TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

March 4, 2009

Mr. Tom Scott
Pinnacle Health Properties I, LLC
5212 Village Creek
Plano, TX 75093-5066

Re: Edwards Aquifer, Comal County
NAME OF PROJECT: Kirkwood Manor; Located at the intersection of Loop 337 and Walnut Avenue; New Braunfels, Texas
TYPE OF PLAN: Request for a Modification of an Approved Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer
Edwards Aquifer Protection Program ID No. 1281.03; Investigation No. 722948; Regulated Entity No. RN102751195

Dear Mr. Scott:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the WPAP modification for the above-referenced project submitted to the San Antonio Regional Office by Ford Engineering, Inc. on behalf of Pinnacle Health Properties I, LLC on December 29, 2009. Final review of the WPAP modification was completed after additional material was received on February 26, 2009. 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.*

BACKGROUND

A Water Pollution Abatement Plan application for the subject site was originally approved under 30 TAC 213.4 (c) [formerly 31 TAC 313.3] by letter dated December 10, 1986. The existing impervious cover at the site consisted of a building and a parking lot. The subject site is 5.613 acres with 2.271 acres of existing impervious cover that pre-dates the requirement of treating stormwater runoff.

A modification to the WPAP was approved by letter dated June 18, 1999. The construction activities for the modification did not commence within the two year term of approval therefore the approval expired on June 18, 2001.

A modification to the WPAP was approved by letter dated July 27, 2004. The proposed commercial project was to have an area of 5.613 acres and 1.69 acres of new impervious cover constructed (expansion of existing assisted living building, sidewalks, driveways and associated parking. Approximately 0.506 acres of existing parking was proposed to be removed, therefore the net increase in impervious cover for the site resulted in 1.184 acres. The total impervious cover for the project site would result in 3.455 acres (57.2%). Project wastewater was to be disposed of by conveyance to the existing Kuehler Sewage Treatment Plant owned by New Braunfels Utilities.

PROJECT DESCRIPTION

The proposed commercial project will have an area of approximately 5.613 acres. The modification to the approved WPAP application will include the addition of 21 new parking stalls increasing the impervious cover at the site by 0.082 acres. The total impervious cover will be 3.537 acres (63 percent). Project wastewater will be disposed of by conveyance to the existing Kuehler Water Recycling Center owned by the New Braunfels Utilities.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, two partial sedimentation/filtration basins, designed using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (1999), were constructed to treat stormwater runoff. The sizing calculations for Basin #1 were completed using the latest edition of the Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005) due to the new impervious cover additions (0.082 acres) presented in this application. Basin #2 was not affected by this modification application.

Watershed A (Basin #1). The partial sedimentation/filtration basin will capture the first 0.21 inches of stormwater run-off from 2.11 acres of impervious cover (1.36 acres pre-existing) within a 3.37 acre catchment area. The required total suspended solids (TSS) treatment for this project is 680 pounds. The basin will also provide compensatory TSS treatment for 0.01 acres (9 pounds of TSS) bypassing the on site BMPs. The sedimentation/filtration system consist of:

1. total capture volume of 2,531 cubic feet (1,517 cubic feet required),
2. sand filter area of 243 square feet (126 square feet required), which is 18 inches thick
3. an underdrain piping wrapped in geotextile membrane, and
4. an impervious liner.

Watershed B (Basin #2). The partial sedimentation/filtration basin will capture the first 0.15 inches of stormwater run-off from 1.42 acres of impervious cover (0.91 acres pre-existing) within a 2.25 acre catchment area. The sedimentation/filtration system consists of:

1. total capture volume of 1,223 cubic feet
2. 136 square feet of sand, which is 18 inches thick
3. an underdrain piping wrapped in geotextile membrane, and
4. an impervious liner.

The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project.

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COUNTY ENGINEER

GEOLOGY

According to the geologic assessment included with the application, the project site is located on the Cyclic and Marine Member of the Cretaceous Edwards Person Limestone. Three geologic features were identified by the project geologist during the assessment. One of the features was man made (sanitary sewer manhole) and none of the features were assessed as sensitive by the project geologist. The San Antonio Regional Office site assessment conducted on February 2, 2009 revealed the site conditions were generally as described in the geologic assessment submitted with the application.

SPECIAL CONDITIONS

I. This modification is subject to all Special and Standard Conditions listed in the WPAP approval letters dated December 10, 1986 and July 27, 2004.

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

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

IV. Unless an exception is requested, justified with documentation as equivalent protection, and approved, the "industry standard" for temporary BMPs to be used for activities regulated by 30 TAC 213 are described in RG-348 (2005), and shall be used.

V. The applicant shall provide all contractors with a copy of pages 1-35 through 1-60 of TCEQ TGM RG-348 (2005) as a guide for soil stabilization practices and assure that any soil stabilization is performed in accordance with these practices and the approved plan.

VI. The applicant shall provide soil stabilization in accordance with TCEQ TGM RG-348 for the improved drainage channel from outfall of Basin #2.

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.

<u>During Construction</u>:

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

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

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

13. No wells exist on site. All water wells, including injection, dewatering, and monitoring wells must be in compliance with the requirements of the Texas Department of Licensing and Regulation under Title 16 TAC Chapter 76 (relating to Water Well Drillers and Pump Installers) and all other locally applicable rules, as appropriate.

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

15. Intentional discharges of sediment laden 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 Agnieszka Hobson of the Edwards Aquifer Protection Program of the San Antonio Regional Office at (210) 403-4075.

Sincerely,

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

MRV/AMH/eg

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

cc: Mr. Mark B. Hill, P.E., Ford Engineering, Inc.
Mr. James Klein, City of New Braunfels
Mr. Thomas H. Hornseth, P.E., Comal County
Ms. Velma Reyes Danielson, Edwards Aquifer Authority
TCEQ Central Records, Building F, MC 212

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

January 5, 2009

RECEIVED
JAN 0 8 2009
COUNTY ENGINEER

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: Kirkwood Manor, located at 2590 Loop 337, 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.: 1281.03

Dear Mr. Hornseth:

The enclosed WPAP application received on December 29, 2008, 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 January 28, 2009.

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

Lynn M. Bumguardner
Water Section Work Leader
San Antonio Regional Office

LMB/eg

FORD ENGINEERING, INC.

Texas Commission on Environmental Quality
San Antonio Regional Office
Field Operations Division
14250 Judson Rd
San Antonio, Texas 78233-4480

February 25, 2009
FEI Project 21[illegible].05

Att: Agnieska Hobson

Re: Edwards Aquifer, Comal County
Kirkwood Manor, Modification of Approved WPAP, dated 12/19/2008
Response to first review comments dated February 17, 2009

Ms. Hobson,

Ford Engineering received TCEQ comments dated February 17, 2009 , see attached. We have addressed the TCEQ comments below. Ford Engineering responses/clarifications are bold italicized text.

1. The site assessment investigation conducted on February 2, 2009 revealed several concerns:
   a. The cell tower and equipment located by BMP do not appear to be a part of any application previously submitted for the site. Please explain and provide any supporting documentation.
   The cell tower was not shown on the site plan of the original WPAP, but was constructed at the same time as the nursing facility addition. Attached photos show it under construction at the same time as the nursing facility addition. The area for the cell tower was included in the original WPAP impervious cover of 3.455 under Structure and Rooftop, as shown in TCEQ Form 0584 is 70,567 sf. The main building rooftop is approximately 69,000 square feet as measured from an aerial dated 2008 obtained from Comal GIS at 6-inch resolution (the main building rooftop as measured from the architect CAD file is 67,500), the storage building is approximately 750 sf (from survey), the gazebo is approximately 230 sf (from survey), the cell tower 680 sf (as taken from cell tower plans) for a total of 70,660 sf. The difference, approximately 93 sf or 0.002 acres, is minor and can be attributed to the resolution of the aerial imagery.
   b. The gate valves for both BMPs appear to be inaccessible due to large amounts of debris on top of the valves. Please maintain the access points so the valves are accessible and provide supporting photographic documentation of the maintenance.

10927 WYE DRIVE, SUITE 104, SAN ANTONIO, TEXAS 78217 (210) 590-4777 FAX: 590-49
1-800-332-3109 Web Site: www.fordengineering.com

The debris from the top of the valves has been removed as requested. Photos showing that the valves are accessible are attached.

c. The discharge point from the sand filter appears to be sloped back to the BMP, possibly causing the device not to drain properly. Please confirm the device is draining properly in accordance with July 27, 2004 approval letter.
Sedimentation and vegetation have blocked the outfall of BMP2. A swale from the outfall to a daylight point within the downstream channel has been cut to restore the outfall to approved conditions. See attached photos.

2. Based on the information presented in the application it is not clear how much impervious cover is present at the site and how much will be added following the modification:
   a. The WPAP approval letter dated July 27, 2004 states the impervious cover will be 3.455 acres, however form TCEQ-0590 indicates that the approved impervious cover for the site is 3.48 acres. Please explain the difference and how this change will affect the BMP sizing. Please revise any pertinent forms and attachments.
   The correct previously approved water pollution abatement plan impervious cover is 3.455 acres. A rounding error in determining 62% impervious cover from the 5.613 acres resulted in the 3.48.
   This error also affected the proposed impervious area. The revised proposed impervious acreage is 3.455 + 0.082 (addition of the parking spots) = 3.537.
   As a result, TCEQ 0590 (page 1 of 2) and TCEQ 0584 (page 1 of 4) have been corrected and attached for re-submittal.
   b. Attachment C to TCEQ-0587 states that the new additional impervious cover will be 0.078 acres. However, the increase of impervious cover on form TCEQ-0590 shows the acreage to be 0.082 acres. Please explain.
   The correct acreage is 0.082 for the parking spot additions. The number 0.078 was an approximation based on 21 spots at 9'x18' used in earlier calculations and was to have been replaced with the plan quantity of 0.082. Attachment C to TCEQ 0587 has been corrected.
   c. How is treatment provided for the impervious cover generated from the cell tower and equipment present at the site?
   The walled area drains to the walk and down to the parking lot, where it is directed to BMP 1.
   d. Please note the TSS load from any new unapproved impervious cover proposed at the site must be calculated using the latest version of the TCEQ BMP sizing calculations. Please see TCEQ TGM RG-348 (2005 edition). Please provide calculations demonstrating BMPs presented for the site will be able to treat the TSS load generated from the impervious cover present at the site and any additional impervious cover proposed or provide additional BMPs.

10927 WYE DRIVE, SUITE 104, SAN ANTONIO, TEXAS 78217 (210) 590-4777 FAX: 590-4940
1-800-332-3109 Web Site: www.fordengineering.com

The latest version of the TCEQ BMP sizing calculations spreadsheet were obtained from the website and utilized to calculate the capacity of the existing BMPs and their ability to treat the additional TSS from the parking addition. Both BMPs were re-calculated. The results for the BMPs indicate that they have sufficient capacity. The revised calculations have been resubmitted for Attachment F of TCEQ 0600.
Attachment C to TCEQ 0600 has been updated to reflect the change in inches to be captured.

Please find attached one original and 4 copies of the following resubmitted items:

- TCEQ 0590 (page 1 of 2)
- TCEQ 0584 (page 1 of 4)
- Attachment C to TCEQ 0587
- Attachment C to TCEQ 0600
- Calculations for Attachment F of TCEQ 0600

Also find the following support data as requested:

- Pictures of valves of BMP1 and BMP2 free of debris
- Pictures of restored outfall for BMP 2, letter from facility manager attesting to functionality of drain.

If you have any questions or require more clarification, please contact Mark Hill, PE, (210) 590-4777. Thank you.

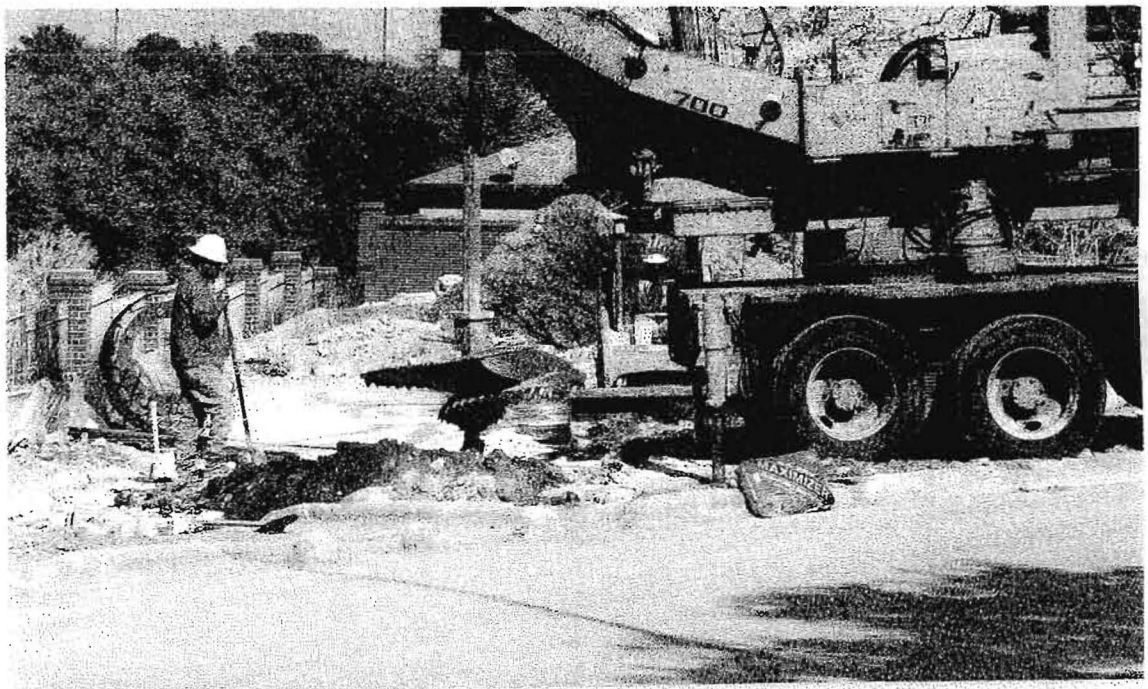
Sincerely,
Ford Engineering Inc.

