANENT BMP'S HAVE BEEN DESIGNED TO REMOVE AT LEAST 80% OF THE INCREASED TOTAL SUSPENDED SOLIDS (TSS) FOR THE 33.09 ACRES IN ACCORDANCE WITH THE TCEQ'S TECHNICAL GUIDANCE MANUAL (TGM) RG-348 (2005).
2. SILT FENCING AND ROCK BERMS, WHERE APPROPRIATE, WILL BE MAINTAINED UNTIL THE ROADWAY, UTILITY, DRAINAGE IMPROVEMENTS, AND BUILDING CONSTRUCTION ARE COMPLETED.
3. ENERGY DISSIPATORS (TO HELP REDUCE EROSION) WILL BE PROVIDED AT POINTS OF CONCENTRATED DISCHARGE WHERE EXCESSIVE VELOCITIES MAY BE ENCOUNTERED.

NOTES:

1. CONTRACTOR SHALL INSTALL AND ESTABLISH VEGETATION FOR SOIL STABILIZATION PRIOR TO SITE CLOSEOUT.
2. ALL PERMANENT BMP'S MUST BE CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER.

SUMMARY OF PERMANENT POLLUTION ABATEMENT MEASURES:

1. TEMPORARY BMP'S WILL BE MAINTAINED UNTIL THE SITE IMPROVEMENTS ARE COMPLETED AND THE SITE HAS BEEN STABILIZED, INCLUDING SUFFICIENT VEGETATION BEING ESTABLISHED.
2. DURING CONSTRUCTION, TO THE EXTENT PRACTICAL, CONTRACTOR SHALL MINIMIZE THE AREA OF SOIL DISTURBANCE. AREAS OF DISTURBED SOIL SHALL BE REVEGETATED TO STABILIZE SOIL USING SOLID SOD IN A STAGGERED PATTERN. SEE DETAIL ON TEMPORARY POLLUTION ABATEMENT DETAIL SHEET AND REFER TO SECTION 1.3.11 IN TCEQ'S TECHNICAL GUIDANCE MANUAL RG-348 (2005). SOD SHOULD BE USED IN CHANNELS AND ON SLOPES > 15%. THE CONTRACTOR MAY SUBSTITUTE THE USE OF SOD WITH THE PLACEMENT OF TOP SOIL AND A FRIABLE SEED BED WITH A PROTECTIVE MATTING OR HYDRAULIC MULCH ALONG WITH WATERING UNTIL VEGETATION IS ESTABLISHED. APPLICATIONS AND PRODUCTS SHALL BE THOSE APPROVED BY TXDOT AS OF FEBRUARY 2001 AND IN COMPLIANCE WITH THE TGM RG-348 (2005). SEED MIXTURE AND/OR GRASS TYPE TO BE DETERMINED BY OWNER AND SHOULD BE IN COMPLIANCE WITH TGM RG-348 (2005) GUIDELINES. IRRIGATION MAY BE REQUIRED IN ORDER TO ESTABLISH SUFFICIENT VEGETATION.
3. FOR DISTURBED AREAS WHERE INSUFFICIENT SOIL EXISTS TO ESTABLISH VEGETATION, CONTRACTOR SHALL PLACE A MINIMUM OF 6" OF TOPSOIL PRIOR TO REVEGETATION.
4. TYPICAL SLOPES ON THIS PROJECT RANGE FROM APPROXIMATELY 1% TO 10%

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

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

EXHIBIT 3

4S RANCH UNIT-6B & MUSTANG VISTA PHASE 3 TSS TREATMENT SUMMARY

WATERSHED	WATERSHED AREA (ACRES)	COMBINED WATERSHED AREA (ACRES)	4S RANCH PHASE 1 IMPERVIOUS COVER (ACRES)	4S RANCH PHASE 2 IMPERVIOUS COVER (ACRES)	4S RANCH PHASE 2 WWTP (ACRES)	4S RANCH PHASE 3 IMPERVIOUS COVER (ACRES)	4S RANCH PHASE 3 LIFT STATION (ACRES)	4S Ranch Unit-6B & Mustang Vista Phase III	TOTAL IMPERVIOUS COVER (ACRES)	COMBINED TOTAL IMPERVIOUS COVER (ACRES)	BMP	REQUIRED TSS REMOVAL (LBS./YR)	DESIGNED TSS REMOVAL (LBS./YR)
M	1.82		0.00	0.00	0.00	0.12	0.00	0.00	0.12			108	
N	6.02		0.46	2.22	0.00	0.00	0.00	0.00	2.68			2,406	
O	8.79		1.26	0.00	0.00	0.00	0.00	0.00	1.26			1,131	
P	4.13	37.50	1.33	0.00	0.00	0.10	0.00	0.00	1.43	10.58	EXISTING WATER QUALITY BASIN "B" (4S RANCH, PHASE 1 CZP EAPP #1274304)[1]	1,284	10,302
Q	7.23		3.12	0.00	0.00	0.00	0.00	0.00	3.12			2,801	
R	5.61		0.06	1.15	0.00	0.00	0.00	0.00	1.21			1,086	
T	3.90		0.07	0.69	0.00	0.00	0.00	0.00	0.76			682	
X	11.12	N/A	0.00	5.21	0.00	0.00	0.00	0.00	5.21	N/A	EXISTING SAND FILTER BASIN "C"(4S RANCH, PHASE 2 CZP EAPP # 13000510)[2]	4,676	4,820
Z	0.39	N/A	0.00	0.16	0.00	0.00	0.00	0.00	0.16	N/A	OVERTREATMENT SAND FILTER BASIN "C" (4S RANCH, PHASE 2 CZP EAPP # 13000510)	144	
A	91.03	91.03	0.00	25.64	0.00	1.67	0.00	5.04	32.35	32.35	EXISTING BATCH DETENTION BASIN "C" (4S RANCH, PHASE 2 CZP EAPP # 13000510)[3]	29,037	34,045
B	N/A	N/A	0.76	0.00	0.00	0.00	0.00	0.00	0.76	N/A	EXISTING 15' VFS #2 (4S RANCH, PHASE 1 CZP EAPP #1274304)	682	682
T	N/A	N/A	0.55	0.00	0.00	0.00	0.00	0.00	0.55	N/A	EXISTING 15' VFS #5 (4S RANCH, PHASE 1 CZP EAPP #1274304)	494	494
U	11.87	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	NO IMPERVIOUS COVER IN THIS WATERSHED		
V	2.03	N/A	0.00	0.80	0.00	0.00	0.00	0.00	0.80	N/A	EXISTING 15' VFS #7 (4S RANCH, PHASE 2 CZP EAPP # 13000510)	718	718
W	0.89	N/A	0.00	0.40	0.00	0.00	0.00	0.00	0.40	N/A	EXISTING 15' VFS #8 (4S RANCH, PHASE 2 CZP EAPP # 13000510)	359	359
S	2.12	N/A	0.00	0.00	0.56	0.00	0.00	0.00	0.56	N/A	EXISTING 50' VFS #1 (4S RANCH WWTP CZP EAPP #13000473)[4]	503	567
A-WWTP	0.81	N/A	0.00	0.00	0.36	0.00	0.00	0.00	0.36	N/A	EXISTING 15' VFS #2 (4S RANCH WWTP CZP EAPP #13000473)	323	356
BB	7.26	N/A	0.00	0.00	0.00	0.00	0.00	3.28	3.28	N/A	OVERTREATMENT BATCH DETENTION BASIN "C"(4S RANCH, PHASE 2 CZP EAPP # 13000510)	2,944	
AA	1.11	N/A	0.00	0.00	0.00	0.00	0.00	0.48	0.48	N/A	PROPOSED 15' VFS #9	431	475
AB	1.69	N/A	0.00	0.00	0.00	0.00	0.00	0.70	0.70	N/A	PROPOSED 15' VFS #10	628	694
AC	0.98	N/A	0.00	0.00	0.00	0.00	0.00	0.40	0.40	N/A	PROPOSED 15' VFS #11	359	397
AD	0.40	N/A	0.00	0.00	0.00	0.00	0.00	0.16	0.16	N/A	OVERTREATMENT BATCH DETENTION BASIN "C"(4S RANCH, PHASE 2 CZP EAPP # 13000510)	144	
AE	0.71	N/A	0.00	0.00	0.00	0.00	0.00	0.39	0.39	N/A	N/A[5]		
AF	3.69	N/A	0.00	0.00	0.31	0.00	0.00	1.53	1.84	N/A	OVERTREATMENT BATCH DETENTION BASIN "C" (4S RANCH, PHASE 2 CZP EAPP # 13000510)	1,652	
AG	0.63	N/A	0.00	0.00	0.00	0.00	0.00	0.10	0.10	N/A	OVERTREATMENT PROPOSED VFS #9, VFS #10, VFS #11 & EXISTING VFS #2 (4S RANCH WWTP CZP EAPP #13000473)	171	
I	77.95		0.00	0.00	0.00	34.56	0.00	0.00	34.56			31,021	
J	0.12	80.14	0.00	0.00	0.00	0.00	0.12	0.00	0.12	35.55	EXISTING BATCH DETENTION BASIN "D" (4S RANCH, PHASE 3 CZP EAPP #13000682)	108	31,930
Y	2.07		0.00	0.87	0.00	0.00	0.00	0.00	0.87			781	
K (OFFSITE)	17.16	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A			
AA	1.21	N/A	0.00	0.00	0.00	0.30	0.00	0.00	0.30	N/A	OVERTREATMENT BATCH DETENTION BASIN "C"(4S RANCH, PHASE 2 CZP EAPP #13000510)	269	
TOTAL		272.74	N/A	7.60	37.15	1.32	36.75	0.12	12.06	95.01	N/A	84,940	85,818

1. WATER QUALITY BASIN "B" (4S RANCH, PHASE 1 CZP EAPP #1274304) OVERTREATS 63 LBS/YR, 27 LBS/YR, AND 27 LBS/YR FOR WATERSHEDS C, E, AND F, RESPECTIVELY, ASSOCIATED WITH THE 4S RANCH WWTP CZP (EAPP # 13000473).
2. EXISTING SAND FILTER BASIN "C" (4S RANCH, PHASE 2 CZP EAPP # 13000510) OVERTREATS UNCAPTURED IMPERVIOUS COVER FROM WATERSHED Z (4S RANCH, PHASE 2 CZP EAPP # 13000510).
3. EXISTING BATCH DETENTION BASIN "C" NO LONGER OVERTREATS UNCAPTURED IMPERVIOUS COVER FROM WATERSHED Y (4S RANCH, PHASE 2 CZP EAPP # 13000510). THIS WATERSHED NOW DRAINS TO EXISTING BATCH DETENTION BASIN "D". (EAPP #13000682)
4. A PORTION OF THE IMPERVIOUS COVER FROM WATERSHED "N" IS NO LONGER INCLUDED IN THIS WATERSHED. THE PREVIOUS IMPERVIOUS COVER FOR THAT WATERSHED WAS 0.73 ACRES AND NOW IT IS 0.56 ACRES.
5. IMPERVIOUS COVER WITHIN DRAINAGE AREA "AE" IS NOT COUNTED SINCE THIS AREA IS FOR THE PROPOSED BRIDGE SIDWALK DRAINS WITHIN THE BRIDGE ARE DESIGNED TO CAPTURE THE STORMWATER BEFORE IT LEAVES THIS DRAINAGAE AREA.
6. A TOTAL OF 0.76 ACRES OF IMPERVIOUS COVER WAS PREVIOUSLY APPROVED FOR WATERSHED A-WWTP WITH THE 4S RANCH WWTP CZP (EAPP #13000473).

NO.	REVISION	DATE

STATE OF TEXAS
EUGENE H. DAWSON III
112792
LICENSED
PROFESSIONAL ENGINEER
4/22/19

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800

4S RANCH UNIT-6B & MUSTANG VISTA PH. 3
BULVERDE, TEXAS
CONTRIBUTING ZONE PLAN

PERMANENT POLLUTION PREVENTION PLAN

PLAT NO.
JOB NO. 8547-42
DATE APRIL 2019
DESIGNER DW
CHECKED BS DRAWN DW
SHEET 1 OF 1

Date: Apr 24, 2019, 3:28pm User ID: DWright
File: P:\85\47\42\DESIGN\ENVIRONMENTAL\PM8547742.dwg

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

October 30, 2015

RECEIVED

NOV 05 2015

COUNTY ENGINEER

Mr. Scott Teeter
Lennar Homes of Texas Land and Construction, Ltd.
1015 Central Parkway, North, Suite 140
San Antonio, Texas 78232

Re: Edwards Aquifer, Comal County

NAME OF PROJECT: 4S Ranch Phase 1; Located approximately 1.9 miles north of the intersection of FM 1863 and Stahl Lane, Bulverde, Texas 78163
PLAN TYPE: Request for Approval of a Contributing Zone Plan (CZP); 30 Texas Administrative Code (TAC) Chapter 213 Subchapter B Edwards Aquifer
Investigation No. 1274304; Regulated Entity No. RN105628622; Additional ID No. 13-15082002

Dear Mr. Teeter:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the CZP Application for the above-referenced project submitted to the San Antonio Regional Office by Pape-Dawson Engineers, Inc. on behalf of Lennar Homes of Texas Land and Construction, Ltd. on August 20, 2015. Final review of the CZP was completed after additional material was received on October 14, 2015. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) were selected and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

PROJECT DESCRIPTION

The proposed residential project will have an area of approximately 87.75 acres. It will include clearing, grading, excavation, installation of utilities and drainage improvements, streets, sidewalks and homes. The impervious cover will be 34.41 acres (39.22 percent). Project wastewater will be disposed of by conveyance to the proposed 4S Ranch Wastewater Treatment Facility (WQ0015095001) owned by Stahl Lane LTD.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, two (2) single chamber sedimentation/filtration basins and six (6) vegetative filter strips, designed using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005), will be constructed to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 30,888 pounds of TSS generated from the 34.41 acres of impervious cover. The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project.

Watershed	Area (acres)	Impervious Cover (acres)	BMP	Required TSS Removal (lbs/yr)	Designed TSS Removal (lbs/yr)
B, C, E1, E2, H, I	31.57	14.82	Basin A	13,302	15,049
A1, A2	4.15	0.63	Overtreatment Basin A	570	-
G2, G3	3.67	1.17	Overtreatment Basin A	1,054	-
J3, J4	1.74	0.88	Overtreatment Basin B	794	-
K	2.20	0.14	Overtreatment Basin A	124	-
F	0.79	0.28	VFS 1	247	247
D3	3.27	1.10	VFS 2	989	989
K	2.20	0.63	VFS 3	569	569
L	81.22	0.44	VFS 4	396	396
M, N, O, P, Q, R, T	35.30	11.72	Basin B	10,520	11,561
R, T	9.41	1.57	VFS 5	1,409	1,409
N	6.93	0.74	VFS 6	668	668
U	4.30	0.28	Overtreatment Basin B	247	-
TOTAL	186.75	34.41		30,888	30,888

*Total project boundary area = 87.75 acres

The six VFS will be at least 15 feet wide (in the direction of flow) and will extend along the entire length of the contributing area with no gullies, rills or obstructions that will concentrate flow. The VFS will have a uniform slope of less than 20 percent, and will maintain a vegetated cover of at least 80 percent.

SPECIAL CONDITIONS

I. Within 60 days of receiving written approval of an Edwards Aquifer Protection Plan, the applicant must submit to the San Antonio Regional Office, proof of recordation of notice in the county deed records, with the volume and page number(s) of the county deed records of the county in which the property is located. A description of the property boundaries shall be included in the deed recordation in the county deed records. A suggested format (Deed Recordation Affidavit, TCEQ-0625A) that you may use to deed record the approved CZP is enclosed.

II. All permanent pollution abatement measures shall be operational prior to occupancy of the facility.

III. All sediment and/or media removed from the two water quality basins during maintenance activities shall be properly disposed of according to 30 TAC 330 or 30 TAC 335, as applicable.

IV. Please be advised that the construction of the wastewater treatment plant for this development cannot be authorized through this application. A separate CZP application must be submitted and approved prior to initiating construction of the treatment plant and associated areas.

STANDARD CONDITIONS

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

Prior to Commencement of Construction:

4. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved Contributing Zone Plan and this notice of approval shall be maintained at the project location until all regulated activities are completed.
5. Any modification to the activities described in the referenced CZP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
6. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the San Antonio Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the name of the approved plan and file number for the regulated activity, the date on which the regulated activity will commence, and the name of the prime contractor with the name and telephone number of the contact person.

7. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved Storm Water Pollution Prevention Plan (SWPPP) must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

During Construction:

8. During the course of regulated activities related to this project, the applicant or his agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.
9. If sediment escapes the construction site, the sediment must be removed at a frequeney sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been significantly reduced. Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).
10. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.
11. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
12. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.
13. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 5, above.

After Completion of Construction:

14. Owners of permanent BMPs and measures must insure that the 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 San Antonio Regional Office within 30 days of site completion.
15. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new

property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred. A copy of the transfer of responsibility must be filed with the executive director through the San Antonio Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.

16. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Contributing Zone Plan. If the new owner intends to commence any new regulated activity on the site, a new Contributing Zone Plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.
17. A Contributing Zone Plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Contributing Zone Plan must be submitted to the San Antonio Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.
18. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Ms. Lillian Butler of the Edwards Aquifer Protection Program of the San Antonio Regional Office at (210) 403-4026.

Sincerely,

Lynn M. Bumguardner, Water Section Manager
San Antonio Region Office
Texas Commission on Environmental Quality

LMB/LIB/eg

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

cc: Ms. Cara C. Tackett, P.E., Pape-Dawson Engineers, Inc.
Mr. Roland Ruiz, Edwards Aquifer Authority
Mr. Thomas H. Hornseth, P.E., Comal County Engineer
The Honorable Bill Krawietz, City of Bulverde
TCEQ Central Records, Building F, MC 212

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

August 21, 2015

Mr. Thomas H. Hornseth, P.E.
Comal County Engineer
195 David Jonas Drive
New Braunfels TX 78132-3710

Re: Edwards Aquifer, Comal County
PROJECT NAME: 4S Ranch Phase 1, located off Stahl Road, Bulverde, Texas

PLAN TYPE: Application for Contributing Zone Water Pollution Abatement Plan (CZP)
30 Texas Administration Code (TAC) Chapter 213; Edwards Aquifer Protection Program

Dear Mr. Hornseth:

The referenced application is being forwarded to you pursuant to the Edwards Aquifer Rules. The Texas Commission on Environmental Quality (TCEQ) is required by 30 TAC Chapter 213 to provide copies of all applications to affected incorporated cities and underground water conservation districts for their comments prior to TCEQ approval. More information regarding this project may be obtained from the TCEQ Central Registry website at http://www.tceq.state.tx.us/permitting/central_registry/.

Please forward your comments to this office by September 21, 2015.

The Texas Commission on Environmental Quality appreciates your assistance in this matter and your compliance efforts to ensure protection of the State's environment. If you or members of your staff have any questions regarding these matters, please feel free to contact the San Antonio Region Office at (210) 490-3096.

Sincerely

Todd Jones
Water Section Work Leader
San Antonio Regional Office

TJ/eg

PAPE-DAWSON ENGINEERS

50th ANNIVERSARY

San Antonio | Austin | Houston | Fort Worth | Dallas

4S RANCH PHASE-I

Contributing Zone Plan Application Modification

August 2015

4S RANCH PHASE-I

Contributing Zone Plan Application Modification

August 2015

Texas Board of Professional Engineers, Firm Registration # 470

PAPE-DAWSON ENGINEERS

PAPE-DAWSON ENGINEERS

August 19, 2015

Mr. Joel Anderson
Texas Commission on Environmental Quality (TCEQ)
Region 13
14250 Judson Road
San Antonio, Texas 78233-4480

Re: 4S Ranch Phase-I
Contributing Zone Plan Application

Dear Mr. Anderson:

Please find attached one (1) original and four (4) copies of the 4S Ranch Phase-I Contributing Zone Plan Application. This Contributing Zone Plan Application has been prepared in accordance with the Texas Administrative Code (30 TAC 213) and current policies for development over the Edwards Aquifer Contributing Zone.

This Contributing Zone Application applies to an approximately 87.75-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 fees ($10,000) and fee application form are included. If you have questions or require additional information, please call our office.

Sincerely,
Pape-Dawson Engineers, Inc.
TBPE, Firm Registration # 470 | TBPLS, Firm Registration # 10028800

STATE OF TEXAS
CARA C. TACKETT
89491
LICENSED
PROFESSIONAL ENGINEER

Cara C. Tackett, P.E.
Sr. Vice President

Attachments

P:\85\47\02\Word\Reports\CZP\150818A1 CZP Letter.docx

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

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

2. This Edwards Aquifer Application Cover Page form (certified by the applicant or agent) must be included in the application and brought to the administrative review meeting.

3. Administrative reviews are scheduled with program staff who will conduct the review. Applicants or their authorized agent should call the appropriate regional office, according to the county in which the project is located, to schedule a review. The average meeting time is one hour.

4. In the meeting, the application is examined for administrative completeness. Deficiencies will be noted by staff and emailed or faxed to the applicant and authorized agent at the end of the meeting, or shortly after. Administrative deficiencies will cause the application to be deemed incomplete and returned.

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

5. If an application is received by mail, courier service, or otherwise submitted without a review meeting, the administrative review will be condncted within 30 days. The applicant and agent will be contacted with the results of the administrative review. If the application is fonnd to be administratively incomplete, it can be retrieved from the regional office or returned by regular mail. If returned by mail, the regional office may require arrangements for return shipping.

6. If the geologic assessment was completed before October 1, 2004 and the site contains "possibly sensitive" features, the assessment must be updated in accordance with the *Instructions to Geologists* (TCEQ-0585 Instructions).

Technical Review

1. When an application is deemed administratively complete, the technical review period begins. The regional office will distribute copies of the application to the identified affected city, county, and groundwater conservation district whose jurisdiction inclndes 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 if not withdrawn the application will be denied and 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 to you:

- You can withdraw your application, and your fees will be refunded or credited for a resubmittal.
- 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 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 effected 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: 4S Ranch Phase-I						**2. Regulated Entity No.:** Not yet assigned				
3. Customer Name: Lennar Homes of Texas Land and Constructin, Ltd.						**4. Customer No.:** 602412207				
5. Project Type: **(Please circle/check one)**	(New)		Modification			Extension		Exception		
6. Plan Type: **(Please circle/check one)**	WPAP	(CZP)	SCS	UST	AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures	
7. Land Use: **(Please circle/check one)**	(Residential)		Non-residential			**8. Site (acres):**			753.6	
9. Application Fee:	$10,000		**10. Permanent BMP(s):**							
11. SCS (Linear Ft.):			**12. AST/UST (No. Tanks):**							
13. County:	Comal		**14. Watershed:**					Cibolo Creek		

Application Distribution

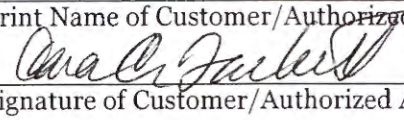
Instructions: Use the table below to determine the number of applications required. One original and one copy of the application, plus additional copies (as needed) for each affected incorporated city, county, and groundwater conservation district are required. Linear projects or large projects, which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

http://www.tceq.texas.gov/assets/public/compliance/field_ops/eapp/EAPP%20GWCD%20map.pdf

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

Austin Region			
County:	**Hays**	**Travis**	**Williamson**
Original (1 req.)	___	___	___
Region (1 req.)	___	___	___
County(ies)	___	___	___
Groundwater Conservation District(s)	___Edwards Aquifer Authority ___Barton Springs/ Edwards Aquifer ___Hays Trinity ___Plum Creek	___Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	___Austin ___Buda ___Dripping Springs ___Kyle ___Mountain City ___San Marcos ___Wimberley ___Woodcreek	___Austin ___Bee Cave ___Pflugerville ___Rollingwood ___Round Rock ___Sunset Valley ___West Lake Hills	___Austin ___Cedar Park ___Florence ___Georgetown ___Jerrell ___Leander ___Liberty Hill ___Pflugerville ___Round Rock

San Antonio Region					
County:	**Bexar**	**Comal**	**Kinney**	**Medina**	**Uvalde**
Original (1 req.)	___	✓	___	___	___
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 Hills ___Fair Oaks Ranch ___Helotes ___Hill Couutry Village ___Hollywood Park ___San 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 application is complete and accurate. This application is hereby submitted to TCEQ for administrative review and technical review. Cara C. Tackett, P.E.
Print Name of Customer/Authorized Agent  8/19/15
Signature of Customer/Authorized Agent Date

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

CONTRIBUTING ZONE PLAN APPLICATION (TCEQ-10257)

Contributing Zone Plan Application

Texas Commission on Environmental Quality

for Regulated Activities on the Contributing Zone to the Edwards Aquifer and Relating to 30 TAC §213.24(1), Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the farm are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the applicatian, 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 **Contributing Zone Plan Application** is hereby submitted for TCEQ review and Executive Director approval. The application was prepared by:

Print Name of Customer/Agent: Cara C. Tackett, P.E.

Date: 8/19/15

Signature of Customer/Agent:

Regulated Entity Name: 4S Ranch Phase-I

Project Information

1. County: Comal
2. Stream Basin: Cibolo Creek
3. Groundwater Conservation District (if applicable): Comal Trinity
4. Customer (Applicant):

   Contact Person: Scott Teeter
   Entity: Lennar Homes of Texas Land and Construction, Ltd.
   Mailing Address: 1015 Central Parkway, North, Suite 140
   City, State: San Antonio, Texas Zip: 78232
   Telephone: (210) 403-6292 Fax: (210) 403-6280
   Email Address: scott.teeter@lennar.com

5. Agent/Representative (If any):

Contact Person: Cara C. Tackett, P.E.
Entity: Pape-Dawson Engineers, Inc.
Mailing Address: 2000 NW Loop 410
City, State: San Antonio, Texas Zip: 78213
Telephone: (210) 375-9000 Fax: (210) 375-9010
Email Address: ctackett@pape-dawson.com

6. Project Location:

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

7. ☒ The location of the project site is described below. Sufficient detail and clarity has been provided so that the TCEQ's Regional staff can easily locate the project and site boundaries for a field investigation.

From TCEQ's regional office, travel approximately 2.5 miles north on Judson Road to Loop 1604. Turn left onto Loop 1604 and travel approximately 5 miles to U.S. Hwy 281. Exit toward onto U.S. 281N and travel north approximately 9.3 miles to exit for FM 1863/Bulverde. Turn right on FM 1863 E and travel approximately 1.5 miles, then turn left on Stahl Lane. Travel 1.9 miles north on Stahl Lane and the site will be on your right.

8. ☒ **Attachment A - Road Map**. A road map showing directions to and the location of the project site is attached. The map clearly shows the boundary of the project site.

9. ☒ **Attachment B - USGS Quadrangle Map**. A copy of the official 7 ½ minute USGS Quadrangle Map (Scale: 1" = 2000') is attached. The map(s) clearly show:

☒ Project site boundaries.
☒ USGS Quadrangle Name(s).

10. ☒ **Attachment C - Project Narrative**. A detailed narrative description of the proposed project is attached. The project description is consistent throughout the application and contains, at a minimum, the following details:

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

11. Existing project site conditions are noted below:

- ☐ Existing commercial site
- ☐ Existing industrial site
- ☐ Existing residential site
- ☐ Existing paved and/or unpaved roads
- ☐ Undeveloped (Cleared)
- ☒ Undeveloped (Undisturbed/Not cleared)
- ☐ Other: _____

12. The type of project is:

- ☒ Residential: # of Lots: 202
- ☐ Residential: # of Living Unit Equivalents: _____
- ☐ Commercial
- ☐ Industrial
- ☐ Other: _____

13. Total project area (size of site): 87.75 Acres

    Total disturbed area: 87.75 Acres

14. Estimated projected population: 606* (Based on an assumed three (3) persons per home

15. The amount and type of impervious cover expected after construction is complete is shown below:

Table 1 - Impervious Cover

Impervious Cover of Proposed Project	*Sq. Ft.*	*Sq. Ft./Acre*	*Acres*
Structures/Rooftops	759,300	÷ 43,560 =	17.43
Parking	0	÷ 43,560 =	0
Other paved surfaces	739,705.7	÷ 43,560 =	16.98
Total Impervious Cover	1,499,006	÷ 43,560 =	34.41

Total Impervious Cover 34.41 **÷ Total Acreage** 87.75 **X 100 =** 39.22**% Impervious Cover**

16. ☒ **Attachment D - Factors Affecting Surface Water Quality**. A detailed description of all factors that could affect surface water quality is attached. If applicable, this includes the location and description of any discharge associated with industrial activity other than construction.

17. ☒ Only inert materials as defined by 30 TAC 330.2 will be used as fill material.

For Road Projects Only

Complete questions 18 - 23 if this application is exclusively for a road project.

☒ N/A

18. Type of project:

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

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

- ☐ Concrete
- ☐ Asphaltic concrete pavement
- ☐ Other: _____

20. Right of Way (R.O.W.):

Length of R.O.W.: _____ feet.
Width of R.O.W.: _____ feet.
L x W = _____Ft^2 ÷ 43,560 Ft^2/Acre = _____ acres.

21. Pavement Area:

Length of pavement area: _____ feet.
Width of pavement area: _____ feet.
L x W = _____Ft^2 ÷ 43,560 Ft^2/Acre = _____ acres.
Pavement area _____ acres ÷ R.O.W. area _____ acres x 100 = _____% impervious cover.

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

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

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

Stormwater to be generated by the Proposed Project

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

Wastewater to be generated by the Proposed Project

25. ☒ Wastewater is to be discharged in the contributing zone. Requirements under 30 TAC §213.6(c) relating to Wastewater Treatment and Disposal Systems have been satisfied.

☐ N/A

26. Wastewater will be disposed of by:

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

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

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

☒ Sewage Collection System (Sewer Lines):

The sewage collection system will convey the wastewater to the 4S Ranch (name) Treatment Plant. The treatment facility is:

☐ Existing.
☒ Proposed.

☐ N/A

Permanent Aboveground Storage Tanks(ASTs) ≥ 500 Gallons

Complete questions 27 - 33 if this project includes the installation of AST(s) with volume(s) greater than or equal to 500 gallons.

☒N/A

27. Tanks and substance stored:

Table 2 - Tanks and Substance Storage

AST Number	*Size (Gallons)*	*Substance to be Stored*	*Tank Material*
1			
2			
3			

AST Number	*Size (Gallons)*	*Substance to be Stored*	*Tank Material*
4			
5			

Total x 1.5 = _____ Gallons

28. ☐ The AST will be placed within a containment structure that is sized to capture one and one-half (1 1/2) times the storage capacity of the system. For facilities with more than one tank system, the containment structure is sized to capture one and one-half (1 1/2) times the cumulative storage capacity of all systems.

☐ **Attachment G - Alternative Secondary Containment Methods**. Alternative methods for providing secondary containment are proposed. Specifications showing equivalent protection for the Edwards Aquifer are attached.

29. Inside dimensions and capacity of containment structure(s):

Table 3 - Secondary Containment

Length (L)(Ft.)	*Width(W)(Ft.)*	*Height (H)(Ft.)*	*L x W x H = (Ft3)*	*Gallons*

Total: _____ Gallons

30. Piping:

☐ All piping, hoses, and dispensers will be located inside the containment structure.
☐ Some of the piping to dispensers or equipment will extend outside the containment structure.
☐ The piping will be aboveground
☐ The piping will be underground

31. ☐ The containment area must be constructed of and in a material impervious to the substance(s) being stored. The proposed containment structure will be constructed of: _____.

