TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

November 24, 2010

Mr. Edward Badouh, Jr.
New Braunfels Joint Venture
P.O. Box 311240
New Braunfels, TX 78131-1240

Re: Edwards Aquifer, Comal County
NAME OF PROJECT: Oak Run Commercial Unit 2 Infrastructure; Located on the northeast side of US Highway 46 and Oak Sprawl; New Braunfels, Texas
TYPE OF PLAN: Request for the Approval of a Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer;
Edwards Aquifer Protection Program San Antonio File No. 2947.00; Investigation No. 865394; Regulated Entity No. RN106003163

Dear Mr. Badouh:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the WPAP Application for the above-referenced project submitted to the San Antonio Regional Office by Pawelek & Moy, Inc. on behalf of New Braunfels Joint Venture on September 17, 2010. Final review of the WPAP was completed after additional material was received on November 24, 2010. 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 6.278 acres. It will include the construction of a cross access drive, a storm water detention pond with associated stormdrains, and utility lines. The impervious cover will be 0.13 acres (2.07 percent). No wastewater is generated by this project.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, a vegetated filter strip, designed

using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005), will be constructed to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 117 pounds of TSS generated from the 0.13 acres of impervious cover. The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project.

The vegetated filter strip will consist of the following:

- The engineered vegetated filter strips will extend along the entire length of the contributing area;
- The slope will not exceed 20%;
- The minimum dimension of the filter strip (in the direction of the flow) will not be less than 15 feet;
- The maximum width of (in the direction of the flow) of the contributing impervious area will not exceed 72 feet;
- The minimum vegetated cover will be 80%;
- The contributing area to the filter strip will be relatively flat so that runoff is distributed evenly to the vegetated areas without the use of a level spreader;
- The vegetated filter strip will be free of gullies or rills that can concentrate overland flow.

GEOLOGY

According to the geologic assessment included with the application, the site is within the Cyclic and Marine Member of the Person Formation. One man-made feature was reported and assessed as not sensitive. The San Antonio Regional Office site assessment conducted on November 16, 2010 revealed no additional features and that the site is generally as described by the geologic assessment.

SPECIAL CONDITIONS

I. The permanent pollution abatement measure shall be operational prior to occupancy of the facility.

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

STANDARD CONDITIONS

1. Pursuant to Chapter 7 Subchapter C of the Texas Water Code, any violations of the requirements in 30 TAC Chapter 213 may result in administrative penalties.

2. The holder of the approved Edwards Aquifer protection plan must comply with all provisions of 30 TAC Chapter 213 and all best management practices and measures contained in the approved plan. Additional and separate approvals, permits, registrations and/or authorizations from other TCEQ Programs (i.e., Stormwater, Water Rights, UIC) can be required depending on the specifics of the plan.

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

Prior to Commencement of Construction:

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

5. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved WPAP and this notice of approval shall be maintained at the project location until all regulated activities are completed.

6. Modification to the activities described in the referenced WPAP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.

7. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the San Antonio Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the date on which the regulated activity will commence, the name of the approved plan and program ID number for the regulated activity, and the name of the prime contractor with the name and telephone number of the contact person. The executive director will use the notification to determine if the approved plan is eligible for an extension.

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

9. All borings with depths greater than or equal to 20 feet must be plugged with non-shrink grout from the bottom of the hole to within three (3) feet of the surface. The remainder of the hole must be backfilled with cuttings from the boring. All borings less than 20 feet must be backfilled with cuttings from the boring. All borings must be backfilled or plugged within four (4) days of completion of the drilling operation. Voids may be filled with gravel.

During Construction:

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

11. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 6, above.

12. If any sensitive feature (caves, solution cavities, sink holes, etc.) is discovered during construction, all regulated activities near the feature must be suspended immediately. The applicant or his agent must immediately notify the San Antonio Regional Office of the discovery of the feature. Regulated activities near the feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the feature and the aquifer from potentially adverse impacts to water quality. The plan must be sealed, signed, and dated by a Texas Licensed Professional Engineer.

13. Zero wells exist on site. All water wells, including injection, dewatering, and monitoring wells must be in compliance with the requirements of the Texas Department of Licensing and Regulation under Title 16 TAC Chapter 76 (relating to Water Well Drillers and Pump Installers) and all other locally applicable rules, as appropriate.

14. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.

15. Intentional discharges of sediment laden storm water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.

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

17. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.

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

18. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the San Antonio Regional Office within 30 days of site completion.

19. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without

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

20. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Edwards Aquifer protection plan. If the new owner intends to commence any new regulated activity on the site, a new Edwards Aquifer protection plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.

21. An Edwards Aquifer protection plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Edwards Aquifer protection plan must be submitted to the San Antonio Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.

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

If you have any questions or require additional information, please contact Mr. Javier Anguiano of the Edwards Aquifer Protection Program of the San Antonio Regional Office at (210) 490-3096.

Sincerely,

for Mark R. Vickery, P.G.
Executive Director
Texas Commission on Environmental Quality

MRV/JA/eg

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

cc: Mr. John J. Moy, Jr., P.E., Pawelek & Moy, Inc.
Mr. James C. Klein, P.E., City of New Braunfels
Mr. Thomas H. Hornseth, P.E., Comal County
Mr. Karl J. Dreher, Edwards Aquifer Authority
TCEQ Central Records, Building F, MC 212

PAWELEK & MOY, INC.

CIVIL ENGINEERING & CONSULTING SERVICES
- RESIDENTIAL DEVELOPMENT
- SITE DEVELOPMENT
- PUBLIC WORKS
- UTILITIES

November 17, 2010

Mr. Javier Anguiano
TCEQ San Antonio Regional Office – Region 13
14250 Judson Rd.
San Antonio, Texas 78233-4480

Re: Response to TCEQ Comments dated November 15, 2010
Edwards Aquifer, Comal County
NAME OF PROJECT: Oak Run Commercial Unit 2
TYPE OF PLAN: Request for the Approval of a Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer; Edwards Aquifer Protection Program San Antonio File No. 2947.00; Investigation No. 865394; Regulated Entity No. RN106003163

Dear Mr. Anguiano,

Pawelek & Moy, Inc. (P&M) has addressed the comments by the TCEQ dated November 15, 2010 for the above mentioned project. P&M has taken the following actions with regards to the comments:

General Concerns:

Comment	Response
1	The driveway apron was included in the overall impervious cover of the site as shown in the impervious cover summary table, which is 5,776 sf – total impervious cover. However, for clarification purposes, the description on this table has been revised to now read "Access Drive with Driveway Apron". See the enclosed revised Site Plan (Sheet S1).
2	Please find the attached TCEQ spreadsheet that reflects the required TSS removal resulting from the proposed development (L_m = 117 lbs), which equals 80% of increased load, and also the TSS Load removed from the catchment area by the proposed BMP, which is a vegetated filter strip (L_r = 126 lbs).
3	The Vegetated Filter Strip (VFS) is being proposed as a permanent measure for this 6.278 acre tract. However, as potential future lot(s) are created/platted over the access drive and VFS, it will be the responsibility of the new owner(s) to either honor the BMP measures or submit the required applications to the TCEQ if there are changes to the approved BMP or criteria. Therefore, this VFS is to be constructed and approved as a permanent BMP with the understanding that future development may occur across this area which may require additional application/submittals for compliance with the TCEQ if there are changes to the approved BMP.

Site Plan Concerns:

4 The enclosed revised Site Plan (Sheet S1) now contains a Mountable Curb Detail which will allow us to drain the concrete driveway apron into the site and the VFS. We discussed this detail and application with both the City Engineer and the owner's for their approvals, which we received. Therefore by using this curb detail the stormwater runoff from the driveway apron will be captured by the VFS while the water in the gutter of Oak Sprawl will remain in Oak Sprawl (See revised Master Drainage Area Map, Sheet D1) .

Please call if you have questions regarding these responses. Thank you for your assistance.

Sincerely,

John J. Moy, Jr., P.E.
Project Engineer

Attachments: TCEQ – TSS Removal Calculation Spreadsheet
Sheet S1
Sheet D1

cc via email: Mr. Edward Badouh, Jr. – New Braunfels Investment Joint Venture

F:\0906.01 - OAK RUN COMMERCIAL UNIT 2\DWG\WPAP\TCEQCOMMENTS.DOC

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Oak Run Commercial
Unit 2 - Infrastructure
Date Prepared: Nov. 16, 2010

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

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

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

where:

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

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

County =	Comal	
Total project area included in plan * =	6.28	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan * =	0.13	acres
Total post-development impervious cover fraction * =	**0.02**	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	**117**	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 =	6.28	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.13	acres
Post-development impervious fraction within drainage basin/outfall area =	**0.02**	
$L_{M\ THIS\ BASIN}$ =	**117**	lbs.

3. Indicate the proposed BMP Code for this basin.

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

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

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

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

where:

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

A_C = **0.13** acres
A_I = 0.13 acres
A_P = **0.00** acres
L_R = **126** lbs

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

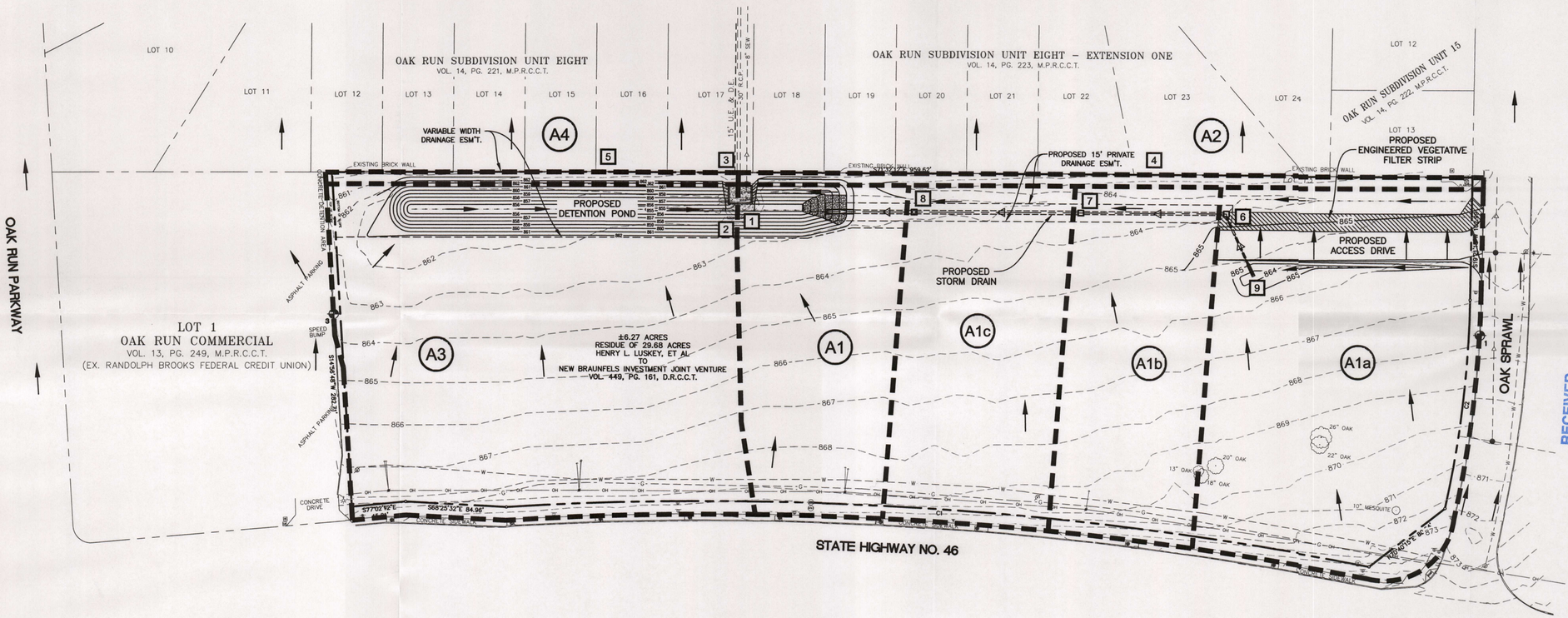
Desired $L_{M\ THIS\ BASIN}$ = 117 lbs.

F = **0.93**

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

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

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



RECEIVED
DEC 0 2 2010
COUNTY ENGINEER

"RECEIVED TCEQ"
SAN ANTONIO
REGION
2010 NOV 24 AM 8:00

DRAINAGE NOTE: THE PURPOSE FOR THE CONSTRUCTION OF THIS STORM DRAIN AND DETENTION POND IS TO PROVIDE CONVEYANCE AND MITIGATION FOR ±6.27 ACRES ASSUMING 95% IMPERVIOUS COVER.

EXISTING DRAINAGE AREA DESIGNATION	DRAINAGE AREAS (acres)	PROPOSED DRAINAGE AREA DESIGNATION	DRAINAGE AREAS (acres)
A1	4.21	A1	4.28
A2	0.14	A1a	1.66
A3	2.18	A1b	0.85
A4	0.08	A1c	0.93
		A2	0.07
		A3	2.18
		A4	0.08

*represents future 5' landscape buffer

*Values Applied to C_{10} to Determine C_{25} & C_{100}	
K_{10}	1.00
K_{25}	1.10
K_{100}	1.25

RATIONAL METHOD (Q=KCIA) - EXISTING CONDITIONS

DRAINAGE NODE POINT	CONTRIBUTING DA's	DRAINAGE AREA (acres)	C_2	C_{10}	*C_{25}	*C_{100}	Tc (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)
1	A1	4.21	0.38	0.38	0.42	0.48	20	3.65	5.44	6.51	8.51	5.84	8.71	11.45	17.02
2	A3	2.18	0.38	0.38	0.42	0.48	17	3.96	5.92	7.09	9.27	3.28	4.91	6.49	9.70
3	A1+A3	6.39	0.38	0.38	0.42	0.48	20	3.65	5.44	6.51	8.51	8.86	13.21	17.47	26.10
4	A2	0.14	0.38	0.38	0.42	0.48	10	4.96	7.57	9.07	11.90	0.26	0.40	0.53	0.80
5	A4	0.08	0.38	0.38	0.42	0.48	10	4.96	7.57	9.07	11.90	0.15	0.23	0.30	0.46

RATIONAL METHOD (Q=KCIA) - PROPOSED CONDITIONS

DRAINAGE NODE POINT	CONTRIBUTING DA's	DRAINAGE AREA (acres)	C_2	C_{10}	*C_{25}	*C_{100}	Tc (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)
1	A1	4.28	0.81	0.81	0.89	1.00	10	4.96	7.57	9.07	11.90	17.19	26.23	34.58	50.93
2	A3	2.18	0.81	0.81	0.89	1.00	10	4.96	7.57	9.07	11.90	8.76	13.36	17.61	25.94
3	A1+A3	6.46	0.81	0.81	0.89	1.00	10	4.96	7.57	9.07	11.90	25.95	39.59	52.13	76.88
4	A2	0.07	0.38	0.38	0.42	0.48	10	4.96	7.57	9.07	11.90	0.13	0.20	0.27	0.40
5	A4	0.08	0.38	0.38	0.42	0.48	10	4.96	7.57	9.07	11.90	0.15	0.23	0.30	0.46
6	A1a	1.66	0.81	0.81	0.89	1.00	10	4.96	7.57	9.07	11.90	6.67	10.18	13.40	19.75
7	A1b	0.85	0.81	0.81	0.89	1.00	10	4.96	7.57	9.07	11.90	3.41	5.21	6.86	10.12
8	A1c	0.93	0.81	0.81	0.89	1.00	10	4.96	7.57	9.07	11.90	3.74	5.70	7.51	11.07
9	Part of A1a(temp)	1.32	0.38	0.38	0.42	0.48	10	4.96	7.57	9.07	11.90	2.49	3.80	5.03	7.54

POND ROUTING SUMMARY NODE PT. 3

POND RELEASE RATES (NODE PT. 3)
2 yr = 8.24 cfs < 8.86 cfs
10 yr = 13.11 cfs < 13.21 cfs
100 yr = 25.69 cfs < 26.10 cfs

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

STATE OF TEXAS · DONALD D. PAWELEK · 87835 · REGISTERED PROFESSIONAL ENGINEER · 11/17/10

OWNER:
NEW BRAUNFELS INVESTMENT JOINT VENTURE
P.O. BOX 311240
NEW BRAUNFELS, TX 78131-1240

MASTER DRAINAGE AREA MAP

FOR

OAK RUN COMMERCIAL, UNIT 2 - INFRASTRUCTURE

NEW BRAUNFELS, TEXAS

REVISIONS		
	DESCRIPTION	DATE
	ADDRESSED TCEQ COMMENTS	11/17/10

SYMBOL LEGEND
- OVER HEAD POWER LINE
- POWER POLE
- GUY WIRE
- TRANSFORMER BOX
- WATER VALVE
- FIRE HYDRANT
- SANITARY SEWER MANHOLE
- STORM SEWER MANHOLE
- AT&T MANHOLE
- AT&T FIBER OPTIC CABLE SIGN
- TELEPHONE JUNCTION BOX
- FIBER OPTIC CABLE JUNCTION BOX
- SIGN
- LIGHT STANDARD
- UNDERGROUND GAS LINE (MARKED BY OTHERS)
- UNDERGROUND WATER LINE (MARKED BY OTHERS)

DRAWN BY: D.G. III
CHECKED BY: D.D.P.
DATE: SEPTEMBER 2010
JOB NO.: 0906.01

D1

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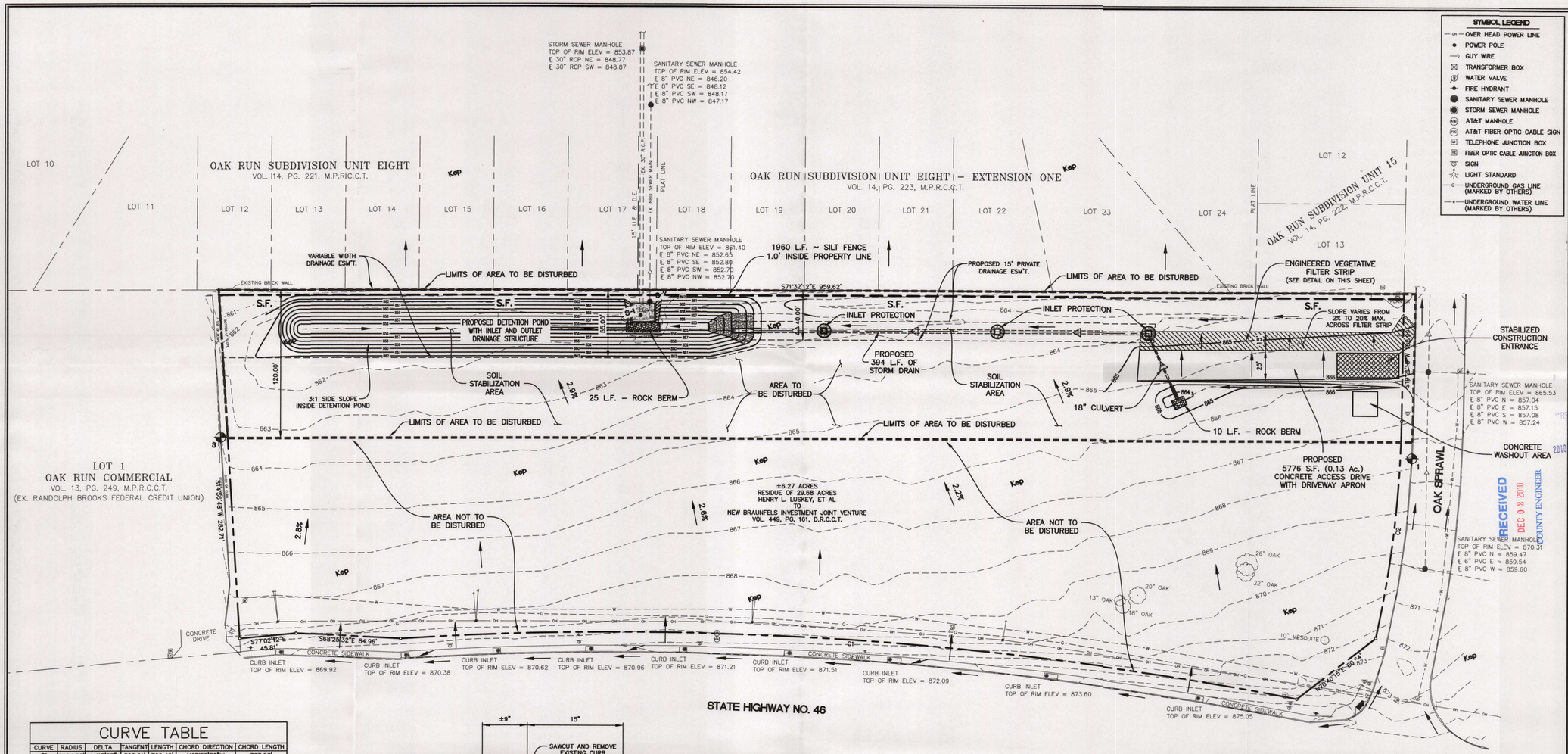
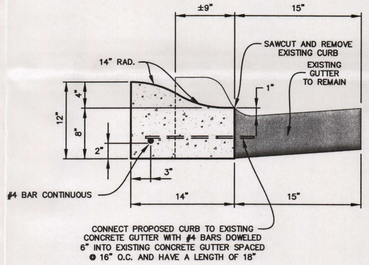
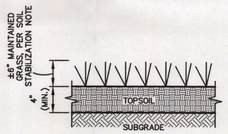


CURVE TABLE						
CURVE	RADIUS	DELTA	TANGENT	LENGTH	CHORD DIRECTION	CHORD LENGTH
C1	2924.68'	14°17'23"	366.61'	729.42'	N67°55'32"W	727.53'
C2	885.74'	11°28'10"	88.95'	177.31'	N25°05'23"E	177.01'



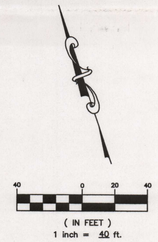
MOUNTABLE CURB DETAIL
N.T.S.



ENGINEERED VEGETATIVE FILTER STRIP DETAIL
N.T.S.

LEGEND

- S.F. — SILT FENCE
- ROCK BERM
- INLET PROTECTION
- TEMPORARY CONSTRUCTION ENTRANCE/EXIT
- CONCRETE WASHOUT
- 100 — EXISTING CONTOURS
- 100 — PROPOSED CONTOURS
- LIMITS OF AREA TO BE DISTURBED
- PROPERTY LINE
- S-# — POTENTIAL RECHARGE FEATURE (PRF) AS PER GEOLOGIC ASSESSMENT. NO SENSITIVE FEATURES WERE IDENTIFIED
- Kep — EDWARDS PERSON LIMESTONE



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

VELOCITY CONTROL NOTE
AT THE POINT WHERE THE PROPOSED STORM DRAIN SHOWN IN THE "AREAS TO BE DISTURBED" DISCHARGE INTO THE DETENTION POND, A VELOCITY CONTROL PROCEDURE UTILIZING HEAVY ROCK RIPRAP (TYPE 'R' PER TXDOT ITEM 432) SHALL BE USED TO DISSIPATE THE FLOWS (SEE DETAIL ON SHEET S2). THIS APPLICATION SHALL REMAIN IN PLACE AND NOT BE REMOVED UPON COMPLETION OF THE CONSTRUCTION ACTIVITIES.

FLOODPLAIN NOTE
ACCORDING TO FEMA FIRM MAP PANEL No. 48091C0435F, EFFECTIVE DATE 9/2/2009, THE PROPOSED DEVELOPMENT LIES OUTSIDE THE 100 YR FLOODPLAIN.

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 =	0.0
ACCESS DRIVE WITH DRIVEWAY APRON	5,776	÷ 43,560 =	0.13
TOTAL IMPERVIOUS COVER	5,776	÷ 43,560 =	0.13
TOTAL IMPERVIOUS COVER ÷ TOTAL ACREAGE x 100 =			2.07 %

TOTAL SITE ACREAGE = 6.278 Ac

BOUNDARY NOTE: (BY KOLODZIE SURVEYING CO.)
THE BOUNDAY SHOWN HEREON IS BASED ON THE SURVEY CONDUCTED BY KOLODZIE SURVEYING COMPANY DATED AUGUST 26, 2010.

TOPOGRAPHIC INFORMATION PROVIDED BY (KOLODZIE SURVEYING CO.)
PROJECT BENCHMARK: ✪1
SQUARE ON TOP OF WEST CURBLINE OF OAK SPRAWL APPROXIMATELY 240' NORTH OF THE INTERSECTION OF STATE HIGHWAY NO. 46 AND OAK SPRAWL, 89' NORTH OF A SANITARY MANHOLE IN OAK SPRAWL, 72' SOUTH OF A SANITARY MANHOLE IN OAK SPRAWL.
ELEVATION = 867.85 (SET BY OTHERS)

PROJECT BENCHMARK: ✪2
SQUARE ON TOP OF SOUTHEAST CURBLINE AT RANDOLPH BROOKS CREDIT UNION APPROXIMATELY 175' NORTHEAST OF STATE HIGHWAY NO. 46.
ELEVATION = 864.18 (SET BY OTHERS)

RECEIVED
DEC 0 2 2010
COUNTY ENGINEER

RECEIVED TCEQ AN ANTONIO REGION
2010 NOV 24 AM 8:00

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

STATE OF TEXAS — JOHN J. MOY, JR. — 87835 — REGISTERED PROFESSIONAL ENGINEER
Date: 11/17/10

OWNER:
NEW BRAUNFELS INVESTMENT JOINT VENTURE
P.O. BOX 311240
NEW BRAUNFELS, TX 78131-1240

SITE PLAN FOR OAK RUN COMMERCIAL, UNIT 2 - INFRASTRUCTURE
NEW BRAUNFELS, TEXAS

REVISIONS	
DATE	DESCRIPTION
11/17/10	ADDRESSED TCEQ COMMENTS

DRAWN BY: D.G. III
CHECKED BY: D.D.P.
DATE: SEPTEMBER 2010
JOB NO.: 0906.01

S1 OF 2

F:\0906.01 - Oak Run Commercial Unit 2\dwg\vesp\01-SITE.dwg 2010/11/17 8:43am Domingo

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

September 22, 2010

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

Re: Edwards Aquifer, Comal County
PROJECT NAME: Oak Run Commercial Unit 2, Infrastructure, located on the northeast side of US Highway 46 and Oak Sprawl, New Braunfels, Texas
PLAN TYPE: Application for Approval of a Water Pollution Abatement Plan (WPAP) 30 Texas Administration Code (TAC) Chapter 213; Edwards Aquifer Protection Program
EAPP File No.: 2947.00

Dear Mr. Hornseth:

The referenced application is being forwarded to you pursuant to the Edwards Aquifer Rules. The Texas Commission on Environmental Quality (TCEQ) is required by 30 TAC Chapter 213 to provide copies of all applications to affected incorporated cities and underground water conservation districts for their comments prior to TCEQ approval.

