TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

October 14, 2015

RECEIVED

OCT 22 2015

COUNTY ENGINEER

Mr. & Mrs. Bobbie Sullinger
607 E. Morningside Dr. NE
Atlanta, GA 30324

Re: Edwards Aquifer, Comal County

NAME OF PROJECT: Sullinger Subdivision; Located at 1720 Gruene Road; New Braunfels, Texas

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

Additional ID No.: 13-15081401; Investigation No. 1273676; Regulated Entity No. RN108288788

Dear Mr. & Mrs. Sullinger:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the WPAP application for the above-referenced project submitted to the San Antonio Regional Office by Pawelek & Moy, Inc. on behalf of Mr. & Mrs. Bobbie Sullinger on August 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 commercial project will have an area of approximately 1.977 acres. It will include the construction of a restaurant and a residence, associated parking, sidewalks, utilities, and driveway entrances. The impervious cover will be 1.15 acres (35.9 percent). Project wastewater will be disposed of by conveyance to the existing Gruene Road Treatment Plant owned by New Braunfels Utilities.

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, three vegetative filter strips and one sand filtration basin, 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 637 pounds of TSS generated from the 0.71 acres of impervious cover. The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project.

The sand filtration area required to be provided is 605 square feet (624 square feet provided). The required capture volume is 6,043 cubic feet (6,369 cubic feet provided). A six-inch layer of gravel is overlain by an 18-inch layer of sand meeting ASTM C-33. A perforated PVC underdrain lies within the gravel layer. Approximately, 0.076 acres of uncaptured impervious cover will be compensated for by the sand filtration basin. The TSS load designed to be removed by the sand filtration basin is 553 pounds annually.

The three vegetative filter strips 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 TSS load designed to be removed from the three vegetative filter strips is 84 pounds annually.

GEOLOGY

According to the geologic assessment included with the application, the project site is within the Person Formation. There were no geologic or manmade features identified in the geologic assessment. The San Antonio Regional Office site assessment was conducted on September 18, 2015. The site was generally found to be as described in the application.

SPECIAL CONDITIONS

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

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

STANDARD CONDITIONS

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

3. In addition to the rules of the Commission, the applicant may also be required to comply with state and local ordinances and regulations providing for the protection of water quality.

Prior to Commencement of Construction:

4. Within 60 days of receiving written approval of an Edwards Aquifer Protection Plan, the applicant must submit to the San Antonio Regional Office, proof of recordation of notice in the county deed records, with the volume and page number(s) of the county deed records of the county in which the property is located. A description of the property boundaries shall be included in the deed recordation in the county deed records. A suggested form (Deed Recordation Affidavit, TCEQ-0625) that you may use to deed record the approved WPAP is enclosed.
5. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved WPAP and this notice of approval shall be maintained at the project location until all regulated activities are completed.
6. Modification to the activities described in the referenced WPAP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
7. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the San Antonio Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the date on which the regulated activity will commence, the name of the approved plan and program ID number for the regulated activity, and the name of the prime contractor with the name and telephone number of the contact person. The executive director will use the notification to determine if the approved plan is eligible for an extension.
8. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved WPAP, must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.
9. All borings with depths greater than or equal to 20 feet must be plugged with non-shrink grout from the bottom of the hole to within three (3) feet of the surface. The remainder of the hole must be backfilled with cuttings from the boring. All borings less than 20 feet must be backfilled with cuttings from the boring. All borings must be backfilled or plugged within four (4) days of completion of the drilling operation. Voids may be filled with gravel.

During Construction:

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

11. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 6, above.
12. If any sensitive feature (caves, solution cavities, sink holes, etc.) is discovered during construction, all regulated activities near the feature must be suspended immediately. The applicant or his agent must immediately notify the San Antonio Regional Office of the discovery of the feature. Regulated activities near the feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the feature and the aquifer from potentially adverse impacts to water quality. The plan must be sealed, signed, and dated by a Texas Licensed Professional Engineer.
13. No wells exist on site. All water wells, including injection, dewatering, and monitoring wells must be in compliance with the requirements of the Texas Department of Licensing and Regulation under Title 16 TAC Chapter 76 (relating to Water Well Drillers and Pump Installers) and all other locally applicable rules, as appropriate.
14. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.
15. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.
16. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
17. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.

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

18. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the San Antonio Regional Office within 30 days of site completion.
19. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. The regulated entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is

transferred. A copy of the transfer of responsibility must be filed with the executive director through San Antonio Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.

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

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 Michael Isley, P.E. 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 Office
Texas Commission on Environmental Quality

LMB/MI/eg

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

cc: Mr. John Moy, P.E., Pawelek and Moy, Inc.
Mr. Thomas Hornseth, P.E., Comal County
Mr. Roland Ruiz, Edwards Aquifer Authority
Mr. Charlie Thomas, P.E., City of New Braunfels
TCEQ Central Records, Building F, MC 212

PAWELEK & MOY, INC.

CIVIL ENGINEERING & CONSULTING SERVICES

- RESIDENTIAL DEVELOPMENT
- SITE DEVELOPMENT
- PUBLIC WORKS
- UTILITIES

Water Pollution Abatement Plan

Sullinger Subdivision Tract

1720 Gruene Road
New Braunfels, Texas 78130

RECEIVED
AUG 19 2015
COUNTY ENGINEER

TCEQ-R13
AUG 14 2015
SAN ANTONIO

by
Pawelek & Moy, Inc.
Job No. 1501.02

August 2015

STATE OF TEXAS
JOHN J. MOY JR.
87835
LICENSED
PROFESSIONAL ENGINEER

John J Moy Jr. P.E.
8/14/15

130 W. Jahn Street, New Braunfels, Texas 78130 P.O. Box 311870 New Braunfels, Texas 78131-1870
tel: (830) 629-2563 fax: (830) 629-2564

Water Pollution Abatement Plan Checklist

X **Edwards Aquifer Application Cover Page (TCEQ-20705)**

X **General Information Form (TCEQ-0587)**

Attachment A - Road Map
Attachment B - USGS / Edwards Recharge Zone Map
Attachment C - Project Description

X **Geologic Assessment Form (TCEQ-0585)**

Attachment A - Geologic Assessment Table (TCEQ-0585-Table)
Comments to the Geologic Assessment Table
Attachment B - Soil Profile and Narrative of Soil Units
Attachment C - Stratigraphic Column
Attachment D - Narrative of Site Specific Geology
Site Geologic Map(s)
Table or list for the position of features' latitude/longitude (if mapped using GPS)

X **Water Pollution Abatement Plan Application Form (TCEQ-0584)**

Attachment A - Factors Affecting Water Quality
Attachment B - Volume and Character of Stormwater
Attachment C - Suitability Letter from Authorized Agent (if OSSF is proposed)
Attachment D - Exception to the Required Geologic Assessment (if requesting an exception)
Site Plan

X **Temporary Stormwater Section (TCEQ-0602)**

Attachment A - Spill Response Actions
Attachment B - Potential Sources of Contamination
Attachment C - Sequence of Major Activities
Attachment D - Temporary Best Management Practices and Measures
Attachment E - Request to Temporarily Seal a Feature, if sealing a feature
Attachment F - Structural Practices
Attachment G - Drainage Area Map
Attachment H - Temporary Sediment Pond(s) Plans and Calculations
Attachment I - Inspection and Maintenance for BMPs
Attachment J - Schedule of Interim and Permanent Soil Stabilization Practices

X **Permanent Stormwater Section (TCEQ-0600)**

Attachment A - 20% or Less Impervious Cover Waiver, if project is multi-family residential, a school, or a small business and 20% or less impervious cover is proposed for the site
Attachment B - BMPs for Upgradient Stormwater

Attachment C - BMPs for On-site Stormwater
Attachment D - BMPs for Surface Streams
Attachment E - Request to Seal Features (if sealing a feature)
Attachment F - Construction Plans
Attachment G - Inspection, Maintenance, Repair and Retrofit Plan
Attachment H - Pilot-Scale Field Testing Plan, if BMPs not based on Complying with the Edwards Aquifer Rules: Technical Guidance for BMPs
Attachment I -Measures for Minimizing Surface Stream Contamination

X **Agent Authorization Form (TCEQ-0599), if application submitted by agent**

X **Application Fee Form (TCEQ-0574)**

X **Check Payable to the "Texas Commission on Environmental Quality"**

X **Core Data Form (TCEQ-10400)**

General Information Form

Texas Commission on Environmental Quality

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

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

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

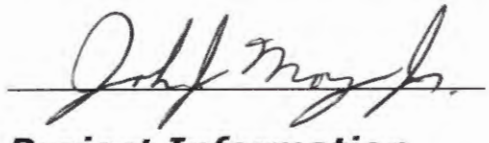
Signature

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

Print Name of Customer/Agent: John J. Moy, Jr. (Agent)

Date: 08/14/2015

Signature of Customer/Agent:



Project Information

1. Regulated Entity Name: Sullinger Subdivision Tract
2. County: Comal
3. Stream Basin: Tributary of Guadalupe River
4. Groundwater Conservation District (If applicable): Edwards Aquifer Authority
5. Edwards Aquifer Zone:

   [X] Recharge Zone
   [ ] Transition Zone

6. Plan Type:

   [X] WPAP
   [ ] SCS
   [ ] Modification
   [ ] AST
   [ ] UST
   [ ] Exception Request

7. Customer (Applicant):

Contact Person: Jennifer A. & Bobbie G. Sullinger, Jr.
Entity: N/A - Property Owners
Mailing Address: 607 E. Morningside Dr. NE
City, State: Atlanta, Georgia Zip: 30324-5218
Telephone: (770)355-7843 FAX: -
Email Address: bob_sullinger@yahoo.com

8. Agent/Representative (If any):

Contact Person: John J. Moy, Jr., P.E.
Entity: Pawelek & Moy, Inc.
Mailing Address: 130 W. Jahn St.
City, State: New Braunfels, Texas Zip: 78130-7640
Telephone: (830) 629-2563 FAX: (830) 629-2564
Email Address: johnmoy711@sbcglobal.net

9. Project Location:

[X] The project site is located inside the city limits of New Braunfels, Texas.
[ ] The project site is located outside the city limits but inside the ETJ (extra-territorial jurisdiction) of _____.
[ ] The project site is not located within any city's limits or ETJ.

10. [X] The location of the project site is described below. The description provides sufficient detail and clarity so that the TCEQ's Regional staff can easily locate the project and site boundaries for a field investigation.
The site is located on Gruene Rd., at the northeast corner of Gruene Rd. and Rock Street.
Address: 1720 Gruene Road, New Braunfels, TX 78130

11. [X] **Attachment A – Road Map**. A road map showing directions to and the location of the project site is attached. The project location and site boundaries are clearly shown on the map.

12. [X] **Attachment B - USGS / Edwards Recharge Zone Map**. A copy of the official 7 ½ minute USGS Quadrangle Map (Scale: 1" = 2000') of the Edwards Recharge Zone is attached. The map(s) clearly show:

[X] Project site boundaries.
[X] USGS Quadrangle Name(s).
[X] Boundaries of the Recharge Zone (and Transition Zone, if applicable).
[X] Drainage path from the project site to the boundary of the Recharge Zone.

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

[X] Survey staking will be completed by this date: 08/14/2015

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

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

15. Existing project site conditions are noted below:

- [ ] Existing commercial site
- [ ] Existing industrial site
- [X] Existing residential site
- [ ] Existing paved and/or unpaved roads
- [ ] Undeveloped (Cleared)
- [ ] Undeveloped (Undisturbed/Uncleared)
- [ ] Other: _____

Prohibited Activities

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

(1) Waste disposal wells regulated under 30 TAC Chapter 331 of this title (relating to Underground Injection Control);

(2) New feedlot/concentrated animal feeding operations, as defined in 30 TAC §213.3;

(3) Land disposal of Class I wastes, as defined in 30 TAC §335.1;

(4) The use of sewage holding tanks as parts of organized collection systems; and

(5) New municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41(b), (c), and (d) of this title (relating to Types of Municipal Solid Waste Facilities).

(6) New municipal and industrial wastewater discharges into or adjacent to water in the state that would create additional pollutant loading.

17. [N/A] I am aware that the following activities are prohibited on the Transition Zone and are not proposed for this project:

(1) Waste disposal wells regulated under 30 TAC Chapter 331 (relating to Underground Injection Control);

(2) Land disposal of Class I wastes, as defined in 30 TAC §335.1; and

(3) New municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41 (b), (c), and (d) of this title.

Administrative Information

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

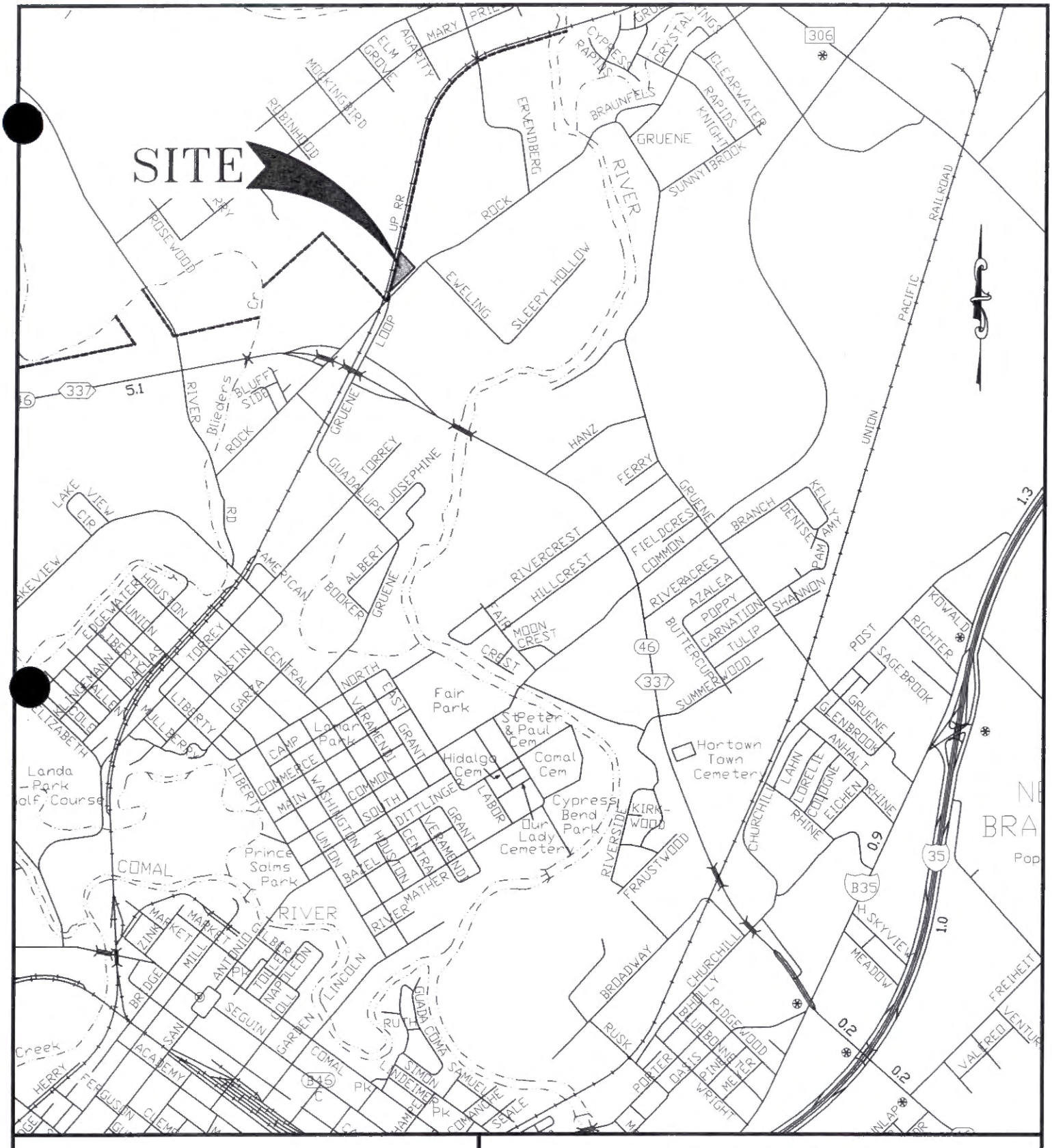
- [X] For a Water Pollution Abatement Plan or Modification, the total acreage of the site where regulated activities will occur.
- [ ] For an Organized Sewage Collection System Plan or Modification, the total linear footage of all collection system lines.
- [ ] For a UST Facility Plan or Modification or an AST Facility Plan or Modification, the total number of tanks or piping systems.
- [ ] A request for an exception to any substantive portion of the regulations related to the protection of water quality.
- [ ] A request for an extension to a previously approved plan.

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

- [ ] TCEQ cashier
- [ ] Austin Regional Office (for projects in Hays, Travis, and Williamson Counties)
- [X] San Antonio Regional Office (for projects in Bexar, Comal, Kinney, Medina, and Uvalde Counties)

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

21. [X] No person shall commence any regulated activity until the Edwards Aquifer Protection Plan(s) for the activity has been filed with and approved by the Executive Director.



LOCATION MAP

SCALE: 1" = 2000'

ATTACHMENT A
ROAD MAP

PAWELEK & MOY, INC.
CIVIL ENGINEERING & CONSULTING SERVICES
130 W. Jahn Street tel: (830) 629-2563
New Braunfels, Texas 78130 fax: (830) 629-2564

TECHNICIAN:	D.G.III	DATE:	AUGUST 2015
JOB NO.	1501.02	SHEET:	R1

ATTACHMENT B

USGS/EDWARDS RECHARGE ZONE MAP

Recharge Zone

SITE

Recharge Zone

Transition Zone

Transition Zone

NEW BRAUNFELS

NEW BRAUNFELS

NEW BRAUNFELS MUNICIPAL AIRPORT

Clear Springs

Camp Willow

Produced by the United States Geological Survey
Revised in cooperation with the Texas Water Development Board

Control by USGS, NOS/NOAA, and USCE

Compiled by the Army Map Service by photogrammetric methods from aerial photographs taken 1956. Field checked 1958
Revised from aerial photographs taken 1986. Field checked 1987
Map edited 1988

Projection and 10,000-foot grid ticks: Texas coordinate system, south central zone (Lambert conformal conic)
1000-meter Universal Transverse Mercator grid, zone 14
1927 North American Datum
To place on the predicted North American Datum 1983 move the projection lines 20 meters south and 28 meters east as shown by dashed corner ticks

Fine red dashed lines indicate selected fence and field lines generally visible on aerial photographs. This information is unchecked

UTM GRID AND 1988 MAGNETIC NORTH DECLINATION AT CENTER OF MAP DIAGRAM IS APPROXIMATE

SCALE 1:24 000

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

QUADRANGLE LOCATION

2998-413

ROAD CLASSIFICATION

Primary highway, hard surface — Light-duty road, hard or improved surface

Secondary highway, hard surface — Unimproved road

Interstate Route U. S. Route State Route

NEW BRAUNFELS WEST, TEX.
29098-F2-TF-024
1988
DMA 6343 II NW–SERIES V822

Last revision date of the Recharge Zone Boundary for this Quadrangle Map: March 1974

UTM GRID AND 1984 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 10 FEET
SUPPLEMENTARY CONTOUR INTERVAL 5 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

QUADRANGLE LOCATION

2998-414

ROAD CLASSIFICATION

Primary highway, hard surface — Light-duty road, hard or improved surface

Secondary highway, hard surface — Unimproved road

Interstate Route U. S. Route State Route

NEW BRAUNFELS EAST, TEX.
29098-F1-TF-024
1958
REVISED 1994
DMA 6343 II NE-SERIES V882

Last revision date of the Recharge Zone Boundary for this Quadrangle Map: March 1974

ATTACHMENT "C"
PROJECT DESCRIPTION

This 1.977 acre project site is located at 1720 Gruene Road in New Braunfels, Texas, at the intersection of Gruene Road and Rock Street. The existing site is a vacant residential tract that generally drains from the north to the south towards Gruene Road. There are currently asphalt/flexible base drives and miscellaneous residential type structures (i.e. sheds, a covered parking area, etc.) on the site consisting of approximately 0.13 acres which will be removed/demolished. The lot is located in a Tributary of the Guadalupe River drainage basin but is not located in a FEMA 100 yr. flood plain according to FEMA FIRM Map 48091C0455F (effective 09/02/2009).