Mark B Hill, PE

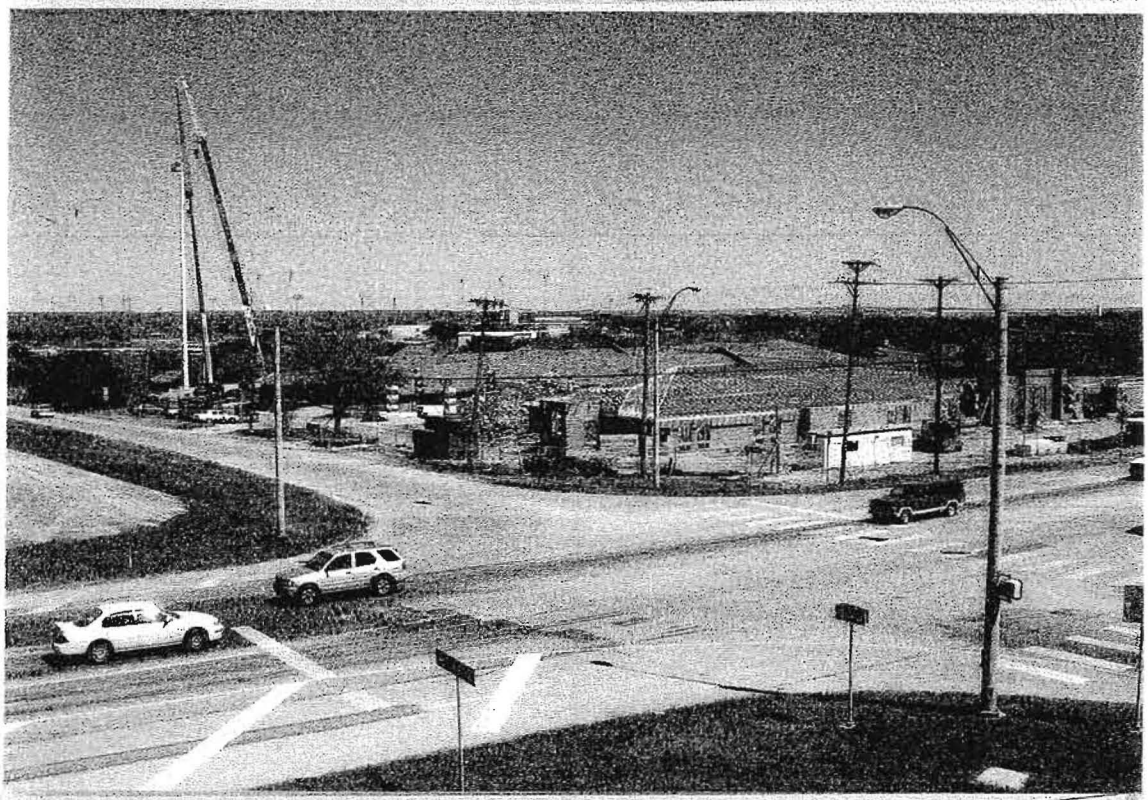
CC. Mr. Tom Scott

10927 WYE DRIVE, SUITE 104, SAN ANTONIO, TEXAS 78217 (210) 590-4777 FAX: 590-4940
1-800-332-3109 Web Site: www.fordengineering.com

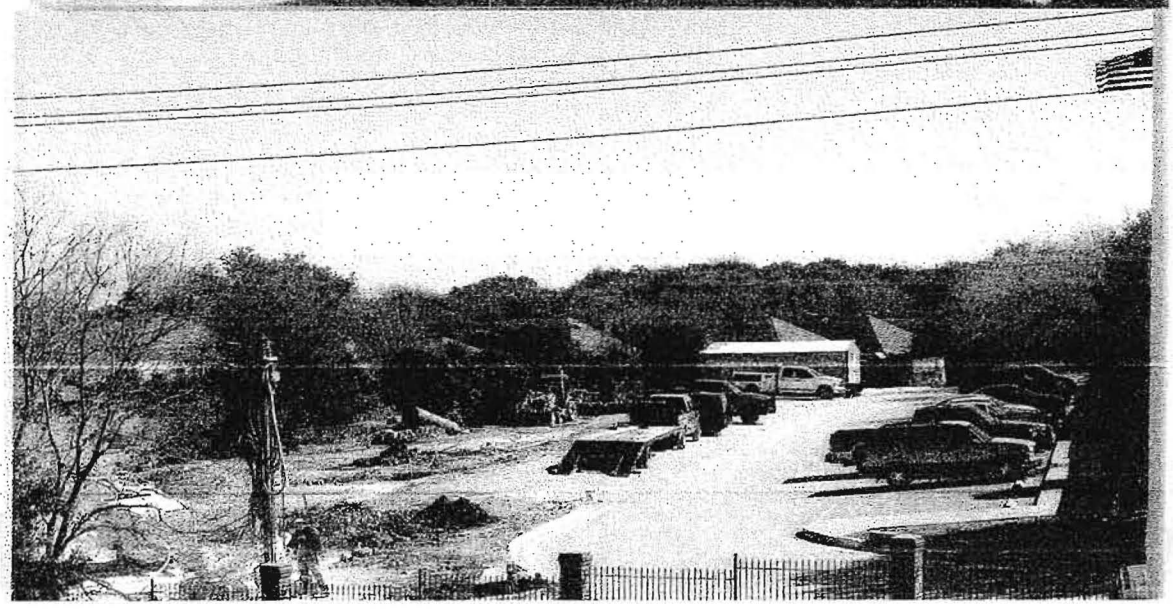
CONSTRUCTION OF
CELL TOWER
WITH CONSTRUCTION
OF NEW ADDITON



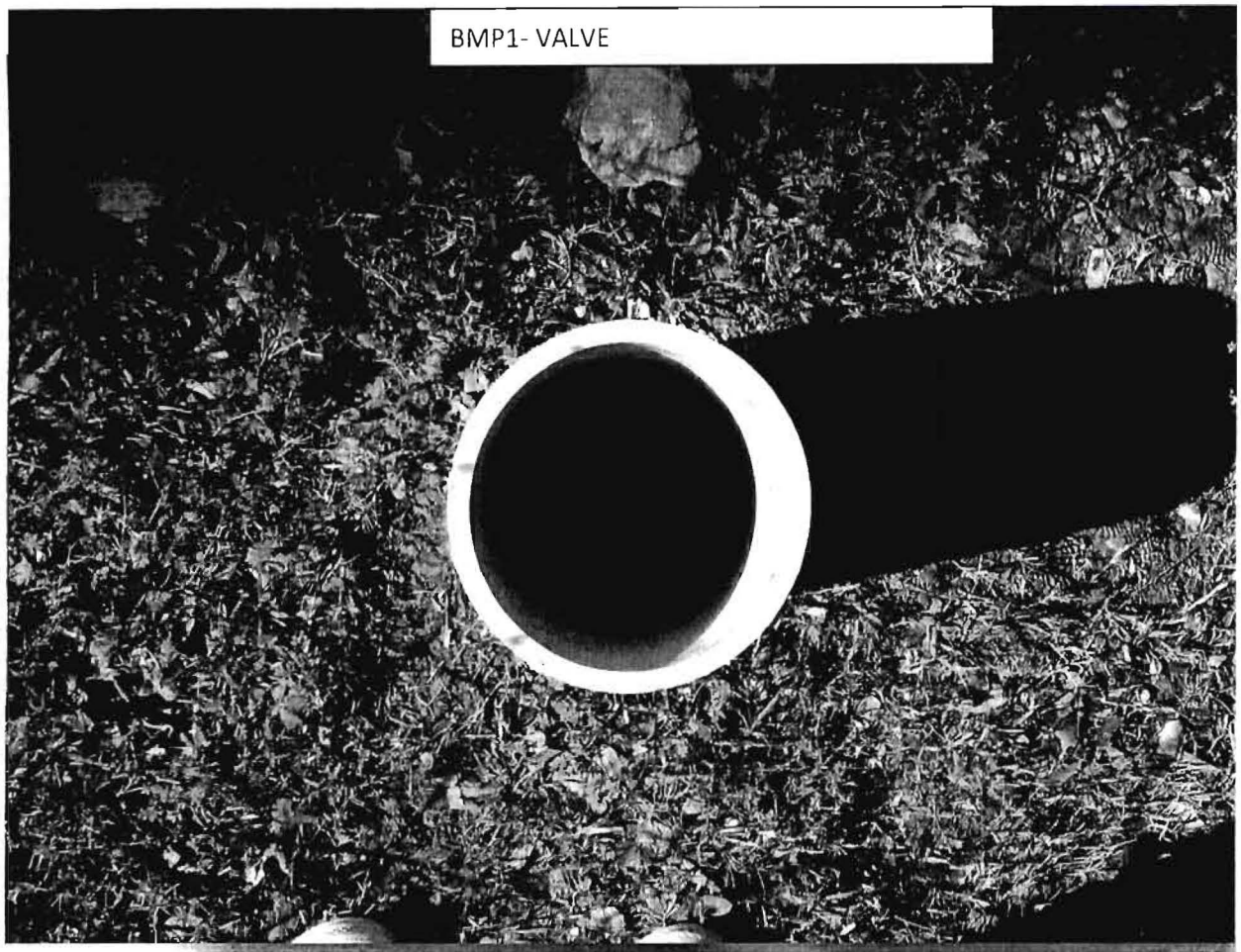
CONSTRUCTION OF
CELL TOWER
WITH CONSTRUCTION
OF NEW ADDITON

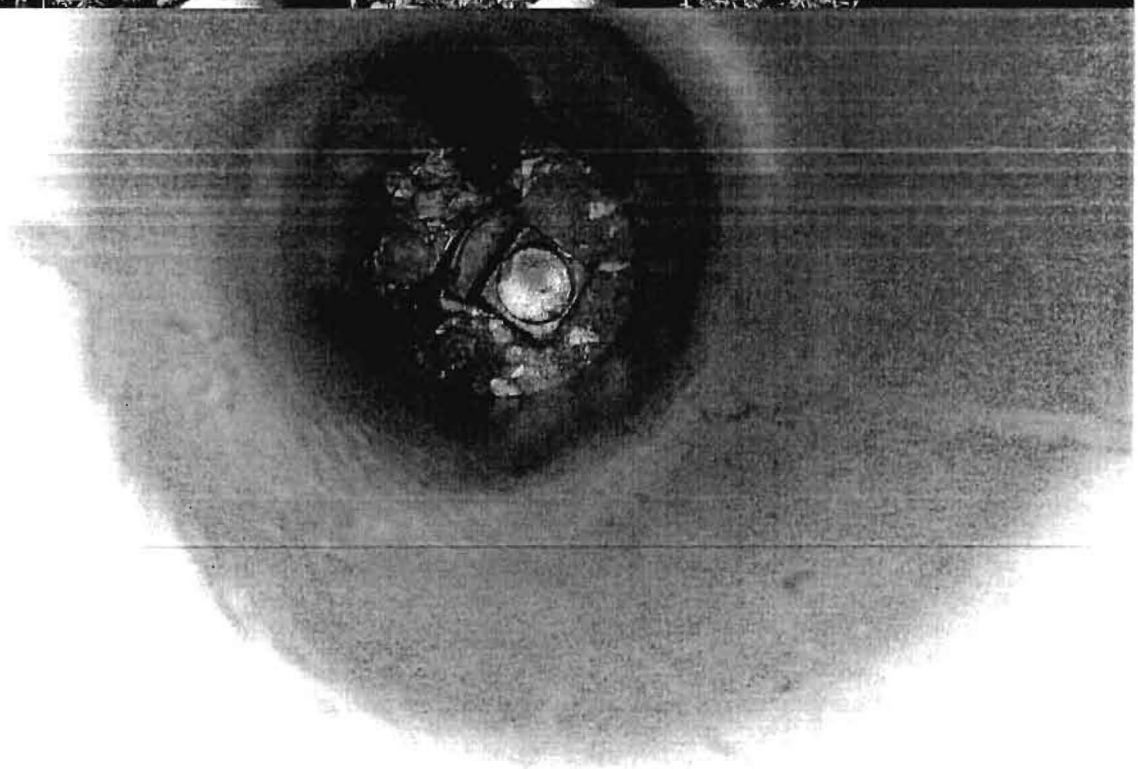


CONSTRUCTION OF
CELL TOWER
WITH CONSTRUCTION
OF PONDS

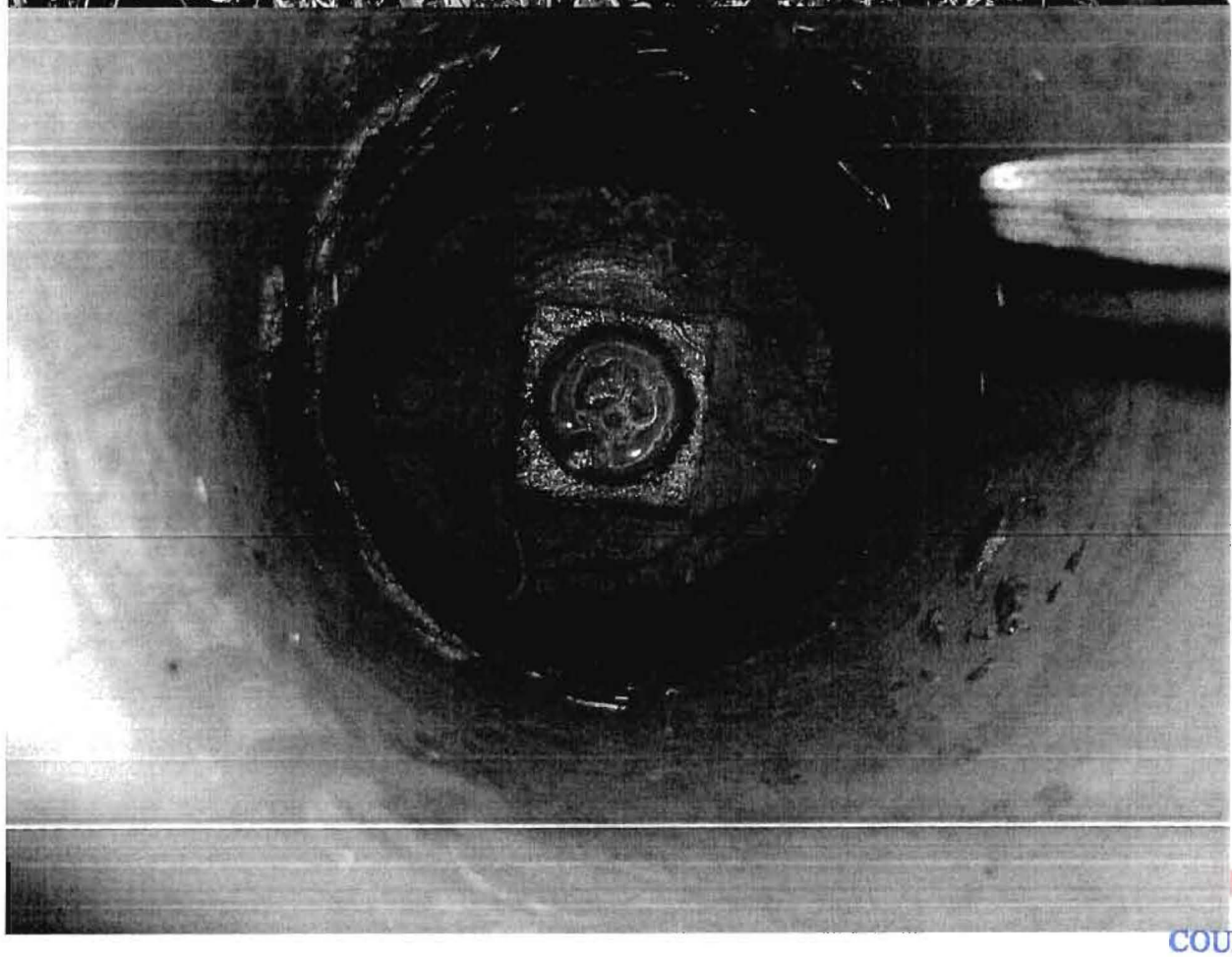


BMP1- VALVE





BMP2 - VALVE



February 24, 2009

To Whom It May Concern:

Please accept this letter along with pictures to validate requested work was completed per your expectations. I personally witnessed my employees make drain fully operational. Water was observed entering and exiting drain appropriately. Should you have any questions or need further explanation of items corrected please feel free to call me directly at 830.515.1267.

