

Kathleen Hartnett White, *Chairman*
R. B. "Ralph" Marquez, *Commissioner*
Larry R. Soward, *Commissioner*
Glenn Shankle, *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

July 18, 2006

Mr. Ernesto E. Jergins
Hunter's Creek Business Park, Inc.
651 N. Business IH 35, Suite 240
New Braunfels, TX 78130

Re: Edwards Aquifer, Comal County

NAME OF PROJECT: Hunter's Creek Business Park; Located at the southwest corner of the intersection of SH 46 and Oak Run Parkway; New Braunfels, Texas

TYPE OF PLAN: Request for Approval of a Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer
Edwards Aquifer Protection Program ID No. 1964.02

Regulated Entity ID: RN104590567

Investigation Number: 462637

Dear Mr. Jergins:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the WPAP application for the referenced project submitted to the San Antonio Regional Office by S. Craig Hollmig, Inc. on behalf of Hunters Creek Business Park, Inc. on April 5, 2006. Final review of the WPAP submittal was completed after additional material was received on July 7, 2006. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) 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 22.38 acres. This portion of the project will include the construction of a 1.5 acre site access road within a 1.97 acre right-of-way, a sedimentation/filtration basin that will provide treatment for stormwater run-off from the access road, utilities, and various related drainage structures. The 22.38 acre subdivision is proposed to have 14 commercial lots. These lots will be addressed by separate water pollution abatement plans. No permanent BMPs have been provided for any of the 14 lots as part of this WPAP. Project wastewater will be disposed of by conveyance to the existing Gruene Wastewater Treatment Plant owned by the New Braunfels Utilities.

REPLY TO: REGION 13 • 14250 JUDSON RD. • SAN ANTONIO, TEXAS 78233-4480 • 210/490-3096 • FAX 210/545-4329

P.O. Box 13087 • Austin, Texas 78711-3087 • 512/239-1000 • Internet address: www.tceq.state.tx.us

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PERMANENT POLLUTION ABATEMENT MEASURES

To prevent pollution of stormwater runoff originating on-site from the 1.50 acres of paved road and potentially flowing across and off the site after construction, one partial sedimentation filtration basin designed using the TCEQ technical guidance document, *Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices* (July 2005) will be constructed. The pollution abatement measure are sized based on the information in the following table. The approved measures have been presented to meet the required 80 percent removal of the increased load in total suspended solids caused by the project.

Water-shed	Total Area (acres)	Imp. Cover (acres)	Calc. Min. Capture Volume (ft ³)	Design Capture Volume (ft ³)	Calc. Min. Filter Area (ft ²)	Design Filter Area (ft ²)	Target TSS Removal (lb/yr)	Design Estimated TSS Removal (lb/yr)
A	7.2	1.5	7,764	8,928	738	1,225	1346	1615

GEOLOGY

According to the geologic assessment included with the application, sixteen features assessed as "not sensitive" were identified on the site by the geologist. The San Antonio Regional Office did not conduct a site assessment investigation.

SPECIAL CONDITIONS

- I. All sediment and or media removed from the partial sedimentation/filtration basins during maintenance activities shall be properly disposed of according to 30 TAC 330 or 30 TAC 335, as applicable.
- II. Intentional discharges of sediment laden stormwater are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetative filter strips, sediment traps, rock berms, silt fence rings, etc.
- III. Permanent pollution abatement measures shall be operational prior to public use of the road.
- IV. For any future modifications to any of the permanent BMPs on this site, the summary tables in this letter must be updated and included in the application. It is the responsibility of the applicant to maintain this information and keep it current.
- V. 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.
- VI. Inspections of and maintenance actions for the partial sedimentation/filtration basin shall be documented and retained for a period of 5 years from the date of the inspection or maintenance. The records will be maintained in a location that will allow them to be provided to the TCEQ at their request. The following items must be included in the documentation:

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- a. date of inspection
- b. items inspected
- c. name of inspector
- d. description of result
- e. corrective actions taken, if needed
- f. date corrective actions complete, if needed.

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.

Prior to Commencement of Construction:

2. 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, TNRCC-0625) that you may use to deed record the approved WPAP is enclosed.
3. 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.
4. 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.
5. 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.
6. 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.
7. 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

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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:

8. 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.
9. 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.
10. No wells exist on the 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.
11. 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.
12. 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.
13. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.

After Completion of Construction:

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

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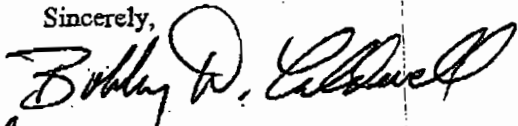
July 18, 2006

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

16. 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.
17. 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.
18. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

If you have any questions or require additional information, please contact Lynn M. Bumgardner of the Edwards Aquifer Protection Program of the San Antonio Regional Office at 210.403.4023.

Sincerely,



Glenn Shankle
Executive Director
Texas Commission on Environmental Quality

GS/LMB/eg

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

fc/cc: Mr. Brian L. Merriman, P.E., S. Craig Hollmig, Inc
Mr. Michael Short, City of New Braunfels
Mr. Tom Hornseth, Comal County
Mr. Robert J. Potts, Edwards Aquifer Authority
TCEQ Central Records, MC 212

ATTACHMENT "C"

Project Description

The proposed site is located on a 0.716 acre lot within Hunters Creek Business Park. The proposed area to be disturbed is 0.716 acres with 0.50 acres of impervious cover (67.0%). The lot is located within the New Braunfels city limits on the south side of SH 46 approximately 250 feet north west of the intersection of Oak Run Parkway and Hunter's Village. The site is served by New Braunfels Utilities for electric, water, and wastewater. The site is currently cleared, and there are no above ground improvements.

The proposed use for the project is a 5,800 square foot medical office building. No other planned uses are proposed for the site.

The proposed construction will include minor grading for the parking areas and building pad, utility service lines, and building infrastructure.

According to the Flood Insurance Rate Map No. 48091C0435F the site is outside of the flood plain. The entire site drains to an unnamed tributary of Blieders creek. Stormwater runoff will be treated with a Sand Filter System located at the southwest corner of the site. The Sand Filter System will ensure the quality of water exiting without adversely affecting the downstream drainage patterns.

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

REGULATED ENTITY NAME: Dr. Wofford Office

REGULATED ENTITY INFORMATION

1. The type of project is:
☐ Residential: # of Lots: _____
☐ Residential: # of Living Unit Equivalents: _____
☒ Commercial
☐ Industrial
☐ Other: _____
2. Total site acreage (size of property): 0.716
3. Projected population: 0
4. The amount and type of impervious cover expected after construction are shown below:

Impervious Cover of Proposed Project	Sq. Ft.	Sq. Ft./Acre	Acres
Structures/Rooftops	5,806	÷ 43,560 =	0.13
Parking	13,940	÷ 43,560 =	0.32
Other paved surfaces	1,136	÷ 43,560 =	0.03
Total Impervious Cover	20,882	÷ 43,560 =	0.48
Total Impervious Cover ÷ Total Acreage x 100 =			67.0%

5. ☒ **ATTACHMENT A - Factors Affecting Water Quality.** A description of any factors that could affect surface water and groundwater quality is provided at the end of this form.
6. ☒ Only inert materials as defined by 30 TAC §330.2 will be used as fill material.

FOR ROAD PROJECTS ONLY

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

7. Type of project:
☐ TXDOT road project.
☐ County road or roads built to county specifications.
☐ City thoroughfare or roads to be dedicated to a municipality.
☐ Street or road providing access to private driveways.
8. Type of pavement or road surface to be used:
☐ Concrete
☐ Asphaltic concrete pavement
☐ Other: _____

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ATTACHMENT "A"

Factors Affecting Water Quality

The development will consist of building structure of approximately 5,800 square feet with a Sand Filter System. This will result in minimal to no pollution from the site. Some pollution may originate from automobile wastes and cleaning chemicals, which may have an effect on surface water by sediments leaving the site after a rainfall event.

ATTACHMENT "B"

Volume and Character of Stormwater

The development of this site will result in a minimal increase in stormwater run-off. The hydrology calculations for existing and proposed conditions are broken out in the table below. Onsite stormwater within the parking, and building area will be captured and treated by a Sand Filter System and all offsite stormwater will exit the site through a channel along the southern border of the site.

Table 1 - Dr. Wofford Office Hydrology Calculations											
Point	Area (ac)	"C" Value	T _c (min)	I ₂ (in/hr)	I ₁₀ (in/hr)	I ₂₅ (in/hr)	I ₁₀₀ (in/hr)	Q ₂ (cfs)	Q ₁₀ (cfs)	Q ₂₅ (cfs)	Q ₁₀₀ (cfs)
A - Ex	1.64	0.50	21	3.60	5.35	6.40	8.37	2.95	4.40	5.79	8.60
A - Pro	1.64	0.74	21	3.60	5.35	6.40	8.37	4.36	6.50	8.55	12.70
A1 - Pro	1.02	0.69	21	3.60	5.35	6.40	8.37	2.53	3.77	4.96	7.36
A2 - Pro	0.62	0.90	10	4.96	7.57	9.07	11.90	2.77	4.22	5.57	8.30

The drainage onsite will continue maintain existing drainage patterns.

ATTACHMENT "C"

Suitability Letter from Authorized Agent

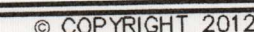
There is no proposed OSSF.

ATTACHMENT "D"

Exception to the Required Geologic Assessment

No exception will be requested.

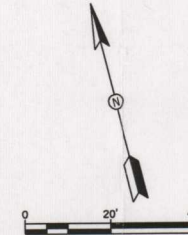
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Drawing Name: N:\Projects\JC-Jimmy Jacobs Construction\JC0001 Dr. Wofford Office - Hunters Creek Engineering Reports\WPAP\Drainage Area Map.dwg User: KlorSA Feb 13, 2013 - 3:26pm

TOTAL LAND AREA = 0.716 AC
TOTAL DISTURBED AREA (INFRASTRUCTURE) = 0.716 AC
TOTAL IMPERVIOUS AREA = 0.48 AC
% IMPERVIOUS = 67.0%

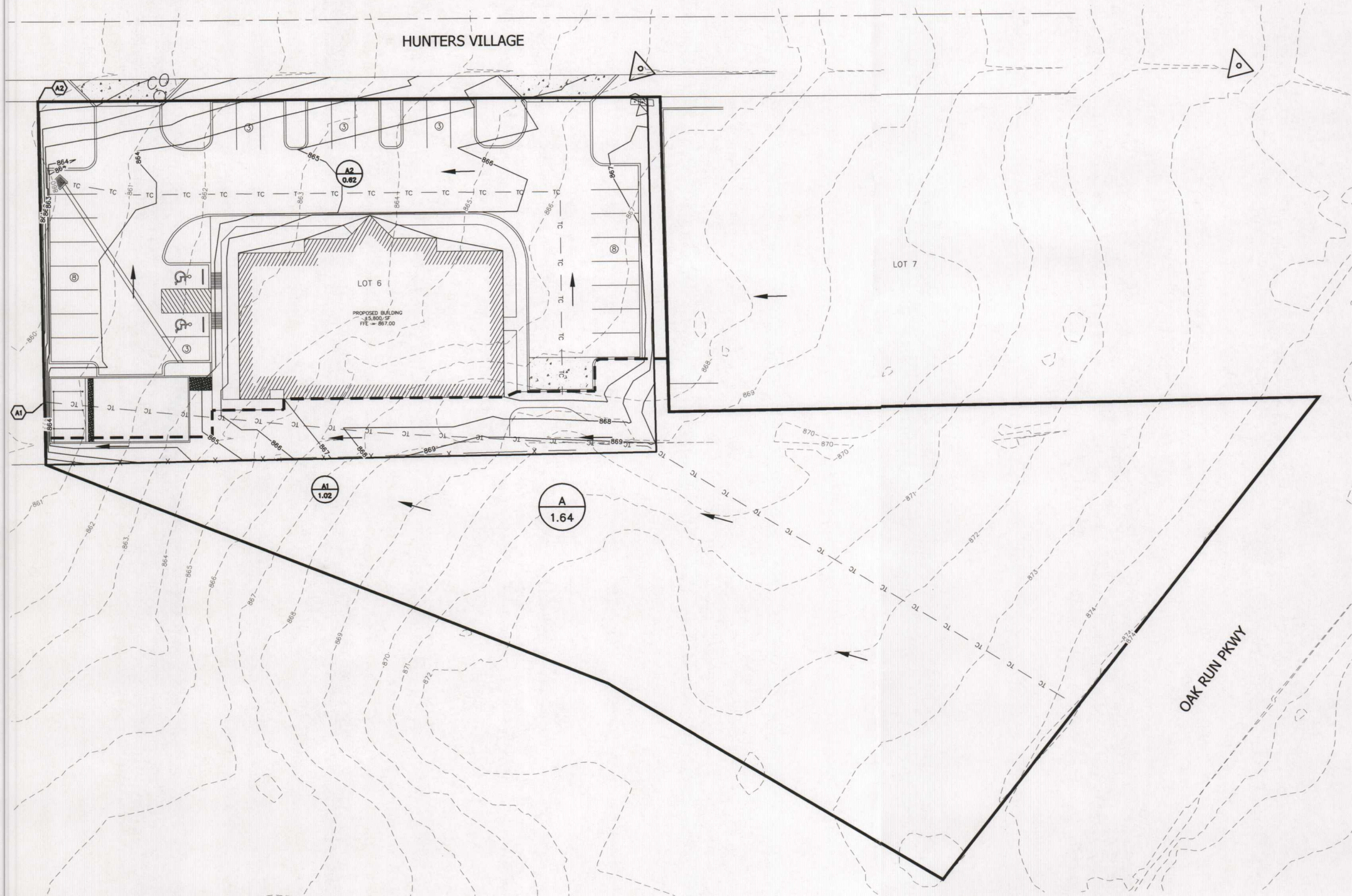
Table 1 - Dr. Wofford Office Hydrology Calculations											
p point	Area (ac)	"C" Value	T _c (min)	I ₂	I ₁₀	I ₂₅	I ₁₀₀	Q ₂ (cfs)	Q ₁₀ (cfs)	Q ₂₅ (cfs)	Q ₁₀₀ (cfs)
A - Ex	1.64	0.50	21	3.60	5.35	6.40	8.37	2.95	4.40	5.79	8.60
A - Pro	1.64	0.74	21	3.60	5.35	6.40	8.37	4.36	6.50	8.55	12.70
A1 - Pro	1.02	0.69	21	3.60	5.35	6.40	8.37	2.53	3.77	4.96	7.38
A2 - Pro	0.62	0.90	10	4.96	7.57	9.07	11.90	2.77	4.22	5.57	8.30



LEGEND

- Solid line: LIMITS OF DRAINAGE BASIN
- Dashed line: LIMITS OF SUB-DRAINAGE AREA
- TC: TIME OF CONCENTRATION
- 900: EXISTING CONTOURS
- 900: PROPOSED CONTOURS
- Arrow: FLOW ARROWS

- (A) DRAINAGE BASIN LABEL
- (9.0) BASIN AREA (AC)
- (A1) SUB-DRAINAGE AREA LABEL
- (2.0) SUB-DRAINAGE AREA (AC)
- (A1) INLET LABEL
- (A) ANALYSIS POINT LABEL



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ISSUES AND REVISIONS

DATE

NO

MOELLER & ASSOCIATES
Engineering Solutions
1040 N. WALNUT AVE. STE. B, NEW BRAUNFELS, TX. 78130
PH: 830-358-7127 www.mro-tx.com
1504 FISH FISH

DRAINAGE AREA MAP

DR WOFFORD OFFICE

NEW BRAUNFELS, TX 78130

SHEET

1
OF 1

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ATTACHMENT "A"

20% or Less Impervious Cover Waiver

The proposed development is a medical office and the 20% Impervious Cover Waiver does not apply. Permanent BMP's will be designed in accordance with TCEQ requirements for the removal of TSS generated by the proposed development.

ATTACHMENT "B"

BMP's for Upgradient Stormwater

There are 0.92 south of the site that drains west through an existing channel running along the southern border of the development. The upgradient stormwater will be contained within the existing channel running along southern boundary of the proposed project site. Natural vegetation in the area of the upgradient stormwater will act as a vegetative filter strip to treat the upgradient storm flows. The upgradient stormwater will not comingle with any untreated stormwater from the site. Reference the Drainage Area Map of the Hunters Creek Business Park WPAP(Approved by TCEQ June 5, 2006, EAPP #1964.01) for drainage patterns for the area.

ATTACHMENT "C"

BMP's for On-Site Stormwater

The permanent BMP's used to treat on-site stormwater runoff will be a Sand Filter System. Please refer to the Drainage Area Map in the Temporary Stormwater Section for areas of treatment and BMP structures used.

ATTACHMENT "D"

BMP's for Surface Streams

The Sand Filter System will be installed to prevent pollutants from entering surface streams and ultimately the aquifer. There were no sensitive features identified by the Geological Assessment.

The natural vegetation located downgradient of proposed improvements will provide additional filtration to help prevent pollution from entering streams, sensitive features, and the aquifer.

ATTACHMENT "G"

Inspection, Maintenance, Repair, and Retrofit Plan

Sand Filter Systems Maintenance and Monitoring Procedures

- *Inspections.* BMP facilities must be inspected at least twice a year (once during or immediately following wet weather) to evaluate facility operation. During each inspection, erosion areas inside and downstream of the BMP must be identified

and repaired or revegetated immediately. With each inspection, any damage to the structural elements of the system (pipes, concrete drainage structures, retaining walls, etc.) must be identified and repaired immediately. Cracks, voids and undermining should be patched/filled to prevent additional structural damage. Trees and root systems should be removed to prevent growth in cracks and joints that can cause structural damage.

- *Sediment Removal.* Remove sediment from the inlet structure and sedimentation chamber when sediment buildup reaches a depth of 6 inches or when the proper functioning of inlet and outlet structures is impaired. Sediment should be cleared from the inlet structure at least every year and from the sedimentation basin at least every 5 years.
- *Media Replacement.* Maintenance of the filter media is necessary when the drawdown time exceeds 48 hours. When this occurs, the upper layer of sand should be removed and replaced with new material meeting the original specifications. Any discolored sand should also be removed and replaced. In filters that have been regularly maintained, this should be limited to the top 2 to 3 inches.
- *Debris and Litter Removal.* Debris and litter will accumulate near the sedimentation basin outlet device and should be removed during regular mowing operations and inspections. Particular attention should be paid to floating debris that can eventually clog the control device or riser.
- *Filter Underdrain.* Clean underdrain piping network to remove any sediment buildup as needed to maintain design drawdown time.
- *Mowing.* Grass areas in and around sand filters must be mowed at least twice annually to limit vegetation height to 18 inches. More frequent mowing to maintain aesthetic appeal may be necessary in landscaped areas. Vegetation on the pond embankments should be mowed as appropriate to prevent the establishment of woody vegetation.

ATTACHMENT "I"

Measures for Minimizing Surface Stream Contamination

All surface streams will be protected from erosion by not allowing runoff to exceed existing velocities. The stormwater runoff for the property will be concentrated into the Sand Filter system where the pollutants will be removed.

Attachment "G"

Maintenance Plan for Sand Filtration Pond

Sand Filtration Pond Location: The Sand Filtration Pond will be located along the southern property line of the site.

Owner: C Brien Wofford, D.O., P.A.
1423 Walnut Ave. #102
New Braunfels, Texas 78130-6010
Phone: 830-627-8300

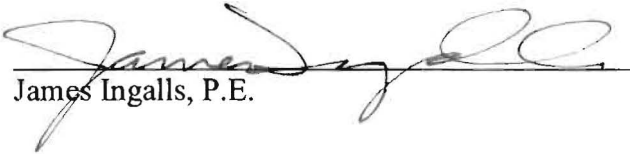
I agree that the attached Sand Filtration Pond Maintenance and Monitoring Procedures will be implemented to ensure that the proposed system functions as designed.

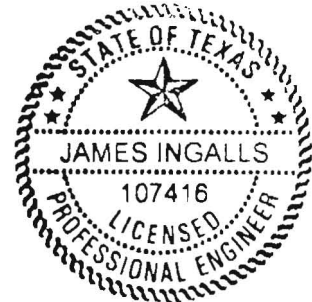


Dr. Brien Wofford
C Brien Wofford, D.O., P.A.

2/13/13
Date

I have reviewed the attached maintenance and monitoring procedures and to the best of my knowledge certify that, if they are followed as outlined, the Sand Filtration Pond will function as designed.


James Ingalls, P.E.



Texas Commission on Environmental Quality

TSS Removal Calculations 02-20-2008

Additional information is provided for cells with a red triangle in the upper right corner
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG
Characters shown in red are data entry fields.

Characters shown in black (Bold) are calculated fields. Changes to these fields will

1. The Required Load Reduction for the total project:

Calculations from RG-348

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

where:

$L_{M \text{ TOTAL PROJECT}}$ = Required TSS removal result

A_N = Net increase in impervious area

P = Average annual precipitation

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

County =	comal	
Total project area included in plan *	0.72	acres
Predevelopment impervious area within the limits of the plan *	0.00	acres
Total post-development impervious area within the limits of the plan *	0.49	acres
Total post-development impervious cover fraction *	0.68	
P =	33	inches

$L_{M \text{ TOTAL PROJECT}}$ = 440 lbs.

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

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

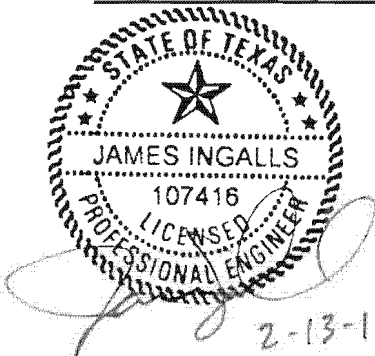
2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. = 1

Total drainage basin/outfall area =	0.62	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.49	acres
Post-development impervious fraction within drainage basin/outfall area =	0.79	
$L_{M \text{ THIS BASIN}}$ =	440	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP =	sf	abbreviation
Removal efficiency =	89	percent



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

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

where:

A_C = Total On-Site drainage area
 A_i = Impervious area proposed in
 A_p = Pervious area remaining in th
 L_R = TSS Load removed from this

A_C = 0.62 acres
 A_i = 0.49 acres
 A_p = 0.13 acres
 L_R = 500 lbs

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

Desired $L_{M \text{ THIS BASIN}}$ = 440 lbs.

F = 0.88

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

Rainfall Depth = 1.50 inches
Post Development Runoff Coefficient = 0.90
On-site Water Quality Volume = 3038 cubic feet

Calculations from RG-348

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 = 608



Total Capture Volume (required water quality volume(s) x 1.20) = 3646 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 C53 will show NA.