The proposed site will consist of a restaurant and associated parking/sidewalk areas as well as a single family dwelling with a detached garage/driveway. The runoff from the roofs, associated parking areas a portion of the sidewalks will be treated by a Partial Sedimentation and Filtration Basin generally located on the southwest portion of the site. The remaining sidewalks and residential drive will be treated by proposed Engineered Vegetative Filter Strips. The following table summarizes the impervious cover areas and the corresponding BMP for a total Impervious Cover of 35.91% for the overall site:

IMPERVIOUS COVER DESCRIPTION	PERMANENT BEST MANAGEMENT PRACTICE
Roof/Buildings - 5,322 sf **Pavement/Sidewalks/ Drainage Items - 20,737 sf** **Driveway Aprons & Sidewalks (Offsite/In Gruene Rd. ROW/ Uncaptured/Overtreatment Provided with Partial Sedimentation/Filtration Basin) - 805 sf** **Impervious Cover = 26,864 sf**	**Proposed - Partial Sedimentation/Filtration Basin**
Pavement & Sidewalks - 4,044 sf	**Proposed – Engineered Vegetative Filter Strips**
Total Impervious Cover included in this 1.977 ac. Plan = 30,908 sf (0.710 Acres) (35.91%)	

GEOLOGIC SITE ASSESSMENT

PREPARED BY

FROST GEOSCIENCES

FOR

SULLINGER SUBDIVISION TRACT

GEOLOGIC ASSESSMENT (WPAP)

SULLINGER SUBDIVISION TRACT
1.977 ACRES
NEW BRAUNFELS, TEXAS

FROST GEOSCIENCES, INC. PROJECT NO.: FGS-E15109
MARCH 13, 2015

Prepared exclusively for

Bobbie Sullinger
607 E. Morningside Drive
Atlanta, Georgia 30324

Frost GeoSciences
Geotechnical ▪ Construction Materials
Geologic ▪ Environmental

Frost GeoSciences
Geotechnical ▪ Construction Materials
Geologic ▪ Environmental

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

March 13, 2015

Bobbie Sullinger
607 E. Morningside Drive
Atlanta, Georgia 30324

Attn: Bobby Sullinger

SUBJECT:
Geologic Assessment (WPAP)
for the Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
Sullinger Subdivision Tract
1.977 Acres
New Braunfels, Texas
FGS Project Nº FGS-E15109

Dear Bobby Sullinger:

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

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

We appreciate the opportunity to perform these services for Bobbie Sullinger. Please contact the undersigned if you have questions regarding this report.

Respectfully submitted,
Frost GeoSciences, Inc.

Chris Wickman, P.G.
Senior Geologist

Copies Submitted: (6) Bobby Sullinger
(1) Electronic (pdf) Copy

TABLE OF CONTENTS

Geologic Assessment

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Geologist: Chris Wickman

Telephone: (210) 372-1315

Date: June 24, 2015

Fax: (210) 372-1318

Representing: Frost Geosciences, Inc. Firm Registration #50040 (Name of Company and TBPG or TBPE registration number)

Signature of Geologist:

Regulated Entity Name: Sullinger Subdivision Tract

Project Information

1. Date(s) Geologic Assessment was performed: February 5, 2015
2. Type of Project:
   - ☒ WPAP
   - ☐ SCS
   - ☐ AST
   - ☐ UST
3. Location of Project:
   - ☒ Recharge Zone
   - ☐ Transition Zone
   - ☐ Contributing Zone within the Transition Zone

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

5. ☒ Soil cover on the project site is summarized in the table below and uses the SCS Hydrologic Soil Groups* (Urban Hydrology for Small Watersheds, Technical Release No. 55, Appendix A, Soil Conservation Service, 1986). If there is more than one soil type on the project site, show each soil type on the site Geologic Map or a separate soils map.

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness(feet)
Comfort-Rock outcrop complex	D	0.5-1.0
		0.5-1.0

** Soil Group Definitions (Abbreviated)*

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

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

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

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

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

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

8. ☒ **Attachment D – Site Geologic Map(s)**. The Site Geologic Map must be the same scale as the applicant's Site Plan. The minimum scale is 1": 400'

   Applicant's Site Plan Scale: 1" = 30'
   Site Geologic Map Scale: 1" = 30'
   Site Soils Map Scale (if more than 1 soil type): 1" = 500'

9. Method of collecting positional data:

   ☒ Global Positioning System (GPS) technology.
   ☒ Other method(s). Please describe method of data collection: 2014 Aerial Photograph

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

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

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

    ☒ Geologic or manmade features were not discovered on the project site during the field investigation.

13. ☒ The Recharge Zone boundary is shown and labeled, if appropriate.

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

    ☐ There are _____ (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
    - ☐ The wells are not in use and have been properly abandoned.
    - ☐ The wells are not in use and will be properly abandoned.
    - ☐ The wells are in use and comply with 16 TAC Chapter 76.

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

Administrative Information

15. ☒ 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.

STRATIGRAPHIC COLUMN

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

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

Frost GeoSciences

GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: Sullinger Subdivision Tract | **PROJECT NUMBER: FGS-E15109**

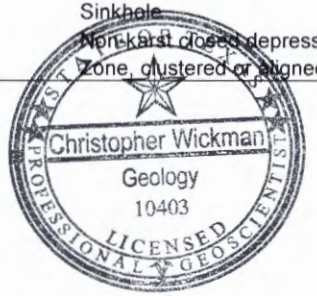
LOCATION			FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING		
1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPOGRAPHY
						X	Y	Z		10						<40	>40	<1.6	>1.6	
No	potential	recharge			features				were	observed		during	the	site	visit					

Datum: NAD 27

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

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

12 TOPOGRAPHY
Cliff, Hilltop, Hillside, Floodplain, Streambed



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

Chris Wickman, P.G.

Date: March 13, 2015

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

LOCATION

The project site is located along and west of Gruene Road, north of the intersection of Rock Street and Gruene Road in northeast New Braunfels, Texas. An overall view of the area is shown on copies of the site plan, a street map, the U.S.G.S. Topographic Map, the E.A.A Edwards Aquifer Recharge Zone and Contributing Zone Map, the FIRM Map, the Bureau of Economic Geology Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle, U.S. Geological Survey Water Resources Investigations 94-4117 Map, a 2012 aerial photograph at a scale of 1"=500', and an aerial photograph obtained on the NRCS Web Soil Survey Website, The maps are present on Figures 1 through 8 in Appendix A.

METHODOLOGY

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

Frost GeoSciences, Inc. researched the geology of the area surrounding the intersection of Rock Street and Gruene Road in New Braunfels, Texas. The research included, but was not limited to, the Geologic Atlas of Texas, San Antonio Sheet, FEMA maps, Edwards Aquifer Recharge Zone Maps, U.S.G.S. 7.5 Minute Quadrangle Maps, the Bureau of Economic Geology-Geologic Atlas of Texas, the Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle, the U.S.G.S. Water-Resources Investigations Report 94-4117, and the U.S.D.A. Soil Survey of Hays and Comal Counties, Texas.

After reviewing the available information, a field investigation was performed to identify any geologic or man-made potential recharge features (PRFs). A transect spacing of approximately 50 feet, or less depending on vegetation thickness, was used to inspect the project area. A 2012 aerial photograph, in conjunction with a hand held Garmin GPS 72H Global Positioning System with an Estimated Potential Error ranging from 10 to 14 feet, was used to navigate around the property and identify the locations of PRFs, as recommended in the "Instructions to Geologists", TCEQ-0585-Instructions (Rev. 10-1-04). The locations of any PRFs noted in the field were marked with blue and white flagging. The flagging is numbered with the same PRF I.D. # that is used on the Site Geologic Map. The Site Geologic Map, indicating the limits of the project site, and the locations of PRFs and rock outcrops noted on the project site, is included in Appendix C. A copy of a 2012 Aerial Photograph at an approximate scale of 1"=500' is included on Figure 8 in Appendix A. The Geologic Assessment Form TCEQ-0585, (Rev. 10-1-10), Stratigraphic Column, and the Geologic Assessment Table have been filled with the appropriate information for this project site and are included on pages 1-4 of this report.

RESEARCH & OBSERVATIONS

7.5 Minute Quadrangle Map Review

According to the U.S.G.S. 7.5 Minute Quadrangle Map, New Braunfels East, Texas Sheet (1994), the elevation across the project site ranges from 660 to 670 feet above mean sea level. The project site has a total relief of approximately 10 feet. Runoff from the project site flows southeast into the Guadalupe River. Green Road is located along the southeastern boundary of the project site. A railroad line was observed northwest of the boundary of the project site. The intersection of Rock Street and Gruene Road was located northeast of the project site. A copy of the U.S.G.S. 7.5 Minute Quadrangle Map indicating the location of the project site is included on Figure 3 in Appendix A.

Recharge/Transition Zone

According to the E.A.A. Edwards Aquifer Recharge Zone and Contributing Zone Map (1994), the Site is located on the Edwards Aquifer Recharge Zone. A copy of the E.A.A. Edwards Aquifer Recharge and Contributing Zone Map indicating the location of the Site is included on Figure 4 in Appendix A.

100-Year Floodplain

The special flood hazard area as defined by the FEMA Flood Insurance Rate Map is the area subject to flooding by the 1% annual chance flood. The Site is located in Zone X (unshaded), which is not designated a special flood hazard area according to the FEMA National Flood Insurance Program Flood Insurance Rate Map, Panel 455 of 505, for incorporated areas of Comal County, Texas, Community Panel Number 48091C0455F, effective September 2, 2009. According to the FEMA Flood Insurance Rate Map Legend, Zone X (unshaded) is defined as areas determined to be outside the 0.2% annual chance floodplain. A copy of the above referenced FIRM panel indicating the location of the Site is included on Figure 5 in Appendix A

Soils

According to the United States Department of Agriculture, Soil Conservation Service, Soil Survey of Hays and Comal Counties, Texas, issued (1984) and the NRCS Web Soil Survey Website, the project site is located on the Comfort-Rock outcrop complex, undulating (CrD). A copy of an aerial photograph obtained from the NRCS Web Soil Survey Website indicating the location of the project site and the soil types is included on Figure 6 in Appendix A.

Comfort-Rock outcrop complex, undulating consists of shallow, clayey soils and Rock outcrops on the side slopes, hilltops, and ridge-tops in the uplands area of the Edwards Plateau. This soil complex is composed of the Comfort extremely stony clay (~49% to ≥95% of the complex), the Rock outcrop (5-36% of the complex), and small amounts of the Rumple, Purves, Eckert, and Real soils. Typically, the surface layer of the Comfort soil is dark brown extremely stony clay about 6" thick. Stones and cobbles (some as much as 4' across) cover approximately 45% of the surface. The subsoil extends to a depth of 13". It's dark reddish brown extremely stony clay. The underlying material is indurated fractured limestone. The soil is mildly alkaline and non-calcareous throughout. The soil is well drained, surface runoff is slow to medium, permeability is slow, and the available

water capacity is very low. Water erosion is a slight hazard. Typically, the Rock outcrop is dolomitic limestone that is barren of soil except in narrow fractures in the rock. Some areas may have as much as 3" of soil on top of the outcrop. The Comfort soil has a USDA Texture Classification of extremely stony clay, stony clay, very stony clay, and weathered bedrock. The Unified Classification is CH, GC, SC, and CL. The AASHO Classification is A-2-7 and A-7-6. This soil has an average permeability from 0.06-0.2 inches/hour.

Narrative Description of the Site Geology

Based on a visual inspection of the ground surface, the overall potential for fluid flow from the project site into the Edwards Aquifer appears to be low. No obvious visual indications of PRFs were identified on the project site at the time of the site inspection. The project site existed as an open grassy field covered by a dense stand of ankle high grasses with a few trees scattered across the project site. Three structures were observed on the project site at the time of the site visit. Site visit photos indicating the condition of the property at the time of the on-site inspection are included in Appendix B. The variations in the vegetative cover on the property are visible in the 2012 aerial photo on Figure 8 in Appendix A. A copy of the site plan indicating the boundary of the project site and the elevations is included on the Site Geologic Map in Appendix C of this report.

According to the Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle, the project site is located on the Cretaceous Edwards Person Limestone (Kp). The Edwards Person limestone consists of limestone, dolomitic limestone, dolomite, and lesser argillaceous limestone. A copy of the Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle are included on Figure 7 in Appendix A. A copy of the Stratigraphic Column highlighting the members of the Edwards Person Limestone is included on Page 3 of this report.

According to the site plan provided by Pawelek and Moy, Inc, the surveyed elevations on the project site range from 665 to 673 feet. According to this survey, the total relief on the project site is approximately 8 feet. A copy of the site plan indicating the boundary of the project site and the elevations is included on the Site Plan on Figure 1 in Appendix A and the Site Geologic Map in Appendix C of this report.

BEST MANAGEMENT PRACTICES

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

DISCLAIMER

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

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

REFERENCES

1. USGS - 7.5 Minute Topographic Quadrangle of New Braunfels East, Texas, 1994

2. E.A.A. Edwards Aquifer Recharge Zone and Contributing Zone Map, 1994

3. Stein, W.G. and Ozuna, G.B., 1995, Geologic Framework and Hydrogeologic Characteristics of the Edwards Aquifer Recharge Zone, Comal County, Texas, U.S. Geological Survey Water Resources Investigations 95-4030.

4. Barnes, V.L., 1983, Geologic Atlas of Texas Sheet, Bureau of Economic Geology and University of Texas at Austin, Geologic Atlas of Texas.

5. Federal Emergency Management Agency, Federal Insurance Administration, National Flood Insurance Program, Flood Insurance Map, Community Panel Number 48091C0455F, dated September 9, 2009.

6. United States Department of Agriculture Soil Conservation Service Soil Survey of Hays and Comal County 1984.

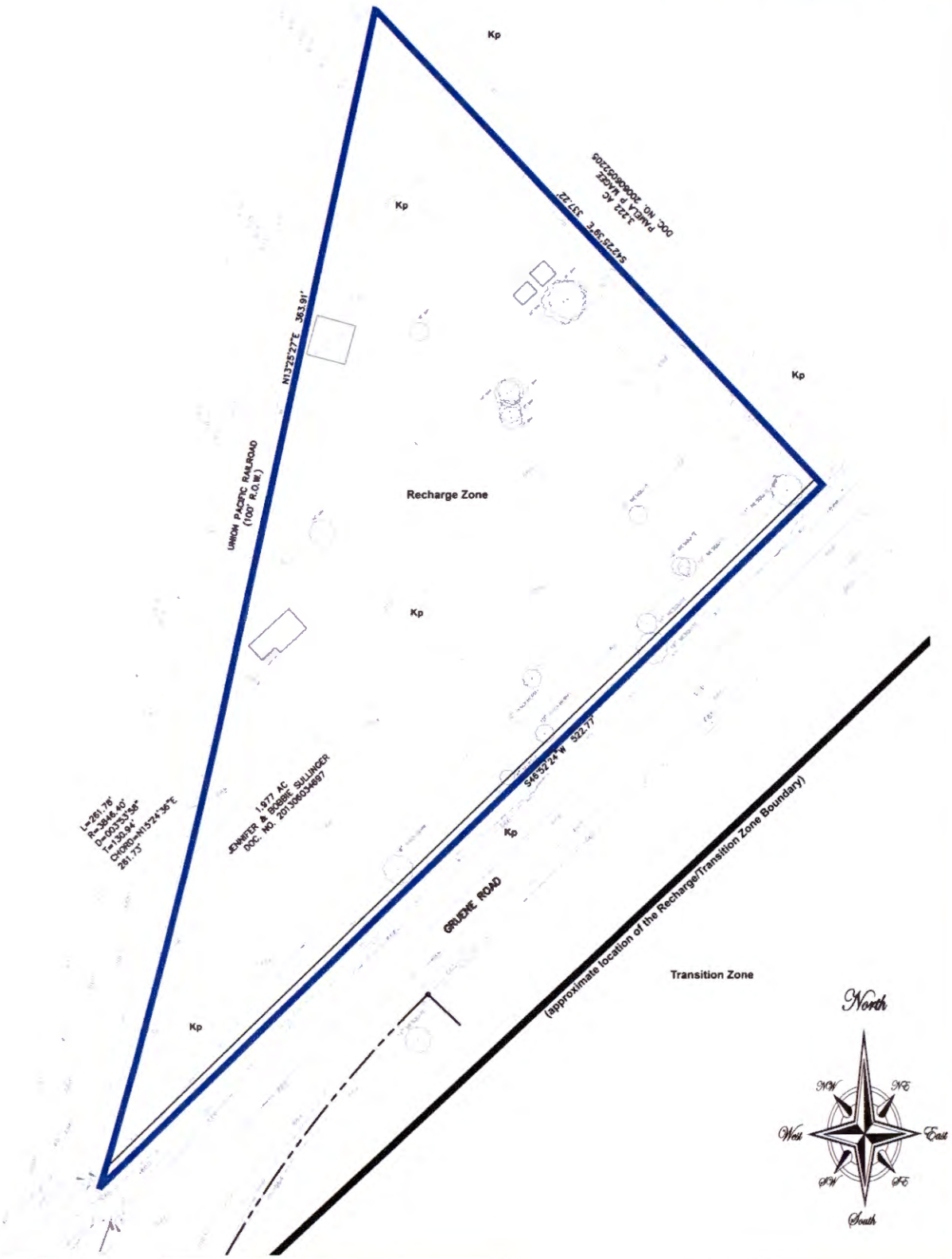
7. NRCS Web Soil Survey: http://websoilsurvey.nrcs.usda.gov

8. TCEQ-0585-Instructions (Rev. 10-1-04), "Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zone".

9. Collins, Edward, W., 2000, Geologic Map of the New Braunfels 30 X 60 Minute Quadrangle, Bureau of Economic Geology, The University of Texas at Austin, Texas.