Sincerely,

William Pomeroy, Administrator
Kirkwood Manor
830.620.0509

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COUNTY ENGINEER

IMPROVED DRAINAGE FOR OUTFALL OF BMP2

RECEIVED
MAR 0 9 2009
COUNTY ENGINEER

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

1. Current Regulated Entity Name: Kirkwood Manor
Original Regulated Entity Name: _____
Assigned Regulated Entity Numbers (RN): 1) RN102751195, 2) _____, 3) _____

X The applicant has not changed and the Customer Number (CN) is: CN 601402076
___ The applicant has changed. A new Core Data Form has been provided.

2. X **Attachment A: Original Approval Letter and Approved Modification Letters:** A copy of the original approval letter and copies any letters approving modification are found at the end of this form.

3. A modification of a previously approved plan in requested for (check all that apply):

___ physical or operational modification of any water pollution abatement structure(s) including but not limited to ponds, dams, berms, sewage treatment plants, and diversionary structures;
___ change in the nature or character of the regulated activity from that which was originally approved or a change which would significantly impact the ability of the plan to prevent pollution of the Edwards Aquifer;
X development of land previously identified as undeveloped in the original water pollution abatement plan;
___ physical modification of the approved organized sewage collection system;
___ physical modification of the approved underground storage tank system;
___ physical modification of the approved aboveground storage tank system.

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

WPAP Modification Summary	Approved Project	Proposed Modification
Acres	5.613	5.613
Type of Development	Commercial	Commercial
Number of Residential Lots	-	-
Impervious Cover (acres)	3.455	3.537
Impervious Cover (%)	0.62	0.63
Permanent BMPs	sedimentaiton/filtration basin	
Other		

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

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

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: Kirkwood Manor

REGULATED ENTITY INFORMATION

1. The type of project is:
   - ___ Residential: # of Lots: ___
   - ___ Residential: # of Living Unit Equivalents: ___
   - X Commercial
   - ___ Industrial
   - ___ Other: _____

2. Total site acreage (size of property): 5.613

3. Projected population: 212

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	70,567	÷ 43,560 =	1.62
Parking	72,663	÷ 43,560 =	1.67
Other paved surfaces	10,759	÷ 43,560 =	0.247
Total Impervious Cover	153,989	÷ 43,560 =	3.537
Total Impervious Cover ÷ Total Acreage x 100 =			63 %

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:

ATTACHMENT C TO TCEQ-0587

PROJECT DESCRIPTION

Modification for an Approved WPAP for Kirkwood Manor located at the intersection of Loop 337 and Walnut Avenue in New Bruanfels. The WPAP was approved in July of 2004, and the construction/improvements included in that WPAP was completed in October of 2005 (RN102751195). Commercial Site. Total site is 5.613 ac

Previous approved impervious area is 3.455 acres. The owner proposes to add a total of 21 new parking stalls. The new stalls are to match the existing 18'x9' parking stalls. Approximate additional impervious area = 3571 sf (0.082 ac). The total post project impervious acreage will be 3.357 acres.

Existing site has two (2) sedimentation/sand filtration basins. Basins were sized with some additional storage volume and sand filtration surface area to account for minor additions of impervious areas. With the addition of the new parking stalls the new pollutant load must be handled with the existing structures.

The new parking stalls will contribute to Basin 1. Basin 1 has sufficient capacity to accommodate the additional required load due to the addition of 21 parking stalls.

ATTACHMENT C TO TCEQ-0600

BMPS FOR ON-SITE STORMWATER

The existing BMP for the on-site stormwater runoff of the Kirkwood Manor Expansion consists of two sand filtration basins located at the down gradient end of the property. The anticipated pollutants would be oil and grease from the vehicles of the patrons parked on the property and the suspended solids and sediments brought on site by the vehicles.

The existing basins have been verified to have sufficient capacity to capture the first 0.33 inches of runoff, based on an impervious cover of 63%, providing a minimum of 80% removal of the increase in pollutants, based on the design criteria of the TCEQ TGM RG-348 (2005 edition) using the TCEQ TSS removal calculations.

The sizing and design of the basin is for the 5.613 acre site.

Summation of Load Remoal Calculations

2/23/2009

Kirkwood Manor

Modification to Approved WPAP

County =	**comal**	
Total project area included in plan * =	**5.61**	acres
Predevelopment impervious area within the limits of the plan * =	**2.27**	acres
Total post-development impervious area within the limits of the plan* =	**3.54**	acres
Total post-development impervious cover fraction * =	**0.63**	
P =	**33**	inches
$L_{M\ TOTAL\ PROJECT}$ =	**1136**	lbs.
Number of drainage basins / outfalls areas leaving the plan area =	**2**	

BMP 1	Sand filtration basin (partial/gabion wall)		
Required Design TGM 2005)			
Required TSS Removal	672	lbs	
Desire TSS Removal	695	lbs	
Water Quality Volume + 20%=	1519	cubic feet	
Minimum filter basin area =	127	square feet	
Minimum sedimentation basin area =	32	square feet	
Basin Dimensions:	(as-built conditions, TGM 1999)		
Bottom Area	953	sf	
Available Volume	2531	cu-ft	Greater than Required Capture Volume
Basin Depth, w/freeboard	3.33	ft, (not including filter media)	
Sand bed Area	243.7	sf	Greater than minimum

BMP 2	Sand filtration basin (partial/gabion wall)		
Required Design TGM 2005)			
Required TSS Removal	455	lbs	
Desire TSS Removal	455	lbs	
Water Quality Volume + 20%=	1049	cubic feet	
Minimum filter basin area =	87	square feet	
Minimum sedimentation basin area =	22	square feet	
Basin Dimensions:	(as-built conditions, TGM 1999)		
Bottom Area	694	sf	
Available Volume	1825	cu-ft	Greater than Required Capture Volume
Basin Depth, w/freeboard	3.33	ft, (not including filter media)	
Sand bed Area	205.2	sf	Greater than minimum

Texas Commission on Environmental Quality

TSS Removal Calculations 02-20-2008

Project Name: Kirkwood Manor
Date Prepared: 2/23/2009

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

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

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

where:

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

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

County =	comal	
Total project area included in plan * =	5.61	acres
Predevelopment impervious area within the limits of the plan * =	2.27	acres
Total post-development impervious area within the limits of the plan * =	3.54	acres
Total post-development impervious cover fraction * =	0.63	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	1136	lbs.

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

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

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

Drainage Basin/Outfall Area No. = **1**

Total drainage basin/outfall area =	**3.37**	acres
Predevelopment impervious area within drainage basin/outfall area =	**1.36**	acres
Post-development impervious area within drainage basin/outfall area =	**2.11**	acres
Post-development impervious fraction within drainage basin/outfall area =	**0.63**	
$L_{M\ THIS\ BASIN}$ =	**672**	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP =	**sf**	abbreviation
Removal efficiency =	**89**	percent

BMP Code:	BMP Type:
AQ	Aqualogic™ Cartridge Filter
BR	Bioretention
CS	Contech StormFilter
CW	Constructed Wetland
ED	Extended Detention
GS	Grassy Swale
RI	Retention / Irrigation
SF	Sand Filter
VF	Vegetative Filter Strip
WB	Wet Basin
WV	Wet Vault

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

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

where:

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

A_C =	**2.56**	acres
A_I =	**2.10**	acres

A_P =	**0.46**	acres
L_R =	**2143**	lbs

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

Desired $L_{M\ THIS\ BASIN}$ =	**695**	lbs.
F =	**0.32**	

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth =	**0.21**	inches
Post Development Runoff Coefficient =	**0.65**	
On-site Water Quality Volume =	**1266**	cubic feet

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

Off-site area draining to BMP =	**0.00**	acres
Off-site Impervious cover draining to BMP =	**0.00**	acres
Impervious fraction of off-site area =	**0**	
Off-site Runoff Coefficient =	**0.00**	
Off-site Water Quality Volume =	**0**	cubic feet
Storage for Sediment =	**253**	
Total Capture Volume (required water quality volume(s) x 1.20) =	**1519**	cubic feet

The following sections are used to calculate the required water quality volume(s) for the selected BMP.
The values for BMP Types not selected in cell C53 will show NA.

7. Retention/Irrigation System Designed as Required in RG-348 Pages 3-42 to 3-46

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

Irrigation Area Calculations:

Soil infiltration/permeability rate =	**0.1**	in/hr	Enter determined permeability rate or assumed value of 0.1
Irrigation area =	**NA**	square feet	
	NA	acres	

8. Extended Detention Basin System — Designed as Required in RG-348 — Pages 3-46 to 3-51

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

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

9A. Full Sedimentation and Filtration System

Water Quality Volume for sedimentation basin =	**1519**	cubic feet	
Minimum filter basin area =	**70**	square feet	
Maximum sedimentation basin area =	**633**	square feet	For minimum water depth of 2 feet
Minimum sedimentation basin area =	**158**	square feet	For maximum water depth of 8 feet

9B. Partial Sedimentation and Filtration System

Water Quality Volume for combined basins =	**1519**	cubic feet	
Minimum filter basin area =	**127**	square feet	
Maximum sedimentation basin area =	**506**	square feet	For minimum water depth of 2 feet
Minimum sedimentation basin area =	**32**	square feet	For maximum water depth of 8 feet

10. Bioretention System — Designed as Required in RG-348 — Pages 3-63 to 3-65

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

Drainage Basin/Outfall Area No. = **2**

Total drainage basin/outfall area =	**2.25**	acres
Predevelopment impervious area within drainage basin/outfall area =	**0.91**	acres
Post-development impervious area within drainage basin/outfall area =	**1.42**	acres
Post-development impervious fraction within drainage basin/outfall area =	**0.63**	
$L_{M\ THIS\ BASIN}$ =	**455**	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP =	**sf**	abbreviation
Removal efficiency =	**89**	percent

BMP Code:	BMP Type:
AQ	Aqualogic™ Cartridge Filter
BR	Bioretention
CS	Contech StormFilter
CW	Constructed Wetland
ED	Extended Detention
GS	Grassy Swale
RI	Retention / Irrigation
SF	Sand Filter
VF	Vegetative Filter Strip
WB	Wet Basin
WV	Wet Vault

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

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

where:

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

A_C =	**1.64**	acres
A_I =	**1.42**	acres

A_P =	**0.22**	acres
L_R =	**1441**	lbs

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

Desired $L_{M\ THIS\ BASIN}$ =	**455**	lbs.
F =	**0.32**	

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth =	**0.21**	inches
Post Development Runoff Coefficient =	**0.71**	
On-site Water Quality Volume =	**874**	cubic feet

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

Off-site area draining to BMP =	**0.00**	acres
Off-site Impervious cover draining to BMP =	**0.00**	acres
Impervious fraction of off-site area =	**0**	
Off-site Runoff Coefficient =	**0.00**	
Off-site Water Quality Volume =	**0**	cubic feet
Storage for Sediment =	**175**	
Total Capture Volume (required water quality volume(s) x 1.20) =	**1049**	cubic feet

The following sections are used to calculate the required water quality volume(s) for the selected BMP.
The values for BMP Types not selected in cell C53 will show NA.