7. Retention/Irrigation System

Designed as Required in RG

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

Irrigation Area Calculations:

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

8. Extended Detention Basin System

Designed as Required in RG

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

9. Filter area for Sand Filters

Designed as Required in RG

9A. Full Sedimentation and Filtration System

Water Quality Volume for sedimentation basin = **3646** cubic feet

Minimum filter basin area = **169** square feet

Maximum sedimentation basin area = **1519** square feet

Minimum sedimentation basin area = **380** square feet

9B. Partial Sedimentation and Filtration System

Water Quality Volume for combined basins = **3646** cubic feet

Minimum filter basin area = **304** square feet

Maximum sedimentation basin area = **1215** square feet

Minimum sedimentation basin area = **76** square feet

10. Bioretention System

Designed as Required in RG

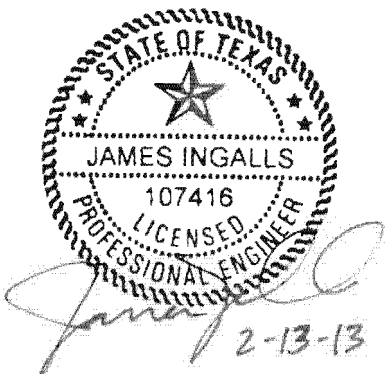
Required Water Quality Volume for Bioretention Basin = **NA** cubic feet

11. Wet Basins

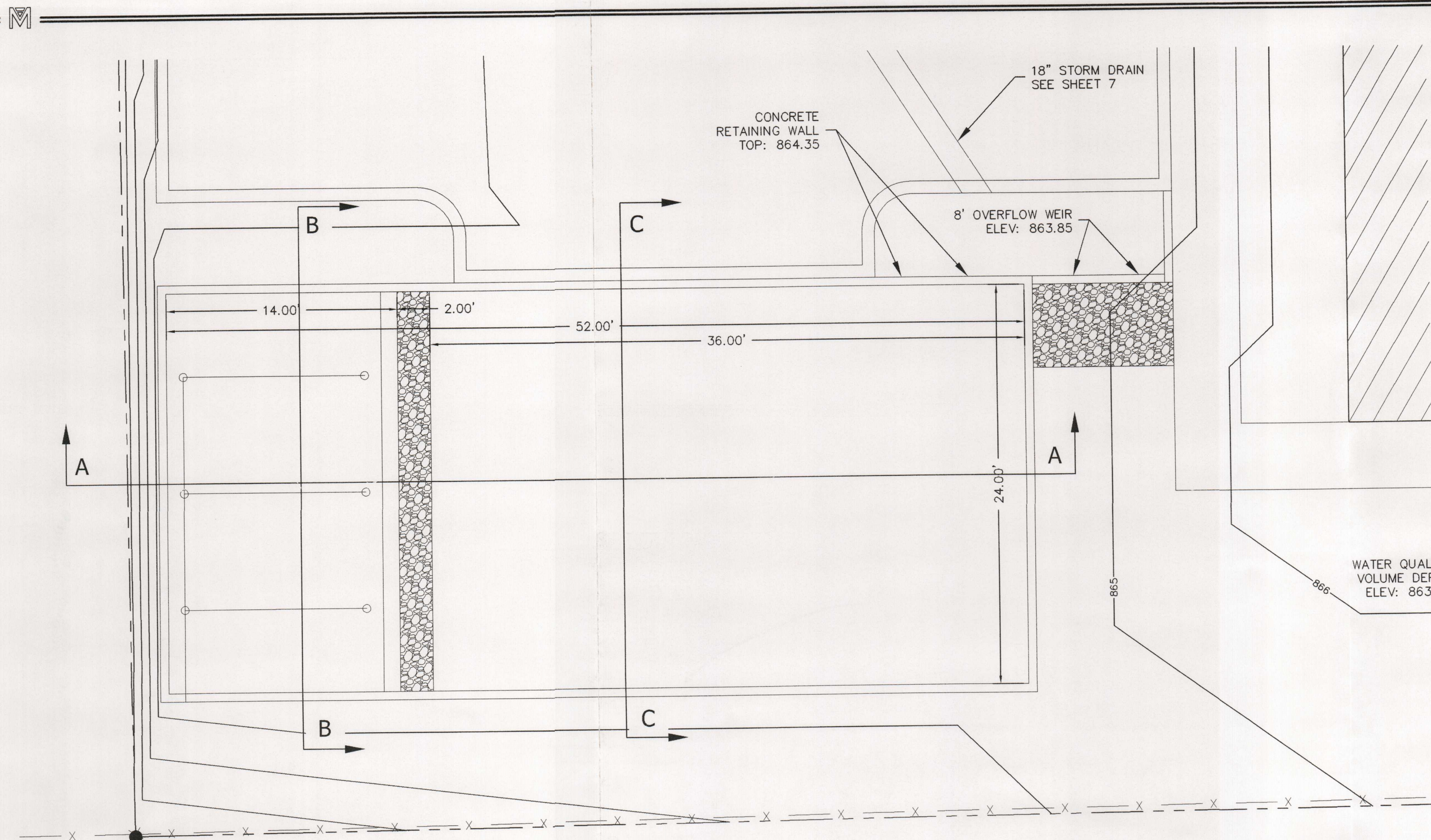
Designed as Required in RG

Required capacity of Permanent Pool = **NA** cubic feet

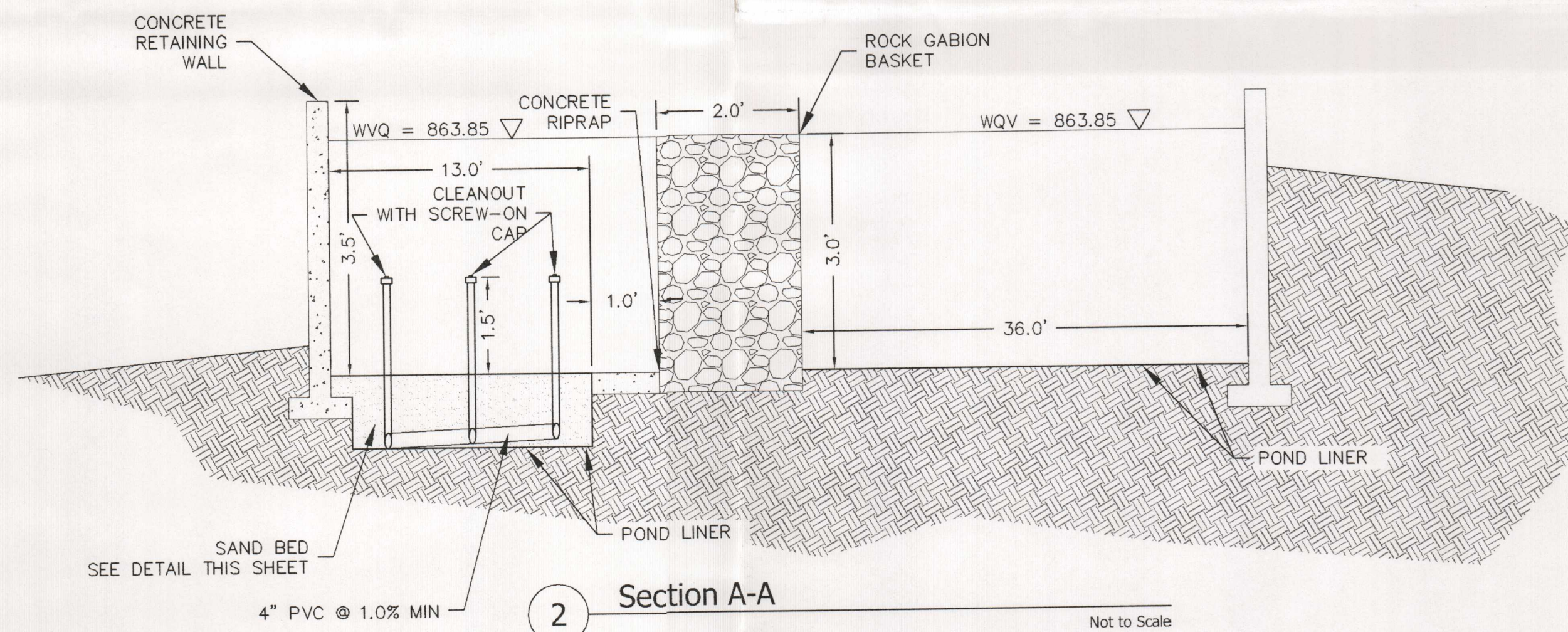
Required capacity at WQV Elevation = **NA** cubic feet



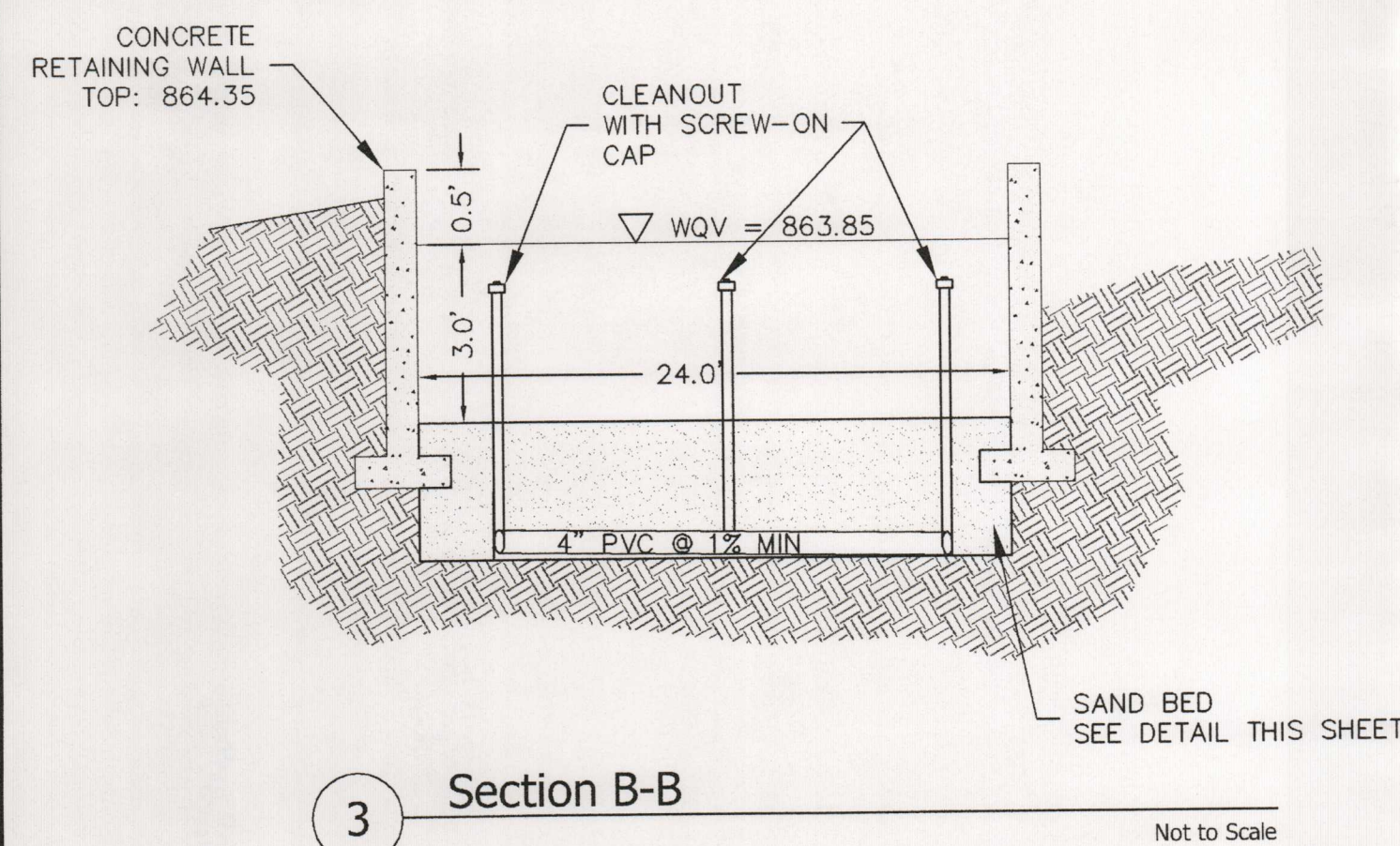
Drawing Name: N:\Projects\JC-Jimmy Jacobs Construction\JC0001 Dr Wofford Office - Hunters Creek\Construction Drawings\6 WATER QUALITY BASIN DETAILS.dwg User: KACSA Feb 13, 2013 3:20pm



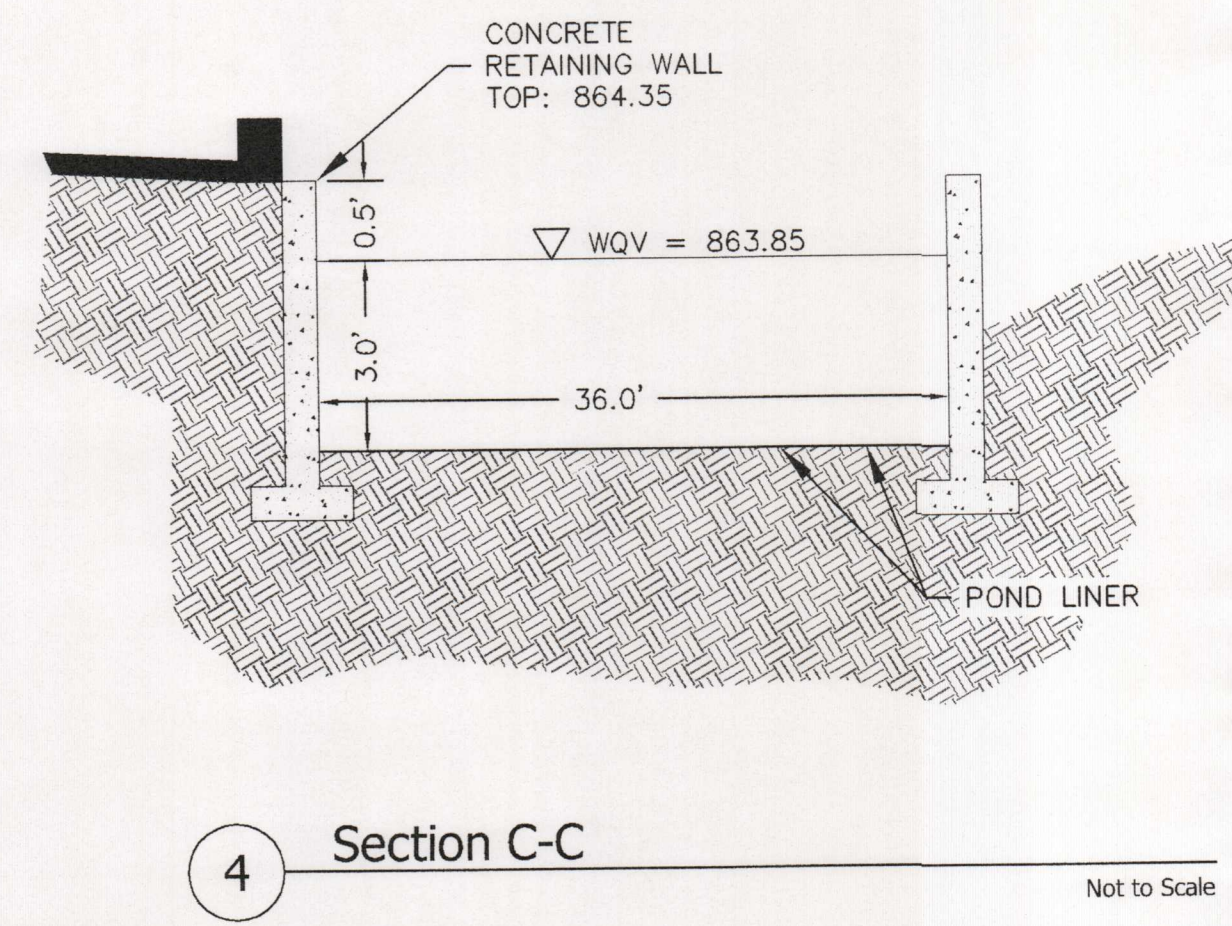
1 Plan View Scale: 1:10



2 Section A-A Not to Scale

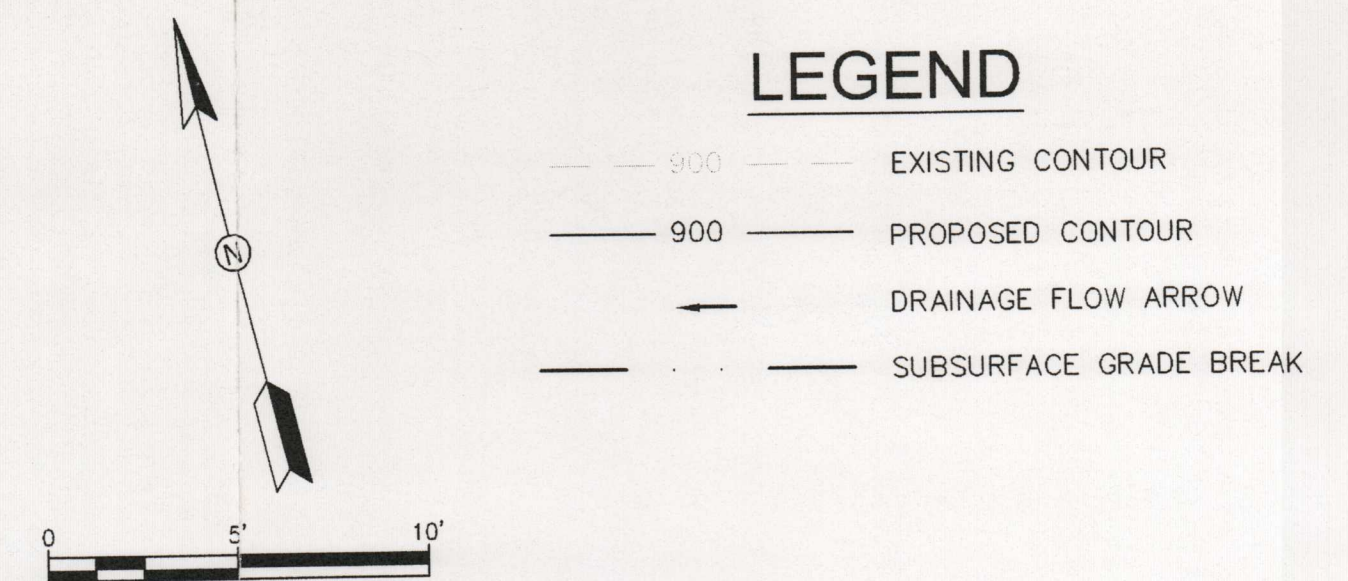


3 Section B-B Not to Scale

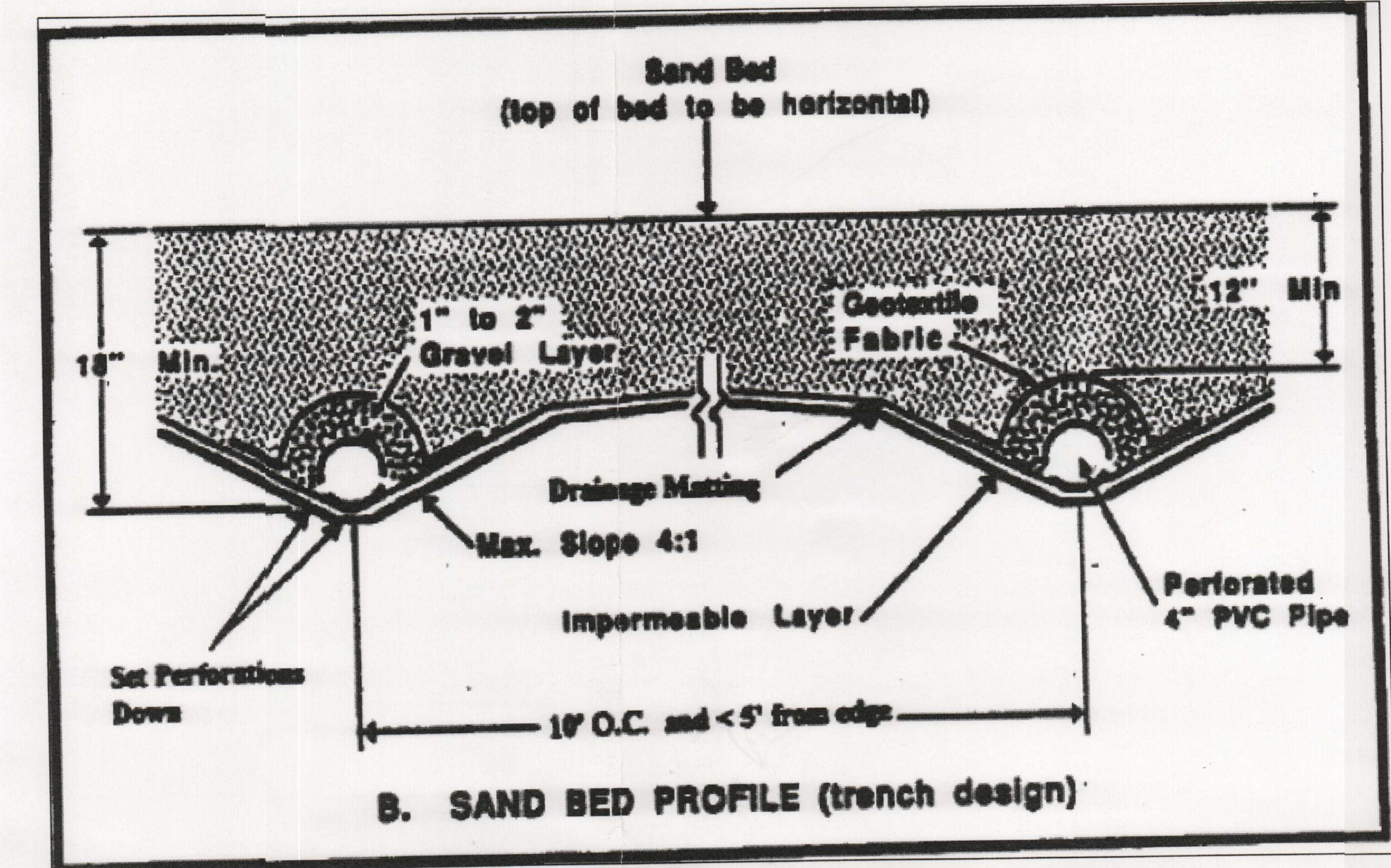


4 Section C-C Not to Scale

REQUIRED POND VOLUME = 3,646 CF
AVAILABLE POND VOLUME = 3,744 CF
REQUIRED SAND FILTER AREA = 304 SF
PROPOSED SAND FILTER AREA = 312 SF

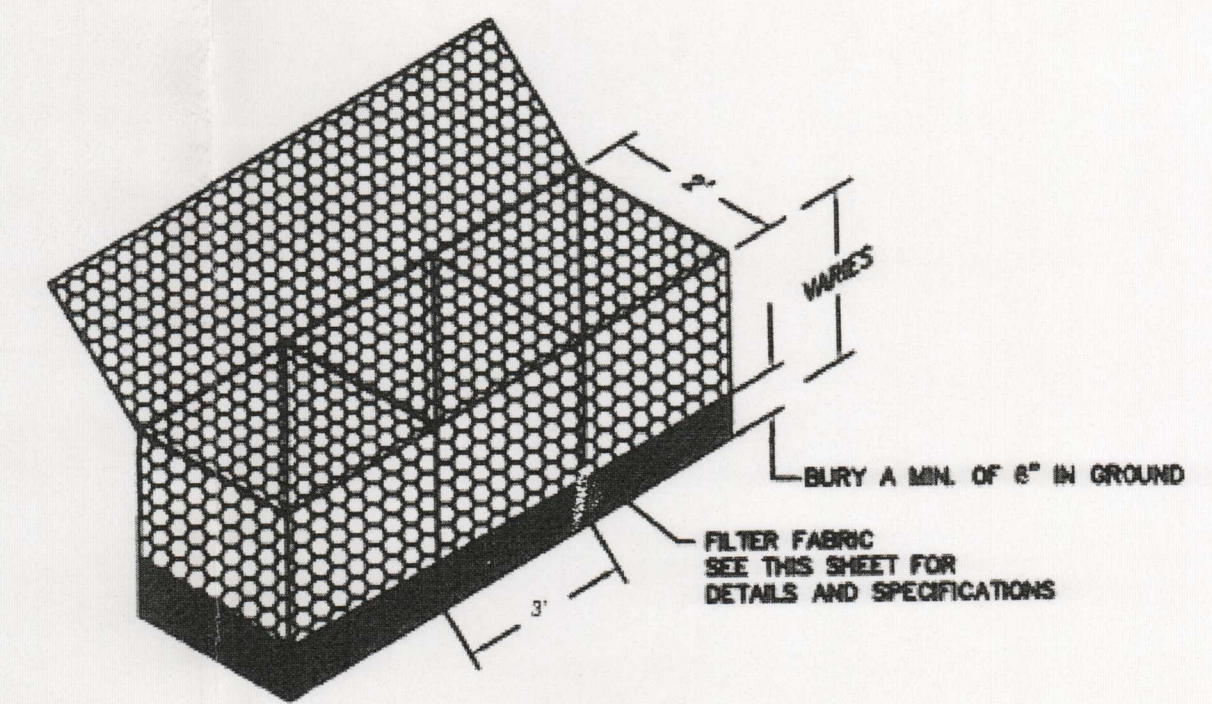


* NOTE: SUGRADE FOR SLOPES BETWEEN 2% AND 5% SHALL BE STABILIZED WITH SUBSURFACE SOIL DAMS EVERY 10 FEET. GRADE BETWEEN SOIL DAMS NOT TO EXCEED 0.5%.



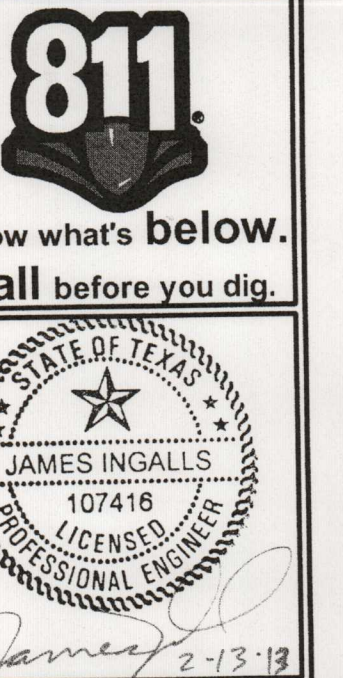
*NOTE: ALL CLEANOUTS TO HAVE SCREW-ON CAPS

5 Sediment Depth Marker Not to Scale



GABION BASKET DETAIL SCALE: NTS

1. STONE
STONE FILL MATERIAL SHALL CONSIST OF HARD, DURABLE, CLEAN STONE OF THE SIZE INDICATED, 6 TO 8 INCHES IN SIZE OR AS APPROVED BY THE ENGINEER AND RESISTANT TO THE ACTION OF AIR AND WATER AND SUITABLE IN ALL RESPECTS FOR THE PURPOSE INTENDED.
2. WIRE CONTAINERS
WIRE MESH SHALL CONSIST OF PLASTIC COATED (P.V.C.) GALVANIZED WIRE 0.120 INCH IN DIAMETER MINIMUM AND SHALL EQUAL OR EXCEED FEDERAL SPECIFICATION QQ-W-481G, CLASS 3 UNLESS OTHERWISE INDICATED. OPENING OF THE MESH SHALL NOT EXCEED APPROXIMATELY 4 INCHES IN THE LONGEST DIMENSION. THE WIRE MESH IS TO BE FABRICATED IN SUCH MANNER AS TO BE NONRAVELING, TIE AND CONNECTING WIRE SHALL BE OF THE SAME TYPE AND SIZE AS THE BASKETS AND SHALL BE SUPPLIED IN SUFFICIENT QUANTITY FOR SECURELY FASTENING ALL EDGES OF THE GABION AND DIAPHRAGMS.
3. FILTER FABRIC
FILTER FABRIC SHALL BE NON-Biodegradable ULTRAVIOLET STABILIZED, INERT TO MOST SOIL CHEMICALS, UNAFFECTED BY MOISTURE WHICH ALLOWS WATER TO PASS THROUGH WHILE RETAINING SOIL PARTICLES AND SHALL CONFORM TO ITEM NO. 820, "FILTER FABRIC".