APPENDIX A

SITE LOCATION FIGURES

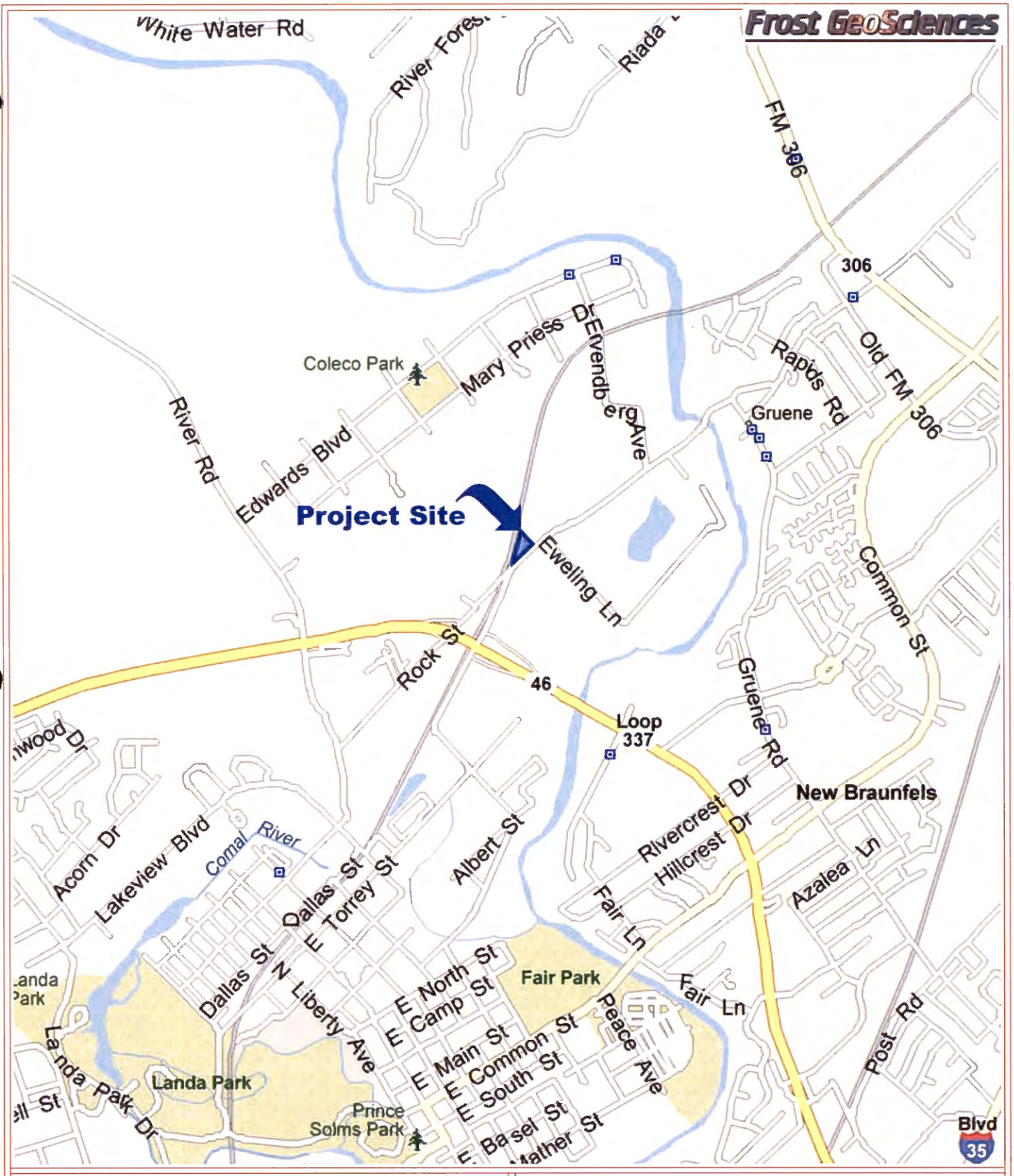


PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
Sullinger Subdivision Tract
New Braunfels, Texas

Site Plan

PROJECT NO.: FGS-E15109

DATE: March 13, 2015

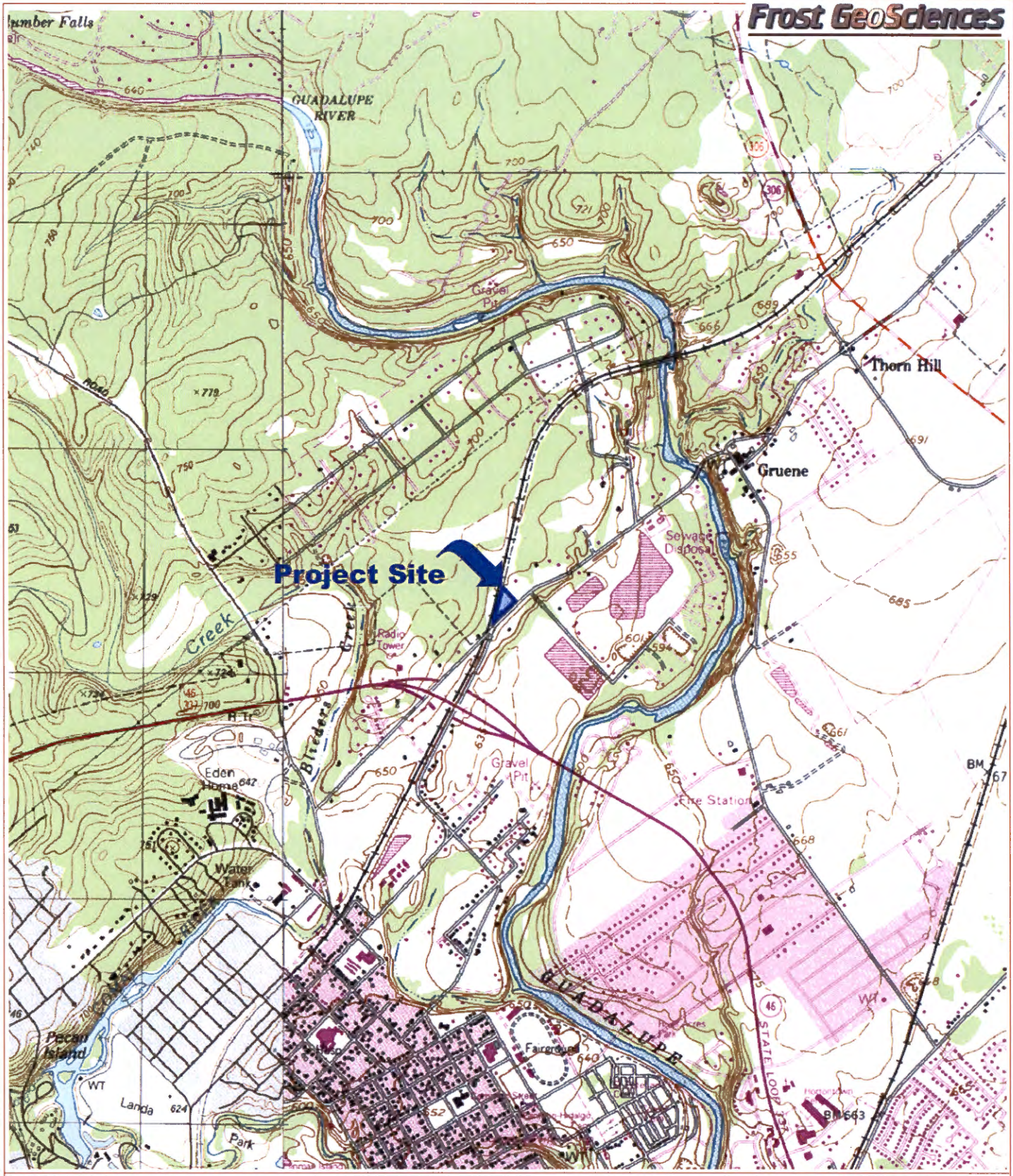


PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
Sullinger Subdivision Tract
New Braunfels, Texas

Street Map

PROJECT NO.: FGS-E15109

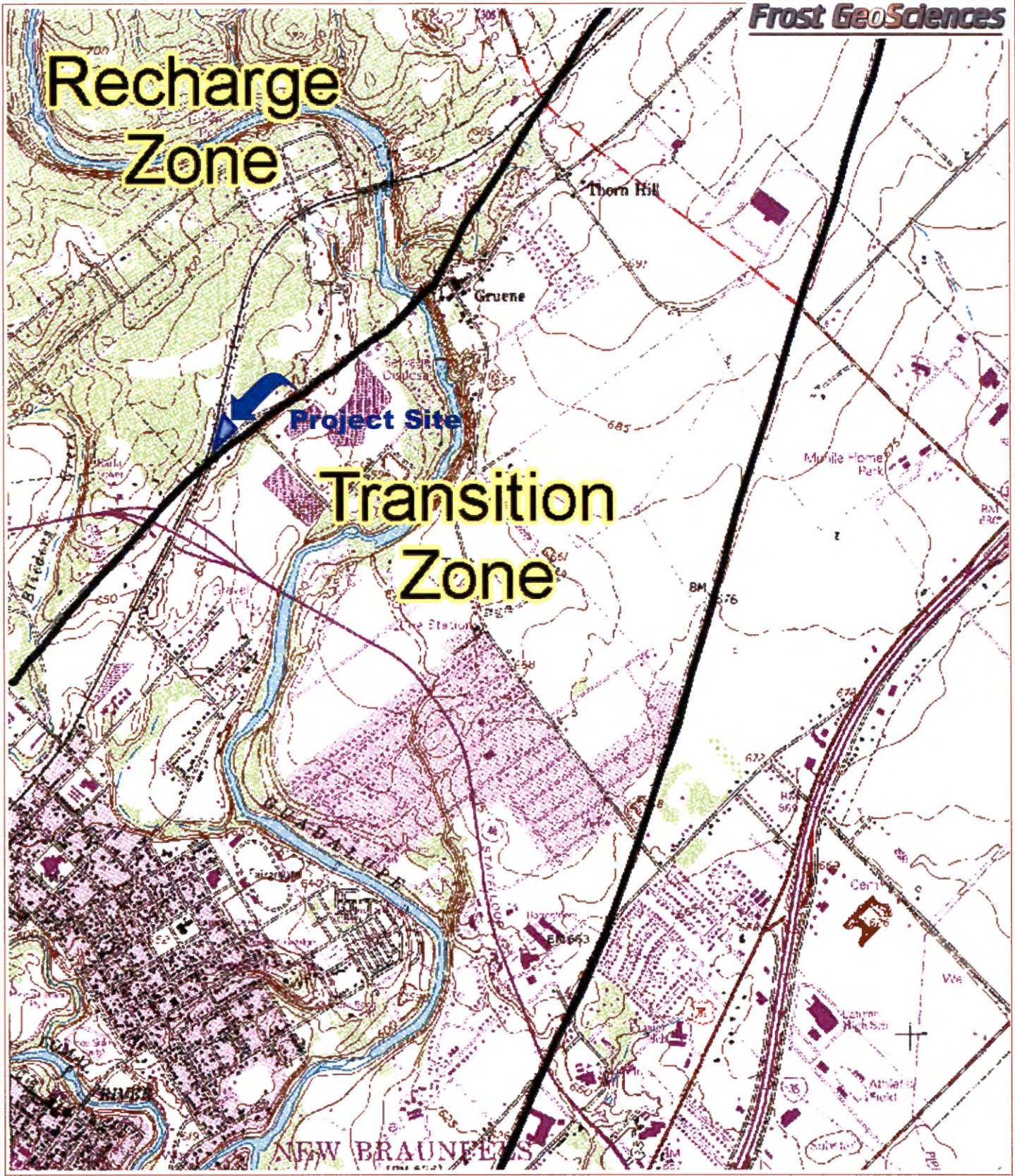
DATE: March 13, 2015



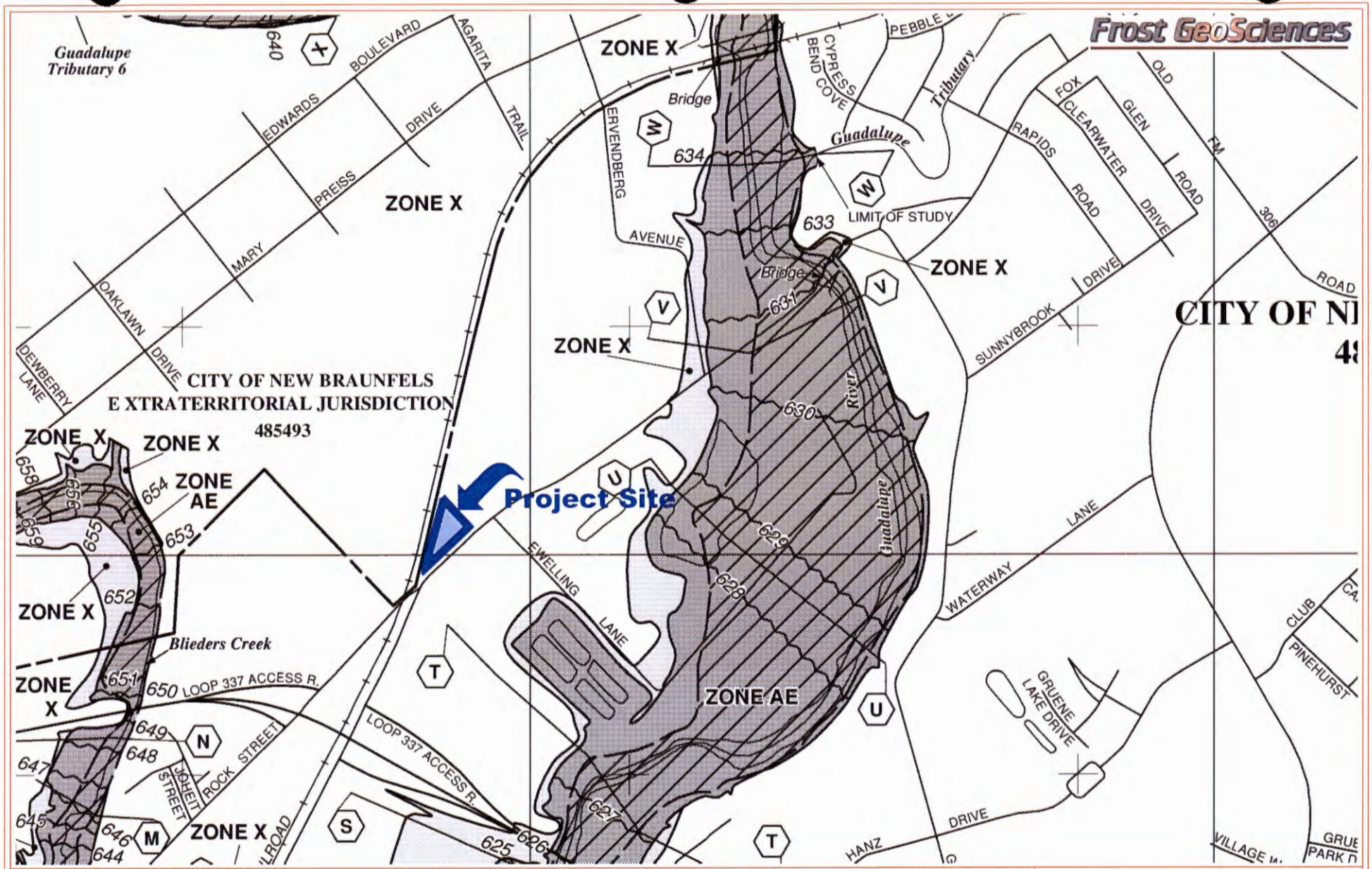
PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
Sullinger Subdivision Tract
New Braunfels, Texas

U.S.G.S. 7.5 Minute Quadrangle Map
New Braunfels East, Texas Sheet (1994)

PROJECT NO.:	DATE:
FGS-E15109	March 13, 2015



PROJECT NAME: Geologic Site Assessment (WPAP) for Regulated Activities / Development on the Edwards Aquifer Recharge / Transition Zone Sullinger Subdivision Tract New Braunfels, Texas	EAA-Edwards Aquifer Recharge and Contributing Zone Map, New Braunfels East, Texas Quadrangle (1999)
	PROJECT NO.: FGS-E15109 / **DATE:** March 13, 2015



PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
Sullinger Subdivision Tract
New Braunfels, Texas

Flood Insurance Rate Map (FIRM)
Community Panel # 48091C0455F, September 9, 2009

PROJECT NO.: FGS-E15109

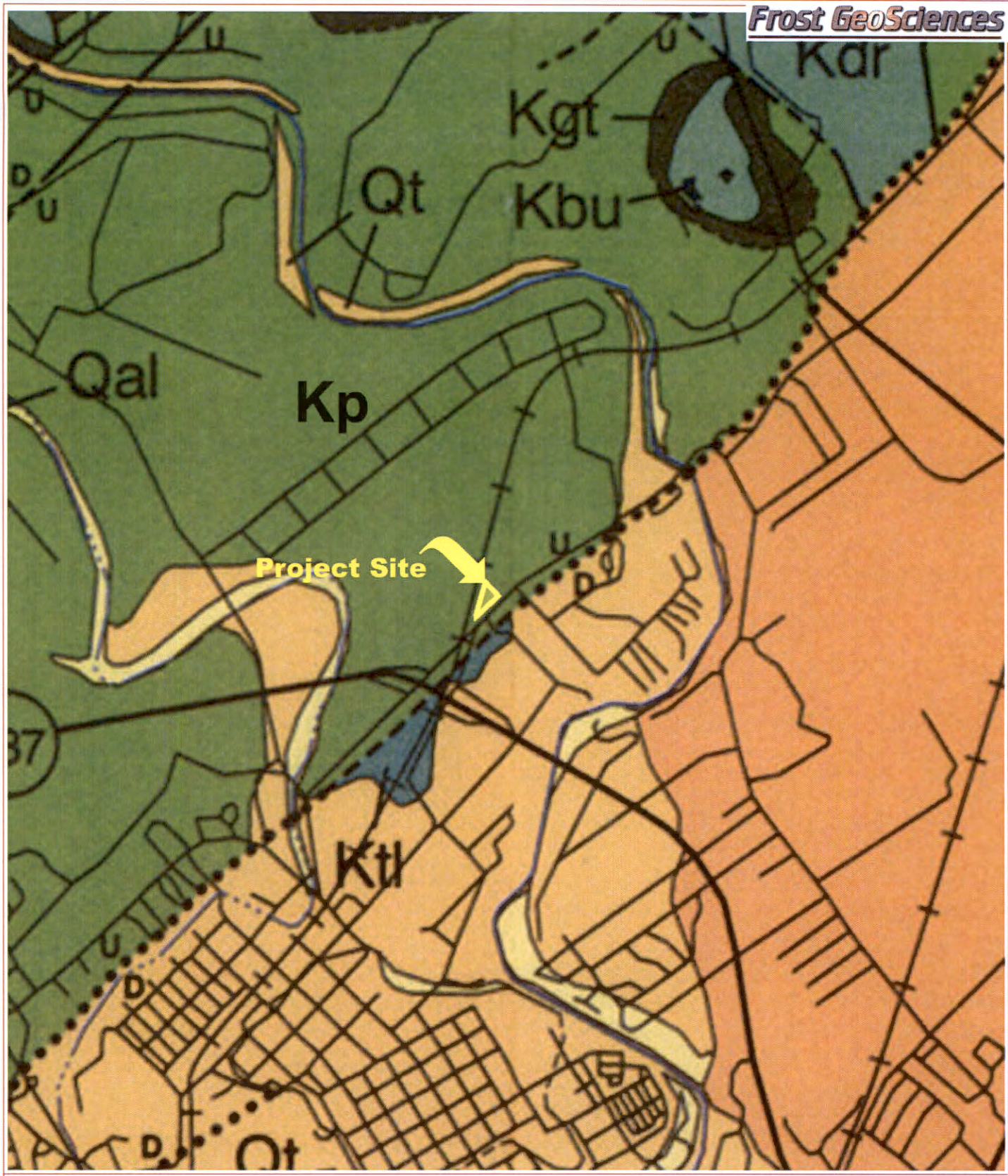
DATE: March 13, 2015

PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
Sullinger Subdivision Tract
New Braunfels, Texas

NRCS-Web Soil Survey Website
http://websoilsurvey.nrcs.usda.gov
Comal County

PROJECT NO.: FGS-E15109

DATE: March 13, 2015



PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
Sullinger Subdivision Tract
New Braunfels, Texas

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

PROJECT NO.: FGS-E15109

DATE: March 13, 2015

Frost GeoSciences

PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
Sullinger Subdivision Tract
New Braunfels, Texas

2012 Aerial Photograph
National Agricultural Imagery Program

PROJECT NO.: FGS-E15109

DATE: March 13, 2015

APPENDIX B

SITE PHOTOGRAPHS

Photo #1 – View to the north across the central portion of the project site.

Photo #2 – View to the northwest across the western portion of the project site.

Photo #3 – View to the south across the northern portion of the project site.

Photo #4 – View to the south across the southern portion of the project site.

Photo #5 – View to the north across the southern portion of the project site.

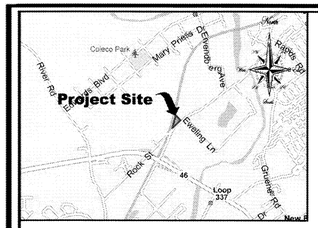
Photo #6 – View of an additional structure observed in the southwestern portion of the project site.

Photo #7 – View of a small metal barn observed in the northwestern portion of the project site.