Please forward your comments to this office by October 21, 2010.

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

Sincerely

Todd Jones

Todd Jones
Water Section Work Leader
San Antonio Regional Office

TJ/eg

PAWELEK & MOY, INC.

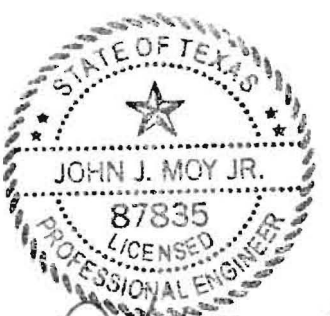
CIVIL ENGINEERING & CONSULTING SERVICES

- RESIDENTIAL DEVELOPMENT
- SITE DEVELOPMENT
- PUBLIC WORKS
- UTILITIES

Water Pollution Abatement Plan

Oak Run Commercial, Unit 2 Infrastructure

New Braunfels, Texas 78130



John J. Moy P.E.
9/16/10

by

Pawelek & Moy, Inc.

Job No. 0906.01

September 2010

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

Water Pollution Abatement Plan Checklist

X General Information Form (*TCEQ-0587*)
- ATTACHMENT A - Road Map
- ATTACHMENT B - USGS / Edwards Recharge Zone Map
- ATTACHMENT C - Project Description

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

X Water Pollution Abatement Plan Application Form (*TCEQ-0584*)
- ATTACHMENT A - Factors Affecting Water Quality
- ATTACHMENT B - Volume and Character of Stormwater
- ATTACHMENT C - Suitability Letter from Authorized Agent (if OSSF is proposed)
- ATTACHMENT D - Exception to the Required Geologic Assessment (if requesting an exception)
- Site Plan

X Temporary Stormwater Section (*TCEQ-0602*)
- ATTACHMENT A - Spill Response Actions
- ATTACHMENT B - Potential Sources of Contamination
- ATTACHMENT C - Sequence of Major Activities
- ATTACHMENT D - Temporary Best Management Practices and Measures
- ATTACHMENT E - Request to Temporarily Seal a Feature, if sealing a feature
- ATTACHMENT F - Structural Practices
- ATTACHMENT G - Drainage Area Map
- ATTACHMENT H - Temporary Sediment Pond(s) Plans and Calculations
- ATTACHMENT I - Inspection and Maintenance for BMPs
- ATTACHMENT J - Schedule of Interim and Permanent Soil Stabilization Practices

X Permanent Stormwater Section (*TCEQ-0600*)
- ATTACHMENT A - 20% or Less Impervious Cover Waiver, if project is multi-family residential, a school, or a small business and 20% or less impervious cover is proposed for the site
- ATTACHMENT B - BMPs for Upgradient Stormwater
- ATTACHMENT C - BMPs for On-site Stormwater
- ATTACHMENT D - BMPs for Surface Streams
- ATTACHMENT E - Request to Seal Features (if sealing a feature)
- ATTACHMENT F - Construction Plans
- ATTACHMENT G - Inspection, Maintenance, Repair and Retrofit Plan
- ATTACHMENT H - Pilot-Scale Field Testing Plan, if BMPs not based on *Complying with the Edwards Aquifer Rules: Technical Guidance for BMPs*
- ATTACHMENT I -Measures for Minimizing Surface Stream Contamination

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

X Application Fee Form (*TCEQ-0574*)

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

X Core Data Form (*TCEQ-10400*)

General Information Form
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: Oak Run Commercial, Unit 2 - Infrastructure
COUNTY: Comal STREAM BASIN: Blieder's Creek

EDWARDS AQUIFER: X RECHARGE ZONE
__ TRANSITION ZONE

PLAN TYPE: X WPAP __ AST __ EXCEPTION
__ SCS __ UST __ MODIFICATION

CUSTOMER INFORMATION

1. Customer (Applicant):

Contact Person: Edward Badouh, Jr.
Entity: New Braunfels Investment Joint Venture
Mailing Address: P.O. Box 311240
City, State: New Braunfels, TX. Zip: 78131-1240
Telephone: (830) 625-8933 FAX: (830)609-0480

Agent/Representative (If any):

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

2. X This project is inside the city limits of New Braunfels, Texas.
__ 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.

The site is located on the northwest corner of State Highway 46 and Oak Sprawl.

4. X **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. X **ATTACHMENT B - USGS / EDWARDS RECHARGE ZONE MAP**. A copy of the official 7 ½ minute USGS Quadrangle Map (Scale: 1" = 2000') of the Edwards Recharge Zone is attached behind this sheet. The map(s) should clearly show:

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

6. X 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. X **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)
X Undeveloped (Undisturbed/Uncleared) (Routine Maintenance/Shredding)
__ Other: _____

PROHIBITED ACTIVITIES

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

(1) waste disposal wells regulated under 30 TAC Chapter 331 of this title (relating to Underground Injection Control);
(2) new feedlot/concentrated animal feeding operations, as defined in 30 TAC §213.3;
(3) land disposal of Class I wastes, as defined in 30 TAC §335.1;
(4) the use of sewage holding tanks as parts of organized collection systems; and
(5) new municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41(b), (c), and (d) of this title (relating to Types of Municipal Solid Waste Facilities).

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:

X 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 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)

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

4

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

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:

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

Signature of Customer/Agent

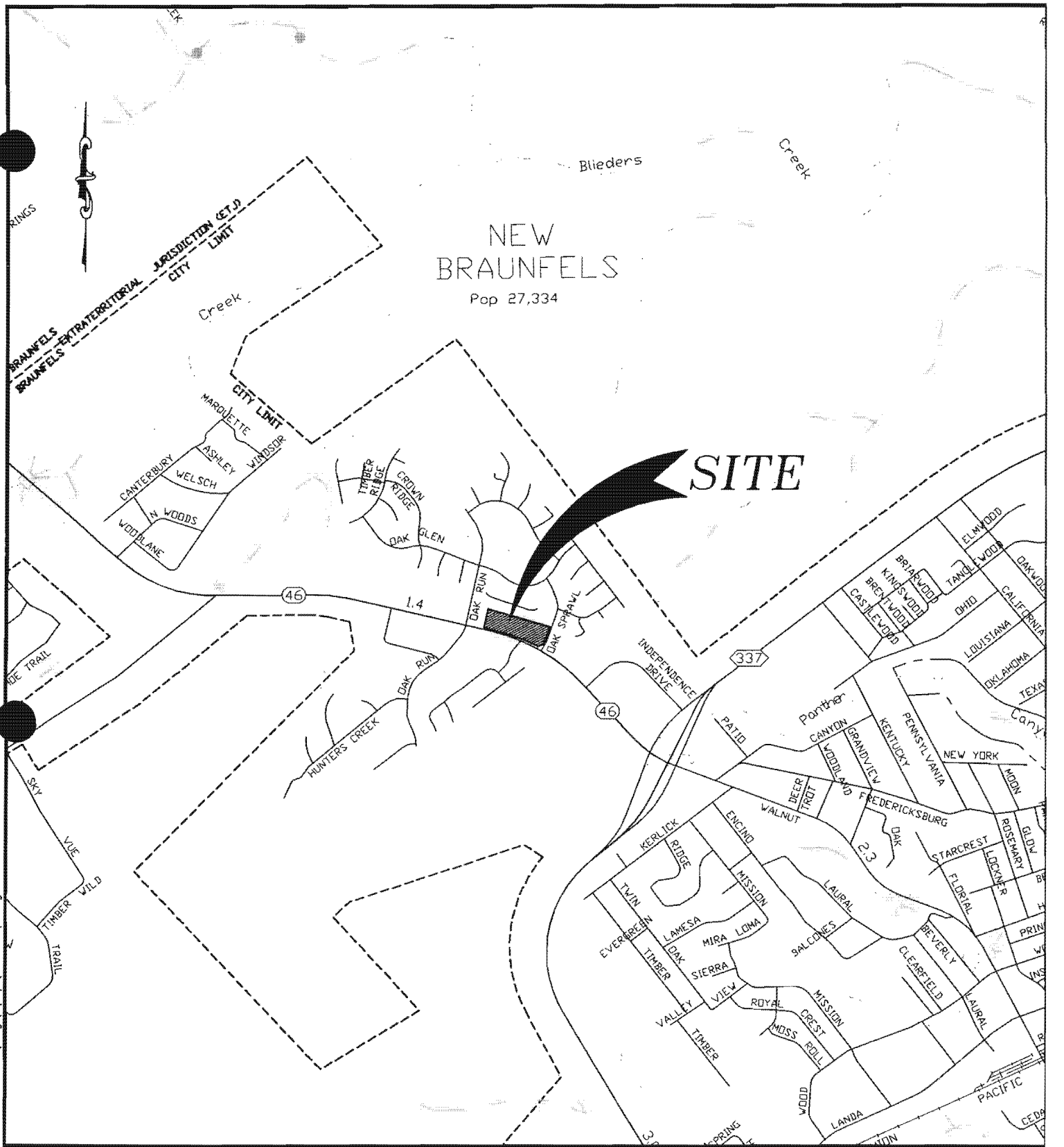
9/16/10
Date

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.

ATTACHMENT A

ROAD MAP



LOCATION MAP

SCALE: 1" = 2000'

ATTACHMENT A
ROAD MAP

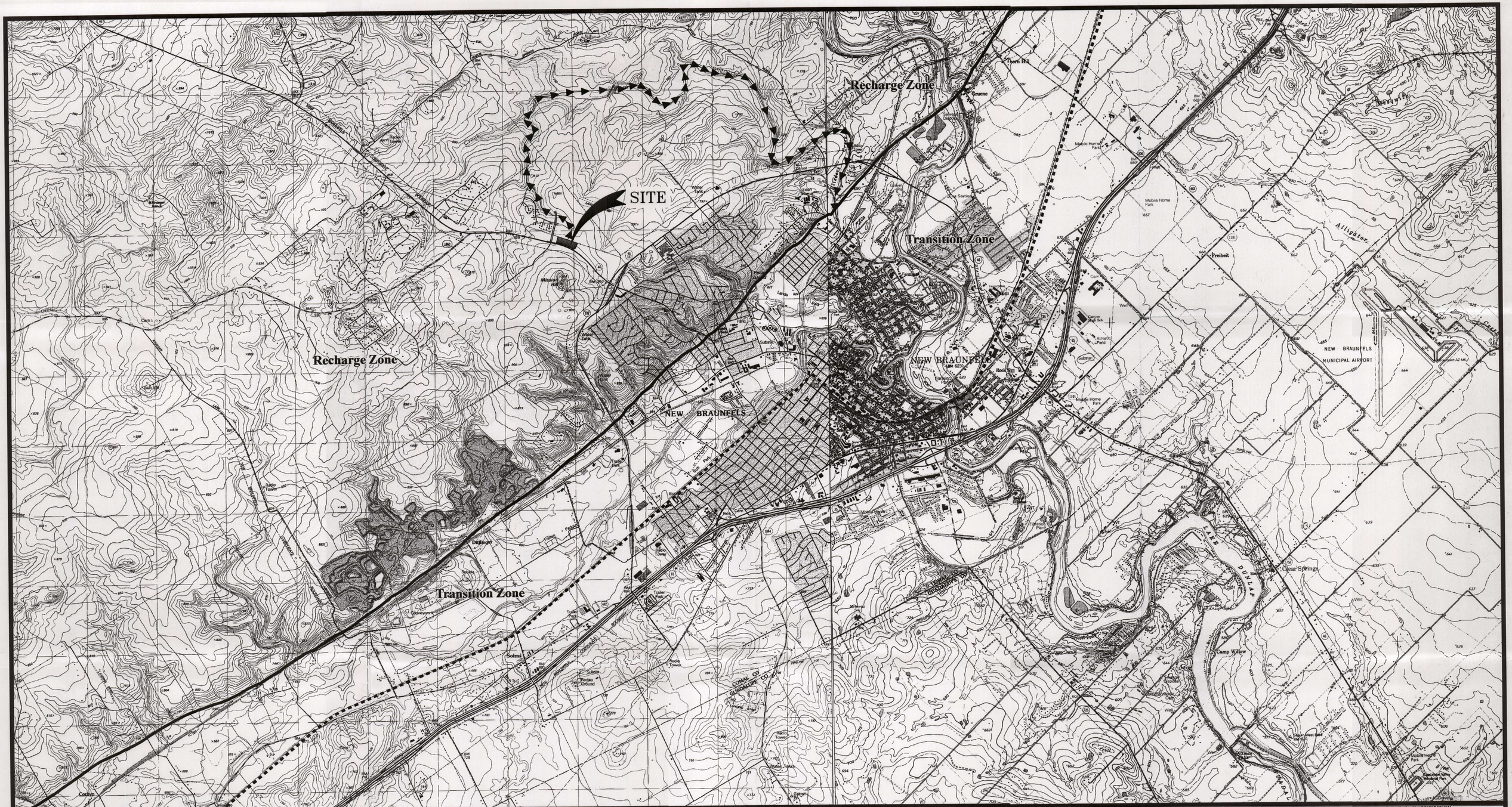
PAWELEK & MOY, INC.
CIVIL ENGINEERING & CONSULTING SERVICES
130 W. Jahn Street tel: (830) 629-2563
New Braunfels, Texas 78130 fax: (830) 629-2564

TECHNICIAN:	D.G.III	DATE:	10-06-08
JOB NO.	0706.04	SHEET:	R1

File Name: F:\0706.01 - Oak Run Commercial Unit 2\dwg\wpap\site map.dwg

ATTACHMENT B

USGS/EDWARDS RECHARGE ZONE MAP



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

Control by USGS, NOS/NOAA, and USCE

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

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

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

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

SCALE 1:24 000

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

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

QUADRANGLE LOCATION

2998-413

ROAD CLASSIFICATION

Primary highway, hard surface — Light-duty road, hard or improved surface
Secondary highway, hard surface — Unimproved road
Interstate Route · U. S. Route · State Route

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

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

UTM GRID AND 1994 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

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

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

QUADRANGLE LOCATION

2998-414

ROAD CLASSIFICATION

Primary highway, hard surface — Light-duty road, hard or improved surface
Secondary highway, hard surface — Unimproved road
Interstate Route · U. S. Route · State Route

NEW BRAUNFELS EAST, TEX.
29098-F1-TF-024
1968
REVISED 1994
DMA 6343 II NE-SERIES V882

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

ATTACHMENT "C"
PROJECT DESCRIPTION

This proposed project site is inside the City Limits of the City of New Braunfels and is located at the corner of State Highway 46 and Oak Sprawl. The project site is 6.278 acres and is located in the Blieder's Creek drainage basin but is not located in a FEMA 100 yr. flood plain according to FEMA FIRM Map 48091C0435F (effective 9/2/2009). The site generally drains from the front, along State Highway 46, towards the rear of the property to an existing 30 inch reinforced concrete pipe.

The purpose of this project is to install drainage features and a cross access drive for future subdividing and development of this 6.278 acre tract. As discussed with TCEQ staff, the developers of the future lots will each prepare and submit a site specific Water Pollution Abatement Plan (WPAP) prior to any regulated activities for each individual lot. Therefore, this WPAP will only cover infrastructure related construction activities consisting of a 0.59 acre storm water detention pond with inlet/outlet structures, 394 lf. of storm drain and a 5776 sf. concrete access drive coming off of Oak Sprawl for a total impervious cover of 2.07%. The concrete access drive will require a Permanent Best Management Practice (BMP) which will be a 15 ft. wide Engineered Vegetative Filter Strip in accordance with the TCEQ's RG-348.

GEOLOGIC SITE ASSESSMENT

PREPARED BY

FROST GEOSCIENCES

FOR

OAK RUN COMMERCIAL, UNIT 2

(INFRASTRUCTURE)

Geologic Site Assessment (WPAP)

for Regulated Activities / Development
on the Edwards Aquifer Recharge / Transition Zone

The Oak Run Commercial Reserve
Unit 2, 6.27 Acres
New Braunfels, Texas

FROST GEOSCIENCES CONTROL # FGS-E10154

August 30, 2010

Prepared exclusively for

New Braunfels Investment Joint Venture
2501 Oak Run Parkway
New Braunfels, Texas 78132

Frost GeoSciences

Geotechnical ▪ Construction Materials
Forensics ▪ Environmental

13402 Western Oak • Helotes, Texas 78023 • Phone: (210) 372-1315 • Fax: (210) 372-1318

Frost GeoSciences
Geotechnical • Construction Materials
Forensics • Environmental

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

August 30, 2010

New Braunfels Investment Joint Venture
2501 Oak Run Parkway
New Braunfels, Texas 78132

Attn: Mr. Rob Eversberg

Re: Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
The Oak Run Commercial Reserve
Unit 2, 6.27 Acres
New Braunfels, Texas

Frost GeoSciences, Inc. Control # FGS-E10154

Dear Sir:

Attached is a copy of the Geologic Assessment Report completed for the above referenced project site as it relates to 30 TAC §213.5(b)(3), effective June 1, 1999. Our investigation was conducted and this report was prepared in general accordance with the "Instructions to Geologists", TCEQ-0585-Instructions (Rev. 10-1-04). The results of our investigation, along with any recommendations for Best Management Practices (BMP's), are provided in the following report.

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

Sincerely,
Frost GeoSciences, Inc.

Steve Frost, C.P.G., P.G.
President, Senior Geologist

Distribution: (5) Pawelek & Moy, Inc.
(1) New Braunfels Investment Joint Venture

Table of Contents

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: The Oak Run Commercial Reserve, Unit 2, 6.27 Acres

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 Association	C/D	1 to 2

* 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" = 40 '
Site Geologic Map Scale 1" = 40 '
Site Soils Map Scale (if more than 1 soil type) 1" = 500 '

6. Method of collecting positional data:

✓ Global Positioning System (GPS) technology.
✓ Other method(s). 2009 Aerial Photograph

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. ✓ 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: August 26, 2010
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.

Steve Frost, C.P.G., P.G. (210) 372-1315
Print Name of Geologist Telephone

STATE OF TEXAS
Steve M. Frost
Geology
License No. 315
PROFESSIONAL SCIENTIST

(210) 372-1318
Fax

August 30, 2010
Signature of Geologist Date

Representing: Frost GeoSciences, Inc.
(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

Stratigraphic Column

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

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

GEOLOGIC ASSESSMENT TABLE | PROJECT NAME: The Oak Run Commercial Reserve | FGS-E10154

LOCATION			FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING		
1	2*	3*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NO/FT²)	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° 43.208'	98° 09.835'	MB	30	Kcp	30	40	5		-	-	-	-	7	37	37			X	Hillside

* DATUM 1984 North American Datum (NAD83)

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 213.

Signature _____ Date August 30, 2010 Sheet 1 of 1

Steve M. Frost
Geology
License No. 315
8/30/10

LOCATION

The project site consists of 6.27 acres of land located along and north of State Highway 46 near the northeastern corner of the intersection of Oak Run Parkway and State Highway 46 in New Braunfels, Texas. An overall view of the area is shown on copies of the site plan, a street map, the USGS Topographic Map, the Official Edwards Aquifer Recharge Zone Map, the Flood Insurance Rate Map (FIRM), a geologic map, a 2009 aerial photograph at a scale of 1"=500', a 2009 aerial photograph at a scale of 1"=200', and a 1973 aerial photograph at a scale of 1"=500', Plates 1 through 9 in Appendix A.

METHODOLOGY

The Geologic Assessment was performed by Mr. Steve Frost, C.P.G., President and Senior Geologist with Frost GeoSciences, Inc. Mr. Frost is a Licensed Professional Geoscientist in the State of Texas (License # 315) and is a Certified Professional Geologist with the American Institute of Professional Geologist (Certification # 10176).

Frost GeoSciences, Inc. researched the geology of the area in the immediate vicinity of the project site. The research included, but was not limited to, the Geologic Atlas of Texas, San Antonio Sheet, FIRM maps, Edwards Aquifer Recharge Zone Maps, USGS 7.5 Minute Quadrangle Maps, the Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle, the USGS Water-Resources Investigations Report 94-4117 and the USDA Soil Survey of Comal & Hays County, Texas.

After reviewing the available information, a field investigation was performed to identify any geologic or man-made potential recharge features. A transect spacing of approximately 50 feet or less, depending on vegetation thickness, was used to inspect the project site. A 2009 aerial photograph, in conjunction with a hand held Garmin eTrex Summit Global Positioning System with an Estimated Potential Error ranging from 10 to 15 feet, was used to navigate around the property and identify the locations of potential recharge features, as recommended in the "Instructions to Geologists", TCEQ-0585-Instructions (Rev. 10-1-04). The locations of any potential recharge features noted in the field were identified with blue and white flagging. The flagging is

numbered with the same potential recharge feature I.D. # that is used on the Site Geologic Map in Appendix C of this report. The Site Geologic Map indicating the limits of the project site is included in Appendix C. A copy of a 2009 aerial photograph at an approximate scale of 1"=200', indicating the locations of the potential recharge features, is included on Plate 8 in Appendix A. The Geologic Assessment Form, Stratigraphic Column and the Geologic Assessment Table have been filled with the appropriate information for this project site and are included on pages 1-4 of this report.

RESEARCH & OBSERVATIONS

7.5 Minute Quadrangle Map Review

According to the USGS 7.5 Minute Quadrangle Map, New Braunfels West, Texas Sheet (1988), the elevation of the project site is approximately 870 feet. This elevation is calculated above mean sea level (AMSL). The surface runoff from the project site flows to the west into an unnamed tributary of Blieders Creek. State Highway 46 is located immediately south of the project site. Oak Run Parkway is located west of the project site. A copy of the above referenced USGS 7.5 Minute Quadrangle Map , indicating the location of the project site, is included in this report on Plate 3 in Appendix A.

Recharge / Transition Zone

According to Official Edwards Aquifer Recharge Zone Map 31, New Braunfels West, Texas Sheet (1996), the project site is located within the Recharge Zone of the Edwards Aquifer. A copy of Official Edwards Aquifer Recharge Zone Map 31, indicating the location of the project site, is included on Plate 4 in Appendix A.

100-Year Floodplain

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for Comal County, Texas, Community Panel Number 48091C0435F (Revised 9/02/09) was reviewed to determine if the project site is located in areas prone to flooding. A review of the above-

mentioned panel indicates that no portion of the project site is located within the 100 year floodplain. The project site is located within Zone X. According to the panel legend, Zone X represents areas determined to be outside the 0.2% annual chance floodplain. A copy of the Comal County, Texas, FIRM map, indicating the location of the project site, is included in this report on Plate 5 in Appendix A.

Soils

According to the United States Department of Agriculture, Soil Conservation Service, Soil Survey of Comal & Hays County, Texas (1982), the project site is located on the Rumple-Comfort Association (RUD). A copy of the 1973 aerial photograph (approximate scale: 1"=500') from the USDA Soil Survey of Comal & Hays County, Texas indicating the location of the project site and the soil types is included on Plate 9 in Appendix A.

The Rumple-Comfort Association (RuD) consists of shallow and moderately deep soils on uplands in the Edwards Plateau Land Resource Area. The surface layer of the Rumple Soil is dark reddish brown very cherty clay loam about 10 inches thick. Rounded chert and limestone cobbles and gravel cover about 20 percent of the surface. The subsoil to a depth of 14 inches is dark reddish-brown very cherty clay, and to a depth of 28 inches it is dark reddish-brown extremely stony clay. The underlying material is indurated fractured limestone. The Comfort Soil is dark brown, neutral, extremely stony clay about 7 inches thick. The subsoil to a depth of 12 inches is dark reddish-brown, mildly alkaline, extremely stony clay. The underlying material is indurated fractured limestone. The soil is noncalcareous throughout. The soils in this association are well drained. Surface runoff is medium, but varies due to the occurrence of caves, fracture zones, and sinks. Permeability is moderately slow. Water erosion is a moderate hazard.

Narrative Description of the Site Geology

The project site exists as undeveloped land. The site was mowed and supported only minor amounts of vegetative cover with a thick stand of cut native grasses. No areas of natural rock outcrops were noted during the on-site inspection. The site appears to support a

thick soil cover. The variations in the vegetative cover across the project site are visible in the 2009 aerial photographs on Plates 7 and 8 in Appendix A and in the site visit photographs included in Appendix B. One PRF's was identified during our site inspection.

S-1 consists of a manmade feature in bedrock (MB) located along the northern fence line. This feature is a storm drain collector consisting of an area of internal drainage approximately 30 feet wide and 40 feet long. The feature is approximately 5 feet deep and empties into a storm drain pipe. The feature is lined with course boulder rubble to prevent erosion into the storm drain collector. This feature is not considered sensitive by FGS. These feature scores a 37 on the feature assessment table on page 4.

According to the USGS 7.5 Minute Quadrangle Map, New Braunfels West, Texas Sheet (1988), the elevation of the project site is approximately 870 feet. This elevation is calculated above mean sea level (AMSL). According to topographic data obtained from Pawelek & Moy, Inc., the elevations on the project site range from 860 near the northwestern property corner to 875 feet near the southeastern property corner. A copy of the site plan, indicating the boundary of the project site and the elevations, is included on Plate 1 in Appendix A and on the Site Geologic Map in Appendix C of this report.

According to the WRI 94-4117 Geologic Map of Comal County, Texas, and the Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle, the project site is covered by the Cyclic and Marine Member of the Cretaceous Edwards Person Limestone.

The Cyclic and Marine Member of the Cretaceous Edwards Person Limestone consists of mudstone to packstone and miliolid grainstone with chert. The member is characterized by massive beds of limestone to relatively thin beds of limestone with some crossbedding. The Cyclic and Marine Member forms a few caves some that are laterally extensive. Overall thickness ranges from 80 to 90 feet thick.

A copy of the WRI 94-4117 Geologic Map, indicating the location of the project site, is included on Plate 6a in Appendix A. A copy of the Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle, indicating the location of the project site, is included on Plate 6b in Appendix A.