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MOELLER & ASSOCIATES
Engineering Solutions
1040 N. WALNUT AVE. STE. B, NEW BRAUNFELS, TX. 78130
PH: 830-358-7127 www.mo-tx.com
TBE FIRM E-13351

WATER QUALITY BASIN
DETAILS
REVIEW SET

DR WOFFORD OFFICE
NEW BRAUNFELS, TX 78130

WATER POLLUTION ABATEMENT PLAN
FOR
HUNTERS CREEK BUSINESS PARK, INC.
COMMERCIAL SUBDIVISION

RECEIVED
APR 12 2006
COUNTY ENGINEER

TCEQ-R13
APR 05 2006
SAN ANTONIO

Prepared for
Ernesto E. Jergins
HUNTERS CREEK BUSINESS PARK, INC.
651 N. Business IH 35 Suite 240
New Braunfels, TX 78130

Prepared By
Brian L. Merriman, P.E.
S. Craig Hollmig, Inc.
410 N. Seguin Street
New Braunfels, TX 78130

March, 2006

General Information Form
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

REGULATED ENTITY NAME: HUNTERS CREEK BUSINESS PARK, INC.
COUNTY: Comal STREAM BASIN: Blieder's Creek Tributary of Guadalupe River.

EDWARDS AQUIFER: ☒ RECHARGE ZONE
☐ TRANSITION ZONE

PLAN TYPE: ☒ WPAP ☐ AST ☐ EXCEPTION
☐ SCS ☐ UST ☐ MODIFICATION

CUSTOMER INFORMATION

1. Customer (Applicant):

Contact Person: Ernesto E. Jergins
Entity: Hunters Creek Business Park, Inc.
Mailing Address: 651 N. Business IH 35, Suite 240
City, State: New Braunfels Zip: 78130
Telephone: 210-771-7770 FAX: _____

Agent/Representative (If any):

Contact Person: Brian L. Merriman, P.E.
Entity: S. Craig Hollmig, Inc., Trustee
Mailing Address: 410 N. Seguin Street
City, State: New Braunfels Zip: 78130
Telephone: 830-625-8555 FAX: 830-625-8556

2. ☒ This project is inside the city limits of New Braunfels
☐ This project is outside the city limits but inside the ETJ (extra-territorial jurisdiction) of _____
☐ This project is not located within any city's limits or ETJ.
3. 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.
Head west on Hwy 46 from its intersection with Loop 337 for about one mile. The tract fronts on the South side of Hwy 46 and the West side of Oak Run Parkway.
4. ☒ **ATTACHMENT A - ROAD MAP.** A road map showing directions to and the location of the project site is attached at the end of this form.
5. ☒ **ATTACHMENT B - USGS / EDWARDS RECHARGE ZONE MAP.** A copy of the official 7 1/2 minute USGS Quadrangle Map (Scale: 1" = 2000') of the Edwards Recharge Zone is

attached behind this sheet. The map(s) should clearly show:

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

6. ☒ 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. **The TCEQ must be able to inspect the project site or the application will be returned.**
7. ☒ **ATTACHMENT C - PROJECT DESCRIPTION.** Attached at the end of this form is a detailed narrative description of the proposed project.
8. Existing project site conditions are noted below:
- ☐ Existing commercial site
 - ☐ Existing industrial site
 - ☐ Existing residential site
 - ☐ Existing paved and/or unpaved roads
 - ☒ Undeveloped (Cleared)
 - ☐ Undeveloped (Undisturbed/Uncleared)
 - ☐ Other:

PROHIBITED ACTIVITIES

9. ☒ 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).
10. ☒ 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

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

☒ For a Water Pollution Abatement Plan and Modifications, the total acreage of the site

where regulated activities will occur.

☐ For an Organized Sewage Collection System Plans and Modifications, the total linear footage of all collection system lines.

☐ For a UST Facility Plan or an AST Facility Plan, the total number of tanks or piping systems.

☐ A Contributing Zone Plan.

☐ 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.

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

☐ TCEQ cashier

☐ Austin Regional Office (for projects in Hays, Travis, and Williamson Counties)

☒ San Antonio Regional Office (for projects in Bexar, Comal, Kinney, Medina, and Uvalde Counties)

13. ☒ Submit one (1) original and three (3) copies of the completed application to the appropriate regional office for distribution by the TCEQ to the local municipality or county, groundwater conservation districts, and the TCEQ's Central Office.

14. ☒ 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.
☐ No person shall commence any regulated activity until the Contributing Zone Plan for the activity has been filed with the executive director.

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 Brian L. Merriman, P.E.

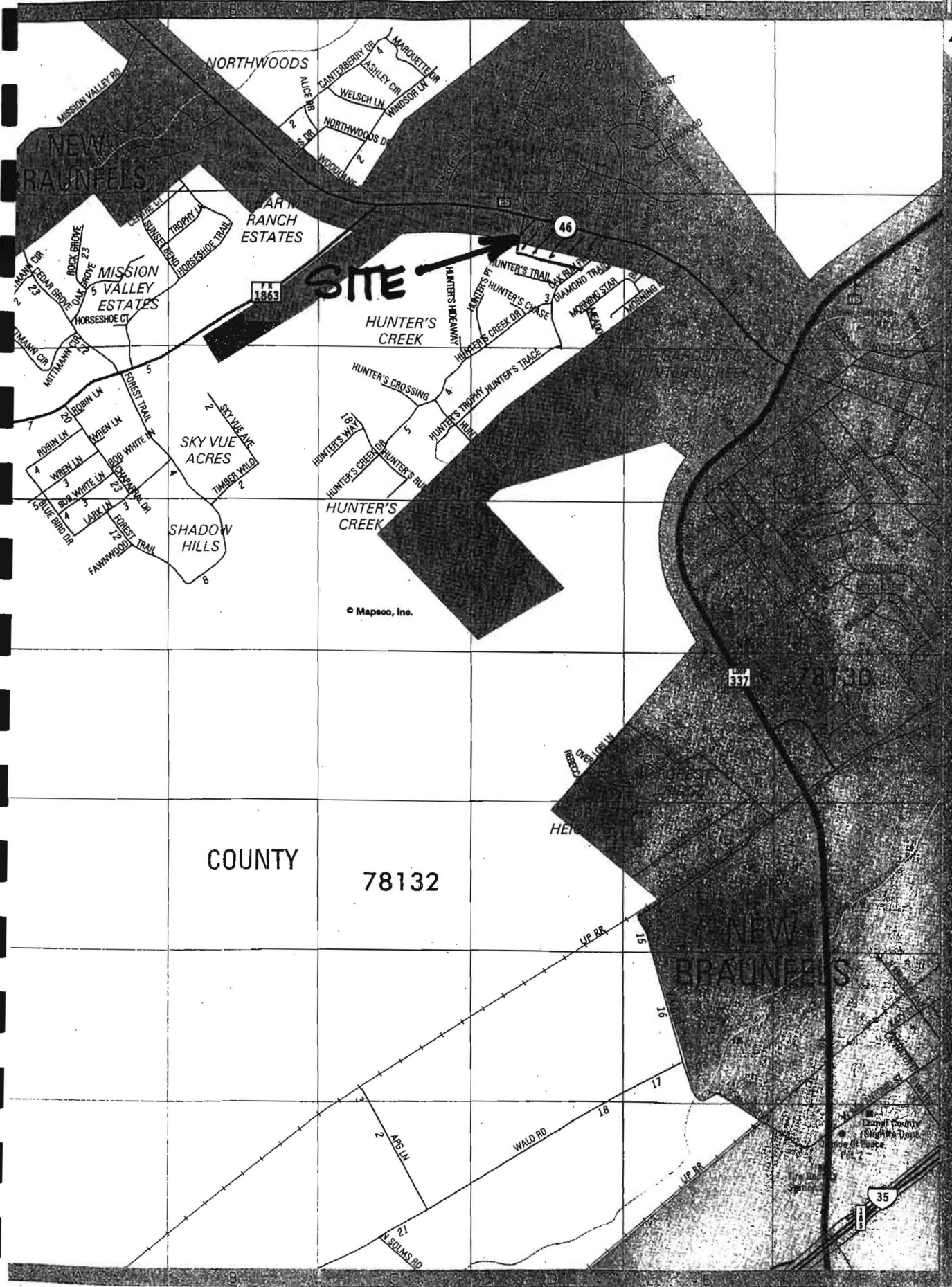
Brian L. Merriman 3/22/06
Signature of Customer/Agent

Date

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

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

One Inch equals 2200 ft.



© Mapsoo, Inc.

CONTINUED ON MAP 458

COUNTY

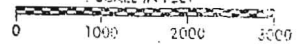
78132

NEW
BRAUNFELS

SCALE IN MILES

CONTINUED ON MAP 489

SCALE IN FEET

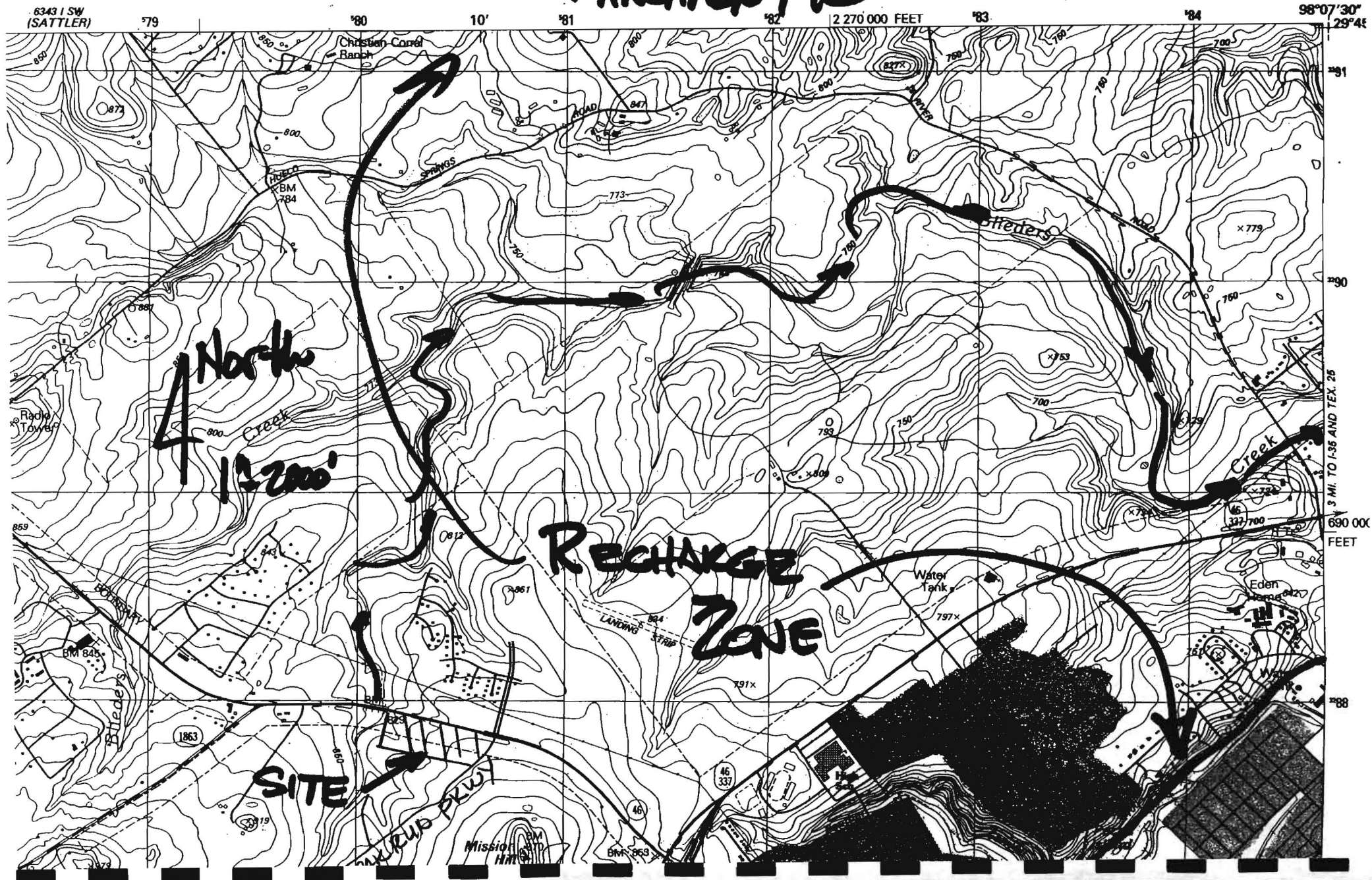


ATTACHMENT "A"
ROAD MAP

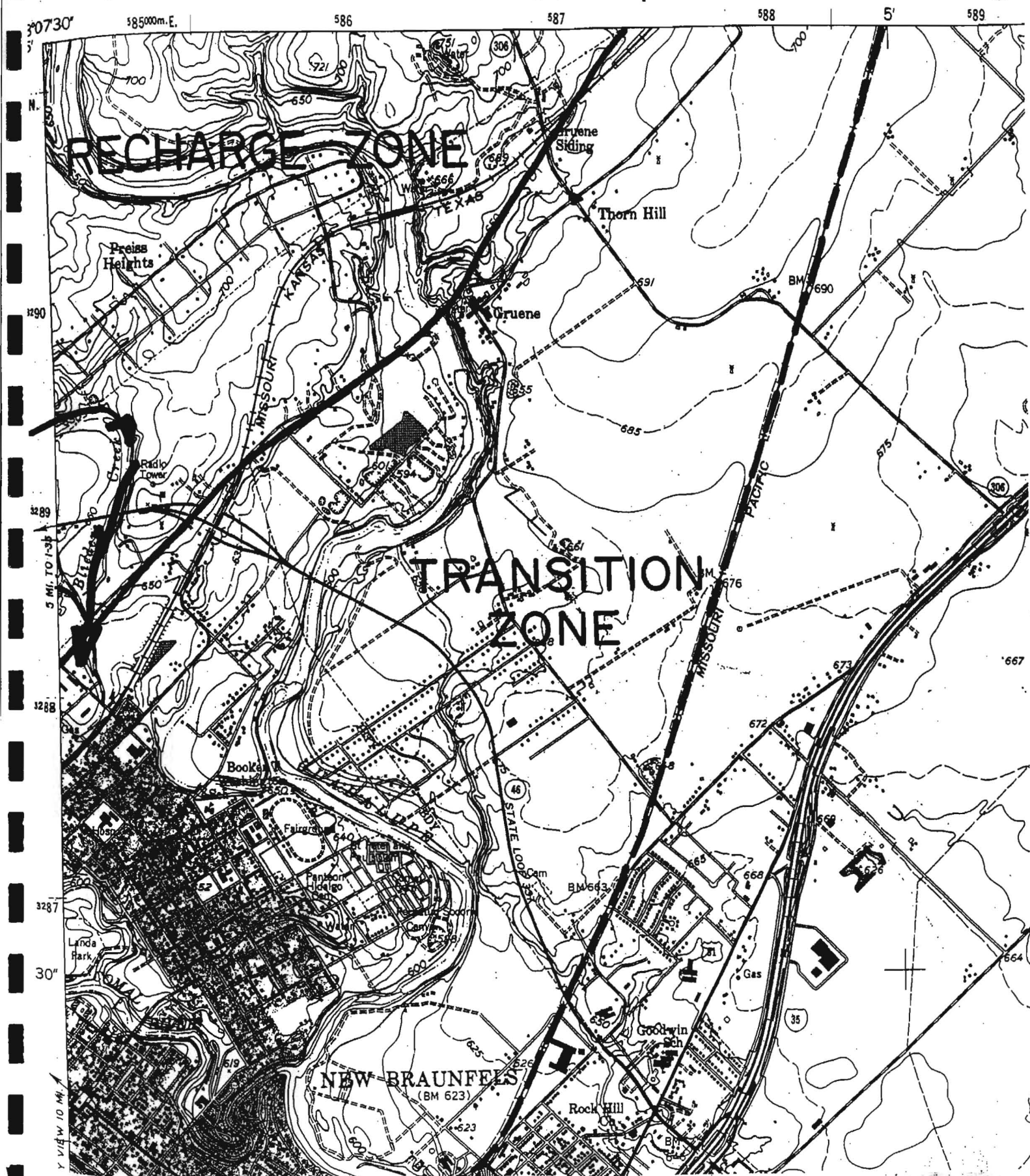
1" = 2000'

ATTACHMENT B

NEW BRAUNFELS WEST QUADRANGLE
TEXAS
7.5 MINUTE SERIES (TOPOGRAPHIC)



Official Edwards Aquifer Recharge Zone
31 Texas Administrative Code Chapter
Subchapter A—San Antonio Region



GENERAL INFORMATION FORM

ATTACHMENT "C"

This project is a 15 lot commercial subdivision located at the Southwest corner of Oak Run Parkway and Highway 46 intersection. This subdivision will be located in the city of New Braunfels and will be served by New Braunfels Utilities for electric, water and wastewater. Construction will consist of approximately 1,370 L.F new street, 3,048 L.F. of 8" and 12" wastewater lines and 3,100 L.F. 8" and 12" water lines. Three channels will also be constructed with this project. Channel "A" is a 1325 L.F. "V" Bottom Channel that diverts all upgradient flows around this site. This channel will prevent the possible pollution of upgradient flows. Channel "B" will convey the on-site stormwater off the street and to the water quality pond. Channel "C" will convey flows from the lots fronting Highway 46 to the low end of the site. A permanent BMP consisting of a sand filtration pond is proposed to tract the first 1.50" of runoff from the street. Please see Attachment "F" of the Permanent Stormwater Section of this application. All lots will be required by final plat note and restrictions to provide their own permanent stormwater abatement measures as required by the TCEQ Edwards Aquifer Protection Program. An application for a sewage collection system was made on this day as well.

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

REGULATED ENTITY NAME: Hunters Creek Business Park

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

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

PROJECT INFORMATION

1. ☒ Geologic or manmade features are described and evaluated using the attached **GEOLOGIC ASSESSMENT TABLE**.
2. 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.

Soil Units, Infiltration Characteristics & Thickness		
Soil Name	Group*	Thickness (feet)
Rumple-Comfort Assoc. (RUD)	C	1.6-3.0

*** 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 thoroughly wetted.

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

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

Applicant's Site Plan Scale

1" = 50'

Site Geologic Map Scale

1" = 50'

Site Soils Map Scale (if more than 1 soil type)

1" = '

6. Method of collecting positional data:

- ☒ Global Positioning System (GPS) technology.
☒ Other method(s).
7. ☒ The project site is shown and labeled on the Site Geologic Map.
8. ☒ Surface geologic units are shown and labeled on the Site Geologic Map.
9. ☒ Geologic or manmade features were discovered on the 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.
10. NA The Recharge Zone boundary is shown and labeled, if appropriate.
11. All known wells (test holes, water, oil, unplugged, capped and/or abandoned, etc.):
☐ There are _____ (#) 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

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

Date(s) Geologic Assessment was performed: 10/14/05
Date(s)

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

Boyd Dreyer
Print Name of Geologist

512-312-0714
Telephone

512-295-2307
Fax

 
Signature of Geologist 3/15/06
Date

Representing: GeoConsul
(Name of Company)

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

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

**Site Specific Geologic Column
Hunters Creek business Park-WPAP
New Braunfels, Texas**

Formation	Member	Lithology	Thickness (feet)
Person	Cyclic and marine (undivided)	Mudstone to packstone; miliolid grainstone; chert	80 -100
Person	Leached & collapsed (undivided)	Crystalline limestone, mudstone to grainstone; chert; collapsed breccia	80 - 100
Person	Regional dense	Dense, argillaceous mudstone	20 - 24
Kainer	Grainstone	Grainstone; mudstone to wackestone; chert	50 - 60
Kainer	Kirschberg evaporite	Highly altered crystalline limestone; chalky mudstone; chert	50 - 60
Kainer	Dolomitic	Mudstone to grainstone; crystalline limestone; chert	110 - 130
Kainer	Basal Nodular	Shaly, nodular limestone; mudstone and grainstone	50 - 60
Glen Rose	Upper	Thinly bedded limestone and marl	350 - 500

Geologic Narrative
Hunters Creek Business Park-WPAP
New Braunfels, Texas

The site is underlain by the Person Formation (Kep). The cyclic and marine members (undivided) of the Person Formation are present on the site.

The Edwards Group is about 440 feet thick in Comal County and consists of limestone with chert in the form of nodules, lenses and discontinuous beds. The cyclic and marine members, undivided consist of variably burrowed mudstone, grainstone, and crystalline limestone with chert lenses common. The cyclic member was reportedly eroded prior to the deposition of the Georgetown Formation. The remaining marine member consists of medium to thick beds of mudstone and fossiliferous packstone. The cyclic and marine members (hydrogeologic subdivision II) has moldic and vuggy porosity and permeability associated with fossiliferous zones, and fracture porosity and permeability associated with faulting.

The leached and collapsed members (undivided), which underlie the cyclic and marine members) has vuggy and burrow porosity and permeability assisted with burrowed zones; breccia and cavern porosity and permeability associated with collapsed zones resulting from dissolution of evaporites; and fracture porosity and permeability associated with faulting. The regional dense member, below the leached and collapsed members, has little porosity or permeability except for some fracture porosity and permeability associated with faulting.

A mapped fault with a trend North approximately 40 degrees East lies on the eastern side of the site. The fault is down thrown to the East and is confined to members of the cyclic and marine members (undivided) of the Person Formation. An inferred fault with a trend North approximately 8 degrees East lies along the streambed located at the western edge of the tract. The fault is down thrown to the West with members of the cyclic and marine members (undivided) of the Person Formation exposed on the eastern side and members of the leached and collapsed members (undivided) of the Person Formation exposed on the west side. Evidence of these existence of these faults were not observed during the field investigation.

References

Small, Ted A. and Hanson John A., 1994, Geologic framework and hydrogeologic characteristics of the Edwards aquifer outcrop, Comal County, Texas, U.S. Geological Survey Water-Resources Investigations Report 94-4117, 10 p.

Soils Narrative
Hunters Creek Business Park-WPAP
New Braunfels, Texas

The soil mapped at the site are assigned to the Rumple-Comfort association (RUD). The Rumple Series consists of moderately deep, well drained, undulating clayey and cherty soils on uplands. The soils formed over indurated fractured limestone. Slopes are 1 to 8 percent. A typical soil profile is as follows:

- A1 - 0 to 10 inches; dark reddish brown (5YR 3/3) very cherty clay loam, dark reddish brown (5YR 3/2) moist; moderate fine subangular blocky structure; hard, friable; common fine roots; about 35 percent by volume, angular chert fragments mostly 0.5 to 1 inch across; noncalcareous; mildly alkaline; clear smooth boundary.
- B21t - 10 to 14 inches; dark reddish brown (2.5YR 3/4) very cherty clay, dark reddish brown (2.5YR 2/4) moist; moderate very fine subangular blocky structure; hard, friable; common fine roots; patchy clay films on peds; about 35 percent by volume, angular chert fragments mostly 0.5 inch to 2 inches across; noncalcareous; mildly alkaline; abrupt irregular boundary.
- B22t - 14 to 28 inches; dark reddish brown (2.5YR 3/4) extremely stony clay, dark reddish brown (2.5YR 2/4) moist; few fine roots; about 25 percent by volume, clayey soil material in vertical and horizontal fractures and solution cavities; 75 percent limestone cobbles and stones and chert pebbles and cobbles; noncalcareous; mildly alkaline; abrupt wavy boundary.
- R - 28 to 36 inches; coarsely fractured indurated limestone with dark reddish brown clay in crevices.

The soils found within 0 to 10 inch horizon are classified as a GC, CL, or a SC clay with Liquid Limits ranging from 30 to 40 and Plasticity Indices ranging from 13 to 22. The soils found within 10 to 28 inch horizon are classified as a GC, or a SC clay with Liquid Limits ranging from 41 to 86 and Plasticity Indices ranging from 20 to 60. The Rumple soils have a permeability value which ranges from 0.2 to 0.6 inches per hour.

References

United States Department of Agriculture, 1984, Soil survey of Comal and Hays Counties Texas, Soil Conservation Service., 136 p.

Geologist Comments
Hunters Creek Business Park-WPAP
New Braunfels, Texas

The site is underlain by the Person Formation (Kep). The cyclic and marine members (undivided) of the Person Formation are present on the site.