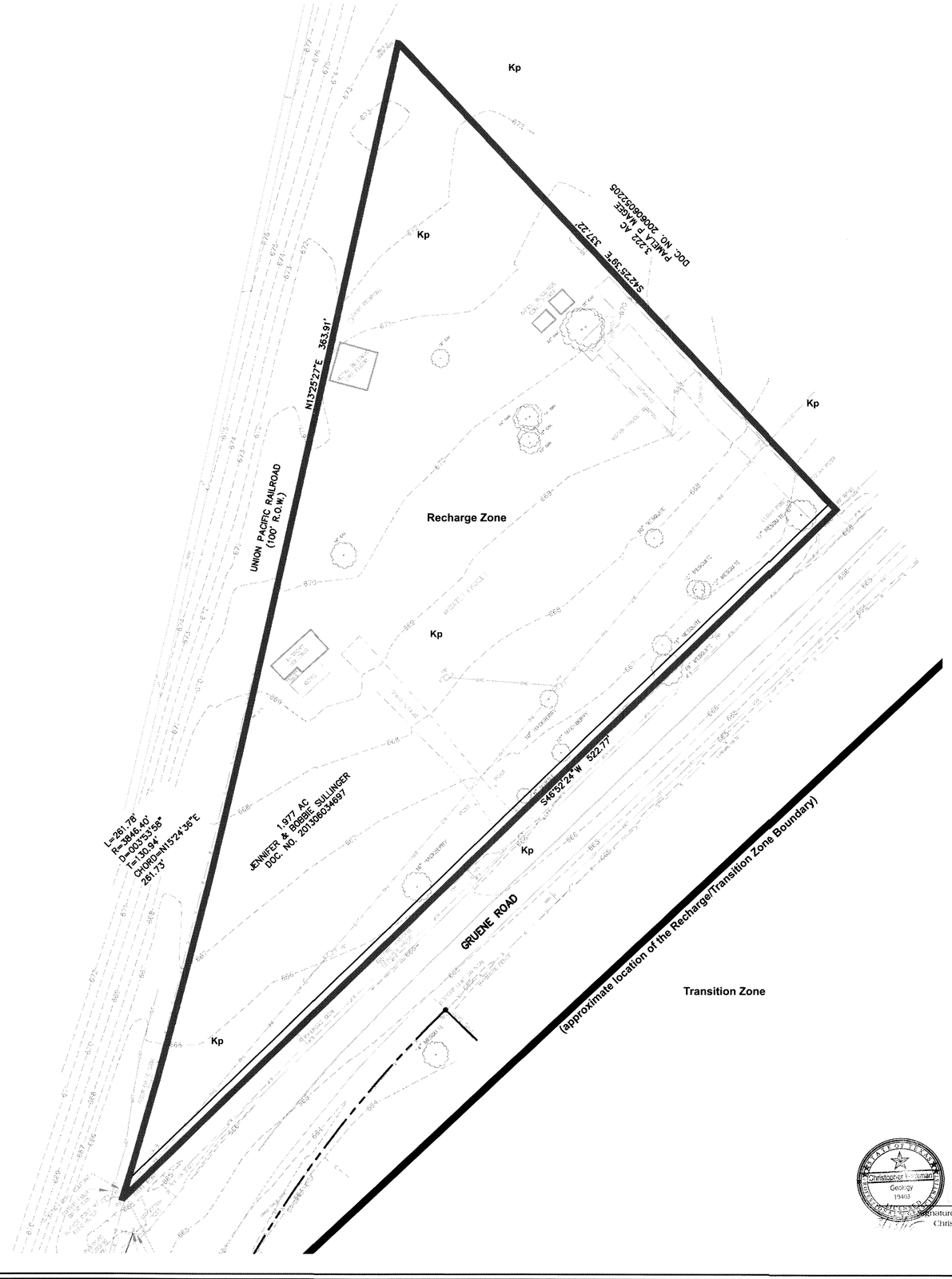
Photo #8 – View of Gruene Road followed by undeveloped land observed on the adjoining property east of the project site.

APPENDIX C

SITE GEOLOGIC MAP



Location Map



Christopher Wickman
Geology
19403

Signature of Texas Licensed Geoscientist
Chris Wickman, P.G. Lic. # 10403

Frost GeoSciences
Geotechnical • Construction Materials
Environmental & Geologic Consulting
SDVOSB • VBE • DIBE • SBE
13402 Western Oak Dr. • Helotes, Texas 78023
Phone: 210-372-1315 • Fax 210-372-1318

Site Geologic Map

Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
for the
Sullinger Subdivision Tract
+/- 1.977 Acres
New Braunfels, Texas

Frost GeoSciences, Inc. Control # FGS-E15109

Legend

- Fill - Fill Material
- Qal - Alluvium
- Kau - Austin Chalk
- Kef - Eagle Ford Shale
- Kbu - Buda Limestone
- Kdr - Del Rio Clay
- Kgt - Georgetown Limestone
- Kp - Edwards Person Limestone
- Kk - Edwards Kainer Limestone
- Kgr - Glen Rose Formation
- Kknm - Navarro and Taylor Groups, Undivided
- S-# - Potential Recharge Feature (PRF)
- Formation Contact
- 100-Year Floodplain - Zone A
- 100-Year Floodplain - Zone AE
- Other Flood Hazard Area - Zone X (shaded)

Floodplain Information Obtained From
FIRM: Flood Insurance Rate Map
Comal County, Texas: Panel # 48091C0455F, Revised 9/2/2009

Fault Information Obtained From:
Bureau of Economic Geology, Geologic Atlas of Texas, San Antonio Sheet (1983)
U.S. Geological Survey, Water Resources Investigations Report 94-4117 (1994)
Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle (2000)

North
NW NE
West East
SW SE
South

Graphic Scale
30 0 15 30 60
(In Feet)

1 inch = 30 feet
Representative Fraction 1:360
Contour Interval - 1 foot

Water Pollution Abatement Plan Application

Texas Commission on Environmental Quality

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

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

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

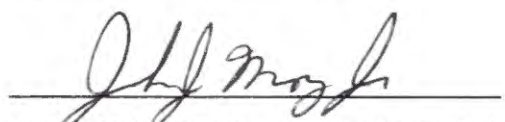
Signature

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

Print Name of Customer/Agent: John J. Moy, Jr. (Agent)

Date: 8/14/15

Signature of Customer/Agent:



Regulated Entity Name: Sullinger Subdivision Tract

Regulated Entity Information

1. The type of project is:

   ☐ Residential: Number of Lots:_____
   ☐ Residential: Number of Living Unit Equivalents:_____
   ☒ Commercial
   ☐ Industrial
   ☒ Other: One residential dwelling unit also proposed on-site.

2. Total site acreage (size of property): 1.977 acres

3. Estimated projected population: Residential - 2, Proposed Restaurant - Approximately 99 seats

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

Table 1 - Impervious Cover Table

Impervious Cover of Proposed Project	Sq. Ft.	Sq. Ft./Acre	Acres
Structures/Rooftops	5,322	÷ 43,560 =	0.122
Parking	16,315	÷ 43,560 =	0.375
Other paved surfaces	9,271	÷ 43,560 =	0.213
Total Impervious Cover	30,908	÷ 43,560 =	0.710

Total Impervious Cover 0.710 **÷ Total Acreage** 1.977 **X 100 =** 35.91 **% Impervious Cover**

5. [X] **Attachment A - Factors Affecting Surface Water Quality**. A detailed description of all factors that could affect surface water and groundwater quality that addresses ultimate land use is attached.

6. [X] Only inert materials as defined by 30 TAC §330.2 will be used as fill material.

For Road Projects Only

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

7. Type of project:

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

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

   [ ] Concrete
   [ ] Asphaltic concrete pavement
   [ ] Other: _____

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

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

10. Length of pavement area: _____ feet.

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

11. [ ] A rest stop will be included in this project.

    [ ] A rest stop will not be included in this project.

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

Stormwater to be generated by the Proposed Project

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

Wastewater to be generated by the Proposed Project

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

100 % Domestic	4,440 Gallons/day
_____ % Industrial	_____ Gallons/day
_____ % Commingled	_____ Gallons/day
TOTAL gallons/day 4,440	

15. Wastewater will be disposed of by:

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

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

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

☒ Sewage Collection System (Sewer Lines):

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

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

☒ The SCS was previously submitted on April 13, 2015 and May 15, 2015 (TCEQ Approval Letter Dated June 3, 2015)

☐ The SCS was submitted with this application.

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

[X] The sewage collection system will convey the wastewater to the Gruene Road Sewage (name) Treatment Plant. The treatment facility is:

[X] Existing.
[ ] Proposed.

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

Site Plan Requirements

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

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

Site Plan Scale: 1" = 30 '.

18. 100-year floodplain boundaries:

[ ] Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.
[X] No part of the project site is located within the 100-year floodplain.
The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): FEMA FIRM MAP PANEL NO. 48091C0455F, Effective date 09/02/2009

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

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

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

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

[ ] The wells are not in use and have been properly abandoned.
[ ] The wells are not in use and will be properly abandoned.
[ ] The wells are in use and comply with 16 TAC §76.

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

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

[ ] All sensitive geologic or manmade features identified in the Geologic Assessment are shown and labeled.
[X] No sensitive geologic or manmade features were identified in the Geologic Assessment.
[ ] **Attachment D - Exception to the Required Geologic Assessment**. A request and justification for an exception to a portion of the Geologic Assessment is attached.

22. [X] The drainage patterns and approximate slopes anticipated after major grading activities.

23. [X] Areas of soil disturbance and areas which will not be disturbed.

24. [X] Locations of major structural and nonstructural controls. These are the temporary and permanent best management practices.

25. [X] Locations where soil stabilization practices are expected to occur.

26. [X] Surface waters (including wetlands).

    [ ] N/A

27. [X] Locations where stormwater discharges to surface water or sensitive features are to occur.

    [ ] There will be no discharges to surface water or sensitive features.

28. [X] Legal boundaries of the site are shown.

Administrative Information

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

30. [X] Any modification of this WPAP will require Executive Director approval, prior to construction, and may require submission of a revised application, with appropriate fees.

WATER POLLUTION ABATEMENT PLAN APPLICATION

5. Attachment A – Factors Affecting Water Quality

The potential sources of contamination on the proposed project include, but are not limited to, hydrocarbons, such as oil and grease, vehicle/machinery fluid leaks, trash or debris, and fertilizers and soil runoff.

All construction equipment will be fueled off-site, and no hazardous materials shall be utilized for the construction of the proposed improvements. Portable toilets will be placed on site for use by construction workers during construction activities. All waste will be hauled off site daily, as generated.

Prior to any construction activity, stormwater pollution prevention controls shall be installed and these controls include silt fence along the right of way/property line of Gruene Road and along the eastern property line, a rock berm downstream of the proposed residential driveway, a rock berm upstream of the 18" culvert near the intersection of Gruene Road and Rock St., and the installation of a stabilized construction entrance/exit to reduce sediment removal from the site. The construction contractor will be responsible for the installation, repair and upkeep of all control measures.

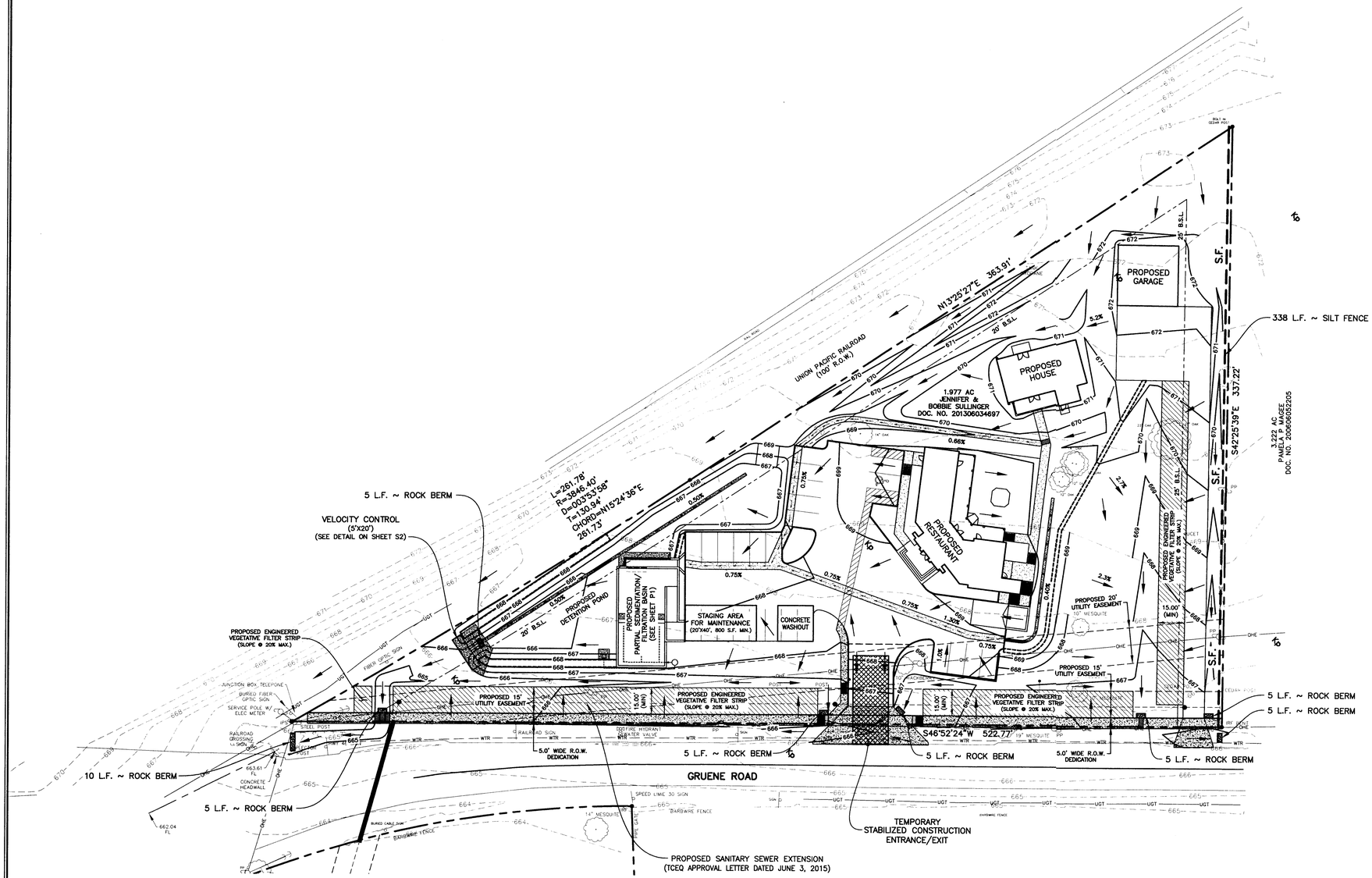
After construction is complete and the site has been built, the factors affecting water quality will include runoff from the roofs, paved areas, sidewalks and greenbelt areas. Chemicals that may be present include pesticides and fertilizers for the greenbelt areas as well as miscellaneous oils or fuels from vehicles utilizing the drives. However, the stormwater runoff from these areas will be treated by the proposed Partial Sedimentation/Filtration pond and the Engineered Vegetative Filter strips as shown on the Site Plan, Sheet S1.

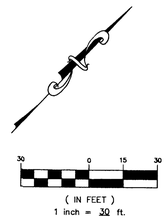
13. Attachment B – Volume and Character of Stormwater

The stormwater runoff generated from this site will consist of runoff from the roofs, paved areas, sidewalks and greenbelt areas. The runoff may contain small amounts of suspended solids, fertilizers/pesticides for the greenbelt areas or oils/fuel that would be associated with vehicles entering/exiting and/or being stored on the site. The average runoff coefficient for the site is C_{10pre} = 0.40 due to the existing improvements and the average Post-Construction runoff coefficient is C_{10post} = 0.54. Based on the BMP calculations provided in this submittal, there will be a Water Quality Volume of 6,043 cf required to treat the portion of the site that does not drain to the proposed engineered vegetated filters strips and 6,369 cf has been provided in the design of the Partial

Sedimentation and Filtration Pond. Prior to exiting the site, a portion of the storm water runoff will be conveyed to a detention pond which will aid in the sedimentation of solids and improve the overall water quality.

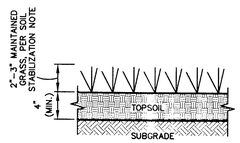
SITE PLAN





LEGEND

- S.F. — SILT FENCE
- TEMPORARY STABILIZED CONSTRUCTION ENTRANCE/EXIT
- ROCK BERM
- CONCRETE WASHOUT
- EXISTING FLOW DIRECTION
- 100 — EXISTING CONTOURS
- 100 — PROPOSED CONTOURS
- PROPERTY LINE
- Kep — EDWARDS PERSON LIMESTONE



ENGINEERED VEGETATIVE FILTER STRIP DETAIL
N.T.S.

NOTES;

1. SEE DRAINAGE AREA MAP SHEET D1 FOR OVERALL DRAINAGE AREAS.
2. ENTIRE 1.977 ACRE SITE IS ANTICIPATED TO HAVE SOIL DISTURBANCE AND THEREFORE WILL BE REQUIRED SOIL STABILIZATION IN AREAS OUTSIDE OF THE LIMITS OF THE BUILDING, PAVING, SIDEWALKS, LANDSCAPING, ETC.

SOIL STABILIZATION NOTE:
IN ALL AREAS TO BE DISTURBED OUTSIDE OF THE LIMITS OF THE BUILDING, PAVING, SIDEWALKS, LANDSCAPING, ETC., AND FOR THE ENGINEERED VEGETATIVE FILTER STRIP, VEGETATIVE STABILIZATION IN ACCORDANCE WITH RG-348 COMPLYING WITH THE EDWARDS AQUIFER RULES, ITEM 1.3.8-TEMPORARY VEGETATION, ITEM 1.3.9-BLANKETS AND MATTING, ITEM 1.3.10-HYDRAULIC MULCH AND/OR ITEM 1.3.11 SOD SHALL BE IMPLEMENTED. THE AREAS TO BE VEGETATED SHALL BE WATERED SUFFICIENTLY TO ESTABLISH 70% STABILIZATION.

FLOODPLAIN NOTE:
ACCORDING TO FEMA FIRM MAP PANEL No. 48091C0455F, EFFECTIVE DATE 9/2/2009, THE PROJECT SITE LIES OUTSIDE THE 100 YR FLOODPLAIN.

IMPERVIOUS COVER SUMMARY

IMPERVIOUS COVER OF PROJECT SITE	Sq. Ft.	Sq. Ft./Acre	Acres
STRUCTURES/ROOFTOPS	5,322	÷ 43,560 =	0.122
PARKING	16,315	÷ 43,560 =	0.375
SIDEWALKS & DRAINAGE ITEMS	9,271	÷ 43,560 =	0.213
TOTAL IMPERVIOUS COVER	30,908	÷ 43,560 =	0.710
TOTAL IMPERVIOUS COVER ÷ TOTAL ACREAGE x 100 =			35.91 %

TOTAL PROJECT SITE ACREAGE = 1.977 Ac.

PAWELEK & MOY, INC.
CIVIL ENGINEERING & CONSULTING SERVICES
130 W. JAHN STREET
NEW BRAUNFELS, TX 78130
TEL: (830) 629-2563
FIRM No. F-9862

STATE OF TEXAS — JOHN J. MOY JR. — LICENSED PROFESSIONAL ENGINEER — 87235 — 8/14/15

SITE PLAN FOR SULLINGER SUBDIVISION TRACT

NEW BRAUNFELS, TEXAS

REVISIONS

DESCRIPTION	DATE

DRAWN BY:	D.G. III
CHECKED BY:	J.J.M.
DATE:	AUGUST 2015
JOB NO.:	1501.02

S1

F:\1501.02 - Sullinger Subd\dwg\S1.dwg 2015/08/12 3:07pm Administrator

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

1. Written construction notification must be given to the appropriate TCEQ regional office no later than 48 hours prior to commencement of the regulated activity. Information must 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 and the name and telephone number of the contact person.

2. All contractors conducting regulated activities associated with this project must be provided with complete copies of the approved Water Pollution Abatement Plan and the TCEQ letter indicating the specific conditions of its approval. During the course of these regulated activities, the contractors are required to keep on-site copies of the approved plan and approval letter.

3. If any sensitive feature is discovered during construction, all regulated activities near the sensitive feature must be suspended immediately. The appropriate TCEQ regional office must be immediately notified of any sensitive features encountered during construction. The regulated activities near the sensitive feature may not proceed until the TCEQ has reviewed and approved the methods proposed to protect the sensitive feature and the Edwards Aquifer from any potentially adverse impacts to water quality.

4. No temporary aboveground hydrocarbon and hazardous substance storage tank system is installed within 150 feet of a domestic, industrial, irrigation, or public water supply well, or other sensitive feature.

5. Prior to commencement of construction, all temporary erosion and sedimentation (E&S) control measures must be properly selected, installed, and maintained in accordance with the manufacturers specifications and good engineering practices. Controls specified in the temporary storm water section of the approved Edwards Aquifer Protection 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.

6. 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).

7. 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.

8. 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).

9. All spoils (excavated material) generated from the project site must be stored on-site with proper E&S controls. For storage or disposal of spoils at another site on the Edwards Aquifer Recharge Zone, the owner of the site must receive approval of a water pollution abatement plan for the placement of fill material or mass grading prior to the placement of spoils at the other site.

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

11. The following records shall be maintained and made available to the TCEQ upon request: the dates when major grading activities occur; the dates when construction activities temporarily or permanently cease on a portion of the site; and the dates when stabilization measures are initiated.