7. Retention/Irrigation System Designed as Required in RG-348 Pages 3-42 to 3-46

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

Irrigation Area Calculations:

Soil infiltration/permeability rate =	**0.1**	in/hr	Enter determined permeability rate or assumed value of 0.1
Irrigation area =	**NA**	square feet	
	NA	acres	

8. Extended Detention Basin System — Designed as Required in RG-348 — Pages 3-46 to 3-51

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

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

9A. Full Sedimentation and Filtration System

Water Quality Volume for sedimentation basin =	**1049**	cubic feet	
Minimum filter basin area =	**49**	square feet	
Maximum sedimentation basin area =	**437**	square feet	For minimum water depth of 2 feet
Minimum sedimentation basin area =	**109**	square feet	For maximum water depth of 8 feet

9B. Partial Sedimentation and Filtration System

Water Quality Volume for combined basins =	**1049**	cubic feet	
Minimum filter basin area =	**87**	square feet	
Maximum sedimentation basin area =	**350**	square feet	For minimum water depth of 2 feet
Minimum sedimentation basin area =	**22**	square feet	For maximum water depth of 8 feet

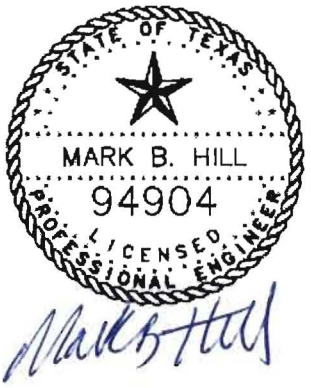
10. Bioretention System — Designed as Required in RG-348 — Pages 3-63 to 3-65

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

1281.03

KIRKWOOD MANOR
SKILLED NURSING ADDITION
New Braunfels, Texas

MODIFICATION TO WATER POLLUTION ABATEMENT PLAN



December 19, 2008

FEI PROJECT NO. 2190.05

Texas Society of Professional Surveyors
MEMBER

FORD ENGINEERING INC.
ENGINEERING • SURVEYING • PLANNING
10927 WYE DRIVE, SUITE 104, SAN ANTONIO, TEXAS 78217, (210) 590-4777

TSPE
Texas Society of Professional Engineers
MEMBER

Modification of a Previously Approved Plan Checklist

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

✓ 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)

✓ Modification of a Previously Approved Plan (*TCEQ-0590*)
- ATTACHMENT A - Original Approval Letter and Approved Modification Letters
- ATTACHMENT B - Narrative of Proposed Modification
- ATTACHMENT C - Current Site Plan of the Approved Project

✓ Application Form (appropriate for the modification)
- Aboveground Storage Tank Facility Plan (*TCEQ-0575*)
- Organized Sewage Collection System Plan (*TCEQ-0582*)
- Underground Storage Tank Facility Plan (*TCEQ-0583*)
- Water Pollution Abatement Plan Application Form (*TCEQ-0584*)
- Lift Station / Force Main System Application (*TCEQ-0624*)

✓ Temporary Stormwater Section (*TCEQ-0602*), if necessary
- 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

✓ Permanent Stormwater Section (*TCEQ-0600*), if necessary
- 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

Modification of a Previously Approved Plan Checklist (continued)

- [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)*

1	TCEQ-0587
2	TCEQ-0585
3	TCEQ-0590
4	TCEQ-0584
5	TCEQ-0602
6	TCEQ-0600
7	TCEQ-0599
8	TCEQ-0574
9	TCEQ-10400
10	Pre-submittal Comments
11	Additional Communications
12	

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: KIRKWOOD MANOR
COUNTY: COMAL STREAM BASIN: PANTHER CANYON

EDWARDS AQUIFER: X RECHARGE ZONE
__ TRANSITION ZONE

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

CUSTOMER INFORMATION

1. Customer (Applicant):

Contact Person: Tom Scott, Manager
Entity: Pinnacle Health Properties I, LLC
Mailing Address: 5212 Village CXreek
City, State: Plano, Texas Zip: 75093-5066
Telephone: (972) 931-3800 FAX: (972)-931-3801

Agent/Representative (If any):

Contact Person: Mark B Hill, PE
Entity: Ford Engineering, Inc
Mailing Address: 10927 Wye Dr, Ste. 104
City, State: San Antonio, Texas Zip: 78217
Telephone: (210) 590-4777 FAX: (210) 590-4940

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.

Located at the intersection of Loop 337 and Walnut Ave.

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:
   - X Existing commercial site
   - ___ Existing industrial site
   - ___ Existing residential site
   - ___ Existing paved and/or unpaved roads
   - ___ Undeveloped (Cleared)
   - ___ Undeveloped (Undisturbed/Uncleared)
   - ___ 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. X I am aware that the following activities are prohibited on the **Transition Zone** and are not proposed for this project:

   (1) waste disposal wells regulated under 30 TAC Chapter 331 (relating to Underground Injection Control);
   (2) land disposal of Class I wastes, as defined in 30 TAC §335.1; and
   (3) new municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41 (b), (c), and (d) of this title.

ADMINISTRATIVE INFORMATION

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 Contributing Zone Plan.

___ A request for an exception to any substantive portion of the regulations related to the protection of water quality.

___ A request for an extension to a previously approved plan.

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

___ TCEQ cashier

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

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

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.

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

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

Mark B Hill, P.E.
Print Name of Customer/Agent

Mark B Hill
Signature of Customer/Agent

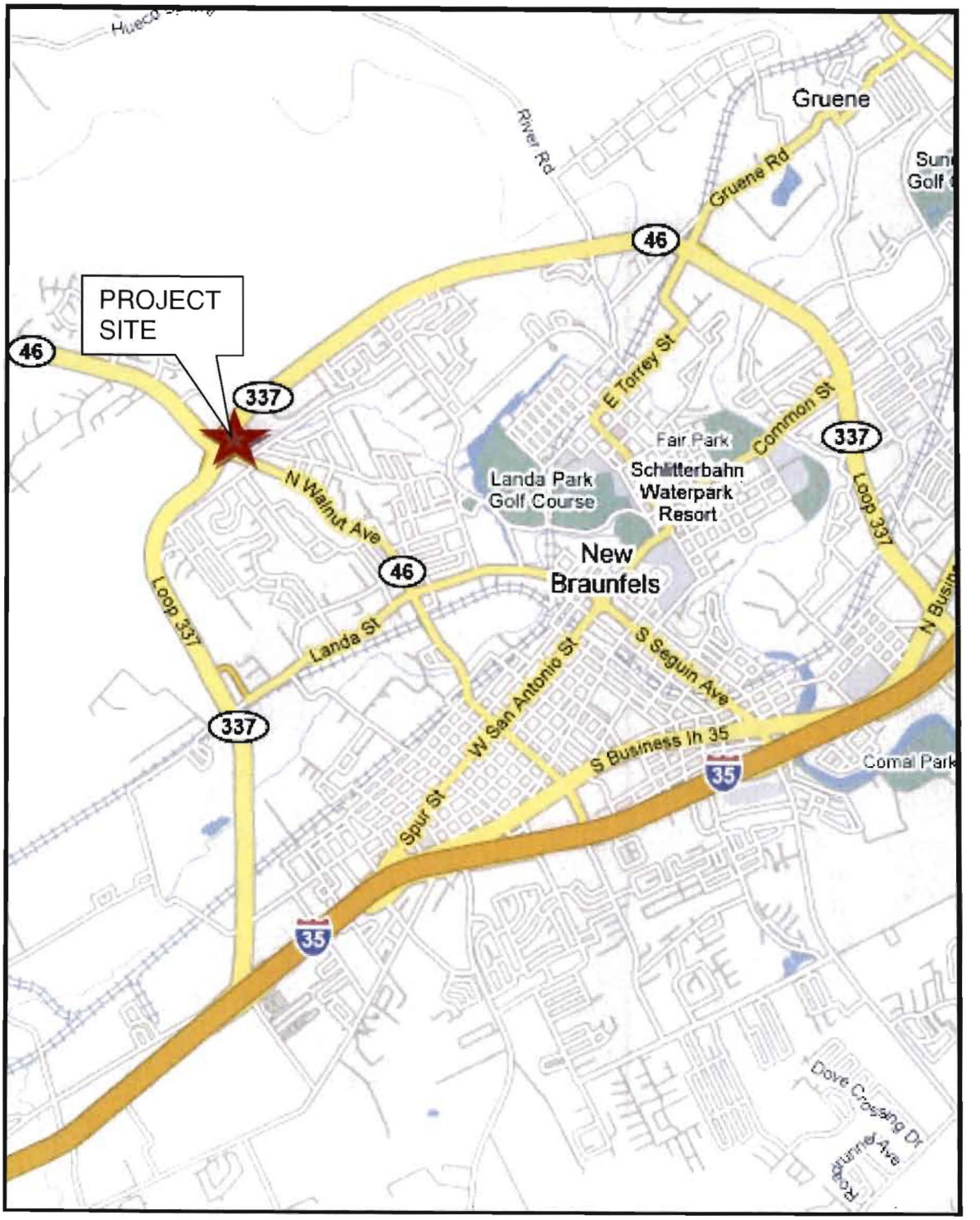
12/19/08
Date

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.

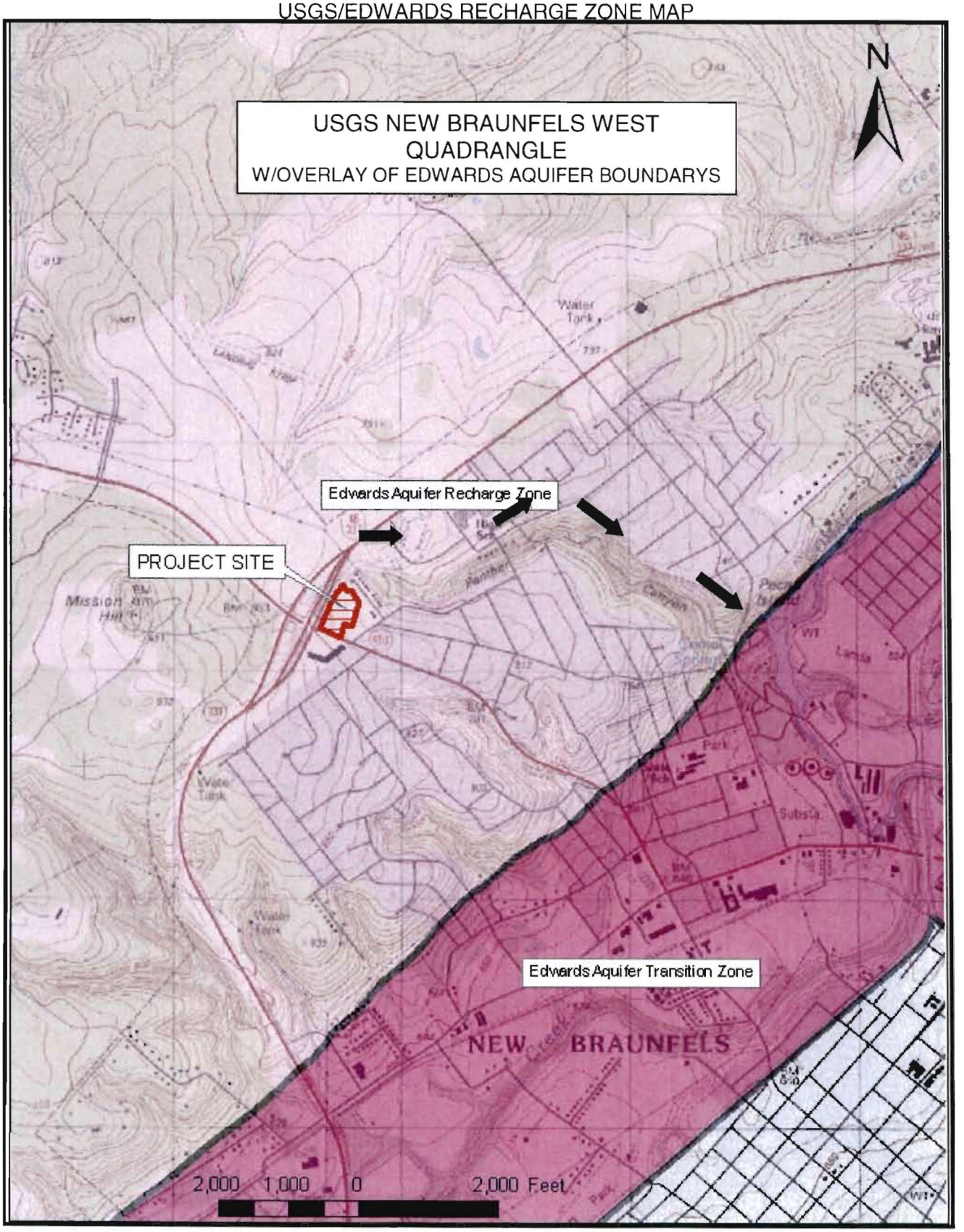
ATTACHMENT A TO TCEQ-0587

ROAD MAP & TRIP DIRECTIONS



ATTACHMENT B TO TCEQ-0587

USGS/EDWARDS RECHARGE ZONE MAP



ATTACHMENT C TO TCEQ-0587

PROJECT DESCRIPTION

Modification for an Approved WPAP for Kirkwood Manor located at the intersection of Loop 337 and Walnut Avenue in New Bruanfels. The WPAP was approved in July of 2004, and the construction/improvements included in that WPAP was completed in October of 2005 (RN102751195). Commercial Site.

The owner proposes to add a total of 21 new parking stalls. The new stalls are to match the existing 18'x9' parking stalls. Approximate additional impervious area = 3,402 sf (0.078 ac). Total site is 5.613 ac

Existing site has two (2) sedimentation/sand filtration basins. Basins were sized with some additional storage volume and sand filtration surface area to account for minor additions of impervious areas. With the addition of the new parking stalls the following New Pollutant Load must be handled with the existing structures

The new parking stalls will contribute to Basin 1. Basin 1 has sufficient capacity to accommodate the additional required load due to the addition of 21 parking stalls.

Geologic Site Assessment (WPAP)

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

The Kirkwood Manor Nursing Home
5.613 Acres
New Braunfels, Texas

FROST GEOSCIENCES CONTROL # FGS-04139

MARCH 12, 2004

Prepared exclusively for

Ford Engineering, Inc.
10927 Wye Drive, Suite 104
San Antonio, Texas 78217

Frost GeoSciences

Geologic and Environmental Consulting

103 Misty Waters • Boerne, Texas 78006 • Phone: (830) 229-5603 • Fax: (830) 229-5601

Frost GeoSciences
Geologic and Environmental Consulting

103 Misty Waters
Boerne, Texas 78006
Phone (830) 229-5603 metro
Fax (830) 229-5601 metro
www.frostgeosciences.com

Steve Frost, C.P.G.

March 12, 2004

Ford Engineering, Inc.
10927 Wye Drive, Suite 104
San Antonio, Texas 78217

Attn: Mr. Lawrence C. Dublin, P.E.

Re: Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
The Kirkwood Manor Nursing Home
5.613 Acres
New Braunfels, Texas

Frost GeoSciences, Inc. Control # FGS-04139

Gentlemen:

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", TNRCC-0585-Instructions (Rev. 5-1-02). The results of our investigation along with any required 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.
President, Senior Geologist

Distribution: (6) Ford Engineering, Inc.

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 Kirkwood Manor Nursing Home - 5.613 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 Assoc.	C/D	0.5 to 1
Comfort-Rock Assoc.	D	0.5 to 1

* Soil Group Definitions (Abbreviated)

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

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

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

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

3. ✓ A **STRATIGRAPHIC COLUMN** is attached at the end of this form that shows formations, members, and thicknesses. The outcropping unit should be at the top of the stratigraphic column.