A mapped fault (Feature 16) with a trend North approximately 40 degrees East lies on the eastern side of the site. The fault is down thrown to the East and is confined to members of the cyclic and marine members (undivided) of the Person Formation. An inferred fault (Feature 15) with a trend North approximately 8 degrees East lies along the streambed located at the western edge of the tract. The fault is down thrown to the West with members of the cyclic and marine members (undivided) of the Person Formation exposed on the eastern side and members of the leached and collapsed members (undivided) of the Person Formation exposed on the west side. Evidence of the existence of these faults was not observed during the field investigation.

Feature 14 is a large closed depression, indicated by topographic contours, which lies along the streambed located on the northwest edge of the site. The large closed depression is created by the Highway 46 road embankment and is not a natural closed depression. The stream drainage passes under the roadway by a concrete culvert. However, within the large depression, stream scour was evident on the upstream side of the culvert adjacent to the roadway and the northwest corner of the site and was noted on the Geologic Assessment Table. The scour is attributed to stream erosion and not a natural collapsed feature. TXDOT has recently re-graded the area along the roadway and the scour may not be as evident as it was at the time of the investigation.

The other features observed at the site were closed depressions created by clearing of trees from the property with the exception of Feature S-2 which was an exposed area of fractured rock. A description of the features follows:

S-1 N 29E 43.171' W 98E 10.239'
Closed Depression 6' dia. 1' deep, Soil Rock fill, Hillside, Uprooted tree location

S-2 N 29E 43.191' W 98E 10.355'
Fractured Rock with fractures up to 18" wide with soil, organic fill, area 10' wide X 20' long orientated N 30 deg E Hillside

S-3 N 29E 43.078' W 98E 10.225'
Closed Depression 6' dia. 1' deep, Soil Rock fill, Hillside, Uprooted tree location

S-4 N 29E 43.070' W 98E 10.207'
Closed Depression 4' dia. 1' deep, Soil Rock fill, Hillside, Uprooted tree location

S-5 N 29E 43.066' W 98E 10.183'
Closed Depression 6' dia. 1' deep, Soil Rock fill, Hillside, Uprooted tree location

S-6 N 29E 43.055' W 98E 10.143'
Closed Depression 4' dia. 1' deep, Soil fill, Hillside, Uprooted tree location

S-7 N 29E 43.058' W 98E 10.131'
Closed Depression 4' dia. 1' deep, Soil Rock fill, Hillside, Uprooted tree location

S-8 N 29E 43.098' W 98E 10.212'
Closed Depression 6' dia. 1' deep, Soil fill, Hillside, Uprooted tree location

S-9 N 29E 43.106' W 98E 10.209'
Closed Depression 6' dia. 1' deep, Soil fill, Hillside, Uprooted tree location

S-10 N 29E 43.085' W 98E 10.139'
Closed Depression 4' dia. 1' deep, Soil Rock fill, Hillside, Uprooted tree location

S-11 N 29E 43.078' W 98E 10.100'
Closed Depression 6' dia. 1' deep, Soil fill, Hillside, Uprooted tree location

S-12 N 29E 43.083' W 98E 10.104'
Closed Depression 3' dia. 1' deep, Soil fill, Hillside, Uprooted tree location

S-13 N 29E 43.095' W 98E 10.121'
Closed Depression 4' dia. 1' deep, Soil fill, Hillside, Uprooted tree location

S-14 Closed depression created along Highway 46 by construction of the highway

S-15 Mapped inferred fault along drainage path of creek located on western edge of the site. Fault not observed in field. Fault trend N 08E E.

S-16 Mapped fault located on eastern side of the site. Fault no observed in field. Fault trend N 40E E.

Project Site GPS Reference Points:

Southeast Corner of Site N 29E 43.044' W 98E 10.133'

Northwest Corner of Site N 29E 43.202' W 98E 10.361'

Highway 46 Benchmark N 29E 43.193' W 98E 10.315'

GEOLOGIC ASSESSMENT TABLE						PROJECT NAME: Hunters Creek business Park-WPAP													
LOCATION			FEATURE CHARACTERISTICS											EVALUATION		PHYSICAL SETTING			
5	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
S-1	29°43.171'	98°10.239'	CD	5	Kep	6	6	1	None				COF	5	10	10		<1.6	Hillside
S-2	29°43.191'	98°10.355'	SF	20	Kep	20	10	0.5	N30°E	10			OF	8	38	38		<1.6	Hillside
S-3	29°43.078'	98°10.225'	CD	5	Kep	6	6	1	None				COF	5	10	10		<1.6	Hillside
S-4	29°43.070'	98°10.220'	CD	5	Kep	4	4	1	None				COF	5	10	10		<1.6	Hillside
S-5	29°43.066'	98°10.183'	CD	5	Kep	6	6	1	None				COF	5	10	10		<1.6	Hillside
S-6	29°43.075'	98°10.143'	CD	5	Kep	4	4	1	None				OF	5	10	10		<1.6	Hillside
S-7	29°43.058'	98°10.131'	CD	5	Kep	4	4	1	None				COF	5	10	10		<1.6	Hillside
S-8	29°43.098'	98°10.212'	CD	5	Kep	6	6	1	None				OF	5	10	10		<1.6	Hillside
S-9	29°43.106'	98°10.209'	CD	5	Kep	6	6	1	None				OF	5	10	10		<1.6	Hillside
S-10	29°43.085'	98°10.139'	CD	5	Kep	4	4	1	None				COF	5	10	10		<1.6	Hillside
S-11	29°43.078'	98°10.100'	CD	5	Kep	6	6	1	None				OF	5	10	10		<1.6	Hillside
S-12	29°43.083'	98°10.104'	CD	5	Kep	3	3	1	None				OF	5	10	10		<1.6	Hillside
S-13	29°43.095'	98°10.121'	CD	5	Kep	4	4	1	None				OF	5	10	10		<1.6	Hillside
S-14			CD	5	Kep	40	40	2	None				COF	10	15	15		>1.6	Streambed
S-15**			F	20	Kep				N8°E										Streambed
S-16**			F	20	Kep				N40°E										Hilltop

* DATUM NAD83

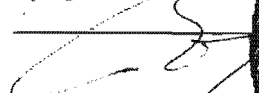
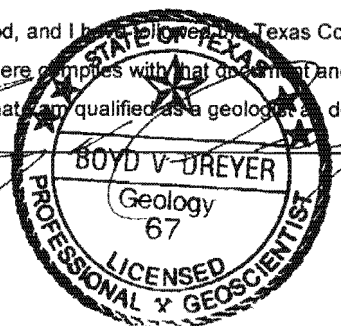
** Not observed in field investigation

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

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

12 TOPOGRAPHY
Cliff, Hilltop, Hillside, Drainage, Floodplain, Streambed

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

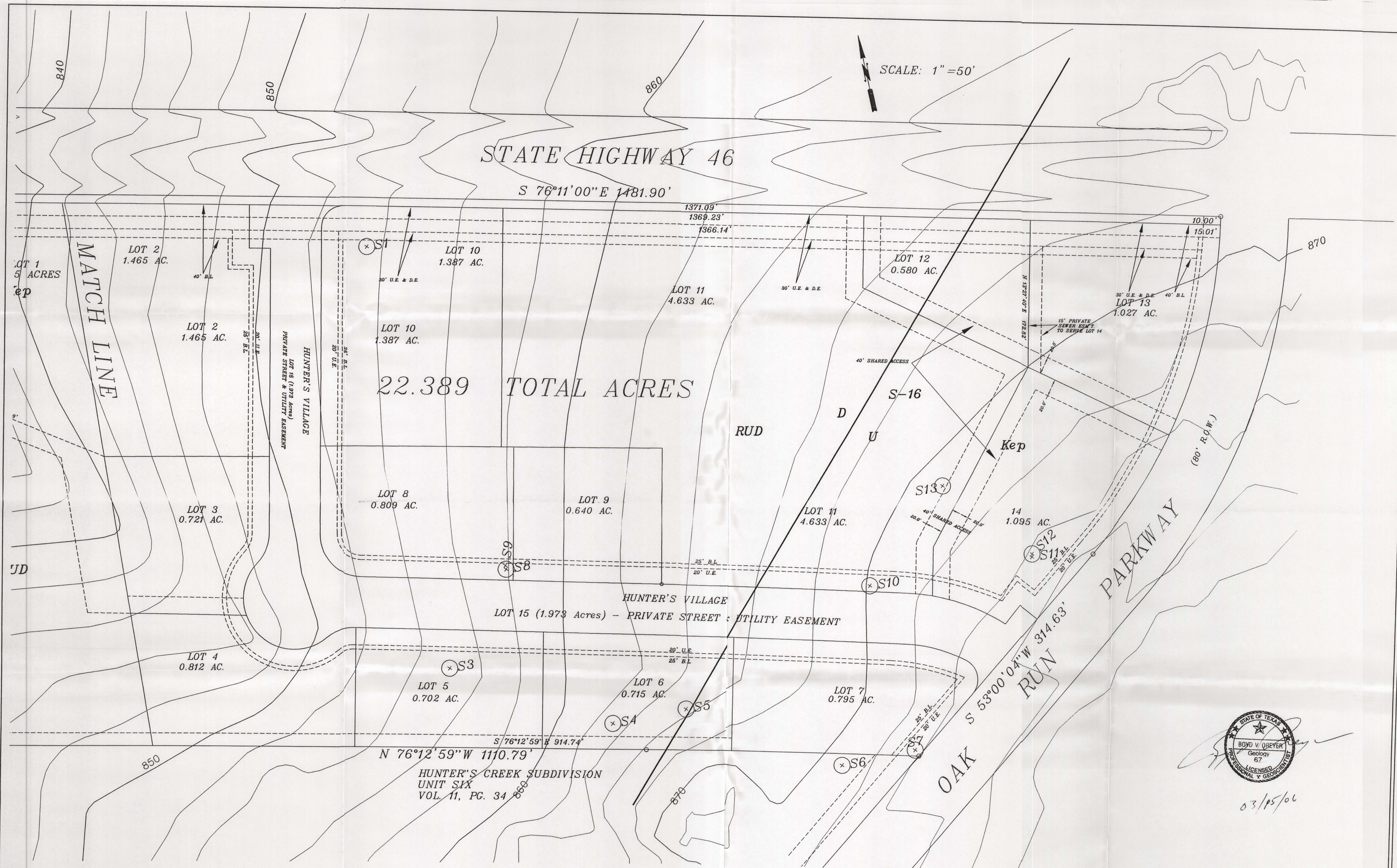


 BOYD V. DREYER
 Geology
 67
 LICENSED PROFESSIONAL GEOSCIENTIST

Date

03/15/06

Sheet

of



Soils Legend

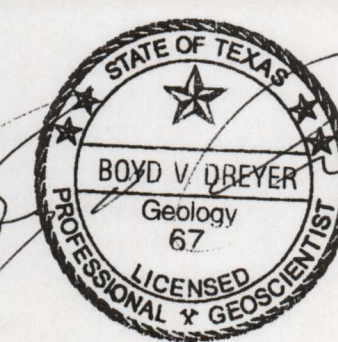
RUD - Rumble-Comfort Association

Geologic Legend

Kep - Person Formation

- U/D Inferred Fault
- U/D Fault
- S-1 - Feature

GeoConsult	
Geological and Environmental Consultants	
Project: HUNTERS CREEK BUSINESS PARK-WPAP NEW BRAUNFELS, TEXAS	
Title: GEOLOGIC/SOILS MAP	
Plate No. II	Project No. 05017
Drawn By: BD	Date: 3/15/06
Approved By: BD	Date: 3/15/06



03/15/06

HUNTERS CREEK
BUSINESS PARK
NEW BRAUNFELS, TEXAS

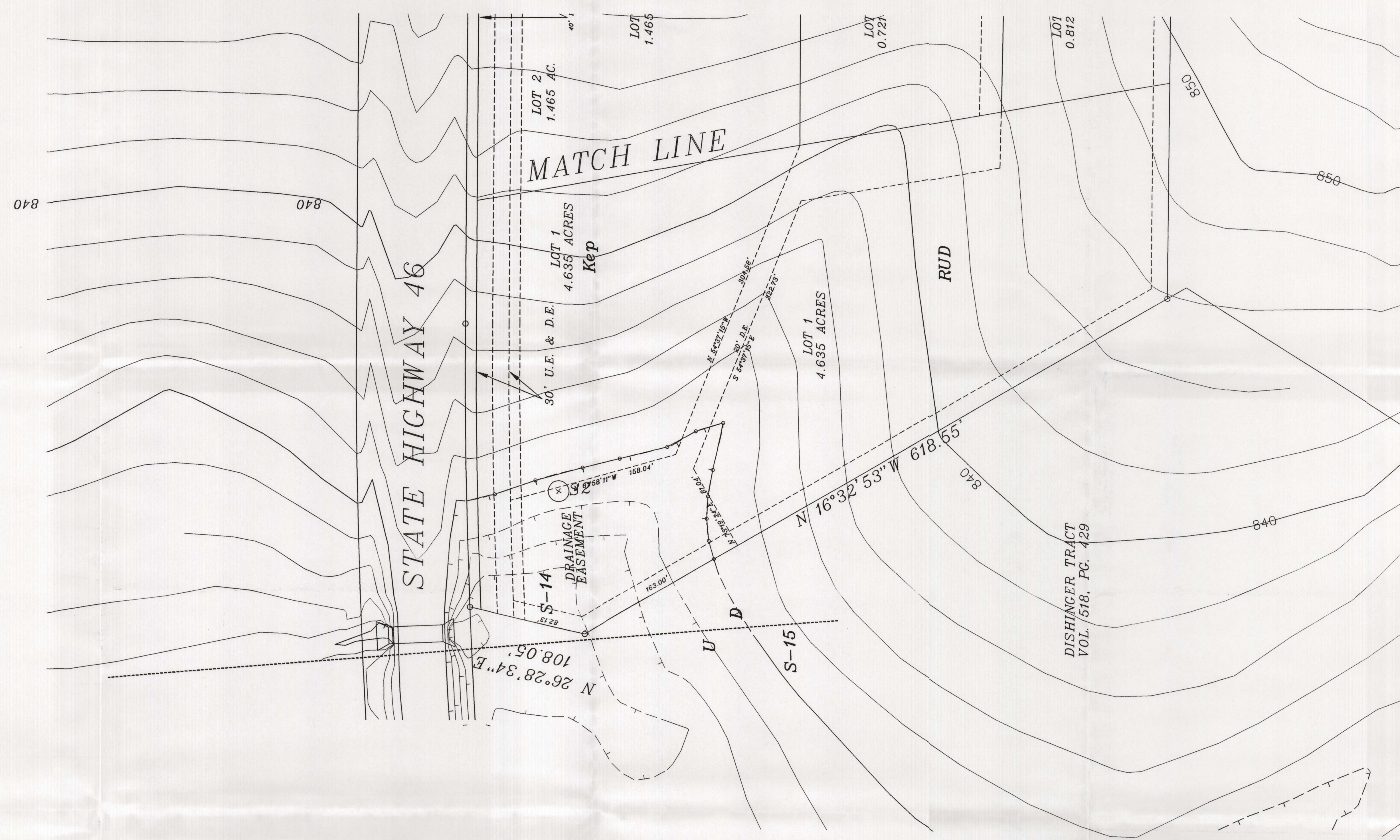
SITE PLAN
(SHT. 2 OF 2)

DRAWN BY: CHECKED BY: DATE: REVISIONS:

S. CRAIG HOLLMIG, INC.
CONSULTING ENGINEERS - SURVEYORS

410 N. SEQUIN STREET
NEW BRAUNFELS, TEXAS 77813-5085
PH: (830) 225-8555 • FAX: (830) 225-8556 • EMAIL: hollmig@stx.com

SCALE: 1"=50'



Soils Legend

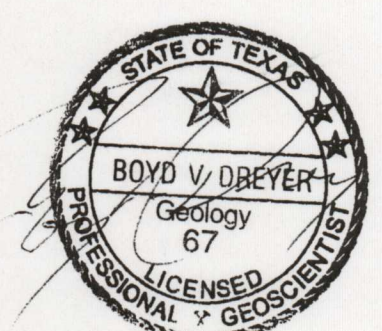
RUD - Rumple-Comfort Association

Geologic Legend

Kep - Person Formation

U/D Inferred Fault
 U/D Fault
 S-1 - Feature

GeoConsul Geological and Environmental Consultants	
Project: HUNTERS CREEK BUSINESS PARK-WPAP NEW BRAUNFELS, TEXAS	
Title: GEOLOGIC/SOILS MAP	
Plate No. 1	Project No. 05017
Drawn By: BD Date: 3/15/06	Approved By: BD Date: 3/15/06



03/15/06

HUNTERS CREEK
 BUSINESS PARK
 NEW BRAUNFELS, TEXAS

SITE PLAN
 (SHT. 1 OF 2)

S. CRAIG HOLLMIG,
 CONSULTING ENGINEERS - SURV
 410 N. SEGUN STREET
 NEW BRAUNFELS, TEXAS 78130
 PH: (830) 625-8555 • FAX: (830) 625-8556 • E-MAIL

DWG. NO:
 PROJECT
 SHEET #

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

REGULATED ENTITY NAME: Hunters Creek Business Park, Ltd.

REGULATED ENTITY INFORMATION

1. The type of project is:
☐ Residential: # of Lots:
☐ Residential: # of Living Unit Equivalents:
☒ Commercial
☐ Industrial
☐ Other:
2. Total site acreage (size of property): 22.38 acres ..
3. Projected population: 0
4. The amount and type of impervious cover expected after construction are shown below:

Impervious Cover of Proposed Project	Sq. Ft.	Sq. Ft./Acre	Acres
Structures/Rooftops	0	÷ 43,560 =	0
Parking	0	÷ 43,560 =	0
Other paved surfaces	65,340	÷ 43,560 =	1.5
Total Impervious Cover	65,340	÷ 43,560 =	1.5
Total Impervious Cover ÷ Total Acreage x 100 = 1.50 ÷ 22.38 x 100% =			6.70%

5. ☒ **ATTACHMENT A - Factors Affecting Water Quality.** A description of any factors that could affect surface water and groundwater quality is provided at the end of this form.
6. ☒ Only inert materials as defined by 30 TAC §330.2 will be used as fill material.

FOR ROAD PROJECTS ONLY

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

7. Type of project:
☐ TXDOT road project.
☐ County road or roads built to county specifications.
☐ City thoroughfare or roads to be dedicated to a municipality.
☐ Street or road providing access to private driveways.
8. Type of pavement or road surface to be used:

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

9. Length of Right of Way (R.O.W.): _____ feet.
 Width of R.O.W.: _____ feet.
 $L \times W = \text{_____ Ft}^2 \div 43,560 \text{ Ft}^2/\text{Acre} = \text{_____ acres.}$
10. Length of pavement area: _____ feet.
 Width of pavement area: _____ feet.
 $L \times W = \text{_____ Ft}^2 \div 43,560 \text{ Ft}^2/\text{Acre} = \text{_____ acres.}$
 Pavement area _____ acres \div R.O.W. area _____ acres $\times 100 = \text{_____ \%}$ 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 description of the volume and character (quality) of the stormwater runoff which is expected to occur from the proposed project is provided at the end of this form. The estimates of stormwater runoff quality and quantity should be based on area and type of impervious cover. Include the runoff coefficient of the site for both pre-construction and post-construction conditions.

WASTEWATER TO BE GENERATED BY THE PROPOSED PROJECT

Not applicable

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

<u>100</u> % Domestic	<u>22,300</u> gallons/day
<u> </u> % Industrial	<u> </u> gallons/day
<u> </u> % Commingled	<u> </u> gallons/day

TOTAL 22,300 gallons/day

15. Wastewater will be disposed of by: Not applicable

☐ **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. The appropriate licensing authority's (authorized agent) written approval is provided at the end of this form. It states that the land is suitable for the use of an on-site sewage facility or identifies areas that are not suitable.

☐ 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.

X Sewage Collection System (Sewer Lines):

- ☐ Private service laterals from the wastewater generating facilities will be connected to an existing SCS.
- X Private service laterals from the wastewater generating facilities will be connected to a proposed SCS.
- ☐ The SCS was previously submitted on _____.
- X The SCS was submitted with this application.
- ☐ The SCS will be submitted at a later date. The owner is aware that the SCS may not be installed prior to executive director approval.

The sewage collection system will convey the wastewater to the New Braunfels Utilities Gruene Waste Water 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 through 27 must be included on the Site Plan.

17. The Site Plan must have a minimum scale of 1" = 400'.
Site Plan Scale: 1" = 50'.
18. 100-year floodplain boundaries
- ☐ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.
- 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):

Flood Insurance Rate Map – City of New Braunfels Map No. 485493 0005E dated 1-05-06

19. X The layout of the development is shown with existing and finished contours at appropriate, but not greater than ten-foot contour intervals. Show lots, recreation centers, buildings, roads, etc.
- ☐ The layout of the development is shown with existing contours. Finished topographic contours will not differ from the existing topographic configuration and are not shown.
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 30 TAC §238.
- 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:
- X All **sensitive and possibly sensitive** geologic or manmade features identified in the Geologic Assessment are shown and labeled.

— No **sensitive and possibly sensitive** geologic or manmade features were identified in the Geologic Assessment.

N/A **ATTACHMENT D - Exception to the Required Geologic Assessment.** An exception to the Geologic Assessment requirement is requested and explained in ATTACHMENT D provided at the end of this form. Geologic or manmade features were found and are shown and labeled.

N/A **ATTACHMENT D - Exception to the Required Geologic Assessment.** An exception to the Geologic Assessment requirement is requested and explained in ATTACHMENT D provided at the end of this form. No geologic or manmade features were found.

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).
27. X Locations where stormwater discharges to surface water or sensitive features.
— There will be no discharges to surface water or sensitive features.

ADMINISTRATIVE INFORMATION

28. X One (1) original and three (3) copies of the completed application have been provided.
29. X Any modification of this WPAP will require TCEQ executive director approval, prior to construction, and may require submission of a revised application, with appropriate fees.

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 Brian L. Merriman, P.E.

Brian L. Merriman

Signature of Customer/Agent

3/22/06

Date

ATTACHMENT "A"

FACTORS AFFECTING WATER QUALITY

Surface Water – Construction from the street and drainage utility improvements may have an effect on surface water by sediments leaving the site after a rainfall event.

Ground Water – Any sediments or non point source pollutants generated by the site construction activity may provide an opportunity for affecting ground water quality.

WATER POLLUTION ABATEMENT PLAN APPLICATION

ATTACHMENT "B"

13. Volume and Character of Stormwater

Pre – clearing runoff coefficient – 0.4

Post – clearing runoff coefficient – 0.43

What is the quantity (peak) on a 10 and 100 year basis?

Time of concentration = 15 min.

Drainage Area = 22.389 Acres

Rainfall intensity (10 yr) = 6.3 in/hr.

Rainfall intensity (100 yr) = 9.87 in/hr.

Pre-Developed

$$Q_{10} = CIA = 0.4 (6.3) (22.389) = 56.4 \text{ cfs}$$

$$Q_{100} = CIA = 0.4 (9.87) (22.389) = 88.4 \text{ cfs}$$

Post-Developed

$$Q_{10} = CIA = 0.43 (6.3) (22.389) = 60.6 \text{ cfs}$$

$$Q_{100} = CIA = 0.43 (9.81) (22.389) = 95.0 \text{ cfs}$$

Temporary Stormwater Section
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

REGULATED ENTITY NAME: HUNTERS CREEK BUSINESS PARK, INC.

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.

Note: The clearing project has occurred.

1. Fuels for construction equipment and hazardous substances which will be used during construction:
 - ☐ 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-site.
According to the contractor, no fuels or hazardous substances were stored on site.
2. ☒ **ATTACHMENT A - Spill Response Actions.** A description of the measures to be taken to contain any spill of hydrocarbons or hazardous substances is provided at the end of this form.
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.** Describe in an attachment at the end of this form any other activities or processes which may be a potential source of contamination.
 - ☐ There are no other potential sources of contamination.

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 provided at the end of this form. For each activity described, an estimate of the total area of the site to be disturbed by each activity is given.
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: Bleider's Creek Tributary to 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. X **ATTACHMENT D - Temporary Best Management Practices and Measures.** A description of the TBMPs and measures that will be used during and after construction are provided at the end of this form. For each activity listed in the sequence of construction, include appropriate control measures and the general timing (or sequence) during the construction process that the measures will be implemented.
- X 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 has been provided in the attachment at the end of this form
- a. A description of how BMPs and measures will prevent pollution of surface water, groundwater or stormwater that originates upgradient from the site and flows across the site.
 - b. A description of how BMPs and measures will prevent pollution of surface water or groundwater that originates on-site or flows off site, including pollution caused by contaminated stormwater runoff from the site.
 - c. A description of how BMPs and measures will prevent pollutants from entering surface streams, sensitive features, or the aquifer.
 - d. A description of how, to the maximum extent practicable, BMPs and measures will maintain flow to naturally-occurring sensitive features identified in either the geologic assessment, TCEQ inspections, or during excavation, blasting, or construction.
8. The temporary sealing of a naturally-occurring sensitive feature which accepts recharge to the Edwards Aquifer as a temporary pollution abatement measure during active construction should be avoided.
- ATTACHMENT E - Request to Temporarily Seal a Feature.** A request to temporarily seal a feature is provided at the end of this form. 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.** Describe 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. Placement of structural practices in floodplains has been avoided.