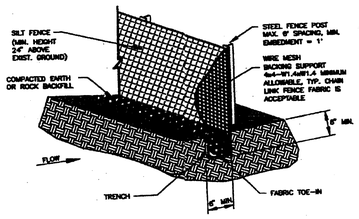
12. The holder of any approved Edward Aquifer protection plan must notify the appropriate regional office in writing and obtain approval from the executive director prior to initiating any of the following:

   A. any physical or operational modification of any water pollution abatement structure(s), including but not limited to ponds, dams, berms, sewage treatment plants, and diversionary structures;

   B. any change in the nature or character of the regulated activity from that which was originally approved or a change which would significantly impact the ability of the plan to prevent pollution of the Edwards Aquifer;

   C. any development of land previously identified as undeveloped in the original water pollution abatement plan.

Austin Regional Office 2800 S. IH 35, Suite 100 Austin, Texas 78704-5712 Phone (512) 339-2929 Fax (512) 339-3795	San Antonio Regional Office 14250 Judson Road San Antonio, Texas 78233-4480 Phone (210) 490-3096 Fax (210) 545-4329



ISOMETRIC PLAN VIEW
N.T.S.

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- 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 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.

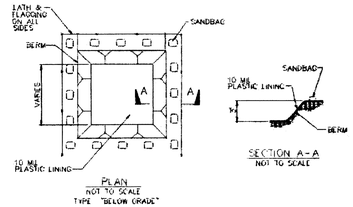
(3) Place the rock along the sheathing as shown in the diagram (Figure 1-1), to a height not less than 18".

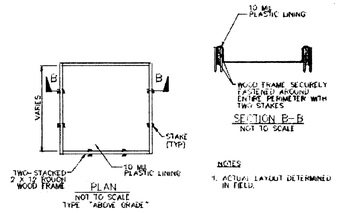
(4) Wrap the wire sheathing around the rock and secure with tie wire so that the ends of the sheathing overlap at least 2 inches, and the berm retains its shape when walked upon.

(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.

SILT FENCE DETAIL
N.T.S.





NOTES
1. ACTUAL LAYOUT DETERMINED IN FIELD.

FOR ONSITE WASHOUT:

1) LOCATE WASHOUT AREA AT LEAST 50 FEET FROM SENSITIVE FEATURES, STORM DRAINS, OPEN DITCHES, OR WATER BODIES. DO NOT ALLOW RUNOFF FROM THIS AREA BY CONSTRUCTING A TEMPORARY PIT OR BERMED AREA LARGE ENOUGH FOR LIQUID AND SOLID WASTE.

2) WASH OUT WASTES INTO THE TEMPORARY PIT WHERE THE CONCRETE CAN SET, BE BROKEN UP, AND THEN DISPOSED OF PROPERLY.

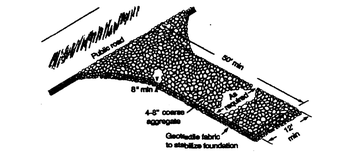
3) PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10 MIL IN POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL.

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

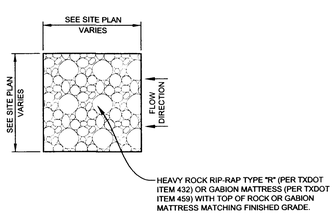
5) HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE BACKFILLED AND REPAIRED.

6) SEE TCEQ RG-348 SECTION 1.4.18 CONCRETE WASHOUT AREAS FOR ANY ADDITIONAL INFORMATION.

CONCRETE WASHOUT DETAIL
N.T.S.



ROCK RIPRAP DETAIL
N.T.S.



VELOCITY CONTROL DETAIL
N.T.S.

Schematic of Temporary Construction Entrance/Exit

Cross-section of a Construction Entrance/Exit

Materials:

(1) The aggregate should consist of 4 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 rack 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 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.

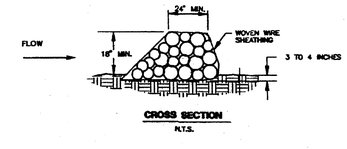
(5) Place geotextile fabric and grade foundation to improve stability, especially where wet conditions are anticipated.

(6) Place stone to dimensions and grade shown on plans. Leave surface smooth and slope for drainage.

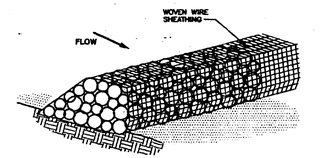
(7) Divert all surface runoff and drainage from the stone pad to a sediment trap or basin.

(8) Install pipe under pad as needed to maintain proper public road drainage.

TEMPORARY CONSTRUCTION ENTRANCE/EXIT DETAIL
N.T.S.



CROSS SECTION
N.T.S.



ISOMETRIC PLAN VIEW
N.T.S.

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- 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 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 (Figure 1-1), 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.

ROCK BERM DETAIL
N.T.S.

PAWELEK & MOY, INC.
CIVIL ENGINEERING & CONSULTING SERVICES
130 W. JAHN STREET
NEW BRAUNFELS, TX 78130
TEL: (830) 629-2563
FIRM No. F-9862

JOHN J. MOY JR. 97835 LICENSED PROFESSIONAL ENGINEER 8/14/15

WATER POLLUTION ABATEMENT PLAN GENERAL NOTES AND DETAILS

FOR

SULLINGER SUBDIVISION TRACT

NEW BRAUNFELS, TEXAS

REVISIONS		
DESCRIPTION	DATE	

DRAWN BY:	D.G. III
CHECKED BY:	J.J.M.
DATE:	AUGUST 2015
JOB NO.:	1501.02

S2 OF 2

F:\1501.02 - Sullinger Subd\dwg\S2.dwg 2015/08/12 8:17am Administrator

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.

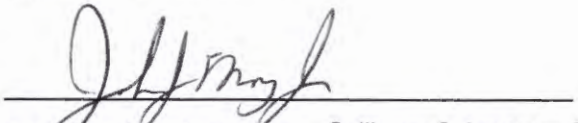
Signature

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: John J. Moy, Jr. (Agent)

Date: 8/14/15

Signature of Customer/Agent:



Regulated Entity Name: Sullinger Subdivision Tract

Project Information

Potential Sources of Contamination

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

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

   ☐ The following fuels and/or hazardous substances will be stored on the site: _____

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

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

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

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

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

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

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

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

Sequence of Construction

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

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

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

6. ☒ Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: Site drains to ditch along Gruene Road and then to an Un-Named Tributary of the Guadalupe River.

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:

[X] 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.

[X] 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.

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

[X] 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. [X] 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.

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

9. [X] **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. [X] **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.

[X] 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.

    [X] N/A

12. [X] **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. [X] 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. [X] 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. [N/A] 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. [X] 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 vegetotion, establishment of permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, or preservation of mature vegetation.

17. [X] **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. [X] 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. [X] Stabilization practices must be initiated as soon as practicable where construction activities have temporarily or permanently ceased.

Administrative Information

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

21. [X] 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. [X] 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.

TEMPORARY STORMWATER SECTION

2. Attachment A – Spill Response Actions

Regarding spill prevention and control of a spill that may occur on this 1.977 acre site, found directly behind this sheet is copy of Section 1.4.16 of the Texas Commission on Environmental Quality (TCEQ) "Complying with the Edwards Aquifer Rules Technical Guidance on Best Management Practices, pages 1-118 through 1-121, Spill Prevention and Control which covers necessary procedures for spill prevention and control. In the event of a significant or hazardous spill (per the attached TCEQ criteria and guidelines) the contractor or construction personnel shall 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.

(See Spill Prevention and Control information on the following sheets)

RG-348
Revised July 2005

Complying with the Edwards Aquifer Rules

Technical Guidance on Best Management Practices

printed on
recycled paper

Field Operations Division

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

1.4.16 Spill Prevention and Control

The objective of this section is to describe measures to prevent or reduce the discharge of pollutants to drainage systems or watercourses from leaks and spills by reducing the chance for spills, stopping the source of spills, containing and cleaning up spills, properly disposing of spill materials, and training employees.

The following steps will help reduce the stormwater impacts of leaks and spills:

Education

(1) Be aware that different materials pollute in different amounts. Make sure that each employee knows what a "significant spill" is for each material they use, and what is the appropriate response for "significant" and "insignificant" spills. Employees should also be aware of when spill must be reported to the TCEQ. Information available in 30 TAC 327.4 and 40 CFR 302.4.

(2) Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.

(3) Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).

(4) Establish a continuing education program to indoctrinate new employees.

(5) Have contractor's superintendent or representative oversee and enforce proper spill prevention and control measures.

General Measures

(1) To the extent that the work can be accomplished safely, spills of oil, petroleum products, substances listed under 40 CFR parts 110,117, and 302, and sanitary and septic wastes should be contained and cleaned up immediately.

(2) Store hazardous materials and wastes in covered containers and protect from vandalism.

(3) Place a stockpile of spill cleanup materials where it will be readily accessible.

(4) Train employees in spill prevention and cleanup.

(5) Designate responsible individuals to oversee and enforce control measures.

(6) Spills should be covered and protected from stormwater runon during rainfall to the extent that it doesn't compromise clean up activities.

(7) Do not bury or wash spills with water.

(8) Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose in conformance with the provisions in applicable BMPs.

(9) Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with applicable regulations.

(10) Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.

(11) Place Material Safety Data Sheets (MSDS), as well as proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.

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

Cleanup

(1) Clean up leaks and spills immediately.

(2) Use a rag for small spills on paved surfaces, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be disposed of as hazardous waste.

(3) Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly. See the waste management BMPs in this section for specific information.

Minor Spills

(1) Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.

(2) Use absorbent materials on small spills rather than hosing down or burying the spill.

(3) Absorbent materials should be promptly removed and disposed of properly.

(4) Follow the practice below for a minor spill:

(5) Contain the spread of the spill.

(6) Recover spilled materials.

(7) Clean the contaminated area and properly dispose of contaminated materials.

Semi-Significant Spills

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

Spills should be cleaned up immediately:

(1) Contain spread of the spill.

(2) Notify the project foreman immediately.

(3) If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.

(4) If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.

(5) If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

Significant/Hazardous Spills

For significant or hazardous spills that are in reportable quantities:

(1) 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.

(2) 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.

(3) Notification should first be made by telephone and followed up with a written report.

(4) 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.

(5) Other agencies which may need to be consulted include, but are not limited to, the City Police Department, County Sheriff Office, Fire Departments, etc.

More information on spill rules and appropriate responses is available on the TCEQ website at: http://www.tnrcc.state.tx.us/enforcement/emergency_response.html

Vehicle and Equipment Maintenance

(1) If maintenance must occur onsite, use a designated area and a secondary containment, located away from drainage courses, to prevent the runon of stormwater and the runoff of spills.

(2) Regularly inspect onsite vehicles and equipment for leaks and repair immediately

(3) Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment onsite.

(4) Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.

(5) Place drip pans or absorbent materials under paving equipment when not in use.

(6) Use absorbent materials on small spills rather than hosing down or burying the spill. Remove the absorbent materials promptly and dispose of properly.

(7) Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around.

(8) Oil filters disposed of in trashcans or dumpsters can leak oil and pollute stormwater. Place the oil filter in a funnel over a waste oil-recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask the oil supplier or recycler about recycling oil filters.

(9) Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Vehicle and Equipment Fueling

(1) If fueling must occur on site, use designated areas, located away from drainage courses, to prevent the runon of stormwater and the runoff of spills.

(2) Discourage "topping off" of fuel tanks.

(3) Always use secondary containment, such as a drain pan, when fueling to catch spills/ leaks.

4. **Attachment B – Potential Sources of Contamination**

Potential Sources of contamination may include items such as: asphaltic products being used for paving operations, construction vehicles tracking sediment onto public roads and litter/debris that is produced from the general construction site. It will be the contractor's responsibility to maintain erosion/sedimentation controls to limit/prevent contaminants from escaping the site and also to pick up general litter/debris across the site.

5. Attachment C – Sequence of Major Activities

The following is a sequence of major activities which will involve soil disturbance along with an estimate of the area of the site to be disturbed by each activity:

Sequence No.	Description of Soil Disturbing Activity	Estimated Area to be Disturbed by each Activity (Acres ~ Total)	Temporary Control Measure
1	Prior to Construction	-	1. Temporary Construction Entrance/Exit Installation 2. Installation of Concrete Washout area. 3. Perimeter Silt Fence Installations along eastern property line and along Gruene Road R.O.W. line. 4. Rock Berm Installations in Gruene Rd. ditch at the two discharge points.
2	Clearing/Grubbing/Construction Staging (For Proposed Buildings, Parking Area, Water Quality Basin and Vegetative Filter Strips)	1.97	1.Maintain Perimeter Silt Fences 2.Maintain Rock Berms in ditches
3	Excavation and Grading of Detention Pond	0.15	1.Maintain Rock Berm in ditches. 2. Within 24 hrs after excavation of detention pond, add 5' Rock Berm inside detention pond at outfall.
4	Excavation and Grading (Proposed Building, Partial Sedimentation/Filtration Basin, Sidewalks, Parking, Drives, Vegetative Filter Strips)	1.0	1.Add remaining Rock Berms at discharge points within 24 hrs. of swale/channel excavation. 2.Maintain Silt Fences. 3.Maintain Construction Entrance/Exit
5	Final Paving and Sidewalks. Final Stabilization.	0.59	1. Maintain all rock berms. 2. Maintain all silt fences. 3. Final stabilization of disturbed areas. 4. Removal of temporary controls upon final stabilization.

7. Attachment D – Temporary Best Management Practices and Measures

The Temporary Best Management Practices (TBMPs) that will be used for this development are rock berms, silt fences, a concrete washout area and a temporary construction entrance/exit in accordance with the Site Plan. The temporary controls (i.e. rock berm, silt fences, temporary construction entrance/exit and the concrete washout area) shall be in place prior to construction activities and will be maintained by the contractor during construction. The controls shall be removed by the contractor when vegetation is established on all exposed or disturbed areas.

a. The area upgradient of the site is the Union Pacific Railroad right of way and there is an existing swale/ditch where the water is conveyed around the site. Therefore, no upgradient flow enters the property.
b. The stormwater that originates on-site will be controlled and filtered by rock berms and silt fences on the down gradient side of the areas of disturbance. Upon completion of the proposed detention pond excavation, a temporary rock berm will be placed at the outfall location. The rock berms and silt fences will reduce the velocity of the water and allow the sediment to settle out and be trapped by the control device. After a significant rainfall event, it will be the contractor's responsibility to remove the sediment and debris that is captured.
c. The BMPs will prevent pollutants from entering surface streams, sensitive features (no sensitive features present on this site), or the aquifer by capturing the silts and sediments through the utilization of the previously mentioned control devices such as silt fences and rock berms. These devices are located such that they capture the silts and sediment prior to entering the surface streams, etc. where they would otherwise be carried downstream. The settlement of the silts and sediment is due to the reduction of the velocity of the water.
d. There were no sensitive features located on the site. However, previously described temporary measures will be maintained and incorporated where necessary to prevent contamination of stormwater runoff. In the event a sensitive feature is discovered during construction, the contractor or construction personnel shall 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. At that point an assessment will be made with the TCEQ as to how to best protect what was discovered.

9. Attachment F – Structural Practices

The structural practices that will be used for temporary erosion/sediment control for this development are a rock berms, silt fences, a temporary construction entrance/exits and a concrete washout area. The rock berms and silt fences will allow the silts and sediment to settle out prior to discharging into surface streams or sensitive features (no sensitive features present on this site).

10. Attachment G – Drainage Area Map

The drainage area map can be found at the end of this section.

12. Attachment I – Inspection and Maintenance for BMP's

A. Rock Berm Inspection and Maintenance Guidelines:

1) Inspection shall be made weekly and after each rainfall by the contractor.
2) All debris and sediment shall be removed when buildup reaches 6 inches and this accumulated debris/sediment shall be disposed in an approved site and in a manner as to not introduce additional siltation.
3) Any loose wire sheathing shall be repaired.
4) During the inspection, the berm shall be reshaped as needed.
5) The berm shall be replaced when the structure does not function as intended due to silt accumulation, construction traffic, etc.
6) The rock berm shall be left in place until all upstream disturbed areas are stabilized and the accumulated silt has been removed.

B. Silt Fence Inspection and Maintenance Guidelines:

1) Inspection shall be made weekly and after each rainfall by the contractor.
2) All sediment shall be removed when buildup reaches 6 inches.
3) Any torn fabric shall be replaced or a new line of fencing shall be installed parallel to the torn section.
4) Replace or repair areas of silt fence that have been damaged due to construction activity, vehicular access, etc. and if the silt fence is located in an area of high construction traffic, relocate to an area that will provide equal protection but will not obstruct vehicular movements.

C. Temporary Construction Entrance/Exit:

1) The entrance shall be maintained in a way that will prevent tracking of sediment onto the public right-of-way.
2) Any sediment dropped, spilled, washed or tracked on to the public right of way shall be immediately removed by the contractor.
3) When applicable, wheels shall be washed to removed sediment prior to exiting the construction site.
4) When washing is required it shall be performed in an area that is stabilized/protected to prevent sediment from entering any public right of ways, streams or sensitive areas.

D. Concrete Washout Area Inspection and Maintenance Guidelines:

1) Inspection shall be made weekly and after each rainfall by the contractor.
2) When concrete accumulates 6 inches in depth, the concrete shall be broken up, removed and disposed of properly.
3) All controls around the perimeter of the washout area shall be checked, maintained and repaired as needed.
4) Upon completion of construction, the concrete washout area shall be cleaned and all concrete shall be removed and disposed of properly. Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facility shall be backfilled and repaired.

F. Documentation and Recordkeeping:

All scheduled inspection and maintenance measures made to the temporary BMPs must be documented clearly on the Inspection Forms included for the respective BMP, showing inspection/maintenance measure performed, date and person responsible for inspection and maintenance. Any changes made to the location of type of controls shown on the accepted plans, due to onsite conditions, shall be documented on the site plan that is part of this Water Pollution Abatement Plan(WPAP). No other changes shall be made unless approved by TCEQ and the Design Engineer. Documentation shall clearly show changes made, date, person responsible for the change, and the reason for the change. All documentation and recordkeeping shall be retained onsite with the WPAP.

***Person or Firm Responsible for Erosion/Sedimentation Control Maintenance:**

Company: _____

Contact: _____

Phone: _____

Address: _____

Signature of Responsible Party: _____

(*This information shall be filled out and signed by the responsible party prior to construction)

TEMPORARY CONSTRUCTION ENTRANCE/EXIT
INSPECTION FORM

Inspection Date: _____

Signature: _____

General Notes

1) Stone Size – 4 to 8 inches crushed rock
2) Length – as effective, but not less than 50 feet.
3) Thickness – not less than 8 inches.
4) Width – not less than 12 feet.
5) Washing – when necessary, wheels shall be cleaned to remove sediment prior to access onto the public roadway. When washing is required, it shall be done so that no sediment leaves the site/development. All unfiltered sediment shall be prevented from entering any storm drain, ditch or watercourse.
6) Maintenance – the entrance shall be maintained in a condition which will prevent tracking of sediment onto the public roadways. This may require periodic addition of stones as necessary, repair and/or cleanout of any measures used to trap sediment. All sediment spilled, dropped, washed or tracked onto the public roadway must be removed immediately.
7) Drainage – the entrance must be properly graded to prevent runoff from leaving the construction site.

	Yes	No	Comment
Is sediment present on the roadway?			
Is the gravel clean and working properly (relatively free of mud/sediment)?			
Does all traffic use the stabilized entrance to leave the site?			

Maintenance Required for Temporary Construction Entrance/Exit:

_____

_____

_____

_____

To Be Performed by:_____ On or Before:_____

SILT FENCE
INSPECTION FORM

Inspection Date: _____

Signature: _____

General Notes:

1) The steel posts which support the silt fence shall be installed on a slight angle toward the anticipated runoff source. Posts must be embedded a minimum of one foot deep and spaced not more than 6 feet on center.
2) The toe of the silt fence shall be trenched in with a spade or mechanical trencher.
3) 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 and compacted.
4) Silt fence should be securely fastened to each steel support post and to woven wire, which in turn is attached to the steel fence post. There shall be a 3 foot double overlap, securely fastened where ends of fabric meet.
5) Silt fence shall be removed when the site is completely stabilized so as not to block or impede storm flow or drainage.
6) Accumulated silt shall be removed when it reaches a depth of 6 inches. The silt shall be disposed of in an approved site and in such a manner as to not contribute additional silt.

	Yes	No	Comment
Is the bottom of the fabric still buried/secured?			
Is the fabric torn, missing or sagging?			
Are the post tipped over?			
How deep is the sediment?			