BEST MANAGEMENT PRACTICE (BMP)

Based on a visual inspection of the ground surface the overall potential for fluid flow from the project site into the Edwards Aquifer appears to be low. The potential always exists to encounter subsurface features that lack a surface expression. Frost GeoSciences, Inc. recommends that we be included in the pre-construction meeting to inform construction personnel of the potential to encounter subsurface karst features during excavating activities. Construction personnel should also be informed of the proper protocol to follow in the event that a solution cavity and/or cave is encountered during the excavation and development of the property.

DISCLAIMER

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

This report has been prepared for and may be relied upon by New Braunfels Investment Joint Venture, and Pawelek & Moy, Inc. This report is based on available known records, a visual inspection of the project site and the work generally accepted for a Geologic Assessment TAC §213.5(b)(3), effective June 1, 1999.

REFERENCES

1) USGS 7.5 Minute Quadrangle Map, New Braunfels West, Texas Sheet (1988),

2) Official Edwards Aquifer Recharge Zone Map 31, New Braunfels West, Texas Sheet (1996).

3) Stein, W.G. and Ozuna, G.B., 1995, Geologic Framework and Hydrogeologic Characteristics of the Edwards Aquifer Recharge Zone, Comal County, Texas. U.S. Geological Survey Water Resources Investigations 94-4117.

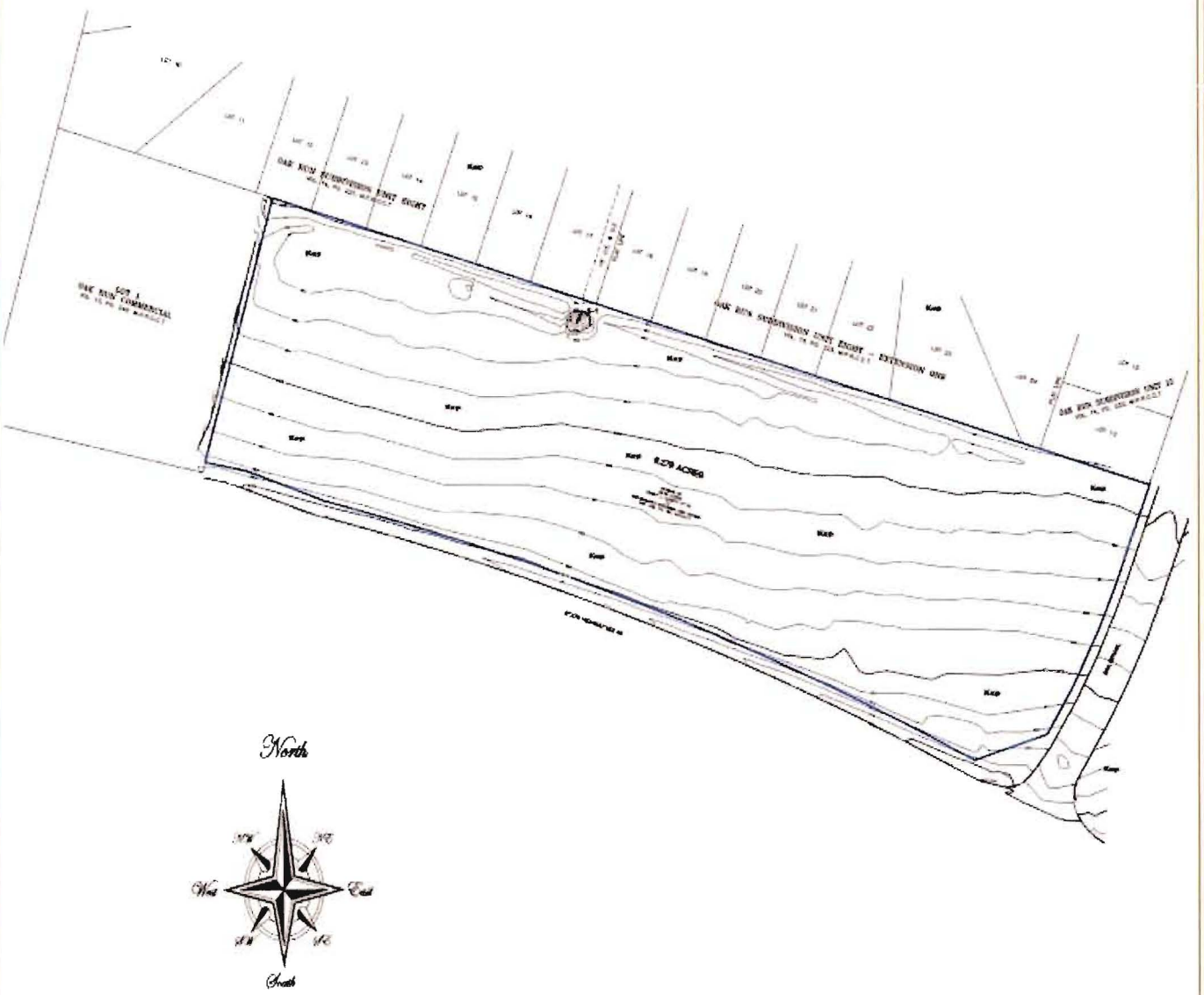
4) Collins, Edward, W., 2000, Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle.

5) Federal Emergency Management Agency (FEMA), Bexar County, Texas and Incorporated Areas, Flood Insurance Rate Map (FIRM), Panel 48091C0435F (9/02/09) FEMA, Washington D.C.

7) USDA Soil Conservation Service, Soil Survey of Comal & Hays Counties, Texas (1982).

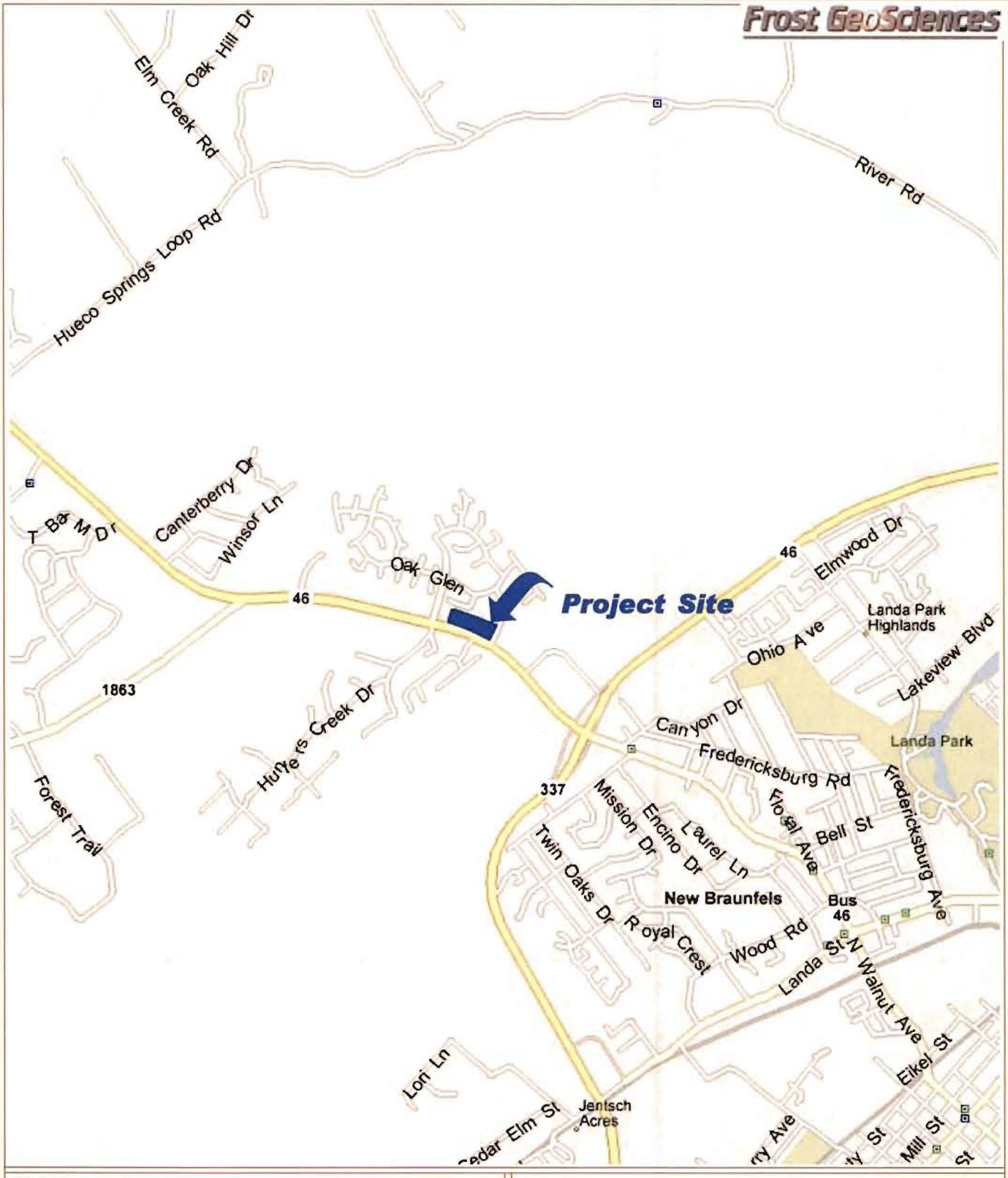
8) TCEQ-0585-Instructions (Rev. 10-1-04). "Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zone".

Frost GeoSciences



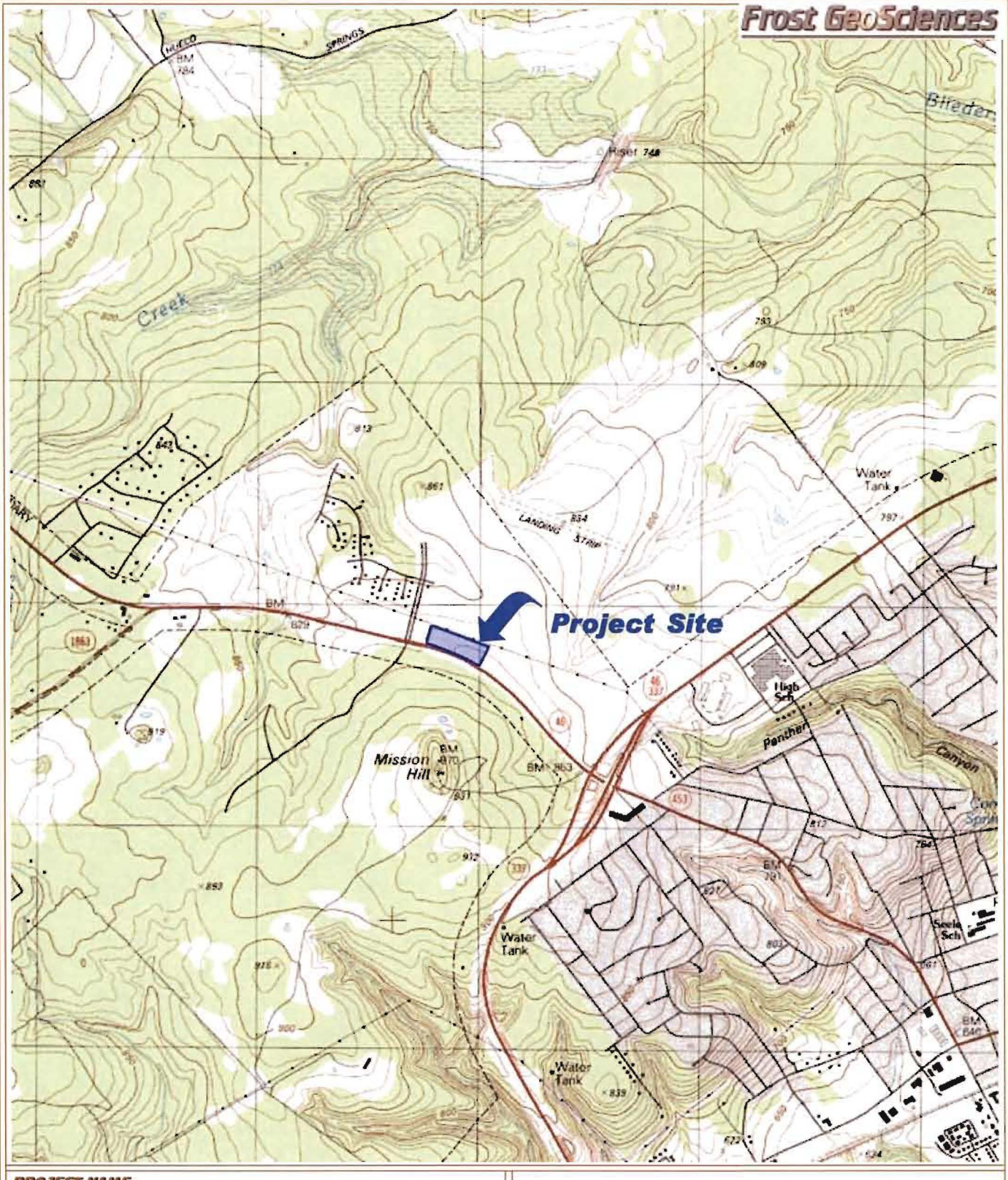
PROJECT NAME:		
Geologic Site Assessment (WPAP) for Regulated Activities / Development on the Edwards Aquifer Recharge / Transition Zone The Oak Run Commercial Reserve, 6.27 Acres New Braunfels, Texas	Site Plan	
	PROJECT NO.: FGS-E10154	DATE: August 30, 2010

Frost GeoSciences



PROJECT NAME:	Street Map	
Geologic Site Assessment (WPAP) for Regulated Activities / Development on the Edwards Aquifer Recharge / Transition Zone The Oak Run Commercial Reserve, 6.27 Acres New Braunfels, Texas	PROJECT NO.: FGS-E10154	DATE: August 30, 2010

Frost GeoSciences

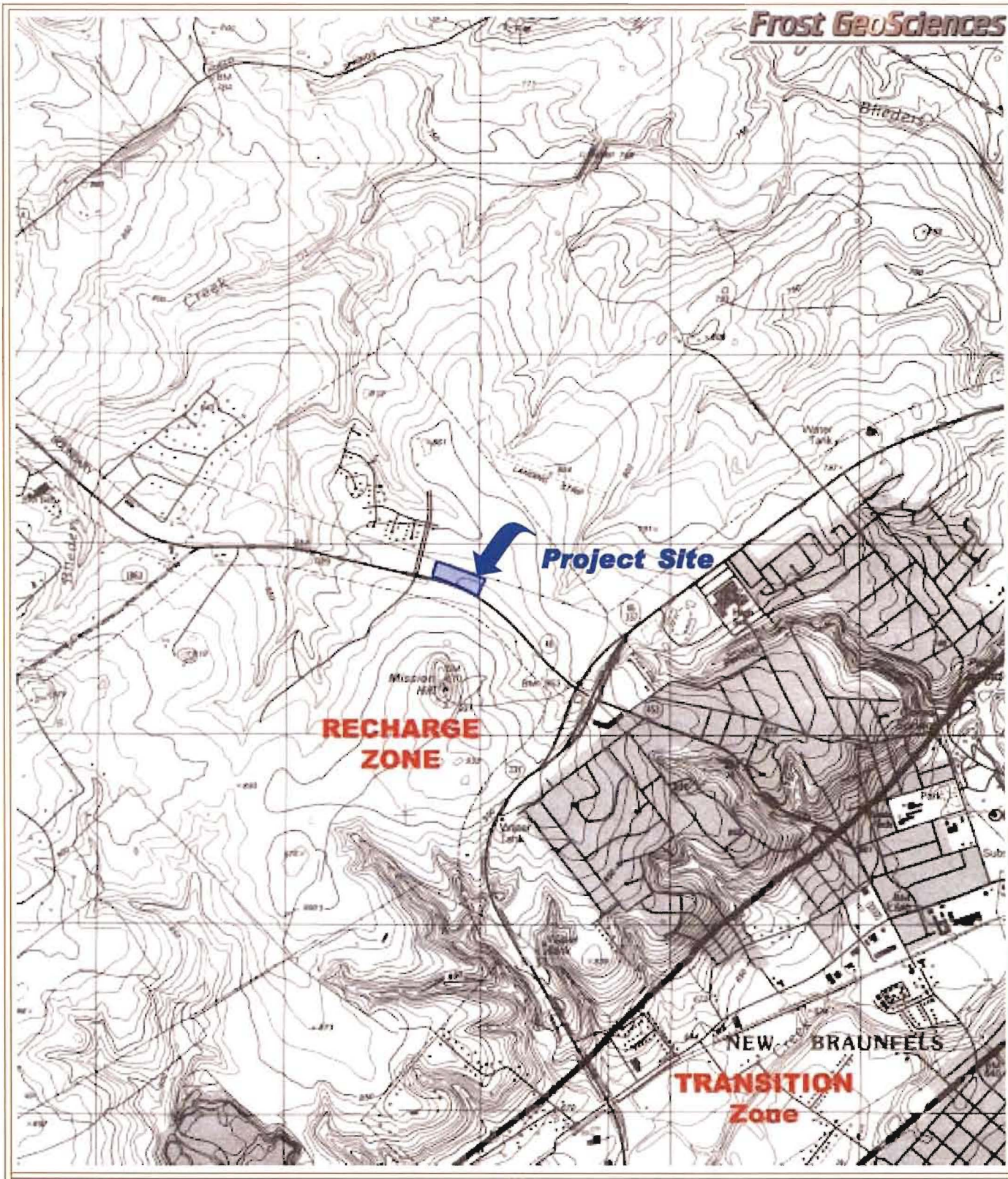


PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the Edwards Aquifer Recharge / Transition Zone
The Oak Run Commercial Reserve, 6.27 Acres
New Braunfels, Texas

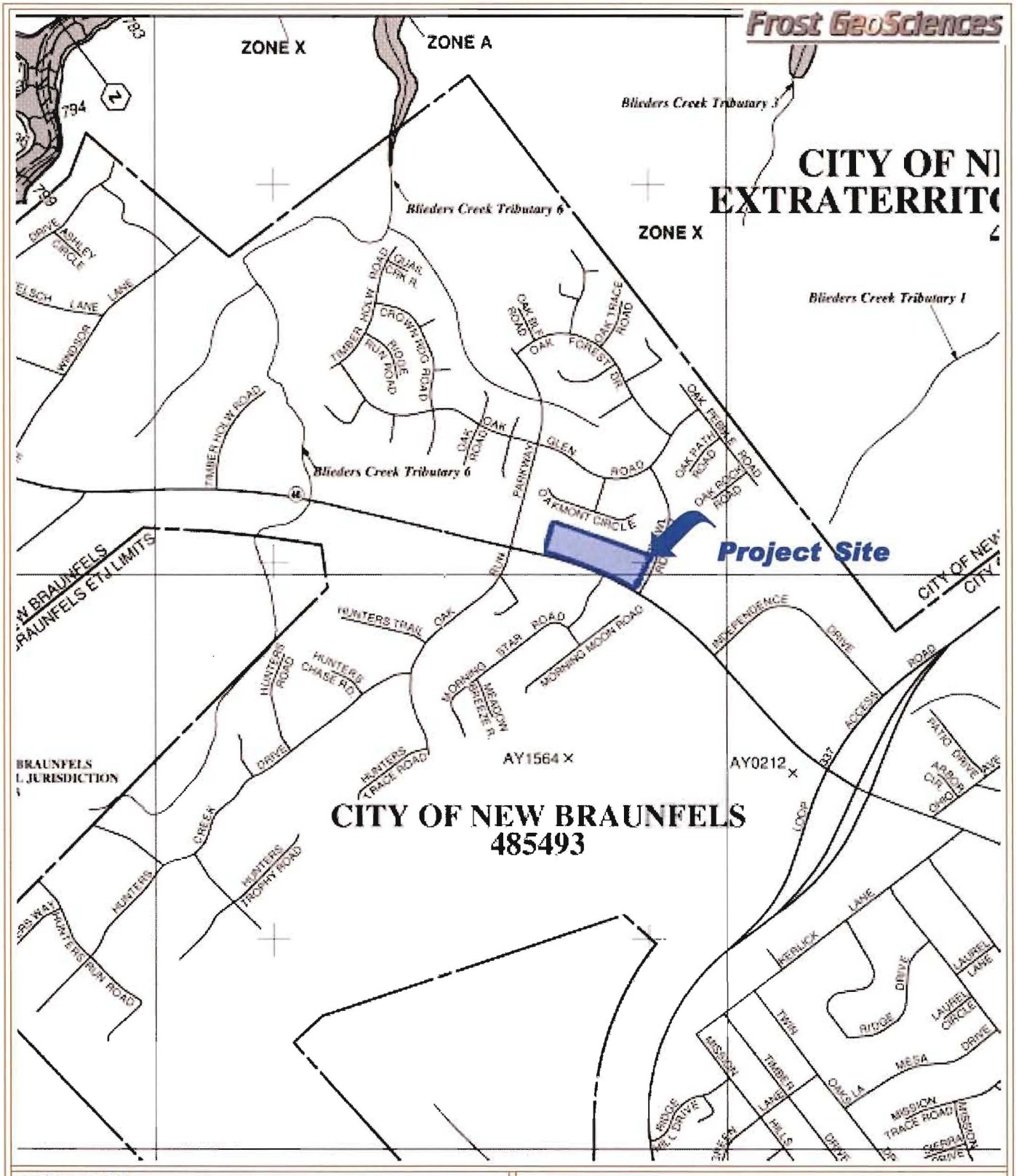
U.S.G.S. 7.5 Minute Quadrangle Map
New Braunfels West, Texas Sheet (1988)

PROJECT NO.:	DATE:
FGS-E10154	August 30, 2010

Frost GeoSciences



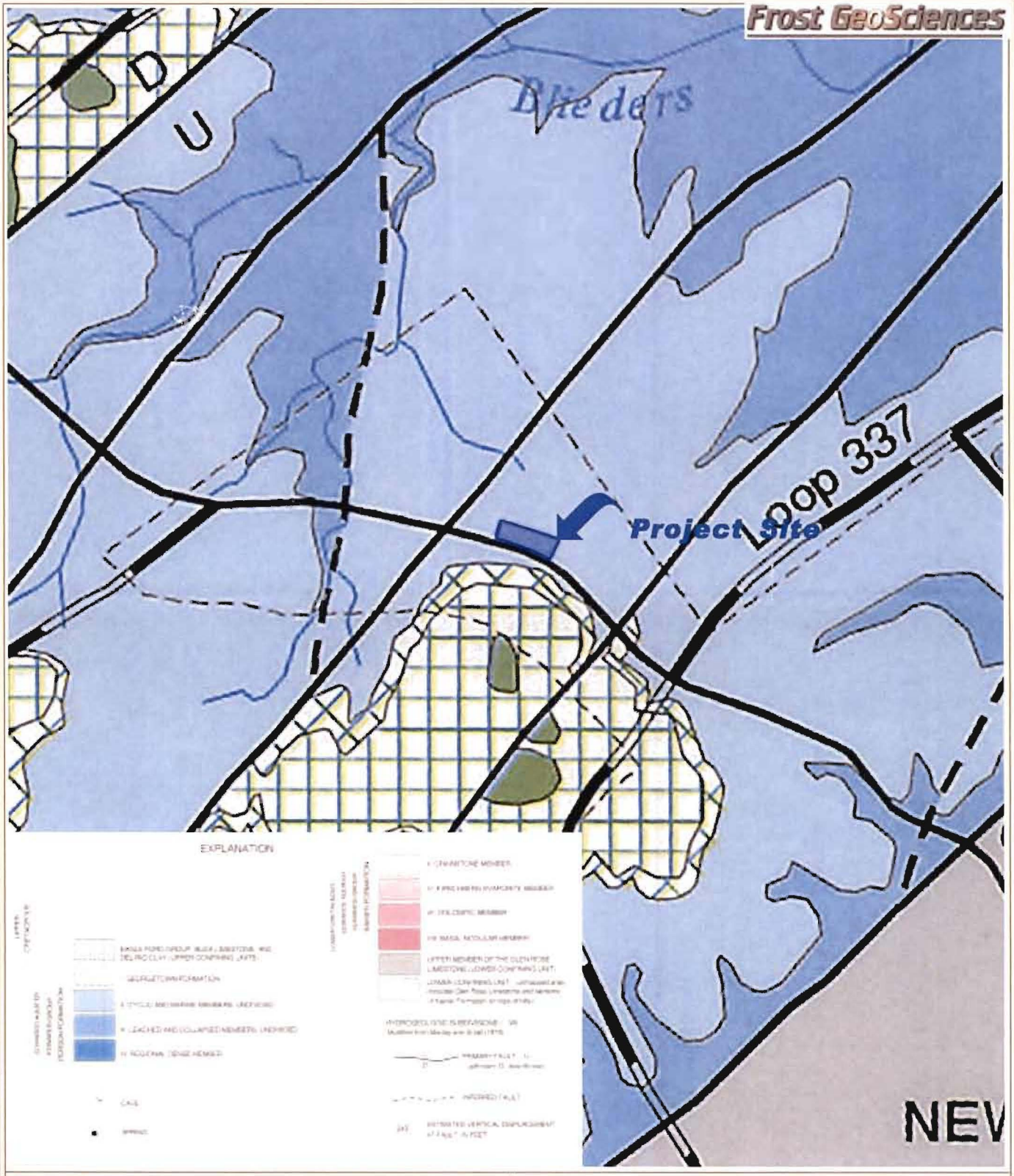
PROJECT NAME:	Official Edwards Aquifer Recharge Zone Map New Braunfels West, Texas Sheet (1996)	
Geologic Site Assessment (WPAP) for Regulated Activities / Development on the Edwards Aquifer Recharge / Transition Zone The Oak Run Commercial Reserve, 6.27 Acres New Braunfels, Texas	PROJECT NO.: FGS-E10154	DATE: August 30, 2010



PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the Edwards Aquifer Recharge / Transition Zone
The Oak Run Commercial Reserve, 6.27 Acres
New Braunfels, Texas

Flood Insurance Rate Map (FIRM)
Community Panel # 48091C0435F
(Revised 9/02/09)