10. X **ATTACHMENT G - Drainage Area Map.** A drainage area map is provided at the end of this form to support the following requirements.
- 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.
 - X 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.
11. N/A **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 has 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 provided as at the end of this form.
12. X **ATTACHMENT I - Inspection and Maintenance for BMPs.** A plan for the inspection of temporary BMPs and measures and for their timely maintenance, repair, and, if necessary, retrofit is provided at the end of this form. A description of documentation procedures and recordkeeping practices is included in the plan.
13. X All control measures must be properly selected, installed, and maintained in accordance with the manufacturers specifications and good engineering practices. If periodic inspections by the applicant or the executive director, or other information indicates 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. X 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 vegetation, 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 at the end of this form.
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.

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the 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 Brian L. Merriman, P.E.

Brian L. Merriman 3/22/06
Signature of Customer/Agent

Date

TEMPORARY STORMWATER SECTION

ATTACHMENT A

Spill Response Actions

Contractor to notify all appropriate authorities if more than 25 gallons of hydrocarbons are spilled. The construction plans include the required notes regarding appropriate spill response actions as directed by TECQ. There will be no temporary storage vessels of fuel or hydrocarbons to be stored on site.

If spills of any hydrocarbons occur, construction must contain spills by immediate action. Earthen materials must be kept readily available to provide a Dike. Sand should be used to help soak fuels. Proper disposal of any materials used will be required.

TEMPORARY STORMWATER SECTION

ATTACHMENT "B"

Potential Sources of Contamination

This project includes the construction of approximately 1,360 L.F. of new street and associated drainage channels, culverts and water and wastewater lines. The possible sources of contamination include fuel spills by the Contractor while refueling equipment. Other smaller quantities of solvent for construction may be present. As well placement of asphalt concrete and emulsions will also introduce a potential source. Contractor shall keep all fuel transfers and any other contaminants used secure. Please see Attachment "A" for response actions.

TEMPORARY STORMWATER SECTION

ATTACHMENT "C"

Sequence of Major Activities

Construction sequencing

1. Call New Braunfels Utilities and TCEQ 48-hours prior to beginning any work. Call the Dig Text for utility locations.
2. Install temporary erosion controls prior to construction.
3. Begin site clearing of the SCS line right-of-way.
4. Inspect erosion controls at weekly intervals, before and after significant rainfall events to insure they are functioning properly.
5. Cut utility trench.
6. Install site utilities including drainage infrastructure
7. Complete street paving.
8. Complete all construction and stabilize any disturbed soils.
9. Contact project engineer to inspect the site. Final City inspection to be scheduled.
10. Complete any necessary final dress up areas disturbed.
11. Remove and dispose of temporary erosion controls after site stabilization has occurred.

Total area disturbed for construction under this WPAP is approximately 4.5 acres.

Streets	1.97 acres
Channels	1.6 acres
W.Q. Pond	0.90 acres

TEMPORARY STORMWATER SECTION

ATTACHMENT D

Temporary Best Management Practices and Measures

Temporary erosion controls are proposed for this project to include silt fence, rock berms, and stabilized construction entrances and exits.

860 lineal feet of silt fence will be used. This will be placed downgradient of all proposed construction. Please see Sheet # 6 of the plans.

Two stabilized construction entrances at the beginning of the project will be required. Please see Sheet # 6 of the plans.

One rock berm will be used for Channel "C" and two existing rock berms for Channel "B". See sheet # 5 of the plans.

A. The stormwater from points G & C that originates upgradient will be diverted around the site in a 15' D. E. Four (4) silt fence crossings will be used in this channel. The diversion of upgradient flows will prevent possible contamination from pollutants leaving this site.

B. There are no known surface streams or ground water that originate on this site. Silt fence, rock berms and areas that remain undisturbed with natural vegetation in place will minimize erosion leaving the site during construction.

C. A permanent water quality pond will be constructed. This pond shall be rough cut to act as a sediment trap for construction activity.

In addition, the contractor has been directed to minimize disturbance to approximately 4.5 acres. A staging area has been shown on Sheet # 6. This area will be protected by silt fence.

D. There are no sensitive features that were identified in the Geologic Assessment by GeoConsul dated January 30, 2006, if any are discovered during excavation, all construction activity will halt. The feature will be reported as required. The feature will be evaluated and the engineer will provide a plan to TCEQ. The overall drainage patterns for developed conditions will not be altered greatly from natural conditions.

TEMPORARY STORMWATER SECTION

ATTACHMENT "F"

Structural Practices

During construction, silt fence and rock berms will be used until construction is complete and vegetation and paving has been established. Rough cutting of the proposed streets will divert flows to one proposed water quality pond that will be rough cut as well. This will serve as a temporary sediment trap while construction is occurring.

In addition, the contractor will be directed to minimize site disturbance and avoid having equipment in areas that are not necessary for the construction of this subdivision. Natural vegetation shall be left undisturbed and will help remove sediment if any bypass at silt fences or other structural measures occurs.

TEMPORARY STORMWATER SECTION

ATTACHMENT I

Inspection and Maintenance for BMP's

The Contractor will be directed to inspect and maintain all temporary BMP's. The design engineer will also make regular visits to the project and will provide visual inspections as well. Any deficiency noted must be corrected immediately by Contractor.

Maintenance:

- (1). Inspect all silt fencing weekly and after any rainfalls.
- (2). Remove sediment when buildup reaches 6 inches or install a second line of silt fence parallel.
- (3). Replace any torn fabric or install a second line of silt fence parallel.
- (4). Replace or repair any sections crushed or collapsed in the course of construction.
- (5). See stormwater pollution plan details as shown in the construction plans for proper size and installation.
- (6). Contractor to maintain a daily log and note any deficiencies to temporary BMP's and corrective action taken. Rainfall events shall also be noted.

SWPPP INSPECTION REPORT ATTACH "I"

Pg 1 of 3

Operator: _____

Job Name: _____

Location: _____

Inspector: _____

Is this site over the Aquifer recharge or contributing zone _____	If this site is in compliance with the SWPPP and Permit _____	Check here <input type="checkbox"/>
---	---	-------------------------------------

Date: Rain Fall

Receiving Waters: _____

Map GIRD: _____

Inspector Qualifications: See Qualification Form

Visual Inspection of site	Y	N	N/A
NOI Posted?			
Site Notice Posted?			
Was a copy of the NOI sent to the Reporting agency?			
SWPPP Plan in Box?			
Copy of WPAP in the box? (If applies)			
SWPPP Information updates			
Material list updated?			
Project Milestone current with intended dates?			
All current locations of BMP's Identified on plans?			
Areas under operators control clearly Identified on site map?			
Trash Containers and Restrooms noted?			
Stabilized areas updated or noted on plans?			
Site Condition			
Entrance and exits free from off site tracking?			
Trash and Debris being contained on site?			
Material storage area effectively controlling pollutants?			
Wash out pit in working order?			
Are all pollutants contained on site?			
Erosion Control devices in working order?			
Are all BMP's Adequate for this site at this time?			
Hazardous Waste			
Is there materials being exposed to storm water runoff?			
Any signs of major leaks or spills?			
Any Leaks or spills of reputable Quantity need to be reported?			

Comments

[illegible]

2111

SWPPP INSPECTION REPORT

ATTACH "I"

Pg 2 of 3

Job Name: _____ Date: _____

Location	What Failed and Amount	Reason	Modification to be made	Correction Date
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
Location	What Failed and Amount	Reason	Modification to be made	Correction Date
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
Location	What Failed and Amount	Reason	Modification to be made	Correction Date
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
Location	What Failed and Amount	Reason	Modification to be made	Correction Date
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
Location	What Failed and Amount	Reason	Modification to be made	Correction Date
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

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

Qualified BMP Inspector _____

ATTACH "I"

[illegible]

NOTES:

TEMPORARY STORMWATER SECTION

ATTACHMENT J

Schedule of Interim and Permanent Soil Stabilization Practices

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.

If after 21 days, and construction activity will not resume, hydromulch shall be applied to all disturbed areas except in drainage channels or where slopes exceed 3:1. 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.

All erosion control measures must remain in place until such stabilization has successfully occurred.

Rock berms shall be used as indicated. Owner shall consult with design engineer to determine all necessary measures to stabilize the site if construction does not resume.

TCEQ RG 398 dated July 2005 shall be used as a guide in determining these areas that may require stabilization.

Permanent Stormwater Section
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

REGULATED ENTITY NAME: Hunters Creek Business Park, Inc.

Permanent best management practices (BMPs) and measures that will be used during and after construction is completed. Construction of land clearing has occurred and site stabilization is secure.

1. x Permanent BMPs and measures must be implemented to control the discharge of pollution from regulated activities after the completion of construction. Vegetation is complete.

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 provided below

3. x 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.

4. N/A 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.

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

5. x 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.

N/A **ATTACHMENT A - 20% or Less Impervious Cover Waiver.** This 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 found at the end of this form.

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

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

6. **ATTACHMENT B - BMPs for Upgradient Stormwater.**

X 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 identified as **ATTACHMENT B** at the end of this form.

— If no surface water, groundwater or stormwater originates upgradient from the site and flows across the site, an explanation is provided as **ATTACHMENT B** at the end of this form.

— If 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, an explanation is provided as **ATTACHMENT B** at the end of this form .

7. **ATTACHMENT C - BMPs for On-site Stormwater.**

X 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 identified as **ATTACHMENT C** at the end of this form.

— If 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, an explanation is provided as **ATTACHMENT C** at the end of this form.

8. X **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 provided at the end of this form. Each feature identified in the Geologic Assessment as "sensitive" or "possibly sensitive" has been addressed.

9. X 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.

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

occurring "sensitive" or "possibly sensitive" features on this site.

N/A

ATTACHMENT E - Request to Seal Features. A request to seal a naturally-occurring "sensitive" or "possibly sensitive" feature, that includes a justification as to why no reasonable and practicable alternative exists, is found at the end of this form. A request and justification has been provided for each feature.

10. X

ATTACHMENT F - Construction Plans. Construction plans and design calculations for the proposed permanent BMPs and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information have been signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed permanent BMPs and measures are provided at the end of this form. Design Calculations, TCEQ Construction Notes, all man-made or naturally occurring geologic features, all proposed structural measures, and appropriate details must be shown on the construction plans.

11. X

ATTACHMENT G - Inspection, Maintenance, Repair and Retrofit Plan. A plan for the inspection, maintenance, repair, and, if necessary, retrofit of the permanent BMPs and measures is provided at the end of this form. The plan has been prepared and certified by the engineer designing the permanent BMPs and measures. The plan has been signed by the owner or responsible party. The plan includes procedures for documenting inspections, maintenance, repairs, and, if necessary, retrofits as well as a discussion of record keeping procedures.

12. X

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

N/A

Pilot-scale field testing (including water quality monitoring) may be required for BMPs that are not contained in technical guidance recognized by or prepared by the executive director.

— **ATTACHMENT H - Pilot-Scale Field Testing Plan.** A plan for pilot-scale field testing is provided at the end of this form.

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 provided at the end of this form. 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.

Responsibility for maintenance of permanent BMPs 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.

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.

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 Brian L. Merriman, P.E.

Brian L. Merriman 3/22/06

Signature of Customer/Agent

Date

Permanent Stormwater Section
Attachment "B"

All upgradient stormwater flows will be intercepted and conveyed around this site in Channel "A". Please see Sheet # 6. Intercepting these flows will prevent any mixing with untreated runoff from this development. No or no known surface waters or groundwater flows on this site. Each lot will be required by plat notes and restrictions to provide permanent water pollution abatement measures in accordance with the TCEQ EAPP.

PERMANENT STORMATER SECTION ATTACHMENT "C"

A 7,337 cubic foot sand filtration pond is proposed to treat the first 1.50" of runoff from the street only. According to TCEQ's RG 348 dated July, 2005, a sand filtration pond will provide up to 89% removal efficiency. Street grades have been designed to convey the runoff to one point and drain through a 25' curb opening between lots 3 and 4. The filtration pond will be located within a drainage easement on lot 1, please see sheet No. 6, for this site plan. This pond is not sized to treat any additional impervious cover other than the street and 11 driveway approach aprons. Please see Attachment "F" for plans and calculations for this water quality pond.

Each lot developer will be required by a subdivision plat note and owner disclosures that each lot shall provide its own permanent structural best management practice and comply with the TCEQ Edwards Aquifer Protection Program TAC Chapter 213. In addition each lot developer shall modify this WPAP as necessary.

PERMANENT WASTEWATER SECTION ATTACHMENT "D"

In addition to the permanent BMP as discussed in Attachment "C", each lot will be required to have its own permanent structural BMP as well. This restriction will limit the amount of developed land on each lot. With each lot required to provide a permanent structural BMP, a higher level of abatement will be achieved if a non point source discharge occurs.

There were no "sensitive" or "possibly sensitive" features identified in the Geologic Assessment by Mr. Boyd Dreyer of GeoConsul.

ATTACHMENT "F"

HUNTERS CREEK BUSINESS PARK BMP SIZING CALCULATIONS

The area to be treated is the roadway surface for Hunter's Creek Business Park. The area also includes the Parkway area and 11 proposed driveway approaches (for lots 2-11 & 14).

Area: 1.97 Acres

Impervious cover: 1.50 Acres

$$\% \text{ I.C.} = 1.50/1.97 \times 100\% = 76.1\%$$

Required TSS Removal

From Eq 3.2 $L_m = 27.2 (A_n \times P)$

$A_n = 1.50 \text{ Ac. } P = 33''$ (Comal County Table 3-2)

$$L_m = 27.2 (1.40 \times 33) = 1346.4 \text{ lbs.}$$

Select appropriate BMP

80% TSS Reduction Required.

→ Sand Filter provides 89% reduction.

Calculate TSS Load removed by Sand Filter.

From Eq. 3.8 $L_r = 0.89 \times 33 \times (1.50 \times 34.6 + 0.47 \times 0.54)$

$$L_r = 1531.7 \text{ lbs.}$$

Calculate Fraction of Annual Runoff

From Eq. 3.9 $F = L_m / \sum L_r$

$$F = 1346.4/1531.7 = 0.88$$

Required Rainfall Depth

From Table 3-4 Using $F = 0.88$

→ Depth = 1.50"

Calculate Required Water Quality Volume

From Eq. 3.10 $WQV = 1.50'' \times C \times \text{Area}$

Runoff Coefficient:

From Eq. 3.11 $C = 1.72 (.76)^3 - 1.97 (.76)^2 + (.23(.76) + 0.02$

$$\begin{aligned} \rightarrow C &= 0.758 - 1.14 + 0.93 + 0.02 \\ &= 0.57 \end{aligned}$$

$$\begin{aligned} WQV &= [1.50'' \times 0.57 (1.97 \text{ Ac.} \times 43,560)] / 12 \text{ inch/ft} \\ &= 6114.2 \text{ CF} \end{aligned}$$

Increase W.Q.V. by 20% Yields = 7337.0 CF

Calculate Min. Surface Area:

$$A_f = WQV/10 = 7337/10 = 734 \text{ Sq. Ft.}$$



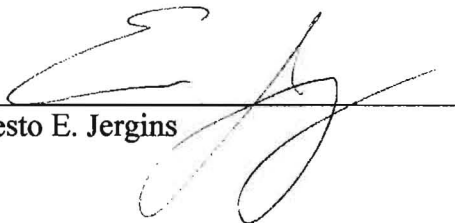
3/29/06
Brian L. Merriman

ATTACHMENT "G"
WATER QUALITY POND MAINTENANCE PLAN
FOR WATER QUALITY POND # 1

Pond Location: Sand Filtration Pond will be located on Lot # 1 adjacent to Lot # 3 of
Hunters Creek Business Park.

Pond Owner: Mr. Ernesto E. Jergins
President
Hunters Creek Business Park, Inc.
651 N. Business IH 35 Suite 240
New Braunfels, TX 78130

The attached plan shall be implemented to ensure that the proposed sand filtration pond
function as designed.



Ernesto E. Jergins



Date

PERMANENT STORMWATER SECTION
ATTACHMENT "G"
SCHEDULE & MEASURES

MAINTENANCE

Inspections. BMP facilities must be inspected at least quarterly (once during or immediately following wet weather) to evaluate facility operations. During each inspection, erosion areas inside and downstream of the BMP must be identified and repaired or revegetated immediately. With each inspection, any damage to the structural elements of the system (pipes, concrete drainage structures, retaining walls, etc) must be identified and repaired immediately. Cracks, voids and undermining should be patched/filled to prevent additional structural damage. Trees and root systems should be removed to prevent growth in cracks and joints that can cause structural damage.

Sediment Removal. Remove sediment from the inlet structure and sedimentation chamber when sediment buildup reaches a depth of 6 inches or when the proper functioning of inlet and outlet structures is impaired. Sediment should be cleared from the inlet structure at least every year and from the sedimentation basin at least every 5 years.

Media Replacement. Maintenance of the filter media is necessary when the drawdown time exceeds 48 hours. When this occurs, the upper layer of sand should be removed and replaced with new material meeting the original specifications. Any discolored sand should also be removed and replaced. In filters that have been regularly maintained, this should be limited to the top 2 to 3 inches.

Debris and Litter Removal. Debris and litter will accumulate near the sedimentation basin outlet device and should be removed during regular mowing operations and inspections. Particular attention should be paid to floating debris that can eventually clog the said filter.

Filter Underdrain. Clean underdrain piping network to remove any sediment buildup as needed to maintain design drawdown time.

Mowing. Grass areas in and around sand filters must be mowed at least twice annually to limit vegetation height to 18 inches. More frequent mowing to maintain aesthetic appeal may be necessary in landscaped areas. Vegetation on the pond embankments should be mowed as appropriate to prevent the establishment of woody vegetation.

ATTACHMENT "G"

PERMANENT STORMWATER SECTION SAND FILTRATION POND QUARTERLY INSPECTION & MAINTENANCE FORM

Date: _____

1. Erosion

_____ Any evidence of erosion inside pond: yes / no
_____ Any evidence of erosion downstream: yes / no
_____ Any evidence of erosion of side slopes: yes / no

2. Sediment

_____ Depth of sediment in pond: _____
_____ Date of last sediment removal: _____

3. Debris and Trash

_____ Removal of debris and trash: yes / no

4. Sand Media

_____ Does pond drain in 48 hours: yes / no
_____ Date of last sand media replacement: _____

5. Filter Underdrain

_____ Is underground piping functioning: yes / no

6. Mowing

_____ Height of grass: _____

List of Deficiencies:

Corrective Action:

Work Performed by:

JAM
4/15/06

THIS SERVES AS A RECORD FOR COMPLIANCE WITH THE
PERMANENT STORMWATER SECTION OF THIS WCAP. THESE
MAINTENANCE RECORDS SHALL BE KEPT AND MAINTAINED
ON-SITE BY THE OWNER.

PERMANENT STORMWATER SECTION ATTACHMENT "I"

The developer for the project has chosen to require each individual lot developer to provide on-site detention of stormwater as well as on-site treatment of stormwater. By providing detention of stormwater on-site, the downstream waterways will be protected from the flashing effects of increased flows.

All stormwater leaves this site at one location in the Northwest corner of this tract.

Post developed conditions will not greatly alter the flow patterns to this point.

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

I Ernesto E. Jergins
Print Name

Title - Owner/President/Other

of Hunters Creek Business Park, Inc..
Corporation/Partnership/Entity Name

have authorized Brian L. Merriman, P.E.
Print Name of Agent/Engineer

of S. Craig Hollmig, 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 applicants 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.

Applicant's Signature

Date 3-22-06

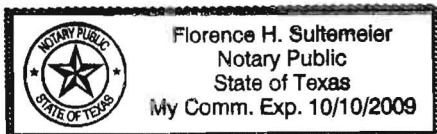
THE STATE OF TEXAS §

County of Comal §

BEFORE ME, the undersigned authority, on this day personally appeared Ernesto E. Jergins 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 22nd day of March, 2006

Florence H. Sultemeier
NOTARY PUBLIC



Florence H. Sultemeier
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 10/10/2009

Texas Commission on Environmental Quality
Edwards Aquifer Protection Plan
Application Fee Form

NAME OF PROPOSED REGULATED ENTITY: Hunter's Creek Business Park, Inc.

REGULATED ENTITY LOCATION: Southwest Corner of SH 46 and Oak Run Parkway, New Braunfels, Tx.

NAME OF CUSTOMER: Hunters Creek Business Park, Inc.

CONTACT PERSON: Ernesto E. Jergins

(Please Print)

PHONE: 210-771-7770

Customer Reference Number (if issued): CN 602825382 (nine digits)

Regulated Entity Reference Number (if issued): RN 104590567 (nine digits)

AUSTIN REGIONAL OFFICE (3373)

- ☐ Hays
☐ Travis
☐ Williamson

SAN ANTONIO REGIONAL OFFICE (3362)

- ☐ Bexar ☐ Medina
☒ Comal ☐ Uvalde
☐ 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 (CHECK ONE):

☒ **SAN ANTONIO REGIONAL OFFICE**

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

☐ **AUSTIN REGIONAL OFFICE**

- ☐ **Overnight Delivery to TCEQ:**
TCEQ - Cashier
12100 Park 35 Circle
Building A, 3rd Floor
Austin, TX 78753
512/239-0347

Type of Plan	Size	Fee Due
Water Pollution Abatement, One Single Family Residential Dwelling	Acres	\$
Water Pollution Abatement, Multiple Single Family Residential and Parks	Acres	\$
Water Pollution Abatement, Non-residential	22,389 Acres	\$ 5000
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] 3/29/06
Signature

Date

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

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

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program
Application Fee Schedule
30 TAC §213.14 (effective 11/14/97) & 30 TAC §213.9 (effective 6/1/99)

Water Pollution Abatement Plans and Modifications

PROJECT	PROJECT AREA IN ACRES	FEE
One Single Family Residential Dwelling	<5	\$500
Multiple Single Family Residential and Parks	<5	\$1,000
	5 < 10	\$2,000
	10 < 50	\$3,000
	≥50	\$5,000
Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur)	< 1	\$2,000
	1 < 5	\$3,000
	5 < 10	\$4,000
	≥10	\$5,000

Organized Sewage Collection Systems and Modifications

PROJECT	COST PER LINEAR FOOT	MINIMUM FEE MAXIMUM FEE
Sewage Collection Systems	\$0.50	\$500 - \$5,000

**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	\$500	\$500 - \$5,000

Exception Requests

PROJECT	FEE
Exception Request	\$250

Extension of Time Requests

PROJECT	FEE
Extension of Time Request	\$100

TCEQ Core Data Form

TCEQ Use Only

If you have questions on how to fill out this form or about our Central Registry, please contact us at 512-239-5175.

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

SECTION I: General Information

1. Reason for Submission *Example: new wastewater permit; IHW registration; change in customer information;*

New WPAP

2. Attachments Describe Any Attachments: (ex: Title V Application, Waste Transporter Application, etc.)

☒ X ☐ Y ☐ NO ☐ WPAP

3. Customer Reference Number-if issued

4. Regulated Entity Reference Number-if issued

CN 602825382

(9 digits)

RN

104590567

(9 digits)

SECTION II: Customer Information

5. Customer Role (Proposed or Actual) -- As It Relates to the Regulated Entity Listed on This Form

Please check one of the following:

☒ X

Owner

☐ Operator

☐ Owner and Operator

☐ Occupational Licensee

☐ Volunteer Cleanup Applicant

☐ Other

TCEQ Use Only

☐ Superfund

☐ PST

☐ Respondent

6. General Customer Information

☐ New Customer

☐ Change to Customer Information

☐ Change in Regulated Entity Ownership

☒ X No Change *

*If A No Change and Section I is complete, skip to Section III - Regulated Entity Information.

7. Type of Customer:

☐ Individual

☐ Sole Proprietorship - D.B.A.

☐ Partnership

☐ Corporation

☐ Federal Government

☐ State Government

☐ County Government

☐ City Government

☐ Other Government

☐ Other: Limited Partnership

8. Customer Name (If an individual, please print last name first) If new name, enter previous name:

Hunter's Creek Business Park, Inc.