32. ☐ **Attachment H - AST Containment Structure Drawings**. A scaled drawing of the containment structure is attached that shows the following:

☐ Interior dimensions (length, width, depth and wall and floor thickness).
☐ Internal drainage to a point convenient for the collection of any spillage.
☐ Tanks clearly labeled
☐ Piping clearly labeled

☐ Dispenser clearly labeled

33. ☐ Any spills must be directed to a point convenient for collection and recovery. Spills from storage tank facilities must be removed from the controlled drainage area for disposal within 24 hours of the spill.

    ☐ In the event of a spill, any spillage will be removed from the containment structure within 24 hours of the spill and disposed of properly.

    ☐ In the event of a spill, any spillage will be drained from the containment structure through a drain and valve within 24 hours of the spill and disposed of properly. The drain and valve system are shown in detail on the scaled drawing.

Site Plan Requirements

Items 34 - 46 must be included on the Site Plan.

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

    Site Plan Scale: 1" = 100'.

35. 100-year floodplain boundaries:

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

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

    The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): FEMA (Flood Insurance Rate Map for Comal County, Texas, and Incorporated areas) Panel Number 48091C0220F, dated September 2, 2009.

36. ☒ 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, etc. are shown on the site plan.

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

37. ☒ A drainage plan showing all paths of drainage from the site to surface streams.

38. ☒ The drainage patterns and approximate slopes anticipated after major grading activities.

39. ☒ Areas of soil disturbance and areas which will not be disturbed.

40. ☒ Locations of major structural and nonstructural controls. These are the temporary and permanent best management practices.

41. ☒ Locations where soil stabilization practices are expected to occur.

42. ☐ Surface waters (including wetlands).

☒ N/A

43. ☐ Locations where stormwater discharges to surface water.

☒ There will be no discharges to surface water.

44. ☒ Temporary aboveground storage tank facilities.

☐ Temporary aboveground storage tank facilities will not be located on this site.

45. ☐ Permanent aboveground storage tank facilities.

☒ Permanent aboveground storage tank facilities will not be located on this site.

46. ☒ Legal boundaries of the site are shown.

Permanent Best Management Practices (BMPs)

Practices and measures that will be used during and after construction is completed.

47. ☒ Permanent BMPs and measures must be implemented to control the discharge of pollution from regulated activities after the completion of construction.

☐ N/A

48. ☒ 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

49. ☒ 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

50. 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.

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

- ☐ **Attachment I - 20% or Less Impervious Cover Waiver**. The site will be used for multi-family residential developments, schools, or small business sites and has 20% or less impervious cover. A request to waive the requirements for other permanent BMPs and measures is attached.
- ☐ The site will be used for multi-family residential developments, schools, or small business sites but has more than 20% impervious cover.
- ☒ The site will not be used for multi-family residential developments, schools, or small business sites.

52. ☒ **Attachment J - 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.

53. ☒ **Attachment K - BMPs for On-site Stormwater**.

- ☒ A description of the BMPs and measures that will be used to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff from the site is attached.
- ☐ Permanent BMPs or measures are not required to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff, and an explanation is attached.

54. ☒ **Attachment L - BMPs for Surface Streams**. A description of the BMPs and measures that prevent pollutants from entering surface streams is attached.

☐ N/A

55. ☒ **Attachment M - Construction Plans**. Construction plans and design calculations for the proposed permanent BMPs and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer, and are signed, sealed, and dated. Construction plans for the proposed permanent BMPs and measures are attached and include: Design calculations, TCEQ Construction Notes, all proposed structural plans and specifications, and appropriate details.

☐ N/A

56. ☒ **Attachment N - Inspection, Maintenance, Repair and Retrofit Plan**. A site and BMP specific plan for the inspection, maintenance, repair, and, if necessary, retrofit of the permanent BMPs and measures is attached. The plan fulfills all of the following:

☒ Prepared and certified by the engineer designing the permanent BMPs and measures
☒ Signed by the owner or responsible party
☒ Outlines specific procedures for documenting inspections, maintenance, repairs, and, if necessary, retrofit.
☒ Contains a discussion of record keeping procedures

☐ N/A

57. ☐ **Attachment O - Pilot-Scale Field Testing Plan**. Pilot studies for BMPs that are not recognized by the Executive Director require prior approval from the TCEQ. A plan for pilot-scale field testing is attached.

☒ N/A

58. ☒ **Attachment P - 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 result in water quality degradation.

☐ N/A

Responsibility for Maintenance of Permanent BMPs and Measures after Construction is Complete.

59. ☒ 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.

60. ☒ 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.

Administrative Information

61. ☒ 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.

62. ☒ Any modification of this Contributing Zone Plan may require TCEQ review and Executive Director approval prior to construction, and may require submission of a revised application, with appropriate fees.

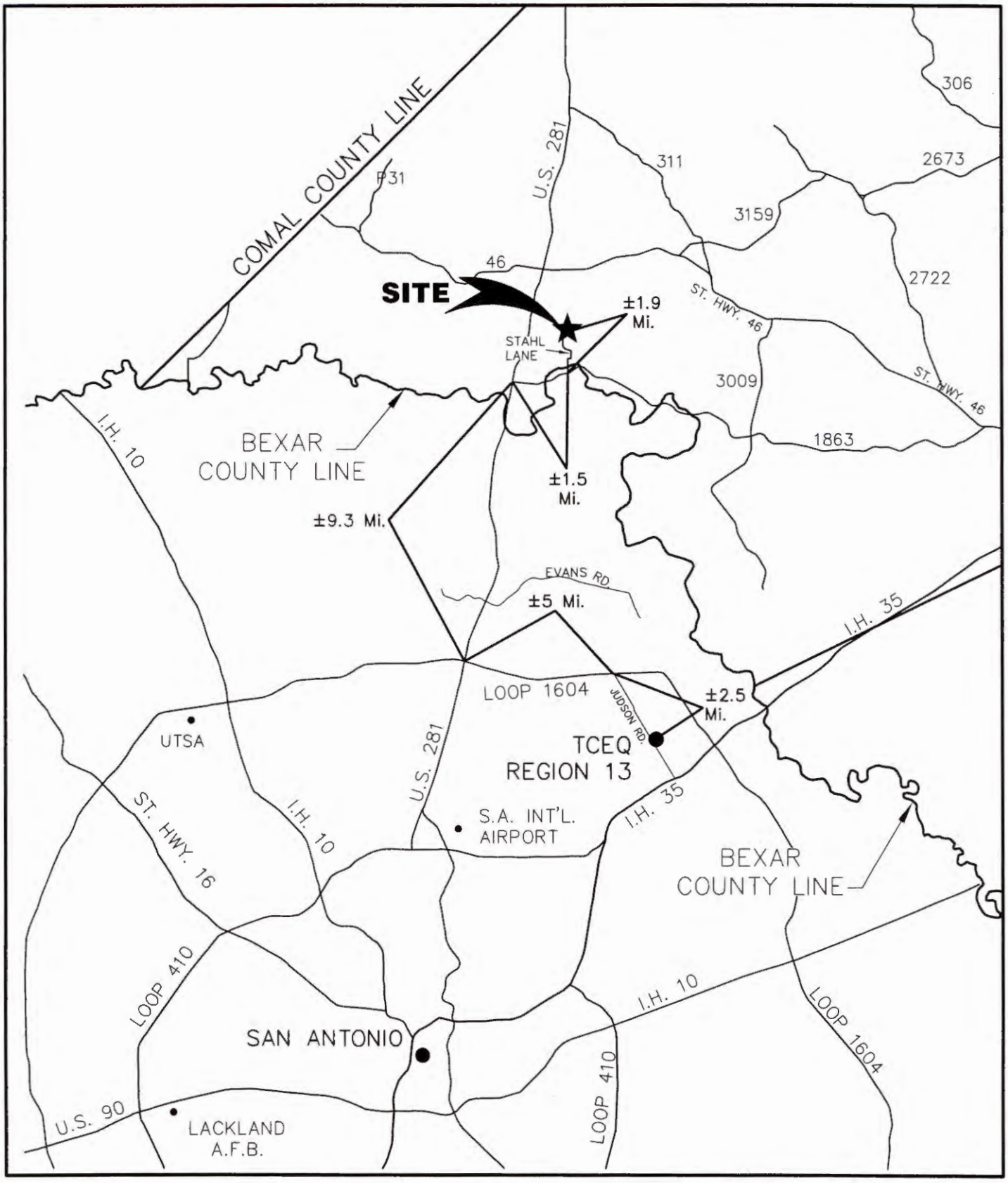
63. ☒ The site description, controls, maintenance, and inspection requirements for the storm water pollution prevention plan (SWPPP) developed under the EPA NPDES general permits for stormwater discharges have been submitted to fulfill paragraphs 30 TAC §213.24(1-5) of the technical report. All requirements of 30 TAC §213.24(1-5) have been met by the SWPPP document.

☒ The Temporary Stormwater Section (TCEQ-0602) is included with the application.

ATTACHMENT A

4S RANCH PHASE-1
Contributing Zone Plan

NOT TO SCALE



Pape-Dawson Engineers, Inc.

Date: Aug 18, 2015, 4:06pm User ID: ROlivarez
File: P:\85\47\02\Design\Environmental\CZP\RM854702.dwg

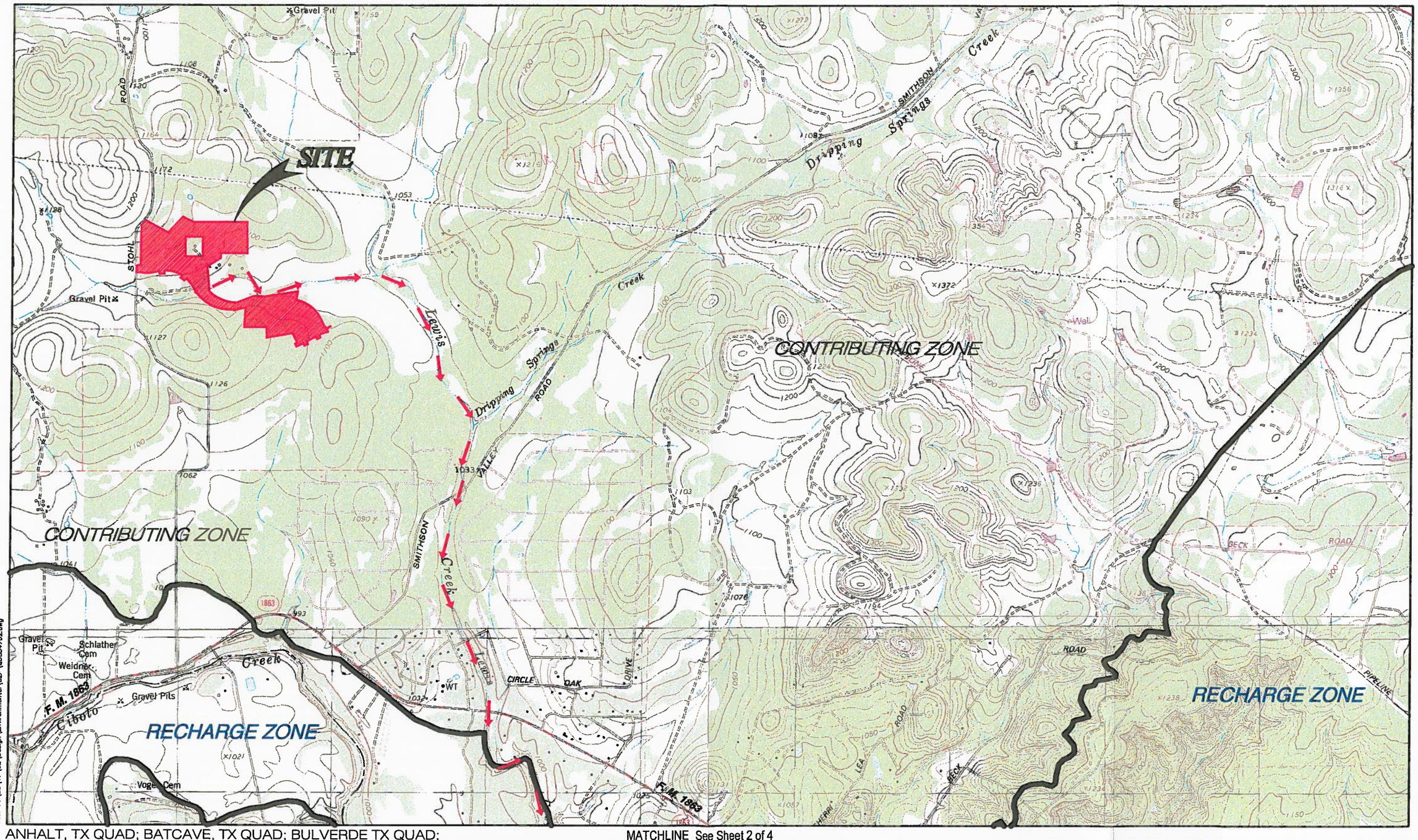
ATTACHMENT A
Road Map

ATTACHMENT B

4S RANCH PHASE-1
Contributing Zone Plan

N

SCALE: 1" = 2000'



Date: Aug 18, 2015, 4:17pm User ID: ROlivarez
File: P:\SD\47\02\Design\Environmental\CZP\20884702.dwg

ANHALT, TX QUAD; BATCAVE, TX QUAD; BULVERDE TX QUAD;
LONGHORN, TX QUAD; SCHERTZ, TX QUAD; SMITHSON VALLEY, TX QUAD

DRAINAGE FLOW → →

MATCHLINE See Sheet 2 of 4

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

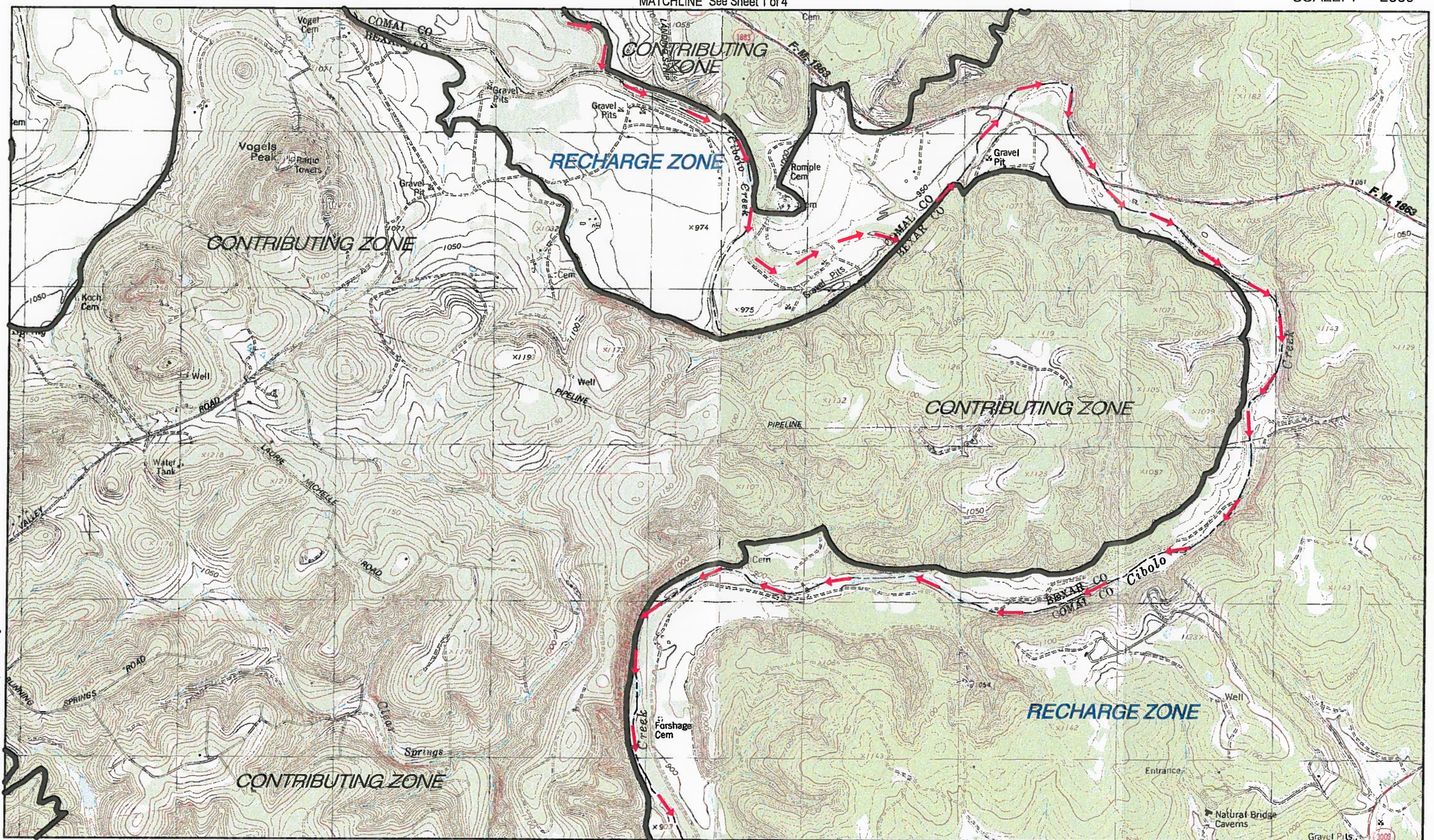
Pape-Dawson Engineers, Inc.

4S RANCH PHASE-1
Contributing Zone Plan

N

SCALE: 1" = 2000'

MATCHLINE See Sheet 1 of 4



Date: Aug 18, 2015, 4:17pm User ID: ROlivarez
File: P:\651\47\02\Design\Environmental\CZP\20854702.dwg

ANHALT, TX QUAD; BATCAVE, TX QUAD; BULVERDE TX QUAD;
LONGHORN, TX QUAD; SCHERTZ, TX QUAD; SMITHSON VALLEY, TX QUAD

DRAINAGE FLOW → →

Pape-Dawson Engineers, Inc.

MATCHLINE See Sheet 3 of 4

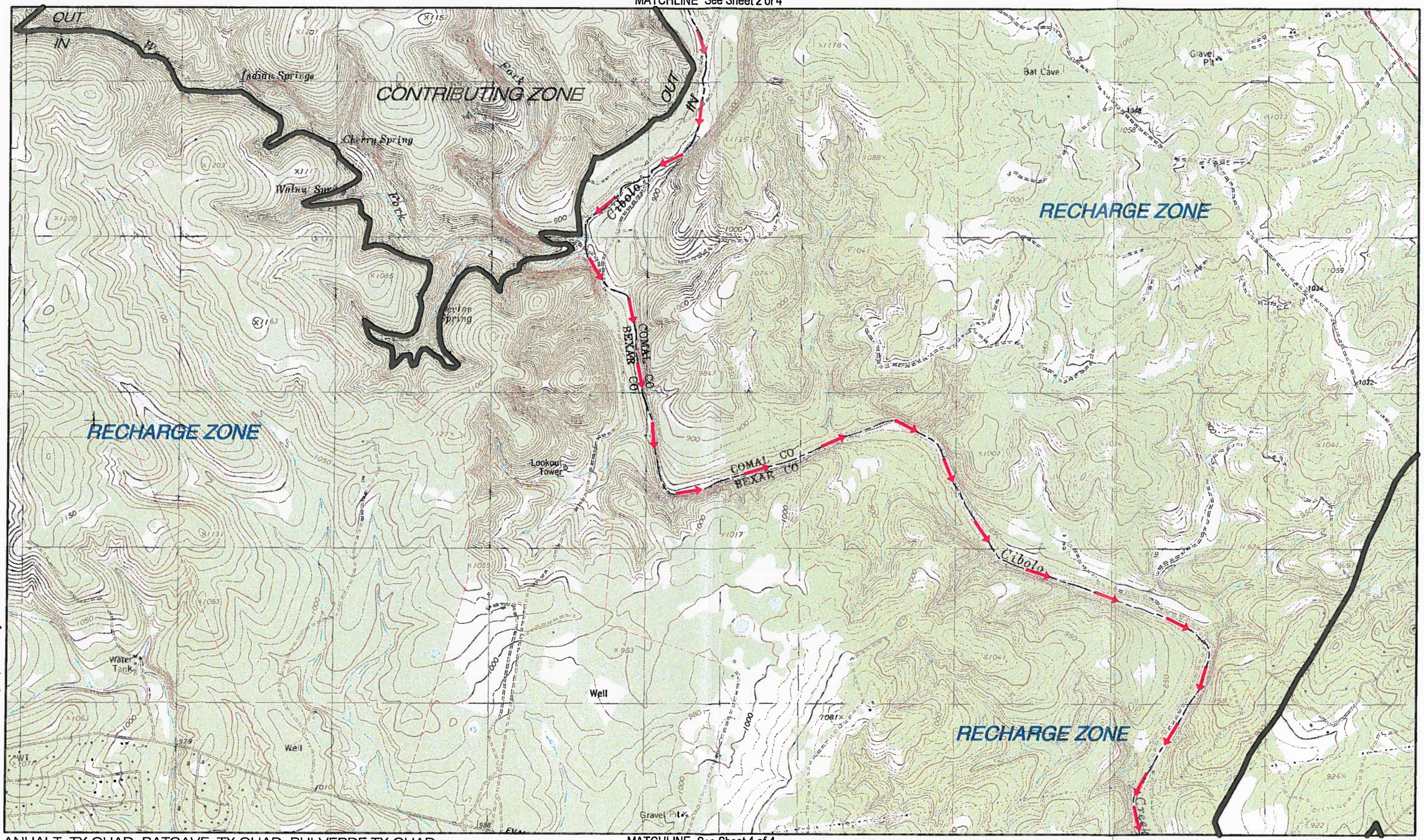
USGS/EDWARDS RECHARGE ZONE MAP
Sheet 2 Of 4
ATTACHMENT B

4S RANCH PHASE-1
Contributing Zone Plan

N

SCALE: 1" = 2000'

MATCHLINE See Sheet 2 of 4



Date: Aug 18, 2015, 4:17pm User ID: ROlivarez
File: P:\85\47\02\Design\Environmental\CZP\QD854702.dwg

ANHALT, TX QUAD; BATCAVE, TX QUAD; BULVERDE TX QUAD;
LONGHORN, TX QUAD; SCHERTZ, TX QUAD; SMITHSON VALLEY, TX QUAD

DRAINAGE FLOW → →

Pape-Dawson Engineers, Inc.

MATCHLINE See Sheet 4 of 4

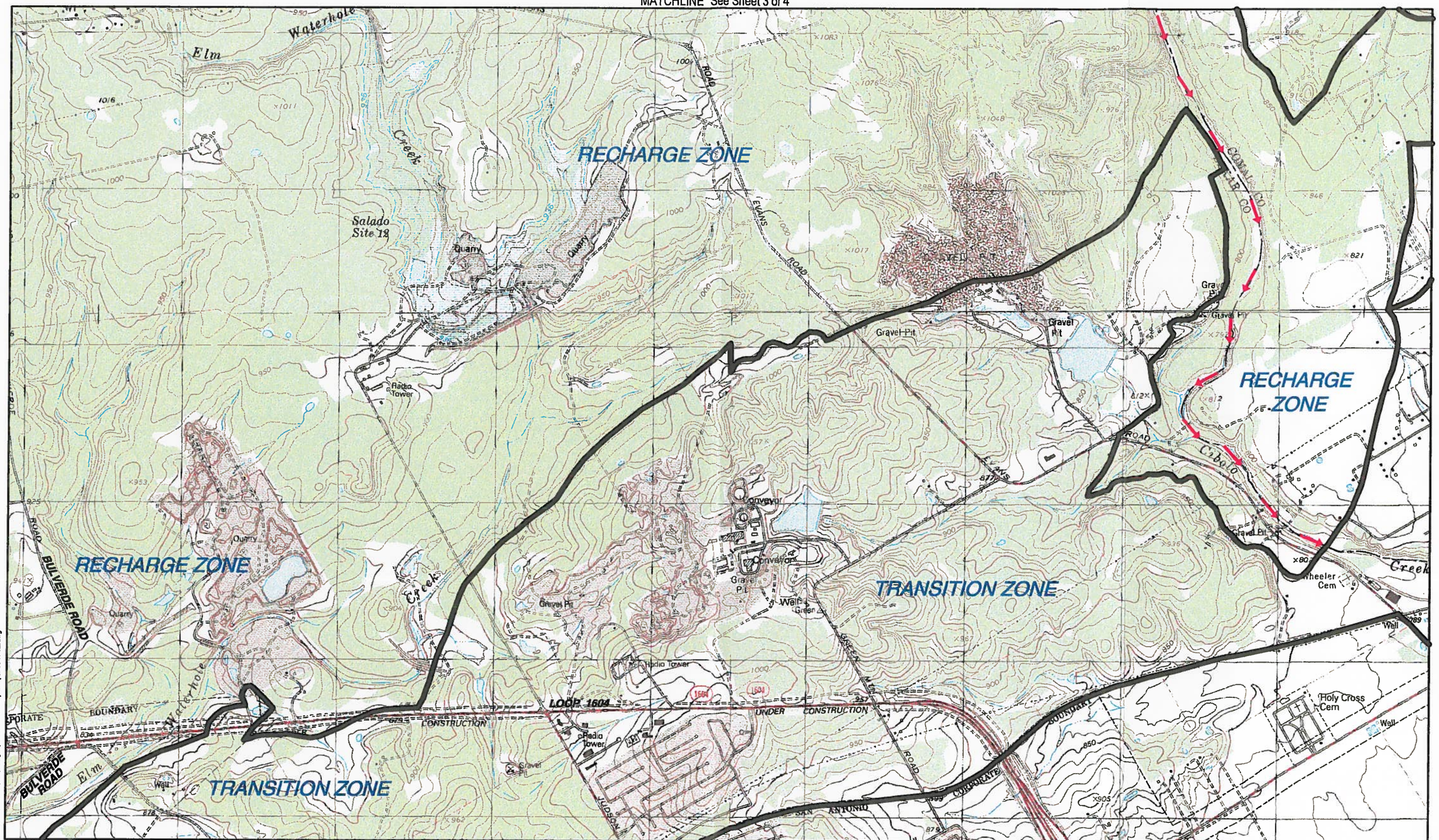
USGS/EDWARDS RECHARGE ZONE MAP
Sheet 3 Of 4
ATTACHMENT B

4S RANCH PHASE-1
Contributing Zone Plan

N

SCALE: 1" = 2000'

MATCHLINE See Sheet 3 of 4



Date: Aug 18, 2015, 4:16pm User ID: ROlivarez
File: P:\85\47\02\Design\Environmental\C2P\QD85-4702.dwg

ANHALT, TX QUAD; BATCAVE, TX QUAD; BULVERDE TX QUAD;
LONGHORN, TX QUAD; SCHERTZ, TX QUAD; SMITHSON VALLEY, TX QUAD

DRAINAGE FLOW → →

Pape-Dawson Engineers, Inc.

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

ATTACHMENT C

Attachment C – Project Narrative

This Contributing Zone Plan (CZP) for 4S Ranch Phase-I, proposes the construction of a single-family residential unit on an 87.75 acres. The project site is located within the extraterritorial jurisdiction of Bulverde in Comal County, Texas. The site was previously used as a ranch and there are existing structures that have been in place some as early as 1995. The site is currently undeveloped though portions were previously cleared for agricultural uses. The site is located entirely over the Edwards Aquifer Contributing Zone. The proposed 87.75-acre project area is part of a larger planned development on a 753.6-acre tract.
This CZP proposes clearing, grading, excavation, installation of utilities and drainage improvements, streets, sidewalks, and homes. There are a total of 202 single-family residential lots proposed for construction ranging from 2,900 – 4,100 square feet (SF) of impervious cover per lot for the house pad, driveway, sidewalk, and some with a concrete patio. Approximately 34.41 acres of impervious cover are proposed for this project or 39.22% of the 87.75-acre site.

Two (2) water quality basins and six (6) vegetative filter strips (VFS) are the proposed permanent best practice management (PBMPs) in this CZP. Three (3), fifteen-foot (15') engineered VFS and three (3), fifty-foot (50') natural VFS are proposed. Upgradient stormwater from the northwest (Watersheds D1, D2 & L) will be intercepted upgradient of the site and conveyed through a stormwater channel and discharged into the existing floodplain to the southeast. Upgradient stormwater from the southern edge of the site (watershed G1, J1, and J2) will be intercepted by an interceptor drain along the upgradient edge of Mustang Vista and collected in a storm drain to be discharged to the floodplain to the north of the road. Approximately 8.49 acres of upgradient area (watershed O and M) drains into Mustang Vista and a portion of the southeastern portion of the site. This upgradient area does not contain any existing impervious cover. It is included in the watershed to the water quality Basin "B."

A portion of Mustang Vista Road in the eastern portion of the project limits is not proposed to be constructed in Phase I; however, impervious cover from this future road is included in the sizing of water quality Basin "B." Currently portions of Phase I residential lot construction (watershed T and R) flow across natural VFS #5 before entering the floodplain. At such time as Mustang Vista is constructed, an interceptor drain will collect runoff from watershed T and R. Runoff from watersheds T and R will ultimately be conveyed to water quality Basin "B" along with runoff from watersheds O, M, P, and Q. Water quality Basin "B" has been sized to include runoff from watershed T and R. Impervious area for the future wastewater treatment plant in watershed U is .28 acres. The runoff for this area will drain to Basin "B" which has been designed for it.

There is an existing property within watershed H that is not currently within the 4S Ranch site. This is an existing single family residential lot with approximately 1.06 acres of impervious cover on a 3.48 acres tract. The existing house in watershed "H" was existing pre December 27, 1996, see attached Exhibit for additional reference; therefore, the post-development impervious cover calculations have it included. This property will be accessed

through the 4S Ranch Phase I development. Stormwater runoff from this property will flow onto the 4S Ranch Phase I site and be collected in stormdrains where it will be routed to the water quality Basin "A." Upgradient stormwater in the northwest area of watershed A1 flows to the south and across the edge of Stahl Road before being conveyed into the flood plain. All PBMPs have been designed in accordance with the Texas Commission on Environmental Quality (TCEQ's) Technical Guidance Manual (TGM) RG-348 (2005) to remove 80% of the increase in Total Suspended Solids (TSS) from the site.

Since this project is located entirely over the Edwards Aquifer Contributing Zone, a Geological Assessment was not conducted and is not required by 30 TAC 213 regulations. Therefore, no naturally-occurring sensitive features are known to exist on the site.

*Potable water will be supplied by the Canyon Lake Water Supply Company (CLWSC). The proposed development will generate approximately 48,480 gallons per day (average flow) of domestic wastewater (1 edu/lot*240gpd/edu*202 lots = 48,480 gpd). Wastewater will be disposed of by conveyance to a proposed 4S Ranch Wastewater Treatment facility.*

ATTACHMENT D

Attachment D– Factors Affecting Surface 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 E

Attachment E– Volume and Character of Stormwater

Stormwater runoff will increase as a result of this development. For a 25-year storm event, the overall project will generate approximately 411 cfs. The runoff coefficient for the site changes from approximately .46 before development to .77 after development. Values are based on the Rational Method using runoff coefficients per the City of San Antonio Unified Development Code.