PROJECT NO.:	DATE:
FGS-E10154	August 30, 2010

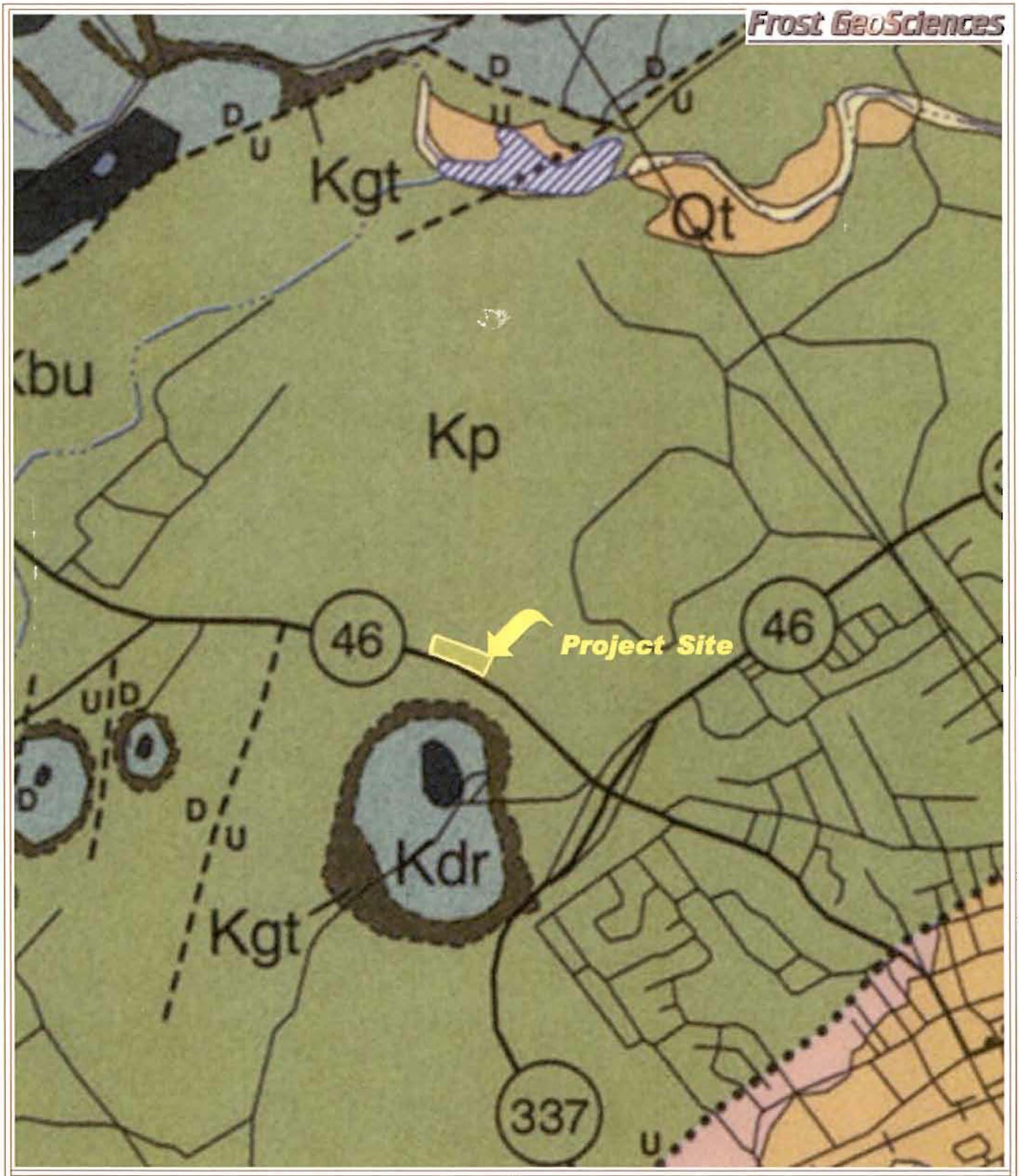


PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the Edwards Aquifer Recharge / Transition Zone
The Oak Run Commercial Reserve, 6.27 Acres
New Braunfels, Texas

United States Geologic Survey
Water Resources Investigations #94-4117
Geologic Map of Comal County, Texas

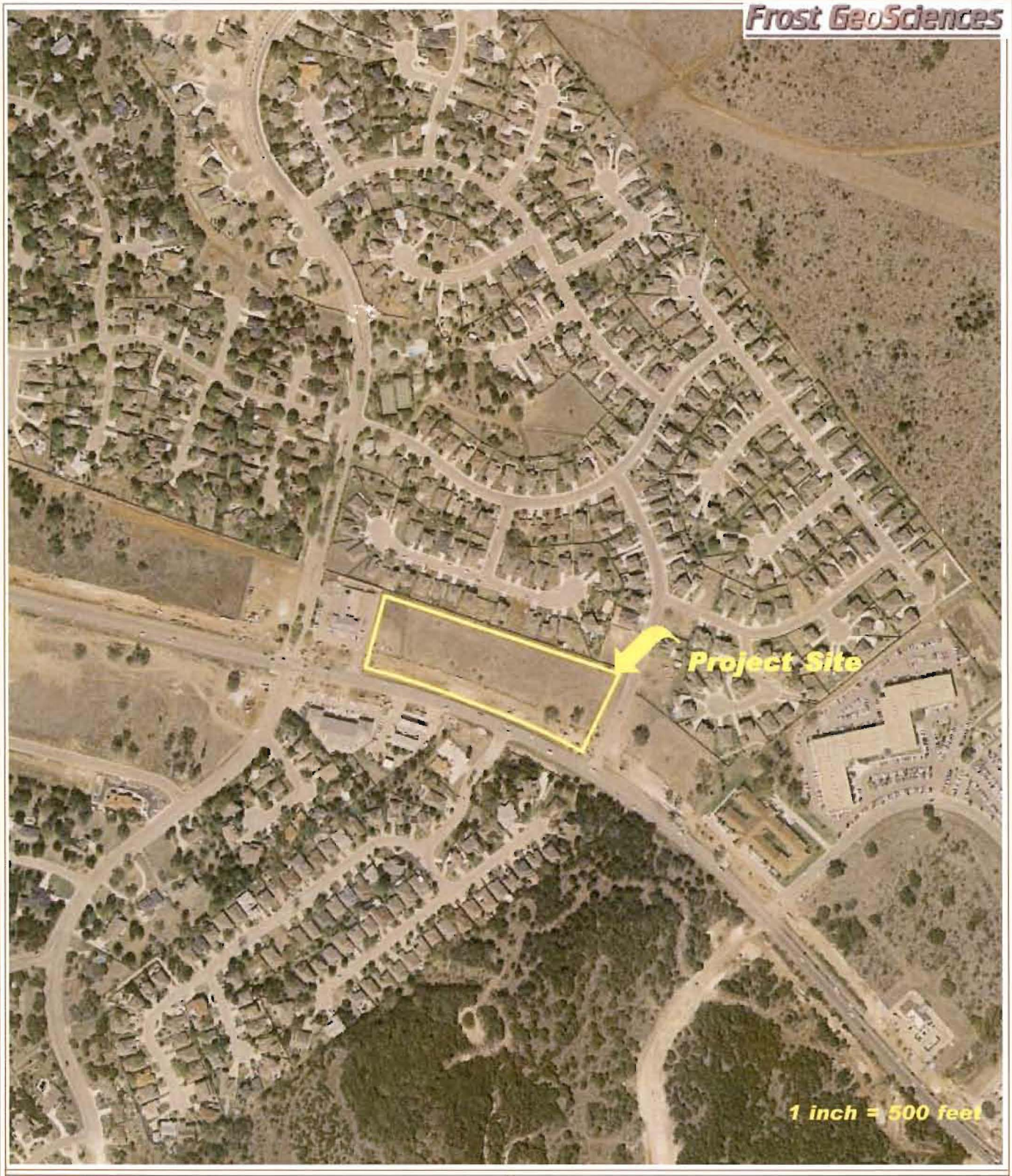
PROJECT NO.: FGS-E10154

DATE: August 30, 2010



PROJECT NAME:	Bureau of Economic Geology Geologic Mapof the New Braunfels, Texas 30 X 60 Minute Quadrangle (2000)	
Geologic Site Assessment (WPAP) for Regulated Activities / Development on the Edwards Aquifer Recharge / Transition Zone The Oak Run Commercial Reserve, 6.27 Acres New Braunfels, Texas	PROJECT NO.: FGS-E10154	DATE: August 30, 2010

Frost GeoSciences



PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
The Oak Run Commercial Reserve, 6.27 Acres
New Braunfels, Texas

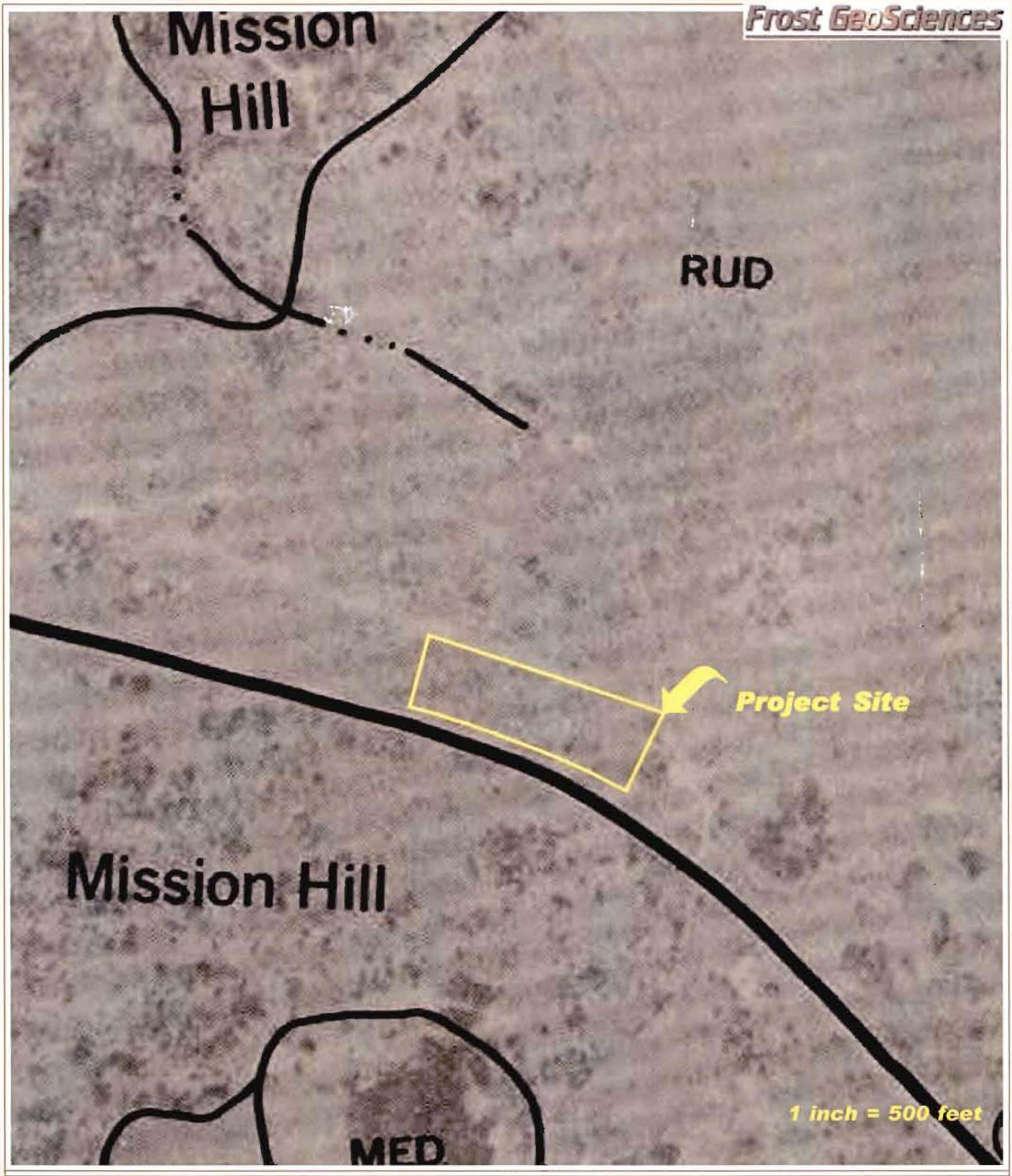
2009 Aerial Photograph
Landiscor Aerial Information

PROJECT NO.:	DATE:
FGS-E10154	August 30, 2010

PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
The Oak Run Commercial Reserve, 6.27 Acres
New Braunfels, Texas

2009 Aerial Photograph with PRF's
Landiscor Aerial Information

PROJECT NO.:	DATE:
FGS-E10154	August 30, 2010



PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
The Oak Run Commercial Reserve, 6.27 Acres
New Braunfels, Texas

1973 Aerial Photograph
United States Department of Agriculture

PROJECT NO.:	DATE:
FGS-E10154	August 30, 2010

View to the west, of the project site along the southern property line.

View to the north, of the project site along the eastern property line.

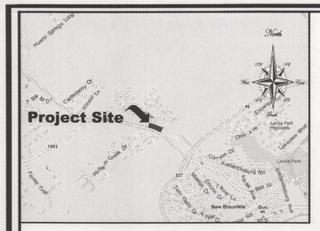
View to the northeast, of the project site from the southern property line.

View to the northwest, of the project site from the southern property line.

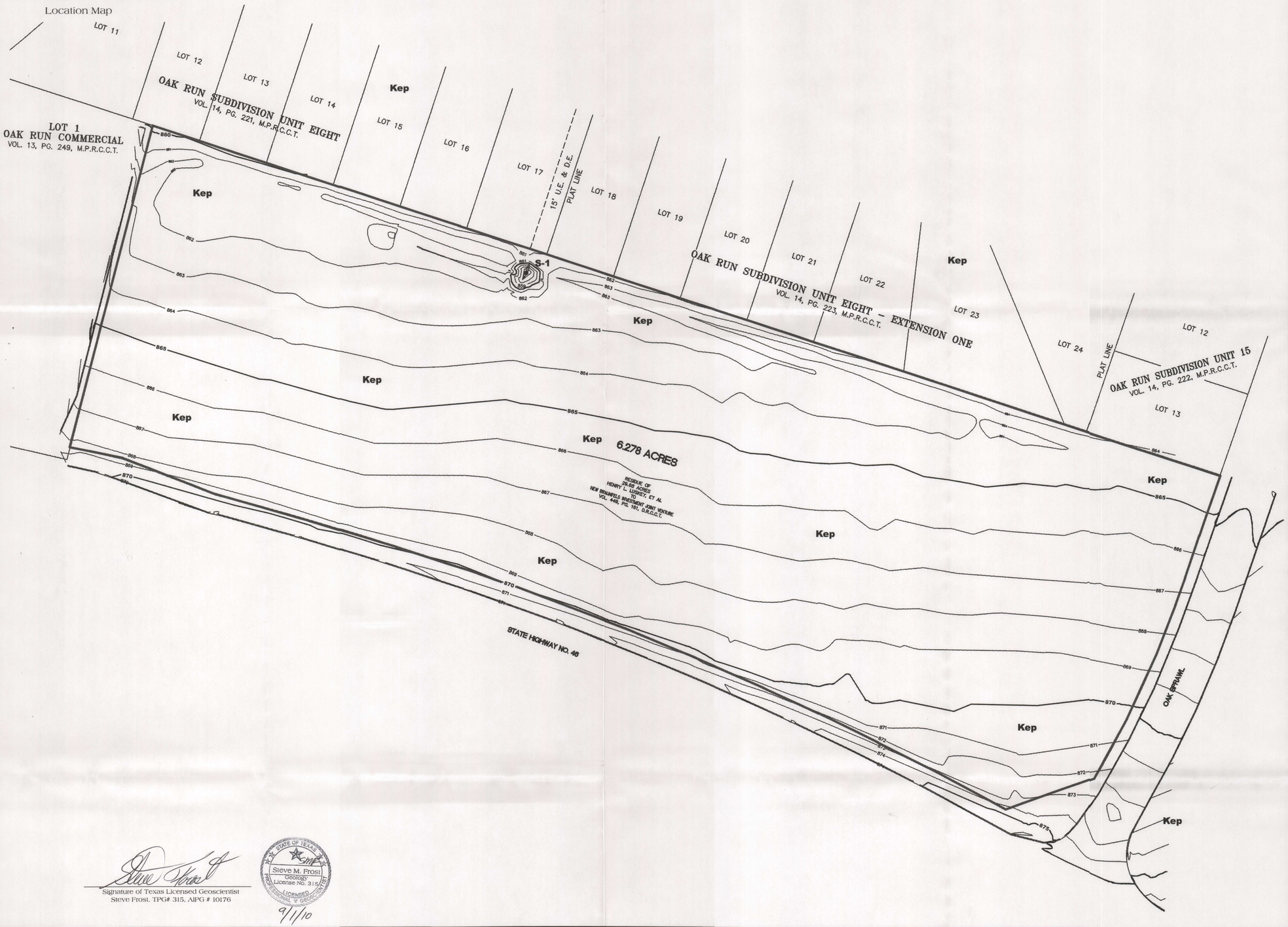
View to the east, of the project site along the northern property line.

View to the west, of the project site along the northern property line.

View of Potential Recharge Feature # S-1.



Location Map



Signature of Texas Licensed Geoscientist
Steve Frost, TPG# 315, AIPG # 10176

STATE OF TEXAS
Steve M. Frost
Geology
License No. 315
LICENSED
PROFESSIONAL GEOSCIENTIST

9/1/10

TCEQ-R13
SEP 17 2010
SAN ANTONIO

Frost GeoSciences
Geotechnical • Construction Materials
Forensics • Environmental
13402 Western Oak Dr. • Helotes, Texas 78023
Phone: (210) 372-1315 Fax: (210) 372-1318

Site Geologic Map

Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
for
The Oak Run Commercial Reserve
Unit 2, 6.27 Acres
New Braunfels, Texas

Frost GeoSciences, Inc. Control # FGS-E10154

Legend

- Fill - Fill Material
- Qal - Alluvium
- Kau - Austin Chalk
- Kef - Eagle Ford Shale
- Kbu - Buda Limestone
- Kdr - Del Rio Clay
- Kgt - Georgetown Limestone
- Kep - Edwards Person Limestone
- Kek - Edwards Kainer Limestone
- Kgr - Glen Rose Formation

- S-# - Potential Recharge Feature (PRF)
- Formation Contact
- 100-Year Floodplain - Zone A
- 100-Year Floodplain - Zone AE
- Other Flood Hazard Area - Zone X (shaded)

Floodplain Information Obtained From
FIRM: Flood Insurance Rate Map
Bexar County, Texas: Panel # 48091C0435F, Revised 9/02/09

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

North
NW NE West East SW SE South

Graphic Scale
40 0 20 40 80
(In Feet)

1 inch = 40 feet
Representative Fraction 1:480

Contour Interval - 1 foot

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: Oak Run Commercial, Unit 2 - Infrastructure

REGULATED ENTITY INFORMATION

1. The type of project is:
   ___ Residential: # of Lots: ___
   ___ Residential: # of Living Unit Equivalents: ___
   ___ Commercial
   ___ Industrial
   X Other: (Infrastructure)

2. Total site acreage (size of property): 6.278 Acres

3. Projected population: N/A

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 (Access Driveway)	5776	÷ 43,560 =	0.13
Total Impervious Cover	5776	÷ 43,560 =	0.13
Total Impervious Cover ÷ Total Acreage x 100 =			2.07 %

5. X **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. X Only inert materials as defined by 30 TAC §330.2 will be used as fill material.

FOR ROAD PROJECTS ONLY
Complete questions 7-12 if this application is exclusively for a road project.

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

__ Concrete
__ Asphaltic concrete pavement
__ Other: _____

9. Length of Right of Way (R.O.W.): _____ feet.
Width of R.O.W.: _____ feet.
L x W = _____ Ft^2 ÷ 43,560 Ft^2/Acre = _____ acres.

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

11. __ A rest stop will be included in this project.
__ A rest stop will **not** be included in this project.

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

STORMWATER TO BE GENERATED BY THE PROPOSED PROJECT

13. **ATTACHMENT B - Volume and Character of Stormwater.** A 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

14. The character and volume of wastewater is shown below:
0 % Domestic - gallons/day
0 % Industrial - gallons/day
0 % Commingled - gallons/day

TOTAL 0 gallons/day (Only Infrastructure with this WPAP)

15. Wastewater will be disposed of by:
__ **On-Site** Sewage Facility (OSSF/Septic Tank):
ATTACHMENT C - Suitability Letter from Authorized Agent. An on-site sewage facility will be used to treat and dispose of the wastewater. 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.

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

__ The SCS was previously submitted on _____.

__ The SCS was submitted with this application.

X 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 Gruene Road (name) Treatment Plant. The treatment facility is :

X existing.

__ proposed.

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

SITE PLAN REQUIREMENTS

Items 17 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" = 40 '.

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):
FIRM Map, Comal County, Texas - Map No. 48091C0435F
Effective Date - September 2, 2009

19. X The layout of the development is shown with existing and finished contours at appropriate, but not greater than ten-foot contour intervals. 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.

__ **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.

__ **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). (Site drains to an existing 30" RCP)

27. X Locations where stormwater discharges to surface water or sensitive features. (Site drains to an existing 30" RCP)
__ 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:

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

Signature of Customer/Agent

9/16/10
Date

WATER POLLUTION ABATEMENT PLAN APPLICATION

5. Attachment A – Factors Affecting Water Quality

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

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

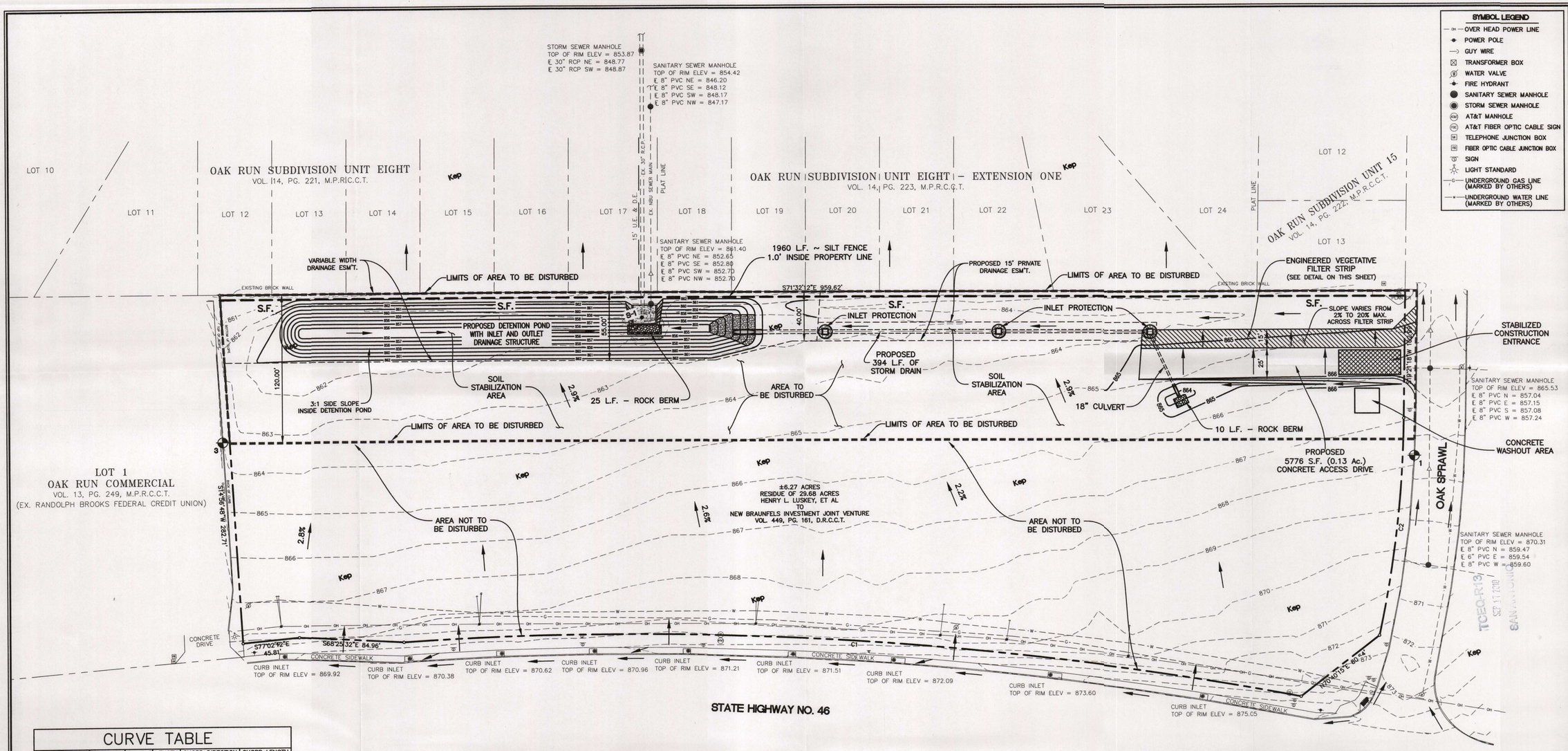
Prior to any construction activity, stormwater pollution prevention controls shall be installed and these controls include silt fence along the property lines (down gradient of soil disturbance), a rock berm in the front of the existing 30" reinforced concrete pipe (RCP) and the installation of a stabilized construction entrance/exit to reduce sediment removal from the site. The construction contractor will be responsible for the installation, repair and upkeep of all control measures.

After construction is complete and the site has been built, the factors affecting water quality will include runoff from the concrete access drive and greenbelt areas. Chemicals that may be present include pesticides and fertilizers for the greenbelt areas as well as miscellaneous oils or fuels from vehicles utilizing the access drive. However, the stormwater runoff from the access drive will be filtered across the proposed engineered vegetative filter strip as shown on the Site Plan, Sheet S-1.

13. Attachment B – Volume and Character of Stormwater

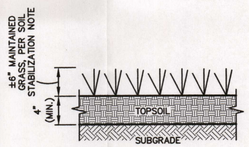
The stormwater runoff generated from this site will consist of runoff from the access drive and the greenbelt areas. The runoff may contain small amounts of suspended solids, fertilizers/pesticides for the greenbelt areas, oils or fuel that would be associated with vehicles entering and exiting the site. The average Pre-Development (original state) runoff coefficient for the site is $C_{10pre} = 0.38$ and the average Post-Construction runoff coefficient is $C_{10post} = 0.81$, used for ultimate/future development runoff calculations for the storm drain and detention pond sizing (See Drainage Area Map in the Temporary Stormwater Section for hydrology calculations). The volume of water associated with the access drive will be treated with an engineered vegetative filter strip. Prior to exiting the site, the storm water will be conveyed to a detention pond, designed in accordance with the City of New Braunfels drainage ordinance, which will aid in the sedimentation of solids and improve the overall water quality.