Maintenance Required for Silt Fence:

_____

_____

_____

_____

To Be Performed by:_____ On or Before:_____

ROCK BERMS
INSPECTION FORM

Inspection Date: _____

Signature: _____

General Notes:

1) The woven wire sheathing shall be perpendicular to the flow line and the sheathing shall be 20 gauge woven wire mesh with 1 inch openings.
2) The berm shall have a top width of 24 inches with side slopes being 2:1 (H:V) or flatter.
3) Placement of the rock along the sheathing shall not be less than 18 inches.
4) The wire sheathing shall be wrapped around the rock and secured 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 berm shall be built along the contour at zero percent grade or as near as possible.
6) The ends of the berm shall be tied into the existing upslope grade and the berm shall be buried in a trench approximately 3 to 4 inches deep to prevent failure of the control.

	Yes	No	Comment
Is the berm a minimum of 18 inches high?			
Does the berm have a top width of 24 inches?			
Is the level of sediment/silt greater than 6 inches?			
Does the rock berm need repair?			

Maintenance Required for Rock Berms:

_____

_____

_____

_____

To Be Performed by:_____ On or Before:_____

CONCRETE WASHOUT AREA
INSPECTION FORM

Inspection Date: _____

Signature: _____

General Notes:

1) The concrete washout shall be located at least 50 feet from sensitive features, storm drains, open ditches or water bodies.
2) The containment area shall be maintained such that there is no concrete or sediment escaping the containment area and shall be lined with 10 mil plastic.
3) Concrete wash out wastes shall be allowed to set, be broken up, and then disposed of properly.

	Yes	No	Comment
Is the concrete washout located near any sensitive features, storm drains, open ditches or water bodies?			
Is the containment area secured and working properly?			
Is there a plastic lining?			
Does the washout area need to be cleaned from too much old concrete?			

Maintenance Required for Concrete Washout Area:

_____

_____

_____

_____

To Be Performed by:_____ On or Before:_____

17. Attachment J – Schedule of Interim and Permanent Soil Stabilization Practices

A. Temporary Stabilization

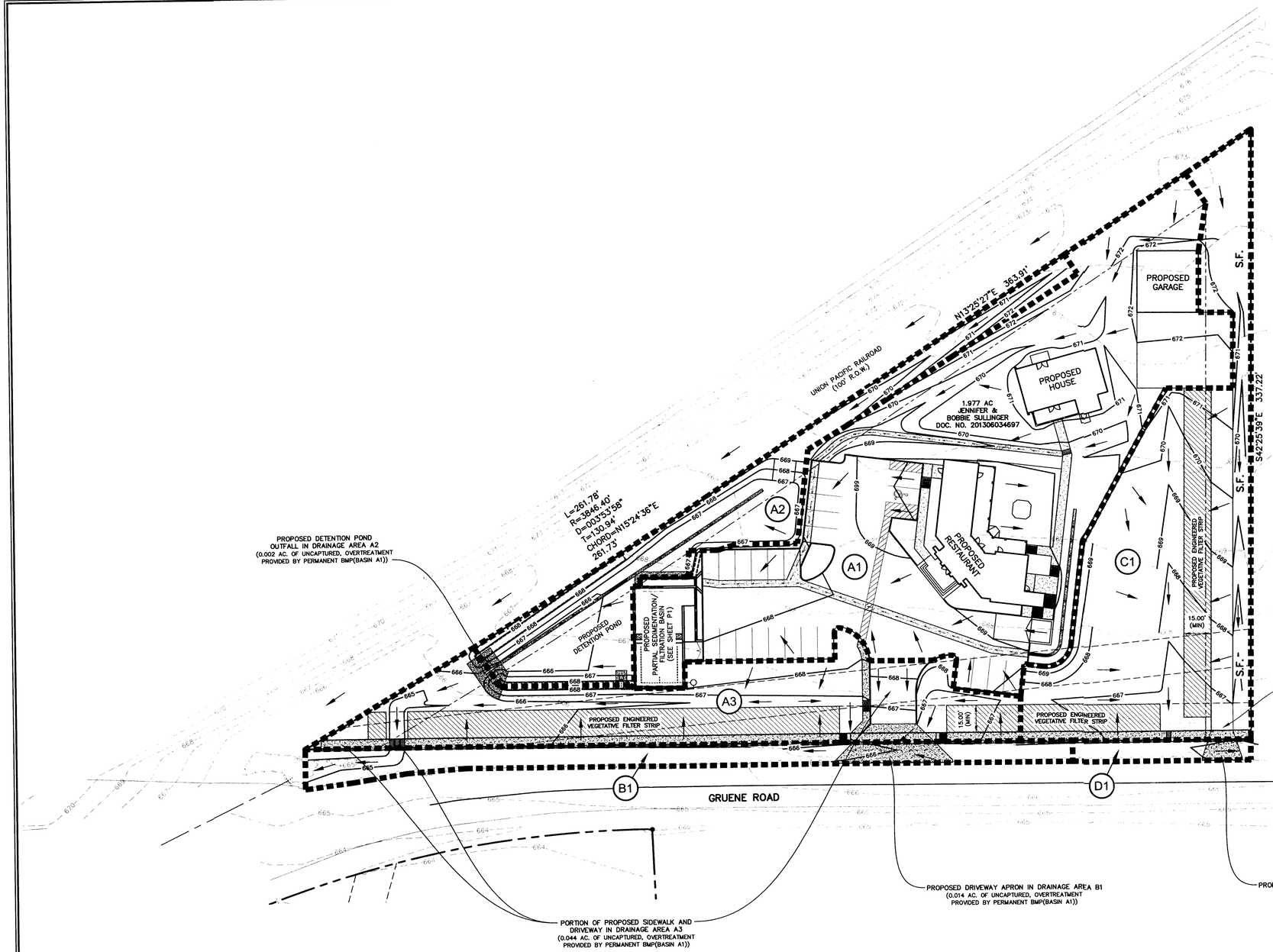
No bare ground exposed during construction will be left to stabilize naturally. Any disturbed area where construction activities have ceased, permanently or temporarily, the contractor shall initiate temporary stabilization of the area by the use of seeding and mulching within 14 days, except in areas where construction activities are scheduled to resume within 21 days. The temporary seeding will consist of Buffalograss, Green Sprangletop and Bermuda Grass with straw or cedar mulch applied on final layer in accordance with TxDOT Item 164 – Seeding for Erosion Control. Based on the growing season at the time of construction, mixture and application rates may be modified by the engineer.

B. Permanent Stabilization

All disturbed portions of the site where construction activity permanently ceases shall be stabilized with permanent seed no later than 14 days after the last construction activity. The permanent seed mix shall consist of Bermuda Grass, Green Sprangletop and Buffalo Grass with straw or cedar mulch applied on the final layer in accordance with TxDOT Item 164 – Seeding for Erosion Control. Depending on the growing season at the time of construction, the mixture and application rates may be modified. It shall be the contractor's responsibility to sufficiently water the areas to be vegetated to achieve 70% stabilization.

ATTACHMENT G

DRAINAGE AREA MAP



30 0 15 30

(IN FEET)
1 inch = 30 ft.

LEGEND

- DRAINAGE AREA BOUNDARY
- (A1) DRAINAGE AREA
- FLOW DIRECTION
- EXISTING CONTOURS
- 100 PROPOSED CONTOURS

PROPOSED DRAINAGE AREA DESIGNATION	DRAINAGE AREAS(acres)
A1	0.94
A2	0.22
A3	0.33
B1	0.12
C1	0.48
D1	0.03

DRAINAGE AREA DESIGNATION	COMPOSITE RUNOFF COEFFICIENT OF SITE
(A1+A2+A3+C1) (exist)	0.40
(A1+A2+A3+C1) (dev)	0.54

PAWELEK & MOY, INC.
CIVIL ENGINEERING & CONSULTING SERVICES
130 W. JAHN STREET
NEW BRAUNFELS, TX 78130
TEL: (830) 629-2563
FIRM No. F-9862

STATE OF TEXAS · JOHN J. MOY JR. · 87635 · LICENSED PROFESSIONAL ENGINEER

8/24/15

DRAINAGE AREA MAP
FOR
SULLINGER SUBDIVISION TRACT
NEW BRAUNFELS, TEXAS

REVISIONS

DESCRIPTION	DATE

DRAWN BY: D.G. III
CHECKED BY: J.J.M.
DATE: AUGUST 2015
JOB NO.: 1501.02

D1

Permanent Stormwater Section

Texas Commission on Environmental Quality

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

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

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

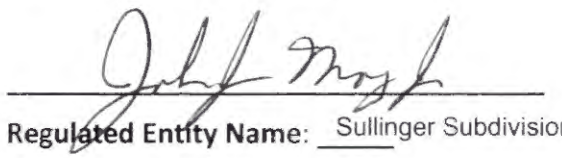
Signature

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

Print Name of Customer/Agent: John J. Moy, Jr. (Agent)

Date: 08/14/15

Signature of Customer/Agent



Regulated Entity Name: Sullinger Subdivision Tract

Permanent Best Management Practices (BMPs)

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

1. [X] Permanent BMPs and measures must be implemented to control the discharge of pollution from regulated activities after the completion of construction.

   [ ] N/A

2. [X] 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.

   [X] The TCEQ Technical Guidance Manual (TGM) was used to design permanent BMPs and measures for this site.

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

☐ N/A

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

   ☐ N/A

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

   ☐ The site will be used for low density single-family residential development and has 20% or less impervious cover.
   ☐ The site will be used for low density single-family residential development but has more than 20% impervious cover.
   ☒ The site will not be used for low density single-family residential development.

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

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

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

☐ A description of the BMPs and measures that will be used to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site is attached.

☒ No surface water, groundwater or stormwater originates upgradient from the site and flows across the site, and an explanation is attached.

☐ Permanent BMPs or measures are not required to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site, and an explanation is attached.

7. ☒ **Attachment C - BMPs for On-site Stormwater**.

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

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

8. ☒ **Attachment D - BMPs for Surface Streams**. A description of the BMPs and measures that prevent pollutants from entering surface streams, sensitive features, or the aquifer is attached. Each feature identified in the Geologic Assessment as sensitive has been addressed.

   ☐ N/A

9. ☒ The applicant understands that to the extent practicable, BMPs and measures must maintain flow to naturally occurring sensitive features identified in either the geologic assessment, executive director review, or during excavation, blasting, or construction.

   ☒ The permanent sealing of or diversion of flow from a naturally-occurring sensitive feature that accepts recharge to the Edwards Aquifer as a permanent pollution abatement measure has not been proposed.

   ☐ **Attachment E - Request to Seal Features**. A request to seal a naturally-occurring sensitive feature, that includes, for each feature, a justification as to why no reasonable and practicable alternative exists, is attached.

10. ☒ **Attachment F - Construction Plans**. All construction plans and design calculations for the proposed permanent BMP(s) and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer, and are signed, sealed, and dated. The plans are attached and, if applicable include:

    ☒ Design calculations (TSS removal calculations)
    ☒ TCEQ construction notes
    ☒ All geologic features (None Present)
    ☒ All proposed structural BMP(s) plans and specifications

    ☐ N/A

11. [X] **Attachment G - Inspection, Maintenance, Repair and Retrofit Plan**. A plan for the inspection, maintenance, repairs, and, if necessary, retrofit of the permanent BMPs and measures is attached. The plan includes all of the following:

    [X] Prepared and certified by the engineer designing the permanent BMPs and measures
    [X] Signed by the owner or responsible party
    [X] Procedures for documenting inspections, maintenance, repairs, and, if necessary retrofit
    [X] A discussion of record keeping procedures

    [ ] N/A

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

    [X] N/A

13. [X] **Attachment I -Measures for Minimizing Surface Stream Contamination**. A description of the measures that will be used to avoid or minimize surface stream contamination and changes in the way in which water enters a stream as a result of the construction and development is attached. The measures address increased stream flashing, the creation of stronger flows and in-stream velocities, and other in-stream effects caused by the regulated activity, which increase erosion that results in water quality degradation.

    [ ] N/A

Responsibility for Maintenance of Permanent BMP(s)

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

14. [X] The applicant is responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred.

    [ ] N/A

15. [X] A copy of the transfer of responsibility must be filed with the executive director at the appropriate regional office within 30 days of the transfer if the site is for use as a multiple single-family residential development, a multi-family residential development, or a non-residential development such as commercial, industrial, institutional, schools, and other sites where regulated activities occur.

    [ ] N/A

PERMANENT STORMWATER SECTION

5. Attachment A- 20% or Less Impervious Cover Waiver

Not Applicable.

6. Attachment B- BMP's for Upgradient Stormwater

The area upgradient of the site is the Union Pacific Railroad right of way and there is an existing swale/ditch where the water is conveyed around the site. Therefore, no upgradient flow enters the property.

7. Attachment C- BMP's for On-Site Stormwater

The proposed BMPs for this site consist of a proposed partial sedimentation/ filtration basin and engineered vegetative filter strips. For the majority of the site consisting of the buildings/parking areas, the proposed partial sedimentation/filtration basin will treat the first flush that will be captured in the pond (Capture Volume) which allows the larger particles to settle out. The sand filters the fines and other contaminated stormwater pollutants that are present in the runoff and a network of perforated PVC piping allows the filtered water to be released from the pond. In the event that a hazardous spill would occur, a gate valve will be located outside of the sand filter to close off flow.

For the remaining sidewalks and the residential drive, engineered vegetative filter strips are the proposed BMP's. With this BMP, the storm water will drain in a sheet flow manner, from the sidewalks and drive across 15' wide grass filter strips. With the contributing drainage area being less than 72 feet and the slope of the engineered vegetated filter strip ranging from 1% to 20% (max.), the 80% removal requirement will be achieved (per TCEQ RG-348).

8. Attachment D- BMP's for Surface Streams

The proposed BMPs for this site include a proposed partial sedimentation/ filtration basin and engineered vegetative filter strips. For the majority of the site consisting of the building/parking areas, the water quality pond system will

capture and filter the first flush of stormwater runoff which appears to contain the most pollutants and prevent these pollutants from entering the surface streams, sensitive features (no sensitive features on this site), or the aquifer. Additionally, once the water quality volume is reached in the sand filtration pond, the remaining storm water discharges into a detention pond which will also allow for additional solids/pollutants time to settle. This additional time for settlement will aid in the improvement of the overall water quality and further reduce the impact of the pollutants on surface streams, sensitive features (no sensitive features on this site), or the aquifer.

The engineered vegetative filter strips will filter the storm water runoff coming off of the sidewalks and the residential drive. With this BMP, the storm water will drain in a sheet flow manner, from the sidewalks and drive areas across 15' wide grass filter strips. With the contributing drainage area being less than 72 feet and the slope of the engineered vegetated filter strip ranging from 1% to 20% (max.), the 80% removal requirement will be achieved (per TCEQ RG-348) and will prevent pollutants from entering surface streams, sensitive features, or the aquifer.

10. Attachment F- Construction Plans

Construction Plans for the proposed Partial Sedimentation/Filtration Basin, Permanent BMP, are enclosed in this submittal. See Site Plan for the Sand Filtration Pond and Engineered Vegetative Filter Strip locations.

The design criteria/requirements for the Engineered Vegetative Filter Strips was taken from the TCEQ "Calculation Template 4-20-09" spreadsheet for Vegetative Filter Strips is shown below.

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

11. Attachment G- Inspection, Maintenance, Repair and Retrofit Plan

The Maintenance Plan and Scheduled Inspection Plans are located at the end of this section.

12. Attachment H- Pilot-Scale Field Testing Plan

Not Applicable.

The proposed BMP's for this site were designed according to the TCEQ Technical Guidance Manual.

13. Attachment I – Measures for Minimizing Surface Stream Contamination

As mentioned previously, one of the proposed BMP's for this site is a proposed partial sedimentation/filtration basin. With this BMP, the first flush is captured in the pond (Capture Volume) which allows the larger particles to settle out. The sand filters the fines and other contaminated stormwater pollutants that are present in the runoff and a network of perforated PVC piping allows the filtered water to be released from the basin. In the event that a hazardous spill would occur, a gate valve will be located outside of the sand filter to close off flow. Additionally, once the water quality volume is reached in the sedimentation/filtration pond, the remaining storm water discharges into a detention pond which also allows for additional solids/pollutants time to settle. This additional time for settlement will aid in the improvement of the overall water quality and further reduce the impact of the pollutants on surface streams, sensitive features (no sensitive features on this site), or the aquifer. Located at the outfall of the detention pond is a proposed velocity control measure which utilizes heavy rock riprap to dissipate the higher flow velocities that may be present prior to exiting the site to the natural flow conditions. The remaining portion of the site will have engineered vegetative filter strips that will drain to grass swales and then discharge to the ditch along Gruene Road. These swales are designed to have velocities less than 3 ft/s which will prevent erosion and downstream contamination.

Attachment "G"
Inspection, Maintenance, Repair and Retrofit Plan for Vegetative Filter Strip

PROJECT NAME: **Sullinger Subdivision Tract**

ADDRESS: 1720 Gruene Road

CITY, STATE, ZIP: New Braunfels, Texas 78130-3309

VEGETATIVE FILTER STRIP (per TCEQ: RG-348)

Pest Management: An Integrated Pest Management (IPM) Plan shall be implemented consisting of minimal or no use of herbicides for insect and weed control. Weeds shall be manually removed from the vegetative filter strip where possible and if an abundance of weeds/insects are present, the filter strip shall be sprayed with an environmentally/vegetative safe pesticide/herbicide.

Seasonal Mowing and Lawn Care: If the filter strip is made up of turf grass, it should be mowed as needed to limit vegetation height to 18 inches, using a mulching mower (or removal of clippings). If native grasses are used, the filter may require less frequent mowing, but at a minimum of twice annually. Grass clippings and brush debris should not be deposited on the vegetated filter strip areas. Regular mowing shall include weed control practices, with herbicide use kept to a minimum.

Inspection: The filter strip shall be inspected at a minimum of twice annually for erosion or damage to vegetation; however, additional inspection after periods of heavy runoff is most desirable. The strip shall be checked for uniformity of grass cover, debris and litter, and areas of sediment accumulation. More frequent inspections of the grass cover during the first few years after establishment will help to determine if any problems are developing, and to plan for long-term restorative maintenance needs. Bare spots and areas of erosion identified during semi-annual inspections must be replanted and restored to meet specifications. Construction of a level spreader device may be necessary to reestablish shallow overland flow.

Debris and Litter Removal: All filter strips shall be kept free of obstructions to reduce floatables being flushed downstream, and for aesthetic reasons. The need for this practice is determined through periodic inspection, but shall be performed no less than 4 times per year.

Sediment Removal: Sediment removal is not normally required, since the vegetation normally grows through it and binds it to the soil. However, sediment may accumulate along the upstream boundary of the strip preventing uniform overland flow. Excess sediment shall be removed by hand or with flat-bottomed shovels.

Grass Reseeding and mulching: A healthy dense grass shall be maintained on the filter strip. If areas are eroded, they shall be filled, compacted and reseeded so that the final grade is level. Grass damaged during the sediment removal process shall be promptly replaced using the same seed mix used during filter strip establishment. If possible, flow should be diverted from the damaged areas until the grass is firmly established. Bare spots and areas identified during semi-annual inspections must be replanted and restored to meet specifications. Corrective maintenance, such as weeding or replanting shall be done more frequently in the first two to three years after installation to ensure stabilization. Dense vegetation may require irrigation immediately after planting, during particularly dry periods and when vegetation is initially established.

"Proper" disposal of accumulated silt shall be accomplished following Texas Commission on Environmental Quality guidelines and specifications.

Documentation and Recordkeeping:

All scheduled inspection and maintenance measures made to the permanent BMPs must be documented clearly on the Maintenance and Inspection Form included with this attachment for the respective BMP, showing inspection/maintenance/repair/and retrofit (if necessary) measures performed, date and person responsible for inspection and maintenance. Documentation of the maintenance shall clearly show the maintenance procedure(s) made, date and person responsible for the maintenance procedure. No changes to the permanent BMP's shall be made unless approved by TCEQ and the Design Engineer. All documentation and recordkeeping shall be retained onsite with the WPAP.

Attachment "G"
Inspection, Maintenance, Repair and Retrofit Plan for Vegetative Filter Strip (cont.)

An amended copy of this document will be provided to the Texas Commission on Environmental Quality within thirty (30) days of any changes in the following information.