ATTACHMENT J

Attachment J – BMPs for Upgradient Stormwater

Upgradient stormwater from Watersheds D1, D2, L, G1, J1, and J2 will be intercepted by interceptor channels and conveyed through underground storm drains to be discharged into the existing floodplain. Upgradient runoff from watershed O and M will flow onto the site and to water quality basin B. These areas are currently undeveloped and the basin has been sized to include this upgradient area. 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 14th day after construction activity has temporarily or permanently ceased is precluded by seasonably arid conditions, stabilization measures must be initiated as soon as practicable.

ATTACHMENT K

Attachment K – BMPs for Onsite Stormwater

The proposed Permanent Best Management Practices (PBMPs) for stormwater treatment are:

- *Two (2) proposed water quality basins A1 and B1 designed in accordance with the TCEQ's Technical Guidance Manual (TGM) RG-348 (2005) to remove 80% of the increase in Total Suspended Solids (TSS) from the site.*

- *Three (3) proposed fifteen-foot (15') wide Engineered Vegetative Filter Strips (VFS) designed in accordance with the TCEQ's Technical Guidance Manual (TGM) RG-348 (2005) to remove 80% of the increase in Total Suspended Solids (TSS) from the site.*

- *Three (3) proposed fifty-foot (50') wide Natural Vegetative Filter Strips (VFS) designed in accordance with the TCEQ's Technical Guidance Manual (TGM) RG-348 (2005) to remove 80% of the increase in Total Suspended Solids (TSS) from the site.*

ATTACHMENT L

Attachment L – BMPs for Surface Streams

There are no surface streams on or immediately adjacent to the site.

ATTACHMENT M

Attachment M – Construction Plans

The permanent BMPs for this CZP are two (2) proposed water quality basins A1 and B1. Three (3) proposed fifteen-foot (15') wide Engineered Vegetative Filter Strips (VFS) and three (3) proposed fifty-foot (50') wide Natural Vegetative Filter Strips (VFS) which have been designed in accordance with the TCEQ's Technical Guidance Manual (TGM) RG-348 (2005) to remove 80% of the increase in Total Suspended Solids (TSS) from the site.

ATTACHMENT N

PERMANENT POLLUTION ABATEMENT MEASURES
MAINTENANCE SCHEDULE AND MAINTENANCE PROCEDURES

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

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

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

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

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

Signature

Date 8/10/15

Scott Teeter, Vice President
Lennar Homes of Texas Land and Construction, Ltd.

INSPECTION AND MAINTENANCE SCHEDULE FOR PERMANENT POLLUTION ABATEMENT MEASURES

Recommended Frequency	Task to be Performed													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
After Rainfall	√							√	√	√				
Biannually*	√	√	√	√	√	√	√	√	√	√				

At least one biannual inspection must occur during or immediately after a rainfall event.
√Indicates maintenance procedure that applies to this specific site

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

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

Task No. & Description	*Included in this project*	
1. Check Depth of Vegetation	Yes	~~No~~
2. Check Depth of Silt Deposit in Basin	Yes	~~No~~
3. Removal of Debris and Trash	Yes	~~No~~
4. Cut-off Valve	Yes	~~No~~
5. Inlet Splash Pad	Yes	~~No~~
6. Underdrain System	Yes	~~No~~
7. Structural Integrity	Yes	~~No~~
8. Discharge Pipe	Yes	~~No~~
9. Drawdown Time	Yes	~~No~~
10. Vegetated Filter Strips	Yes	~~No~~
11. For Pump Stations	~~Yes~~	No
12. For Pump Stations	~~Yes~~	No
13. For Pump Stations	~~Yes~~	No
14. Visually Inspect Security Fencing for Damage or Breach	~~Yes~~	No
15. Recordkeeping Procedures for Inspections, Maintenance, Repairs, and Retrofits	Yes	~~No~~

MAINTENANCE PROCEDURES FOR PERMANENT POLLUTION ABATEMENT MEASURES

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

1. Check Depth of Vegetation. Vegetation in the basin shall not exceed 18-inches in depth. When vegetation needs to be cut, it shall be cut to an approximately 4-inch height. *A written record will be kept of inspection results and maintenance performed.*

2. Check Depth of Silt Deposit in Basin. Top of cleanouts shall be set 4-inches above sand layer. When silt has accumulated to top of cleanouts, the silt shall be removed. The top two (2) inches of the sand media shall also be removed and replaced with clean silica-based washed sand meeting ASTM C33 specifications [0.0165 inch (#40 sieve) to 0.0469 inch (#16 sieve)]. Silt/sediment shall be cleared from the inlet structure at least every year and from the basin at least every five (5) years. Any sand discolored as a result of apparent impact by petroleum hydrocarbon or hazardous materials should also be removed and replace. *A written record will be kept of inspection results and maintenance performed.*

3. Removal of Debris and Trash. The basin and inlet structure shall be checked for the accumulation of debris and trash such as brush, limbs, leaves, paper cups, aluminum cans, plastic bottles etc. Accumulated trash and debris shall be raked or collected from the basin and inlet structure and disposed of properly. *A written record will be kept of inspection results and maintenance performed.*

4. Cut-off Valve. The cut-off valve shall be turned to confirm full opening and full closure. Prior to operating the valve, the valve setting shall be checked to determine the position to which the valve is to be returned (which should limit drawdown time of the basin between 24-hours and 48-hours). Count should be kept of number of turns to open and close the valve so that the valve can be reset to the starting position. Defects in the operation of the cut-off valve shall be corrected within 7 working days. *A written record will be kept of inspection results and maintenance performed.*

5. Inlet Splash Pad. The filter area around the inlet splash pad shall be checked for erosion and for the condition of the rock rubble. Erosion or disturbance of the rock rubble should be corrected by removing the rock rubble, restoring missing sand media to appropriate depth and replacement of the rock rubble. If the condition persists in subsequent inspections, the size of the rock rubble should be increased. Rubble should be placed to a density that minimizes the amount of exposed sand between the rock rubble. Deficiencies should be corrected within seven working days. *A written record will be kept of inspection results and maintenance performed.*

6. Underdrain System. The underdrain system shall be visually inspected for the accumulation of silt in the pipe system. The pipe clean-outs shall have the caps removed and visually inspected for accumulation of silt deposits. If silt deposits appear to have accumulated so as to significantly reduce the drain capacity of the pipes then maintenance shall be performed. When silt deposits have accumulated to the stage described above, the clean-outs and drainpipes can be flushed with a high-pressure water flushing process. Clean-out caps must be replaced onto the clean-outs after maintenance so as to avoid the possibility of short circuiting the filtering process. Sediment accumulation at outlet pipe or in wet well due to flushing shall be removed and disposed of properly. *A written record will be kept of inspection results and maintenance performed.*

7. Structural Integrity. In addition to Items 1 through 6, the following are measures which should be reviewed during a check of structural integrity:
   - Observe the height of the confining berm for visible signs of erosion or potential breach. Signs of erosion should be identified and repaired immediately. Corrective measures include but are not limited to addition of topsoil or appropriate soil material so as to restore the original berm height of the sand filter basin. Restored areas shall be protected through placement of solid block sod.
   - Sand filter media will be inspected for signs of erosion. If erosion is identified, the area will be repaired by adding additional sand.

- Bypass of filter process. This condition can manifest itself in several ways. One way is by visually inspecting the clean-outs for accumulation of silt as described in Item 6. Significant accumulations of silt could be a sign of a torn filter fabric. Observations should be made over several inspection cycles to determine whether the condition persists. A second non-intrusive way of making observations for structural condition would be to visually look for collapsed or depressed areas along the edge of the filter media interface with basin side slope. If condition exists, corrective action should be performed within 15 working days. Removal of sand and replacement of filter fabric and/or pipe and gravel may be necessary. *A written record should be kept of inspection results and corrective measures taken.*

8. Discharge Pipe. The basin discharge pipe shall be checked for accumulation of silt, debris or other obstructions which could block flow. Soil accumulations, vegetative overgrowth and other blockages should be cleared from the pipe discharge point. Erosion at the point of discharge shall be monitored. If erosion occurs, the addition of rock rubble to disperse the flow should be accomplished. *A written record should be kept of inspection results and corrective measures taken.*

9. Drawdown Time. This characteristic can be a sign of the need for maintenance. The minimum drawdown time is 24 hours. If drawdown time is less than 24 hours, the gate valve shall be checked and partially closed to limit the drawdown time. Extensive drawdown time greater than 48 hours may indicated blockage of the sand media, the underdrain system and/or the discharge pipe. Corrective actions should be performed and completed within 15 working days. *A written record of the inspection findings and corrective actions performed should be made.*

10. Vegetated Filter Strips. Vegetation height for native grasses shall be limited to no more than 18-inches. When vegetation exceeds that height, the filter strip shall be cut to a height of approximately 4 inches. Turf grass shall be limited to a height of 4-inches with regular maintenance that utilizes a mulching mower. Trash and debris shall be removed from filter strip prior to cutting. Check filter strip for signs of concentrated flow and erosion. Areas of filter strip showing signs of erosion shall be repaired by scarifying the eroded area, reshaping, regrading and placement of solid block sod over the affected area. *A written record of the inspection findings and corrective actions performed should be made.*

11. For Pump Stations. Check wet well discharge pipe to confirm flow through the pump system. If flow is not present, allow sufficient time for pump to cycle on and off. If flow does not occur, the wet well should be checked for the level of water. The wet well should be opened and the on/off float switches should be moved up and down to activate the pump. If the pump does not start, a repair technician shall be called in to repair the malfunction within 5 working days. *A written record of the inspection findings and corrective actions performed should be made.*

12. For Pump Stations. Check the wet well for accumulation for trash, debris and silt. Trash and debris shall be removed and disposed of properly. Silt depth can be checked by probing the bottom of the wet well with a stick or PVC pipe. Silt accumulations should be removed when silt collects to a depth of three (3) inches over the entire wet well bottom. Silt can be removed by vacuum pump method. If silt buildup continues, underdrain system shall be inspected. *A written record will be kept of inspection results and maintenance performed.*

13. For Pump Stations. Visually check aboveground pump wiring and connections for damage. Damaged or loose connections should be repaired within 5 working days. *A written record will be kept of inspection results and maintenance performed.*

14. Visually Inspect Security Feucing for Damage or Breach. Check maintenance access gates for proper operation. Damage to fencing or gates shall be repaired within 5 working days. *A written record will be kept of inspection results and maintenance performed.*

15. Recordkeeping Procedures for Inspections, Maintenance, Repairs, and Retrofits.

- Written records shall be kept by the party responsible for maintenance or a designated representative.
- Written records shall be retained for a minimum of five years.

ATTACHMENT P

Attachment P - Measures for Minimizing Surface Stream Contamination

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

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: Cara C. Tackett, P.E.

Date: 8/19/15

Signature of Customer/Agent:

Cara C. Tackett

Regulated Entity Name: 4S Ranch Phase-I

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: located within the construction staging area in compliance with 30TAC§213.

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

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

☐ Aboveground storage tanks with a cumulative storage capacity between 250 gallons and 499 gallons will be stored on the site for less than one (1) year.

☐ Aboveground storage tanks with a cumulative storage capacity of 500 gallons or more will be stored on the site. An Aboveground Storage Tank Facility Plan application must be submitted to the appropriate regional office of the TCEQ prior to moving the tanks onto the project.

☐ Fuels and hazardous substances will not be stored on the site.

2. ☒ **Attachment A - Spill Response Actions**. A site specific description of the measures to be taken to contain any spill of hydrocarbons or hazardous substances is attached.

3. ☒ Temporary aboveground storage tank systems of 250 gallons or more cumulative storage capacity must be located a minimum horizontal distance of 150 feet from any domestic, industrial, irrigation, or public water supply well, or other sensitive feature.

4. ☒ **Attachment B - Potential Sources of Contamination**. A description of any activities or processes which may be a potential source of contamination affecting surface water quality is attached.

Sequence of Construction

5. ☒ **Attachment C - Sequence of Major Activities**. A description of the sequence of major activities which will disturb soils for major portions of the site (grubbing, excavation, grading, utilities, and infrastructure installation) is attached.

   ☒ For each activity described, an estimate (in acres) of the total area of the site to be disturbed by each activity is given.

   ☒ For each activity described, include a description of appropriate temporary control measures and the general timing (or sequence) during the construction process that the measures will be implemented.

6. ☒ Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: Cibolo Creek

Temporary Best Management Practices (TBMPs)

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

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

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

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

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

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

8. ☒ The temporary sealing of a naturally-occurring sensitive feature which accepts recharge to the Edwards Aquifer as a temporary pollution abatement measure during active construction should be avoided.

☐ **Attachment E - Request to Temporarily Seal a Feature**. A request to temporarily seal a feature is attached. The request includes justification as to why no reasonable and practicable alternative exists for each feature.

☒ There will be no temporary sealing of naturally-occurring sensitive features on the site.

9. ☒ **Attachment F - Structural Practices**. A description of the structural practices that will be used to divert flows away from exposed soils, to store flows, or to otherwise limit runoff discharge of pollutants from exposed areas of the site is attached. Placement of structural practices in floodplains has been avoided.

10. ☒ **Attachment G - Drainage Area Map**. A drainage area map supporting the following requirements is attached:

☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin will be provided.

☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a smaller sediment basin and/or sediment trap(s) will be used.

☒ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin or other equivalent controls are not attainable, but other TBMPs and measures will be used in combination to protect down slope and side slope boundaries of the construction area.

☐ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. A smaller sediment basin and/or sediment trap(s) will be used in combination with other erosion and sediment controls within each disturbed drainage area.

☐ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. Erosion and sediment controls other than sediment basins or sediment traps within each disturbed drainage area will be used.

11. ☐ **Attachment H - Temporary Sediment Pond(s) Plans and Calculations.** Temporary sediment pond or basin construction plans and design calculations for a proposed temporary BMP or measure have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information must be signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed temporary BMPs and measures are attached.

☒ N/A

12. ☒ **Attachment I - Inspection and Maintenance for BMPs.** A plan for the inspection of each temporary BMP(s) and measure(s) and for their timely maintenance, repairs, and, if necessary, retrofit is attached. A description of the documentation procedures, recordkeeping practices, and inspection frequency are included in the plan and are specific to the site and/or BMP.

13. ☒ All control measures must be properly selected, installed, and maintained in accordance with the manufacturer's specifications and good engineering practices. If periodic inspections by the applicant or the executive director, or other information indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations.

14. ☒ If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain).

15. ☒ Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50%. A permanent stake will be provided that can indicate when the sediment occupies 50% of the basin volume.

16. ☒ Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).

Soil Stabilization Practices

Examples: establishment of temporary vegetation, establishment of permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, or preservation of moture 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:
  - the National Response Center at (800) 424-8802
  - the Edwards Aquifer Authority at (210) 222-2204
  - the TCEQ Regional Office (210) 490-3096 (if during business hours: 8 AM to 5 PM) or
  - the State Emergency Response Center (800) 832-8224 (if after hours)

- 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

Attachment B – Potential Sources of Contamination

Other potential sources of contamination during construction include:

Potential Source
- *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 rain.*

Potential Source
- *Oil, grease, fuel and hydraulic fluid contamination from construction equipment 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 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 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.*
Preventive Measure	■	*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.*
Potential Source	•	*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 clearing and grubbing of vegetation where applicable. This will disturb approximately 87.75 total acres. The second is construction that will include two (2) proposed water quality basins, construction of new pavement areas, roads, landscaping and site cleanup. Home site construction will be based on market demand and may not be concurrent with infrastructure developments. This will disturb approximately 87.75 total 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.

Upgradient stormwater from Watersheds D1, D2, L, G1, J1, and J2 will be intercepted by interceptor channels and conveyed through underground storm drains to be discharged into the existing floodplain. Upgradient runoff from watershed O and M will flow onto the site and to water quality basin B. These areas are currently undeveloped and the basin has been sized to include this upgradient area. All TBMPs are adequate for the drainage areas served.

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 stabilized construction entrance/exit(s) to reduce the dispersion of sediment from the site, and (4) 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 as construction phasing warrants that include installation of the concrete truck washout pit(s) and placement of gravel filter bags for use in inlet protection and to prevent sediment migration off-site.

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 the aquifer, surface streams and/or sensitive features that may exist downstream of the site.

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

As this site is entirely over the Edwards Aquifer Contributing Zone, a Geologic Assessment was not conducted and is not required; therefore, no sensitive features were identified. There are no surface streams on or immediately adjacent to the site.

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.

Since the project is located entirely over the Edwards Contributing Zone, a Geologic Assessment was not conducted and is not required by 30 TAC 213 regulations. Therefore, no naturally-occurring sensitive features are known to exist on the site. 30 TAC 213(f)(2) only applies to projects over the Edwards Recharge Zone.

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 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

Attachment G – Drainage Area Map

TBMPs and interim on-site stabilization measures will be used in combination to protect down slope and side slope boundaries of the construction. Construction of civil infrastructure (utilities, roads, drainage, etc.) will precede home construction and homes will be constructed as the market warrants. For acres where more than ten (10) acres will be disturbed within a common drainage area at one time, all TBMPs utilized are adequate for the drainage areas served. Please see Exhibits section for additional details.

ATTACHMENT I

Attachment I – Inspection and Maintenance for BMPs

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 date of the inspection. 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.

Pollution Prevention Measure	Inspected	Corrective Action	
		Description	Date Completed
General			
Revegetation			
Erosion/sediment controls			
Vehicle exits			
Material areas			
Equipment areas			
Concrete rinse			
Construction debris			
Trash receptacles			
Infrastructure			
Roadway clearing			
Utility clearing			
Roadway grading			
Utility construction			
Drainage construction			
Roadway base			
Roadway surfaces			
Site cleanups			
Building			
Clearing for building			
Foundation grading			
Utility construction			
Foundation construction			
Building construction			
Site grading			
Site cleanup			

**Indicate N/A where measure does not apply.*

By my signature below, I certify that all items are acceptable and the project site is in compliance with SWPPP.

Inspector's Name _____ Inspector's Signature _____

Name of Owner/Operator (Firm) _____ Date _____

Note: Inspector is to attach a brief statement of his qualifications to this report.

PROJECT MILESTONE DATES

Date when major site grading activities begin:

Construction Activity	Date

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	Date

ATTACHMENT J

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 14th day after construction activity has temporarily or permanently ceased is precluded by seasonably arid conditions, stabilization measures must be initiated as soon as practicable.

NOTICE OF INTENT
(TCEQ-20022)

TCEQ Office Use Only
Permit No.:
RN:
CN:
Region:

TCEQ Notice of Intent (NOI) for Stormwater Discharges Associated with Construction Activity under TPDES General Permit (TXR150000)

IMPORTANT:

- Use the INSTRUCTIONS to fill out each question in this form.
- Use the CHECKLIST to make certain all you filled out all required information. Incomplete applications **WILL** delay approval or result in automatic denial.
- Once processed your permit can be viewed at: http://www2.tceq.texas.gov/wq_dpa/index.cfm

ePERMITS: Sign up now for online NOI: https://www3.tceq.texas.gov/steers/index.cfm
Pay a $225 reduced application fee by using ePermits.

APPLICATION FEE:

- You must pay the **$325** Application Fee to TCEQ for the paper application to be complete.
- Payment and NOI must be mailed to separate addresses.
- Did you know you can pay on line?
  - Go to https://www3.tceq.texas.gov/epay/index.cfm
  - Select Fee Type: GENERAL PERMIT CONSTRUCTION STORM WATER DISCHARGE NOI APPLICATION
- **Provide your payment information below, for verification of payment:**

☐ Mailed — Check/Money Order No.: _____
Name Printed on Check: _____

☐ EPAY — Voucher No.: _____
Is the Payment Voucher copy attached? ☐ Yes

RENEWAL: Is this NOI a Renewal of an existing General Permit Authorization? (Note: A permit cannot be renewed after June 3, 2013.)

☐ Yes The Permit number is: TXR15_____
(If a permit number is not provided, a new number will be assigned.)
☐ No

1) OPERATOR (Applicant)

a) If the applicant is currently a customer with TCEQ, what is the Customer Number (CN) issued to this entity? You may search for your CN at: http://www12.tceq.texas.gov/crpub/index.cfm?fuseaction=cust.CustSearch

CN 602412207

b) What is the Legal Name of the entity (applicant) applying for this permit?
Lennar Homes of Texas Land and Construction, Ltd.
(The legal name must be spelled exactly as filed with the Texas Secretary of State, County, or in the legal document forming the entity.)

c) What is the name and title of the person signing the application? The person must be an executive official meeting signatory requirements in TAC 305.44(a).
Prefix (Mr. Ms. Miss): Mr.
First/Last Name: Scott Teeter Suffix: _____
Title: Vice President Credential: _____

d) What is the Operator Contact's (Responsible Authority) contact information and mailing address as recognized by the US Postal Service (USPS)? You may verify the address at: http://zip4.usps.com/zip4/welcome.jsp
Phone #: (210) 403-6292 ext: _____ Fax #: (210) 403-6280
E-mail: scott.teeter@lennar.com
Mailing Address: 1015 Central Parkway North, Suite 140
Internal Routing (Mail Code, Etc.): _____
City: San Antonio State: Texas ZIP Code: 78232
If outside USA: Territory: _____ Country Code: _____ Postal Code: _____

e) Indicate the type of Customer (The instructions will help determine your customer type):

☐ Individual	☐ Limited Partnership	☐ Sole Proprietorship-DBA
☐ Joint Venture	☐ General Partnership	☒ Corporation
☐ Trust	☐ Estate	☐ Federal Government
☐ State Government	☐ County Government	☐ City Government
☐ Other Government		

f) Independent Operator? ☐ Yes ☒ No
(If governmental entity, subsidiary, or part of a larger corporation, check "No".)

g) Number of Employees:
☐ 0-20; ☐ 21-100; ☐ 101-250; ☐ 251-500; or ☒ 501 or higher

h) Customer Business Tax and Filing Numbers:
(REQUIRED for Corporations and Limited Partnerships. Not Required for Individuals, Government, or Sole Proprietors)
State Franchise Tax ID Number: 17527920189
Federal Tax ID: 752792018
Texas Secretary of State Charter (filing) Number: 0011452910
DUNS Number (if known): _____

2) APPLICATION CONTACT

If TCEQ needs additional information regarding this application, who should be contacted?

Is the application contact the same as the applicant identified above?

☐ Yes, go to Section 3). ☐ No, complete section below.

Prefix (Mr. Ms. Miss): _____
First/Last Name: _____ Suffix: _____
Title: _____ Credential: _____

Organization Name:_____
Phone No.:_____ ext:_____ Fax Number:_____
E-mail:_____
Mailing Address:_____
Internal Routing (Mail Code, Etc.):_____
City:_____State:_____ZIP Code:_____
Mailing Information if outside USA:
Territory:_____Country Code:_____Postal Code:_____

3) REGULATED ENTITY (RE) INFORMATION ON PROJECT OR SITE

If the site of your business is part of a larger business site or if other businesses were located at this site before yours, a Regulated Entity Number (RN) may already be assigned for the larger site. Use the RN assigned for the larger site. Search TCEQ's Central Registry to see if the larger site may already be registered as a regulated site at: http://www12.tceq.texas.gov/crpub/index.cfm?fuseaction=regent.RNSearch.

If the site is found, provide the assigned Regulated Entity Reference Number and provide the information for the site to be authorized through this application below. The site information for this authorization may vary from the larger site information.

a) TCEQ issued RE Reference Number (RN): RN_____

b) Name of project or site (the name known by the community where located):
4S Ranch Phase-I

c) In yonr own words, briefly describe the primary business of the Regulated Entity: (Do not repeat the SIC and NAICS code):
Construction of a single-family residential development

d) County (or counties if > 1) Comal

e) Latitude: 29.771733 N Longitude: -98.412315 W

f) Does the site have a physical address?
☐ Yes, complete Section A for a physical address.
■ No, complete Section B for site location information.

Section A: Enter the physical address for the site.
Verify the address with USPS. If the address is not recognized as a delivery address, provide the address as identified for overnight mail delivery, 911 emergency or other online map tools to confirm an address.

Physical Address of Project or Site:
Street Number: _____ Street Name: _____
City: _____State: _____ ZIP Code: _____

Section B: Enter the site location information.
If no physical address (Street Number & Street Name), provide a written location access description to the site. (Ex.: located 2 miles west from intersection of Hwy 290 & IH35 accessible on Hwy 290 South)

Approximately 1.9 miles north of intersection of FM 1863 and Stahl Lane

City where the site is located or, if not in a city, what is the nearest city:
Bulverde

State: Texas ZIP Code where the site is located: 78163

4) GENERAL CHARACTERISTICS

a) Is the project/site located on Indian Country Lands?

☐ Yes - If the answer is Yes, you must obtain authorization through EPA, Region 6.

☒ No

b) Is your construction activity associated with a facility that, when completed, would be associated with the exploration, development, or production of oil or gas or geothermal resources?

☐ Yes - If the answer is Yes, you may be under jurisdiction of the Railroad Commission of Texas and may need to obtain authorization through EPA, Region 6.

☒ No

c) What is the Primary Standard Industrial Classification (SIC) Code that best describes the construction activity being conducted at the site?
Primary SIC Code: 1521

d) If applicable, what is the Secondary SIC Code(s): 1623

e) What is the total number of acres disturbed? 87.75

f) Is the project site part of a larger common plan of development or sale?

☒ Yes - If the answer is Yes, the total number of acres disturbed can be less than 5 acres.

☐ No - If the answer is No, the total number of acres disturbed must be 5 or more. If the total number of acres disturbed is less than 5 then the project site does not qualify for coverage through this Notice of Intent. Coverage will be denied. See the requirements in the general permit for small construction sites.

g) What is the name of the first water body(s) to receive the stormwater runoff or potential runoff from the site?
Cibolo Creek

h) What is the segment number(s) of the classified water body(s) that the discharge will eventually reach?
1908

i) Is the discharge into an MS4?

☒ Yes - If the answer is Yes, provide the name of the MS4 operator below.

☐ No

If Yes, provide the name of the MS4 operator:
Comal

Note: The general permit requires you to send a copy of the NOI to the MS4 operator.

j) Are any of the surface water bodies receiving discharges from the construction site on the latest EPA-approved CWA 303(d) List of impaired waters?

☒ Yes - If the answer is Yes, provide the name(s) of the impaired water body(s) below.

☐ No

If Yes, provide the name(s) of the impaired water body(s):
Upper Cibolo Creek

k) Is the discharge or potential discharge within the Recharge Zone, Contributing Zone, or Contributing Zone within the Transition Zone of the Edwards Aquifer as defined in 30 TAC Chapter 213?

☐ Yes - If the answer is Yes, complete certification below by checking "Yes."

☒ No

I certify that a copy of the TCEQ approved Plan required by the Edwards Aquifer Rule (30 TAC Chapter 213) is either included or referenced in the Stormwater Pollution Prevention Plan.

☐ Yes

5) CERTIFICATION

Check Yes to the certifications below. Failure to indicate Yes to ***ALL*** items may result in denial of coverage under the general permit.

a) I certify that I have obtained a copy and understand the terms and conditions of the Construction General Permit (TXR150000). ☐ Yes

b) I certify that the full legal name of the entity applying for this permit has been provided and is legally authorized to do business in Texas. ☐ Yes

c) I understand that a Notice of Termination (NOT) must be submitted when this authorization is no longer needed. ☐ Yes

d) I certify that a Stormwater Pollution Prevention Plan has been developed, will be implemented prior to construction and to the best of my knowledge and belief is compliant with any applicable local sediment and erosion control plans, as required in the general permit TXR150000. Note: For multiple operators who prepare a shared SWP3, the confirmation of an operator may be limited to its obligations under the SWP3 provided all obligations are confirmed by at least one operator. ☐ Yes

Operator Certification:

I,_____ _____

Typed or printed name Title

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

I further certify that I am authorized under 30 Texas Administrative Code 305.44 to sign and submit this document, and can provide documentation in proof of such authorization upon request.

Signature: _____ Date:_____

(Use blue ink)

NOTICE OF INTENT CHECKLIST (TXR150000)

- Did you complete everything? Use this checklist to be sure!
- Are you ready to mail your form to TCEQ? Go to the General Information Section of the Instructions for mailing addresses.

This checklist is for use by the operator to ensure a complete application. Missing information may result in denial of coverage under the general permit. (See NOI process description in the Instructions)

Application Fee:

If paying by Check:

- ☐ Check was mailed **separately** to the TCEQs Cashier's Office. (See Instructions for Cashier's address and Application address.)
- ☐ Check number and name on check is provided in this application.

If using ePay:

- ☐ The voucher number is provided in this application or a copy of the voucher is attached.

PERMIT NUMBER:

- ☐ Permit number provided – if this application is for renewal of an existing authorization.

OPERATOR INFORMATION - Confirm each item is complete:

- ☑ Customer Number (CN) issued by TCEQ Central Registry
- ☑ Legal name as filed to do business in Texas (Call TX SOS 512/463-5555)
- ☑ Name and title of responsible authority signing the application
- ☑ Mailing address is complete & verifiable with USPS. www.usps.com
- ☑ Phone numbers/e-mail address
- ☑ Type of operator (entity type)
- ☑ Independent operator
- ☑ Number of employees
- ☑ For corporations or limited partnerships – Tax ID and SOS filing numbers
- ☑ Application contact and address is complete & verifiable with USPS. http://www.usps.com

REGULATED ENTITY (RE) INFORMATION ON PROJECT OR SITE - Confirm each item is complete:

- ☐ Regulated Entity Reference Number (RN) (if site is already regulated by TCEQ)
- ☑ Site/project name/regulated entity
- ☑ Latitude and longitude http://www.tceq.texas.gov/gis/sqmaview.html
- ☑ County
- ☑ Site/project physical address. Do not use a rural route or post office box.
- ☑ Business description

GENERAL CHARACTERISTICS - Confirm each item is complete:

- ☑ Indian Country Lands –the facility is not on Indian Country Lands
- ☑ Construction activity related to facility associated to oil, gas, or geothermal resources
- ☑ Standard Industrial Classification (SIC) Code www.osha.gov/oshstats/sicser.html
- ☑ Acres disturbed is provided and qualifies for coverage through a NOI
- ☑ Common plan of development or sale
- ☑ Receiving water body(s)
- ☑ Segment number(s)
- ☑ Impaired water body(s)
- ☑ MS4 operator
- ☑ Edwards Aquifer rule

CERTIFICATION

- ☐ Certification statements have been checked indicating "Yes"
- ☐ Signature meets 30 Texas Administrative Code (TAC) 305.44 and is original.

Texas Commission on Environmental Quality
General Permit Payment Submittal Form

Use this form to submit your Application Fee only if you are mailing your payment.

- Complete items 1 through 5 below:
- Staple your check in the space provided at the bottom of this document.
- Do not mail this form with your NOI form.
- Do not mail this form to the same address as your NOI.

Mail this form and your check to:

BY REGULAR U.S. MAIL

Texas Commission on Environmental Quality
Financial Administration Division
Cashier's Office, MC-214
P.O. Box 13088
Austin, TX 78711-3088

BY OVERNIGHT/EXPRESS MAIL

Texas Commission on Environmental Quality
Financial Administration Division
Cashier's Office, MC-214
12100 Park 35 Circle
Austin, TX 78753

Fee Code: GPA	General Permit: TXR150000

1. Check / Money Order No: _____
2. Amount of Check/Money Order: _____
3. Date of Check or Money Order: _____
4. Name on Check or Money Order: _____
5. NOI INFORMATION

   If the check is for more than one NOI, list each Project/Site (RE) Name and Physical Address exactly as provided on the NOI. DO NOT SUBMIT A COPY OF THE NOI WITH THIS FORM AS IT COULD CAUSE DUPLICATE PERMIT ENTRIES.