SITE PLAN



CURVE TABLE

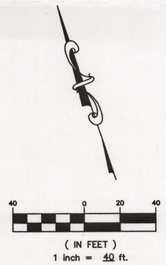
CURVE	RADIUS	DELTA	TANGENT	LENGTH	CHORD DIRECTION	CHORD LENGTH
C1	2924.68'	14°17'23"	366.61'	729.42'	N67°55'32"W	727.53'
C2	885.74'	11°28'10"	88.95'	177.31'	N25°05'23"E	177.01'



ENGINEERED VEGETATIVE FILTER STRIP DETAIL
N.T.S.

LEGEND

- S.F. — SILT FENCE
- ROCK BERM
- INLET PROTECTION
- TEMPORARY CONSTRUCTION ENTRANCE/EXIT
- CONCRETE WASHOUT
- 100 — EXISTING CONTOURS
- 100 — PROPOSED CONTOURS
- LIMITS OF AREA TO BE DISTURBED
- PROPERTY LINE
- S-# — POTENTIAL RECHARGE FEATURE (PRF) AS PER GEOLOGIC ASSESSMENT, NO SENSITIVE FEATURES WERE IDENTIFIED
- Kep — EDWARDS PERSON LIMESTONE



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

VELOCITY CONTROL NOTE
AT THE POINT WHERE THE PROPOSED STORM DRAIN SHOWN IN THE "AREAS TO BE DISTURBED" DISCHARGE INTO THE DETENTION POND, A VELOCITY CONTROL PROCEDURE UTILIZING HEAVY ROCK RIPRAP (TYPE 'R' PER TXDOT ITEM 432) SHALL BE USED TO DISSIPATE THE FLOWS (SEE DETAIL ON SHEET S2). THIS APPLICATION SHALL REMAIN IN PLACE AND NOT BE REMOVED UPON COMPLETION OF THE CONSTRUCTION ACTIVITIES.

FLOODPLAIN NOTE
ACCORDING TO FEMA FIRM MAP PANEL No. 48091C0435F, EFFECTIVE DATE 9/2/2009, THE PROPOSED DEVELOPMENT LIES OUTSIDE THE 100 YR FLOODPLAIN.

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 =	0.0
ACCESS DRIVE	5,776	÷ 43,560 =	0.13
TOTAL IMPERVIOUS COVER	5,776	÷ 43,560 =	0.13
TOTAL IMPERVIOUS COVER ÷ TOTAL ACREAGE x 100 =			2.07 %

TOTAL SITE ACREAGE = 6.278 Ac

BOUNDARY NOTE: (BY KOLODZIE SURVEYING CO.)
THE BOUNDAY SHOWN HEREON IS BASED ON THE SURVEY CONDUCTED BY KOLODZIE SURVEYING COMPANY DATED AUGUST 26, 2010.

TOPOGRAPHIC INFORMATION PROVIDED BY (KOLODZIE SURVEYING CO.)
PROJECT BENCHMARK: ✪1
SQUARE ON TOP OF WEST CURBLINE OF OAK SPRAWL APPROXIMATELY 240' NORTH OF THE INTERSECTION OF STATE HIGHWAY NO. 46 AND OAK SPRAWL, 89' NORTH OF A SANITARY MANHOLE IN OAK SPRAWL, 72' SOUTH OF A SANITARY MANHOLE IN OAK SPRAWL.
ELEVATION = 867.85 (SET BY OTHERS)

PROJECT BENCHMARK: ✪2
SQUARE ON TOP OF SOUTHEAST CURBLINE AT RANDOLPH BROOKS CREDIT UNION APPROXIMATELY 175' NORTHEAST OF STATE HIGHWAY NO. 46.
ELEVATION = 864.18 (SET BY OTHERS)

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

STATE OF TEXAS — JOHN J. MOY JR. — 87835 — LICENSED PROFESSIONAL ENGINEER — 09/29/10

OWNER:
NEW BRAUNFELS INVESTMENT JOINT VENTURE
P.O. BOX 311240
NEW BRAUNFELS, TX 78131-1240

SITE PLAN FOR OAK RUN COMMERCIAL, UNIT 2 - INFRASTRUCTURE
NEW BRAUNFELS, TEXAS

REVISIONS		
	DESCRIPTION	DATE

DRAWN BY:	D.G. III
CHECKED BY:	D.D.P.
DATE:	SEPTEMBER 2010
JOB NO.:	0906.01

S1 OF 2

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

1. Written construction notification must be given to the appropriate TCEQ regional office no later than 48 hours prior to commencement of the regulated activity. Information must include the date on which the regulated activity will commence, the name of the approved plan for the regulated activity, and the name of the prime contractor and the name and telephone number of the contact person.

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

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

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

5. Prior to commencement of construction, all temporary erosion and sedimentation (E&S) control measures must be properly selected, installed, and maintained in accordance with the manufacturers specifications and good engineering practices. Controls specified in the temporary storm water section of the approved Edwards Aquifer Protection Plan are required during construction. If inspections indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations. The controls must remain in place until disturbed areas are revegetated and the areas have become permanently stabilized.

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

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

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

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

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

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

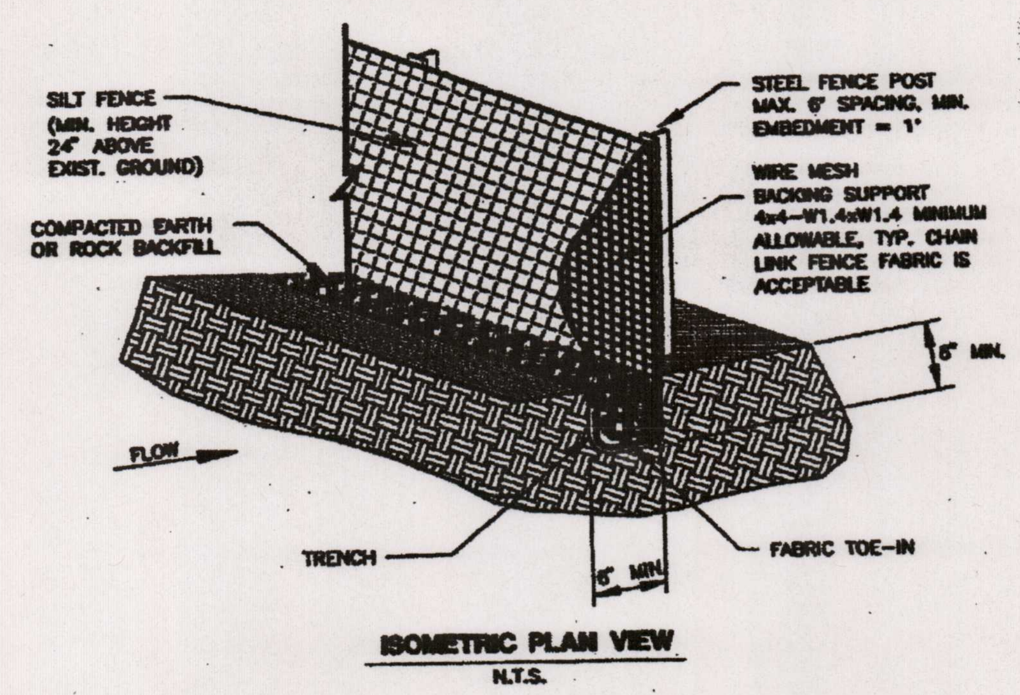
12. The holder of any approved Edward Aquifer protection plan must notify the appropriate regional office in writing and obtain approval from the executive director prior to initiating any of the following:

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

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

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

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



ISOMETRIC PLAN VIEW
N.T.S.

Materials:

(1) Silt fence material should be polypropylene, polyethylene or polyamide woven or nonwoven fabric. The fabric width should be 36 inches, with a minimum unit weight of 4.5 oz/yd, mullen burst strength exceeding 190 lb/in^2, ultraviolet stability exceeding 70%, and minimum apparent opening size of U.S. Sieve No. 30.

(2) Fence posts should be made of hot rolled steel, at least 4 feet long with Tee or Y-bar cross section, surface painted or galvanized, minimum nominal weight 1.25 lb/ft^2, and Brindell hardness exceeding 140.

(3) Woven wire backing to support the fabric should be galvanized 2" x 4" welded wire, 12 gauge minimum.

Installation:

(1) Steel posts, which support the silt fence, should be installed on a slight angle toward the anticipated runoff source. Post must be embedded a minimum of 1-foot deep and spaced not more than 8 feet on center. Where water concentrates, the maximum spacing should be 6 feet.

(2) Lay out fencing down-slope of disturbed area, following the contour as closely as possible. The fence should be sited so that the maximum drainage area is ¼ acre/100 feet of fence.

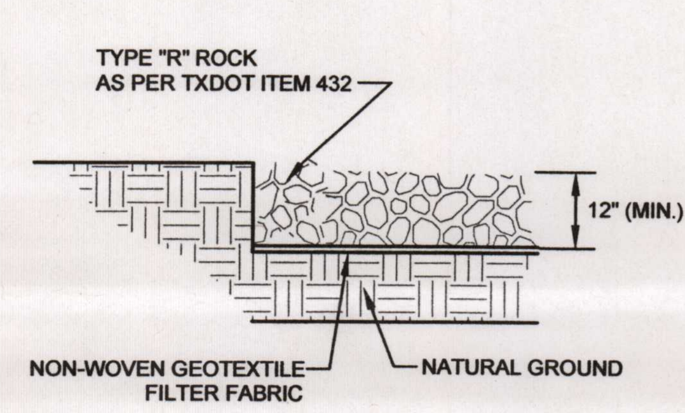
(3) The toe of the silt fence should be trenched in with a spade or mechanical trencher, so that the down-slope face of the trench is flat and perpendicular to the line of flow. Where fence cannot be trenched in (e.g., pavement or rock outcrop), weight fabric flap with 3 inches of pea gravel on uphill side to prevent flow from seeping under fence.

(4) The trench must be a minimum of 6 inches deep and 6 inches wide to allow for the silt fence fabric to be laid in the ground and backfilled with compacted material.

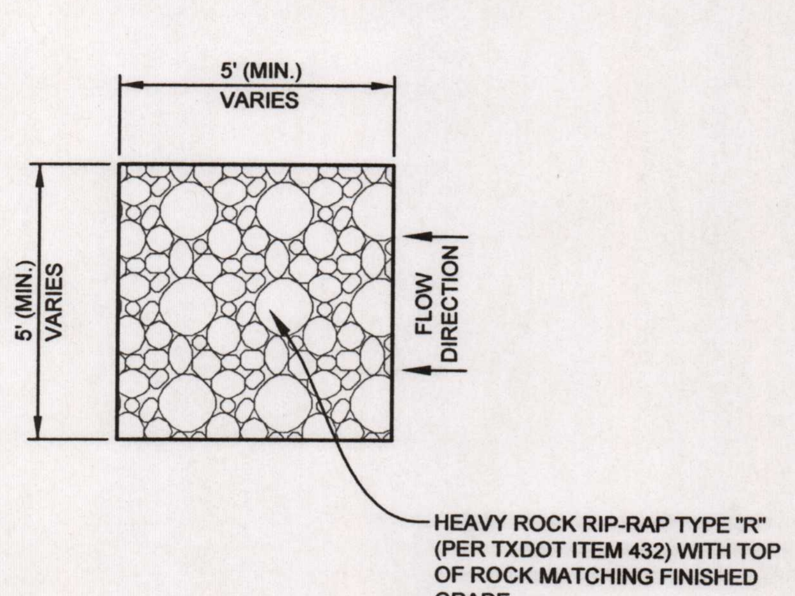
(5) Silt fence should be securely fastened to each steel support post or to woven wire, which is in turn attached to the steel fence post. There should be a 3-foot overlap, securely fastened where ends of fabric meet.

(6) Silt fence should be removed when the site is completely stabilized so as not to block or impede storm flow or drainage.

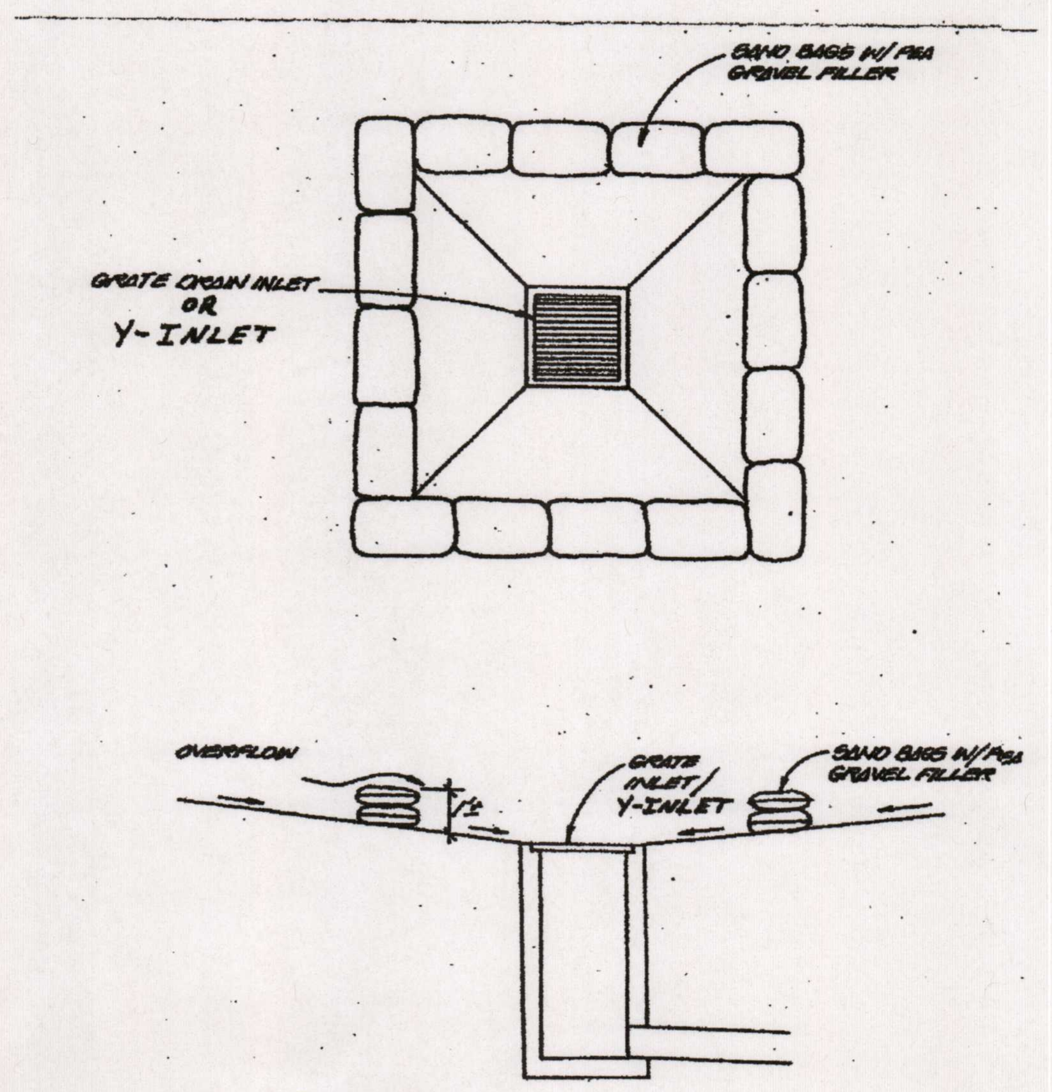
SILT FENCE DETAIL
N.T.S.



ROCK RIPRAP DETAIL
N.T.S.



VELOCITY CONTROL DETAIL
N.T.S.



Inspection and Maintenance Guidelines:

(1) Inspection should be made weekly and after each rainfall. Repair or replacement should be made promptly as needed by the contractor.

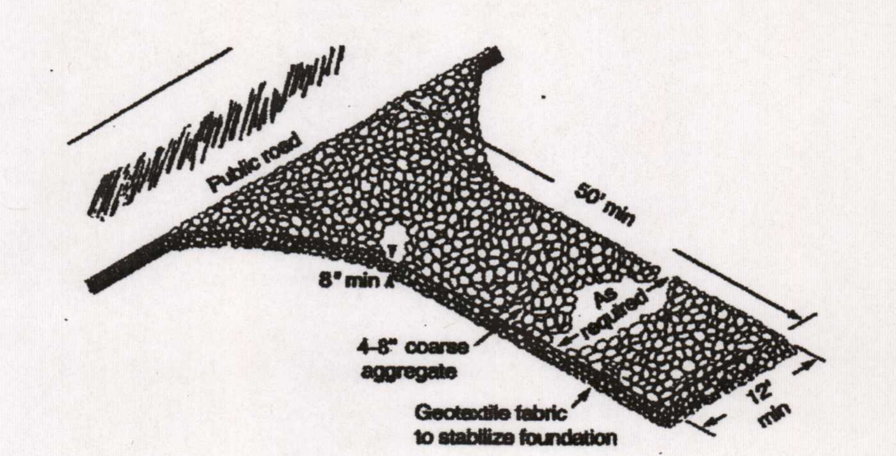
(2) Remove sediment when buildup reaches a depth of 3 inches. Removed sediment should be deposited in a suitable area and in such a manner that it will not erode.

(3) Check placement of device to prevent gaps between device and curb.

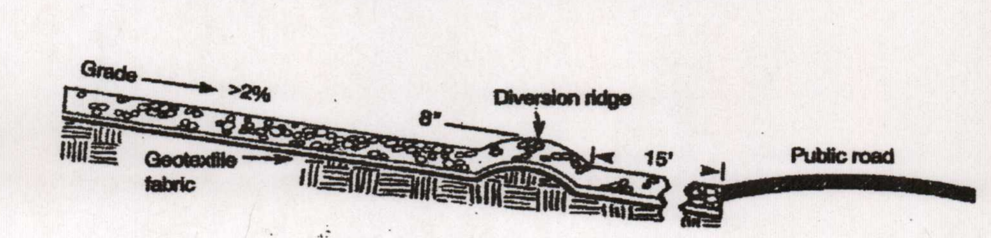
(4) Inspect filter fabric and patch or replace if torn or missing.

(5) Structures should be removed and the area stabilized only after the remaining drainage area has been properly stabilized.

INLET PROTECTION DETAIL
N.T.S.



Schematic of Temporary Construction Entrance/Exit



Cross-section of a Construction Entrance/Exit

Materials:

(1) The aggregate should consist of 4 to 8 inch washed stone over a stable foundation as specified in the plan.

(2) The aggregate should be placed with a minimum thickness of 8 inches.

(3) The geotextile fabric should be designed specifically for use as a soil filtration media with an approximate weight of 6 oz/yd^2, a mullen burst rating of 140 lb/in^2, and an equivalent opening size greater than a number 50 sieve.

(4) If a washing facility is required, a level area with a minimum of 4 inch diameter washed stone or commercial rack should be included in the plans. Divert wastewater to a sediment trap or basin.

Installation:

(1) Avoid curves on public roads and steep slopes. Remove vegetation and other objectionable material from the foundation area. Grade crown foundation for positive drainage.

(2) The minimum width of the entrance/exit should be 12 feet or the full width of exit roadway, whichever is greater.

(3) The construction entrance should be at least 50 feet long.

(4) If the slope toward the road exceeds 2%, construct a ridge, 6 to 8 inches high with 3:1 (H:V) side slopes, across the foundation approximately 15 feet from the entrance to divert runoff away from the public road.

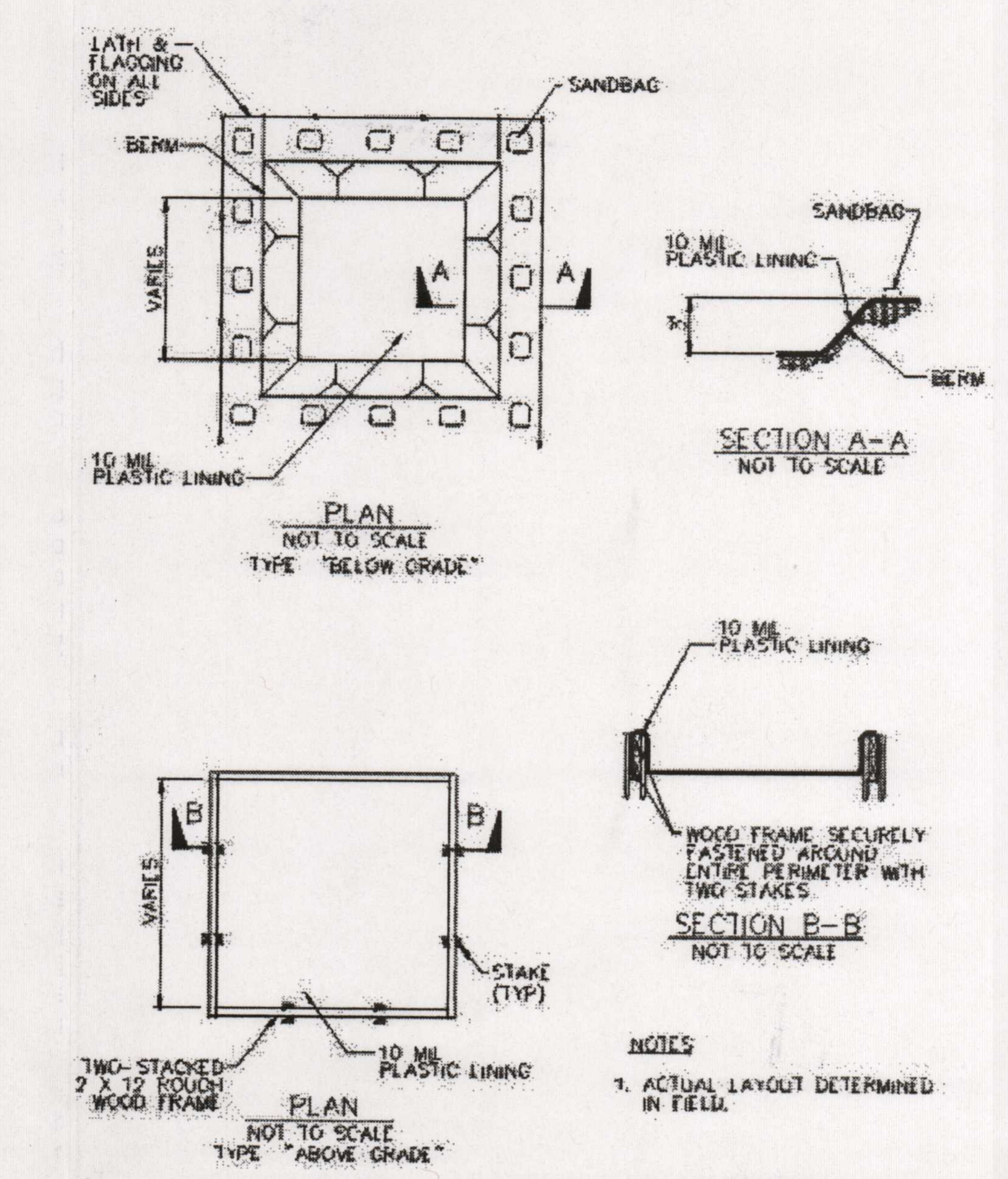
(5) Place geotextile fabric and grade foundation to improve stability, especially where wet conditions are anticipated.

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

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

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

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



FOR ONSITE WASHOUT:

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

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

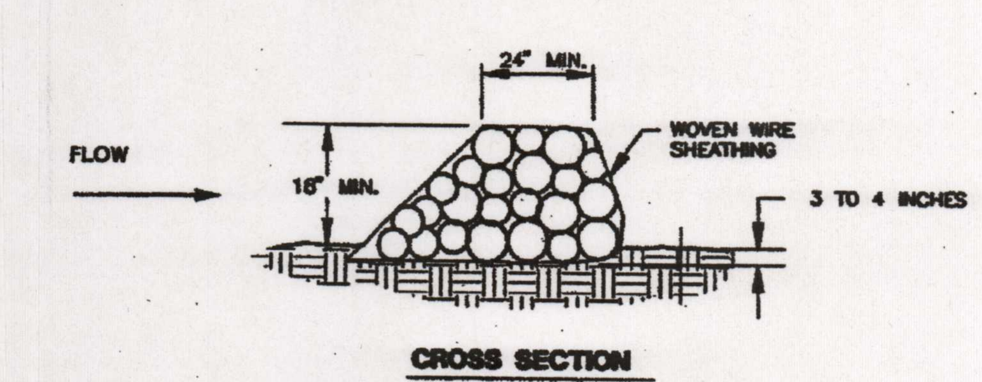
3) PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10 MIL IN POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL.

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

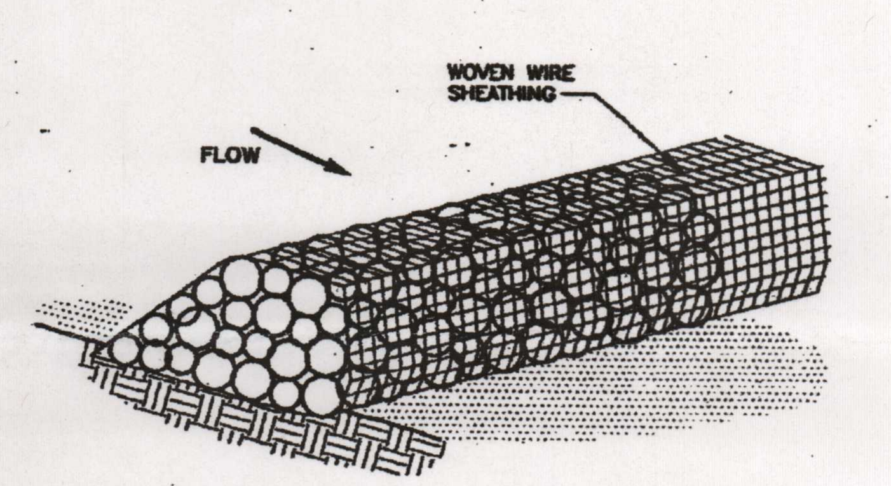
5) HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE BACKFILLED AND REPAIRED.

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

CONCRETE WASHOUT DETAIL
N.T.S.



CROSS SECTION
N.T.S.



ISOMETRIC PLAN VIEW
N.T.S.

Materials:

(1) The berm structure should be secured with a woven wire sheathing having maximum opening of 1 inch and a minimum wire diameter of 20 gauge galvanized and should be secured with shoat rings.