9. Mailing Address: 651 N Business IH 35, Suite 240

City

State

ZIP

ZIP + 4

New Braunfels

TX

78130

10. Country Mailing Information if outside USA

11. E-Mail Address if applicable

12. Telephone Number

13. Extension or Code

14. Fax Number if

210-771-7770

15. Federal Tax ID (9 digits)

16. State Franchise Tax ID Number if applicable

17. DUNS Number if applicable (9 digits)

18. Number of Employees

19. Independently Owned and Operated?

☒ X

0-20

☐ 21-100

☐ 101-250

☐ 251-500

☐ 501 and higher

☐ Yes

☐ No

SECTION III: Regulated Entity Information

20. General Regulated Entity Information

☐ New Regulated Entity

☐ Change to Regulated Entity Information

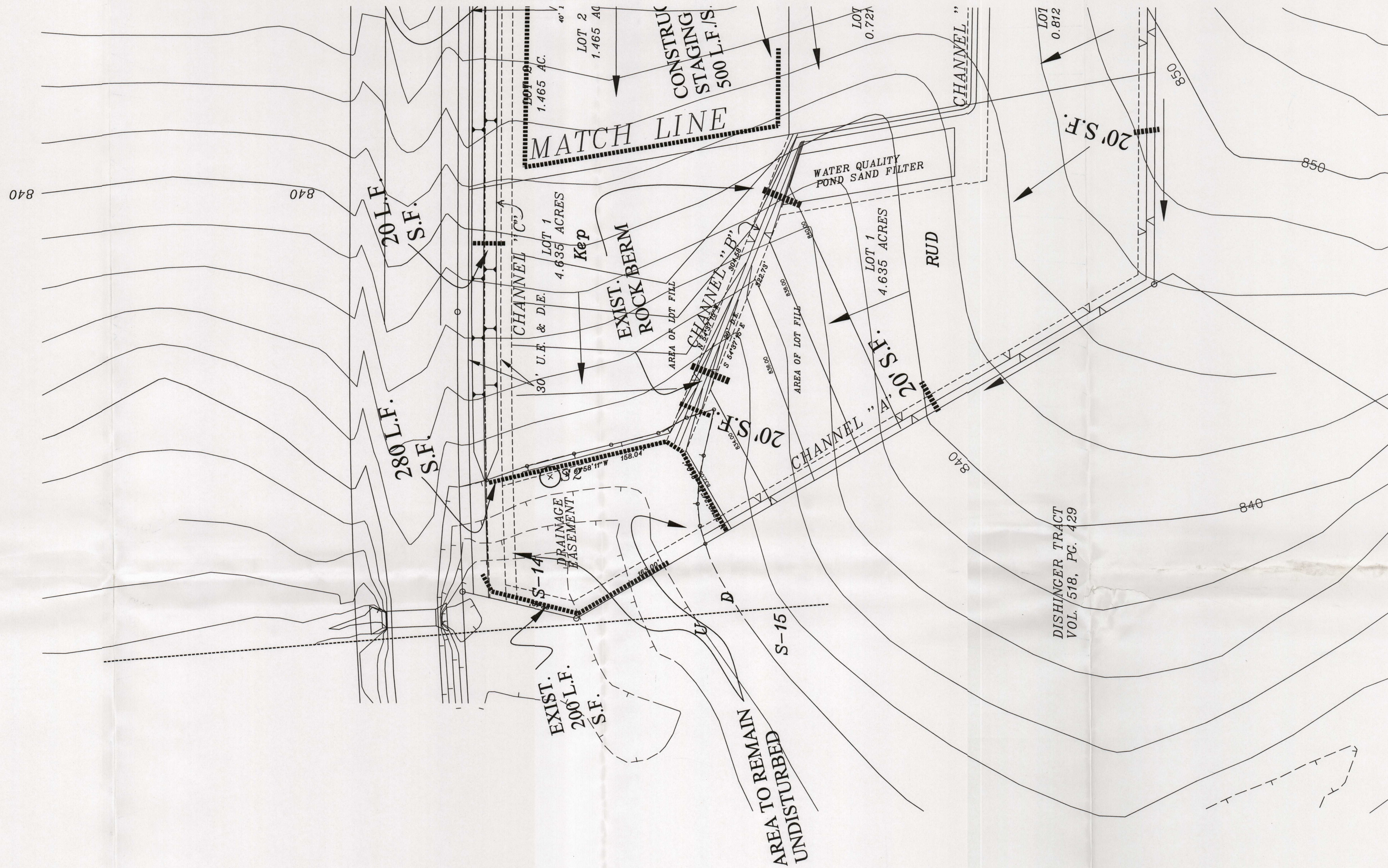
☒ X

No Change*

*If "No Change" and Section I is complete, skip to Section IV - Preparer Information.

21. Regulated Entity Name <i>(If an individual, please print last name first)</i>						
Hunter's Creek Village, Ltd.						
22. Street Address (No PO Boxes)		651 N. Business IH 35, Suite 240				
		City		State	ZIP	ZIP + 4
		New Braunfels, TX 78130		Texas	78130	
23. Mailing Address		651 N. Business IH 35, Suite 240				
		City		State	ZIP	ZIP + 4
		New Braunfels, TX 78130		Texas	78130	
24. E-Mail Address:						
25. Telephone Number		26. Extension or Code		27. Fax Number if applicable		
210-771-7770						
28. Primary SIC Code (4 digits)		29. Secondary SIC Code (4 digits)		30. Primary NAICS Code (5 or 6 digits)		
6552						
31. Secondary NAICS Code (5 or 6 digits)						
32. What is the Primary Business of this entity? <i>(Please do not repeat the SIC or NAICS description)</i>						
Questions 33 - 37 address geographic location. Please refer to the instructions for applicability.						
33. County		Comal				
34. Description of Physical Location Southwest Corner of Oakwood Parkway and SH 46 W						
35. Nearest City New Braunfels		State Texas		Nearest Zip 78130		
36. Latitude (N)						
37. Longitude (W)						
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds	
29	43	5	98	10	8	
38. TCEQ Programs In Which This Regulated Entity Participates <i>Not all programs have been listed. Please add to this list as needed. If you don't know or are unsure, please mark "Unknown". If you know a permit or registration # for this entity, please write it below the program.</i>						
Animal Feeding Operation		Petroleum Storage Tank		Water Rights		
Title V - Air		Wastewater Permit				
Industrial & Hazardous Waste		Water Districts				
Municipal Solid Waste		Water Utilities		Unknown		
New Source Review - Air		Licensing - TYPE(s)				
Section IV: Preparer Information						
39. Name Brian L. Merriman			40. Title Project Engineer			
41. Telephone Number 830-625-8555		42. Extension or Code 18		43. Fax Number if applicable 830-625-8556		
44. E-mail Address:		brian@hollmiginc.com				

SCALE: 1"=50'



Soils Legend

RUD - Rumple-Comfort Association

Geologic Legend

Kep - Person Formation

U/D Inferred Fault
U/D Fault
S-1 - Feature

RECEIVED
APR 12 2006
COUNTY ENGINEER

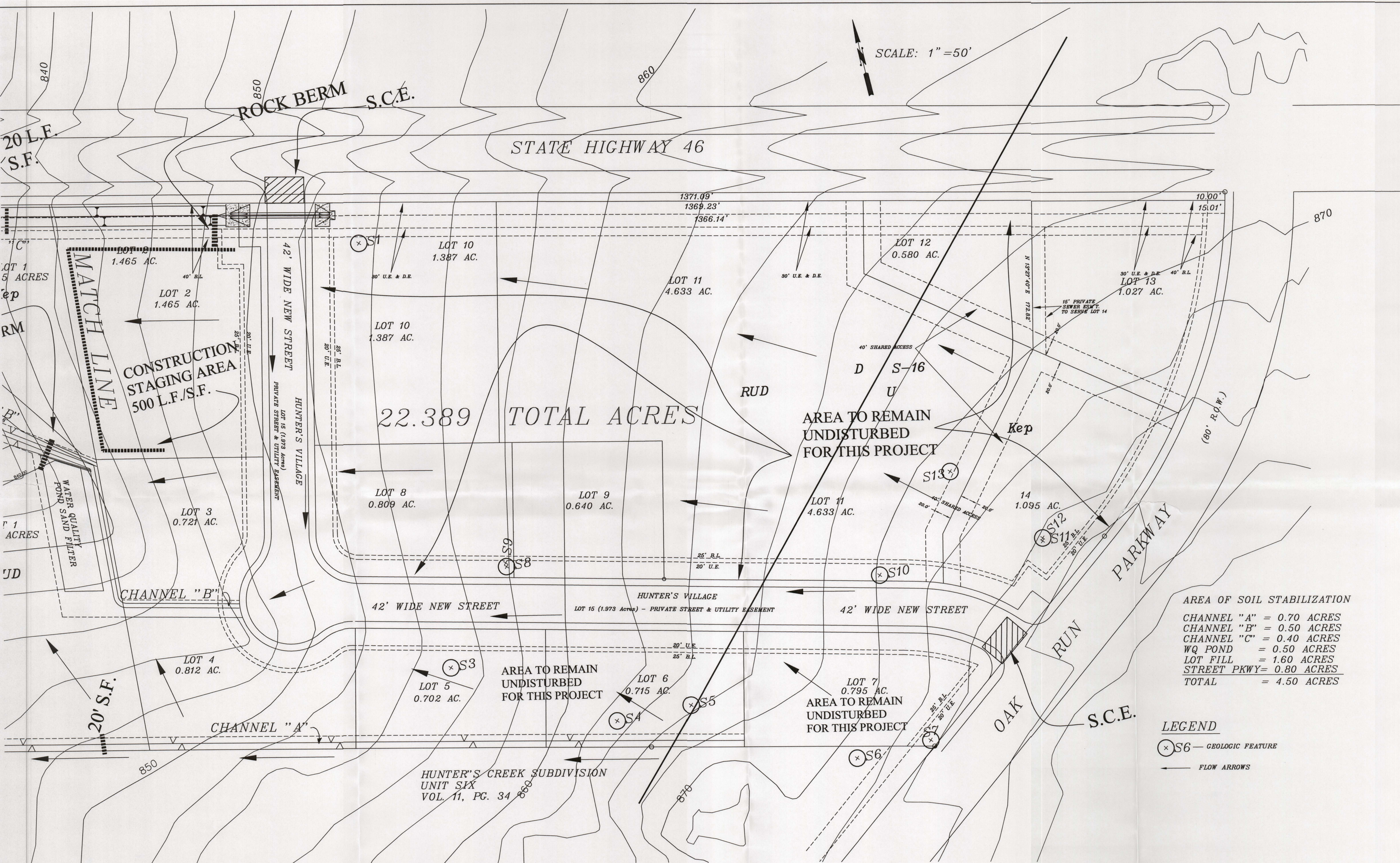
HUNTER'S CREEK
BUSINESS PARK
NEW BRAUNFELS, TEXAS

WPAP SITE PLAN
(SHT. 1 OF 2)

DRAWN BY: - CHECKED BY: - DATE: - REVISIONS: -



S. CRAIG HOLLMIG, INC.
CONSULTING ENGINEERS - SURVEYORS
410 N. SEGUN STREET
NEW BRAUNFELS, TEXAS 78130-5085
PH: (830) 625-8555 • FAX: (830) 625-8556 • EMAIL: hollmig@stx.com



SCALE: 1"=50'

22.389 TOTAL ACRES

AREA OF SOIL STABILIZATION
CHANNEL "A" = 0.70 ACRES
CHANNEL "B" = 0.50 ACRES
CHANNEL "C" = 0.40 ACRES
WQ POND = 0.50 ACRES
LOT FILL = 1.60 ACRES
STREET PKWY = 0.80 ACRES
TOTAL = 4.50 ACRES

LEGEND
⊗ S6 — GEOLOGIC FEATURE
→ FLOW ARROWS

Soils Legend

RUD - Rumble-Comfort Association

Geologic Legend

Kep - Person Formation

U/D Inferred Fault
U/D Fault
S-1 - Feature

S. CRAIG HOLLMIG, INC.

CONSULTING ENGINEERS - SURVEYORS

410 N. SEGUN STREET
NEW BRAUNFELS, TEXAS 78130-5085
PH: (830) 625-8555 • FAX: (830) 625-8556 • EMAIL: hollmig@nbtx.com

STATE OF TEXAS

BRIAN L. MERRIMAN

85523

PROFESSIONAL ENGINEER

WPAP SITE PLAN

(SHT. 2 OF 2)

HUNTER'S CREEK
BUSINESS PARK

NEW BRAUNFELS, TEXAS

DWG. NO:

PROJECT

SHEET #

REVISIONS:

CHECKED BY:

DRAWN BY:

GENERAL NOTES:

All materials and construction procedures within the scope of this contract for roadway and drainage items shall conform to the 1993 Texas Department of Transportation Standard Specifications for Construction of Roadways, of Transportation Standard Specifications for Construction of Roadways.

Contractor and/or Contractor's independently retained employee or safety consultant shall implement a trench safety program in accordance with OSHA Standards governing the presence and activities of individuals working in and around trench excavation.

Contractor shall be responsible for restoring to its original or better condition, any damages done to existing fences, asphalt driveways, and existing utilities (not adjusted on Plans). Cost of restorations, if any, shall be the Contractor's entire expense.

Barriacades and warning signs shall conform to the "Texas Manual on Uniform Traffic Control Devices" and shall be located to provide maximum protection to the Public as well as construction personnel and equipment while providing continuous traffic flow at all times during construction. The Contractor is responsible for maintaining all devices during construction.

The location of utilities, either underground or overhead, shown within the right-of-way are approximate and shall be verified by the Contractor before beginning construction operations.

OSHA Regulations prohibit operations that will bring persons or equipment within 10 feet of an energized line. Where workmen and/or equipment have to work close to an energized electrical line, the Contractor shall notify the Electrical Power Company involved and make whatever adjustments necessary to ensure the safety of those workmen.

It shall be the Contractor's responsibility to locate utility service lines as required for construction. Utility Companies are also previously mentioned in "Utility Company Notification".

All sedimentation controls must be maintained during all construction. Contractor is responsible to obtain an Application for Road Excavation for any construction that will include street cut/repairs on any streets and/or right-of-ways.

Note: Notify city street inspector 48 hours prior to construction.

The Contractor is fully responsible for the traffic control and will be responsible for furnishing all traffic control devices, and flaggers. The construction methods shall be conducted to provide the least possible interference to traffic so as to permit the continuous movement of traffic in one direction at all times. The Contractor shall clean up and remove from the work area any loose material resulting from contract operations at the end of each work day.

Prior to ordering materials to be used in construction, Contractor shall provide the Engineer with four (4) copies and the City Inspector with one (1) copy of the source, type, gradation, material specification data and/or shop drawings, as applicable, to satisfy the requirements of the following items and all material items requirements of the following items and all material items referred to in these listed items:

1. Hot-Mix Asphaltic Concrete Pavement
2. Flexible Base
3. RipRap (both concrete and reinforcing steel).

SITE/LOT PREPARATION

All fill (embankment) material within the limits shown on the overall grading plan (Sheet C-8) shall be placed in accordance with the Housing and Urban Development (HUD) Data Sheet 79g.

Building areas and all areas to support select fill should be stripped of all vegetation and organic topsoil. Exposed subgrades should be thoroughly proof rolled in order to locate and density any weak, compressible zones. A minimum of 5 passes of a fully-loaded dump truck or a similar heavily loaded piece of construction equipment should be used for planning purposes. Proof rolling operations should be observed by the Geotechnical Engineer or his representative to document subgrade condition and preparation. Weak or soft areas identified during proof rolling should be removed and replaced with a suitable, compacted fill.

Upon completion of the proof rolling operations and just prior to fill placement, the exposed subgrade should be moisture conditioned by scarifying to a minimum depth of 6 inches and recompacting to a minimum of 95 percent of the maximum density determined from TxDOT, TEX-114-E, Compaction Test. The moisture content of the subgrade should be maintained within the range of optimum moisture content to 3 percentage points above optimum moisture content until permanently covered.

The elevation of the lowest floor shall be at least 10" above the finished grade of the surrounding ground which shall be sloped in a fashion so as to direct stormwater away from the structure. Properties adjacent to stormwater conveyance structures must have floor slab elevation or bottom of floor joists a minimum of one foot above the 100 year water flow elevation in the structure. Driveway serving houses on the downhill side of the street shall have properly sized cross swale preventing runoff from entering the garage.

STREETS/SIDEWALKS/FLATWORK NOTES:

PREPARING RIGHT-OF-WAY

All vegetative elements shall be removed from the street right-of-ways unless noted otherwise. A permit for burning may be acquired by contacting the City of New Braunfels Fire Department.

FLEXIBLE BASE

"Compacted subgrade" shall consist of native material scarified to a minimum depth of 12" inches (where not in rock) and compacted to the extent necessary to provide not less than 95 percent of the maximum dry density as determined using test method TEX-114-E. As subgrade is compacted, tests as necessary shall be made by the Owner's Geotechnical Engineer in accordance with Test Method TEX-115-E.

Flexible base material shall be sprinkled as required and compacted to the extent necessary to provide not less than 95 percent of the maximum dry density as determined using Test Method TEX-113-E. After each section of flexible base is completed, tests as necessary will be made by the Owner's Geotechnical Engineer in accordance with Test Method TEX-115-E.

All flexible base material shall be Type A Grade 2 and compacted to a minimum of 95% density at optimum moisture conditions.

Contractor shall maintain compacted lift thicknesses to 6 inches or less.

PRIME COAT

Prime coat using MC-30 at a rate of 0.2 gallons per square yard shall be placed over prepared base at least one day prior to laying asphaltic concrete pavement.

HOT-MIX ASPHALTIC CONCRETE PAVEMENT

Any necessary tack coat shall be MC-30 placed at a rate of 0.05 gallons per square yard.

Asphaltic concrete pavement shall be Type "D" Hot Mix Asphalt as defined in TxDOT's Standard Specifications for Construction of Highways, Streets and Bridges 1993.

The asphaltic concrete surface course shall be plant mixed, hot laid type "D" (fine graded surface) meeting the specification requirements of 1993 TxDOT item 340 and specific criteria for the job mix formula. The mix shall be designed for a stability of at least 40, and shall be compacted to between 92 and 97 percent of the maximum theoretical density as determined by ASTM Test Method D 2041. The asphalt cement content by percent of total mixture weight shall fall within a tolerance of ± 0.3 percent asphalt cement from a specific mix in addition, the mix shall be designed so that 75 to 85 percent of the voids in the mineral aggregate (VMA) are filled with asphaltic cement.

All rolling from compaction of asphaltic concrete pavement shall be completed before the mixture temperature drops below 175°F.

When matching existing pavements, the existing pavement shall be saw cut full depth.

All concrete shall be Class "A" unless noted otherwise.

RIPRAP

In all riprap slopes, 2 inch diameter weep holes shall be provided at 6 foot maximum spacing and backed with loose graded gravel or crushed stone and galvanized hardware cloth as directed by the Engineer.

CONCRETE

Concrete shall be Class "A" unless noted otherwise.

Concrete curb shall be 2 ~ #4 bars continuous thru entire length.

See detail sheet for curb section and construction details.

SIDEWALKS

Concrete sidewalks shall receive a broom finish.

Concrete sidewalks shall have dowled expansion joints every 24 feet with 12 inch long, 5/8 inch diameter smooth dowels with 12 inch transverse spacing across sidewalk, embedded a minimum of 5 inches each way, with one end lubricated. In addition, a tooled joint every 4 feet.

Provide doweled expansion joints at end of walks perpendicular to and terminating at curb.

Provide rounded edges at expansion joints.

Drainage Note

Finished Floor Elevations

The elevation of the lowest floor shall be at least 10 inches above the finished grade of the surrounding ground, which shall be sloped in a fashion so as to direct stormwater away from the structure. Properties adjacent to stormwater conveyance structures must have floor slab elevation or bottom of floor joists a minimum of one foot above the 100-year water flow elevation in the structure. Driveways serving houses on the downhill side of the street shall have a properly sized cross swale preventing runoff from entering the garage.

Ground Water

It shall be the responsibility of the developer, contractor, subcontractors, builders, Geotechnical engineer, and project engineer to immediately notify the Office of the City Engineer if the presence of groundwater within the project site is evident. Upon notification the project engineer shall repond with plan revisions for the mitigation of the groundwater issue. The City Engineer shall respond within two (2) business days upon receipt of the mitigation plan. All construction activity, impacted by the discovery of groundwater, shall be suspended until the City Engineer grants a written approval of the of the groundwater mitigation plan.

Roadway

All roadway compaction tests shall be the responsibility of the developer's Geo-technical engineer. Flexible base or fill material shall be placed in uniform layers not to exceed sixinches (6") compacted. Each layer of material, inclusive of subgrade, shall be compacted as specified and tested for density and moisture in accordance with Text Methods TEX-113-E, TEX-114-E, TEX-115-E. The number and location of required tests shall be determined by the Geo-technical Engineer and approved by the City of New Braunfels Street Inspector. Upon completion of testing the Geo-technical Engineer will provide the City of New Braunfels Street Inspector with all testing documentation and a certification stating that the placement of flexible base, and fill material, and subgrade, has been completed in accordance with the plans.

Utility Trench Compaction

All utility trench compaction tests within the street pavement section shall be the responsibility of the developer's Geo-technical engineer. Fill material shall be placed in uniform layers not to exceed twelve inches (12") loose. Each layer of material shall be compacted as specified and tested for density and moisture in accordance with Text Methods TEX-113-E, TEX-114-E, TEX-115-E. The number and location of required tests shall be determined by the Geo-technical Engineer and approved by the City of New Braunfels Street Inspector. Upon completion of testing the Geo-technical Engineer shall provide the City of New Braunfels Street Inspector with all testing documentation and a certification stating that the placement of fill material has been completed in accordance with the plans.

WATER NOTES:

All water line construction shall be conducted in accordance with TAC Chapter 290 rules and the NBU Water Systems Connection & Construction Policy Manual adopted Dec. 9, 2003. All 6" and 8" water lines in this project are AWWA C900.

Water Services shall be single 1" copper tubing.

Water line is to be constructed in accordance with the NBU Water Line Specifications.

All waterlines shall have a minimum of 42" of cover.

Initial backfill of water lines shall be gravel as approved by NBU.

Secondary backfill of water lines shall generally consist of material removed from the trench and shall be free from brush, debris and trash, or stones having any dimension larger than 6 inches.

The Street Contractor, at no separate payment, shall locate a City of New Braunfels Fire Department - Type Blue Reflector in the middle of the street opposite all fire hydrants.

SANITARY SEWER NOTES:

All sewer line construction shall be conducted in accordance with TAC Chapter 317 rules and the NBU Water Systems Connection & Construction Policy Manual adopted Dec. 9, 2003.

All 8" & 12" gravity sewer pipe and fittings in this project are P.V.C. SDR-26, ASTM, D-3034, D-3212, F-477.

Initial backfill of sewer lines shall be gravel as approved per N.B.U. Specifications.

All manholes must be water tight, either monolithic, cast-in-place concrete structures or prefabricated manholes specifically approved by NBU. The manholes shall have water tight rings and covers, wherever they are within the 100 year Flood Plain, the manhole covers shall be bolted. Every fourth manhole in sequence shall have an alternate means of venting per requirements of TCEQ.

All manholes shall be constructed so that the top of the ring is at least two inches (2") above the finished grade of the surrounding ground except when located in paved areas. In paved area, the manhole ring shall be flush with the pavement. Separate pay item is included for raising of all manholes in the street.

Sewer pipe connections to pre-cast manholes will be compression joints or mechanical "Boot Type" joint as approved by N.B.U. and TCEQ.

In areas where a new sanitary sewer manhole is to be constructed over an existing sanitary sewer system, it shall be the Contractor's responsibility to test the existing manholes before construction. After the proposed manhole(s) has been built, the Contractor shall re-test the existing system to the satisfaction of the construction inspector at no additional cost.

Where a minimum nine foot (9') separation distance between sewer mains and water mains cannot be maintained, the wastewater line shall be constructed of cast iron, ductile iron or PVC meeting the ASTM Specification for both pipes and joints, of 150 psi and shall be in accordance with 30 TAC 290.44 (e)(5).

No testing will be performed prior to 30 days from complete installation of the Sanitary Sewer Lines.

The following sequence will be strictly adhered to:

1. Pull mandrel.
2. Perform Air Test.

A minimum of 42" of cover is to be maintained over the sanitary sewer main and laterals at subgrade, otherwise concrete encasement will be required.

Sanitary sewer main connections made directly to existing manholes will require successful testing of the manhole in accordance with NBU Connection/Construction Policies Water-Sewer Volume One.

All work must be completed within a manner that meets the specifications of New Braunfels Utilities and TCEQ.

Any groundwater encountered during construction of utility lines shall be reported to the engineer immediately. See additional notes on this sheet.

Trench safety meassures as approved by OSHA shall be used during all trenching activities on this project. A separate pay item is included.

As specified in the Policy Manual, TV Inspection of the sewer line shall be accomplished by the Contractor, as per the Standard Sewer Notes in the Water Systems Policy Manual; Section 2, Item #15.

UTILITY COMPANY NOTIFICATION:

Contractor shall notify the following Utility Companies 48 hours prior to excavation:

New Braunfels Utilities (Water & Sewer)	(830) 608-8971
New Braunfels Utilities (Electric)	(830) 608-8951
Time Warner Cable	(830) 625-3408
Reliant Energy Entex	(830) 643-6434
SBC (Telephone)	(830) 303-1333

TEXAS ONE CALL SYSTEM	1-800-245-4545
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CONSTRUCTION NOTES

HUNTER'S CREEK
BUSINESS PARK

NEW BRAUNFELS, TEXAS



REVISIONS:

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DATE:

FEB 2006

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DWG. NO:

PROJ. NO:

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S. CRAIG HOLLMIG, INC.