   See Attached List of Sites (If more space is needed, you may attach a list.)

   Project/Site (RE) Name: 4S Ranch Phase-I

   Project/Site (RE) Physical Address:

   Approximately 1.9 miles north of intersection of FM 1863 and Stahl Lane, Bulverde, Texas 78163

Staple Check in This Space

TCEQ Office Use Only
Permit No.:
RN:
CN:
Region:

TCEQ Notice of Intent (NOI) for Stormwater Discharges Associated with Construction Activity under TPDES General Permit (TXR150000)

IMPORTANT:

- Use the INSTRUCTIONS to fill out each question in this form.
- Use the CHECKLIST to make certain all you filled out all required information. Incomplete applications **WILL** delay approval or result in automatic denial.
- Once processed your permit can be viewed at: http://www2.tceq.texas.gov/wq_dpa/index.cfm

ePERMITS: Sign up now for online NOI: https://www3.tceq.texas.gov/steers/index.cfm
Pay a $225 reduced application fee by using ePermits.

APPLICATION FEE:

- You must pay the **$325** Application Fee to TCEQ for the paper application to be complete.
- Payment and NOI must be mailed to separate addresses.
- Did you know you can pay on line?
  - Go to https://www3.tceq.texas.gov/epay/index.cfm
  - Select Fee Type: GENERAL PERMIT CONSTRUCTION STORM WATER DISCHARGE NOI APPLICATION
- **Provide your payment information below, for verification of payment:**

☐ Mailed Check/Money Order No.: _____
Name Printed on Check: _____
☐ EPAY Voucher No.: _____
Is the Payment Voucher copy attached? ☐ Yes

RENEWAL: Is this NOI a Renewal of an existing General Permit Authorization? (Note: A permit cannot be renewed after June 3, 2013.)

☐ Yes The Permit number is: TXR15_____
(If a permit number is not provided, a new number will be assigned.)
☐ No

1) OPERATOR (Applicant)

a) If the applicant is currently a customer with TCEQ, what is the Customer Number (CN) issued to this entity? You may search for your CN at: http://www12.tceq.texas.gov/crpub/index.cfm?fuseaction=cust.CustSearch

CN_____

b) What is the Legal Name of the entity (applicant) applying for this permit?

_____

(The legal name must be spelled exactly as filed with the Texas Secretary of State, County, or in the legal document forming the entity.)

c) What is the name and title of the person signing the application? The person must be an executive official meeting signatory requirements in TAC 305.44(a).

Prefix (Mr. Ms. Miss): _____

First/Last Name: _____ Suffix: _____

Title: _____ Credential: _____

d) What is the Operator Contact's (Responsible Authority) contact information and mailing address as recognized by the US Postal Service (USPS)? You may verify the address at: http://zip4.usps.com/zip4/welcome.jsp

Phone #: _____ ext: _____ Fax #: _____

E-mail: _____

Mailing Address: _____

Internal Routing (Mail Code, Etc.): _____

City: _____ State: _____ ZIP Code: _____

If outside USA: Territory: _____ Country Code: _____ Postal Code: _____

e) Indicate the type of Customer (The instructions will help determine your customer type):

☐ Individual ☐ Limited Partnership ☐ Sole Proprietorship-DBA
☐ Joint Venture ☐ General Partnership ☐ Corporation
☐ Trust ☐ Estate ☐ Federal Government
☐ State Government ☐ County Government ☐ City Government
☐ Other Government

f) Independent Operator? ☐ Yes ☐ No

(If governmental entity, subsidiary, or part of a larger corporation, check "No".)

g) Number of Employees:

☐ 0-20; ☐ 21-100; ☐ 101-250; ☐ 251-500; or ☐ 501 or higher

h) Customer Business Tax and Filing Numbers:

(REQUIRED for Corporations and Limited Partnerships. Not Required for Individuals, Government, or Sole Proprietors)

State Franchise Tax ID Number: _____

Federal Tax ID: _____

Texas Secretary of State Charter (filing) Number: _____

DUNS Number (if known): _____

2) APPLICATION CONTACT

If TCEQ needs additional information regarding this application, who should be contacted?

Is the application contact the same as the applicant identified above?

☐ Yes, go to Section 3). ☐ No, complete section below.

Prefix (Mr. Ms. Miss): _____

First/Last Name: _____ Suffix: _____

Title: _____ Credential: _____

Organization Name:_____
Phone No.:_____ ext:_____ Fax Number:_____
E-mail:_____
Mailing Address:_____
Internal Routing (Mail Code, Etc.):_____
City:_____ State:_____ ZIP Code:_____
Mailing Information if outside USA:
Territory:_____ Country Code:_____ Postal Code:_____

3) REGULATED ENTITY (RE) INFORMATION ON PROJECT OR SITE

If the site of your business is part of a larger business site or if other businesses were located at this site before yours, a Regulated Entity Number (RN) may already be assigned for the larger site. Use the RN assigned for the larger site. Search TCEQ's Central Registry to see if the larger site may already be registered as a regulated site at:
http://www12.tceq.texas.gov/crpub/index.cfm?fuseaction=regent.RNSearch.

If the site is found, provide the assigned Regulated Entity Reference Number and provide the information for the site to be authorized through this application below. The site information for this authorization may vary from the larger site information.

a) TCEQ issued RE Reference Number (RN): RN_____

b) Name of project or site (the name known by the community where located):
4S Ranch Phase-I

c) In your own words, briefly describe the primary business of the Regulated Entity: (Do not repeat the SIC and NAICS code):
Construction of a single-family residential development

d) County (or counties if > 1) Comal

e) Latitude: 29.771733 N Longitude: -98.412315 W

f) Does the site have a physical address?
☐ Yes, complete Section A for a physical address.
☒ No, complete Section B for site location information.

Section A: Enter the physical address for the site.
Verify the address with USPS. If the address is not recognized as a delivery address, provide the address as identified for overnight mail delivery, 911 emergency or other online map tools to confirm an address.

Physical Address of Project or Site:
Street Number: _____ Street Name: _____
City: _____ State: _____ ZIP Code: _____

Section B: Enter the site location information.
If no physical address (Street Number & Street Name), provide a written location access description to the site. (Ex.: located 2 miles west from intersection of Hwy 290 & IH35 accessible on Hwy 290 South)

Approximately 1.9 miles north of intersection of FM 1863 and Stahl Lane

City where the site is located or, if not in a city, what is the nearest city:
Bulverde

State: Texas ZIP Code where the site is located: 78163

4) GENERAL CHARACTERISTICS

a) Is the project/site located on Indian Country Lands?

☐ Yes - If the answer is Yes, you must obtain authorization through EPA, Region 6.

☒ No

b) Is your construction activity associated with a facility that, when completed, would be associated with the exploration, development, or production of oil or gas or geothermal resources?

☐ Yes - If the answer is Yes, you may be under jurisdiction of the Railroad Commission of Texas and may need to obtain authorization through EPA, Region 6.

☒ No

c) What is the Primary Standard Industrial Classification (SIC) Code that best describes the construction activity being conducted at the site?
Primary SIC Code: 1521

d) If applicable, what is the Secondary SIC Code(s): 1623

e) What is the total number of acres disturbed? 87.75

f) Is the project site part of a larger common plan of development or sale?

☒ Yes - If the answer is Yes, the total number of acres disturbed can be less than 5 acres.

☐ No - If the answer is No, the total number of acres disturbed must be 5 or more. If the total number of acres disturbed is less than 5 then the project site does not qualify for coverage through this Notice of Intent. Coverage will be denied. See the requirements in the general permit for small construction sites.

g) What is the name of the first water body(s) to receive the stormwater runoff or potential runoff from the site?
Cibolo Creek

h) What is the segment number(s) of the classified water body(s) that the discharge will eventually reach?
1908

i) Is the discharge into an MS4?

☒ Yes - If the answer is Yes, provide the name of the MS4 operator below.

☐ No

If Yes, provide the name of the MS4 operator:
Comal

Note: The general permit requires you to send a copy of the NOI to the MS4 operator.

j) Are any of the surface water bodies receiving discharges from the construction site on the latest EPA-approved CWA 303(d) List of impaired waters?

☒ Yes - If the answer is Yes, provide the name(s) of the impaired water body(s) below.

☐ No

If Yes, provide the name(s) of the impaired water body(s):
Upper Cibolo Creek

k) Is the discharge or potential discharge within the Recharge Zone, Contributing Zone, or Contributing Zone within the Transition Zone of the Edwards Aquifer as defined in 30 TAC Chapter 213?

☐ Yes - If the answer is Yes, complete certification below by checking "Yes."

☒ No

I certify that a copy of the TCEQ approved Plan required by the Edwards Aquifer Rule (30 TAC Chapter 213) is either included or referenced in the Stormwater Pollution Prevention Plan.

☐ Yes

5) CERTIFICATION

Check Yes to the certifications below. Failure to indicate Yes to ***ALL*** items may result in denial of coverage under the general permit.

a) I certify that I have obtained a copy and understand the terms and conditions of the Construction General Permit (TXR150000). ☐ Yes

b) I certify that the full legal name of the entity applying for this permit has been provided and is legally authorized to do business in Texas. ☐ Yes

c) I understand that a Notice of Termination (NOT) must be submitted when this authorization is no longer needed. ☐ Yes

d) I certify that a Stormwater Pollution Prevention Plan has been developed, will be implemented prior to construction and to the best of my knowledge and belief is compliant with any applicable local sediment and erosion control plans, as required in the general permit TXR150000. Note: For multiple operators who prepare a shared SWP3, the confirmation of an operator may be limited to its obligations under the SWP3 provided all obligations are confirmed by at least one operator. ☐ Yes

Operator Certification:

I,_____ _____

Typed or printed name Title

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

I further certify that I am authorized under 30 Texas Administrative Code 305.44 to sign and submit this document, and can provide documentation in proof of such authorization upon request.

Signature: _____ Date:_____

(Use blue ink)

NOTICE OF INTENT CHECKLIST (TXR150000)

- Did you complete everything? Use this checklist to be sure!
- Are you ready to mail your form to TCEQ? Go to the General Information Section of the Instructions for mailing addresses.

This checklist is for use by the operator to ensure a complete application. Missing information may result in denial of coverage under the general permit. (See NOI process description in the Instructions)

Application Fee:

If paying by Check:

- ☐ Check was mailed **separately** to the TCEQs Cashier's Office. (See Instructions for Cashier's address and Application address.)
- ☐ Check number and name on check is provided in this application.

If using ePay:

- ☐ The voucher number is provided in this application or a copy of the voucher is attached.

PERMIT NUMBER:

- ☐ Permit number provided – if this application is for renewal of an existing authorization.

OPERATOR INFORMATION - Confirm each item is complete:

- ☐ Customer Number (CN) issued by TCEQ Central Registry
- ☐ Legal name as filed to do business in Texas (Call TX SOS 512/463-5555)
- ☐ Name and title of responsible authority signing the application
- ☐ Mailing address is complete & verifiable with USPS. www.usps.com
- ☐ Phone numbers/e-mail address
- ☐ Type of operator (entity type)
- ☐ Independent operator
- ☐ Number of employees
- ☐ For corporations or limited partnerships – Tax ID and SOS filing numbers
- ☐ Application contact and address is complete & verifiable with USPS. http://www.usps.com

REGULATED ENTITY (RE) INFORMATION ON PROJECT OR SITE - Confirm each item is complete:

- ☐ Regulated Entity Reference Number (RN) (if site is already regulated by TCEQ)
- ☑ Site/project name/regulated entity
- ☑ Latitude and longitude http://www.tceq.texas.gov/gis/sqmaview.html
- ☑ County
- ☑ Site/project physical address. Do not use a rural route or post office box.
- ☑ Business description

GENERAL CHARACTERISTICS - Confirm each item is complete:

- ☑ Indian Country Lands –the facility is not on Indian Country Lands
- ☑ Construction activity related to facility associated to oil, gas, or geothermal resources
- ☑ Standard Industrial Classification (SIC) Code www.osha.gov/oshstats/sicser.html
- ☑ Acres disturbed is provided and qualifies for coverage through a NOI
- ☑ Common plan of development or sale
- ☑ Receiving water body(s)
- ☑ Segment number(s)
- ☑ Impaired water body(s)
- ☑ MS4 operator
- ☑ Edwards Aquifer rule

CERTIFICATION

- ☐ Certification statements have been checked indicating "Yes"
- ☐ Signature meets 30 Texas Administrative Code (TAC) 305.44 and is original.

Texas Commission on Environmental Quality
General Permit Payment Submittal Form

Use this form to submit your Application Fee only if you are mailing your payment.

- Complete items 1 through 5 below:
- Staple your check in the space provided at the bottom of this document.
- Do not mail this form with your NOI form.
- Do not mail this form to the same address as your NOI.

Mail this form and your check to:

BY REGULAR U.S. MAIL

Texas Commission on Environmental Quality
Financial Administration Division
Cashier's Office, MC-214
P.O. Box 13088
Austin, TX 78711-3088

BY OVERNIGHT/EXPRESS MAIL

Texas Commission on Environmental Quality
Financial Administration Division
Cashier's Office, MC-214
12100 Park 35 Circle
Austin, TX 78753

Fee Code: GPA	General Permit: TXR150000

1. Check / Money Order No: _____
2. Amount of Check/Money Order: _____
3. Date of Check or Money Order: _____
4. Name on Check or Money Order: _____
5. NOI INFORMATION

   If the check is for more than one NOI, list each Project/Site (RE) Name and Physical Address exactly as provided on the NOI. DO NOT SUBMIT A COPY OF THE NOI WITH THIS FORM AS IT COULD CAUSE DUPLICATE PERMIT ENTRIES.

   See Attached List of Sites (If more space is needed, you may attach a list.)

   Project/Site (RE) Name: 4S Ranch Phase-I

   Project/Site (RE) Physical Address:

   Approximately 1.9 miles north of intersection of FM 1863 and Stahl Lane, Bulverde, Texas 78163

Staple Check in This Space

Notice of Intent (NOI) for Stormwater Discharges Associated with Construction Activity under TPDES General Permit (TXR150000)

General Information and Instructions

GENERAL INFORMATION

Where to Send the Notice of Intent (NOI):

BY REGULAR U.S. MAIL
Texas Commission on
Environmental Quality
Stormwater Processing Center
(MC228)
P.O. Box 13087
Austin, Texas 78711-3087

BY OVERNIGHT/EXPRESS MAIL
Texas Commission on
Environmental Quality
Stormwater Processing Center
(MC228)
12100 Park 35 Circle
Austin, TX 78753

TCEQ Contact List:

Application – status and form questions:	*512/239-3700, swpermit@tceq.texas.gov*
Technical questions:	*512/239-4671, swgp@tceq.texas.gov*
Environmental Law Division:	*512/239-0600*
Records Management - obtain copies of forms:	*512/239-0900*
Reports from databases (as available):	*512/239-DATA (3282)*
Cashier's office:	*512/239-0357 or 512/239-0187*

Notice of Intent Process:

When your NOI is received by the program, the form will be processed as follows:

1) **Administrative Review:** Each item on the form will be reviewed for a complete response. In addition, the operator's legal name must be verified with Texas Secretary of State as valid and active (if applicable). The address(s) on the form must be verified with the US Postal service as receiving regular mail delivery. Never give an overnight/express mailing address.

2) **Notice of Deficiency:** If an item is incomplete or not verifiable as indicated above, a notice of deficiency (NOD) will be mailed to the operator. The operator will have 30 days to respond to the NOD. The response will be reviewed for completeness.

3) **Acknowledgment of Coverage:** An Acknowledgment Certificate will be mailed to the operator. This certificate acknowledges coverage under the general permit.

   -or-

   Denial of Coverage: If the operator fails to respond to the NOD or the response is inadequate, coverage under the general permit may be denied. If coverage is denied, the operator will be notified.

General Permit (Your Permit)

For NOIs submitted **electronically** through ePermits, provisional coverage under the general permit begins immediately following confirmation of receipt of the NOI form by the TCEQ.

For **paper** NOIs, provisional coverage under the general permit begins **7 days after a completed NOI is postmarked for delivery** to the TCEQ.

You should have a copy of your general permit when submitting your application. You may view and print your permit for which you are seeking coverage, on the TCEQ web site http://www.tceq.texas.gov. Search using key word TXR150000.

General Permit Forms

The Notice of Intent (NOI), Notice of Termination (NOT), and Notice of Change (NOC) (including instructions) are available in Adobe Acrobat PDF format on the TCEQ web site http://www.tceq.texas.gov.

Change in Operator

An authorization under the general permit is not transferable. If the operator of the regulated entity changes, the present permittee must submit a Notice of Termination and the new operator must submit a Notice of Intent. The NOT and NOI must be submitted no later than 10 days prior to the change in Operator status.

TCEQ Central Registry Core Data Form

The Core Data Form has been incorporated into this form. Do not send a Core Data Form to TCEQ. After final acknowledgment of coverage under the general permit, the program will assign a Customer Number and Regulated Entity Number.

You can find the information on the Central Registry web site at http://www12.tceq.texas.gov/crpub/index.cfm. You can search by the Regulated Entity (RN), Customer Number (CN) or Name (Permittee), or by your permit number under the search field labeled "Additional ID". Capitalize all letters in the permit number.

The Customer (Permittee) is responsible for providing consistent information to the TCEQ, and for updating all CN and RN data for all authorizations as changes occur. For General Permits, a Notice of Change form must be submitted to the program area.

Fees associated with a General Permit

Payment of the fee may be made by check or money order, payable to TCEQ, or through EPAY (electronic payment through the web).

Application Fee: This fee is required to be paid at the time the NOI is submitted. Failure to submit payment at the time the application is filed will cause delays in acknowledgment or denial of coverage under the general permit.

Mailed Payments:
Payment must be mailed under separate cover at one of the addresses below using the attached Application Fee submittal form. (DO NOT SEND A COPY OF THE NOI WITH THE APPLICATION FEE SUBMITTAL FORM)

BY REGULAR U.S. MAIL
Texas Commission on Environmental Quality
Financial Administration Division
Cashier's Office, MC-214
P.O. Box 13088
Austin, TX 78711-3088

BY OVERNIGHT/EXPRESS MAIL
Texas Commission on Environmental Quality
Financial Administration Division
Cashier's Office, MC-214
12100 Park 35 Circle
Austin, TX 78753

ePAY Electronic Payment: http://www.tceq.texas.gov/epay

When making the payment you must select Water Quality, and then select the fee category "General Permit Construction Storm Water Discharge NOI Application". You must include a copy of the payment voucher with your NOI. Your NOI will not be considered complete without the payment voucher.

INSTRUCTIONS FOR FILLING OUT THE NOI FORM

Renewal of General Permit. Dischargers holding active authorizations under the expired General Permit are required to submit a NOI to continue coverage. The existing permit number is required. If the permit number is not provided or has been terminated, expired, or denied a new permit number will be issued.

1. Operator (Applicant)

a) Enter assigned Customer Number (CN)
TCEQ's Central Registry will assign each customer a number that begins with CN, followed by nine digits. **This is not a permit number, registration number, or license number.**
If this customer has not been assigned a CN, leave the space for the CN blank.
If this customer has already been assigned this number, enter the permittee's CN.

b) Legal Name
Provide the current legal name of the permittee, as authorized to do business in Texas. The name must be provided exactly as filed with the Texas Secretary of State (SOS), or on other legal documents forming the entity, that is filed in the county where doing business. You may contact the SOS at 512/463-5555, for more information related to filing in Texas. If filed in the county where doing business, provide a copy of the legal documents showing the legal name.

c) Person Signing Application
Provide information about person signing section 5) Certification.

d) Operator Contact's (Responsible Authority) Contact Information and Mailing Address
Provide a complete mailing address for receiving mail from the TCEQ. The address must be verifiable with the US Postal Service at http://www.usps.com for regular mail delivery (not overnight express mail). If you find that the address is not verifiable using the USPS web search, please indicate the address is used by the USPS for regular mail delivery.

The area code and phone number should provide contact to the operator. Leave Extension blank if not applicable.

The fax number and e-mail address are optional and should correspond to the operator.

e) Type of Customer (Entity Type)
Check only one box that identifies the type of entity. Use the descriptions below to identify the appropriate entity type. Note that the selected entity type also indicates the name that must be provided as an applicant for a permit, registration or authorization.

Sole Proprietorship – DBA

A sole proprietorship is a customer that is owned by only one person and has not been incorporated. This business may:

- be under the person's name
- have its own name (doing business as or d.b.a.)
- have any number of employees

If the customer is a Sole Proprietorship or DBA, the 'legal name' of the individual business 'owner' must be provided. The DBA name is not recognized as the 'legal name' of the entity. The DBA name may be used for the site name (regulated entity).

Individual

An individual is a customer who has not established a business, but conducts an activity that needs to be regulated by the TCEQ.

Partnership

- A customer that is established as a partnership as defined by the Texas Secretary of State Office (TX SOS). A Limited Partnership or Limited Liability Partnership (Partnership) is required to file with the Texas Secretary of State. A General Partnership or Joint Venture is not required to register with the state.
- **Partnership (Limited Partnership or Limited Liability Partnership):** A limited partnership is defined in the Act as a partnership formed by two or more persons under the provisions of Section 3 of the Uniform Limited Partnership Act (Art. 6132a, Revised Civil Statutes of Texas) and having as members one or more general partners and one or more limited partners. The limited partners as such are not bound by the obligations of the partnership. Limited partners may not take part in the day-to-day operations of the business. A Limited Partnership must file with the Texas Secretary of State. A registered limited liability partnership is a general or limited partnership that is registered with the Texas Secretary of State. The partnership's name must contain the words "Registered Limited Liability Partnership" or the abbreviation "L.L.P." as the last words or letters of its name.
- **General Partnership:** A general partner may or may not invest, participates in running the partnership and is liable for all acts and debts of the partnership and any member of it. A General Partnership does not have limited partners. For a General Partnership, there is no registration with the state or even written agreement necessary for a general partnership to be formed. The legal definition of a partnership is generally stated as "an association of two or more persons to carry on as co-owners a business for profit" (Revised Uniform Partnership Act § 101 [1994]).
- **Joint Venture:** A joint venture is but another name for a special partnership. It might be distinguished from a general partnership in that the latter is formed for the transaction of a general business, while a joint venture is usually limited to a single transaction. That is, a joint venture is a special combination of persons in the nature of a partnership engaged in the joint prosecution of a particular transaction for mutual benefit or profit.

Corporation

A customer meets all of these conditions:

- is a legally incorporated entity under the laws of any state or country
- is recognized as a corporation by the Texas Secretary of State

- has proper operating authority to operate in Texas.
- The corporation's 'legal name' as filed with the Texas Secretary of State must be provided as applicant. An 'assumed' name of a corporation is not recognized as the 'legal name' of the entity.

Government

Federal, state, county, or city government (as appropriate)
The customer is either an agency of one of these levels of government or the governmental body itself. The government agency's 'legal name' must be provided as the applicant. A department name or other description of the organization should not be included as a part of the 'legal name' as applicant.

Trust or Estate

A trust and an estate are fiduciary relationships governing the trustee/executor with respect to the trust/estate property.

Other Government

A utility district, water district, tribal government, college district, council of governments, or river authority. Write in the specific type of government.

f) Independent Entity

Check No if this customer is a subsidiary, part of a larger company, or is a governmental entity. Otherwise, check Yes.

g) Number of Employees

Check one box to show the number of employees for this customer's entire company, at all locations. This is not necessarily the number of employees at the site named in the application.

h) Customer Business Tax and Filing Numbers

These are required for Corporations and Limited Partnerships. These are not required for Individuals, Government, and Sole Proprietors.

State Franchise Tax ID Number

Corporations and limited liability companies that operate in Texas are issued a franchise tax identification number. If this customer is a corporation or limited liability company, enter this number here.

Federal Tax ID

All businesses, except for some small sole proprietors, individuals, or general partnerships should have a federal taxpayer identification number (TIN). Enter this number here. Use no prefixes, dashes, or hyphens. Sole proprietors, individuals, or general partnerships do not need to provide a federal tax ID.

TX SOS Charter (filing) Number

Corporations and Limited Partnerships required to register with the Texas Secretary of State are issued a charter or filing number. You may obtain further information by calling SOS at 512/463-5555.

DUNS Number

Most businesses have a DUNS (Data Universal Numbering System) number issued by Dun and Bradstreet Corp. If this customer has one, enter it here.

2. APPLICATION CONTACT

Provide the name, title and communication information of the person that TCEQ can contact for additional information regarding this application.

3. REGULATED ENTITY (RE) INFORMATION ON PROJECT OR SITE

a) Regulated Entity Reference Number (RN)

A number issued by TCEQ's Central Registry to sites (a location where a regulated activity occurs) regulated by TCEQ. This is not a permit number, registration number, or license number. If this regulated entity has not been assigned an RN, leave this space blank.

If the site of your business is part of a larger business site, a Regulated Entity Number (RN) may already be assigned for the larger site. Use the RN assigned for the larger site. Search TCEQ's Central Registry to see if the larger site may already be registered as a regulated site at: http://www12.tceq.texas.gov/crpub/index.cfm?fuseaction=regent.RNSearch

If the site is found, provide the assigned Regulated Entity Reference Number (RN) and provide the information for the site to be authorized through this application. The site information for this authorization may vary from the larger site information.

An example is a chemical plant where a unit is owned or operated by a separate corporation that is accessible by the same physical address of your unit or facility. Other examples include industrial parks identified by one common address but different corporations have control of defined areas within the site. In both cases, an RN would be assigned for the physical address location and the permitted sites would be identified separately under the same RN.

b) Site/Project Name/Regulated Entity

Provide the name of the site as known by the public in the area where the site is located. The name you provide on this application will be used in the TCEQ Central Registry as the Regulated Entity name.

c) Description of Activity Regulated

In your own words, briefly describe the primary business that you are doing that requires this authorization. Do not repeat the SIC Code description.

d) County

Identify the county or counties in which the regulated entity is located.

e) Latitude and Longitude

Enter the latitude and longitude of the site in degrees, minutes, and seconds or decimal form. For help obtaining the latitude and longitude, go to: http://www.tceq.texas.gov/gis/sqmaview.html or http://nationalmap.gov/ustopo

f) Site/Project (RE) Physical Address/Location Information

Enter the complete address for the site in Section A if the address can be validated through the US Postal Service. If the physical address is not recognized as a USPS delivery address, you may need to validate the address with your local police (911 service) or through an online map site used to locate a site. Please confirm this to be a complete and valid address. Do not use a rural route or post office box for a site location.

If a site does not have an address that includes a street (or house) number and street name, enter NO ADDRESS for the street name in Section A. In Section B provide a complete written location description. For example: "The site is located 2 miles west from intersection of Hwy 290 & IH35, located on the southwest corner of the Hwy 290 South bound lane."
Provide the city (or nearest city) and zip code of the facility location.

4. GENERAL CHARACTERISTICS

a) Indian Country Lands

If your site is located on Indian Country Lands, the TCEQ does not have authority to process your application. You must obtain authorization through EPA, Region 6, Dallas. Do not submit this form to TCEQ.

b) Construction activity associated with facility associated with exploration, development, or production of oil, gas, or geothermal resources

If your activity is associated with oil and gas exploration, development, or production, you may be under jurisdiction of the Railroad Commission of Texas and may need to obtain authorization from EPA Region 6. For more information, see:
http://info.sos.state.tx.us/pls/pub/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=16&pt=1&ch=3&rl=30

Construction activities associated with a facility related to oil, gas or geothermal resources may include the construction of a well site; treatment or storage facility; underground hydrocarbon or natural gas storage facility; reclamation plant; gas processing facility; compressor station; terminal facility where crude oil is stored prior to refining and at which refined products are stored solely for use at the facility; a carbon dioxide geologic storage facility; and a gathering, transmission, or distribution pipeline that will transport crude oil or natural gas, including natural gas liquids, prior to refining of such oil or the use of the natural gas in any manufacturing process or as a residential or industrial fuel.

Where required by federal law, discharges of stormwater associated with construction activities under the Railroad Commission's jurisdiction must be authorized by the EPA and the Railroad Commission of Texas, as applicable. Activities under Railroad Commission of Texas jurisdiction include construction of a facility that, when completed, would be associated with the exploration, development, or production of oil or gas or geothermal resources, such as a well site; treatment or storage facility; underground hydrocarbon or natural gas storage facility; reclamation plant; gas processing facility; compressor station; terminal facility where crude oil is stored prior to refining and at which refined products are stored solely for use at the facility; a carbon dioxide geologic storage facility under the jurisdiction of the Railroad Commission of Texas; and a gathering, transmission, or distribution pipeline that will transport crude oil or natural gas, including natural gas liquids, prior to refining of such oil or the use of the natural gas in any manufacturing process or as a residential or industrial fuel. The Railroad Commission of Texas also has jurisdiction over stormwater from land disturbance associated with a site survey that is conducted prior to construction of a facility that would be regulated by the Railroad Commission of Texas. Under 33 U.S.C. §1342(l)(2) and §1362(24), EPA cannot require a permit for discharges of stormwater from "field activities or operations associated with {oil and gas} exploration, production, processing, or treatment operations, or transmission facilities, including activities necessary to prepare a site for drilling and for the movement and placement of drilling equipment, whether or not such field activities or operations may be considered to be construction activities" unless the discharge is contaminated by contact with any overburden, raw material, intermediate product, finished product, byproduct, or waste product located on the site of the facility. Under §3.8 of this title (relating to Water Protection), the Railroad

Commission of Texas prohibits operators from causing or allowing pollution of surface or subsurface water. Operators are encouraged to implement and maintain best management practices (BMPs) to minimize discharges of pollutants, including sediment, in stormwater during construction activities to help ensure protection of surface water quality during storm events.

c) Primary Standard Industrial Classification (SIC) Code
Provide the SIC Code that best describes the construction activity being conducted at this site.

Common SIC Codes related to construction activities include:

- 1521 - Construction of Single Family Homes
- 1522 - Construction of Residential Bldgs. Other than Single Family Homes
- 1541 - Construction of Industrial Bldgs. and Warehouses
- 1542 - Construction of Non-residential Bldgs, other than Industrial Bldgs. and Warehouses
- 1611 - Highway and Street Construction, except Highway Construction
- 1622 - Bridge, Tunnel, and Elevated Highway Construction
- 1623 - Water, Sewer, Pipeline and Communications, and Power Line Construction

For help with SIC Codes, go to:
http://www.osha.gov/pls/imis/sicsearch.html

d) Secondary SIC Code
Secondary SIC Code(s) may be provided. Leave blank if not applicable. For help with SIC Codes, go to:
http://www.osha.gov/pls/imis/sicsearch.html

e) Total Number of Acres Disturbed
Provide the approximate number of acres that the construction site will disturb. Construction activities that disturb less than one acre, unless they are part of a larger common plan that disturbs more than one acre, do not require permit coverage. Construction activities that disturb between one and five acres, unless they are part of a common plan that disturbs more than five acres, do not require submission of an NOI. Therefore, the estimated area of land disturbed should not be less than five, unless the project is part of a larger common plan that disturbs five or more acres. Disturbed means any clearing, grading, excavating, or other similar activities.