4. ✓ A **NARRATIVE DESCRIPTION OF SITE SPECIFIC GEOLOGY** is attached at the end of this form. The description must include a discussion of the potential for fluid movement to the Edwards Aquifer, stratigraphy, structure, and karst characteristics of the site.

5. ✓ Appropriate **SITE GEOLOGIC MAP(S)** are attached:

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

Applicant's Site Plan Scale 1" = 50 '
Site Geologic Map Scale 1" = 50 '
Site Soils Map Scale (if more than 1 soil type) 1" = 500 '

6. ✓ Method of collecting positional data:
Global Positioning System (GPS) technology.

✓ Other method(s), 2003 Aerial Photo

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 §76.
✓ There are no wells or test holes of any kind known to exist on the project site.

ADMINISTRATIVE INFORMATION

12. ✓ Five (5) originals of the completed assessment have been provided.

Date(s) Geologic Assessment was performed: 03-08-2004
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 213.

Steve Frost, C.P.G.
Print Name of Geologist

(830) 229-5603 metro
Telephone

(830) 229-5601 metro
Fax

Steve Frost
Signature of Geologist

March 12, 2004
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 512/939-2929 (Austin) or 210/403-4024 (San Antonio).

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

GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: The Kirkwood Manor Nursing Home - 5.613 Acres FGS-04139

LOCATION			FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING		
1A	1B*	1C*	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	N29° 42' 52.7"	W98° 9' 15.8"	MB	30	Kep	3	3	?	-	-	-	-	X	7	37	37		Yes		Hillside
S-2	N29° 42' 54.2"	W98° 9' 16.6"	CD	5	Kep/Fill	3	15	2	-	-	-	-	C/F	12	17	17		Yes		Hillside
S-3	N29° 42' 54.1"	W98° 9' 16.3"	CD	5	Fill	10	90	1	-	-	-	-	C/F	7	12	12			Yes	Drainage

* DATUM 1927 North American Datum (NAD27)

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 Natural Resource Conservation Commission'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 Steve Frost Date March 12, 2004 Sheet 1 of 1

Steve M. Frost Geology License No. 3...

Frost GeoSciences
Geologic and Environmental Consulting

TNRCC-0585-Table (Rev. 5-1-02)

LOCATION

The project site is located at the northeastern corner of the intersection of State Highway 46 and Loop 337 in New Braunfels, Texas. An overall view of the area is shown on copies of the site plan, a street map, the U.S.G.S. Topographic Map, the Edwards Underground Water District Reference Map, the FIRM Map, a geologic map, a 2003 Aerial Photograph at a scale of 1"=500', a 2003 Aerial Photograph at a scale of 1"=200', and a 1973 Photograph at a scale of 1"=500', Plates 1a, 1b, 1c, 1d, 1e, 1f, 1g, 1h, and 1i in Appendix A.

METHODOLOGY

The Geologic Assessment was conducted 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 near the intersection of State Highway 46 and Loop 337. The research included, but was not limited to, the Bureau of Economic Geology, Geologic Atlas of Texas, San Antonio Sheet, FEMA maps, Edwards Aquifer Recharge Zone Maps, U.S.G.S. 7.5 Minute Quadrangle Maps, the Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle, the U.S.G.S. Water-Resources Investigations Report 94-4117, and the U.S.D.A. Soil Survey of Comal & Hays Counties, 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 area. A 2003 aerial photograph, in conjunction with a hand held Garmin eTrex Summit Global Positioning System with an Estimated Potential Error ranging from 12 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", TNRCC-0585-Instructions (Rev.

5-1-02). The locations of any potential recharge features noted in the field were marked 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 and the locations of potential recharge features is included in Appendix C. A copy of a 2003 Aerial Photograph at an approximate scale of 1"=200' indicating the limits of the project site and the locations of potential recharge features is included on Plate 1h 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 U.S.G.S. 7.5 Minute Quadrangle Map, New Braunfels West, Texas Sheet (1988), the elevation across the project site ranges from 820 to 850 feet above mean sea level. The project site has a total relief of approximately 30 feet. Runoff from the project site flows to the north into Panther Canyon. Loop 337 is visible immediately west of the project site. Walnut Drive (Business Hwy 46) is visible immediately south of the project site. The City of New Braunfels is visible south and east of the project site. A copy of the U.S.G.S. 7.5 Minute Quadrangle Map indicating the location of the project site is included on Plate 1c in Appendix A.

Recharge / Transition Zone

According to the Official Edwards Aquifer Recharge Zone Map, New Braunfels West, Texas Sheet (1988), the project site is located within the Recharge Zone of the Edwards Aquifer. A copy of the Official Edwards Aquifer Recharge Zone Map indicating the location of the project site is included on Plate 1d in Appendix A.

100-Year Floodplain

According to the Federal Emergency Management Agency (FEMA), Flood Insurance Rate Map (FIRM) Panel # 485493-0002C, revised 05-15-91, the project site is located within Zone C. According to the Panel Legend, Zone C represents areas of minimal flooding. A copy of the above referenced FIRM panel indicating the location of the project site is included on Plate 1e in Appendix A.

Soils

According to the United States Department of Agriculture, Soil Conservation Service, Soil Survey of Comal & Hays Counties, Texas, (1977), the project site is located on the Rumple-Comfort Association (RUD), and the Comfort-Rock Association (CrD). A copy of the 1973 aerial photograph (approximate scale: 1"=500') from the U.S.D.A. Soil Survey of Comal & Hays Counties, Texas indicating the location of the project site and the soil types is included on Plate 1i in Appendix A.

The Rumple-Comfort Association 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.

This soil has a USDA Texture Classification of very cherty clay loam, stony clay, very stony clay, extremely stony clay, and weathered bedrock. The Unified Classification is GC, CL or SC. The AASHO Classification is A-2-6, A-6, and A-2-7. This soil has an average permeability from 0.2 to 0.6 inches/hour.

The Comfort-Rock Outcrop Complex consists of shallow, clayey soils and Rock Outcrop on side slopes and on hilltops and ridge tops on uplands in the Edwards Plateau Land Resource Area. The Comfort Extremely Stony Clay makes up 49 to more than 95 percent of the complex, but on the average it makes up 70 percent. Rock Outcrop and areas of soil less than 4 inches deep make up 5 to 36 percent, but the average is 15 percent. Typically, the surface layer of the Comfort soil is dark brown extremely stony clay about 6 inches thick. Cobbles and stones as much as 4 feet across cover about 45 percent of the surface. The subsoil extends to a depth of 13 inches. It is dark reddish brown extremely stony clay. The underlying material is indurated fractured limestone. The soil is mildly alkaline and noncalcareous throughout. The Comfort Soil is well drained. Surface runoff is slow to medium. Permeability is slow, and the available water capacity is very low. Water erosion is a slight hazard.

This soil has a USDA Texture Classification of extremely stony clay, stony clay, very stony clay, and weathered bedrock. The Unified Classification is CH, GC, CL, or SC. The AASHO Classification is A-2-7, and A-7-6. This soil has an average permeability from 0.6 to 0.2 inches/hour.

Narrative Description of the Site Geology

Based on a visual inspection of the ground surface, the overall potential for fluid flow from the project site into the Edwards Aquifer appears to be low.

Three features were noted on the project site at the time of the field investigation on March 8, 2004. The locations of the Potential Recharge Features are identified on the Site Plan on Plate 1a in Appendix A, on the 2003 aerial photograph on Plate 1h in Appendix A, and

on the Site Geologic Map provided in Appendix C. Color photos of the project site and the potential recharge features are included in Appendix B.

Potential Recharge Feature S-1 is a man-made feature in bedrock consisting of a sanitary sewer manhole. This feature is located in the northeastern portion of the property near the edge of the asphalt driveway. Frost GeoSciences, Inc. rates this feature as low on Figure 1 of the TNRCC-0585-Instructions (Rev. 5-01-02). This feature scores a 37 on the sensitivity scale in column 10 of the Geologic Assessment Table on Page 4 of this report.

Potential Recharge Feature S-2 consists of a non-karst closed depression created by the placement of fill material against native ground. Erosion and settling of the fill material appears to have created the non-karst closed depression. This area is 3 feet wide, 15 feet long, and as much as 2 feet deep in some places. Frost GeoSciences, Inc. rates this feature as low on Figure 1 of the TNRCC-0585-Instructions (Rev. 5-01-02). This feature scores a 17 on the sensitivity scale in column 10 of the Geologic Assessment Table on Page 4 of this report.

Potential Recharge Feature S-3 consists of a non-karst closed depression created by the uneven placement and settling of fill material within the drainage channel along the northern property line. This area is 10 feet wide, 90 feet long, and 1 foot deep in some places. Frost GeoSciences, Inc. rates this feature as low on Figure 1 of the TNRCC-0585-Instructions (Rev. 5-01-02). This feature scores a 12 on the sensitivity scale in column 10 of the Geologic Assessment Table on Page 4 of this report.

The property appears as developed land. The property is currently operating as the Kentwood Manor Nursing Home located at 2690 Loop 337. This facility consists of a one story brick building with approximately 34,200 square feet of floor space. A second small outbuilding was noted northeast of the Kentwood Manor Nursing Home. Asphalt driveways and associated parking areas were also noted around the nursing home. An area of fill material was noted in the northern portion of the project site near the northern property line.

The project site supports a sparse stand of vegetative cover with a sparse to moderate stand of grasses. Overall vegetation on the project site consists of ashe juniper (*Juniperus*

ashei), live oak (*Quercus virginiana*), cedar elm (*Ulmus crassifolia*), and hackberry (*Celtis sp.*).

According to the site plan provided by Ford Engineering, Inc., the surveyed elevations on the project site range from 819 to 845 feet. A copy of the site plan indicating the boundary of the project site and the elevations is included on the Site Plan on Plate 1a in Appendix A and the Site Geologic Map in Appendix C of this report.

There were no limestone outcrops on the project site larger than 10 feet in any direction. Small scattered limestone outcrops were noted in the southern portion of the project site and near the northwestern property corner within the drainage channel. According to the U.S. Geological Survey Water Resources Investigations 94-4117, the project site is located on the Cyclic and Marine Member of the Cretaceous Edwards Person Limestone.

The Cyclic and Marine Member of the Edwards Person Limestone consists of mudstone to packstone with milliolid grainstone and chert. This member occurs as thin graded cycles of massive to relatively thin beds with some crossbeds. Typically, cavern development in this member is common, but occurs mainly in the subsurface. The caverns within this member might be associated with earlier episodes of karst development.

A copy of the U.S.G.S. Water Resources Investigation 94-4117 indicating the location of the project site is included on Plate 1f in Appendix A.

BEST MANAGEMENT PRACTICE (BMP)

Based on a visual inspection of the ground surface and the research performed for this project, the overall potential for fluid flow from the project site into the Edwards Aquifer appears to be low. However, the potential always exists to encounter subsurface features that lack a surface expression. Construction personnel should be informed 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", TNRCC-0585-Instructions (Rev. 5-1-02) by a Licensed Texas Professional Geoscientist. All areas of the project site were carefully inspected for features that could contribute to the recharge of the Edwards Aquifer, however, this survey cannot preclude the presence of subsurface karst features that lack surface expression. This report is not intended to be a definitive investigation of all possible geologic or karst features at this site. All conclusions, opinions, and recommendations for Best Management Practices (BMP's) in this report are based on information obtained while researching the project, and on the site conditions at the time of our field investigation.

This report has been prepared for the exclusive use of Ford Engineering, 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 for Regulated Activities / Developments on the Edwards Aquifer Recharge / Transition Zone, relating to 30 TAC §213.5(b)(3), effective June 1, 1999.

REFERENCES

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

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

3) Small, Ted A., and Hanson, John A., 1994, Geologic Framework and Hydrogeologic Characteristics of the Edwards Aquifer Outcrop, Comal County, Texas. U.S. Geological Survey Water Resources Investigations 94-4117.

4) Barnes, V.L., 1983, Geologic Atlas of Texas, San Antonio Sheet, Bureau of Economic Geology, The University of Texas at Austin, Texas.

5) Federal Emergency Management Agency (FEMA), May 15, 1991, Comal County,

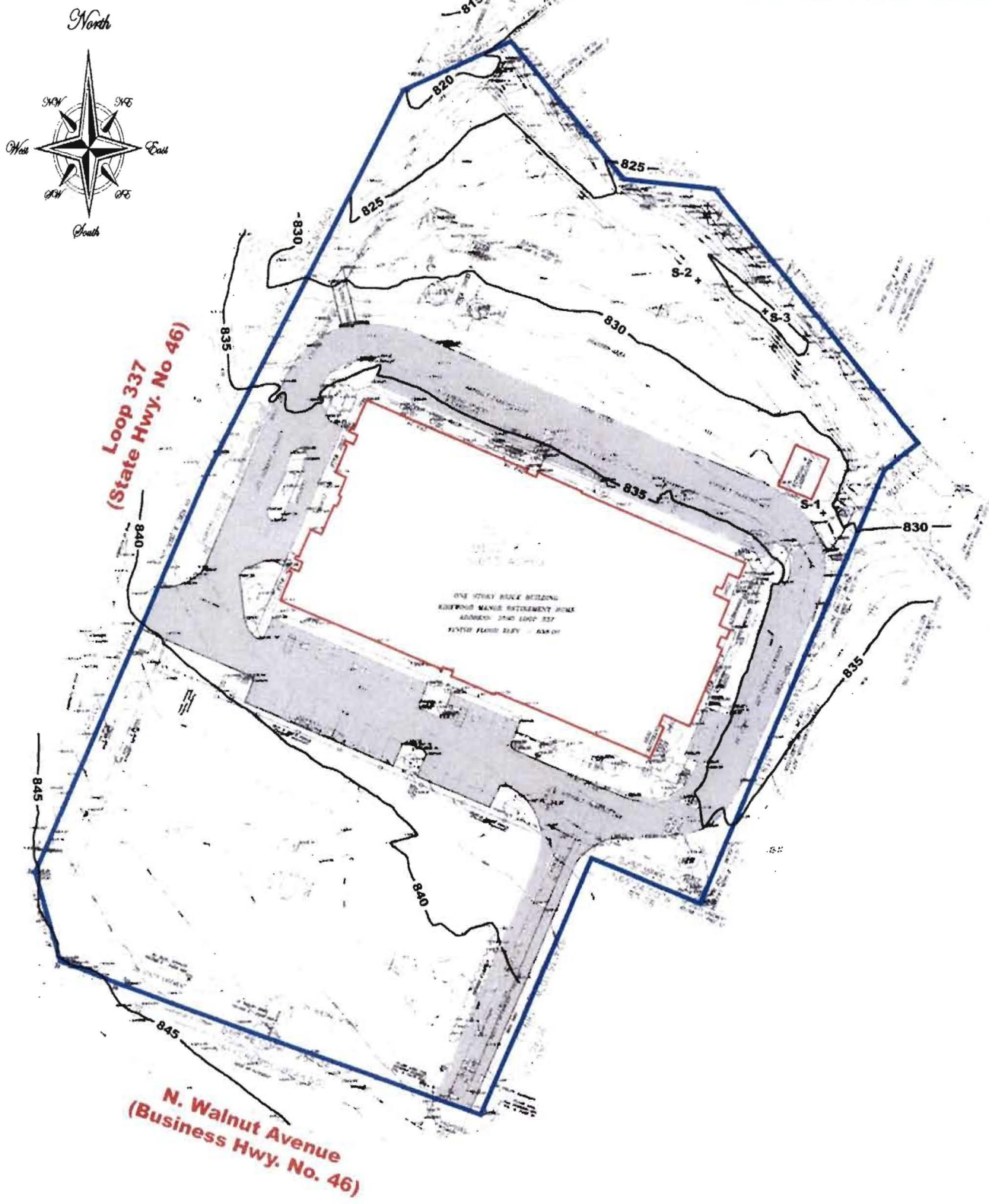
Texas and Incorporated Areas, Flood Insurance Rate Map (FIRM), Panel #485493-0002C FEMA, Washington D.C.