Responsible Party for Maintenance	Bobbie G. Sullinger, Jr.
Address	607 E. Morningside Drive
City, State Zip	Atlanta, GA 30324
Telephone Number	(770) 355-7843

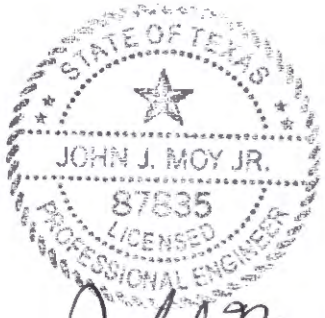
Signature of Responsible Party

06.25.2015
Date

Print Name of Responsible Party

Bobbie G. Sullinger, Sr

I have reviewed the attached Maintenance Plan and Schedule for the Vegetative Filter Strips and to the best of my knowledge certify that, if the Plan and Schedule are adhered to, the Vegetative Filter Strips will perform as designed.



John J Moy P.E.
8/14/15

VEGETATIVE FILTER STRIP

MAINTENANCE AND INSPECTION FORM

Note:

This information shall be filled out and signed by the responsible party performing the maintenance and inspection of the Permanent Best Management Practice. (Make additional copies of this form as needed)

Inspection Date: _____

Signature of Responsible Party: _____

Print Name of Responsible Party: _____

Address of Responsible Party: _____

Phone Number of Responsible Party: _____

Maintenance Performed for Permanent Best Management Practice:

_____

_____

_____

_____

_____

_____

_____

_____

Inspection Date: _____

Signature of Responsible Party: _____

Print Name of Responsible Party: _____

Address of Responsible Party: _____

Phone Number of Responsible Party: _____

Maintenance Performed for Permanent Best Management Practice:

_____

_____

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Attachment "G"
Inspection, Maintenance, Repair and Retrofit Plan for Sedimentation and Filtration Basin

PROJECT NAME: Sullinger Subdivision Tract

ADDRESS: 1720 Gruene Road

CITY, STATE, ZIP: New Braunfels, Texas 78130-3309

SEDIMENTATION BASIN

Twice a Year: The level of accumulated silt in the inlet structure and basin shall be checked. If depth of silt exceeds 6 inches or when function is impaired, it shall be removed and disposed of "properly". The inlet structure and basin shall be checked for accumulation of debris and trash. The debris and trash shall be removed.

The basin shall be inspected for structural integrity and repaired if necessary. Such items to be inspected include pipes, concrete walls, floors, baffles, gabions, etc.

Every 5 Years: Sediment shall be removed from the inlet structure and basin at intervals not to exceed 5 years, regardless of depth.

After Rainfall: The basin shall be checked after each rainfall occurrence to insure that it completely drains within 48 hours after the storm is over. If it does not drain within this time, corrective maintenance is required.

SAND FILTER

Twice a Year: The level of accumulated silt shall be checked. If depth of silt/pollutants exceeds ½", it shall be removed and disposed of "properly".

The accumulation of pollutants/oils shall be checked. If the pollutants have significantly reduced the design capacity of the sand filter and/or the drawdown time exceeds 48 hours, the upper layer of sand in the filter shall be removed and replaced.

The basin shall be checked for accumulation of debris and litter. Debris and litter accumulated in the facility must be removed during each inspection.

The basin shall be inspected for structural integrity and repaired if necessary. Such items to be inspected include pipes and cleanouts, gate valve, etc. Underdrain piping shall be flushed to remove sediment buildup.

After Rainfall: The basin shall be checked after each rainfall occurrence to insure that it drains within 48 hours. If it does not drain within this time, corrective maintenance is required.

Following any required maintenance, the surface of the sand filter shall be raked and leveled to restore the system to its design condition. Maintenance of the water quality basin may require that a section of gabion be temporarily moved to allow access for equipment. Upon completion of maintenance, the gabion shall be reset to its original position.

Vegetation around the basin will be maintained to a height of less than 18 inches.

"Proper" disposal of accumulated silt shall be accomplished following Texas Commission on Environmental Quality guidelines and specifications

Documentation and Recordkeeping:

All scheduled inspection and maintenance measures made to the permanent BMPs must be documented clearly on the Maintenance and Inspection Form included with this attachment for the respective BMP, showing inspection/maintenance/repair/and retrofit (if necessary) measures performed, date and person responsible for inspection and maintenance. Documentation of the maintenance shall clearly show the maintenance procedure(s) made, date and person responsible for the maintenance procedure. No changes to the permanent BMP's shall be made unless approved by TCEQ and the Design Engineer. All documentation and recordkeeping shall be retained onsite with the WPAP.

Attachment "G"
Inspection, Maintenance, Repair and Retrofit Plan for Sedimentation and Filtration Basin (cont.)

An amended copy of this document will be provided to the Texas Commission on Environmental Quality within thirty (30) days of any changes in the following information.

Responsible Party for Maintenance	Bobbie G. Sullinger, Jr.
Address	607 E. Morningside Drive
City, State Zip	Atlanta, GA 30324
Telephone Number	(770) 355-7843
Signature of Responsible Party	06-25-2015 (Date)
Print Name of Responsible Party	Bobbie G Sullinger, Jr

I have reviewed the attached Maintenance Plan and Schedule for the Sedimentation and Filtration Basin and to the best of my knowledge certify that, if the Plan and Schedule are adhered to, the Sedimentation and Filtration Basin will perform as designed.

STATE OF TEXAS
JOHN J. MOY JR.
87835
LICENSED
PROFESSIONAL ENGINEER

P.E.
8/14/15

SEDIMENTATION AND FILTRATION BASIN

MAINTENANCE AND INSPECTION FORM

Note:

This information shall be filled out and signed by the responsible party performing the maintenance and inspection of the Permanent Best Management Practice. (Make additional copies of this form as needed)

Inspection Date: _____

Signature of Responsible Party: _____

Print Name of Responsible Party: _____

Address of Responsible Party: _____

Phone Number of Responsible Party: _____

Maintenance Performed for Permanent Best Management Practice:

_____
_____
_____
_____
_____
_____
_____
_____

Inspection Date: _____

Signature of Responsible Party: _____

Print Name of Responsible Party: _____

Address of Responsible Party: _____

Phone Number of Responsible Party: _____

Maintenance Performed for Permanent Best Management Practice:

_____
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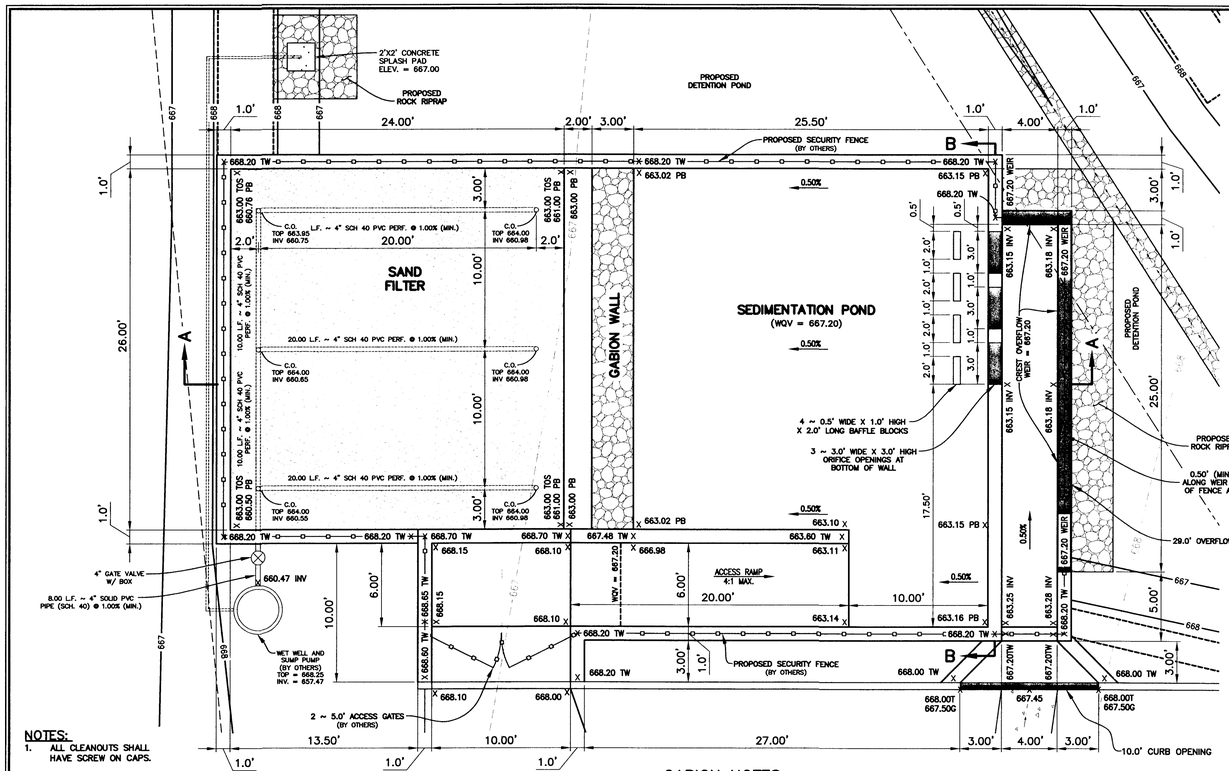
CONSTRUCTION PLANS

FOR

PERMANENT BMP'S



LEGEND

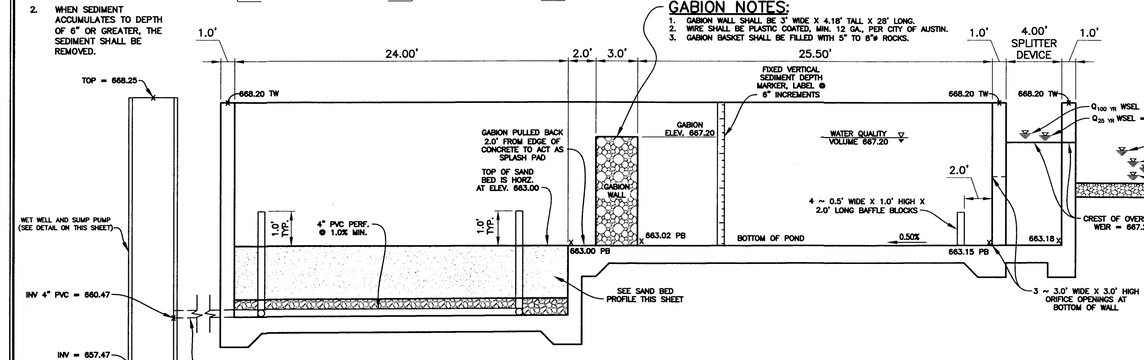
PB	POND BOTTOM
TOC	TOP OF CONCRETE
BW	BOTTOM OF WALL
TW	TOP OF WALL
C.O.	CLEAN OUT
INV.	INVERT
TOS	TOP OF SAND

(IN FEET)
1 inch = 5 ft.

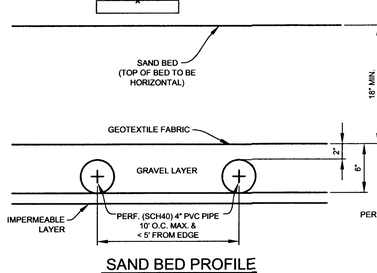
NOTE:
1. DETAILS SHOWN ON THIS SHEET ARE SCHEMATIC ONLY AND REPRESENT THE CALCULATED SEDIMENTATION POND AND SAND FILTRATION BASIN REQUIRED FOR THIS WATER QUALITY POLLUTION ABATEMENT PLAN SUBMITTAL.
2. BASIN PLAN DEPICTS MINIMUM INTERIOR DIMENSIONS (LENGTH, WIDTH, AND HEIGHT) FOR TCEQ REVIEW AND APPROVAL. ACTUAL STRUCTURAL PLANS FOR CONSTRUCTION TO BE PREPARED BY STRUCTURAL ENGINEER PER THE CONTRACTOR OR OWNER.

NOTES:
1. ALL CLEANOUTS SHALL HAVE SCREW ON CAPS.
2. WHEN SEDIMENT ACCUMULATES TO DEPTH OF 6" OR GREATER, THE SEDIMENT SHALL BE REMOVED.

GABION NOTES:
1. GABION WALL SHALL BE 3' WIDE X 4.18' TALL X 28' LONG.
2. WIRE SHALL BE PLASTIC COATED, MIN. 12 GA., PER CITY OF AUSTIN.
3. GABION BASKET SHALL BE FILLED WITH 5" TO 8"ø ROCKS.



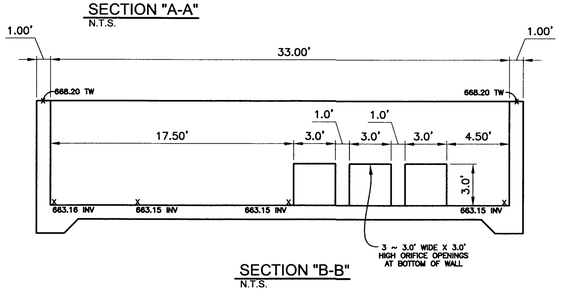
SECTION "A-A"
N.T.S.



SAND BED PROFILE
(WITH GRAVEL FILTER)

SAND BED WITH GRAVEL LAYER NOTES:
THE TOP LAYER IS TO BE A MINIMUM OF EIGHTEEN (18) INCHES OF 0.02-0.04 INCH DIAMETER SAND WHICH CORRESPONDS WITH ASTM C-33 CONCRETE SAND (SMALLER SAND SIZE IS NOT ACCEPTABLE). UNDER THE SAND SHALL BE A LAYER OF ONE-HALF (0.5) TO ONE AND ONE-HALF (1.5) INCH DIAMETER WASHED, ROUNDED, RIVER GRAVEL WHICH PROVIDES A MINIMUM OF TWO (2) INCHES OF COVER OVER THE TOP OF THE UNDERDRAIN LATERAL PIPES, THE SAND AND GRAVEL MUST BE SEPARATED BY A LAYER OF GEOTEXTILE FABRIC MEETING THE SPECIFICATIONS LISTED IN TABLE 3-7 "GEOTEXTILE FABRIC SPECIFICATIONS" SHOWN ON THIS SHEET. THE GEOTEXTILE FABRIC SHALL MEET THE SPECIFICATIONS LISTED IN TABLE 3-7 TAKEN FROM TCEQ TECHNICAL GUIDANCE MANUAL RG-348, JULY 2005 (TABLE SHOWN WAS PROVIDED BY TCEQ AND INCLUDED THE CORRECTIONS TO THIS TABLE FROM THE ERRATA SHEET).

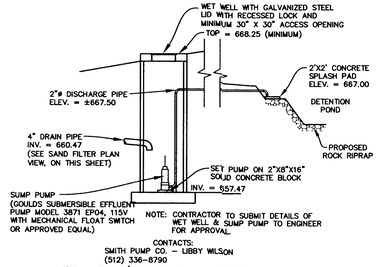
PERFORATION LAYOUT (@ 6" O.C.)
120°
SET PERFORATIONS DOWN (3/8"Ø)



SECTION "B-B"
N.T.S.

TABLE 3-7 GEOTEXTILE FABRIC SPECIFICATIONS

PROPERTY	TEST METHOD	UNIT	SPECIFICATION (min)
Unit Weight	ASTM D-5261	oz/yd²	8
Filtration Rate	ASTM D-4491	cm/sec	0.20
Puncture Strength	ASTM D-4833	lb	125
Mullen Burst Strength	ASTM D-3786	psi	400
Tensile Strength	ASTM D-4632	lb	200
Equiv. Opening Size	US Standard Sieve	No.	80



NOTE: CONTRACTOR TO SUBMIT DETAILS OF WET WELL & SUMP PUMP TO ENGINEER FOR APPROVAL.

CONTACTS:
SMITH PUMP CO. – UBBY WILSON
(512) 336–8790

WET WELL/SUMP PUMP DETAIL
N.T.S.

NOTES:
1. AN ALARM SYSTEM SHOULD BE PROVIDED CONSISTING OF A RED LIGHT LOCATED AT A HEIGHT OF AT LEAST 5 FEET ABOVE THE GROUND LEVEL AT THE WET WELL.
2. THE ALARM SHOULD ACTIVATE WHEN: (1) THE HIGH WATER LEVEL HAS BEEN MAINTAINED IN EXCESS OF 72 HOURS, (2) THE WATER LEVEL IS BELOW THE SHUTOFF POINT AND THE PUMP HAS NOT TURNED OFF, OR (3) THE HIGH/LOW-PRESSURE PUMP SHUT OFF SWITCH HAS BEEN ACTIVATED.
3. THE ALARM SHOULD BE VANDAL AND WEATHER RESISTANT.
4. A SIGN SHOULD BE PLACED AT THE WET WELL CLEARLY DISPLAYING THE NAME AND PHONE NUMBER OF A RESPONSIBLE PARTY THAT MAY BE CONTACTED IF THE ALARM IS ACTIVATED.
5. THE WET WELL SHOULD BE CONSTRUCTED OF PRECAST OR CAST IN PLACE CONCRETE.
6. COMPLETE ACCESS TO THE PUMP AND OTHER INTERNAL COMPONENTS OF THE WET WELL FOR MAINTENANCE SHOULD BE PROVIDED THROUGH A LOCKABLE COVER.

PARTIAL SEDIMENTATION/FILTRATION BASIN SIZING

VOLUME IN SEDIMENTATION BASIN (Vsed)
MAIN BASIN
(Area 1) LENGTH = 30.5'
WIDTH = 26'
DEPTH = Varies: 667.20 - 663.15 = 4.05'
667.20 -663.00 = 4.20'
Average Depth = 4.12'

(Area 2) LENGTH = 10'
WIDTH = 7'
DEPTH = Varies: 667.20 - 663.16 = 4.04'

ACCESS RAMP
LENGTH = 16.24' (to WQ elev.)
WIDTH = 6'
DEPTH = Varies: 667.20 -667.20 = 0'
667.20 -663.14 = 4.06'
Average Depth = 2.03'

Vsed = Vmain basin + Vaccess ramp

Vsed = (30.5'x26'x4.12') + (10'x7'x4.04') + (16.24'x6'x2.03')

Vsed = 3,748 cf

VOLUME IN SAND FILTER BASIN (Vsf)
SAND FILTER
LENGTH = 24'
WIDTH = 26'
DEPTH = 667.20 - 663.00 = 4.20'

Vsf = (24' x 26' x 4.20')
Vsf = 2,621 cf

Asf = 624 sf
624 sf > 605 sf
Note: 624 sf Includes 20% Increase

THEREFORE, WATER QUALITY VOLUME (WQV) PROVIDED = Vsed + Vsf
WQV = 6,369 cf (design) > 6,043cf (required) O.K.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Sullinger Subdivision
Date Prepared: 8/7/2015

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
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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 =	1.977	acres
Predevelopment impervious area within the limits of the plan =	0.000	acres
Total post-development impervious area within the limits of the plan =	0.710	acres
Total post-development impervious cover fraction =	0.36	
P =	33	inches
$L_{M\ total,\ Project}$ =	637	lbs.

This values entered on these fields should be for the total project area

Number of drainage basins / outfalls areas leaving the plan area = 6

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

Drainage Basin/Outfall Area No. = 1 Basin A1

Total drainage basin/outfall area =	0.940	acres
Predevelopment impervious area within drainage basin/outfall area =	0.000	acres
Post-development impervious area within drainage basin/outfall area =	0.541	acres
Post-development impervious fraction within drainage basin/outfall area =	0.58	
$L_{M\ TSS,\ BASIN}$ =	486	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.

Page 3-33 Equation 3.7 $L_R = (\text{BMP efficiency}) \times (A_N \times 34.6 + A_P \times 0.54)$

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 =	0.940	acres
A_I =	0.541	acres
A_P =	0.40	acres
L_R =	566	lbs.