If you have any questions about this item, please contact the stormwater technical staff by phone at (512)239-4671 or by email at swgp@tceq.texas.gov.

f) Common Plan of Development
Construction activities that disturb less than five acres do not require submission of an NOI unless they are part of a common plan of development or for sale where the area disturbed is five or more acres. Therefore, the estimated area of land disturbed should not be less than five, unless the project is part of a larger common plan that disturbs five or more acres. Disturbed means any clearing, grading, excavating, or other similar activities.

For more information on "What is a common plan of development?" go to:
www.tceq.texas.gov/permitting/stormwater/common_plan_of_development_steps.html

For further information, go to the TCEQ stormwater construction webpage at:
www.tceq.texas.gov/goto/construction and search for "Additional Guidance and Quick Links". If

you have any further questions about this item, please call the stormwater technical staff at (512)239-4671.

g) Identify the water body(s) receiving stormwater runoff
The stormwater may be discharged directly to a receiving stream or through a MS4 from your site. It eventually reaches a receiving water body such as a local stream or lake, possibly via a drainage ditch. You must provide the name of the water body that receives the discharge from the site (a local stream or lake).

If your site has more than one outfall you need to include the name of the first water body for each outfall, if they are different.

h) Identify the segment number(s) of the classified water body(s)
Identify the classified segment number(s) receiving a discharge directly or indirectly. Go to the following link to find the segment number of the classified water body where stormwater will flow from the site: www.tceq.texas.gov/waterquality/monitoring/viewer.html

You may also find the segment number in TCEQ publication GI-316:
www.tceq.texas.gov/publications/gi/gi-316

If the discharge is into an unclassified receiving water and then crosses state lines prior to entering a classified segment, select the appropriate watershed:

- 0100 (Canadian River Basin)
- 0200 (Red River Basin)
- 0300 (Sulfur River Basin)
- 0400 (Cypress Creek Basin)
- 0500 (Sabine River Basin)

Call the Water Quality Assessments section at (512)239-4671 for further assistance.

i) Discharge into MS4 – Identify the MS4 Operator
The discharge may initially be into a municipal separate storm sewer system (MS4). If the stormwater discharge is into an MS4, provide the name of the entity that operates the MS4 where the stormwater discharges. An MS4 operator is often a city, town, county, or utility district, but possibly can be another form of government. Please note that the Construction General Permit requires the Operator to supply the MS4 with a copy of the NOI submitted to TCEQ. For assistance, you may call the technical staff at (512)239-4671.

j) Surface Water bodies on list of impaired waters – Identify the impaired water body(s)
Indicate Yes or No if any surface water bodies receiving discharges from the construction site are on the latest EPA-approved CWA 303(d) List of impaired waters. Provide the name(s) of surface water bodies receiving discharges or potential discharges from the construction site that are on the latest EPA-approved CWA 303(d) List of impaired waters. The EPA-approved CWA 303(d) List of impaired waters in Texas can be found at:
www.tceq.texas.gov/waterquality/assessment/305_303.html

NOTE: Do not use any "draft" documents.

k) Discharges to the Edwards Aquifer Recharge Zone and Certification

See maps on the TCEQ website to determine if the site is located within the Recharge Zone, Contributing Zone, or Contributing Zone within the Transition Zone of the Edwards Aquifer at: www.tceq.texas.gov/field/eapp/viewer.html

If the discharge or potential discharge is within the Recharge Zone, Contributing Zone, or Contributing Zone within the Transition Zone of the Edwards Aquifer, a site specific authorization approved by the Executive Director under the Edwards Aquifer Protection Program (30 TAC Chapter 213) is required before construction can begin. The certification must be answered "Yes" for coverage under the Construction General Permit. The TCEQ approved plan must be readily available for TCEQ staff to review at the time that the NOI is submitted.

The general permit requires the approved Contributing Zone Plan or Water Pollution Abatement Plan to be included or referenced as a part of the Stormwater Pollution Prevention Plan.

For questions regarding the Edwards Aquifer Protection Program, contact the appropriate TCEQ Regional Office. For projects in Hays, Travis and Williamson Counties: Austin Regional Office, 12100 Park 35 Circle, Austin, TX 78753, 512-339-2929. For Projects in Bexar, Comal, Kinney, Medina and Uvalde Counties: TCEQ San Antonio Regional Office, 14250 Judson Rd., San Antonio, TX 78233-4480, 210-490-3096.

5. CERTIFICATIONS

Failure to indicate **Yes** to ALL of the certification items may result in denial of coverage under the general permit.

a) Certification of Understanding the Terms and Conditions of Construction General Permit (TXR150000)

Provisional coverage under the Construction General Permit (TXR150000) begins 7 days after the completed paper NOI is postmarked for delivery to the TCEQ. (Electronic applications submitted through ePermits have immediate provisional coverage). You must obtain a copy and read the Construction General Permit before submitting your application. You may view and print the Construction General Permit for which you are seeking coverage at the TCEQ web site: www.tceq.texas.gov/goto/construction

b) Certification of Legal Name

The full legal name of the applicant as authorized to do business in Texas is required. The name must be provided exactly as filed with the Texas Secretary of State (SOS), or on other legal documents forming the entity, that is filed in the county where doing business. You may contact the SOS at (512)463 5555, for more information related to filing in Texas.

c) Understanding of Notice of Termination

A permittee shall terminate coverage under this Construction General Permit through the submittal of a NOT when the operator of the facility changes, final stabilization has been reached, the discharge becomes authorized under an individual permit, or the construction activity never began at this site.

d) Certification of Stormwater Pollution Prevention Plan

The SWP3 identifies the areas and activities that could produce contaminated runoff at your site and then tells how you will ensure that this contamination is mitigated. For example, in describing your mitigation measures, your site's plan might identify the devices that collect and

filter stormwater, tell how those devices are to be maintained, and tell how frequently that maintenance is to be carried out. You must develop this plan in accordance with the TCEQ general permit requirements. This plan must be developed and implemented before you complete this NOI. The SWP3 must be available for a TCEQ investigator to review on request.

Operator Certification:
The certification must bear an original signature of a person meeting the signatory requirements specified under 30 Texas Administrative Code (TAC) §305.44.

IF YOU ARE A CORPORATION:
The regulation that controls who may sign an NOI or similar form is 30 Texas Administrative Code §305.44(a)(1) (see below). According to this code provision, any corporate representative may sign an NOI or similar form so long as the authority to sign such a document has beeu delegated to that person in accordance with corporate procedures. By signing the NOI or similar form, you are certifying that such authority has been delegated to you. The TCEQ may request documentation evidencing such authority.

IF YOU ARE A MUNICIPALITY OR OTHER GOVERNMENT ENTITY:
The regulation that controls who may sign an NOI or similar form is 30 Texas Administrative Code §305.44(a)(3) (see below). According to this code provision, only a ranking elected official or principal executive officer may sign an NOI or similar form. Persons such as the City Mayor or County Commissioner will be considered ranking elected officials. In order to identify the principal executive officer of your government entity, it may be beneficial to consult your city charter, county or city ordinances, or the Texas statute(s) under which your government entity was formed. An NOI or similar document that is signed by a government official who is not a ranking elected official or principal executive officer does not conform to §305.44(a)(3). The signatory requirement may not be delegated to a government representative other than those identified in the regulation. By signing the NOI or similar form, you are certifying that you are either a ranking elected official or principal executive officer as required by the administrative code. Documentation demonstrating your position as a ranking elected official or principal executive officer may be requested by the TCEQ.

If you have any questions or need additional information concerning the signatory requirements discussed above, please contact the Texas Commission on Environmental Quality's Environmental Law Division at (512)239-0600.

30 Texas Administrative Code
§305.44. Signatories to Applications

(a) All applications shall be signed as follows.

(1) For a corporation, the application shall be signed by a responsible corporate officer. For purposes of this paragraph, a responsible corporate officer means a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. Corporate procedures governing authority to sign permit or post-closure order applications may provide for assignment or delegation to applicable corporate positions rather than to specific individuals.

(2) For a partnership or sole proprietorship, the application shall be signed by a general partner or the proprietor, respectively.

(3) For a municipality, state, federal, or other public agency, the application shall be signed by either a principal executive officer or a ranking elected official. For purposes of this paragraph, a principal executive officer of a federal agency includes the chief executive officer of the agency, or a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., regional administrator of the EPA).

AGENT AUTHORIZATION FORM (TCEQ-0599)

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

I ***Scott Teeter***,
Print Name

Vice President,
Title - Owner/President/Other

of ***Lennar Homes of Texas Land and Construction, Ltd.***,
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

8/10/15.
Date

THE STATE OF Texas §

County of Bexar §

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

GIVEN under my hand and seal of office on this 10th day of August.

Dorothy Renese Collier
NOTARY PUBLIC

DOROTHY RENESE COLLIER
Notary Public, State of Texas
My Commission Expires
May 13, 2017

Dorothy Renese Collier
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: _____

APPLICATION FEE FORM (TCEQ-0574)

Application Fee Form

Texas Commission on Environmental Quality

Name of Proposed Regulated Entity: 4S Ranch Phase-I

Regulated Entity Location: Approximately 1.9 miles north of intersection of FM 1863 and Stahl Lane, Bulverde, Texas 78163

Name of Customer: Lennar Homes of Texas Land and Construction, Ltd.

Contact Person: Scott Teeter Phone: (210) 403-6293

Customer Reference Number (if issued):CN 602412207

Regulated Entity Reference Number (if issued):RN Not yet assigned

Austin Regional Office (3373)

☐ Hays ☐ Travis ☐ Williamson

San Antonio Regional Office (3362)

☐ Bexar ☐ Medina ☐ Uvalde

☒ Comal ☐ Kinney

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

☐ Austin Regional Office

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

☒ San Antonio Regional Office

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

Site Location (Check All That Apply):

☐ Recharge Zone ☒ Contributing Zone ☐ Transition Zone

Type of Plan	*Size*	*Fee Due*
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	753.6 Acres	$ 10,000
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	Acres	$
Sewage Collection System	L.F.	$
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	Tanks	$
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Signature: _____

Date: 8/19/15

Application Fee Schedule

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program 30 TAC Chapter 213 (effective 05/01/2008)

Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

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

Organized Sewage Collection Systems and Modifications

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

Underground and Aboveground Storage Tank System Facility Plans and Modifications

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

Exception Requests

Project	*Fee*
Exception Request	$500

Extension of Time Requests

Project	*Fee*

Project	*Fee*
Extension of Time Request	$150

CHECK PAYABLE TO TCEQ

CORE DATA FORM
(TCEQ-10400)

TCEQ

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)* ☐ Other

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN 602412207		RN

SECTION II: Customer Information

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

☐ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership

☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

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

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*

11. Type of Customer: ☐ Corporation ☐ Individual Partnership: ☐ General ☐ Limited

Government: ☐ City ☐ County ☐ Federal ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

12. Number of Employees
☐ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated?
☐ Yes ☐ No

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

☐ Owner ☐ Operator ☐ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ Voluntary Cleanup Applicant ☐ Other:

15. Mailing Address:

City		State		ZIP		ZIP + 4	

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

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

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)*

■ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated in order to meet TCEQ 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.)*

4S Ranch Phase-I

23. Street Address of the Regulated Entity: *(No PO Boxes)*	Not yet assigned							
	City		State		ZIP		ZIP + 4	
24. County	Comal							

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:	Approximately 1.9 miles north of intersection of FM 1863 and Stahl Lane

26. Nearest City	State	Nearest ZIP Code
Bulverde	Texas	78163

27. Latitude (N) In Decimal:	29.771733	28. Longitude (W) In Decimal:	-98.412315

Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
29	46	18.24	98	24	44.33

29. Primary SIC Code (4 digits)	30. Secondary SIC Code (4 digits)	31. Primary NAICS Code (5 or 6 digits)	32. Secondary NAICS Code (5 or 6 digits)
1521	1623	236115	237110

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

Construction of a single-family residential development

34. Mailing Address:	1015 Central Parkway North							
	Suite 140							
	City	San Antonio	State	TX	ZIP	78232	ZIP + 4	5026
35. E-Mail Address:	scott.teeter@lennar.com							

36. Telephone Number	37. Extension or Code	38. Fax Number *(if applicable)*
(210)403- 6292		(210)403-6280

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

☐ Dam Safety	☐ Districts	■ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Waste Water	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

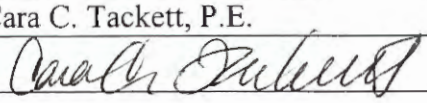
SECTION IV: Preparer Information

40. Name:	Jean Pritchett	41. Title:	Environmental Specialist

42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(210) 375 9000		(210) 375 9010	jpritchett@pape-dawson.com

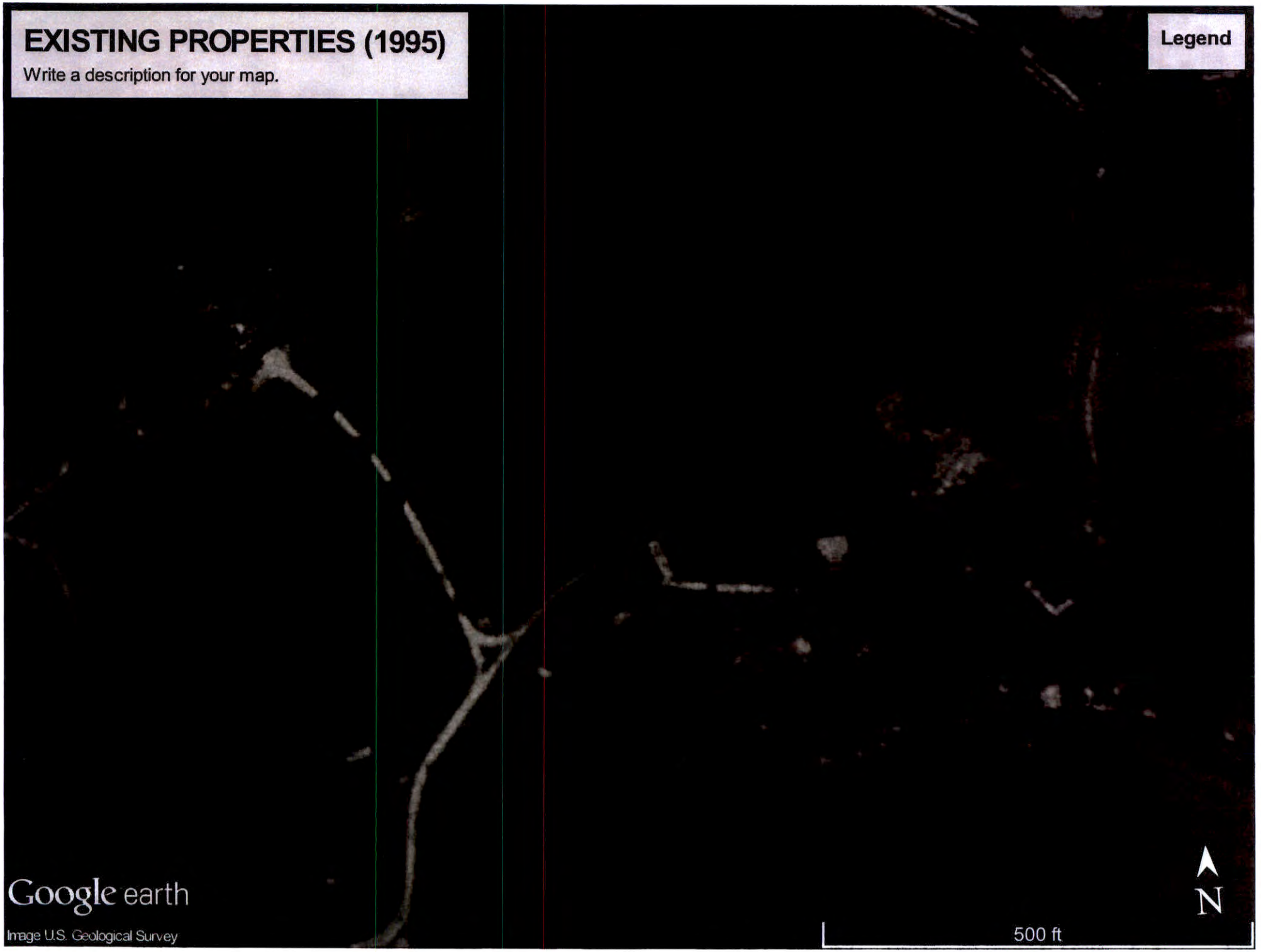
SECTION V: Authorized Signature

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

Company:	Pape-Dawson Engineers, Inc.	Job Title:	Sr. Vice President	
Name*(In Print)* :	Cara C. Tackett, P.E.		Phone:	(210)375-9000
Signature:			Date:	8/19/15

EXHIBITS


EXISTING PROPERTIES (2015)
Write a description for your map.
Legend
Google earth
N
500 ft


EXISTING PROPERTIES (1995)
Write a description for your map.
Legend
Google earth
Image U.S. Geological Survey
500 ft
N

08/18/15

POLLUTANT LOAD AND REMOVAL CALCULATIONS

Treatment Summary Table							
Current Modification							
Watershed	Watershed Area (acres)	Proposed Impervious Cover (acres)	Future Impervious Cover (acres)	Total Impervious Cover to be treated	BMP	Required TSS Removal (lbs/yr)	Designed TSS Removal (lbs/yr)
B,C,E1,E2,H,I	31.57	13.23	1.60	14.82	Basin "A"	13,302	15,095
A1, A2	4.15	0.63	-	0.63	Overtreatment Basin "A"	570	-
G2, G3	3.67	1.17	-	1.17	Overtreatment Basin "A"	1,054	-
J3, J4	1.74	0.88	-	0.88	Overtreatment Basin "B"	794	-
K	2.20	0.14	-	0.14	Overtreatment Basin "A"	124	-
F	0.79	0.28	-	0.28	VFS #1	247	247
D3	3.27	1.10	-	1.10	VFS #2	989	989
K	2.20	0.63	-	0.63	VFS #3	569	569
L	81.22	0.44	-	0.44	VFS #4	396	396
M,N,O,P,Q, R, T	35.30	7.05	4.66	11.72	Basin "B"	10,520	11,730
R	5.51	1.57	-	1.57	VFS #5	1,409	1,409
N	6.93	-	0.74	0.74	VFS #6	668	668
U	4.30	-	0.28	0.28	Overtreatment Basin "B"	247	-
Total	182.85	27.13	7.28	34.41	-	30,888	31,103

Total project boundary area (disturbance area): 87.75 acres

BASIN A		
ELEV	AREA (sf)	
1077.5	14031.9	
1085.5	27357.63	
Volume:	165558.12	cf

BASIN B		
ELEV	AREA (sf)	
1055.5	9199.41	
1063	20915.65	
Volume:	112931.475	cf

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: 4S Ranch Phase-1
Date Prepared: 8/13/2015

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

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

where:

$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

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

County =	Comal	
Total project area included in plan * =	87.75	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	34.41	acres
Total post-development impervious cover fraction * =	0.39	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	30886	lbs.

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

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

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

Drainage Basin/Outfall Area No. = Basin A

Total drainage basin/outfall area =	31.57	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	14.82	acres

Post-development impervious fraction within drainage basin/outfall area = **0.47**

$L_{M\ THIS\ BASIN}$ = **13302** lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = **Sand Filter**

Removal efficiency = **89** percent

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

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

RG-348 Page 3-33 Equation 3.7: L_R = (BMP efficiency) x P x (A_I x 34.6 + A_P x 0.54)

where:

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

A_C = **31.57** acres
A_I = **14.82** acres
A_P = **16.75** acres
L_R = **15326** lbs

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

Desired $L_{M\ THIS\ BASIN}$ = **15095** lbs.

F = **0.98**

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth =	**3.33**	inches
Post Development Runoff Coefficient =	**0.34**	
On-site Water Quality Volume =	**130210**	cubic feet

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

Off-site area draining to BMP =	**0.00**	acres
Off-site Impervious cover draining to BMP =	**0.00**	acres
Impervious fraction of off-site area =	**0**	
Off-site Runoff Coefficient =	**0.00**	
Off-site Water Quality Volume =	**0**	cubic feet
Storage for Sediment =	**26042**	
Total Capture Volume (required water quality volume(s) x 1.20) =	**156253**	cubic feet

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

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

Required Water Quality Volume for retention basin =	**NA**	cubic feet

Irrigation Area Calculations:

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

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

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

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

9A. Full Sedimentation and Filtration System

Water Quality Volume for sedimentation basin =	**156253**	cubic feet

Minimum filter basin area = **7234** square feet

Maximum sedimentation basin area = **65105** square feet **For minimum water depth of 2 feet**
Minimum sedimentation basin area = **16276** square feet **For maximum water depth of 8 feet**

9B. Partial Sedimentation and Filtration System

Water Quality Volume for combined basins = **156253** cubic feet

Minimum filter basin area = **13021** square feet

Maximum sedimentation basin area = **52084** square feet **For minimum water depth of 2 feet**
Minimum sedimentation basin area = **3255** square feet **For maximum water depth of 8 feet**

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

Required Water Quality Volume for Bioretention Basin = **NA** cubic feet

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

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

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

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

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

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

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

14. Stormwater Management StormFilter® by CONTECH

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: 4S Ranch Phase-1
Date Prepared: 8/13/2015

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

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

where:

$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

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

County =	Comal	
Total project area included in plan * =	87.75	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	34.41	acres
Total post-development impervious cover fraction * =	0.39	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	30886	lbs.

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

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

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

Drainage Basin/Outfall Area No. = Basin B

Total drainage basin/outfall area =	35.30	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	11.72	acres

Post-development impervious fraction within drainage basin/outfall area = **0.33**

$L_{M\ THIS\ BASIN}$ = **10520** lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = **Sand Filter**

Removal efficiency = **89** percent

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

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

RG-348 Page 3-33 Equation 3.7: L_R = (BMP efficiency) x P x (A_I x 34.6 + A_P x 0.54)

where:

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

A_C = **35.30** acres
A_I = **11.72** acres
A_P = **23.58** acres
L_R = **12284** lbs

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

Desired $L_{M\ THIS\ BASIN}$ = **11730** lbs.

F = **0.95**

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth =	**2.60**	inches
Post Development Runoff Coefficient =	**0.27**	
On-site Water Quality Volume =	**91342**	cubic feet

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

Off-site area draining to BMP =	**0.00**	acres
Off-site Impervious cover draining to BMP =	**0.00**	acres
Impervious fraction of off-site area =	**0**	
Off-site Runoff Coefficient =	**0.00**	
Off-site Water Quality Volume =	**0**	cubic feet
Storage for Sediment =	**18268**	
Total Capture Volume (required water quality volume(s) x 1.20) =	**109610**	cubic feet

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

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

Required Water Quality Volume for retention basin =	**NA**	cubic feet

Irrigation Area Calculations:

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

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

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

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

9A. Full Sedimentation and Filtration System

Water Quality Volume for sedimentation basin =	**109610**	cubic feet

Minimum filter basin area =	**5075**	square feet	
Maximum sedimentation basin area =	**45671**	square feet	**For minimum water depth of 2 feet**
Minimum sedimentation basin area =	**11418**	square feet	**For maximum water depth of 8 feet**

9B. Partial Sedimentation and Filtration System

Water Quality Volume for combined basins =	**109610**	cubic feet	
Minimum filter basin area =	**9134**	square feet	
Maximum sedimentation basin area =	**36537**	square feet	**For minimum water depth of 2 feet**
Minimum sedimentation basin area =	**2284**	square feet	**For maximum water depth of 8 feet**

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

Required Water Quality Volume for Bioretention Basin =	**NA**	cubic feet	

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

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

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

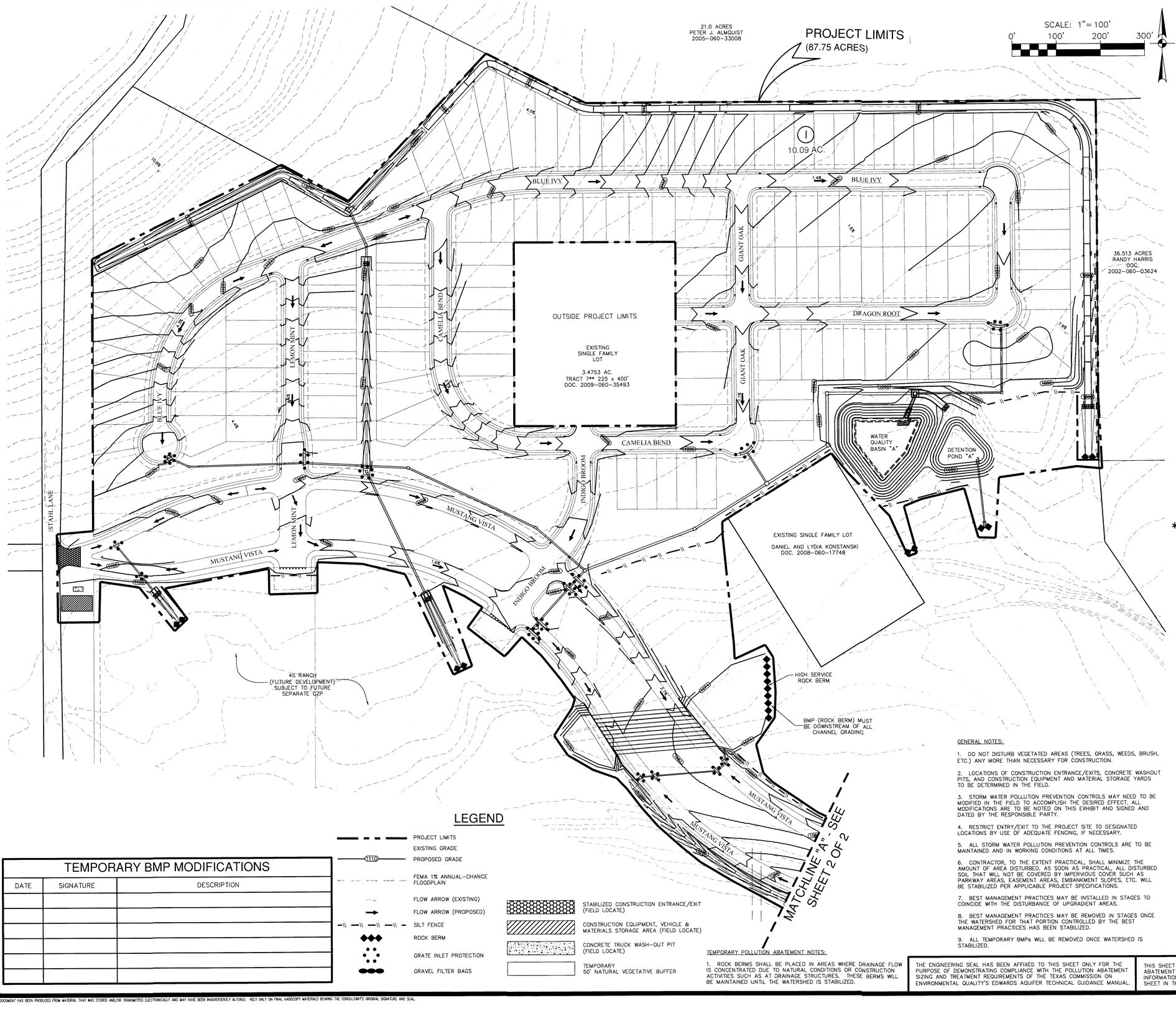
Required Water Quality Volume for Constructed Wetlands =	**NA**	cubic feet	

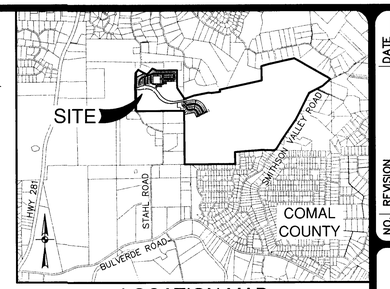
13. AquaLogic™ Cartridge System — Designed as Required in RG-348 — Pages 3-74 to 3-78

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

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

14. Stormwater Management StormFilter® by CONTECH





LOCATION MAP

NOT-TO-SCALE

LEGEND

- PROJECT LIMITS
- EXISTING GRADE
- 1110 PROPOSED GRADE
- FEMA 1% ANNUAL-CHANCE FLOODPLAIN
- FLOW ARROW (EXISTING)
- FLOW ARROW (PROPOSED)
- SILT FENCE
- ROCK BERM
- GRATE INLET PROTECTION
- GRAVEL FILTER BAGS
- STABILIZED CONSTRUCTION ENTRANCE/EXIT (FIELD LOCATE)
- CONSTRUCTION EQUIPMENT, VEHICLE & MATERIALS STORAGE AREA (FIELD LOCATE)
- CONCRETE TRUCK WASH-OUT PIT (FIELD LOCATE)
- TEMPORARY 50' NATURAL VEGETATIVE BUFFER

TEMPORARY BMP MODIFICATIONS

DATE	SIGNATURE	DESCRIPTION

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
CONTRIBUTING ZONE PLAN
GENERAL CONSTRUCTION NOTES

1. WRITTEN CONSTRUCTION NOTIFICATION SHOULD BE PROVIDED TO THE APPROPRIATE TCEQ REGIONAL OFFICE NO LATER THAN 48 HOURS PRIOR TO COMMENCEMENT OF THE REGULATED ACTIVITY. INFORMATION SHOULD INCLUDE THE DATE ON WHICH THE REGULATED ACTIVITY WILL COMMENCE, THE NAME OF THE APPROVED PLAN FOR THE REGULATED ACTIVITY, AND THE NAME OF THE PRIME CONTRACTOR WITH THE NAME AND TELEPHONE NUMBER OF THE CONTACT PERSON.

2. ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROJECT SHOULD BE PROVIDED WITH COMPLETE COPIES OF THE APPROVED CONTRIBUTING ZONE PLAN AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTOR(S) SHOULD KEEP COPIES OF THE APPROVED PLAN AND APPROVAL LETTER ON-SITE.

3. NO TEMPORARY ABOVEGROUND HYDROCARBON AND HAZARDOUS SUBSTANCE STORAGE TANK SYSTEM MAY BE INSTALLED WITHIN 150 FEET OF A DOMESTIC, INDUSTRIAL, IRRIGATION, OR PUBLIC WATER SUPPLY WELL.

4. PRIOR TO COMMENCING CONSTRUCTION, ALL TEMPORARY EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES MUST BE PROPERLY SELECTED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND GOOD ENGINEERING PRACTICES. CONTROLS SPECIFIED IN THE SWPPP SECTION OF THE APPROVED EDWARDS AQUIFER CONTRIBUTING ZONE PLAN ARE REQUIRED DURING CONSTRUCTION. IF INSPECTIONS INDICATE A CONTROL HAS BEEN USED INAPPROPRIATELY, OR INCORRECTLY, THE APPLICANT MUST REPLACE OR MODIFY THE CONTROL FOR SITE SITUATIONS. THE CONTROLS MUST REMAIN IN PLACE UNTIL DISTURBED AREAS ARE REVEGETATED AND THE AREAS HAVE BECOME PERMANENTLY STABILIZED.

5. IF SEDIMENT ESCAPES THE CONSTRUCTION SITE, OFF-SITE ACCUMULATIONS OF SEDIMENT MUST BE REMOVED AT A FREQUENCY SUFFICIENT TO MINIMIZE OFFSITE IMPACTS TO WATER QUALITY (E.G., FUGITIVE SEDIMENT IN STREET BEING WASHED INTO SURFACE STREAMS OR SENSITIVE FEATURES BY THE NEXT RAIN).