CONSULTING ENGINEERS - SURVEYORS

410 N. SEQUIN STREET
NEW BRAUNFELS, TEXAS 78130-5085
PH: (830) 625-8555 • FAX: (830) 625-8556 • EMAIL: hollmig@btx.com

Texas Commission on Environmental Quality
Organized Sewage Collection System
General Construction Notes

1. This Organized Sewage Collection System must be designed and constructed in accordance with the Texas Commission on Environmental Quality's (TCEQ) Edwards Aquifer Rules 30 Texas Administrative Code (TAC) §213.5(c), the Design Criteria for Sewerage Systems 30 TAC §317.1, 30 TAC §317.2, 30 TAC §317.3, and 30 TAC §317.13, and the City of New Braunfels Standard Specifications.

2. All contractors conducting regulated activities associated with this proposed regulated project must be provided with copies of the Sewage Collection System plan and the TCEQ letter indicating the specific conditions of its approval. During the course of these regulated activities, the contractors must be required to keep on-site copies of the plan and the approval letter.

3. Prior to commencing any regulated activity, the applicant or his agent must notify the Austin Regional Office, in writing, of the date on which the regulated activity will begin.

4. Any modification to the activities described in the referenced SCS application to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval.

5. The temporary erosion and sedimentation controls must be installed prior to initiating any other construction activity and maintained in accordance with the requirements of the construction plans. All temporary erosion and sedimentation controls must be removed when the construction area is stabilized.

6. The sewer line trench details showing the cross section with the dimensions, pipe placement, and backfill instructions are included on Plan Sheet 15 of 24 of these plans. All sewer pipes joints must meet the requirements in 30 TAC §317.2(a)(3).

Gravity lines must be SDR 35 or less. Pressurized sewer systems must have pipe with a minimum working pressure rating of 150 psi.

The ASTM, ANSI, or AWWA specification numbers for the pipe(s) and joints are ASTM 2241 ASTM 2034.

The pipe material, the pressure classes, and the SDR and/or DR designations are PVC CLASS 160 SDR-26.

7. If any sensitive features are discovered during the wastewater line trenching activities, all regulated activities near the sensitive feature must be suspended immediately. The owner must notify the appropriate regional office of the Texas Commission on Environmental Quality in writing within two working days of the feature discovered. The applicant must submit a plan for ensuring the structural integrity of the sewer line or for modifying the proposed collection system alignment around the feature. The regulated activities near the sensitive feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the sensitive feature and the Edwards Aquifer from any potentially adverse impacts to water quality while maintaining the structural integrity of the line.

8. Sewer lines located within or crossing the 5-year floodplain of a drainageway will be protected from inundation and stream velocities which could cause erosion and scouring of backfill. The trench must be capped with concrete to prevent scouring of backfill, or the sewer lines must be encased in concrete. All concrete shall have a minimum thickness of six (6) inches.

9. Blasting procedures for protection of existing sewer lines and other utilities will be in accordance with the National Fire Protection Association criteria. Sand is not allowed as bedding or backfill in trenches that have been blasted. If any existing sewer lines are damaged, the lines must be repaired and retested.

10. All manholes constructed or rehabilitated on this project must have watertight size on size resilient connectors allowing for differential settlement. If manholes are constructed within the 100-year floodplain, the cover must have a gasket and be bolted to the ring. Where gasketed manhole covers are required for more than three manholes in sequence or for more than 1500 feet, alternate means of venting will be provided. Bricks are not an acceptable construction material for any portion of the manhole.

The diameter of the manholes must be a minimum of four feet and the manhole covers must have a minimum nominal diameter of two feet. These dimensions and other details showing compliance with the commission's rules concerning manholes and sewer line/manhole inverts described in 30 TAC 317.2(c)(5)(E) are included on Plan Sheet 19 of 24.

It is suggested that entrance into manholes in excess of four feet deep be accomplished by means of a portable ladder. Where steps are used, they shall be made of a non-corrosive material and be in accordance with applicable OSHA specifications.

11. Where water lines and new sewer line are installed with a separation distance closer than nine feet (i.e., water lines crossing wastewater lines, water lines paralleling wastewater lines, or water lines next to manholes) the installation must meet the requirements of 30 TAC §317.13 (Design of Sewerage Systems) or 30 TAC §290.44(e) (Water Hygiene).

12. Where sewers lines deviate from straight alignment and uniform grade all curvature of sewer pipe must be achieved by the following procedure which is recommended by the pipe manufacturer: N/A.

If pipe flexure is proposed, the following method of preventing deflection of the joint must be used: N/A.

Specific care must be taken to ensure that the joint is placed in the center of the trench and properly bedded in accordance with 30 TAC §317.2(a)(5).

13. New sewage collection system lines must be constructed with "stub outs" for the connection of anticipated extensions. The location of such "stub outs" must be marked on the ground such that the location of such "stub outs" can be easily determined at the time of connection of the extensions. Such "stub outs" must be manufactured wyes or tees that are compatible in size and material with both the sewer line and the extension. At the time of original construction, new "stubouts" must be constructed sufficiently to extend beyond the edge(s) of any street pavement under which they will pass to the property line. All "stub-outs" must be sealed with a manufactured cap to prevent leakage. Extensions that were not anticipated at the time of original construction or that are to be connected to an existing sewer line not furnished with "stub outs" must be connected

using a manufactured saddle and in accordance with accepted plumbing techniques.

If no stub-out is present an alternate method of joining laterals is shown in the detail on Plan Sheet 15 of 24. (For potential future laterals).

The private service lateral stub-outs must be installed as shown on the plan and profile sheets on Plan Sheet 19 of 24 and marked after backfilling as shown in the detail on Plan Sheet 20 of 24.

14. Trenching, bedding and backfill must conform with 30 TAC §317.2(a)(5). The bedding and backfill for flexible pipe must comply with the standards of ASTM D-2321, Classes IA, IB, II or III. Rigid pipe bedding must comply with the requirements of ASTM C 12 (ANSI A 106.2) classes A, B or C.

15. Sewer lines must be tested from manhole to manhole. When a new sewer line is connected to an existing stub or clean-out, it must be tested from existing manhole to new manhole. If a stub or clean-out is used at the end of the proposed sewer line, no private service attachments may be connected between the last manhole and the cleanout unless it can be certified as conforming with the provisions of 30 TAC §213.5(c)(3)(E).

16. All sewer lines must be tested in accordance with 30 TAC §317.2(a)(4). The engineer must retain copies of all test results which must be made available to the executive director upon request. The engineer must certify in writing that all wastewater lines have passed all required testing to the appropriate regional office within 30 days of test completion and prior to use of the new collection system. Testing method will be:

(A) Infiltration or Exfiltration Tests. The total exfiltration as determined by a hydrostatic head test, must not exceed 50 gallons per inch diameter per mile of pipe per 24 hours at a minimum test head of two feet above the crown of the pipe at the upstream manhole. When pipes are installed below the groundwater level an infiltration test must be used in lieu of the exfiltration test. The total infiltration, as determined by a hydrostatic head test, must not exceed 50 gallons per inch diameter per mile of pipe per 24 hours at a minimum test head of two feet above the crown of the pipe at the upstream manhole, or at least two feet above existing groundwater level, whichever is greater. For construction within the 25 year flood plain, the infiltration or exfiltration must not exceed 10 gallons per inch diameter per mile of pipe per 24 hours at the same minimum test head. If the quantity of infiltration or exfiltration exceeds the maximum quantity specified, remedial action must be undertaken in order to reduce the infiltration or exfiltration to an amount within the limits specified.

(B) Low Pressure Air Test. The procedure for the low pressure air test must conform to the procedures described in ASTM C-828, ASTM C-924, ASTM F-1417 or other appropriate procedures, except for testing times. The test times must be as outlined in this section. For sections of pipe less than 36-inch average inside diameter, the following procedure must apply unless the pipe is to be joint tested. The pipe must be pressurized to 3.5 psi greater than the pressure exerted by groundwater above the pipe. Once the pressure is stabilized, the minimum time allowable for the pressure to drop from 3.5 pounds per square inch gauge to 2.5 pounds per square inch gauge must be computed from the following equation:

$$T = \frac{0.085 \times D \times K}{Q}$$

T = time for pressure to drop 1.0 pound per square inch gauge in seconds
K = 0.000419 X D X L, but not less than 1.0

D = average inside pipe diameter in inches
L = length of line of same size being tested, in feet
Q = rate of loss, 0.0015 cubic feet per minute per square foot internal surface will be used.

Since a K value of less than 1.0 will not be used, there are minimum times for each pipe diameter as outlined below:

Pipe Diameter (inches)	Minimum Time (seconds)	Length for Minimum (feet)	Time for Longer Length (seconds)
6	340	398	0.855(L)
8	454	298	1.520(L)
10	567	239	2.374(L)
12	680	199	3.419(L)
15	850	159	5.342(L)
18	1020	133	7.693(L)
21	1190	114	10.471(L)
24	1360	100	13.676(L)
27	1530	88	17.309(L)
30	1700	80	21.369(L)
33	1870	72	25.856(L)

The test may be stopped if no pressure loss has occurred during the first 25% of the calculated testing time. If any pressure loss or leakage has occurred during the first 25% of the testing period, then the test must continue for the entire test duration as outlined above or until failure. Lines with a 27-inch average inside diameter and larger may be air tested at each joint. Pipe greater than 36 inch diameter must be tested for leakage at each joint. If the joint test is used, a visual inspection of the joint must be performed immediately after testing. The pipe is to be pressurized to 3.5 psi greater than the pressure exerted by groundwater above the pipe. Once the pressure has stabilized, the minimum time allowable for the pressure to drop from 3.5 pounds per square inch gauge to 2.5 pounds per square inch gauge must be 10 seconds.

(C) Deflection Testing. Deflection tests must be performed on all flexible pipes. For pipelines with inside diameters less than 27 inches, a rigid mandrel must be used to measure deflection. For pipelines with an inside diameter of 27 inches and greater, a method approved by the executive director must be used to test for vertical deflections. Other methods must provide a precision of ± two tenths of one percent (0.2 %) deflection. The test must be conducted after the final backfill has been in place at least 30 days. No pipe will exceed a deflection of five percent. If a pipe should fail to pass the deflection test, the problem must be corrected and a second test

must be conducted after the final backfill has been in place an additional 30 days. The tests must be performed without mechanical pulling devices. The design engineer should recognize that this is a maximum deflection criterion for all pipes and a deflection test less than five percent may be more appropriate for specific types and sizes of pipe. Upon completion of construction, the design engineer or other Texas Licensed Professional Engineer appointed by the owner must certify, to the Executive Director, that the entire installation has passed the deflection test. This certification may be made in conjunction with the notice of completion required in §317.1(e)(1) of this title (relating to General Provisions). This certification must be provided for the Commission to consider the requirements of the approval to have been met.

(i) The rigid mandrel shall have an outside diameter (O.D.) equal to 95% of the inside diameter (I.D.) of the pipe. The inside diameter of the pipe, for the purpose of determining the outside diameter of the mandrel, shall be the average outside diameter minus two minimum wall thicknesses for O.D. controlled pipe and the average inside diameter for I.D. controlled pipe, all dimensions shall be per appropriate standard. Statistical or other "tolerance packages" shall not be considered in mandrel sizing.

(ii) The rigid mandrel shall be constructed of a metal or a rigid plastic material that can withstand 200 psi without being deformed. The mandrel shall have nine or more "runners" or "legs" as long as the total number of legs is an odd number. The barrel section of the mandrel shall have a length of at least 75% of the inside diameter of the pipe. A proving ring shall be provided and used for each size mandrel in use.

(iii) Adjustable or flexible mandrels are prohibited. A television inspection is not a substitute for the deflection test. A deflectometer may be approved for use on a case by case basis. Mandrels with removable legs or runners may be accepted on a case by case basis.

17. All manholes must be tested to meet or exceed the requirements of 30 TAC §317.2(c)(5)(H).

18. All private service laterals must be inspected and certified in accordance with 30 TAC §213.5(c)(3)(I). After installation of and, prior to covering and connecting a private service lateral to an existing organized sewage collection system, a Texas Licensed Professional Engineer, Texas Registered Sanitarian, or appropriate city inspector must visually inspect the private service lateral and the connection to the sewage collection system, and certify that it is constructed in conformity with the applicable provisions of this section. The owner of the collection system must maintain such certifications for five years and forward copies to the appropriate regional office upon request. Connections may only be made to an approved sewage collection system.

THESE GENERAL CONSTRUCTION NOTES MUST BE INCLUDED ON THE CONSTRUCTION PLANS PROVIDED TO THE CONTRACTOR AND ALL SUBCONTRACTORS.

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

- 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.
- 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.
- 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.
- 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.
- 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.
- 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).
- 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.
- 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).
- 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.

THESE GENERAL CONSTRUCTION NOTES MUST BE INCLUDED ON THE CONSTRUCTION PLANS PROVIDED TO THE CONTRACTOR AND ALL SUBCONTRACTORS.

Austin Regional Office 1921 Cedar Bend, Suite 150 Austin, Texas 78758-5336 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
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T.C.E.Q. NOTES

HUNTER'S CREEK
BUSINESS PARK
NEW BRAUNFELS, TEXAS

DWG. NO:

PROJ. NO:

SHEET #

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Brian L. Hollmig 10/24/06

REVISIONS:
DATE: FEB 2006

CHECKED BY:

DRAWN BY:

STORMWATER POLLUTION PLAN NOTES

I. PERMITTEE IDENTIFICATION

This Stormwater Pollution Prevention Plan (SW3P) is prepared in accordance with the guidelines in the Federal Register, Volume 57, No. 175, dated Wednesday, September 9, 1992, "Final NPDES General Permits for Storm Water Discharges from Construction Sites."

The Contractor and his subcontractors shall avoid the pollution of runoff water by adhering to the measures outlined in these "Notes" and/or specified on the "Plan". Contractor shall be held responsible for his actions and the actions of all of his subsequent subcontractors.

The Contractor shall provide the following Certification in writing to the Engineer prior to starting construction

"I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (N.P.D.E.S.) permit that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification."

SUBDIVISION:
CO. NAME:
ADDRESS:

RESPONSIBLE CO. OFFICER:
TITLE:

II. SITE DESCRIPTION

A. Nature of Construction Activity

This SW3P addresses specifically the infrastructure construction of the above referenced development which is to involve the clearing and excavation for, and the installation of drainage, streets, and utilities (water, sanitary sewer, gas, electric, telephone, and cable television services).

The Developer may sell lots to a home builder(s) for the construction of single family dwellings in advance of the completion of the infrastructure. In some instances, initiation of new-home construction may occur prior to the stabilization of the infrastructure "disturbed area". Pollution and soil erosion control measures that are to be installed by the Contractor have been specifically designed to provide control of soil erosion and pollution originating from the infrastructure construction. Where possible, these control measures have also been designed to provide effective control of soil erosion and pollution originating on the lots due to new-home construction. However, each home builder(s) shall be responsible for all soil erosion and pollution originating from his lots during new-home construction.

The Contractor shall file a "Notice of Termination" (N.O.T.) for infrastructure construction activities after the area(s) disturbed by the infrastructure construction, and not being disturbed by new-home construction activity, has been permanently stabilized.

B. Intended Sequence of Major Construction Activities

Typically the intended sequence of major activities which will disturb the soil during construction of the infrastructure are:

- Implementation of SW3P;
- Clearing vegetation from street right-of-ways;
- Grading of streets to proposed subgrade elevation;
- Rough grading of lots (if applicable);
- Clearing vegetation, as needed, from utility easements;
- Construction of utilities within street right-of-ways and utility easements;
- Clearing vegetation, as needed, from drainage easements;
- Construction of drainage improvements;
- Placement of roadway section (base, curbs, and asphalt);
- Construction of new-home(s) where the home builder(s) has started construction prior to the completion of the infrastructure;
- Site cleanup and revegetation of parkways, drainage and utility easements, and graded or otherwise disturbed areas.

C. Site Area

Typically the street right-of-way and drainage/utility easements is where the majority of the soil disturbance during infrastructure construction is expected to occur.

D. Site Runoff Factors

After infrastructure activities are completed and disturbed areas are stabilized, concentrations of suspended soils in the stormwater runoff from the site are expected to be approximately at pre-development levels. After new-home construction is complete, runoff may contain modest concentrations of organic wastes (from pets), small concentrations of fertilizers (lawn and shrub care) and hydrocarbons (from streets and vehicle drippings), and possibly trace amounts of pesticides and herbicides.

E. Site Map

A Stormwater Pollution Prevention Plan (SW3P) showing site topography, drainage patterns, and proposed soil erosion and sedimentation control measures has been prepared to meet the requirements of Article IV.C.1.a of the NPDES Requirements for Construction Site Permits.

III. SOIL EROSION AND SEDIMENT CONTROL MEASURES

Temporary control of pollution, soil erosion and sedimentation in particular, for this project will be accomplished through the installation of structural barriers to trap and filter silt from runoff waters and the temporary stabilization of disturbed areas. Permanent control will be achieved by permanently stabilizing disturbed areas through sodding or seeding with standard lawn or native grasses. The control measures specified on the "Stormwater Pollution Prevention Plan" for the site will be installed and maintained by the Contractor(s) during the entire time infrastructure construction is in progress and until the N.O.T. is filed. The Contractor, as part of final site cleanup, will remove all installed erosion control measures not being specifically turned over to other responsible parties.

A. Infrastructure Construction

Soil disturbances shall be minimized by exposing only the smallest practical area of land required for the construction activity and for the shortest practical period of time. Trenching and associated backfilling for utilities and storm drainage shall be coordinated to minimize the time period of the disturbance. Maximum practical use of natural vegetation for erosion control will be used by leaving this vegetation in place until clearing is necessary. All clearing will be conducted as directed and approved by the Engineer.

1. Stabilization Practices

Construction entrances, parking and staging areas, shall be stabilized with course aggregate or as otherwise directed by the Engineer;

All significant disturbed areas, other than proposed roadways, where construction has been completed, temporarily halted, or no further work is planned for 21 days or longer, shall be revegetated within 14 days of the last construction activity;

Landscaping may be provided by contractor as may be provided for elsewhere within contract or within a separate contract.

2. Structural Practices

To intercept off-site overland sheet flow, diversion dikes/swales will be constructed along the boundaries, if necessary, as shown on the Plan, before street or utility construction begins. The channel areas of these dikes/swales will be lined as directed on the Plan or by the Engineer. These dikes and swales, which serve to protect the subdivision from overland flow from the adjacent upgradient areas, will be left in place until infrastructure construction is completed unless specifically noted otherwise.

B. New Home Construction

It is expected that new-home construction may have commenced on some of the platted lots prior to completion of the infrastructure construction. For the construction activity on these lots, individual home builders may be expected to install a silt fence or some other form of generally accepted soil erosion barrier. Contractor has the right to file a Notice of Termination (N.O.T.) after the area(s) disturbed by the infrastructure construction, and not associated with any new-home construction activity, have been permanently stabilized and accepted by the Engineer.

Areas of lots that must have grade adjustments (excavation and/or fill) shall be revegetated within 14 days, unless building construction, or some other construction activity, is to commence within 21 days. As much as possible, natural vegetation will be left in place and undisturbed.

C. Other Miscellaneous Controls

The Contractor shall avoid the pollution of runoff water by using "best management practices". Some best management practices which the Contractor shall be expected to conform to are as follows:

All construction and related activities shall comply with applicable state and/or local regulations.

A stabilized construction exit is to be provided which will help to reduce vehicle tracking of sediments. All vehicular traffic leaving the construction site (prior to improved streets) will exit through this stabilized area as located on the SW3P. When soils have collected on the stabilized vehicular exit to an extent which reduces its intended effectiveness, the surface will be cleaned or, if needed, replaced.

Construction materials for each phase of construction shall be stored within a designated storage area(s) whose size, shape, and location shall be approved by the Engineer.

Construction equipment (except large, slow moving equipment) not removed from the site at night shall be stored in the designated area(s).

Sediment collected behind silt fences or in sediment traps will be periodically collected and placed as fill material within the property as approved by the Engineer.

The use of temporary construction fuel storage tanks on-site will not be allowed. Release of vehicle fluid(s) onto the ground shall not be allowed. Tainted soil resulting from any spill(s) shall be promptly removed and disposed of by the Contractor in accordance with all applicable regulations. Soil shall be replaced at Contractor's expense. Rinsing out concrete trucks will not be allowed unless a controlled area on site is designated and approved for a rinse-out pit. Pits shall be surrounded by a berm and/or silt fence to prevent runoff of contaminated water. Construction waste materials, domestic garbage, etc., shall be periodically collected and properly disposed of off-site.

All sanitary waste from any portable units shall be regularly collected and disposed of by a licensed sanitary waste management contractor.

Chemicals, solvents, paints, and other potentially toxic materials must be protected from rainfall and surface runoff water while stored.

In the event that hazardous waste materials are encountered, all hazardous waste will be disposed of in the manner specified by federal, state and/or local regulations, and as specified by the manufacturer.

D. State and Local Requirements

Contractor shall comply with all applicable Federal, State or local stormwater pollution prevention control regulations for construction activities that this project may be within the jurisdiction of.

IV. STORMWATER MANAGEMENT

Following the filing of a N.O.T., all soil erosion control measures installed by the Contractor or subcontractors will be removed unless specifically instructed otherwise. In case of the latter, the responsible party(s) will be identified which is to become fully responsible for those control measures. As previously noted, street parkways, utility easements, and any constructed earththen channels will be permanently stabilized.

V. MAINTENANCE

All control measures, as well as general site conditions, shall be inspected at least once every seven (7) calendar days and within 24 hours following any 1/2 inch, or greater, rainfall. Silt accumulations in excess of 12 inches or 1/4 of the height/depth of the control measure, whichever is less, shall be removed. The removed silt shall be deposited within the project at a location not subjected to concentrated runoff. Any damaged or non-functioning control measure(s) shall be repaired immediately. Until such time that the Construction Contract is 100% complete, the Contractor shall remain fully responsible for the maintenance of the erosion control measures installed for the project. Any silt fences or other erosion control barrier temporarily moved from its designated location to facilitate work shall be replaced at the end of each work day or if rain appears imminent.

VI. INSPECTION OF CONTROL MEASURES

The person or entity primarily responsible for inspection of pollution prevention and erosion control measures for the subject site is that person or entity designated by the Contractor. Reports of the weekly inspection, recording the scope of the inspection, name of inspector, date of inspection, major observations, and actions taken as a result of the inspection, shall be recorded with copies provided to the Engineer on a weekly basis. These reports shall be retained by the Contractor as part of storm water N.P.D.E.S. data for three years after the N.O.T. for the project is filed.

As a minimum, the inspector shall observe: disturbed areas for evidence of erosion, storage areas for evidence of leakage from stored materials, structural controls, stabilized construction exits for evidence of off-site sediment tracking, vehicle storage areas for signs of leaking equipment of spills, and concrete truck rinse-out pit for signs of potential failure. All deficiencies noted during the inspection will be documented and corrected within seven calendar days following the inspection.

VII. NON-STORM WATER DISCHARGES

Small discharges associated with activities such as pressure testing of newly-installed water system and sewer system facilities, water blasting curbs, and cleaning and testing activities for construction are expected. For such activities, the Contractor is hereby directed to use reasonable diligence to avoid causing unnecessary erosion. Any observed eroded areas shall be promptly corrected by the Contractor.

GENERAL NOTES FOR SEDIMENT & EROSION CONTROL

The following will be required by the Contractor:

1. To comply with the Stormwater Pollution Prevention Plan (SW3P) filed for this Project with the EPA in accordance with the National Pollutant Discharge Elimination System General Permit, the following will be required of the Contractor:

a. An N.O.I. shall be submitted by the Contractor to the E.P.A. in accordance with the National Pollutant Discharge Elimination System General Permit.

b. All control measures, as well as general site conditions, shall be inspected at least once every seven (7) calendar days and within 24 hours following any 1/2 inch, or greater, rainfall. Silt accumulations in excess of 12 inches or 1/4 of the height/depth of the control measure, whichever is less, shall be removed. Any sediment in the drainage culverts will be removed. The removed silt shall be deposited within the Project Limits at a location not subjected to concentrated runoff or removed to a Site Approved by the Engineer. Any damaged or non-functioning control measure(s) shall be repaired immediately. Until such time that the Construction Contract is 100% complete, the Contractor shall remain responsible for the Maintenance of the Erosion Control Measures installed for the Project. Any erosion control barrier moved from its designated location shall be replaced at the end of each work day or if rain appears imminent. All Temporary Controls will be removed after the disturbed areas have been stabilized.

c. The Contractor will designate a Qualified Person(s) to perform the inspections. As a minimum, the inspector shall observe the following:

- Disturbed areas and areas used for storage of materials that are exposed to precipitation will be inspected for evidence of, or the potential for, pollutants entering the drainage system.
- Erosion and Sediment Control Measures identified in the plan will be observed to ensure that they are operating correctly.
- Discharge locations and points of site access will be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.
- Locations where vehicles enter or exit the site will be inspected for evidence of off-site sediment tracking.
- The vehicle/equipment Wash Area and the Rinse-out Pit will be inspected for loss of aggregate, proper drainage, and proper maintenance of sediment trap and washing equipment.

d. All deficiencies noted during the inspection will be documented and corrected within seven (7) calendar days following the inspection.