6) U.S.D.A. Soil Conservation Service, Soil Survey of Bexar County, Texas (1966).

7) TNRCC-0585-Instructions (Rev. 5-1-02). "Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zone".

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

Frost GeoSciences



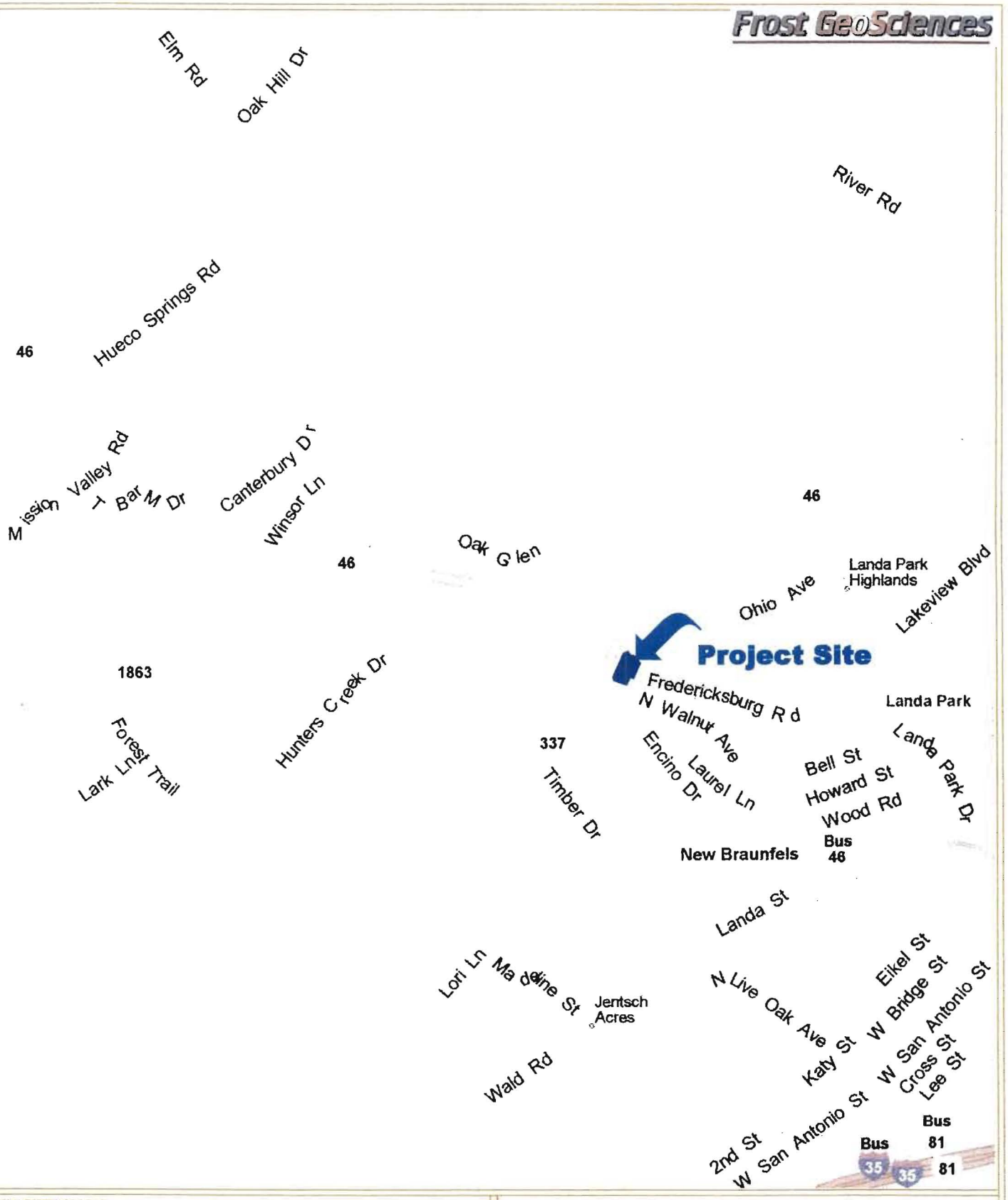
PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
The Kirkwood Manor Nursing Home
New Braunfels, Texas

Site Plan

PROJECT NO.: FGS-04139

DATE: March 12, 2004

Frost GeoSciences



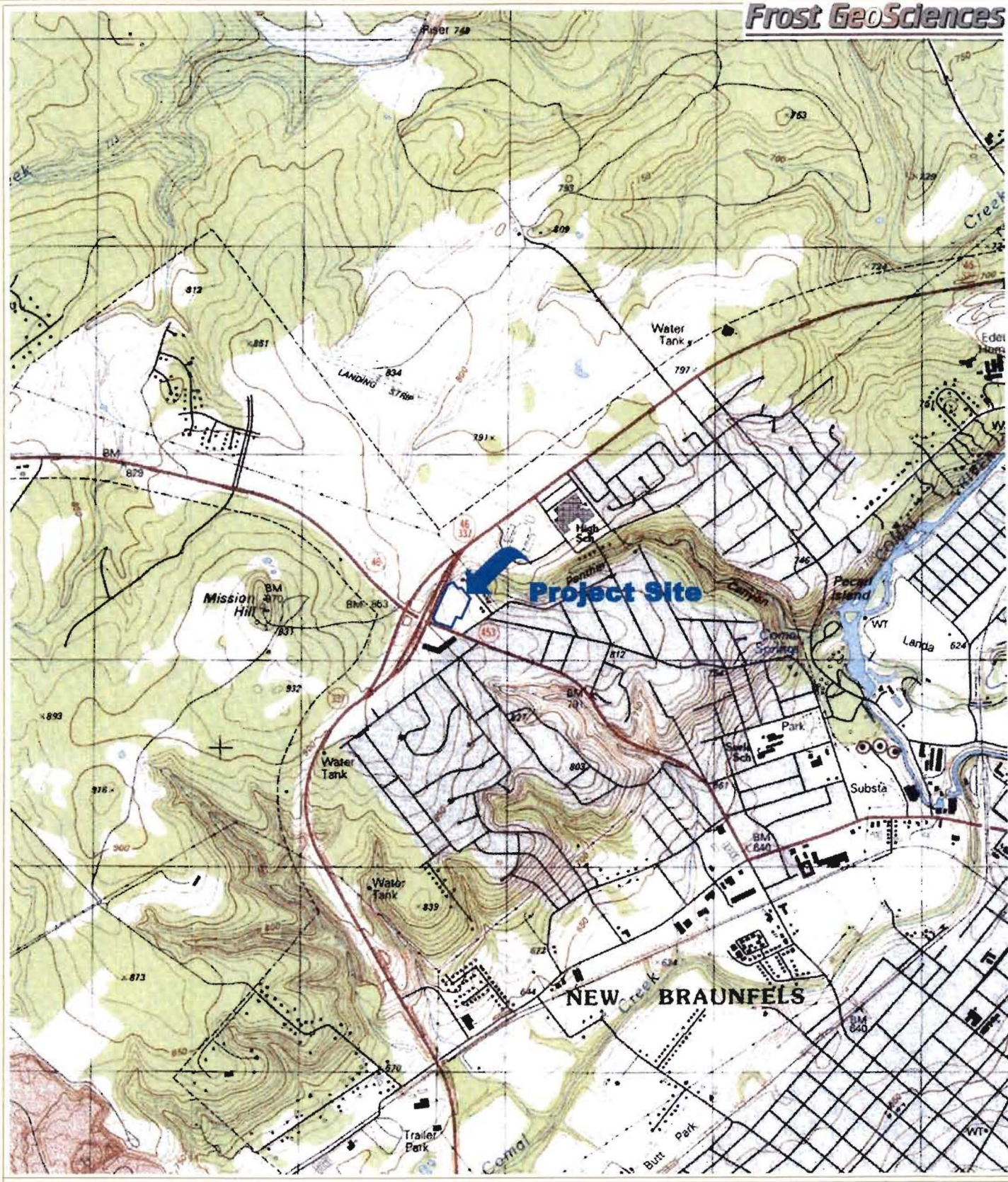
PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
The Kirkwood Manor Nursing Home
New Braunfels, Texas

Street Map

PROJECT NO.: FGS-04139

DATE: March 12, 2004

Frost GeoSciences



PROJECT NAME:

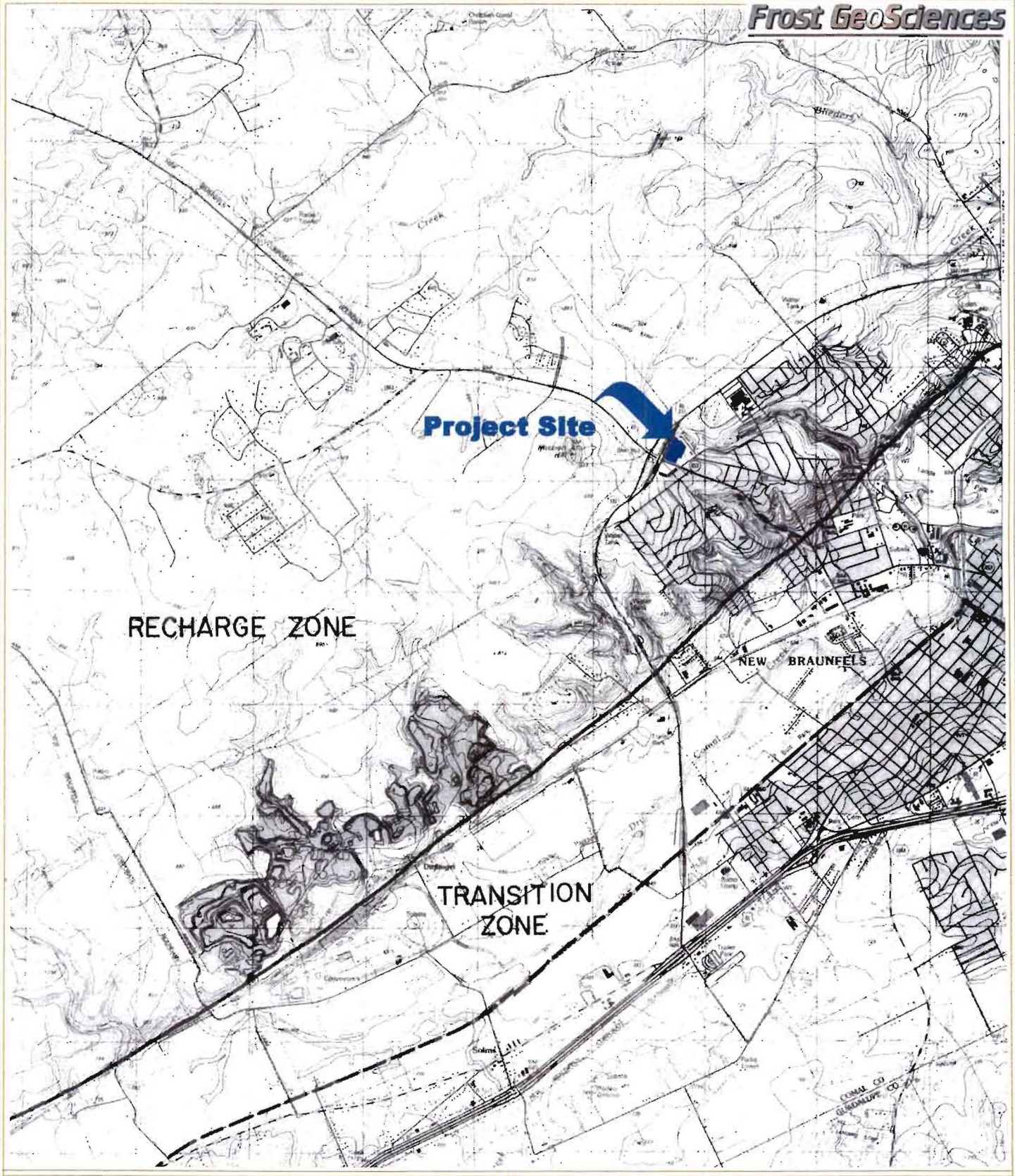
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
The Kirkwood Manor Nursing Home
New Braunfels, Texas

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

PROJECT NO.: FGS-04139

DATE: March 12, 2004

Frost GeoSciences



PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
The Kirkwood Manor Nursing Home
New Braunfels, Texas