6. SEDIMENT MUST BE REMOVED FROM SEDIMENT TRAPS OR SEDIMENTATION PONDS NOT LATER THAN WHEN DESIGN CAPACITY HAS BEEN REDUCED BY 50%. A PERMANENT STAKE MUST BE PROVIDED THAT CAN INDICATE WHEN THE SEDIMENT OCCUPIES 50% OF THE BASIN VOLUME.

7. LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORMWATER SHALL BE PREVENTED FROM BECOMING A POLLUTANT SOURCE FOR STORMWATER DISCHARGES (E.G., SCREENING OUTFALLS, PICKED UP DAILY).

8. ALL SPOILS (EXCAVATED MATERIAL) GENERATED FROM THE PROJECT SITE AND STORED ON-SITE MUST HAVE PROPER E&S CONTROLS INSTALLED.

*9. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, AND CONSTRUCTION ACTIVITIES WILL NOT RESUME WITHIN 21 DAYS. WHEN THE INITIATION OF STABILIZATION MEASURES BY THE 14TH DAY IS PRECLUDED BY WEATHER CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE.

10. THE FOLLOWING RECORDS SHOULD BE MAINTAINED AND MADE AVAILABLE TO THE TCEQ UPON REQUEST: THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR; THE DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE; AND THE DATES WHEN STABILIZATION MEASURES ARE INITIATED.

11. THE HOLDER OF ANY APPROVED CONTRIBUTING ZONE PLAN MUST NOTIFY THE APPROPRIATE REGIONAL OFFICE IN WRITING AND OBTAIN APPROVAL FROM THE EXECUTIVE DIRECTOR PRIOR TO INITIATING ANY OF THE FOLLOWING:

A. ANY PHYSICAL OR OPERATIONAL MODIFICATION OF ANY BEST MANAGEMENT PRACTICES OR STRUCTURE(S), INCLUDING BUT NOT LIMITED TO TEMPORARY OR PERMANENT PONDS, DAMS, BERMS, SILT FENCES, AND DIVERSIONARY STRUCTURES;

B. ANY CHANGE IN THE NATURE OR CHARACTER OF THE REGULATED ACTIVITY FROM THAT WHICH WAS ORIGINALLY APPROVED;

C. ANY CHANGE THAT WOULD SIGNIFICANTLY IMPACT THE ABILITY TO PREVENT POLLUTION OF THE EDWARDS AQUIFER AND HYDROLOGICALLY CONNECTED SURFACE WATER; OR

D. ANY DEVELOPMENT OF LAND PREVIOUSLY IDENTIFIED IN A CONTRIBUTING ZONE PLAN AS UNDEVELOPED.

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

GENERAL NOTES:

1. DO NOT DISTURB VEGETATED AREAS (TREES, GRASS, WEEDS, BRUSH, ETC.) ANY MORE THAN NECESSARY FOR CONSTRUCTION.

2. LOCATIONS OF CONSTRUCTION ENTRANCE/EXITS, CONCRETE WASHOUT PITS, AND CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARDS TO BE DETERMINED IN THE FIELD.

3. STORM WATER POLLUTION PREVENTION CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED EFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS EXHIBIT AND SIGNED AND DATED BY THE RESPONSIBLE PARTY.

4. RESTRICT ENTRY/EXIT TO THE PROJECT SITE TO DESIGNATED LOCATIONS BY USE OF ADEQUATE FENCING, IF NECESSARY.

5. ALL STORM WATER POLLUTION PREVENTION CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITIONS AT ALL TIMES.

6. CONTRACTOR, TO THE EXTENT PRACTICAL, SHALL MINIMIZE THE AMOUNT OF AREA DISTURBED. AS SOON AS PRACTICAL, ALL DISTURBED SOIL THAT WILL NOT BE COVERED BY IMPERVIOUS COVER SUCH AS PARKWAY AREAS, EASEMENT AREAS, EMBANKMENT SLOPES, ETC. WILL BE STABILIZED PER APPLICABLE PROJECT SPECIFICATIONS.

7. BEST MANAGEMENT PRACTICES MAY BE INSTALLED IN STAGES TO COINCIDE WITH THE DISTURBANCE OF UPGRADIENT AREAS.

8. BEST MANAGEMENT PRACTICES MAY BE REMOVED IN STAGES ONCE THE WATERSHED FOR THAT PORTION CONTROLLED BY THE BEST MANAGEMENT PRACTICES HAS BEEN STABILIZED.

9. ALL TEMPORARY BMPs WILL BE REMOVED ONCE WATERSHED IS STABILIZED.

10. MUD OR DIRT INADVERTENTLY TRACKED OFF-SITE AND ONTO EXISTING STREETS SHALL BE REMOVED IMMEDIATELY BY HAND OR MECHANICAL BROOM SWEEPING.

11. PRIOR TO INITIATION OF SUBSEQUENT PHASES OF CONSTRUCTION, TEMPORARY BMPs INCLUDING SILT FENCING, CONSTRUCTION ENTRANCE/EXIT, CONCRETE WASHOUT PIT, AND CONSTRUCTION STAGING AREA SHALL BE FIELD LOCATED AS APPROPRIATE FOR THE AREA OF CONSTRUCTION.

12. TEMPORARY POLLUTION ABATEMENT MEASURES SHOWN ON THE PLAN ARE FOR THE OVERALL DEVELOPMENT. TEMPORARY BMPs MAY REQUIRE ADJUSTMENT BASED ON PHASING OF CONSTRUCTION OF THE DEVELOPMENT. RECORDS OF ADJUSTMENTS AND REVISIONS SHALL BE MAINTAINED AS APPROPRIATE.

13. TEMPORARY BMPs SHOWN ON THIS SHEET ARE FOR GRAPHICAL PURPOSES AND MAY NOT BE TO SCALE. BMPs SHALL BE LOCATED WITHIN THE PROJECT LIMITS.

14. UPON COMPLETION OF THE PROJECT AND BEFORE FINAL PAYMENT IS ISSUED, CONTRACTOR SHALL REMOVE ALL SEDIMENT AND EROSION CONTROL MEASURES.

15. CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION SEQUENCING AND REMOVAL OF TEMPORARY POLLUTION ABATEMENT MEASURES THAT CONFLICT WITH SITE IMPROVEMENTS SUCH AS LANDSCAPING AND FENCES SO AS TO PREVENT SEDIMENT FROM ESCAPING THE PROJECT SITE.

TEMPORARY POLLUTION ABATEMENT NOTES:

1. ROCK BERMS SHALL BE PLACED IN AREAS WHERE DRAINAGE FLOW IS CONCENTRATED DUE TO NATURAL CONDITIONS OR CONSTRUCTION ACTIVITIES SUCH AS AT DRAINAGE STRUCTURES. THESE BERMS WILL BE MAINTAINED UNTIL THE WATERSHED IS STABILIZED.

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

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

EXHIBIT 1

NO.	REVISION	DATE

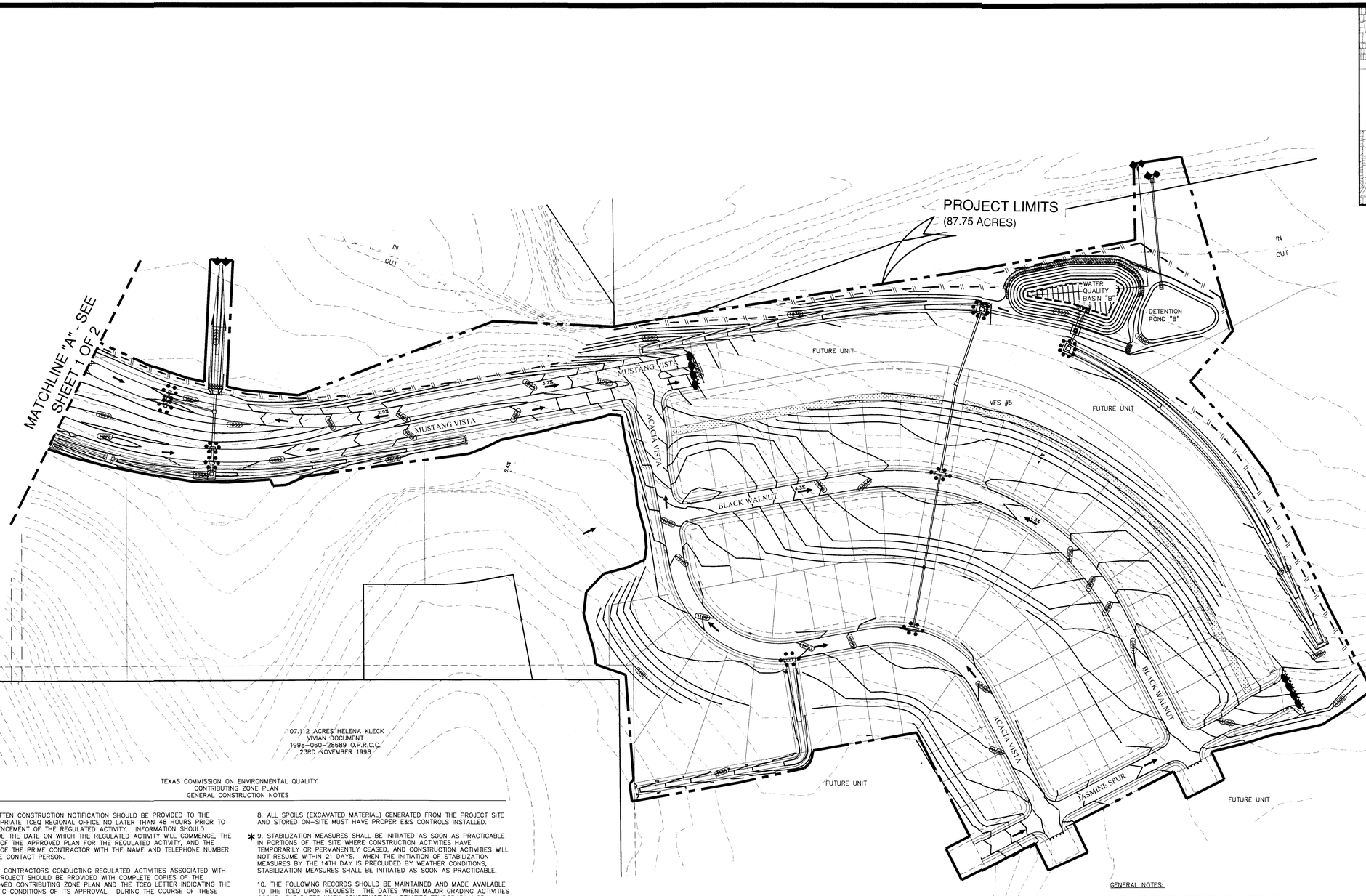
STATE OF TEXAS
CARA C. TACKETT
89491
LICENSED
PROFESSIONAL ENGINEER
8/18/15

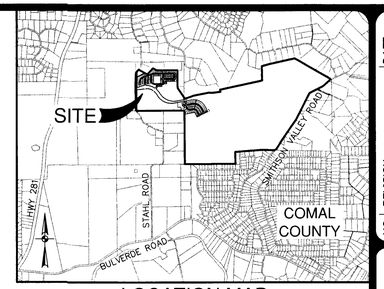
PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TEXAS 78213 | PHONE: 210.375.9000 FAX: 210.375.9010
TEXAS BOARD OF PROFESSIONAL ENGINEERS, FIRM REGISTRATION # 470
TEXAS BOARD OF PROFESSIONAL LAND SURVEYING, FIRM REGISTRATION # 10193974

4S RANCH PHASE - I
BULVERDE, TEXAS

CONTRIBUTING ZONE PLAN
TEMPORARY POLLUTION ABATEMENT PLAN

PLAT NO.
JOB NO. 8547-02
DATE AUGUST 2015
DESIGNER BS
CHECKED TD DRAWN TC
SHEET 1 OF 2





LOCATION MAP
NOT-TO-SCALE

LEGEND

- PROJECT LIMITS
- EXISTING GRADE
- 1110 PROPOSED GRADE
- FEMA 1% ANNUAL-CHANCE FLOODPLAIN
- FLOW ARROW (EXISTING)
- FLOW ARROW (PROPOSED)
- SILT FENCE
- ROCK BERM
- GRATE INLET PROTECTION
- GRAVEL FILTER BAGS
- STABILIZED CONSTRUCTION ENTRANCE/EXIT (FIELD LOCATE)
- CONSTRUCTION EQUIPMENT, VEHICLE & MATERIALS STORAGE AREA (FIELD LOCATE)
- CONCRETE TRUCK WASH-OUT PIT (FIELD LOCATE)
- TEMPORARY 50' NATURAL VEGETATIVE BUFFER

SCALE: 1"= 100'
0' 100' 200' 300'

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
CONTRIBUTING ZONE PLAN
GENERAL CONSTRUCTION NOTES

1. WRITTEN CONSTRUCTION NOTIFICATION SHOULD BE PROVIDED TO THE APPROPRIATE TCEQ REGIONAL OFFICE NO LATER THAN 48 HOURS PRIOR TO COMMENCEMENT OF THE REGULATED ACTIVITY. INFORMATION SHOULD INCLUDE THE DATE ON WHICH THE REGULATED ACTIVITY WILL COMMENCE, THE NAME OF THE APPROVED PLAN FOR THE REGULATED ACTIVITY, AND THE NAME OF THE PRIME CONTRACTOR WITH THE NAME AND TELEPHONE NUMBER OF THE CONTACT PERSON.

2. ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROJECT SHOULD BE PROVIDED WITH COMPLETE COPIES OF THE APPROVED CONTRIBUTING ZONE PLAN AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTOR(S) SHOULD KEEP COPIES OF THE APPROVED PLAN AND APPROVAL LETTER ON-SITE.

3. NO TEMPORARY ABOVEGROUND HYDROCARBON AND HAZARDOUS SUBSTANCE STORAGE TANK SYSTEM MAY BE INSTALLED WITHIN 150 FEET OF A DOMESTIC, INDUSTRIAL, IRRIGATION, OR PUBLIC WATER SUPPLY WELL.

4. PRIOR TO COMMENCING CONSTRUCTION, ALL TEMPORARY EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES MUST BE PROPERLY SELECTED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND GOOD ENGINEERING PRACTICES. CONTROLS SPECIFIED IN THE SWPPP SECTION OF THE APPROVED EDWARDS AQUIFER CONTRIBUTING ZONE PLAN ARE REQUIRED DURING CONSTRUCTION. IF INSPECTIONS INDICATE A CONTROL HAS BEEN USED INAPPROPRIATELY, OR INCORRECTLY, THE APPLICANT MUST REPLACE OR MODIFY THE CONTROL FOR SITE SITUATIONS. THE CONTROLS MUST REMAIN IN PLACE UNTIL DISTURBED AREAS ARE REVEGETATED AND THE AREAS HAVE BECOME PERMANENTLY STABILIZED.

5. IF SEDIMENT ESCAPES THE CONSTRUCTION SITE, OFF-SITE ACCUMULATIONS OF SEDIMENT MUST BE REMOVED AT A FREQUENCY SUFFICIENT TO MINIMIZE OFFSITE IMPACTS TO WATER QUALITY (E.G., FUGITIVE SEDIMENT IN STREET BEING WASHED INTO SURFACE STREAMS OR SENSITIVE FEATURES BY THE NEXT RAIN).

6. SEDIMENT MUST BE REMOVED FROM SEDIMENT TRAPS OR SEDIMENTATION PONDS NOT LATER THAN WHEN DESIGN CAPACITY HAS BEEN REDUCED BY 50%. A PERMANENT STAKE MUST BE PROVIDED THAT CAN INDICATE WHEN THE SEDIMENT OCCUPIES 50% OF THE BASIN VOLUME.

7. LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORMWATER SHALL BE PREVENTED FROM BECOMING A POLLUTANT SOURCE FOR STORMWATER DISCHARGES (E.G., SCREENING OUTFALLS, PICKED UP DAILY).

8. ALL SPOILS (EXCAVATED MATERIAL) GENERATED FROM THE PROJECT SITE AND STORED ON-SITE MUST HAVE PROPER E&S CONTROLS INSTALLED.

* 9. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, AND CONSTRUCTION ACTIVITIES WILL NOT RESUME WITHIN 21 DAYS. WHEN THE INITIATION OF STABILIZATION MEASURES BY THE 14TH DAY IS PRECLUDED BY WEATHER CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE.

10. THE FOLLOWING RECORDS SHOULD BE MAINTAINED AND MADE AVAILABLE TO THE TCEQ UPON REQUEST: THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR; THE DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE; AND THE DATES WHEN STABILIZATION MEASURES ARE INITIATED.

11. THE HOLDER OF ANY APPROVED CONTRIBUTING ZONE PLAN MUST NOTIFY THE APPROPRIATE REGIONAL OFFICE IN WRITING AND OBTAIN APPROVAL FROM THE EXECUTIVE DIRECTOR PRIOR TO INITIATING ANY OF THE FOLLOWING:

A. ANY PHYSICAL OR OPERATIONAL MODIFICATION OF ANY BEST MANAGEMENT PRACTICES OR STRUCTURE(S), INCLUDING BUT NOT LIMITED TO TEMPORARY OR PERMANENT PONDS, DAMS, BERMS, SILT FENCES, AND DIVERSIONARY STRUCTURES;

B. ANY CHANGE IN THE NATURE OR CHARACTER OF THE REGULATED ACTIVITY FROM THAT WHICH WAS ORIGINALLY APPROVED;

C. ANY CHANGE THAT WOULD SIGNIFICANTLY IMPACT THE ABILITY TO PREVENT POLLUTION OF THE EDWARDS AQUIFER AND HYDROLOGICALLY CONNECTED SURFACE WATER; OR

D. ANY DEVELOPMENT OF LAND PREVIOUSLY IDENTIFIED IN A CONTRIBUTING ZONE PLAN AS UNDEVELOPED.

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

TEMPORARY POLLUTION ABATEMENT NOTES:

1. ROCK BERMS SHALL BE PLACED IN AREAS WHERE DRAINAGE FLOW IS CONCENTRATED DUE TO NATURAL CONDITIONS OR CONSTRUCTION ACTIVITIES SUCH AS AT DRAINAGE STRUCTURES. THESE BERMS WILL BE MAINTAINED UNTIL THE WATERSHED IS STABILIZED.

GENERAL NOTES:

1. DO NOT DISTURB VEGETATED AREAS (TREES, GRASS, WEEDS, BRUSH, ETC.) ANY MORE THAN NECESSARY FOR CONSTRUCTION.

2. LOCATIONS OF CONSTRUCTION ENTRANCE/EXITS, CONCRETE WASHOUT PITS, AND CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARDS TO BE DETERMINED IN THE FIELD.

3. STORM WATER POLLUTION PREVENTION CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED EFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS EXHIBIT AND SIGNED AND DATED BY THE RESPONSIBLE PARTY.

4. RESTRICT ENTRY/EXIT TO THE PROJECT SITE TO DESIGNATED LOCATIONS BY USE OF ADEQUATE FENCING, IF NECESSARY.

5. ALL STORM WATER POLLUTION PREVENTION CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITIONS AT ALL TIMES.

6. CONTRACTOR, TO THE EXTENT PRACTICAL, SHALL MINIMIZE THE AMOUNT OF AREA DISTURBED. AS SOON AS PRACTICAL, ALL DISTURBED SOIL THAT WILL NOT BE COVERED BY IMPERVIOUS COVER SUCH AS PARKWAY AREAS, EASEMENT AREAS, EMBANKMENT SLOPES, ETC. WILL BE STABILIZED PER APPLICABLE PROJECT SPECIFICATIONS.

7. BEST MANAGEMENT PRACTICES MAY BE INSTALLED IN STAGES TO COINCIDE WITH THE DISTURBANCE OF UPGRADIENT AREAS.

8. BEST MANAGEMENT PRACTICES MAY BE REMOVED IN STAGES ONCE THE WATERSHED FOR THAT PORTION CONTROLLED BY THE BEST MANAGEMENT PRACTICES HAS BEEN STABILIZED.

9. ALL TEMPORARY BMPs WILL BE REMOVED ONCE WATERSHED IS STABILIZED.

10. MUD OR DIRT INADVERTENTLY TRACKED OFF-SITE AND ONTO EXISTING STREETS SHALL BE REMOVED IMMEDIATELY BY HAND OR MECHANICAL BROOM SWEEPING.

11. PRIOR TO INITIATION OF SUBSEQUENT PHASES OF CONSTRUCTION, TEMPORARY BMPs INCLUDING SILT FENCING, CONSTRUCTION ENTRANCE/EXIT, CONCRETE WASHOUT PIT, AND CONSTRUCTION STAGING AREA SHALL BE FIELD LOCATED AS APPROPRIATE FOR THE AREA OF CONSTRUCTION.

12. TEMPORARY POLLUTION ABATEMENT MEASURES SHOWN ON THE PLAN ARE FOR THE OVERALL DEVELOPMENT. TEMPORARY BMPs MAY REQUIRE ADJUSTMENT BASED ON PHASING OF CONSTRUCTION OF THE DEVELOPMENT. RECORDS OF ADJUSTMENTS AND REVISIONS SHALL BE MAINTAINED AS APPROPRIATE.

13. TEMPORARY BMPs SHOWN ON THIS SHEET ARE FOR GRAPHICAL PURPOSES AND MAY NOT BE TO SCALE. BMPs SHALL BE LOCATED WITHIN THE PROJECT LIMITS.

14. UPON COMPLETION OF THE PROJECT AND BEFORE FINAL PAYMENT IS ISSUED, CONTRACTOR SHALL REMOVE ALL SEDIMENT AND EROSION CONTROL MEASURES.

15. CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION SEQUENCING AND REMOVAL OF TEMPORARY POLLUTION ABATEMENT MEASURES THAT CONFLICT WITH SITE IMPROVEMENTS SUCH AS LANDSCAPING AND FENCES SO AS TO PREVENT SEDIMENT FROM ESCAPING THE PROJECT SITE.

TEMPORARY BMP MODIFICATIONS

DATE	SIGNATURE	DESCRIPTION

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

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

EXHIBIT 1

NO.	REVISION	DATE

STATE OF TEXAS
CARA C. TACKETT
89491
LICENSED
PROFESSIONAL ENGINEER
8/18/15

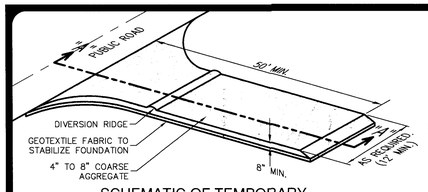
PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TEXAS 78213 | PHONE: 210.375.9000 FAX: 210.375.9010
TEXAS BOARD OF PROFESSIONAL ENGINEERS, FIRM REGISTRATION # 470
TEXAS BOARD OF PROFESSIONAL LAND SURVEYING, FIRM ACCREDITATION # 10193974

4S RANCH PHASE - I
BULVERDE, TEXAS

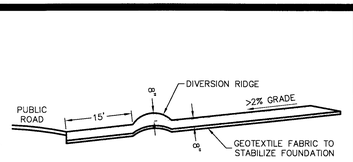
CONTRIBUTING ZONE PLAN
TEMPORARY POLLUTION ABATEMENT PLAN

PLAT NO.
JOB NO. 8547-02
DATE AUGUST 2015
DESIGNER BS
CHECKED TD DRAWN TC
SHEET 2 OF 2

Date: Aug 19, 2015, 1:09pm User ID: BScarpa
File: P:\8547\102\Design\Environmental\CZP\TM8547102.dwg



SCHEMATIC OF TEMPORARY CONSTRUCTION ENTRANCE/EXIT



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

MATERIALS

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 8–INCHES.

3. THE GEOTEXTILE FABRIC SHOULD BE DESIGNED SPECIFICALLY FOR USE AS A SOIL FILTRATION MEDIA WITH AN APPROXIMATE WEIGHT OF 6 OZ/YD^2, A MULLEN BURST RATING OF 140 LB/IN^2, 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 BASIN.

INSTALLATION

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

2. 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 SURFACE SMOOTH AND SLOPE FOR DRAINAGE.

7. DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE STONE PAD TO A SEDIMENT TRAP OR BASIN.

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

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.

3. 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

1. THE ENTRANCE SHOULD BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND 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.

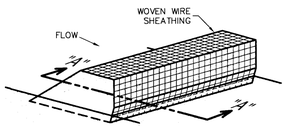
3. WHEN NECESSARY, WHEELS SHOULD BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT–OF–WAY.

4. WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

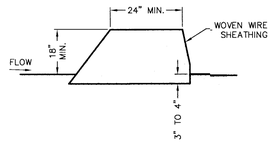
5. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE BY USING APPROVED METHODS.

STABILIZED CONSTRUCTION ENTRANCE/EXIT DETAIL

NOT–TO–SCALE



ISOMETRIC PLAN VIEW



SECTION "A-A"

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.

MATERIALS

1. 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 RINGS.

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 USED.

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 OPENINGS.

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.

INSPECTION AND MAINTENANCE GUIDELINES

1. 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, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.

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

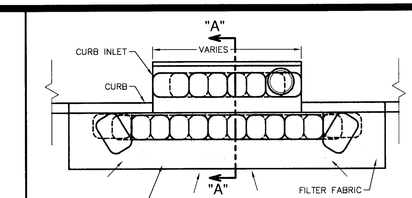
COMMON TROUBLE POINTS

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

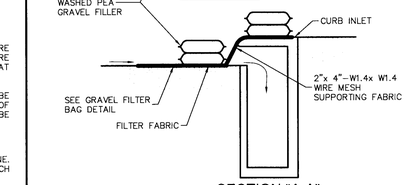
2. BERM NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND ONE SIDE).

ROCK BERM DETAIL

NOT–TO–SCALE



PLAN VIEW



SECTION "A-A"

GENERAL NOTES

1. 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 A MANNER THAT IT WILL NOT ERODE.

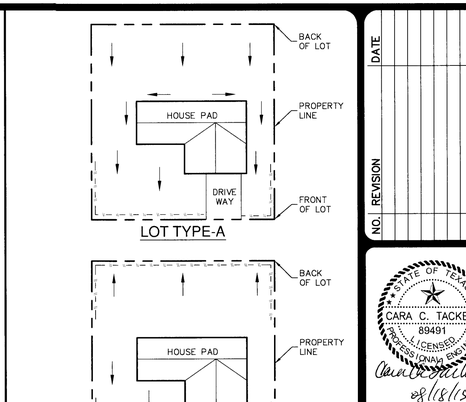
3. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.

4. INSPECT FILTER FABRIC AND PATCH OR REPLACE IF TORN OR MISSING.

5. STRUCTURES SHOULD BE REMOVED AND THE AREA STABILIZED ONLY AFTER THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

BAGGED GRAVEL CURB INLET PROTECTION DETAIL

NOT–TO–SCALE



LOT TYPE-A

LOT TYPE-B

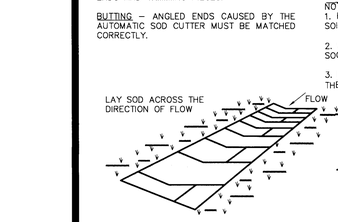
LOT TYPE-C

NOTE: SILT FENCE TO BE INSTALLED PER THESE DETAILS AND LOCATED ON THE DOWNGRADIENT SIDE OF EACH LOT LINE OR LIMITS OF CLEARING AS GENERALLY SHOWN ON THE OVERALL SITE PLAN.

LEGEND
SILT FENCE
DRAINAGE FLOW

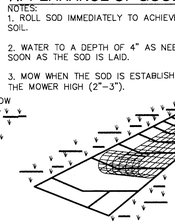
TYPICAL HOUSE LOT LAYOUTS

NOT–TO–SCALE



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.

BUTTING – ANGLED ENDS CAUSED BY THE AUTOMATIC SOD CUTTER MUST BE MATCHED CORRECTLY.

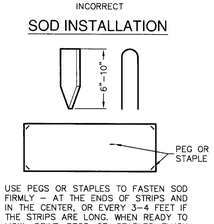


APPEARANCE OF GOOD SOD

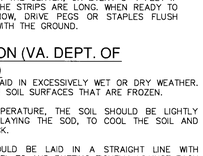
NOTES:
1. ROLL SOD IMMEDIATELY TO ACHIEVE FIRM CONTACT WITH THE SOIL.

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 THE MOWER HIGH (2"–3").



SOD INSTALLATION



USE PEGS OR STAPLES TO FASTEN SOD FIRMLY – AT THE ENDS OF STRIPS AND IN THE CENTER, OR EVERY 3–4 FEET IF THE STRIPS ARE LONG. WHEN READY TO MOW, DRIVE PEGS OR STAPLES FLUSH WITH THE GROUND.

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

MATERIALS

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 SHOOT GROWTH AND THATCH.

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%. TORN OR UNEVEN PADS SHOULD NOT BE ACCEPTABLE.

3. STANDARD SIZE SECTIONS OF SOD SHOULD BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED FROM A FIRM GRASP ON ONE END OF THE SECTION.

4. SOD SHOULD BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS.

SITE PREPARATION

1. PRIOR TO SOIL PREPARATION, AREAS TO BE SODDED SHOULD BE BROUGHT TO FINAL GRADE IN ACCORDANCE WITH THE APPROVED PLAN.

2. THE SURFACE SHOULD BE CLEARED OF ALL TRASH, DEBRIS AND OF ALL ROOTS, BRUSH, WIRE, GRADE STAKES AND OTHER OBJECTS THAT WOULD INTERFERE WITH PLANTING, FERTILIZING OR MAINTENANCE OPERATIONS.

3. FERTILIZE ACCORDING TO SOIL TESTS. FERTILIZER NEEDS CAN BE DETERMINED BY A SOIL TESTING LABORATORY OR REGIONAL RECOMMENDATIONS 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.

INSTALLATION IN CHANNELS

1. 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).

2. 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 AREAS.

GENERAL INSTALLATION (VA. DEPT. OF CONSERVATION, 1992)

1. 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 REDUCE ROOT BURNING AND DIEBACK.

3. 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).

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 INCHES.

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.

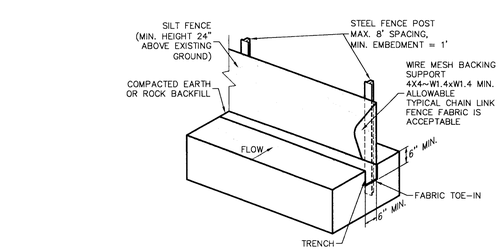
INSPECTION AND MAINTENANCE GUIDELINES

1. 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



ISOMETRIC PLAN VIEW

SILT FENCE

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

1. 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 EXCEEDING 140.

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

INSTALLATION

1. 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 ¼ 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

1. 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.

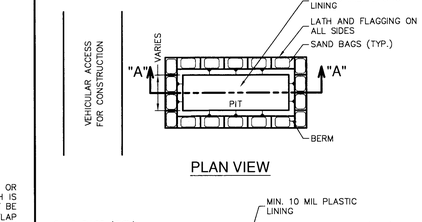
3. REPLACE TORN FABRIC OR INSTALL A SECOND LINE OF FENCING PARALLEL TO THE TORN SECTION.

4. 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.