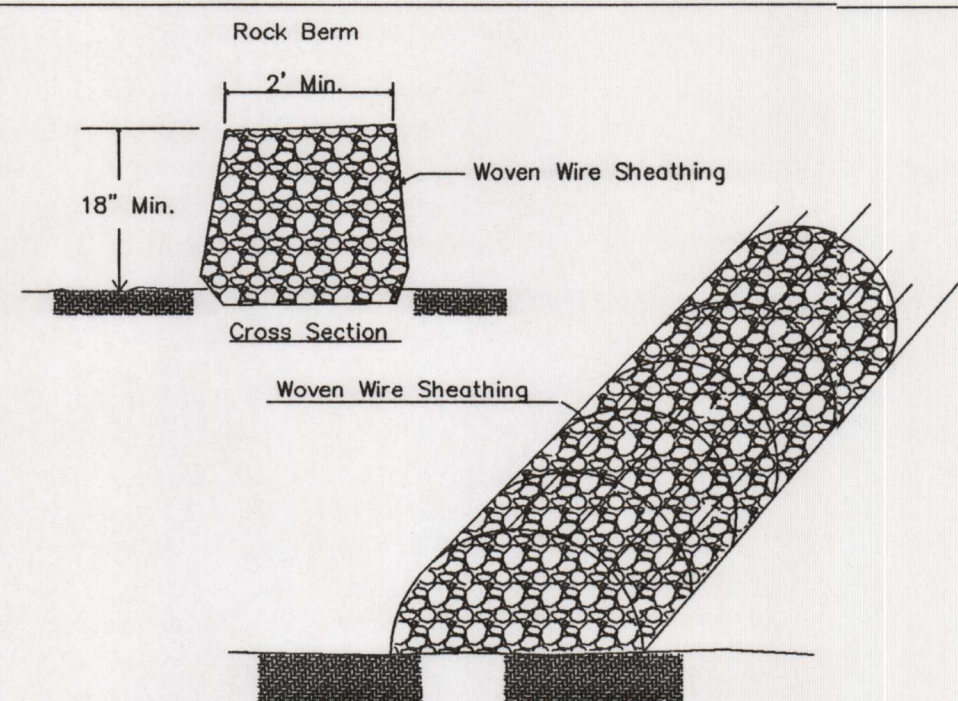
e. After any Phase of the Site is temporarily stabilized, inspections will be conducted at least once every month until Permanent Stabilization occurs and the N.O.T. is filed.

f. Based on the results of the inspection, the control measures of the SW3P will be Revised as appropriate after Approval from the Engineer.

g. A Report summarizing the Scope of the Inspection, names(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the SW3P, and actions taken in accordance with the above will be made and signed in accordance with Part VI.G. of the NPDES General Permit. The Report will be retained as part of the SW3P for at least three (3) years from the date that the site is Permanently Stabilized and the N.O.T. is filed.

2. To comply with this SW3P, the following will be required of the Contractor:

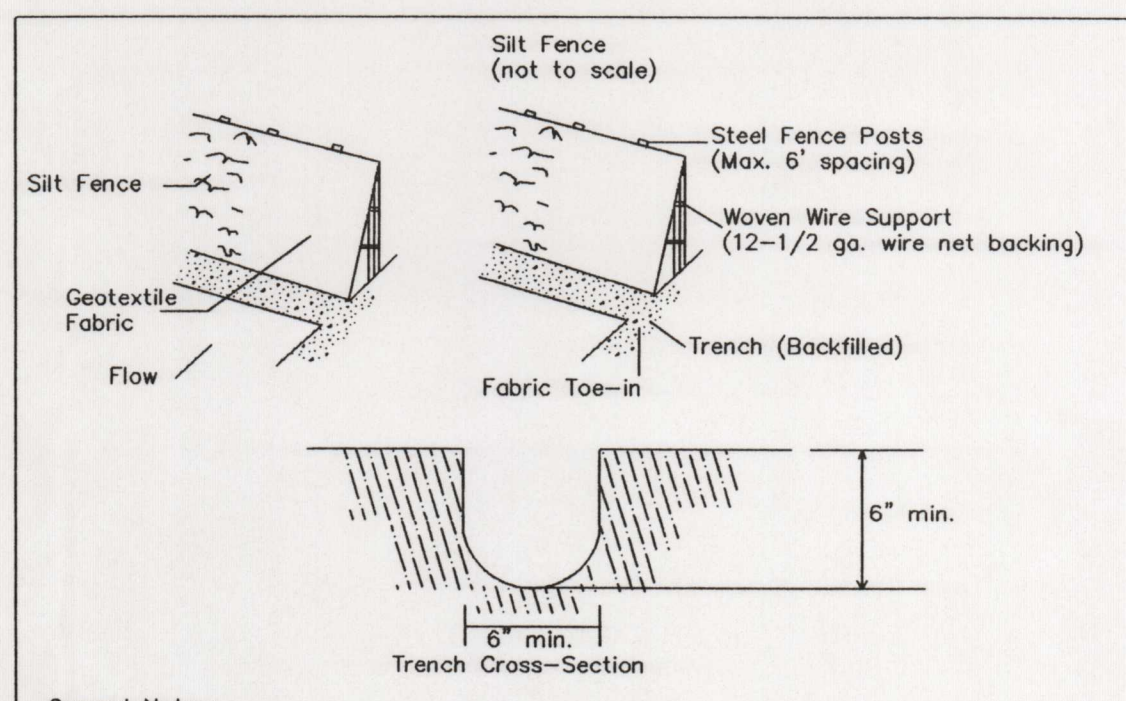
- Compliance with the SW3P "notes" included elsewhere within these plans.
 - Purposeful release of vehicle or equipment fluids onto the ground will not be allowed. Contaminated soil resulting from accidental spills will be immediately removed and disposed of properly.
 - All construction (and personal) material/debris will be regularly collected and disposed of properly at an authorized landfill.
 - Construction equipment/vehicles will be limited to traveling within the limits of the Street Right-of-Way, Utility, Grading, and Construction Easements, and immediately upstream and downstream of Drainage Crossings.
 - All soils, sand, gravel and excavated materials stockpiled on-site will have appropriately sized Erosion and Sedimentation Controls placed both upgradient and downgradient.
3. To comply with this SW3P, the Contractor shall construct and maintain:
- Stabilized Construction Exit(s) at all used access points to the site.
 - Rock Berms, Reinforced (wire backed) Silt Fences, or Silt Fences placed immediately downstream of all Drainage Crossings with sides flared back to meet the roadway embankment unless otherwise clearly shown on the Plan or directed by the Engineer.



- General Notes:
- Use only open graded rock 4-8 inch diameter for streamflow condition; Use open graded rock 3-5 inches diameter for other conditions.
 - The rock berm shall be secured with a woven wire sheathing having maximum 1 inch opening and minimum wire diameter of 20 gauge.
 - The rock berm shall be inspected weekly or after each rain, and the stone and/or fabric core-woven wire sheathing shall be replaced when the structure ceases to function as intended, due to silt accumulation among the rocks, washout, construction traffic damage, etc.
 - When silt reaches a depth equal to one-third the height of the berm or one foot, whichever is less, the silt shall be removed and disposed of in an approved site and in a manner as to not create a siltation problem.
 - Daily inspection shall be made on Serve Service rock berms; silt shall be removed when accumulation reaches 6 inches.
 - When the site is completely stabilized, the berm and accumulated silt shall be removed and disposed of in an approved manner.

Standard Symbol - RB

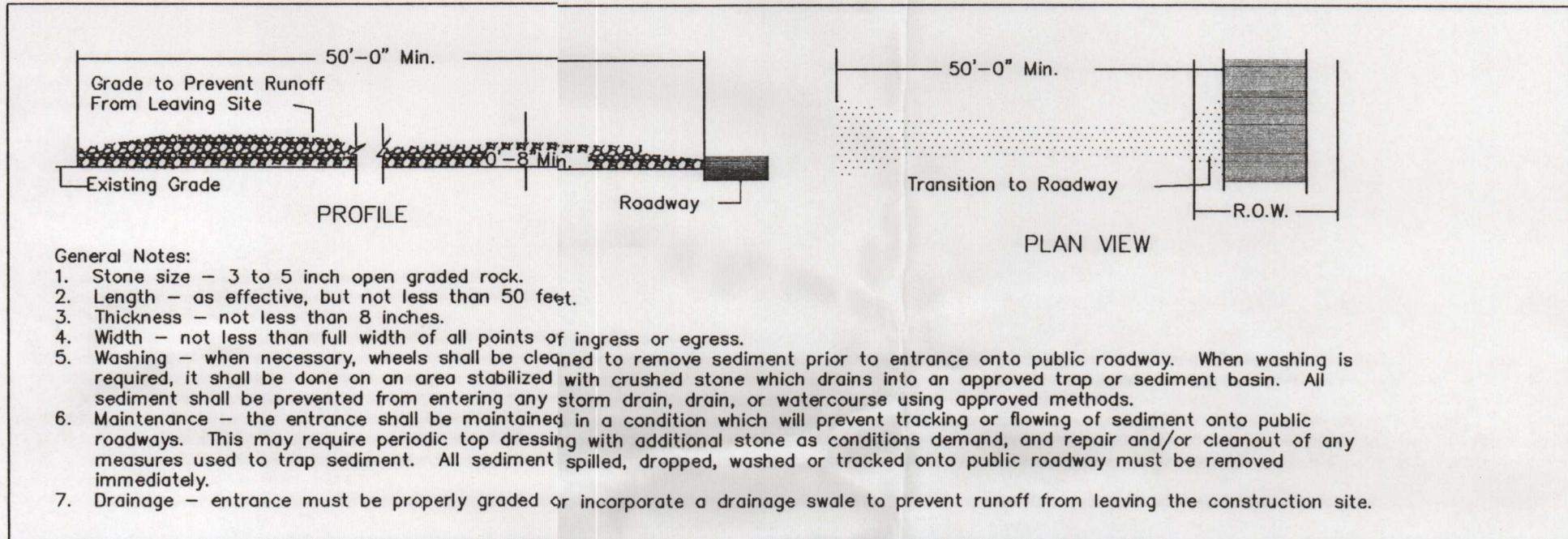
ROCK BERM DETAIL



- General Notes:
- Steel posts which support the silt fence shall be installed on a slight angle toward the anticipated runoff source. Post must be embedded a minimum of one foot.
 - The toe of the silt fence shall be trenched in with a spade or mechanical trencher, so that the downslope face of the trench is flat and perpendicular to the line of flow. Where fence can not be treated in (e.g. pavement) weight fabric flap with washed gravel on uphill side to prevent flow under fence.
 - The trench must be a minimum of 6 inches deep and 6 inches wide to allow for the silt fence fabric to be laid in the ground and backfilled with compacted material.
 - Silt fence should be securely fastened to each steel support posts or to woven wire, which is in turn attached to the steel fence post.
 - Inspection shall be made weekly or after each rainfall event and repair or replacement shall be made promptly as needed.
 - Silt fence shall be removed when the site is completely stabilized so as not to block or impede storm flow or drainage.
 - 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 to additional siltation.

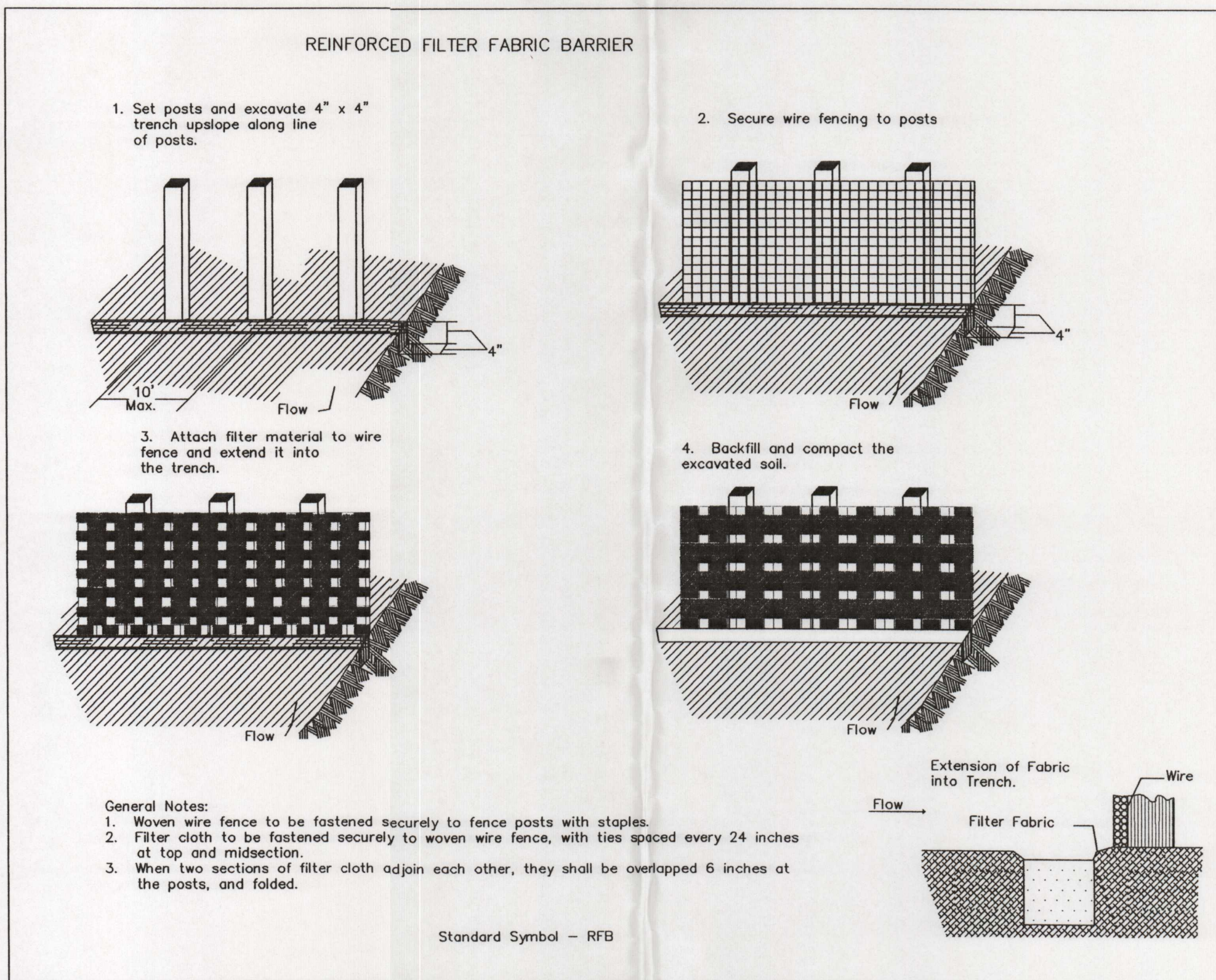
Standard Symbol - SF

SILT FENCE DETAIL



- General Notes:
- Stone size - 3 to 5 inch open graded rock.
 - Length - as effective, but not less than 50 feet.
 - Thickness - not less than 8 inches.
 - Width - not less than full width of all points of ingress or egress.
 - Washing - when necessary, wheels shall be cleaned to remove sediment prior to entrance onto public roadway. When washing is required, it shall be done on an area stabilized with crushed stone which drains into an approved trap or sediment basin. All sediment shall be prevented from entering any storm drain, drain, or watercourse using approved methods.
 - Maintenance - the entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto public roadways. This may require periodic top dressing with additional stone as conditions demand, and repair and/or cleanup of any measures used to trap sediment. All sediment spilled, dropped, washed or tracked onto public roadway must be removed immediately.
 - Drainage - entrance must be properly graded or incorporate a drainage swale to prevent runoff from leaving the construction site.

STABILIZED CONSTRUCTION EXIT DETAIL



- General Notes:
- Woven wire fence to be fastened securely to fence posts with staples.
 - Filter cloth to be fastened securely to woven wire fence, with ties spaced every 24 inches at top and midsection.
 - When two sections of filter cloth adjoin each other, they shall be overlapped 6 inches at the posts, and folded.

Standard Symbol - RFB

REINFORCED FILTER FABRIC BARRIER DETAIL

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STORMWATER POLLUTION
PREVENTION GUIDE

HUNTER'S CREEK
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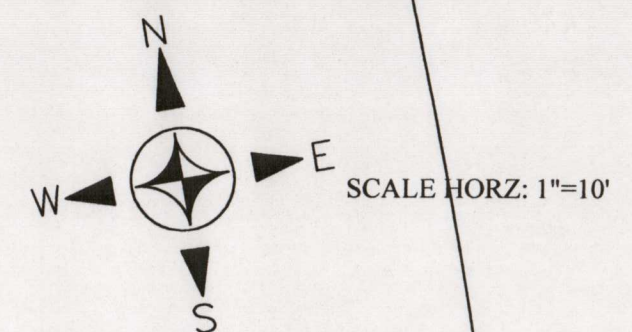
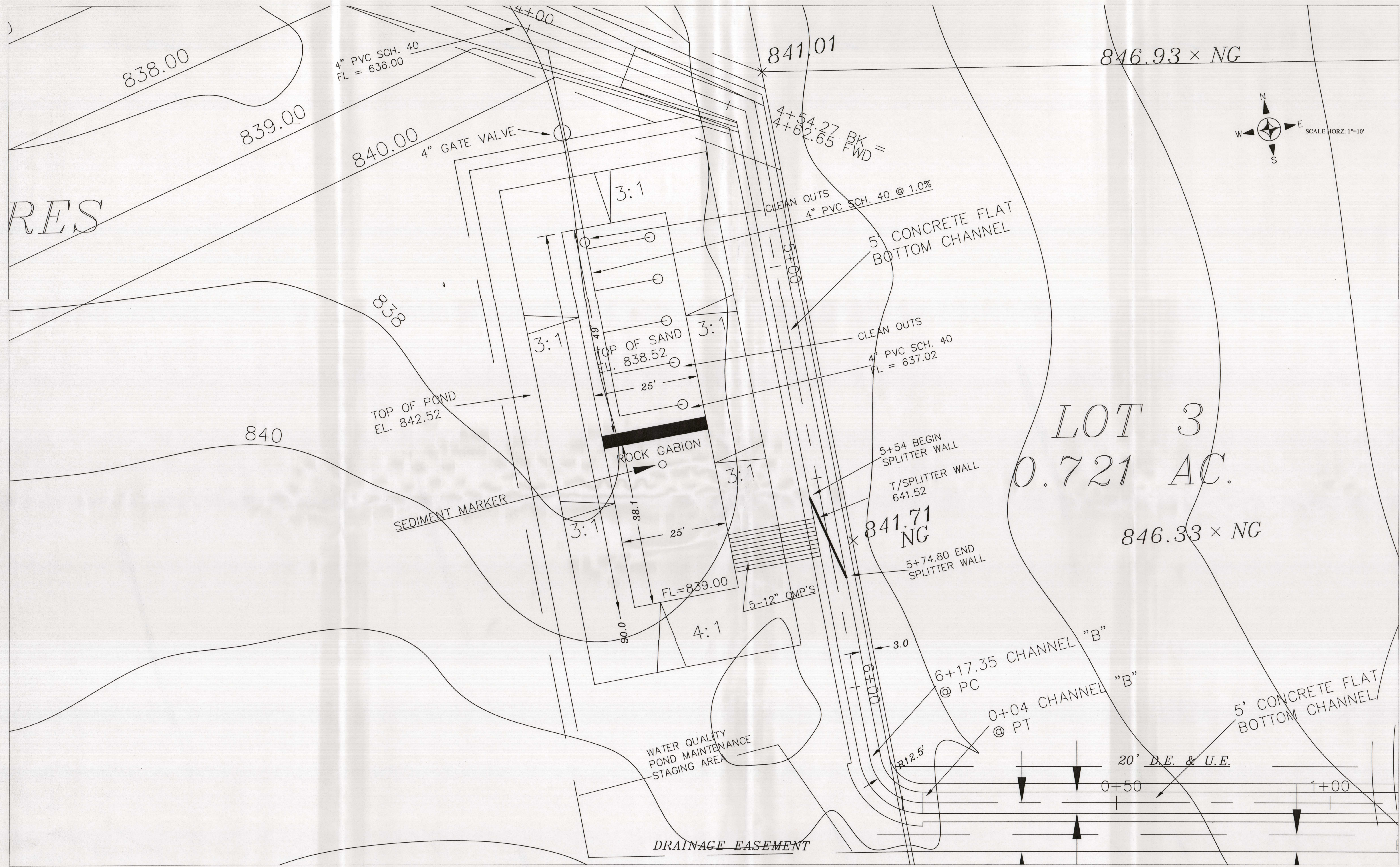
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REVISIONS:

DATE:
FEB 2006

CHECKED BY:

DRAWN BY:



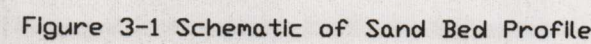
S. CRAIG HOLLMIG, INC.
 CONSULTING ENGINEERS - SURVEYORS
 410 N. SEQUIN STREET
 NEW BRAUNFELS, TEXAS 78130-5085
 PH: (830) 625-8555 • FAX: (830) 625-8556 • EMAIL: hollmig@bttx.com



WATER QUALITY POND			
DRAWN BY:	CHECKED BY:	DATE:	REVISIONS:
-	-	FEB 2006	-

**HUNTER'S CREEK
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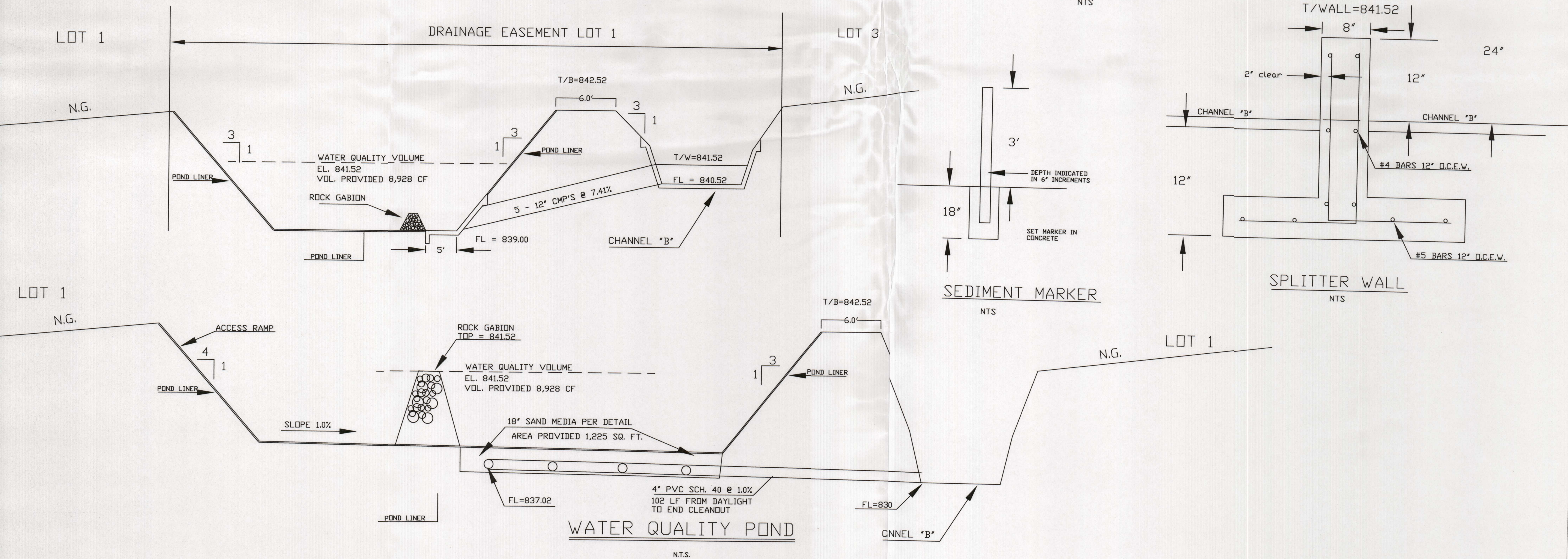
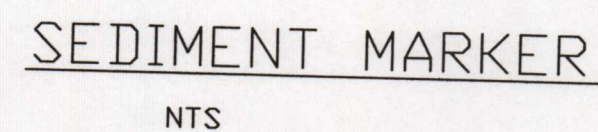
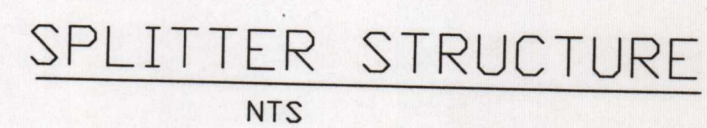
Table 3-1 Clay Liner Specifications (COA,2004)

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

CLAY LINER SHALL BE A MINIMUM OF 12' THICK.

Table 3-2 Fabric Specifications (COA,2004)

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



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CONSULTING ENGINEERS - SURVEYORS



WATER QUALITY POND DETAILS

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