Official Edwards Aquifer Recharge Zone Map
New Braunfels West, Texas Sheet 1988

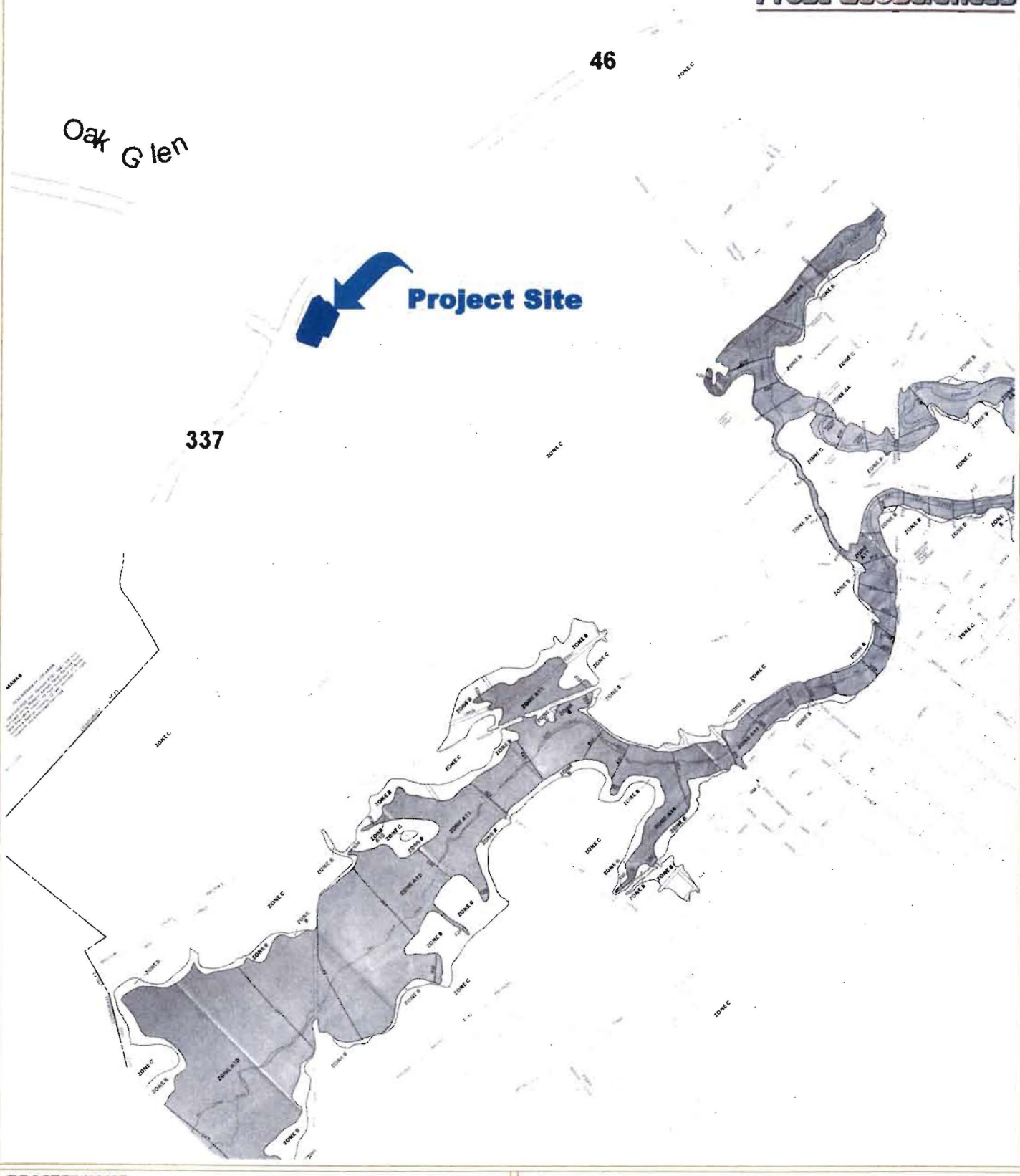
PROJECT NO.: FGS-04139

DATE: March 12, 2004

Geologic and Environmental Consulting

PLATE NO. 1d

Frost GeoSciences



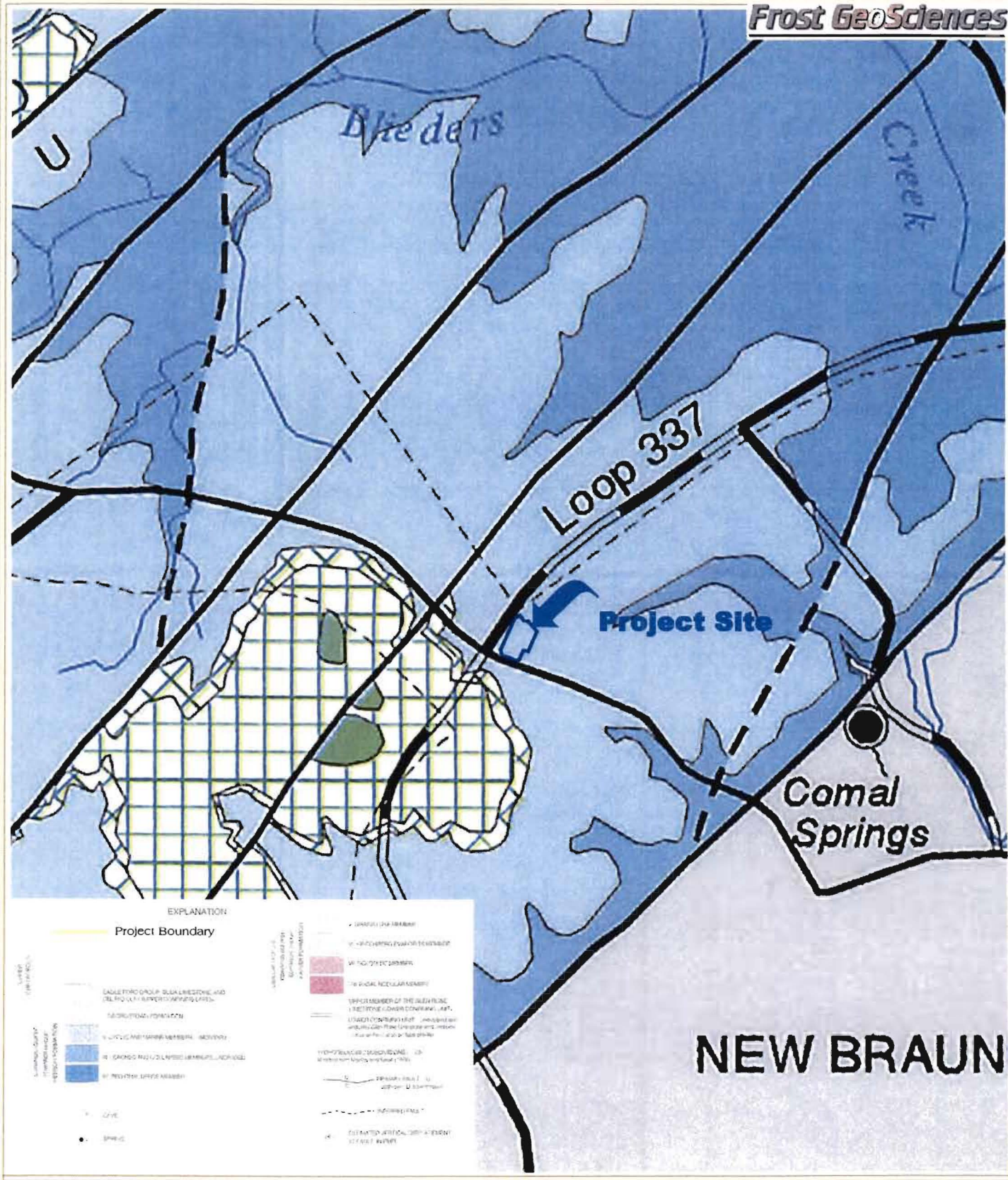
PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
The Kirkwood Manor Nursing Home
New Braunfels, Texas

Flood Insurance Rate Map (FIRM)
Community Panel
485493-0002C & 485493-0005D (5-15-91)

PROJECT NO.: FGS-04139

DATE: March 12, 2004

Frost GeoSciences



PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
The Kirkwood Manor Nursing Home
New Braunfels, Texas

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

PROJECT NO.: FGS-04139

DATE: March 12, 2004

PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
The Kirkwood Manor Nursing Home
New Braunfels, Texas

2003 Photograph
Landiscor Aerial Information

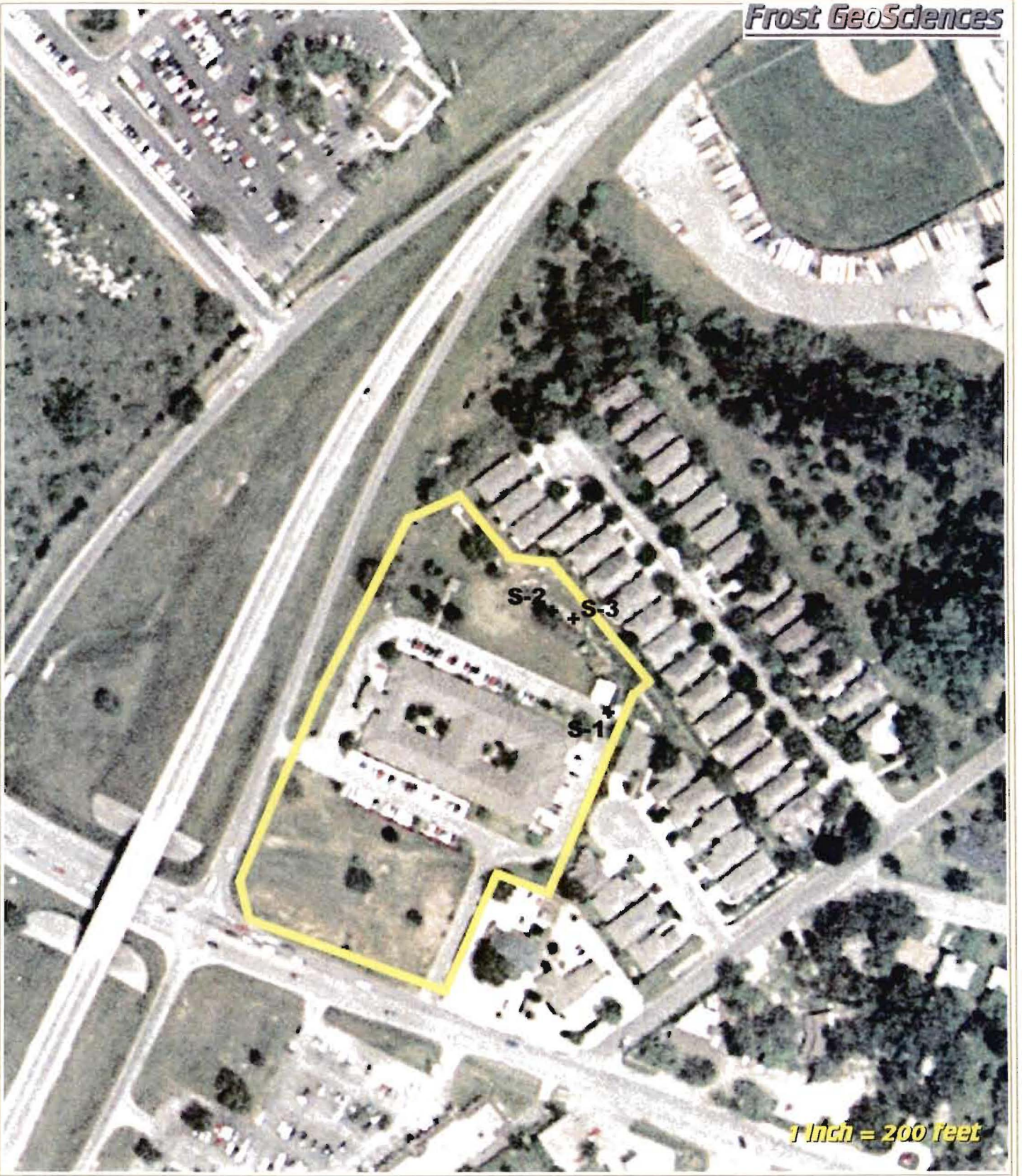
PROJECT NO.: FGS-04139

DATE: March 12, 2004

Geologic and Environmental Consulting

PLATE NO. 1g

Frost GeoSciences

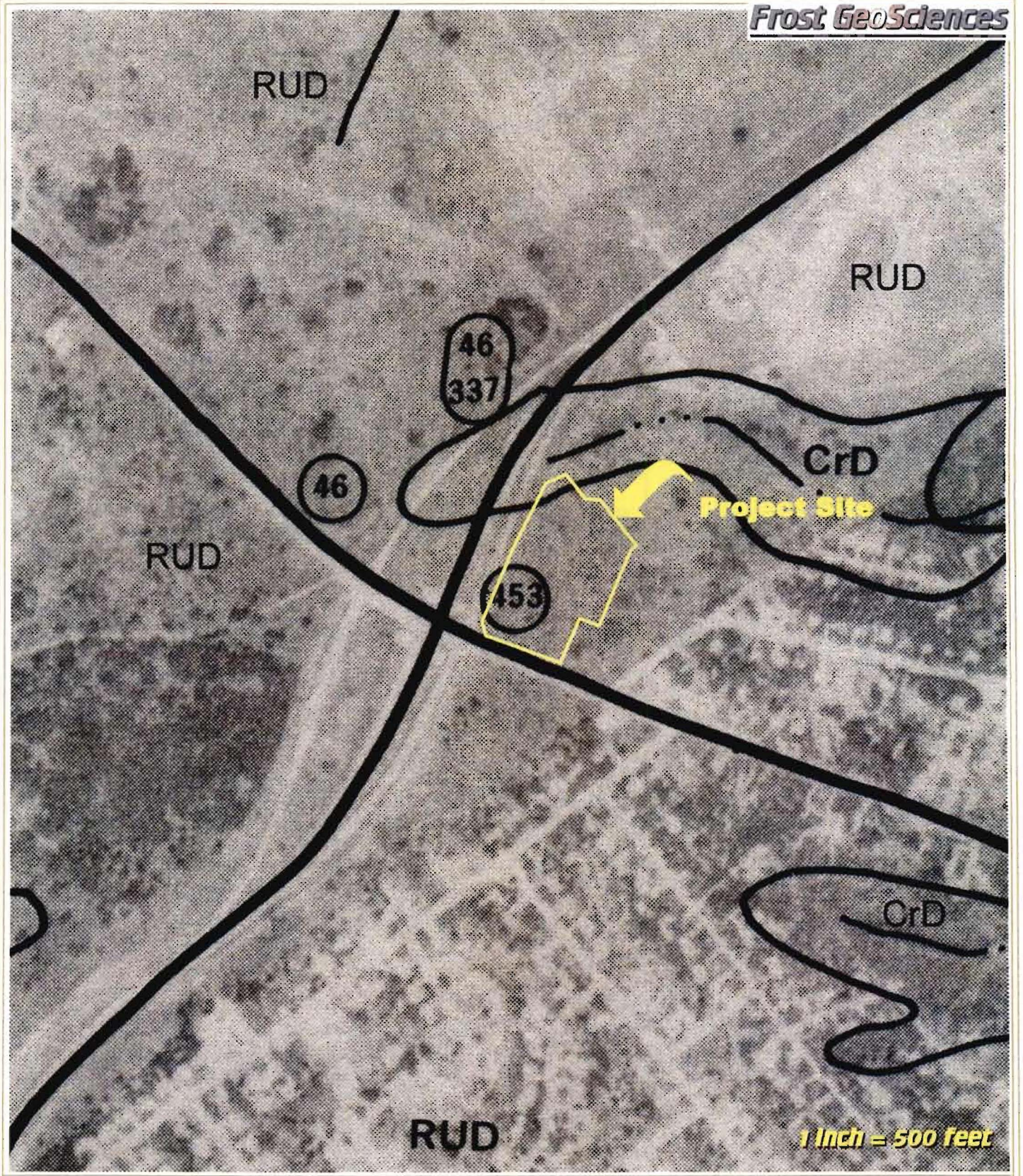


PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
The Kirkwood Manor Nursing Home
New Braunfels, Texas