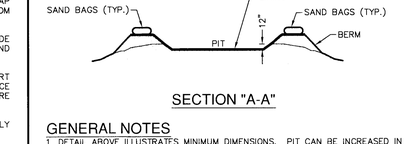
5. WHEN CONSTRUCTION IS COMPLETE, THE SEDIMENT SHOULD BE DISPOSED OF IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTATION AND THE PRIOR LOCATION OF THE SILT FENCE SHOULD BE REVEGETATED. THE FENCE ITSELF SHOULD BE DISPOSED OF IN AN APPROVED LANDFILL.

SILT FENCE DETAIL

NOT–TO–SCALE



PLAN VIEW



SECTION "A-A"

GENERAL NOTES

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

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

3. WASHOUT PIT SHALL NOT BE LOCATED IN AREAS SUBJECT TO INUNDATION FROM STORM WATER RUNOFF.

4. LOCATE WASHOUT AREA AT LEAST 50 FEET FROM SENSITIVE FEATURES, STORM DRAINS, OPEN DITCHES OR WATER BODIES.

5. 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

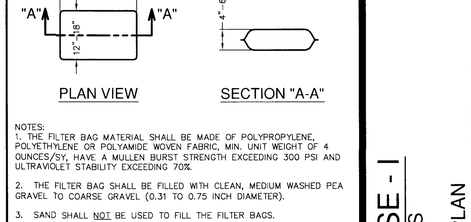
1. WHEN TEMPORARY CONCRETE WASHOUT FACILITIES ARE NO LONGER REQUIRED FOR THE WORK, THE HARDENED CONCRETE SHOULD BE REMOVED AND DISPOSED OF.

2. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF.

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

CONCRETE TRUCK WASHOUT PIT DETAIL

NOT–TO–SCALE



PLAN VIEW

SECTION "A-A"

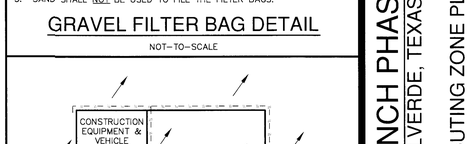
NOTES:
1. THE FILTER BAG MATERIAL SHALL BE MADE OF POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN FABRIC, MIN. UNIT WEIGHT OF 4 OUNCES/SY, HAVE A MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70%.

2. THE FILTER BAG SHALL BE FILLED WITH CLEAN, MEDIUM WASHED PEA GRAVEL TO COARSE GRAVEL (0.31 TO 0.75 INCH DIAMETER).

3. SAND SHALL NOT BE USED TO FILL THE FILTER BAGS.

GRAVEL FILTER BAG DETAIL

NOT–TO–SCALE



LEGEND
SILT FENCE
FLOW ARROWS

CONSTRUCTION STAGING AREA

NOT–TO–SCALE

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

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

EXHIBIT 2

NO.	REVISION	DATE

STATE OF TEXAS
CARA C. TACKETT
89491
LICENSED PROFESSIONAL ENGINEER
8/18/15

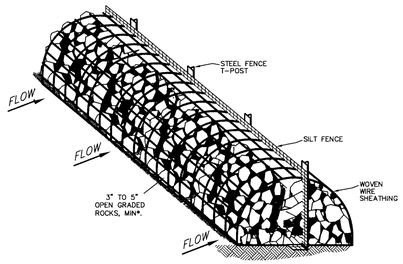
PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TEXAS 78213 | PHONE: 210.375.9000 FAX: 210.375.9010
TEXAS BOARD OF PROFESSIONAL ENGINEERS, FIRM REGISTRATION # 470
TEXAS BOARD OF PROFESSIONAL LAND SURVEYING, FIRM REGISTRATION # 10193974

4S RANCH PHASE - I
BULVERDE, TEXAS

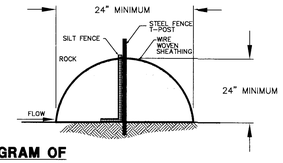
CONTRIBUTING ZONE PLAN
TEMPORARY POLLUTION ABATEMENT PLAN DETAILS

PLAT NO.
JOB NO. 8547–02
DATE AUGUST 2015
DESIGNER BS
CHECKED TD DRAWN TC
SHEET 1 OF 2

Date: Aug 19, 2015, 1:14pm User ID: BSpangler
File: P:\8547\4.0\02\Design\Environmental\CP2\TMD7854702.dwg



*SEE NOTE 3 OF INSTALLATION SECTION



SCHEMATIC DIAGRAM OF HIGH SERVICE ROCK BERM (LCRA, 1998)

GENERAL NOTES:

- A high service rock berm should be designated in areas of important environmental significance such as in steep canyons or above permanent springs, pools, recharge features, or other environmentally sensitive areas that may require a higher level of protection. The drainage area to this device should not exceed 5 acres and the slope should be less than 30%.

MATERIALS:

1. Silt fence material should be polypropylene, polyethylene or polyamide woven or nonwoven fabric. The fabric width should be 36 inches, with a minimum unit weight of 4.5 oz/yd, mullen burst strength exceeding 190 lb/in^2, ultraviolet stability exceeding 70%, and minimum apparent opening size of U.S. Sieve No. 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 nominal weight 1.25 lb/ft^2, and Brindell hardness exceeding 140. Rebar (either #5 or #6) may also be used to anchor the berm.
3. Woven wire backing to support the fabric should be galvanized 2" x 4" welded wire, 12 gauge minimum.
4. 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 rings.
5. Clean, open graded 3- to 5- inch diameter rock should be used, except in areas where high velocities or large volumes of flow are expected, where 5- to 8- inch diameter rocks maybe used.

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 openings.
2. Install the silt fence along the center of the proposed berm placement, as with a normal silt fence described in Section 2.4.3.
3. Place the rock along the sheathing on both sides of the silt fence as shown in the diagram (Figure 1-29), to a height not less than 24 inches. Clean, open graded 3" to 5" diameter rock should be used, except in areas where high velocities or large volumes of flow are expected, where 5" to 8" diameter rock may be used.
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. The high service rock berm should be removed when the site is revegetated or otherwise stabilized or it may remain in place as a permanent BMP if drainage is adequate.

COMMON TROUBLE POINTS:

1. Insufficient berm height or length (runoff quickly escapes over top or around sides of berm).
2. Berm not installed perpendicular to flow line (runoff escaping around one side).
3. Internal silt fence not anchored securely to ground (high flows displacing berm).
4. When installed in streambeds, they often result in diversion scour, so their use in this setting is not recommended.

INSPECTION AND MAINTENANCE GUIDELINES:

1. Inspection should be made weekly and after each rainfall by the responsible party. For installations in streambeds, additional daily inspections should be made on rock berm.
2. Remove sediment and other debris when buildup reaches 6 inches and dispose of the accumulated silt in an approved manner.
3. Repair any loose wire sheathing.
4. The berm should be reshaped as needed during inspections.
5. The berm should be replaced when the structure ceases to function as intended due to silt accumulation among the rocks, washout, construction traffic damage, etc.
6. The rock berm should be left in place until all upstream areas are stabilized and accumulated silt removed.

HIGH SERVICE ROCK BERM DETAIL

NOT-TO-SCALE

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

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

EXHIBIT 2A

NO. | REVISION | DATE

STATE OF TEXAS
CARA C. TACKETT
89491
LICENSED PROFESSIONAL ENGINEER
8/18/15

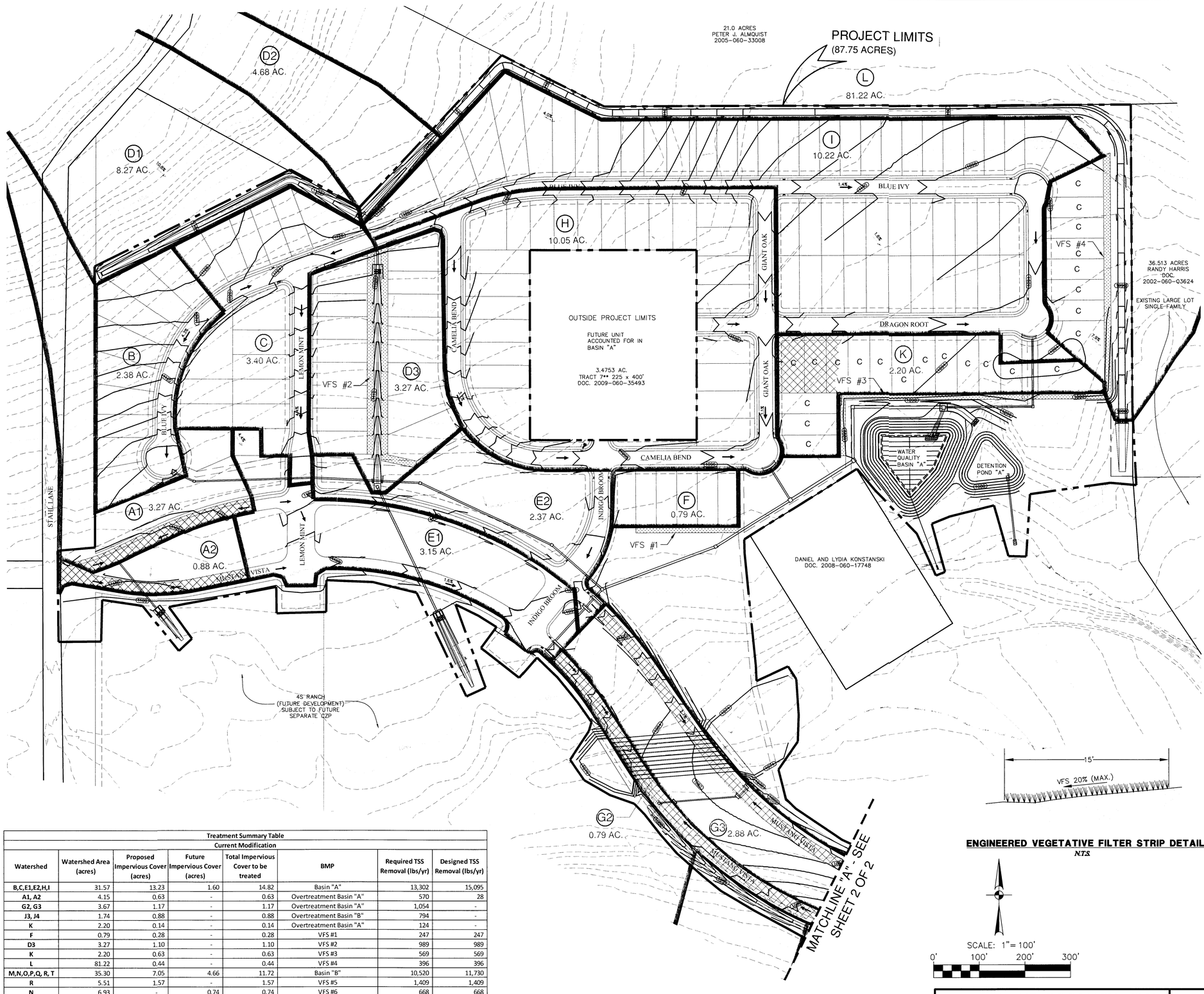
PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TEXAS 78213 | PHONE: 210.375.9000 FAX: 210.375.9010
TEXAS BOARD OF PROFESSIONAL ENGINEERS, FIRM REGISTRATION # 470
TEXAS BOARD OF PROFESSIONAL LAND SURVEYING, FIRM REGISTRATION # 100314

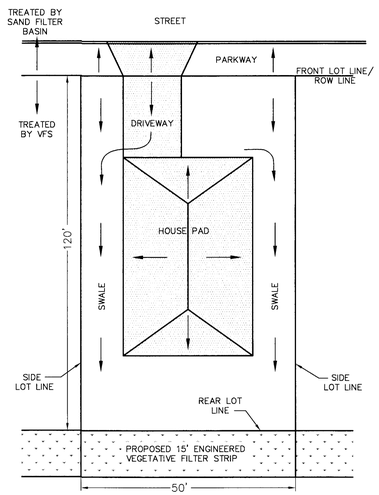
4S RANCH PHASE - I
BULVERDE, TEXAS

CONTRIBUTING ZONE PLAN
TEMPORARY POLLUTION ABATEMENT PLAN DETAILS

PLAT NO.
JOB NO. 8547-02
DATE AUGUST 2015
DESIGNER BS
CHECKED TD DRAWN TC
SHEET 2 OF 2

Date: Aug 19, 2015, 1:14pm User ID: BSpengler
File: P:\85\47\02\Design\Environmental\CZP\TMDT8547702.dwg





TYPICAL LOT DRAINAGE DETAIL FOR FHA TYPE C LOTS

Not to Scale

NOTE:
ROOF DRAINAGE PATTERN IS APPROXIMATE AND SUBJECT TO CHANGE BASED ON FINAL HOUSE PAD DESIGN. HOWEVER RUNOFF FROM DRIVEWAY, ROOF OR OTHER IMPERVIOUS SURFACES WITHIN THE LOT WILL NOT FLOW ACROSS MORE THAN 72' OF IMPERVIOUS SURFACE BEFORE REACHING THE PROPOSED 15' ENGINEERED VEGETATIVE FILTER STRIP. FINAL LOT GRADING TO ALLOW FOR SHEET FLOW OVER VEGETATIVE FILTER STRIP.

LEGEND

- PROJECT LIMITS
- EXISTING GRADE
- PROPOSED GRADE
- FEMA 1% ANNUAL-CHANCE FLOODPLAIN
- FLOW ARROW (EXISTING)
- FLOW ARROW (PROPOSED)
- WATERSHED BOUNDARY
- (A) WATERSHED DESIGNATION
- VEGETATIVE FILTER STRIP (VFS)
- OVERTREATMENT AREA
- C — FHA TYPE C LOT (SEE THIS SHEET FOR DETAIL)

ENGINEERED VEGETATIVE FILTER STRIP DETAIL

N.T.S.

SUMMARY OF PERMANENT POLLUTION ABATEMENT MEASURES:

1.) TEMPORARY BMP'S WILL BE MAINTAINED UNTIL THE SITE IMPROVEMENTS ARE COMPLETED AND THE SITE HAS BEEN STABILIZED, INCLUDING SUFFICIENT VEGETATION BEING ESTABLISHED.

2.) DURING CONSTRUCTION, TO THE EXTENT PRACTICAL, CONTRACTOR SHALL MINIMIZE THE AREA OF SOIL DISTURBANCE. AREAS OF DISTURBED SOIL SHALL BE REVEGETATED TO STABILIZE SOIL USING SOLID SOD IN A STAGGERED PATTERN. SEE DETAIL ON TEMPORARY POLLUTION ABATEMENT DETAIL SHEET AND REFER TO SECTION 1.3.11 IN TCEQ'S TECHNICAL GUIDANCE MANUAL RG-348 (2005). SOD SHOULD BE USED IN CHANNELS AND ON SLOPES > 15%. THE CONTRACTOR MAY SUBSTITUTE THE USE OF SOD WITH THE PLACEMENT OF TOP SOIL AND A FRIABLE SEED BED WITH A PROTECTIVE MATTING OR HYDRAULIC MULCH ALONG WITH WATERING UNTIL VEGETATION IS ESTABLISHED. APPLICATIONS AND PRODUCTS SHALL BE THOSE APPROVED BY TXDOT AS OF FEBRUARY 2001 AND IN COMPLIANCE WITH THE TGM RG-348 (2005). SEED MIXTURE AND/OR GRASS TYPE TO BE DETERMINED BY OWNER AND SHOULD BE IN COMPLIANCE WITH TGM RG-348 (2005) GUIDELINES. IRRIGATION MAY BE REQUIRED IN ORDER TO ESTABLISH SUFFICIENT VEGETATION.

3.) FOR DISTURBED AREAS WHERE INSUFFICIENT SOIL EXISTS TO ESTABLISH VEGETATION, CONTRACTOR SHALL PLACE A MINIMUM OF 6" OF TOPSOIL PRIOR TO REVEGETATION.

4.) PERMANENT BMP'S FOR THIS SITE INCLUDE TWO (2) SEDIMENTATION/FILTRATION BASINS. THESE PERMANENT BMP'S HAVE BEEN DESIGNED TO REMOVE AT LEAST 80% OF THE INCREASED TOTAL SUSPENDED SOLIDS (TSS) FOR THE 86.33 ACRES IN ACCORDANCE WITH THE TCEQ'S TECHNICAL GUIDANCE MANUAL (TGM) RG-348 (2005).

5.) TYPICAL SLOPES ON THIS PROJECT RANGE FROM APPROXIMATELY 1.1% TO 4.4%.

NOTES:

1.) CONTRACTOR SHALL INSTALL AND ESTABLISH VEGETATION FOR SOIL STABILIZATION PRIOR TO SITE CLOSEOUT.

2.) ALL PERMANENT BMP'S MUST BE CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER.

Treatment Summary Table

Current Modification

Watershed	Watershed Area (acres)	Proposed Impervious Cover (acres)	Future Impervious Cover (acres)	Total Impervious Cover to be treated	BMP	Required TSS Removal (lbs/yr)	Designed TSS Removal (lbs/yr)
B,C,E1,E2,H,I	31.57	13.23	1.60	14.82	Basin "A"	13,302	15,095
A1, A2	4.15	0.63	-	0.63	Overtreatment Basin "A"	570	28
G2, G3	3.67	1.17	-	1.17	Overtreatment Basin "A"	1,054	-
J3, J4	1.74	0.88	-	0.88	Overtreatment Basin "B"	794	-
K	2.20	0.14	-	0.14	Overtreatment Basin "A"	124	-
F	0.79	0.28	-	0.28	VFS #1	247	247
D3	3.27	1.10	-	1.10	VFS #2	989	989
K	2.20	0.63	-	0.63	VFS #3	569	569
L	81.22	0.44	-	0.44	VFS #4	396	396
M,N,O,P,Q, R, T	35.30	7.05	4.66	11.72	Basin "B"	10,520	11,730
R	5.51	1.57	-	1.57	VFS #5	1,409	1,409
N	6.93	-	0.74	0.74	VFS #6	668	668
U	4.30	-	0.28	0.28	Overtreatment Basin "B"	247	-
Total	182.85	27.13	7.28	34.41	-	30,888	31,131

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

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

EXHIBIT 3

DATE

NO. REVISION

STATE OF TEXAS
CARA C. TACKETT
89491
LICENSED
PROFESSIONAL ENGINEER
8/18/15

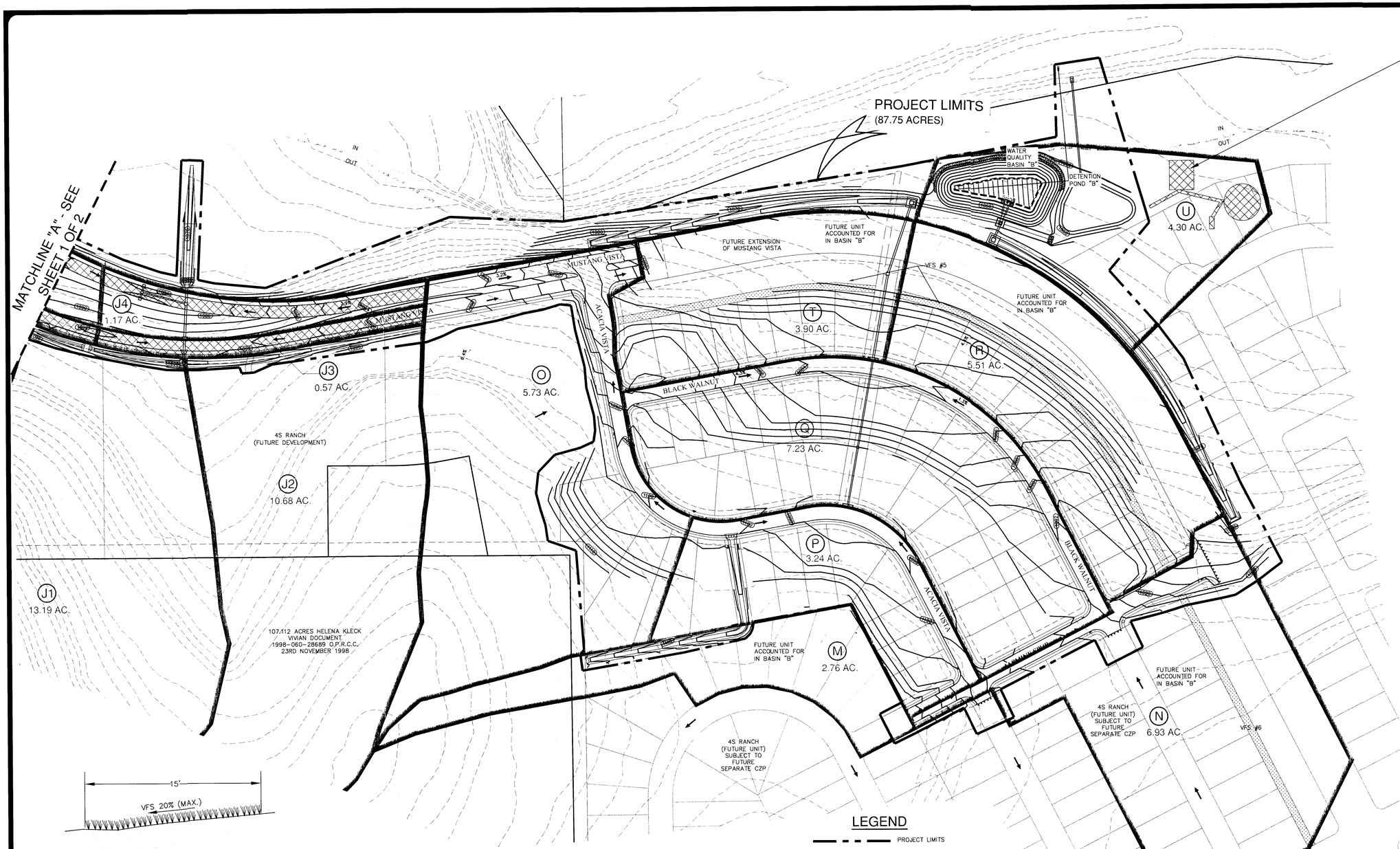
PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TEXAS 78213 | PHONE: 210.375.9000 FAX: 210.375.9010
TEXAS BOARD OF PROFESSIONAL ENGINEERS, FIRM REGISTRATION # 470
TEXAS BOARD OF PROFESSIONAL LAND SURVEYING, FIRM REGISTRATION # 10193974

4S RANCH PHASE - I
BULVERDE, TEXAS

CONTRIBUTING ZONE PLAN
PERMANENT POLLUTION ABATEMENT PLAN

PLAT NO.
JOB NO. 8547-02
DATE AUGUST 2015
DESIGNER BS
CHECKED TD DRAWN TC
SHEET 1 OF 2

Date: Aug 19, 2015, 1:40pm User ID: ROlivarez
File: P:\85\47\02\Design\Environmental\CZP\VM854702.dwg



ENGINEERED VEGETATIVE FILTER STRIP DETAIL

N.T.S.

Treatment Summary Table – Current Modification							
Watershed	Watershed Area (acres)	Proposed Impervious Cover (acres)	Future Impervious Cover (acres)	Total Impervious Cover to be treated	BMP	Required TSS Removal (lbs/yr)	Designed TSS Removal (lbs/yr)
B,C,E1,E2,H,I	31.57	13.23	1.60	14.82	Basin "A"	13,302	15,095
A1, A2	4.15	0.63	-	0.63	Overtreatment Basin "A"	570	28
G2, G3	3.67	1.17	-	1.17	Overtreatment Basin "A"	1,054	-
J3, J4	1.74	0.88	-	0.88	Overtreatment Basin "B"	794	-
K	2.20	0.14	-	0.14	Overtreatment Basin "A"	124	-
F	0.79	0.28	-	0.28	VFS #1	247	247
D3	3.27	1.10	-	1.10	VFS #2	989	989
K	2.20	0.63	-	0.63	VFS #3	569	569
L	81.22	0.44	-	0.44	VFS #4	396	396
M,N,O,P,Q, R, T	35.30	7.05	4.66	11.72	Basin "B"	10,520	11,730
R	5.51	1.57	-	1.57	VFS #5	1,409	1,409
N	6.93	-	0.74	0.74	VFS #6	668	668
U	4.30	-	0.28	0.28	Overtreatment Basin "B"	247	-
Total	182.85	27.13	7.28	34.41	-	30,888	31,131

SUMMARY OF PERMANENT POLLUTION ABATEMENT MEASURES:

1.) TEMPORARY BMP'S WILL BE MAINTAINED UNTIL THE SITE IMPROVEMENTS ARE COMPLETED AND THE SITE HAS BEEN STABILIZED, INCLUDING SUFFICIENT VEGETATION BEING ESTABLISHED.

2.) DURING CONSTRUCTION, TO THE EXTENT PRACTICAL, CONTRACTOR SHALL MINIMIZE THE AREA OF SOIL DISTURBANCE. AREAS OF DISTURBED SOIL SHALL BE REVEGETATED TO STABILIZE SOIL USING SOLID SOD IN A STAGGERED PATTERN. SEE DETAIL ON TEMPORARY POLLUTION ABATEMENT DETAIL SHEET AND REFER TO SECTION 1.3.11 IN TCEQ'S TECHNICAL GUIDANCE MANUAL RG-348 (2005). SOD SHOULD BE USED IN CHANNELS AND ON SLOPES > 15%. THE CONTRACTOR MAY SUBSTITUTE THE USE OF SOD WITH THE PLACEMENT OF TOP SOIL AND A FRIABLE SEED BED WITH A PROTECTIVE MATTING OR HYDRAULIC MULCH ALONG WITH WATERING UNTIL VEGETATION IS ESTABLISHED. APPLICATIONS AND PRODUCTS SHALL BE THOSE APPROVED BY TXDOT AS OF FEBRUARY 2001 AND IN COMPLIANCE WITH THE TGM RG-348 (2005). SEED MIXTURE AND/OR GRASS TYPE TO BE DETERMINED BY OWNER AND SHOULD BE IN COMPLIANCE WITH TGM RG-348 (2005) GUIDELINES. IRRIGATION MAY BE REQUIRED IN ORDER TO ESTABLISH SUFFICIENT VEGETATION.

3.) FOR DISTURBED AREAS WHERE INSUFFICIENT SOIL EXISTS TO ESTABLISH VEGETATION, CONTRACTOR SHALL PLACE A MINIMUM OF 6" OF TOPSOIL PRIOR TO REVEGETATION.

4.) PERMANENT BMP'S FOR THIS SITE INCLUDE TWO (2) SEDIMENTATION/FILTRATION BASINS. THESE PERMANENT BMP'S HAVE BEEN DESIGNED TO REMOVE AT LEAST 80% OF THE INCREASED TOTAL SUSPENDED SOLIDS (TSS) FOR THE 86.33 ACRES IN ACCORDANCE WITH THE TCEQ'S TECHNICAL GUIDANCE MANUAL (TGM) RG-348 (2005).

5.) TYPICAL SLOPES ON THIS PROJECT RANGE FROM APPROXIMATELY 1.1% TO 4.4%.

LEGEND

- PROJECT LIMITS
- EXISTING GRADE
- PROPOSED GRADE
- FEMA 1% ANNUAL-CHANCE FLOODPLAIN
- FLOW ARROW (EXISTING)
- FLOW ARROW (PROPOSED)
- WATERSHED BOUNDARY
- (A) WATERSHED DESIGNATION
- VEGETATIVE FILTER STRIP (VFS)
- OVERTREATMENT AREA
- C FHA TYPE C LOT (SEE SHEET 1 OF 2 FOR GRADING DETAIL)

NOTES:

1.) CONTRACTOR SHALL INSTALL AND ESTABLISH VEGETATION FOR SOIL STABILIZATION PRIOR TO SITE CLOSEOUT.

2.) ALL PERMANENT BMP'S MUST BE CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER.