(2) Clean, open graded 3- to 5-inch diameter rock should be used, except in areas where high velocities or large volumes of flow are expected, where 5- to 8-inch diameter rocks may be used.

Installation:

(1) Lay out the woven wire sheathing perpendicular to the flow line. The sheathing should be 20 gauge woven wire mesh with 1 inch openings.

(2) Berm should have a top width of 2 feet minimum with side slopes being 2:1 (H:V) or flatter.

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

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

(5) Berm should be built along the contour at zero percent grade or as near as possible.

(6) The ends of the berm should be tied into existing upslope grade and the berm should be buried in a trench approximately 3 to 4 inches deep to prevent failure of the control.

ROCK BERM DETAIL
N.T.S.

TCEQ-R13
SEP 17 2010
SAN ANTONIO

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

STATE OF TEXAS — JOHN J. MOY JR. — 87835 — LICENSED PROFESSIONAL ENGINEER
P.E. 9/16/10

OWNER:
NEW BRAUNFELS INVESTMENT JOINT VENTURE
P.O. BOX 311240
NEW BRAUNFELS, TX 78131-1240

WATER POLLUTION ABATEMENT PLAN GENERAL NOTES AND DETAILS
FOR
OAK RUN COMMERCIAL, UNIT 2 - INFRASTRUCTURE
NEW BRAUNFELS, TEXAS

REVISIONS	
DATE	DESCRIPTION

DRAWN BY: D.G. III
CHECKED BY: D.D.P.
DATE: SEPTEMBER 2010
JOB NO.: 0906.01
S2 OF 2

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: Oak Run Commercial, Unit 2 - Infrastructure

POTENTIAL SOURCES OF CONTAMINATION

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

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

   ___ Aboveground storage tanks with a cumulative storage capacity of less that 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.

   X Fuels and hazardous substances will not be stored on-site.

2. X **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. X 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.

   X The are no other potential sources of contamination. (None anticipated beyond those listed as Examples under Potential Sources of Contamination shown above.)

SEQUENCE OF CONSTRUCTION

5. X **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. X 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: Tributary of Blieder's Creek

TEMPORARY BEST MANAGEMENT PRACTICES (TBMPs)

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

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

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

SOIL STABILIZATION PRACTICES

Examples: establishment of temporary 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 proposed regulated activities and methods to protect the Edwards Aquifer. This **TEMPORARY STORMWATER SECTION** is hereby submitted for TCEQ review and executive director approval. The application was prepared by:

John J. Moy, Jr.

Print Name of Customer/Agent

Signature of Customer/Agent

9/16/10

Date

TEMPORARY STORMWATER SECTION

2. Attachment A – Spill Response Actions

Regarding spill prevention and control, found directly behind this sheet is copy of Section 1.4.16 of the Texas Commission on Environmental Quality (TCEQ) "Complying with the Edwards Aquifer Rules Technical Guidance on Best Management Practices, pages 1-118 through 1-121, Spill Prevention and Control which covers necessary procedures for spill prevention and control. In the event of a significant or hazardous spill (per the attached TCEQ criteria and guidelines) the contractor or construction personnel shall notify the TCEQ by telephone as soon as possible and within 24 hours at (512) 339-2929 (Austin) or (210) 490-3096 (San Antonio) between 8 am and 5 pm. After hours, contact the Environmental Release Hotline at 1-800-832-8224. It is the contractor's responsibility to have all emergency phone numbers at the construction site.

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

RG-348
Revised July 2005

Complying with the Edwards Aquifer Rules

Technical Guidance on Best Management Practices

printed on
recycled paper

Field Operations Division

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

1.4.16 Spill Prevention and Control

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

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

Education

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

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

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

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

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

General Measures

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

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

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

(4) Train employees in spill prevention and cleanup.

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

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

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

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

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

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

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

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

Cleanup

(1) Clean up leaks and spills immediately.

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

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

Minor Spills

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

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

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

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

(5) Contain the spread of the spill.

(6) Recover spilled materials.

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

Semi-Significant Spills

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

Spills should be cleaned up immediately:

(1) Contain spread of the spill.

(2) Notify the project foreman immediately.

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

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

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

Significant/Hazardous Spills

For significant or hazardous spills that are in reportable quantities:

(1) Notify the TCEQ by telephone as soon as possible and within 24 hours at 512-339-2929 (Austin) or 210-490-3096 (San Antonio) between 8 AM and 5 PM. After hours, contact the Environmental Release Hotline at 1-800-832-8224. It is the contractor's responsibility to have all emergency phone numbers at the construction site.

(2) For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor should notify the National Response Center at (800) 424-8802.

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

(4) The services of a spills contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site.

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

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

Vehicle and Equipment Maintenance

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

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

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

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

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

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

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

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

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

Vehicle and Equipment Fueling

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

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

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

5. Attachment C – Sequence of Major Activities

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

Sequence No.	Description of Soil Disturbing Activity	Estimated Area to be Disturbed by each Activity (Acres ~ Total)
1	Clearing/Grubbing/Construction Staging (Access Drive, Storm Drain & Detention Pond)	1.76
2	Excavation and Grading (Detention Pond & Storm Drain)	0.73
3	Excavation and Grading (Access Drive)	0.13
4	Final Paving (Access Drive)	0.13

7. Attachment D – Temporary Best Management Practices and Measures

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

a. The only water that originates off-site that flows onto the property is from the TxDOT right-of-way and the Oak Sprawl right-of-way which are existing grass slopes. This water will enter the site and drain across the area not to be disturbed until it reaches the proposed detention pond area. As previously mentioned in this report, an existing 30" pipe located in the rear of the property is the main conveyance system for this site and it will be protected by a rock berm prior to construction and adjusted to the inside of the detention pond upon completion of pond excavation. Therefore off-site water required to enter the site will be treated prior exiting the site.
b. The stormwater that originates on-site will be controlled and filtered by rock berms and silt fences on the down gradient side of the areas of disturbance.

The rock berms and silt fences will reduce the velocity of the water and allow the sediment to settle out and be trapped by the control device. After a significant rainfall event, it will be the contractor's responsibility to remove the sediment and debris that is captured.

c. The BMP's will prevent pollutants from entering surface streams, sensitive features (no sensitive features present on this site), or the aquifer by capturing the silts and sediments through the utilization of the previously mentioned control devices such as silt fences, rock berms and inlet protection. These devices are located such that they capture the silts and sediment prior to entering the surface streams, etc. where they would otherwise be carried downstream. The settlement of the silts and sediment is due to the reduction of the velocity of the water.

d. There were no sensitive features located on the site. However, previously described temporary measures will be maintained and incorporated where necessary to prevent contamination of stormwater runoff. In the event a sensitive feature is discovered during construction, the contractor or construction personnel shall notify the TCEQ by telephone as soon as possible and within 24 hours at (512) 339-2929 (Austin) or (210) 490-3096 (San Antonio) between 8 am and 5 pm. At that point an assessment will be made with the TCEQ as to how to best protect what was discovered.

9. Attachment F – Structural Practices

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

10. Attachment G – Drainage Area Map

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

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

A. Rock Berm Inspection and Maintenance Guidelines:

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

B. Silt Fence Inspection and Maintenance Guidelines:

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

C. Temporary Construction Entrance/Exit:

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

D. Concrete Washout Area Inspection and Maintenance Guidelines:

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

E. Inlet Protection Inspection and Maintenance Guidelines:

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

TEMPORARY CONSTRUCTION ENTRANCE/EXIT
INSPECTION FORM

Inspection Date: _____

Signature: _____

General Notes

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

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

Maintenance Required for Temporary Construction Entrance/Exit:

_____

_____

_____

_____

To Be Performed by:_____ On or Before:_____

SILT FENCE
INSPECTION FORM

Inspection Date: _____

Signature: _____

General Notes:

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

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

Maintenance Required for Silt Fence:

_____

_____

_____

_____

To Be Performed by:_____ On or Before:_____

ROCK BERMS
INSPECTION FORM

Inspection Date: _____

Signature: _____

General Notes:

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

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

Maintenance Required for Rock Berms:

_____

_____

_____

_____

To Be Performed by:_____ On or Before:_____

CONCRETE WASHOUT AREA
INSPECTION FORM

Inspection Date: _____

Signature: _____

General Notes:

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

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

Maintenance Required for Concrete Washout Area:

_____

_____

_____

_____

To Be Performed by:_____ On or Before:_____

INLET PROTECTION
INSPECTION FORM

Inspection Date: _____

Signature: _____

General Notes:

1) Accumulated sediment shall be removed when it reaches a depth of 3 inches.
2) Check placement of the bags of sand around perimeter of inlet.
3) Inspect filter fabric and patch or replace if torn or missing.

	Yes	No	Comment
Are the bags still arranged correctly around the perimeter of the inlet?			
Is the fabric torn or missing?			
Is there debris in the inlet?			
Is the sediment 3 inches deep?			

Maintenance Required for Silt Fence:

_____

_____

_____

_____

To Be Performed by:_____ On or Before:_____

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

A. Temporary Stabilization

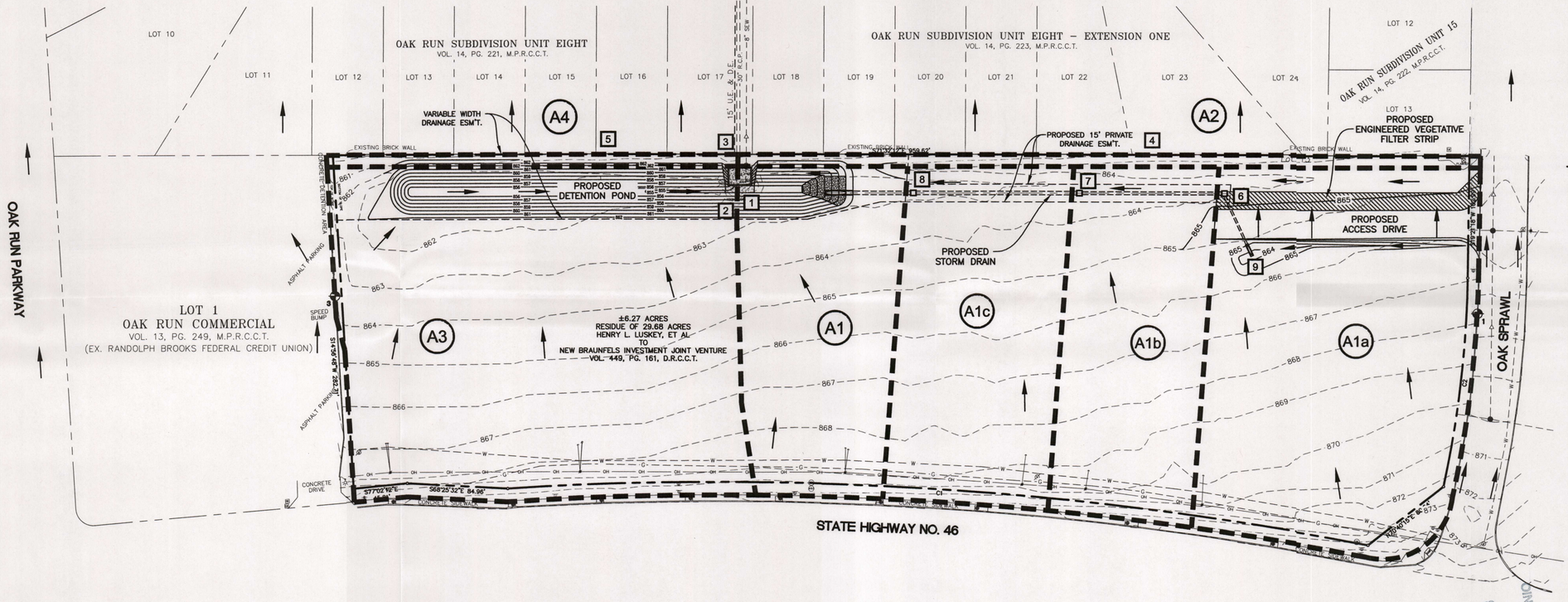
No bare ground exposed during construction will be left to stabilize naturally. Any disturbed area where construction activities have ceased, permanently or temporarily, the contractor shall initiate temporary stabilization of the area by the use of seeding and mulching within 14 days, except in areas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

B. Permanent Stabilization

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

ATTACHMENT G

MASTER DRAINAGE AREA MAP



DRAINAGE NOTE: THE PURPOSE FOR THE CONSTRUCTION OF THIS STORM DRAIN AND DETENTION POND IS TO PROVIDE CONVEYANCE AND MITIGATION FOR ±6.27 ACRES ASSUMING 95% IMPERVIOUS COVER.

EXISTING DRAINAGE AREA DESIGNATION	DRAINAGE AREAS (acres)	PROPOSED DRAINAGE AREA DESIGNATION	DRAINAGE AREAS (acres)
A1	4.21	A1	4.28
A2	0.14	A1a	1.66
A3	2.18	A1b	0.85
A4	0.08	A1c	0.93
		A2	0.07
		A3	2.18
		A4	0.08

*represents future 5' landscape buffer

*Values Applied to C_{10} to Determine C_{25} & C_{100}	
K_{10}	1.00
K_{25}	1.10
K_{100}	1.25

RATIONAL METHOD (Q=KCIA) - EXISTING CONDITIONS

DRAINAGE NODE POINT	CONTRIBUTING DA's	DRAINAGE AREA (acres)	C_2	C_{10}	*C_{25}	*C_{100}	Tc (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)
1	A1	4.21	0.38	0.38	0.42	0.48	20	3.65	5.44	6.51	8.51	5.84	8.71	11.45	17.02
2	A3	2.18	0.38	0.38	0.42	0.48	17	3.96	5.92	7.09	9.27	3.28	4.91	6.49	9.70
3	A1+A3	6.39	0.38	0.38	0.42	0.48	20	3.65	5.44	6.51	8.51	8.86	13.21	17.47	26.10
4	A2	0.14	0.38	0.38	0.42	0.48	10	4.96	7.57	9.07	11.90	0.26	0.40	0.53	0.80
5	A4	0.08	0.38	0.38	0.42	0.48	10	4.96	7.57	9.07	11.90	0.15	0.23	0.30	0.46

RATIONAL METHOD (Q=KCIA) - PROPOSED CONDITIONS

DRAINAGE NODE POINT	CONTRIBUTING DA's	DRAINAGE AREA (acres)	C_2	C_{10}	*C_{25}	*C_{100}	Tc (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)
1	A1	4.28	0.81	0.81	0.89	1.00	10	4.96	7.57	9.07	11.90	17.19	26.23	34.58	50.93
2	A3	2.18	0.81	0.81	0.89	1.00	10	4.96	7.57	9.07	11.90	8.76	13.36	17.61	25.94
3	A1+A3	6.46	0.81	0.81	0.89	1.00	10	4.96	7.57	9.07	11.90	25.95	39.59	52.13	76.88
4	A2	0.07	0.38	0.38	0.42	0.48	10	4.96	7.57	9.07	11.90	0.13	0.20	0.27	0.40
5	A4	0.08	0.38	0.38	0.42	0.48	10	4.96	7.57	9.07	11.90	0.15	0.23	0.30	0.46
6	A1a	1.66	0.81	0.81	0.89	1.00	10	4.96	7.57	9.07	11.90	6.67	10.18	13.40	19.75
7	A1b	0.85	0.81	0.81	0.89	1.00	10	4.96	7.57	9.07	11.90	3.41	5.21	6.86	10.12
8	A1c	0.93	0.81	0.81	0.89	1.00	10	4.96	7.57	9.07	11.90	3.74	5.70	7.51	11.07
9	Part of A1a(temp)	1.32	0.38	0.38	0.42	0.48	10	4.96	7.57	9.07	11.90	2.49	3.80	5.03	7.54

POND ROUTING SUMMARY NODE PT. 3

POND RELEASE RATES (NODE PT. 3)
2 yr = 8.24 cfs < 8.86 cfs
10 yr = 13.11 cfs < 13.21 cfs
100 yr = 25.69 cfs < 26.10 cfs

SYMBOL LEGEND
- OVER HEAD POWER LINE
- POWER POLE
- GUY WIRE
- TRANSFORMER BOX
- WATER VALVE
- FIRE HYDRANT
- SANITARY SEWER MANHOLE
- STORM SEWER MANHOLE
- AT&T MANHOLE
- AT&T FIBER OPTIC CABLE SIGN
- TELEPHONE JUNCTION BOX
- FIBER OPTIC CABLE JUNCTION BOX
- SIGN
- LIGHT STANDARD
- UNDERGROUND GAS LINE (MARKED BY OTHERS)
- UNDERGROUND WATER LINE (MARKED BY OTHERS)

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

STATE OF TEXAS — DAVID L. MOY — 87835 — LICENSED PROFESSIONAL ENGINEER — 9/16/10

OWNER:
NEW BRAUNFELS INVESTMENT JOINT VENTURE
P.O. BOX 311240
NEW BRAUNFELS, TX 78131-1240

MASTER DRAINAGE AREA MAP
FOR
OAK RUN COMMERCIAL, UNIT 2 - INFRASTRUCTURE
NEW BRAUNFELS, TEXAS

REVISIONS

DATE	DESCRIPTION

DRAWN BY: D.G. III
CHECKED BY: D.D.P.
DATE: SEPTEMBER 2010
JOB NO.: 0906.01
D1

F:\0906.01 – Oak Run Commercial Unit 2\dwg\wcap\D-1.dwg 2010/09/16 4:18pm Domingo

TCEQ#13 SEP 17 2010 SAN ANTONIO

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: Oak Run Commercial, Unit 2 - Infrastructure

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

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

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. X 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.

___ **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.

X 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.

__ **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.

__ 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:

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

Signature of Customer/Agent

9/16/10
Date

PERMANENT STORMWATER SECTION

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

Not Applicable.

6. Attachment B- BMP's for Upgradient Stormwater

Permanent BMP's or measures are not required to prevent pollution of surface water, groundwater, or stormwater that originates upgradient of the site because the upgradient stormwater runoff that enters this site is from the existing state and local street right of ways which are existing grassed slopes behind curbed streets/roads.

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

The proposed BMP for this site is an engineered vegetative filter strip adjacent to the proposed access drive. With this BMP, the storm water will drain, in a sheet flow manner, from the access drive across the 15' wide grass filter. With the contributing drainage area being less than 72 feet (25 feet actual) and the slope of the engineered vegetated filter strip ranging from 2% to 20% (max.), the 80% removal requirement will be achieved (per TCEQ RG-348).

8. Attachment D- BMP's for Surface Streams

The proposed BMP for this site is an engineered vegetative filter strip which will filter the storm water runoff coming off of the access drive. Additionally, once the storm water is filtered, it will be conveyed to the proposed detention pond via a storm drain. At the outfall of the storm drain, rock riprap will be placed to dissipate the flow velocity and prevent erosion inside the detention pond. Hence, due to the storm water being routed through the detention pond, solids/pollutants will have additional time for settlement which will aid in the improvement of the overall water quality and further reduce the impact of the pollutants on surface streams, sensitive features (no sensitive features on this site), or the aquifer.

9. **Attachment E- Request to Seal Features**

Based on the Geologic Assessment of the site, there are no sensitive features present.

10. **Attachment F- Construction Plans**

Construction Plans for the Permanent BMP are enclosed in this submittal. See Site Plan for Engineered Vegetative Filter Strip location and detail. The design criteria/requirements taken from the TCEQ "Calculation Template 4-20-09" spreadsheet for Vegetative Filter Strips is shown below.

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

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

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

12. **Attachment H- Pilot-Scale Field Testing Plan**

Not Applicable.

The BMP for this site was designed according to the TCEQ Technical Guidance Manual.

13. **Attachment I – Measures for Minimizing Surface Stream Contamination**

As mentioned previously, the proposed BMP for this site is an engineered vegetative filter strip which will filter the storm water runoff coming off of the access drive. Once the storm water is filtered, it will be conveyed to the proposed detention pond via a storm drain. At the outfall of the storm drain, rock riprap will be constructed to dissipate the flow velocity and prevent erosion inside the detention pond. The detention pond outfall weir will discharge into the existing 30" RCP, with the area around the pipe being permanently stabilized to prevent erosion and stream contamination.

Attachment "G"
Maintenance Plan and Schedule for Vegetative Filter Strip

PROJECT NAME: Oak Run Commercial, Unit 2 - Infrastructure

ADDRESS: P.O. Box 311240

CITY, STATE, ZIP: New Braunfels, Texas 78131-1240

VEGETATIVE FILTER STRIP (per TCEQ: RG-348)

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

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

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

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

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

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

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

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

Responsible Party for Maintenance: New Braunfels Investment Joint Venture
Address: P.O. Box 311240
City, State Zip: New Braunfels, Texas 78131-1240
Telephone Number: (830) 625-8933

Signature of Responsible Party: _____ DATE: 9/10/10

VP of Oak Run Realty, Inc. Manager as Venture Partner

Print Name of Responsible Party: Rebecca L. Hill

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

I Edward Badouh, Jr.,
Print Name

President,
Title - Owner/President/Other

of OakRun Realty, Inc., Managing Venture Partner for: New Braunfels Investment Joint Venture,
Corporation/Partnership/Entity Name

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

of Pawelek & Moy, Inc.
Print Name of Firm

to represent and act on the behalf of the above named Corporation, Partnership, or Entity for the purpose of preparing and submitting this plan application to the Texas Commission on Environmental Quality (TCEQ) for the review and approval consideration of regulated activities.

I also understand that:

1. The applicant is responsible for compliance with 30 Texas Administrative Code Chapter 213 and any condition of the TCEQ's approval letter. The TCEQ is authorized to assess administrative penalties of up to $10,000 per day per violation.

2. For those submitting an application who are not the property owner, but who have the right to control and possess the property, additional authorization is required from the owner.

3. Application fees are due and payable at the time the application is submitted. The application fee must be sent to the TCEQ cashier or to the appropriate regional office. The application will not be considered until the correct fee is received by the commission.

4. A notarized copy of the Agent Authorization Form must be provided for the person preparing the application, and this form must accompany the completed application.

5. No person shall commence any regulated activity on the Edwards Aquifer Recharge Zone, Contributing Zone or Transition Zone until the appropriate application for the activity has been filed with and approved by the Executive Director.

SIGNATURE PAGE:

Edward Badouh, Jr. 9.13.2010

Applicant's Signature Date

THE STATE OF Texas §

County of Comal §

Edward Badouh, Jr.

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

GIVEN under my hand and seal of office on this 13th day of Sept., 2010.

Rebecca L. Hill

NOTARY PUBLIC

REBECCA L. HILL
NOTARY PUBLIC, STATE OF TEXAS
MY COMMISSION EXPIRES
MARCH 28, 2012

_____

Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 3/28/12

NEW BRAUNFELS INVESTMENT JOINT VENTURE

1. Warranty Deed (recorded) from OakRun Development Joint Venture to Luskey, Seguin Street Management, Eversberg Property, Exelco, Wender and Badouh, Jr. dated April 8, 1985 – 110.25 acres.

2. Warranty Deed (recorded) from Luskey, Seguin Street Management, Eversberg Property, Exelco, Wender and Badouh, Jr. to New Braunfels Investment Joint Venture dated April 8, 1985 – 110.25 acres.

3. New Braunfels Investment Joint Venture Agreement dated April 8, 1985.

Ownership Interest	
Wender	18.75%
Seguin Street Mgt.	12.5%
Eversbertg Property	10.0%
Exelco	30.0%
Luskey	18.75%
Edward Badouh, Jr.	10.0%

4. Agreement to Assign Joint Venture Interest dated December 16, 1992 from Wender, Luskey and Eversberg to Exelco, Seguin Street Management and Edward Badouh, Jr.

5. First Amendment to Agreement to Assign Joint Venture Interest dated September 13, 1993 from Wender, Luskey and Eversberg.

6. Assignment of Joint Venture Interests dated January 1, 1994 from Wender, Luskey and Eversberg to New Braunfels Investment Joint Venture.

7. Amended and Restated Joint Venture Agreement of New Braunfels Investment Joint Venture effective January 1, 1994. (Makes reference to April 18, 1994 wherein Wender, Luskey and Eversberg Property assign their interests to remaining Joint Venturers).

Ownership Interest	
Exelco	57.08%
Seguin Street Management	23.90%
Edward Badouh, Jr.	19.02%

8. Assignment of Joint Venture Interest from Edward Badouh, Jr. to OakRun Realty, Inc. effective April 1, 1997. (Badouh, Jr. assigns intrest to OakRun Realty, Inc.)

9. First Amendment to Amended and Restated Joint Venture Agreement of New Braunfels Investment Joint Venture effective April 1, 1997.

NEW BRAUNFELS INVESTMENT JOINT VENTURE (Cont'd)

Ownership Interest	
Exelco	57.08%
Seguin Street Mgt.	23.90%
OakRun Realty, Inc.	19.02%

10. Copy of Consent and Agreement between New Braunfels Investment Joint Venture, Oak Run Realty, Inc., Seguin Street Management, Inc., Exelco, Inc., as Joint Venturers, and Christopher Goldsbury, Jr. and Silver Guarantors, L.P. dated July 3, 2001.

11. Copy of Collateral Assignment of Joint Venture Interests by Exelco, Inc. in favor of Christopher Goldsbury, Jr., Individually and as agent for Silver Guarantors, L.P. dated July 3, 2001.

12. Copy of Promissory Note from Ricardo Elliot Longoria Derby and Grupo Loder De Mexico, to Christopher Goldsbury, Jr. in the amount of $3,750,000.00 dated July 3, 2001.

13. Second Amendment to Amended and Restated Joint Venture Agreement of New Braunfels Investment Joint Venture dated July 1, 2001.

14. Warranty Deed dated October 9, 2002, from OakRun Development Joint Venture to New Braunfels Investment Joint Venture conveying 2.90 acres.

15. Third Amendment to Amended and Restated Joint Venture Agreement of New Braunfels Investment Joint Venture . (Assigned interest of Exelco, Inc. to AML Properties, Ltd.)

16. Assignment of New Braunfels Investment Joint Venture from Exelco, Inc. (57.14%) to AML Properties, Ltd. dated January 1, 2005.

17. Release of Collateral Assignment of Joint Venture Interests of New Braunfels Investment Joint Venture executed by Christopher Goldsbury, Jr. releasing Exelco, Inc. from any further obligations.

18. Fourth Amendment to Amended and Restated Joint Venture Agreement of New Braunfels Investment Joint Venture dated November 20, 2009.