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

Desired $L_{M\ TSS,\ BASIN}$ =	563	lbs.
F =	0.99	

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 =	3.66	inches
Post Development Runoff Coefficient =	0.40	
On-site Water Quality Volume =	5036	cubic feet

Calculations from RG-348 Pages 3-34 to 3-36

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 =	1007	
Total Capture Volume (required water quality volume(s) x 1.20) =	6043	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

9. Filter area for Sand Filters Designed as Required - Table 3-10 Pages 3-58 to 3-63

NOT USED **9A. Full Sedimentation and Filtration System**

Water Quality Volume for sedimentation basin =	6043	cubic feet
Minimum filter basin area =	280	Square feet
Maximum sedimentation basin area =	2518	Square feet For minimum water depth of 2 feet
Minimum sedimentation basin area =	630	Square feet For maximum water depth of 8 feet

USED **9B. Partial Sedimentation and Filtration System**

Water Quality Volume for combined basins =	6043	cubic feet 6,369 cf (PROVIDED)
Minimum filter basin area =	604	Square feet X 1.20 = 605 sf (624 sf PROVIDED)
Maximum sedimentation basin area =	2014	Square feet For minimum water depth of 2 feet
Minimum sedimentation basin area =	126	Square feet For maximum water depth of 8 feet

SULLINGER SUBDIVISION - PERMANENT BEST MANAGEMENT PRACTICE SUMMARY
1.977 ACRE SITE
0.710 ACRES OF IMPERVIOUS COVER

Basin A-1 Summary - Partial Sedimentation and Filtration Basin

Watershed Area	Permanent BMP	Drainage Area (Acres)	Imp. Cover (Acres)	Calc. Min. Capture Volume (cf)	Capture Volume Provided (cf)	Calc. Min. Filter Area (sf)	Filter Area Provided (sf)	Target TSS Removal (lb/yr)	TSS Removal Provided (lb/yr)
A1	Basin A1	0.940	0.541	6,043	6,369	605	624	486	553
Uncaptured Area 'A2' (Detention Pond Outfall)	Overtreatment in Basin A1	0.223	0.002	-----	-----	-----	-----	2	-----
Uncaptured Area 'A3' (Portion of Drainage Area)(Driveway and Sidewalk)	Overtreatment in Basin A1	0.301	0.044	-----	-----	-----	-----	39	-----
*Uncaptured Area 'B1' (Offsite Driveway Apron)	Overtreatment in Basin A1	0.124	0.014	-----	-----	-----	-----	12	-----
Uncaptured Area 'C1' (Portion of Drainage Area)(Driveway and Sidewalk)	Overtreatment in Basin A1	0.420	0.011	-----	-----	-----	-----	10	-----
*Uncaptured Area 'D1' (Off-site Driveway apron)	Overtreatment in Basin A1	0.026	0.005	-----	-----	-----	-----	4	-----
Sub-Total - Basin A1	-----	*2.034	0.617	-----	-----	-----	-----	553	553

Engineered Vegetative Filter Strips

Watershed Area	Permanent BMP	Drainage Area (Acres)	Imp. Cover (Acres)	Calc. Min. Capture Volume (cf)	Capture Volume Provided (cf)	Calc. Min. Filter Area (sf)	Filter Area Provided (sf)	Target TSS Removal (lb/yr)	TSS Removal Provided (lb/yr)
A3(Portion of Drainage Area)	Vegetative Filter Strips	0.034	0.034	-----	-----	-----	-----	31	31
C1(Portion of Drainage Area)	Vegetative Filter Strips	0.059	0.059	-----	-----	-----	-----	53	53
Sub-Total - Vegetative Filter Strips	-----	0.093	0.093	-----	-----	-----	-----	84	84
Total	-----	*2.127	0.710	-----	-----	-----	-----	637	637

Notes:
*1. Area includes Off-site Areas B1 and D1 consisting of the proposed driveway/sidewalks (Uncaptured) but being treated by Overtreatment provided with the Water Quality Basin A1.

PAWELEK & MOY, INC.
CIVIL ENGINEERING & CONSULTING SERVICES
130 W. JAHN STREET
NEW BRAUNFELS, TX 78130
TEL: (830) 629-2563
FIRM No. F-9862

PERMANENT POLLUTION ABATEMENT PLAN FOR
SULLINGER SUBDIVISION TRACT
NEW BRAUNFELS, TEXAS

ORIGINAL SIGNATURE AND SEAL

REVISIONS

DESCRIPTION	DATE

DRAWN BY: D.G. III
CHECKED BY: J.J.M.
DATE: AUGUST 2014
JOB NO.: 1501.02
P1

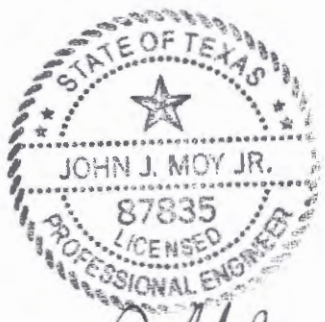
TSS REMOVAL CALCULATIONS

PREPARED BY

PAWELEK & MOY, INC.

FOR

SULLINGER SUBDIVISION TRACT



John J Moy Jr. P.E.
8/14/15

SULLINGER SUBDIVISION - PERMANENT BEST MANAGEMENT PRACTICE SUMMARY
1.977 ACRE SITE
0.710 ACRES OF IMPERVIOUS COVER

Basin A-1 Summary - Partial Sedimentation and Filtration Basin

Watershed Area	Permanent BMP Partial Sedimentation and Filtration Basin	Drainage Area (Acres)	Imp. Cover (Acres)	Calc. Min. Capture Volume (cf)	Capture Volume Provided (cf)	Calc. Min. Filter Area (sf)	Filter Area Provided (sf)	Target TSS Removal (lb/yr)	TSS Removal Provided (lb/yr)
A1	Basin A1	0.940	0.541	6,043	6,369	605	624	486	553
Uncaptured Area 'A2' (Detention Pond Outfall)	Overtreatment in Basin A1	0.223	0.002	-----	-----	-----	-----	2	-----
Uncaptured Area 'A3' (Portion of Drainage Area)(Driveway and Sidewalk)	Overtreatment in Basin A1	0.301	0.044	-----	-----	-----	-----	39	-----
*Uncaptured Area 'B1' (Offsite Driveway Apron)	Overtreatment in Basin A1	0.124	0.014	-----	-----	-----	-----	12	-----
Uncaptured Area 'C1' (Portion of Drainage Area)(Driveway and Sidewalk)	Overtreatment in Basin A1	0.420	0.011	-----	-----	-----	-----	10	-----
*Uncaptured Area 'D1' (Off-site Driveway apron)	Overtreatment in Basin A1	0.026	0.005	-----	-----	-----	-----	4	-----
Sub-Total - Basin A1	-----	*2.034	0.617	-----	-----	-----	-----	553	553

Engineered Vegetative Filter Strips

Watershed Area	Permanent BMP	Drainage Area (Acres)	Imp. Cover (Acres)	Calc. Min. Capture Volume (cf)	Capture Volume Provided (cf)	Calc. Min. Filter Area (sf)	Filter Area Provided (sf)	Target TSS Removal (lb/yr)	TSS Removal Provided (lb/yr)
A3(Portion of Drainage Area)	Vegetative Filter Strips	0.034	0.034	-----	-----	-----	-----	31	31
C1(Portion of Drainage Area)	Vegetative Filter Strips	0.059	0.059	-----	-----	-----	-----	53	53
Sub-Total - Vegetative Filter Strips	-----	0.093	0.093	-----	-----	-----	-----	84	84
Total	-----	***2.127**	**0.710**	-----	-----	-----	-----	**637**	**637**

Notes:

*1. Area includes Off-site Areas B1 and D1 consisting of the proposed driveway/sidewalks (Uncaptured) but being treated by Overtreatment provided with the Water Quality Basin A1.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Sullinger Subdivision
Date Prepared: 8/14/2015

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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 * =	**1.977**	acres
Predevelopment impervious area within the limits of the plan * =	**0.000**	acres
Total post-development impervious area within the limits of the plan* =	**0.710**	acres
Total post-development impervious cover fraction * =	**0.36**	
P =	**33**	inches

$L_{M\ TOTAL\ PROJECT}$ = **637** lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **6**

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Sullinger Subdivision
Date Prepared: 8/14/2015

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where:

$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased loa
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 * =	**1.977**	acres
Predevelopment impervious area within the limits of the plan * =	**0.000**	acres
Total post-development impervious area within the limits of the plan* =	**0.710**	acres
Total post-development impervious cover fraction * =	**0.36**	
P =	**33**	inches

$L_{M\ TOTAL\ PROJECT}$ = **637** lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **6**

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

Drainage Basin/Outfall Area No. =	**1**		Basin A1
Total drainage basin/outfall area =	**0.940**	acres	
Predevelopment impervious area within drainage basin/outfall area =	**0.000**	acres	
Post-development impervious area within drainage basin/outfall area =	**0.541**	acres	
Post-development impervious fraction within drainage basin/outfall area =	**0.58**		
$L_{M\ THIS\ BASIN}$ =	**486**	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 =	**0.940**	acres
A_I =	**0.541**	acres
A_P =	**0.40**	acres
L_R =	**556**	lbs

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

Desired $L_{M\ THIS\ BASIN}$ =	**553**	lbs.
F =	**0.99**	

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 =	**3.66**	inches
Post Development Runoff Coefficient =	**0.40**	
On-site Water Quality Volume =	**5036**	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 =	**1007**	
Total Capture Volume (required water quality volume(s) x 1.20) =	**6043**	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.

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

NOT USED

9A. Full Sedimentation and Filtration System

Water Quality Volume for sedimentation basin =	**6043**	cubic feet	
Minimum filter basin area =	**280**	square feet	
Maximum sedimentation basin area =	**2518**	square feet	**For minimum water depth of 2 feet**
Minimum sedimentation basin area =	**630**	square feet	**For maximum water depth of 8 feet**

USED

9B. Partial Sedimentation and Filtration System

Water Quality Volume for combined basins =	**6043**	cubic feet	**6,369 cf (PROVIDED)**
Minimum filter basin area =	**504**	square feet	**X 1.20 = 605 sf (624 sf PROVIDED)**
Maximum sedimentation basin area =	**2014**	square feet	**For minimum water depth of 2 feet**
Minimum sedimentation basin area =	**126**	square feet	**For maximum water depth of 8 feet**

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Sullinger Subdivision
Date Prepared: 8/14/2015

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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 * =	**0.223**	acres
Predevelopment impervious area within the limits of the plan * =	**0.000**	acres
Total post-development impervious area within the limits of the plan* =	**0.002**	acres
Total post-development impervious cover fraction * =	**0.675**	
P =	**33**	inches
$L_{M\ TOTAL\ PROJECT}$ =	**2**	lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **6**

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

Drainage Basin/Outfall Area No. =	2	A2 (UNCAPTURED)
Total drainage basin/outfall area =	**0.223**	acres
Predevelopment impervious area within drainage basin/outfall area =	**0.000**	acres
Post-development impervious area within drainage basin/outfall area =	**0.002**	acres
Post-development impervious fraction within drainage basin/outfall area =	**0.009**	
$L_{M\ THIS\ BASIN}$ =	**2**	lbs.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Sullinger Subdivision
Date Prepared: 8/14/2015

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where:

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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 * =	**0.301**	acres
Predevelopment impervious area within the limits of the plan * =	**0.000**	acres
Total post-development impervious area within the limits of the plan* =	**0.044**	acres
Total post-development impervious cover fraction * =	**0.675**	
P =	**33**	inches
$L_{M\ TOTAL\ PROJECT}$ =	**39**	lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **6**

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

Drainage Basin/Outfall Area No. = **3** A3 (UNCAPTURED)(PORTION)

Total drainage basin/outfall area =	**0.301**	acres
Predevelopment impervious area within drainage basin/outfall area =	**0.000**	acres
Post-development impervious area within drainage basin/outfall area =	**0.044**	acres
Post-development impervious fraction within drainage basin/outfall area =	**0.146**	
$L_{M\ THIS\ BASIN}$ =	**39**	lbs.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Sullinger Subdivision
Date Prepared: 8/14/2015

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
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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 * =	**0.124**	acres
Predevelopment impervious area within the limits of the plan* =	**0.000**	acres
Total post-development impervious area within the limits of the plan* =	**0.014**	acres
Total post-development impervious cover fraction * =	**0.675**	
P =	**33**	inches
$L_{M\ TOTAL\ PROJECT}$ =	**12**	lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **6**

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

Drainage Basin/Outfall Area No. = **4** B1 (UNCAPTURED)

Total drainage basin/outfall area =	**0.124**	acres
Predevelopment impervious area within drainage basin/outfall area=	**0.000**	acres
Post-development impervious area within drainage basin/outfall area=	**0.014**	acres
Post-development impervious fraction within drainage basin/outfall area=	**0.112**	
$L_{M\ THIS\ BASIN}$ =	**12**	lbs.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Sullinger Subdivision
Date Prepared: 8/14/2015

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 * =	**0.420**	acres
Predevelopment impervious area within the limits of the plan * =	**0.000**	acres
Total post-development impervious area within the limits of the plan* =	**0.011**	acres
Total post-development impervious cover fraction * =	**0.675**	
P =	**33**	inches
$L_{M\ TOTAL\ PROJECT}$ =	**10**	lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **6**

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

Drainage Basin/Outfall Area No. = **5** C1 (UNCAPTURED)(PORTION)

Total drainage basin/outfall area =	**0.420**	acres
Predevelopment impervious area within drainage basin/outfall area =	**0.000**	acres
Post-development impervious area within drainage basin/outfall area =	**0.011**	acres
Post-development impervious fraction within drainage basin/outfall area =	**0.026**	
$L_{M\ THIS\ BASIN}$ =	**10**	lbs.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Sullinger Subdivision
Date Prepared: 8/14/2015

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.
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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 * =	**0.026**	acres
Predevelopment impervious area within the limits of the plan * =	**0.000**	acres
Total post-development impervious area within the limits of the plan* =	**0.005**	acres
Total post-development impervious cover fraction * =	**0.675**	
P =	**33**	inches
$L_{M\ TOTAL\ PROJECT}$ =	**4**	lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **6**

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

Drainage Basin/Outfall Area No. =	**6**	D1 (UNCAPTURED)
Total drainage basin/outfall area =	**0.026**	acres
Predevelopment impervious area within drainage basin/outfall area =	**0.000**	acres
Post-development impervious area within drainage basin/outfall area =	**0.005**	acres
Post-development impervious fraction within drainage basin/outfall area =	**0.192**	
$L_{M\ THIS\ BASIN}$ =	**4**	lbs.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Sullinger Subdivision
Date Prepared: 8/14/2015

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 * =	**0.034**	acres
Predevelopment impervious area within the limits of the plan* =	**0.000**	acres
Total post-development impervious area within the limits of the plan* =	**0.034**	acres
Total post-development impervious cover fraction * =	**0.675**	
P =	**33**	inches
$L_{M\ TOTAL\ PROJECT}$ =	**31**	lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **6**

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

Drainage Basin/Outfall Area No. = **3** A3 - VFS (PORTION)

Total drainage basin/outfall area =	**0.034**	acres
Predevelopment impervious area within drainage basin/outfall area=	**0.000**	acres
Post-development impervious area within drainage basin/outfall area=	**0.034**	acres
Post-development impervious fraction within drainage basin/outfall area=	**1.000**	
$L_{M\ THIS\ BASIN}$ =	**31**	lbs.

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

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

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

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Sullinger Subdivision
Date Prepared: 8/14/2015

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 * =	**0.059**	acres
Predevelopment impervious area within the limits of the plan* =	**0.000**	acres
Total post-development impervious area within the limits of the plan* =	**0.059**	acres
Total post-development impervious cover fraction * =	**0.675**	
P =	**33**	inches
$L_{M\ TOTAL\ PROJECT}$ =	**53**	lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **6**

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

Drainage Basin/Outfall Area No. = **5** C1 - VFS (PORTION)

Total drainage basin/outfall area =	**0.059**	acres
Predevelopment impervious area within drainage basin/outfall area=	**0.000**	acres
Post-development impervious area within drainage basin/outfall area=	**0.059**	acres
Post-development impervious fraction within drainage basin/outfall area=	**1.000**	
$L_{M\ THIS\ BASIN}$ =	**53**	lbs.

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

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

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

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

I Bobbie G. Sullinger, Jr.,
Print Name

Property Owner,
Title - Owner/President/Other

of n/a,
Corporation/Partnership/Entity Name

have authorized John J. Moy, Jr.
Print Name of Agent/Engineer

of Pawelek & Moy, 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

03.05.15
Date

THE STATE OF GEORGIA §

County of FULTON §

Bobbie G. Sullinger, Jr.

BEFORE ME, the undersigned authority, on this day personally appeared _____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 March, 2015.

NOTARY PUBLIC

Christian Alva
Typed or Printed Name of Notary

Christian Alva
NOTARY PUBLIC
Fulton County, GEORGIA
My Commission Expires August 13, 2017

MY COMMISSION EXPIRES: _____

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

I Jennifer A. Sullinger,
Print Name

Property Owner,
Title - Owner/President/Other

of n/a,
Corporation/Partnership/Entity Name

have authorized John J. Moy, Jr.
Print Name of Agent/Engineer

of Pawelek & Moy, 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

March 4 2015
Date

THE STATE OF Georgia §

County of Fulton §

Jennifer A. Sullinger

BEFORE ME, the undersigned authority, on this day personally appeared _____ 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 4 day of MARCH, 2015.

NOTARY PUBLIC

(OFFICIAL SEAL)
NOTARY PUBLIC GEORGIA
GENE COX
COUNTY OF FULTON
My Commission Expires Feb. 19, 2018

GENE COX
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 2/19/18

Application Fee Form

Texas Commission on Environmental Quality

Name of Proposed Regulated Entity: Sullinger Subdivision Tract
Regulated Entity Location: 1720 Gruene Rd, New Braunfels, Texas 78130
Name of Customer: Jennifer & Bobbie Sullinger, Jr.
Contact Person: Bobbie Sullinger Phone: (770) 355-7843
Customer Reference Number (if issued):CN 604799080-Bobbie Sullinger, 604799130 - Jennifer Sullinger
Regulated Entity Reference Number (if issued):RN 108288788

Austin Regional Office (3373)

☐ Hays ☐ Travis ☐ Williamson

San Antonio Regional Office (3362)

☐ Bexar ☐ Medina ☐ Uvalde
☒ Comal ☐ Kinney

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

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

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

Site Location (Check All That Apply):

☒ Recharge Zone ☐ Contributing Zone ☐ Transition Zone

Type of Plan	*Size*	*Fee Due*
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	1.977 Acres	$ 4,000.00
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: 8/14/15

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*
Extension of Time Request	$150

BOBBIE G SULLINGER
JENNIFER A SULLINGER
607 E MORNINGSIDE DRIVE
ATLANTA, GA 30324

1135
88-8777/3119 03

March 2, 2015
Date

Pay to the order of Texas Commission on Environmental Quality $ 4000 00/100

Four thousand & 00/100 Dollars

Security Features Details on Back.

ViewPoint Bank
P.O. Box 869105 • Plano, TX 75086-9105

For TCEQ WPAP

B S M

MP

⑈311987773⑈ 010209000⑈1135

Harland Clarke

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 604799080 Bobbie G. Sullinger 604799130 Jennifer A. Sullinger		RN 108288788

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:*
Sullinger, Jennifer A. & Bobbie G., Jr.	

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:	607 E. Morningside Dr. NE						
	City	Atlanta	State	GA	ZIP	30324	ZIP + 4	5218

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

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(770) 355-7843	-	( ) - N/A

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.)*

Sullinger Subdivision Tract

23. Street Address of the Regulated Entity: *(No PO Boxes)*	1720 Gruene Rd.							
	City	New Braunfels	State	Texas	ZIP	78130	ZIP + 4	3309
24. County	Comal							

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:	At the intersection of Gruene Rd. and Rock Street.

26. Nearest City	State	Nearest ZIP Code
New Braunfels	Texas	78130

27. Latitude (N) In Decimal:	29.73243		28. Longitude (W) In Decimal:	98.11535	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
29	43	57	98	06	55

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)
	5812	722110	

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

Commercial Development - Restaurant with single family residence on the property.

34. Mailing Address:	607 E. Morningside Dr. NE							
	City	Atlanta	State	GA	ZIP	30324	ZIP + 4	5218
35. E-Mail Address:	bob_sullinger@yahoo.com							

36. Telephone Number	37. Extension or Code	38. Fax Number *(if applicable)*
(770)355-7843	-	( ) - N/A

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
		WPAP		
☐ 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:	John J. Moy, Jr	41. Title:	Civil Engineer

42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(830) 629 -2563	-	(830) 629 -2564	johnmoy711@sbcglobal.net

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:	Pawelek & Moy, Inc.	Job Title:	Project Engineer
Name *(In Print)*:	John J. Moy, Jr.	Phone:	(830)629-2563
Signature:	John J Moy	Date:	8/14/15