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

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

EXHIBIT 3

NO. REVISION | DATE

STATE OF TEXAS
CARA C. TACKETT
89491
LICENSED PROFESSIONAL ENGINEER
8/18/15

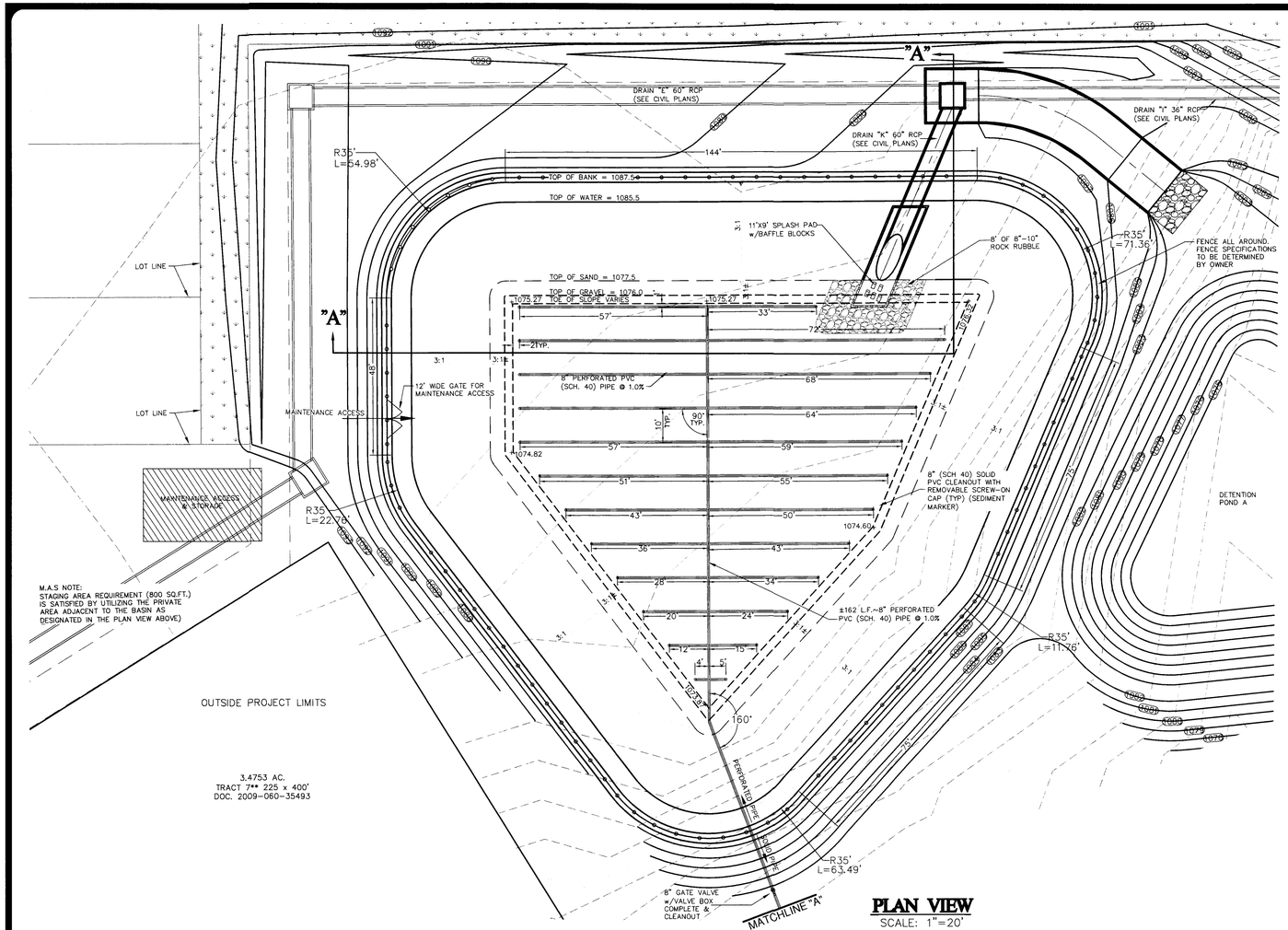
PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TEXAS 78213 | PHONE: 210.375.9000 FAX: 210.375.9010
TEXAS BOARD OF PROFESSIONAL ENGINEERS, FIRM REGISTRATION # 470
TEXAS BOARD OF PROFESSIONAL LAND SURVEYING, FIRM REGISTRATION # 100294

4S RANCH PHASE - I
BULVERDE, TEXAS

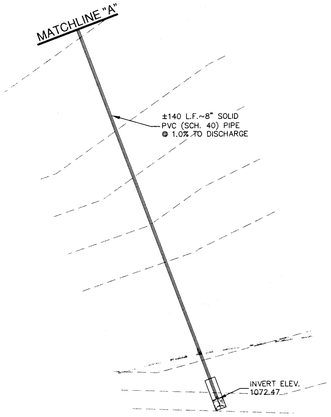
CONTRIBUTING ZONE PLAN
PERMANENT POLLUTION ABATEMENT PLAN

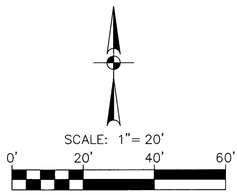
PLAT NO.
JOB NO. 8547-02
DATE AUGUST 2015
DESIGNER BS
CHECKED TD DRAWN TC
SHEET 2 OF 2

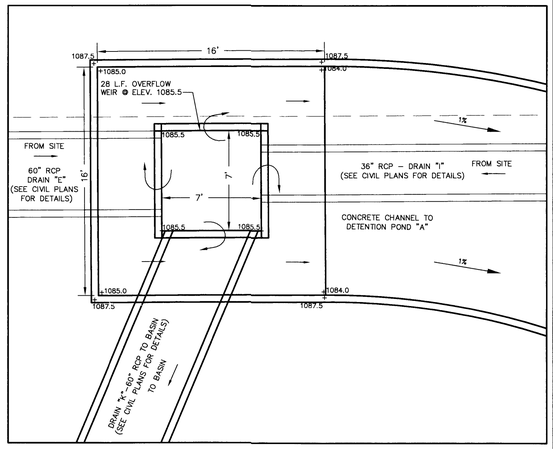
Date: Aug 19, 2015, 1:41pm User ID: ROlivarez
File: P:\8547\VOL2\Design\Environmental\CZP\PM8547P02.dwg



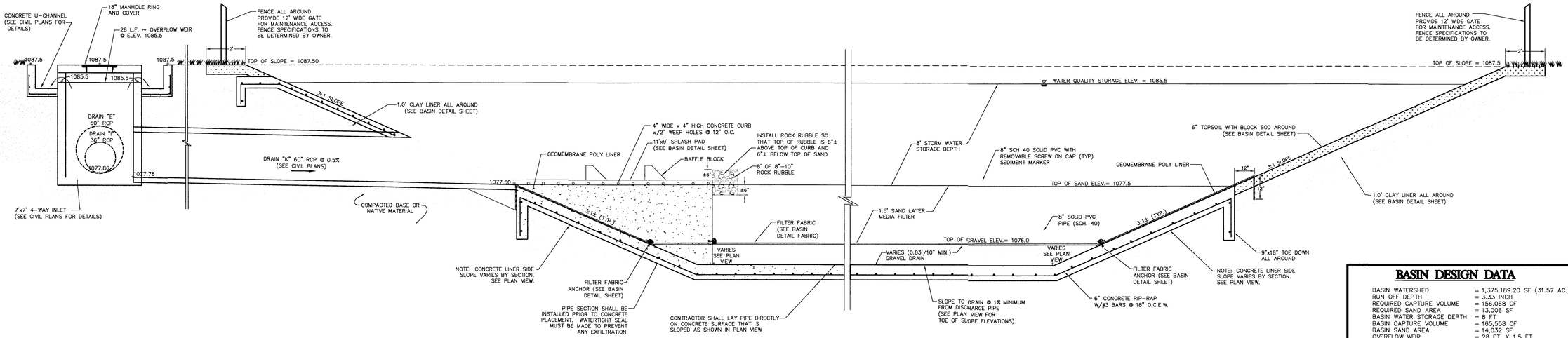
PLAN VIEW
SCALE: 1"=20'







INLET/OVERFLOW STRUCTURE
SCALE: 1"=5'



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

BASIN DESIGN DATA

BASIN WATERSHED	= 1,375,189.20 SF (31.57 AC.)
RUN OFF DEPTH	= 3.33 INCH
REQUIRED CAPTURE VOLUME	= 156,068 CF
REQUIRED SAND AREA	= 13,006 SF
BASIN WATER STORAGE DEPTH	= 8 FT
BASIN CAPTURE VOLUME	= 165,558 CF
BASIN SAND AREA	= 14,032 SF
OVERFLOW WEIR	= 28 FT. X 1.5 FT
Q25	= 139 CFS

BASIN DRAWDOWN IS CONTROLLED BY THE 8" OUTLET PIPE @ 1.0% SLOPE. BASIN DRAWDOWN WILL OCCUR IN APPROXIMATELY 27.5 HOURS.

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

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

EXHIBIT 4

NO.	REVISION	DATE

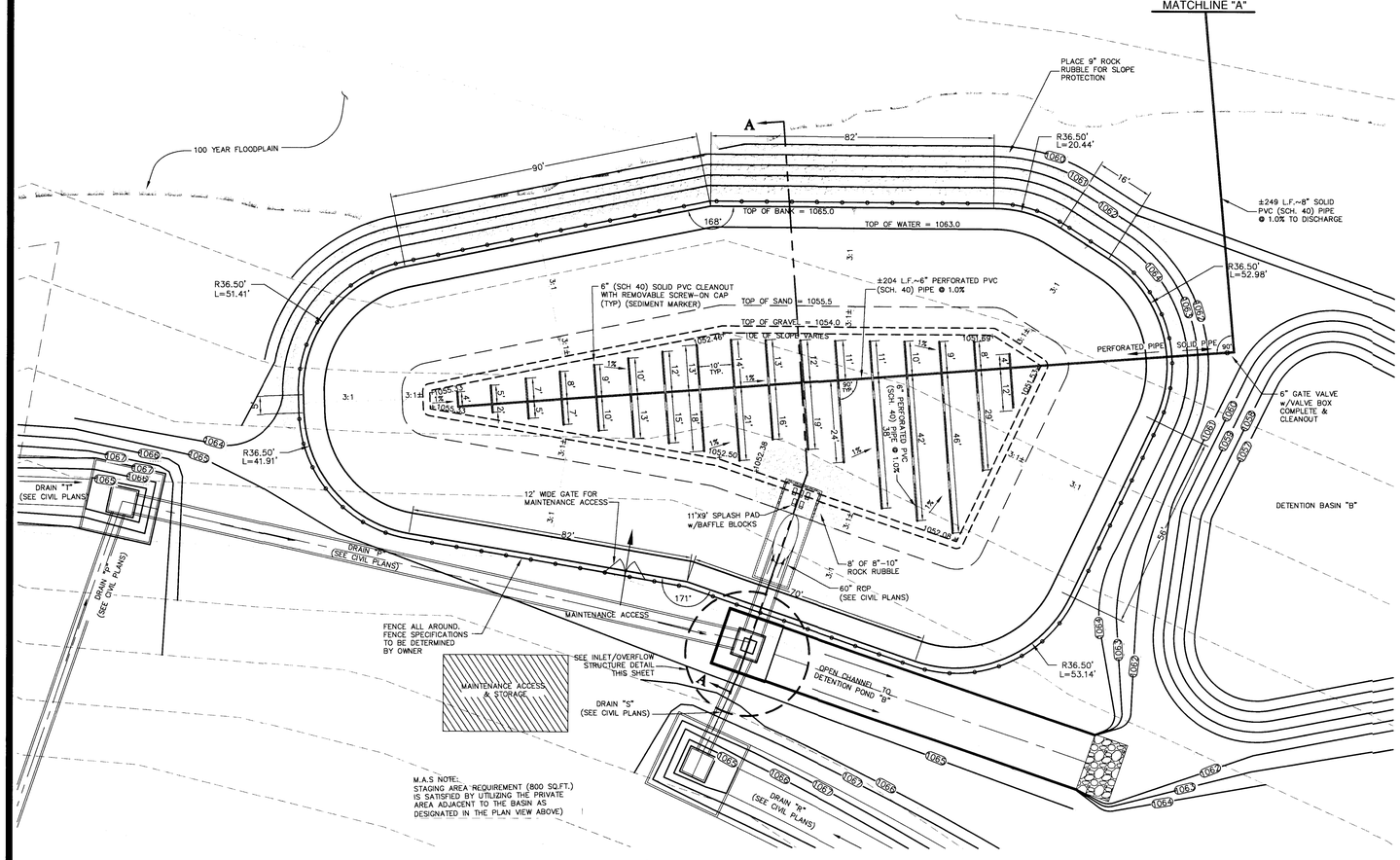
STATE OF TEXAS
CARA C. TACKETT
89491
LICENSED PROFESSIONAL ENGINEER
8/18/15

PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TEXAS 78213 | PHONE: 210.375.9000 FAX: 210.375.9010
TEXAS BOARD OF PROFESSIONAL ENGINEERS, FIRM REGISTRATION # 470
TEXAS BOARD OF PROFESSIONAL LAND SURVEYING, FIRM REGISTRATION # 10193974

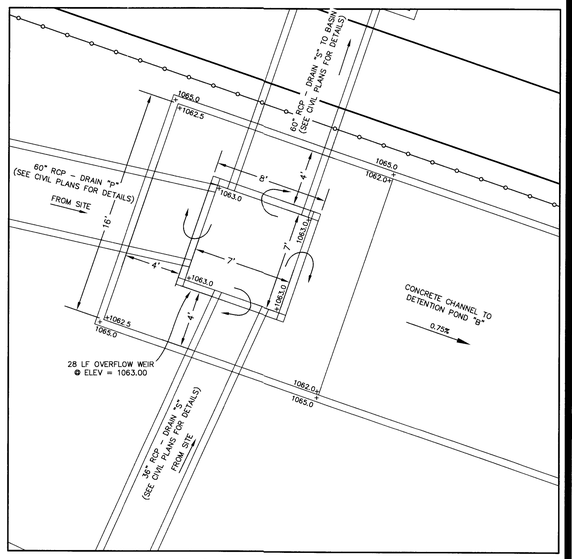
4S RANCH PHASE - I
BULVERDE, TEXAS
CONTRIBUTING ZONE PLAN
PERMANENT POLLUTION ABATEMENT PLAN
BASIN "A" PLAN

PLAT NO.
JOB NO. 8547-02
DATE AUGUST 2015
DESIGNER BS
CHECKED TD DRAWN TC
SHEET 1 OF 1

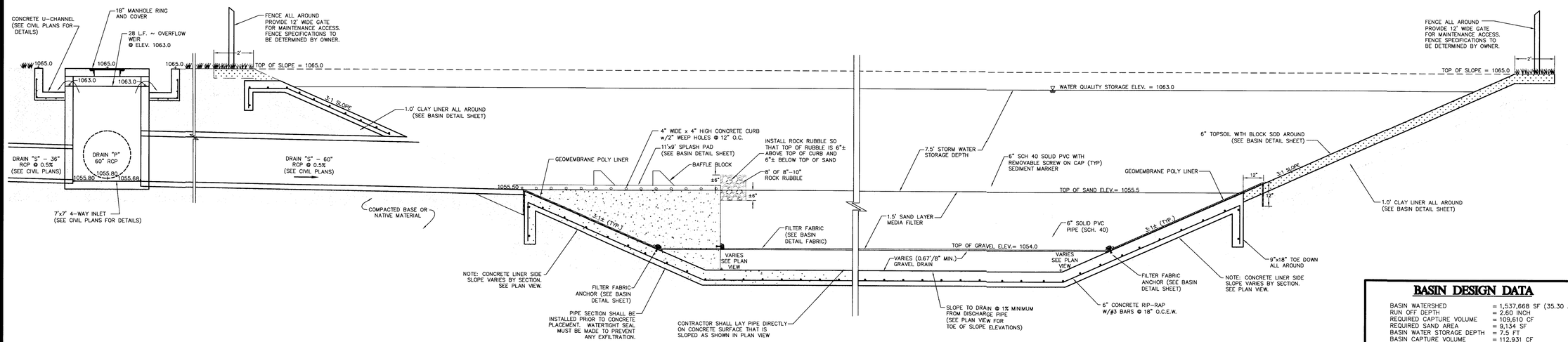
Date: Aug 19, 2015, 12:31pm User ID: BSpengler
File: P:\85\47\02\Design\Environmental\CZP\BA-A854702.dwg



PLAN VIEW
SCALE: 1"=20'



INLET/OVERFLOW STRUCTURE
SCALE: 1"=5'



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

BASIN DESIGN DATA

BASIN WATERSHED	= 1,537,668 SF (35.30 AC.)
RUN OFF DEPTH	= 2.60 INCH
REQUIRED CAPTURE VOLUME	= 109,610 CF
REQUIRED SAND AREA	= 9,134 SF
BASIN WATER STORAGE DEPTH	= 7.5 FT
BASIN CAPTURE VOLUME	= 112,931 CF
BASIN SAND AREA	= 9,199 SF
OVERFLOW WEIR	= 28 FT. X 1.5 FT
Q25	= 150 CFS

BASIN DRAWDOWN IS CONTROLLED BY THE 6" OUTLET PIPE @ 1.0% SLOPE. BASIN DRAWDOWN WILL OCCUR IN APPROXIMATELY 41 HOURS.

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

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

EXHIBIT 5

NO.	REVISION	DATE

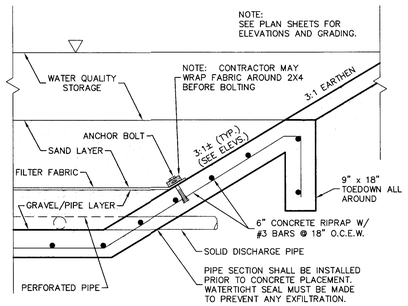
STATE OF TEXAS
CARA C. TACKETT
89491
LICENSED PROFESSIONAL ENGINEER
8/18/15

PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TEXAS 78213 | PHONE: 210.375.9000 FAX: 210.375.9010
TEXAS BOARD OF PROFESSIONAL ENGINEERS, FIRM REGISTRATION # 10193974
TEXAS BOARD OF PROFESSIONAL LAND SURVEYING, FIRM REGISTRATION # 10193974

4S RANCH PHASE - I
BULVERDE, TEXAS
CONTRIBUTING ZONE PLAN
PERMANENT POLLUTION ABATEMENT PLAN
BASIN "B" PLAN

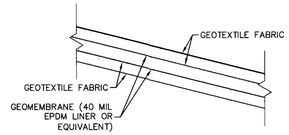
PLAT NO. _____
JOB NO. 8547-02
DATE AUGUST 2015
DESIGNER BS
CHECKED TD DRAWN TC
SHEET 1 OF 1

Date: Aug 19, 2015, 12:39pm User ID: BSpengler
File: P:\85\47\02\Design\Environmental\CZP\GA-B8547102.dwg



PIPE DISCHARGE AT LINER DETAIL

NOT-TO-SCALE



NOTES:
1. LINER AND PROTECTIVE GEOTEXTILE FABRIC, IF REQUIRED, ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.

2. GEOMEMBRANE LINER SHALL HAVE A MINIMUM THICKNESS OF THIRTY (30) MILS, FORTY (40) MILS RECOMMENDED.

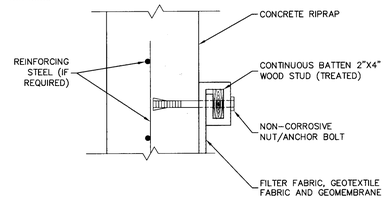
3. SELECTION OF FINAL LINER WILL BE IDENTIFIED IN CERTIFICATION LETTER TO TCEQ AFTER COMPLETION OF BASIN CONSTRUCTION.

GEOMEMBRANE LINER DETAIL

NOT-TO-SCALE

NOTES:
1. CONTRACTOR TO PLACE ANCHOR BOLTS AT 5'-0" O.C.

2. GEOMEMBRANE AND PROTECTIVE GEOTEXTILE FABRIC TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.

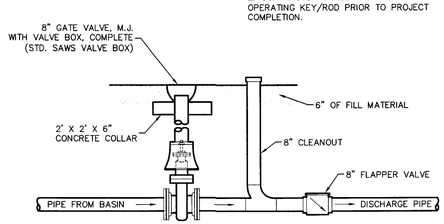


FILTER FABRIC ANCHORING DETAIL

NOT-TO-SCALE

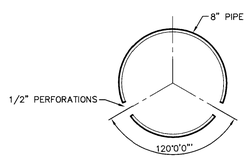
NOTES:
1. VALVE WILL BE SET **PARTIALLY CLOSED** SO AS TO PROVIDE A MINIMUM DRAWDOWN TIME OF 24 HOURS.

2. CONTRACTOR SHALL PROVIDE OWNER WITH VALVE OPERATING KEY/ROD PRIOR TO PROJECT COMPLETION.



8" GATE & FLAPPER VALVE DETAIL

NOT-TO-SCALE



NOTES:
1. MINIMUM DIAMETER = 8 INCHES; SCHEDULE 40 PVC. (SEE PLAN VIEW)

2. THE MAXIMUM SPACING BETWEEN ROWS OF PERFORATIONS SHOULD NOT EXCEED 6".

3. SET PERFORATIONS DOWN.

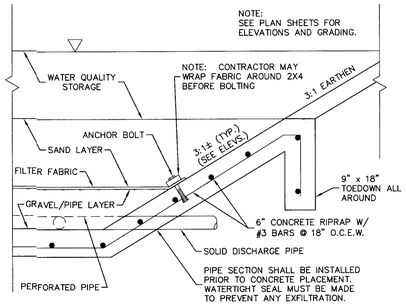
4. PERFORATIONS SHOULD BE LESS THAN A 1/2".

5. PIPES SHOULD LIE FLAT ON CONCRETE BOTTOM WHICH HAS BEEN GRADED TO DRAIN AS SHOWN ON PLAN VIEW.

6. ALL CLEANOUTS SHALL BE SOLID PIPE AND SHALL BE AT THE END OF EACH LINE.

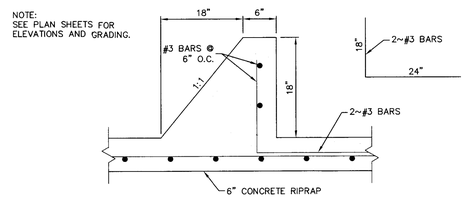
8" PERFORATED PIPE DETAIL

NOT-TO-SCALE



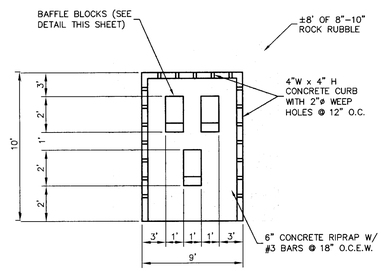
PIPE DISCHARGE AT LINER DETAIL

NOT-TO-SCALE



BAFFLE BLOCK DETAIL

NOT-TO-SCALE



SPLASH PAD DETAIL

NOT-TO-SCALE

NOTES TO CONTRACTOR
(EACH PHASE OF BASIN CONSTRUCTION)

1. CONTRACTOR IS ADVISED THAT TCEQ DOES NOT ALLOW CHANGES TO PERMANENT POLLUTION ABATEMENT MEASURES WITHOUT THEIR PRIOR APPROVAL.

2. CONTRACTOR SHALL NOTIFY CERTIFYING ENGINEER WHEN BASIN CONSTRUCTION HAS PROGRESSED TO THE FOLLOWING MILESTONES:

a.) REINFORCING STEEL FOR BASIN WALL OR RIPRAP LINER HAS BEEN SET, CONCRETE HAS NOT BEEN PLACED AND DRAIN PIPE IS IN PLACE. WHERE EPDM LINER IS USED, CONTRACTOR SHALL PROVIDE ENGINEER WITH SURVEY DATA WHICH DEMONSTRATES THE LINER HAS BEEN SET AT PROPER ELEVATION AND GRADE.

b.) CONCRETE RIPRAP OR EPDM LINER IS IN PLACE AND UNDER-DRAIN SYSTEM IS IN PLACE WITHOUT GRAVEL.

c.) GRAVEL AROUND UNDER-DRAIN SYSTEM IS IN PLACE AND FILTER FABRIC IS INSTALLED AND ATTACHED TO WALLS OR RIPRAP.

d.) SAND FILTER MEDIA HAS BEEN PLACED & BASIN HAS BEEN COMPLETELY FINISHED INCLUDING SOD OR SEED PLACEMENT ON SIDE SLOPES (WHERE APPLICABLE).

3. WORK SHALL NOT CONTINUE ON THE BASIN UNTIL THE ENGINEER HAS HAD AN OPPORTUNITY TO OBSERVE THE STATUS OF CONSTRUCTION AT EACH STAGE. CONTRACTOR SHALL PROVIDE ENGINEER A MINIMUM OF 24 HOURS ADVANCE NOTICE PRIOR TO TIME THE BASIN WILL BE AT THE REQUIRED STAGE.

4. UPON SUBSTANTIAL COMPLETION, OR AS REQUESTED BY ENGINEER, CONTRACTOR TO PROVIDE CERTIFYING ENGINEER WITH FIELD SHOTS VERIFYING ELEVATIONS OF THE FOLLOWING:

- TOP OF BANK/WALL AT EACH CORNER OF BASIN
- TOE OF SLOPE AT EACH CORNER OF BASIN (INSIDE BASIN TOE)
- SPLASH PAD/INLET PIPES
- OVERFLOW WEIRS

5. BEFORE FINAL ACCEPTANCE OF CONSTRUCTION BY THE OWNER, THE CONTRACTOR WILL REMOVE ALL TRASH, DEBRIS, AND ACCUMULATED SILT FROM THE BASINS AND REESTABLISH THEM TO THE PROPER OPERATING CONDITION.

6. THE MINIMUM DRAIN TIME FOR A FULL BASIN IS 24 HOURS. THE CONTRACTOR SHALL RESTRICT THE FLOW THROUGH THE BASIN BY ADJUSTING THE GATE VALVE ON THE DISCHARGE PIPE SO AS TO PROVIDE THE MINIMUM 24 HOUR DRAW-DOWN TIME.

FILTER FABRIC SPECIFICATIONS

THE SEPARATION LAYER BETWEEN THE SAND FILTER AND GRAVEL LAYERS SHALL BE A DRAINAGE MATTING CONSISTING OF NON-WOVEN FILTER FABRIC MEETING THE FOLLOWING SPECIFICATIONS:

PROPERTY	TEST METHOD	SPECIFICATION
WEIGHT (OZ/SY)	ASTM D 5261	≥ 4.0
GRAB STRENGTH (LBS.)	ASTM D 4632	≥ 90
ELONGATIONS (%)	ASTM D 4632	≤ 55
TRAPEZOID TEAR (LBS)	ASTM D 4533	≥ 50
CBR PUNCTURE STRENGTH (LBS)	ASTM D 6241	≥ 300
UV RESISTANCE AFTER 500 HRS. (%)	ASTM D 4355	≥ 70
AOS (SIEVE #)	ASTM D 4751	70-80
FLOW RATE (GPM/SF)	ASTM D 4491	≥125

FABRIC OVERLAP SHALL BE A MINIMUM OF 24".
ALL OVERLAPS SHALL BE WIRE TIED AT A MAXIMUM OF 36" INTERVALS

CLAY LINER SPECIFICATIONS

PROPERTY	TEST METHOD	SPECIFICATION
PERMEABILITY (CM/SEC)	ASTM D 2434	1 X 10^{-6}
PLASTICITY INDEX OF CLAY (%)	ASTM D 423/D 424	NOT LESS THAN 15
LIQUID LIMIT OF CLAY (%)	ASTM D 2216	NOT LESS THAN 30
CLAY PARTICLES PASSING (%)	ASTM D 422	NOT LESS THAN 30
CLAY COMPACTION (%)	ASTM D 2216	95% OF STANDARD PROCTOR DENSITY

NOTES:
1. THE CLAY LINER SHALL HAVE A MINIMUM THICKNESS OF TWELVE (12) INCHES.

SAND & GRAVEL SPECIFICATIONS

SAND FILTER MATERIAL SHALL BE ASTM C33 0.0165 IN (#40 SIEVE) TO 0.0469 IN (#16 SIEVE) SILICA BASED WASHED SAND.

ROCK FOR GRAVEL LAYER SHALL BE 1/2" TO 1" DIAMETER WASHED RIVER GRAVEL.

GEOMEMBRANE POLY LINER

- ULTRAVIOLET RESISTANT
- THICKNESS = 30 MILS MINIMUM, RECOMMENDED 40 MILS.
- JOINTS SHALL BE WATER TIGHT AT SEAMS
- ANCHOR TO WALLS
- WATERTIGHT SEAL BETWEEN POLY LINER AND TRANSITION SURFACES
- BEDDING MATERIAL SHALL BE SUITABLY COMPACTED MATERIAL (NOT SAND) IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS
- PROTECTIVE GEOTEXTILE FABRIC TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS

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

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

EXHIBIT 6

NO.	REVISION	DATE

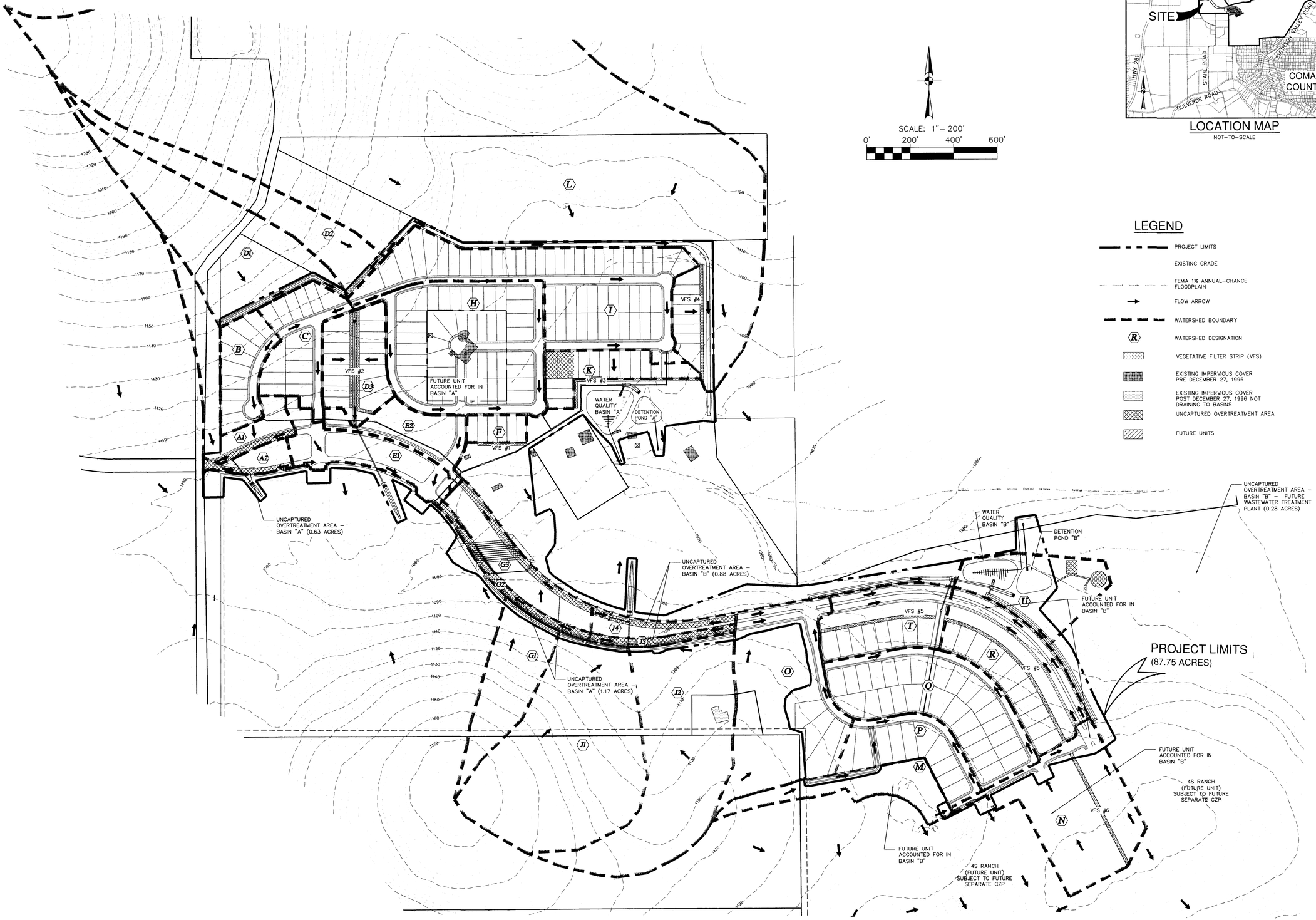
STATE OF TEXAS
CARA C. TACKETT
89491
LICENSED
PROFESSIONAL ENGINEER
8/18/15

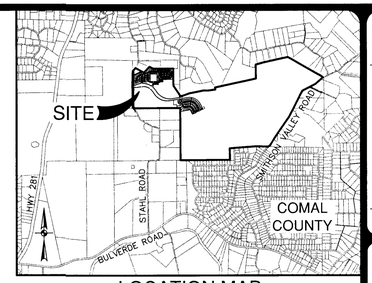
PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TEXAS 78213 | PHONE: 210.375.9000 FAX: 210.375.9010
TEXAS BOARD OF PROFESSIONAL ENGINEERS, FIRM REGISTRATION # 470

4S RANCH - PHASE 1
BULVERDE, TEXAS
CONTRIBUTING ZONE PLAN
PERMANENT POLLUTION ABATEMENT PLAN
BASIN DETAILS

PLAT NO.
JOB NO. 8547-02
DATE AUGUST 2015
DESIGNER BS
CHECKED TD DRAWN TC
SHEET 1 OF 1

Date: Aug 19, 2015, 1:11pm User ID: BStemple
File: P:\8547\CAD\Design\Environmental\PPP\8547AD7854702.dwg





LOCATION MAP
NOT-TO-SCALE

NO.	REVISION	DATE

STATE OF TEXAS
CARA C. TACKETT
89491
LICENSED
PROFESSIONAL ENGINEER
8/18/15

PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TEXAS 78213 | PHONE: 210.375.9000 FAX: 210.375.9010
TEXAS BOARD OF PROFESSIONAL ENGINEERS, FIRM REGISTRATION # 470
TEXAS BOARD OF PROFESSIONAL LAND SURVEYING, FIRM REGISTRATION # 10193974

4S RANCH PHASE - I

BULVERDE, TEXAS

IMPERVIOUS COVER EXHIBIT

PLAT NO.
JOB NO. 8547-02
DATE AUGUST 2015
DESIGNER BS
CHECKED TD DRAWN TC
SHEET 1 OF 1

Date: Aug 19, 2015, 1:02pm User ID: BSpengler
File: P:\JBS\47\02\Design\Environmental\CZP\G8547102.dwg