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

NAME OF PROPOSED REGULATED ENTITY: Oak Run Commercial, Unit 2 - Infrastructure
REGULATED ENTITY LOCATION: Northwest corner of State Highway 46 and Oak Sprawl
NAME OF CUSTOMER: New Braunfels Investment Joint Venture
CONTACT PERSON: Edward Badouh, Jr. PHONE: (830) 625-8933
(Please Print)

Customer Reference Number (if issued): CN 602512097 (nine digits)

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

Austin Regional Office (3373) ☐ Hays ☐ Travis ☐ Williamson

San Antonio Regional Office (3362) ☐ Bexar ☒ Comal ☐ Medina ☐ Kinney ☐ Uvalde

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):

☐ **Austin Regional Office**

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

☒ **San Antonio Regional Office**

☐ **Overnight Delivery to TCEQ**:
TCEQ - Cashier
12100 Park 35 Circle
Building A, 3rd Floor
Austin, TX 78753
512/239-1278

Site Location (Check All That Apply): ☒ Recharge Zone ☐ Contributing Zone ☐ Transition Zone

Type of Plan	Size		Fee Due
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling		Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks		Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	6.278	Acres	$ 5000.00
Sewage Collection System		L.F.	$
Lift Stations without sewer lines		Acres	$
Underground or Aboveground Storage Tank Facility		Tanks	$
Piping System(s)(only)		Each	$
Exception		Each	$
Extension of Time		Each	$

Signature _____ Date 9/16/10

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 Chapter 213 (effective 05/01/2008)

Water Pollution Abatement Plans and Modifications
Contributing Zone Plans and Modifications

PROJECT	PROJECT AREA IN ACRES	FEE
One Single Family Residential Dwelling	< 5	$650
Multiple Single Family Residential and Parks	< 5 5 < 10 10 < 40 40 < 100 100 < 500 ≥ 500	$1,500 $3,000 $4,000 $6,500 $8,000 $10,000
Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur)	< 1 1 < 5 5 < 10 10 < 40 40 < 100 ≥ 100	$3,000 $4,000 $5,000 $6,500 $8,000 $10,000

Organized Sewage Collection Systems and Modifications

PROJECT	COST PER LINEAR FOOT	MINIMUM FEE MAXIMUM FEE
Sewage Collection Systems	$0.50	$650 - $6,500

Underground and Aboveground Storage Tank System Facility Plans and Modifications

PROJECT	COST PER TANK OR PIPING SYSTEM	MINIMUM FEE MAXIMUM FEE
Underground and Aboveground Storage Tank Facility	$650	$650 - $6,500

Exception Requests

PROJECT	FEE
Exception Request	$500

Extension of Time Requests

PROJECT	FEE
Extension of Time Request	$150

New Braunfels Investment Joint Venture
P. O. Box 311240
New Braunfels, TX 78131-1240
(830)625-8933

88-287/1149

94

DATE Sept. 16, 2010

PAY TO THE ORDER OF Texas Commission on Environmental Quality $5,000.00/100 DOLLARS

Five Thousand and 00/100

FIRST STATE BANK
401 MAIN PLAZA
P.O. BOX 311536
NEW BRAUNFELS, TX 78130

MEMO WPAP- 6.27ac.

Edward Bellow MP

⑈114902874⑈ 500080701⑈ 0094

TCEQ Use Only

TCEQ Core Data Form

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

SECTION I: General Information

1. Reason for Submission *(If other is checked please describe in space provided)*

[X] New Permit, Registration or Authorization *(Core Data Form should be submitted with the program application)*

[ ] Renewal *(Core Data Form should be submitted with the renewal form)* [ ] Other

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

[X] Yes [ ] No — Edwards Aquifer Water Pollution Abatement Plan Submittal

3. Customer Reference Number *(if issued)*: CN 602512097

Follow this link to search for CN or RN numbers in Central Registry**

4. Regulated Entity Reference Number *(if issued)*: RN

SECTION II: Customer Information

5. Effective Date for Customer Information Updates (mm/dd/yyyy):

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

[X] Owner [ ] Operator [ ] Owner & Operator
[ ] Occupational Licensee [ ] Responsible Party [ ] Voluntary Cleanup Applicant [ ] Other:

7. General Customer Information

[ ] New Customer [ ] Update to Customer Information [ ] Change in Regulated Entity Ownership
[ ] Change in Legal Name (Verifiable with the Texas Secretary of State) [X] No Change**

If "No Change" and Section I is complete, skip to Section III – Regulated Entity Information.

8. Type of Customer:	[ ] Corporation	[ ] Individual	[ ] Sole Proprietorship- D.B.A
[ ] City Government	[ ] County Government	[ ] Federal Government	[ ] State Government
[ ] Other Government	[ ] General Partnership	[ ] Limited Partnership	[ ] Other:

9. Customer Legal Name *(If an individual, print last name first: ex: Doe, John)* — *If new Customer, enter previous Customer below* — *End Date:*

10. Mailing Address:

City | State | ZIP | ZIP + 4

11. Country Mailing Information *(if outside USA)*

12. E-Mail Address *(if applicable)*

13. Telephone Number ( ) -

14. Extension or Code

15. Fax Number *(if applicable)* ( ) -

16. Federal Tax ID *(9 digits)*

17. TX State Franchise Tax ID *(11 digits)*

18. DUNS Number *(if applicable)*

19. TX SOS Filing Number *(if applicable)*

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

21. Independently Owned and Operated?
[ ] Yes [ ] No

SECTION III: Regulated Entity Information

22. General Regulated Entity Information *(If 'New Regulated Entity" is selected below this form should be accompanied by a permit application)*

[X] New Regulated Entity [ ] Update to Regulated Entity Name [ ] Update to Regulated Entity Information [ ] No Change** *(See below)*

**If "NO CHANGE" is checked and Section I is complete, skip to Section IV, Preparer Information.

23. Regulated Entity Name *(name of the site where the regulated action is taking place)*

Oak Run Commercial, Unit 2 - Infrastructure

24. Street Address of the Regulated Entity: *(No P.O. Boxes)*	Not Assigned						
	City		State		ZIP		ZIP + 4	
25. Mailing Address:	New Braunfels Investment Joint Venture						
	P.O. Box 311240						
	City	New Braunfels	State	Texas	ZIP	78131	ZIP + 4	1240
26. E-Mail Address:	blhill@satx.rr.com						

27. Telephone Number	28. Extension or Code	29. Fax Number *(if applicable)*
(830) . 625-8933	-	(830) . 609-0480

30. Primary SIC Code (4 digits)	31. Secondary SIC Code (4 digits)	32. Primary NAICS Code (5 or 6 digits)	33. Secondary NAICS Code (5 or 6 digits)
6552		237210	

34. What is the Primary Business of this entity? *(Please do not repeat the SIC or NAICS description.)*

Land sales and development.

Questions 34 – 37 address geographic location. Please refer to the instructions for applicability.

35. Description to Physical Location:	Located at the northwest corner of State Hwy 46 and Oak Sprawl.

36. Nearest City	County	State	Nearest ZIP Code
New Braunfels	Comal	Texas	78132

37. Latitude (N) In Decimal:	29.71959	38. Longitude (W) In Decimal:	98.16297

Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
29	43	11	98	09	47

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form or the updates may not be made. If your Program is not listed, check other and write it in. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☒ Edwards Aquifer	☐ Industrial Hazardous Waste	☐ Municipal Solid Waste
		WPAP		
☐ New Source Review – Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS	☐ Sludge
☐ Stormwater	☐ Title V – Air	☐ Tires	☐ Used Oil	☐ Utilities
☐ Voluntary Cleanup	☐ Waste Water	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	John J. Moy, Jr., P.E.	41. Title:	Civil Engineer

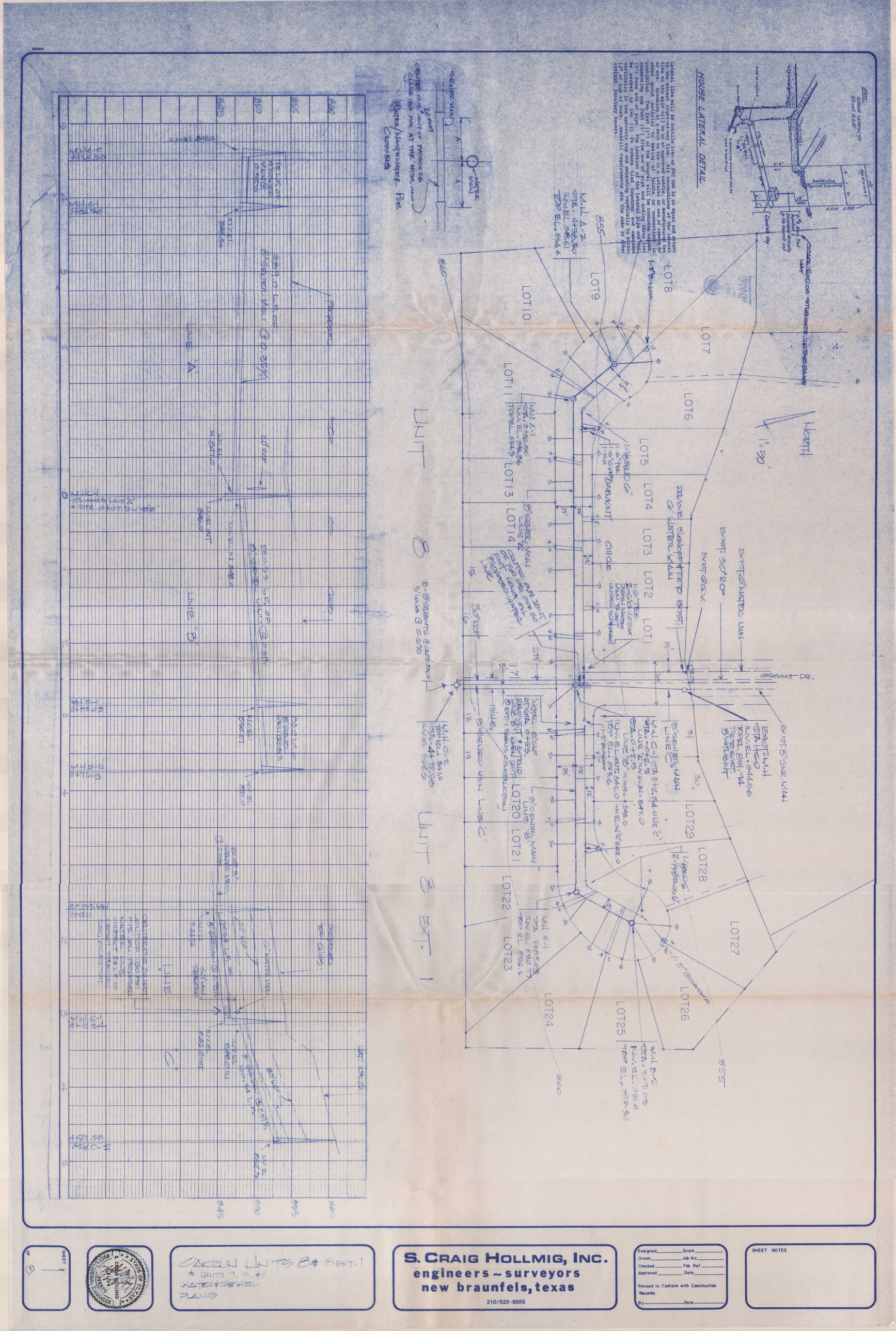
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(830)629-2563	-	(830)629-2564	johnmoy711@sbcglobal.net

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 9 and/or as required for the updates to the ID numbers identified in field 39.

(See the Core Data Form instructions for more information on who should sign this form.)

Company:	Pawelek & Moy, Inc.	Job Title:	Project Engineer
Name *(In Print)*:	John J. Moy, Jr.	Phone:	(830)629-2563
Signature:	John J. Moy Jr.	Date:	9/16/10



S. CRAIG HOLLMIG, INC.
engineers ~ surveyors
new braunfels, texas
210/625-8555

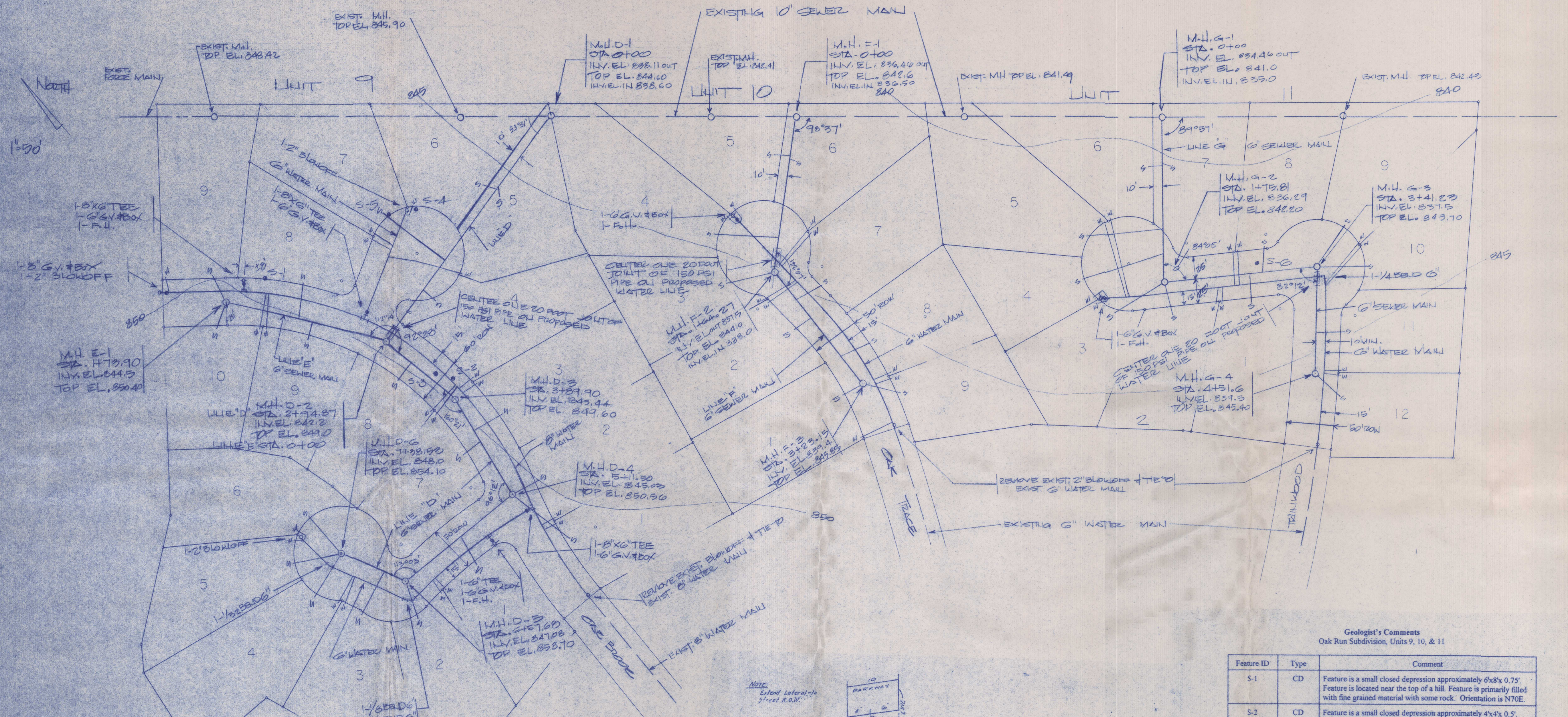
OAKLYN UNITS 8 & EXT. 1
UNITS 9, 10, & 11
WATER & SEWER PLANS

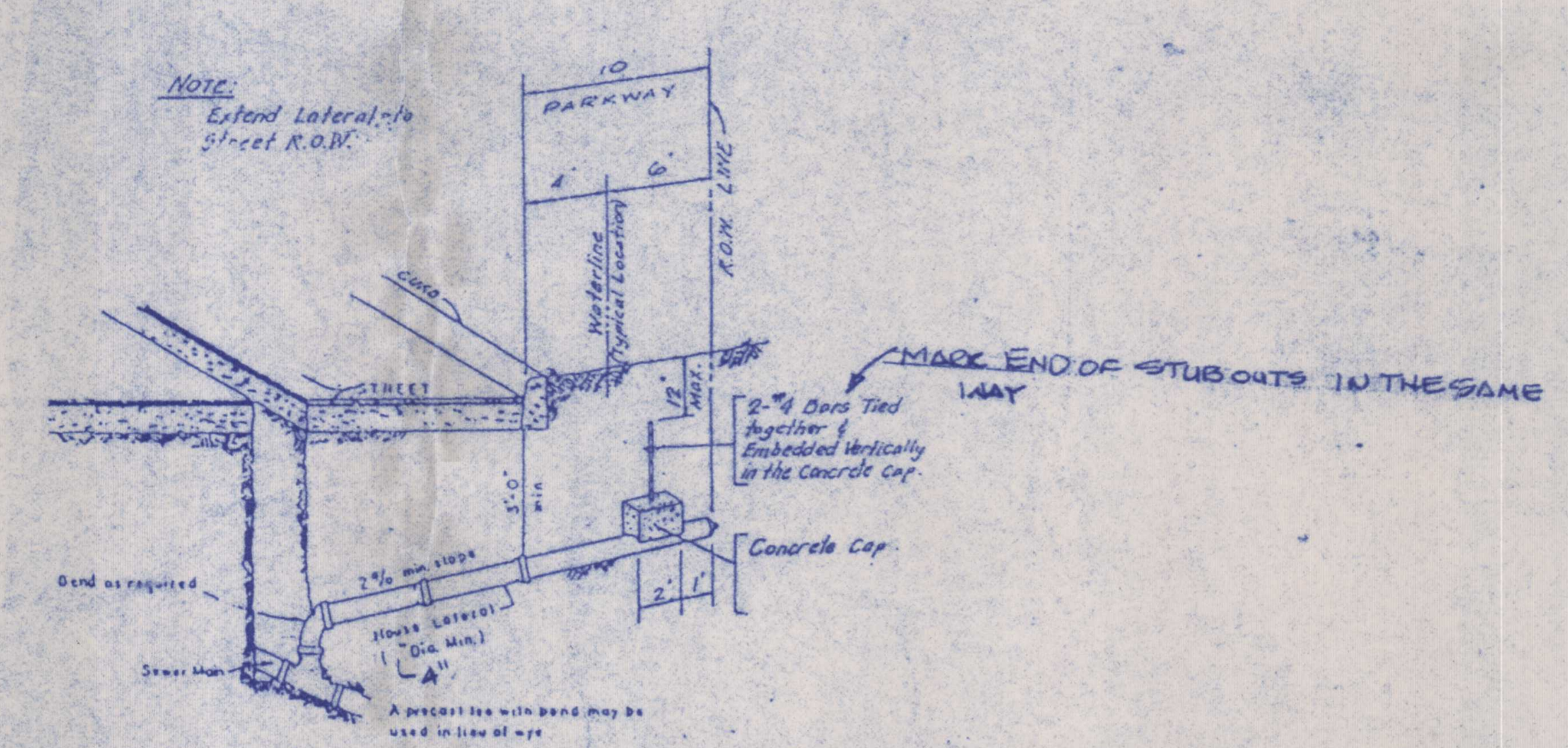
Designed _____ Scale _____
Drawn _____ Job No. _____
Checked _____ File Ref. _____
Approved _____ Date _____
Revised to Conform with Construction Records
By _____ Date _____

SHEET NOTES

SHEET 8 — 1

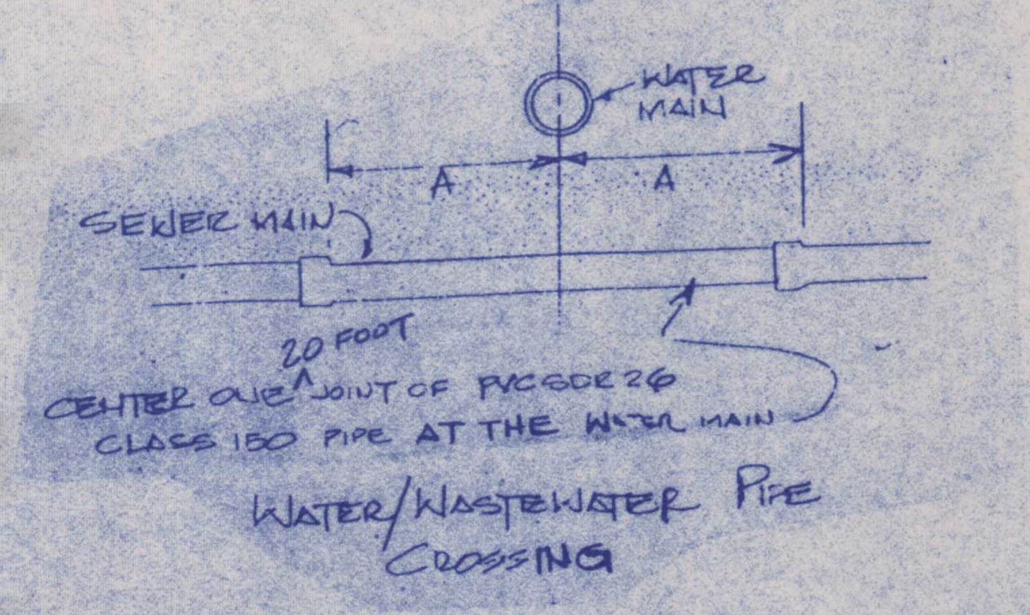
PLAN
PROFILE
TYPICAL SECTION THROUGH A 40' STREET AND TYPICAL CUT/FILL PARKWAY GRADING
(30')
NO SCALE
12'-0"
6'
6'
SECTION A-A
TIE TO EXIST. 30" RCP
STA. 1+60
INV. EL. 847.0
OAKMONT
CIRCLE
REMOVE & RELOCATE BARRICADE
WASHOUT SHADED
CROWN IN AREA
LOT1
LOT2
LOT3
LOT4
LOT5
LOT6
LOT7
LOT8
LOT9
LOT10
LOT11
LOT12
LOT13
LOT14
LOT15
LOT16
LOT17
LOT18
LOT19
LOT20
LOT21
LOT22
LOT23
LOT24
LOT25
LOT26
LOT27
LOT28
LOT29
LOT30
LOT31
CHANNEL "A"
CHANNEL "B"
LEFT CURB
RIGHT CURB
STA 4+72.58
END 30" RCP
INV. EL. 854.5
INSTALL 36" BY-WIDTH SEWER
1-BARRICADE POST (STEEL) W/ REFLECTORS
CURB
4' SIDEWALK
4" CONC. RIP-RAP
PROPERTY LINE
6' ESMT.
4" CONC. RIP-RAP W/ #6-6X6 WIRE MESH IN CTR.
CHANNEL A&B
Q = 1.486 (2.25) (0.55) (0.122) / .015
Q = 15 > 11 O.K.
CHANNEL A & B SHALL BE CONSTRUCTED TO A MINIMUM 1.5% SLOPE
CHANNEL A
CHANNEL B
KEUFFEL & ESSER
PLATE 1, PLAN-PROFILE
46 7008 Made in U.S.A.
SHEET 2 OF 8





HOUSE LATERAL DETAIL

Lateral line will be ductile iron or PVC SDR 26 or equal and extent to the street right-of-way line. All connections of the lateral line to the main will be by an approved saddle, or manufactured tee or wye. Breaking of a main to tie in a lateral or use of cement or other grout material in making of joints or connections is prohibited. Two feet (2') of the lateral will be concrete capped, commencing one foot (1') from end of pipe and ending three feet (3') from end of pipe. The location of the lateral pipe and will be marked up two (2) #4 rebars tied together and embedded vertically in the concrete cap and extending vertically to within 12" of top of curb. Backfill requirements are the same as other 402ERZD, Sanitary Sewers.



WATER/WASTEWATER PIPE CROSSING

Geologist's Comments
Oak Run Subdivision, Units 9, 10, & 11

Feature ID	Type	Comment
S-1	CD	Feature is a small closed depression approximately 6'x8'x 0.75'. Feature is located near the top of a hill. Feature is primarily filled with fine grained material with some rock. Orientation is N70E.
S-2	CD	Feature is a small closed depression approximately 4'x4'x 0.5'. Feature is located near the top of a hill. Feature is primarily filled with fine grained material.
S-3	CD	Feature is a small closed depression approximately 4'x4'x 0.5'. Feature is located near the top of a hill. Feature is primarily filled with fine grained material.
S-4	CD	Feature is a small closed depression approximately 4'x6'x1'. Feature is located near the top of a hill. Feature is primarily filled with fine grained material. Orientation is N20E.
S-5	CD	Feature is a small closed depression approximately 3'x3'x 0.5'. Feature is located near the top of a hill. Feature is primarily filled with fine grained material and some rock.
S-6	CD	Feature is a small closed depression approximately 5'x6'x1'. Feature is located on a hillside. Feature is primarily filled with fine grained material with some rock. Orientation is N30W. An animal burrow is located in feature. Burrow is less than 1' deep.

OAK RUN UNITS 9, 10, & 11
WATER & SEWER PLANS

SHEET 3 OF 8

Kaufel & Esser Company

PLATE & CROSS SECTION PAPER Made in U.S.A.

EXIST. NAT. GND.

PROPOSED TOP OF CURB

164.27 L.F. OF 6" SEWER MAIN @ 0.61% CREATE WYE

138.88 L.F. OF 6" SEWER MAIN @ 0.85%

INV. EL. 839.4

INV. EL. IN 838.0

INV. EL. OUT 837.5

INV. EL. OUT 836.46

INV. EL. IN 836.60

LINE "F"

CENTER ONE 20 FOOT JOINT OF 150 PSI PIPE @ PROPOSED WATER LINE

STA 0+00

STA 1+38.88

STA 2+77.15

PROPOSED TOP OF CURB

173.90 L.F. OF 6" SEWER MAIN @ 1.92%

INV. EL. 844.3

INV. EL. 842.6

LINE "E"

MAP-2 0+00

STA 1+73.90

NAT. GND.

PROPOSED TOP OF CURB

175.81 L.F. OF 6" SEWER MAIN @ 0.78%

165.42 L.F. OF 6" SEWER MAIN @ 6.73%

6" WATER MAIN

CENTER ONE 20 FOOT JOINT OF 150 PSI PIPE @ PROPOSED WATER LINE

INV. EL. 839.5

INV. EL. 836.29

INV. EL. OUT 834.46

INV. EL. IN 835.0

INV. EL. 837.5

110.37 L.F. OF 6" SEWER MAIN @ 1.81%

LINE "G"

STA 0+00

STA 1+75.81

STA 3+41.23

STA 4+51.60

PROP. TOP OF CURB

NAT. GRD.

294.67 L.F. 6" SEWER MAIN @ 1.22%

95.00 L.F. 6" SEWER MAIN @ 1.89%

212.60 L.F. OF 6" SEWER MAIN @ 1.31%

156.18 L.F. OF 6" SEWER MAIN @ 1.31%

10.83 L.F. OF 6" SEWER MAIN @ 1.91%

6" WATER MAIN

INV. EL. 842.2

INV. EL. 843.44

INV. EL. 845.05

INV. EL. 847.08

INV. EL. 848.0

INV. EL. IN 838.60

INV. EL. OUT 838.11

CENTER ONE 20 FOOT JOINT OF 150 PSI PIPE @ PROPOSED WATER LINE

LINE "D"

MAP-2 0+00

STA 1+73.90

MH D-1 STA 0+00

MH D-2 STA 2+94.67

MH D-3 STA 3+89.70

MH D-4 STA 5+02.30

MH D-5 STA 7+81.68

MH D-6 STA 8+38.38

0 1 2 3 4 5 6 7 8

NO	REVISIONS	DRAWN	CHECKED	DATE
	MADE BOOK			

JAMES VANCE ENGINEERING

DRAWING NO. 1

STATE OF TENNESSEE
JAMES VANCE
No. 14714
REGISTERED ENGINEER

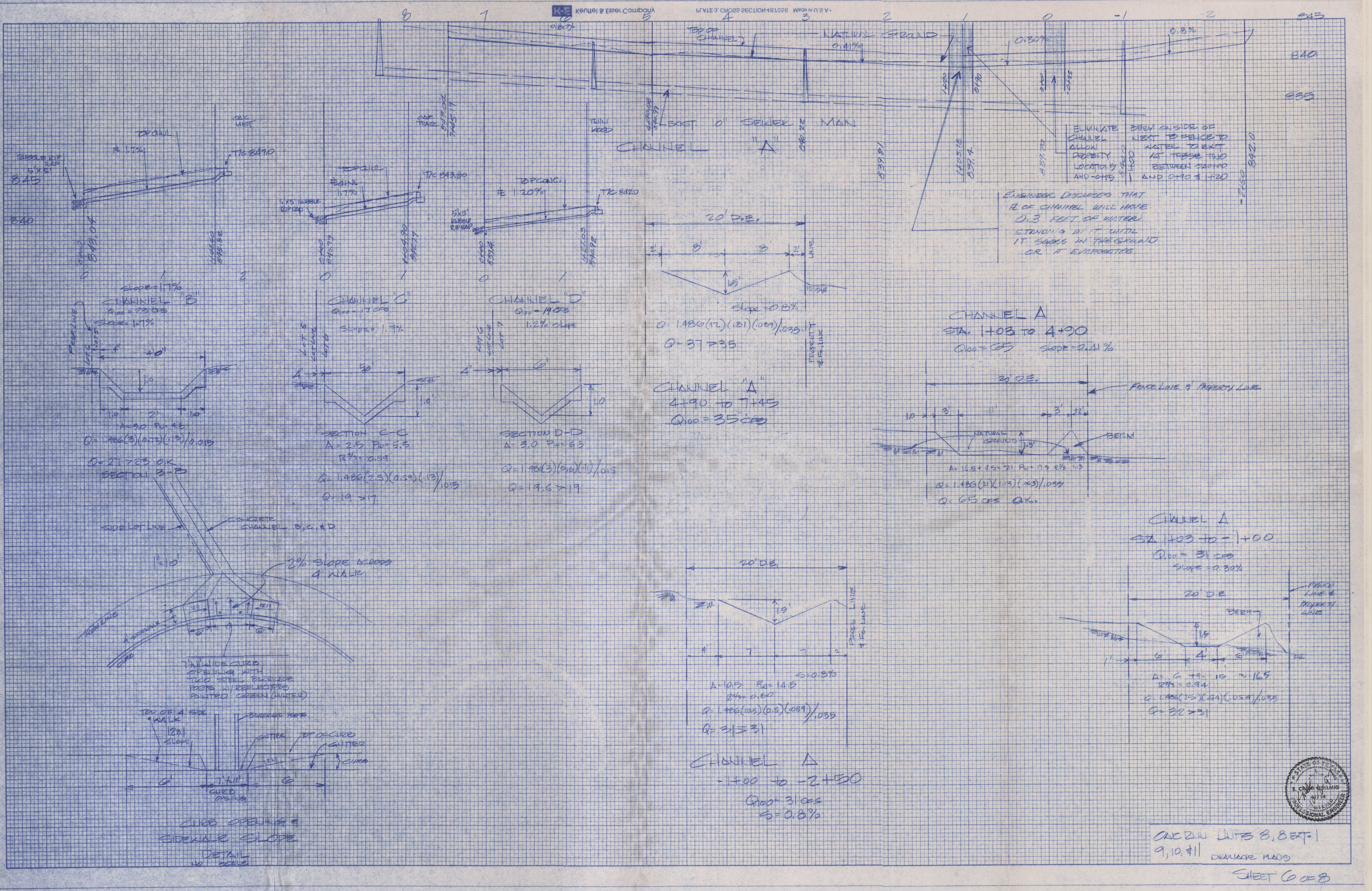
OAK HILL UNITS 8, 8 EXT 1, 9, 10, & 11
WATER & SEWER PLANS

SHEET 4 OF 8

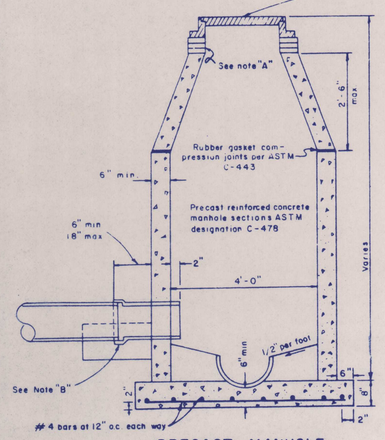
NORTH
1"=50'
CHANNEL "A"
20' D.E.
CHANNEL "E"
OAK MIST
OAK BROOK
OAK TRACE
OAK MOSS
TYPE III BARRICADE
8" Compacted Flexible Base (95% Compacted Density) Unless Shown Otherwise On Plans or in Special Provisions of Specs
MC-1 Prime Coat when specified in Contract Documents
Subgrade - 90% Compacted Density
6" Curb Height
4" Crown
(30')
TYPICAL SECTION THROUGH A 40' STREET
AND TYPICAL CUT/FILL PARKWAY GRADING
NO SCALE
PLAN
PROFILE
KEUFFEL & ESSER
PLATE 1, PLAN-PROFILE
46 7008 Made in U.S.A.
OAK BROOK

STATE OF TEXAS
S. CRAIG HOLLMIG
41714
PROFESSIONAL ENGINEER

OAK RUN UNITS 9, 10, & 11, 8, & 8 EXT. 1
STREET PLANS SHEET 5 OF 8



CHANNEL "A"
CHANNEL "B"
CHANNEL "C"
CHANNEL "D"
SECTION B-B
SECTION C-C
SECTION D-D
CHANNEL A
STA. 1+03 TO 4+90
Q100 = 35
Slope = 0.41%
CHANNEL "A"
4+90 to 7+45
Q100 = 35 cfs
CHANNEL A
STA 1+03 to -1+00
Q100 = 31 cfs
Slope = 0.30%
CHANNEL A
-1+00 to -2+50
Q100 = 31 cfs
S = 0.8%
FENCE LINE & PROPERTY LINE
BERM
NATURAL GROUND
ELIMINATE BERM ON SIDE OF CHANNEL NEXT TO FENCE TO ALLOW WATER TO EXIT PROPERTY AT THESE TWO LOCATIONS BETWEEN 3+00 AND 0+45 AND 0+40 & 1+20
ENGINEER DISCUSSED THAT ½ OF CHANNEL WILL HAVE 0.3 FEET OF WATER STANDING IN IT UNTIL IT SOAKS IN THE GROUND OR IT EVAPORATES
CONCRETE CHANNEL B, C, & D
2% SLOPE ACROSS 4' WALK
CURB OPENING & SIDEWALK SLOPE DETAIL
ONE BLUE UNITS 8, 8 EXT-1 9, 10, & 11
DRAINAGE PLANS
SHEET 6 OF 8

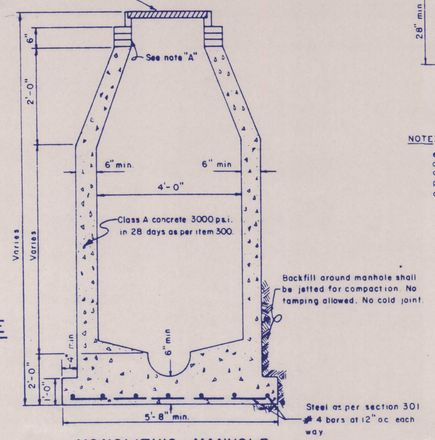


PRECAST MANHOLE

as per item no. 404

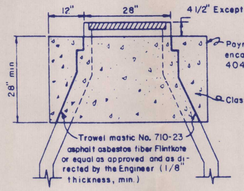
NOTE: "A"
A minimum of two, and a maximum of four throat rings shall be used at each manhole.

STANDARD MANHOLE

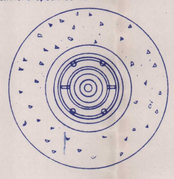


MONOLITHIC MANHOLE

Backfill around manhole shall be jetted for compaction. No tamping allowed. No cold joint.



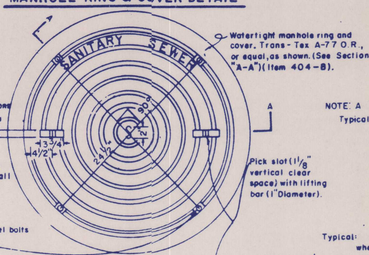
NOTE: Manhole ring encasement is required on all manholes except manholes in new or existing streets, where, as directed by the Engineer, Item 512, may be used in lieu of this requirement. Dimensions of concrete encasement placed in accordance with Item 512, shall not be less than dimensions specified for this detail.



MANHOLE RING ENCASEMENT DETAIL

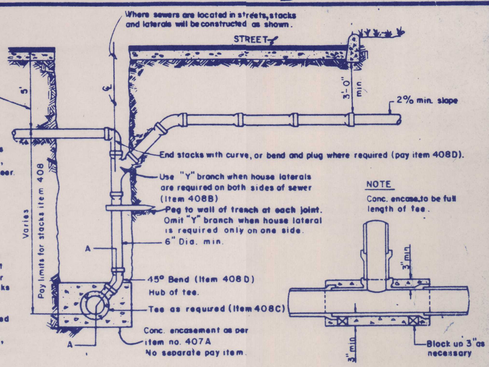
(ALL MANHOLES)

MANHOLE RING & COVER DETAIL



SECTION "A"-"A"

NOTE
All dimensions may vary except the diameter of the lid, and the diameter of the center line of the bolt holes, and the minimum diameter of the clear opening. The combined weight of the manhole ring and cover must be at least 400 lbs.

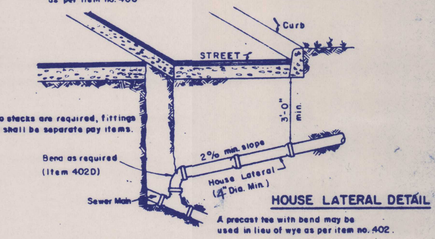


TYPICAL STACK DETAIL

as per item no. 408

SECTION A-A

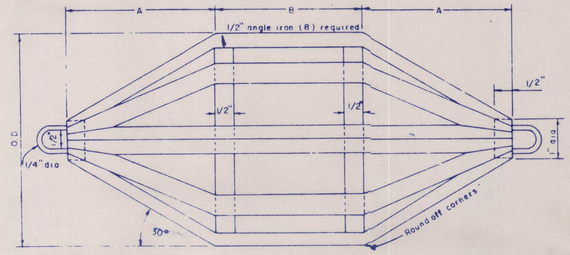
NOTE:
Depth and grade of service laterals, as shown, are typical only. Actual depth, alignment and grade of service laterals shall be as determined by the Engineer based on elevations of the sewer main, street, natural ground and building to be serviced.



HOUSE LATERAL DETAIL

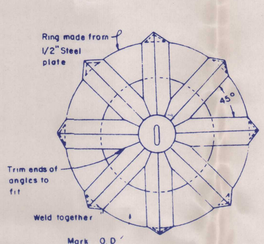
A precast tee with bend may be used in lieu of wye as per item no. 402.

GO, NO GO DEFLECTION TESTING MANDREL

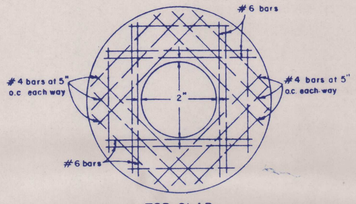


SIDE OR TOP VIEW

NOTE After construction is completed, true O.D. dimension for the full length of "B" to O.D. 0 inch by tool and lathe or grinding

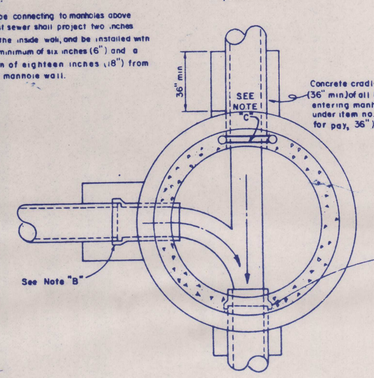


END VIEW

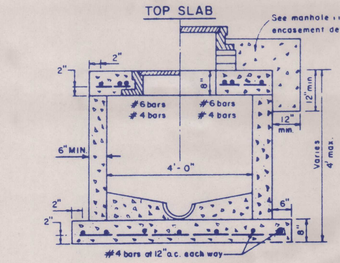


TOP SLAB

NOTE: "B"
Sewer pipe connecting to manholes above the lowest sewer shall project two inches (2") from the inside wall, and be installed with a joint a minimum of six inches (6") and a maximum of eighteen inches (18") from outside manhole wall.



MANHOLE FLOOR PLAN



SHALLOW MANHOLE

PRECAST OR MONOLITHIC

SIZE	A	B	MANDREL O. D. PSM (SDR-41)	MANDREL O. D. PSM (SDR-35)	MANDREL O. D. PSM (SDR-26)	MANDREL O. D. LARGE DIA. RIBBED	RING O. D. PSM (SDR-41)	RING O. D. PSM (SDR-35)	RING O. D. PSM (SDR-26)	RING O. D. LARGE DIA. RIBBED
6"	4.0"	4"	5.62	5.56	5.43	——	4.91	4.85	4.72	——
8"	5.3"	6"	7.52	7.45	7.28	——	6.81	6.74	6.57	——
10"	6.7"	6"	9.41	9.32	9.10	——	8.70	8.61	8.39	——
12"	8.0"	8"	11.20	11.08	10.83	——	10.49	10.37	10.12	——
15"	10.0"	9"	13.71	13.57	13.26	——	13.00	12.86	12.55	——
18"	12.0"	11"	——	16.58	——	16.72	——	15.89	——	16.01
21"	14.0"	12"	——	19.56	——	19.66	——	18.85	——	18.95
24"	16.0"	15"	——	22.00	——	22.26	——	21.29	——	21.55
27"	18.0"	16"	——	24.80	——	25.10	——	24.09	——	24.39
30"	20.0"	18"	——	——	——	27.94	——	——	——	27.23
36"	24.0"	21"	——	——	——	33.63	——	——	——	32.92
40"	26.8"	24"	——	——	——	37.41	——	——	——	36.70
48"	32.0"	29"	——	——	——	44.99	——	——	——	44.28

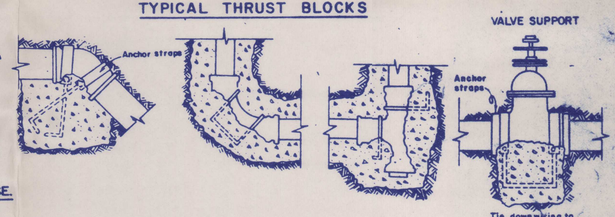
Note: Standards For All PVC Pipe Shall Conform To Minimum Of ASTM D3033

CHART

GENERAL NOTES

1. All construction and materials shall be in strict conformance with applicable provision of "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION".
2. Manhole rings and covers shall be Trans-Tex A77, or Equal. When watertight manhole rings and covers are specified, they shall be Trans-Tex A77 "O" Ring, or Equal.
3. a. Material for sanitary sewer pipe must be the same from manhole to manhole. Changes in type of pipe may be made, only, at manholes, or special structures, except as approved by the Sewer Engineer.
   b. Adaptors and concrete collars shall be used, only, as directed by the Engineer, and as approved by the Sewer Engineer.
4. All sewer pipe with less than three feet (3') of cover shall be conc. encased, as per item no. 407.
5. All Force Mains shall be provided with thrust blocks, where changes in direction occur, at tees, bends, crosses, changes in size, stops (dead ends), valves and /or as shown below, or as directed by the Engineer.

TYPICAL THRUST BLOCKS



TYPICAL CONCRETE ENCASE.

as per item no. 407B

TYPICAL CONCRETE SADDLE

as per item no. 407C

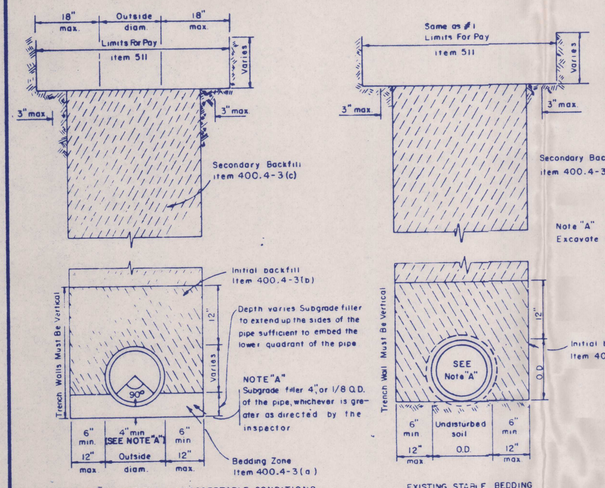
TYPICAL CONCRETE CRADLE

as per item no. 407B

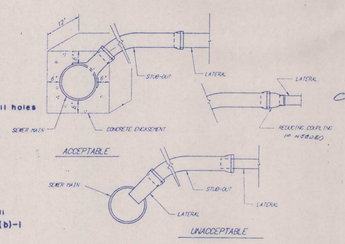
TYPICAL SUPPORT FOR ENCASEMENT OR CRADLE

CONC. JOINTING COLLAR

as per item no. 407D



PIPE LAID IN TRENCH

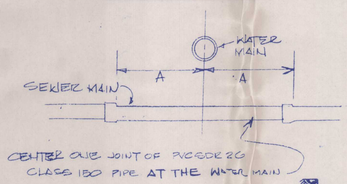


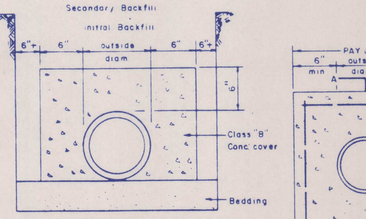
LATERAL CONNECTION TO EXISTING SEWER

MAIN / STUB-OUT

NOTE: THE SADDLE SHALL BE PERMANENTLY BONDED TO THE EXISTING MAIN BY THE USE OF COMPOUNDS OR CLAMPS AS RECOMMENDED BY THE MANUFACTURER.

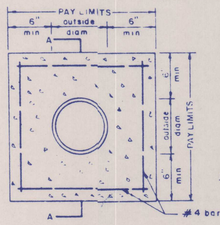
AFTER INSTALLATION OF, PRIOR TO COVERING, AND PRIOR TO CONNECTING A PRIVATE SERVICE LATERAL TO AN ORGANIZED SEWAGE COLLECTION SYSTEM, THE OWNER OF THE PRIVATE SERVICE LATERAL LINE SHALL PROVIDE THAT A TEXAS REGISTERED PROFESSIONAL ENGINEER, TEXAS REGISTERED SANITARIAN, OR APPROPRIATE CITY INSPECTOR MUST VISUALLY INSPECT THE PRIVATE SERVICE LATERAL AND THE CONNECTION TO THE COLLECTION SYSTEM, AND CERTIFY IT TO HAVE BEEN CONSTRUCTED IN CONFORMITY WITH THE APPLICABLE PROVISIONS OF TAC 31 TAC 317.

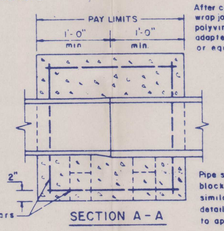




CONC. COVER FOR FLEXIBLE PIPE

To be used wherever trench width is greater than 2 FT plus O.D. As per item 400.4-3(b)





SECTION A-A

After centering pipe ends wrap joints with 3 in wide polyvinyl tape or rubber adapter, Con Tex I-70A or equal.

Pipe sections to be blocked & supported similar to encasement detail above subject to approval

STATE OF TEXAS S. CRAIG HOLLAIG 81714 PROFESSIONAL ENGINEER

FEBRUARY 1987

TYPICAL SECTIONS
SANITARY SEWER STANDARDS
PIPE SIZES THRU 24"

CITY OF SAN ANTONIO
DEPT. OF PUBLIC WORKS
ENGINEERING DIVISION

SHEET 7 OF 8

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION
ORGANIZED SEWAGE COLLECTION SYSTEM
GENERAL CONSTRUCTION NOTES

1. This Organized Sewage Collection System is designed and will be constructed in accordance with the Texas Natural Resource Conservation Commission's 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 _____Standard Specifications.

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

3. The temporary erosion and sedimentation controls will 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 will be removed when the construction area is stabilized.

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

   The ASTM, ANSI, or AWWA specification numbers for the pipe(s) and joints are ASTM 3034.

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

5. **If any caverns or 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 Natural Resource Conservation Commission in writing within two working days of the feature discovered. The regulated activities near the sensitive feature may not proceed until the executive director has review 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.**

6. 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 will be capped with concrete to prevent scouring of backfill, or the sewer lines will be encased in concrete. All concrete shall have a minimum thickness of six (6) inches.

7. Blasting procedures for protection of existing sewer lines and other utilities will be in accordance with the National Fire Protection Association criteria. If any existing sewer lines are damaged, the lines must be repaired and retested.

8. All manholes constructed or rehabilitated on this project will have watertight construction joints, rings, and covers. If manholes are constructed within the 100-year floodplain, the cover will 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 will be a minimum of four feet and the manhole covers will 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 ___ of ____.

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

10. Where sewers lines deviate from straight alignment and uniform grade all curvature of sewer pipe will 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 will be used:

    N/A

    Specific care will 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) and 30 TAC 317.2(c)(10)(D).

11. New sewage collection system lines will be constructed with "stub outs" for the connection of anticipated extensions. The location of such "stub outs" will 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" will 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 "stub-outs" will 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" will 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" will 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 ___ of ___. (For potential future laterals).

The private service lateral stub-outs will be installed as shown on the plan and profile sheets on Plan Sheet ___ of ___ and marked after backfilling as shown in the detail on Plan Sheet ___ of___.

12. The bedding and backfill for flexible pipe will comply with the standards of ASTM D-2321, Classes I or II. Rigid pipe bedding will comply with the requirements of ASTM C 12 classes A or B. Reference 30 TAC §317.2(a)(5)(A). Sand is not allowed as bedding or backfill in trenches that have been blasted.

13. Sewer lines will be tested from manhole to manhole. When a stub or clean-out is used at the end of a proposed sewer line, it cannot be certified as conforming with the provisions of 30 TAC §213.5(c)(3)(E). When a new sewer line is connected to an existing stub or clean-out, it will be tested from existing manhole to new manhole.

14. All sewer lines will be tested in accordance with 30 TAC §317.2(a)(4). Testing method will be:

    (A) Infiltration or Exfiltration Tests. The total exfiltration as determined by a hydrostatic head test, will 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 will be used in lieu of the exfiltration test. The total infiltration, as determined by a hydrostatic head test, will 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 will 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 will 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 will 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 will be as outlined in this section. For sections of pipe less than 36-inch average inside diameter, the following procedure will apply unless the pipe is to be joint tested. The pipe will 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 will be computed from the following equation:

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

T = time for pressure to drop 1.0 pound per square inch gauge in seconds
K = 0.000419(D)(L), but not less than 1.0
D = average inside diameter in inches
L = length of line in feet of same size being tested
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 will 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 will be tested for leakage at each joint. If the joint test is used, a visual inspection of the joint will 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 will be 10 seconds.

(C) Deflection Testing. Deflection tests will be performed on all flexible pipes. For pipelines with inside diameters less than 27 inches, a rigid mandrel will be used to measure deflection. For pipelines with an inside diameter of 27 inches and greater, a method approved by the executive director will be used to test for vertical deflections. Other methods will provide a precision of ± two tenths of one percent (0.2 %) deflection. The test will 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 will be corrected and a second test will be conducted after the final backfill has been in place an additional 30 days. The tests will 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 Registered Professional Engineer appointed by the owner will 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 will be provided for the Commission to consider the requirements of the approval to have been met.

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

16. All private service laterals will be inspected and certified in accordance with 30 TAC §213.5(c)(3)(I), if applicable. After installation of, prior to covering, and prior to connecting a private service lateral to an existing organized sewage collection system, a Texas Registered Professional Engineer, Texas registered sanitarian, or appropriate city inspector will 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 will maintain such certifications for three years and forward copies to the appropriate district office upon request. Connections may only be made to an approved sewage collection system subsequent to receipt by the executive director of the certification of new construction or repairs, and subsequent testing as required by 30 TAC 213.5(c)(3)(I).

S. CRAIG HOLLMIG, INC.
engineers~surveyors
new braunfels, texas
210/625-8555

SHEET NOTES

Designed _____ Scale _____
Drawn _____ Job No. _____
Checked _____ File Ref. _____
Approved _____ Date _____

Revised to Conform with Construction Records.
By _____ Date _____

GENERAL NOTES

STATE OF TEXAS
S. CRAIG HOLLMIG
LICENSED PROFESSIONAL ENGINEER

SHEET 8 OF 8