2003 Photograph with PRF's
Landiscor Aerial Information

PROJECT NO.: FGS-04139

DATE: March 12, 2004

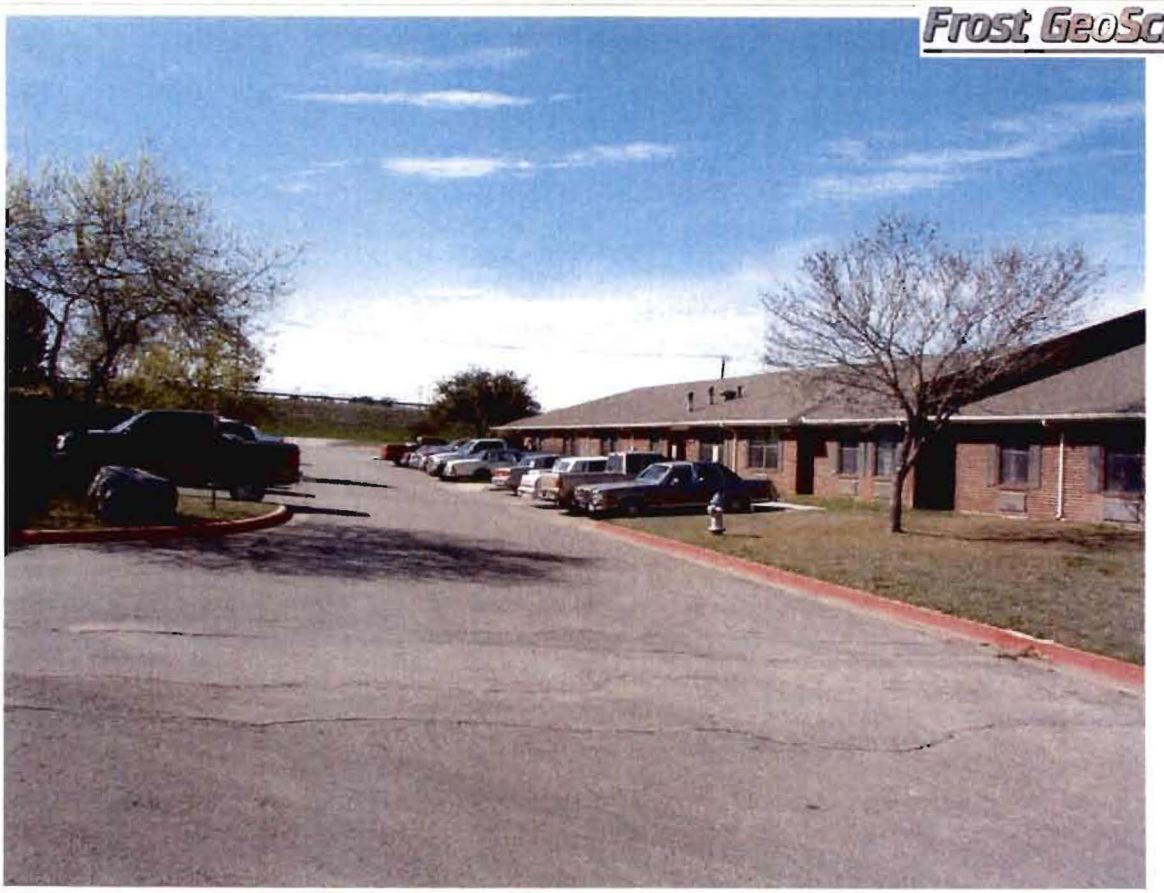


PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
The Kirkwood Manor Nursing Home
New Braunfels, Texas

1973 Photograph
U.S.D.A. Soil Survey of
Comal & Hays Counties, Texas

PROJECT NO.: FGS-03213

DATE: March 12, 2004



View of the southern end of the Kirkwood Nursing Home.

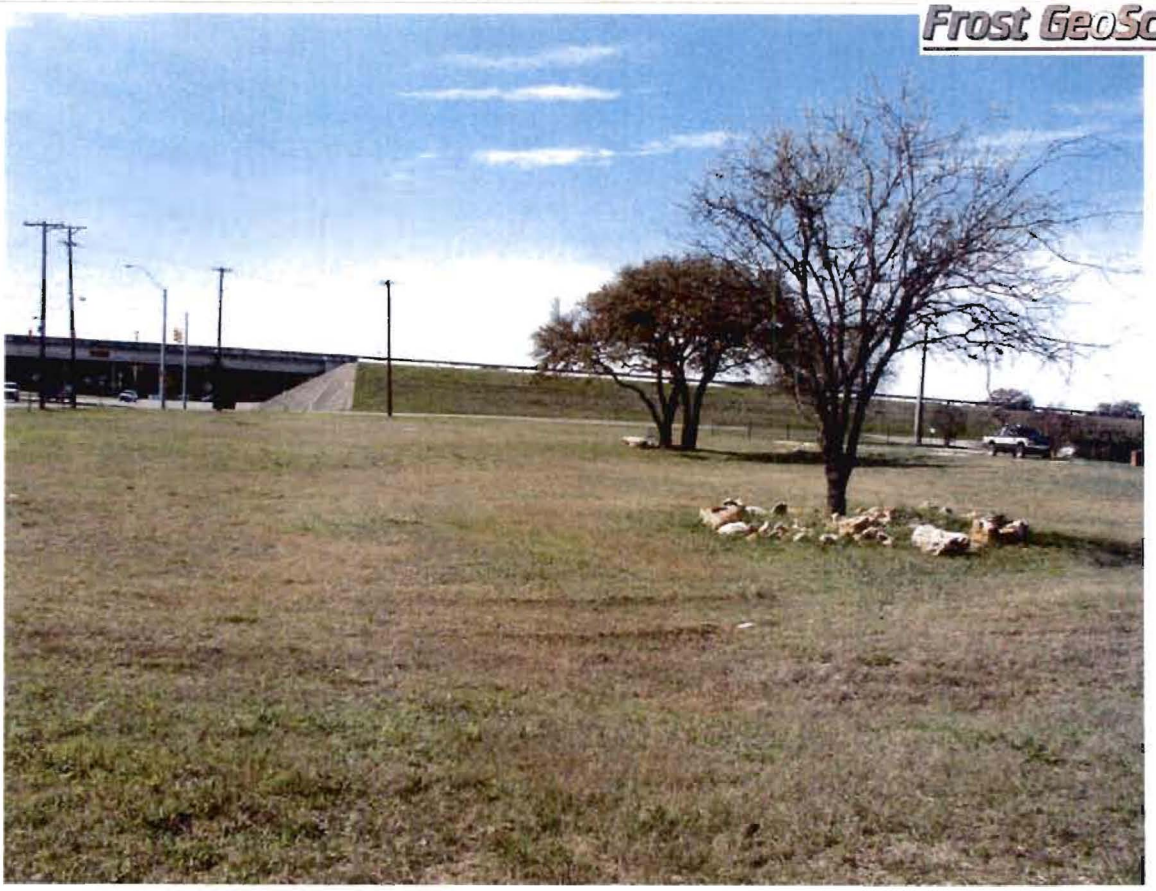
View of the northern end of the Kirkwood Nursing Home.

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

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

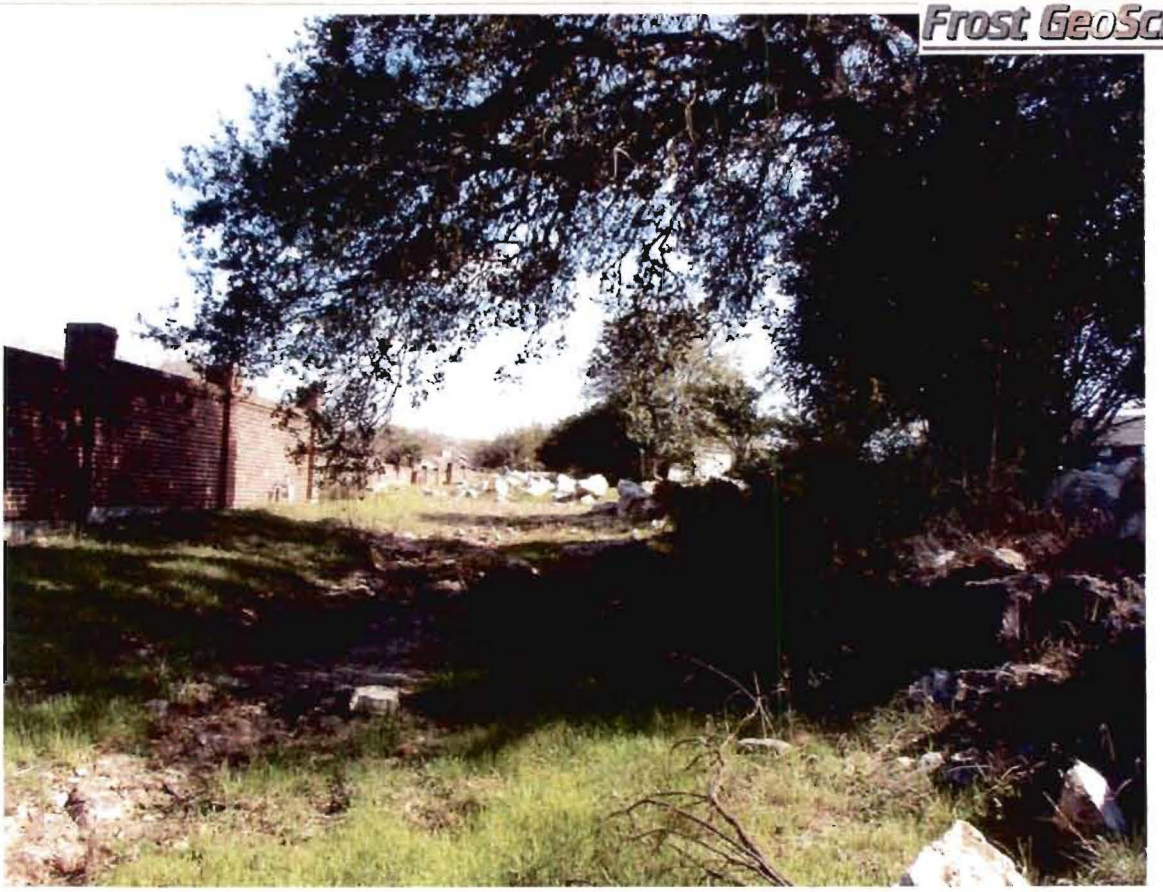
View to the east, of the project site along the southern property line adjacent to Walnut Avenue.

View to the north, of the project site along the western property line adjacent to Loop 337.



Typical view of vegetative cover in the southern portion of the project site.

Typical view of vegetative cover in the northern portion of the project site.

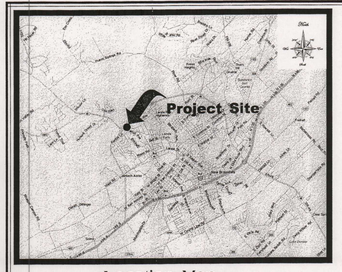


View to the southeast, of the project site along the northern property line.

View of Potential Recharge Feature # S-1.

View of Potential Recharge Feature # S-2.

View of Potential Recharge Feature # S-3.



Location Map

Loop 337
(State Hwy. No 46)

N. Walnut Avenue
(Business Hwy. No. 46)

LOT 1A
BLOCK 1
5.613 ACRES

KIRKWOOD MANOR NURSING HOME
ADDRESS: 2280 LOOP 337
FINISH FLOOR ELEV. = 836.60

Kep

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

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

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

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

Kep
SMF

Frost GeoSciences
Geologic and Environmental Consulting

Site Geologic Map

Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
for the
Kirkwood Manor Nursing Home
5.613 Acres
New Braunfels, Texas

Frost GeoSciences, Inc. Control # FGS-04139

Legend

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

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

Floodplain Information Obtained From
FIRM: Flood Insurance Rate Map
Comal County, Texas: Panel # 485493-0002, revised 5/15/91

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

Graphic Scale

30 0 15 30 60

(In Feet)

1 inch = 30 Feet
Representative Fraction 1:360

Contour Interval - 1 Foot

Modification of a Previously Approved Plan

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

1. Current Regulated Entity Name: Kirkwood Manor
Original Regulated Entity Name: _____
Assigned Regulated Entity Numbers (RN): 1) RN102751195, 2) _____, 3) _____

X The applicant has not changed and the Customer Number (CN) is: CN601402076
___ The applicant has changed. A new Core Data Form has been provided.

2. X **Attachment A: Original Approval Letter and Approved Modification Letters:** A copy of the original approval letter and copies any letters approving modification are found at the end of this form.

3. A modification of a previously approved plan in requested for (check all that apply):

___ physical or operational modification of any water pollution abatement structure(s) including but not limited to ponds, dams, berms, sewage treatment plants, and diversionary structures;
___ change in the nature or character of the regulated activity from that which was originally approved or a change which would significantly impact the ability of the plan to prevent pollution of the Edwards Aquifer;
X development of land previously identified as undeveloped in the original water pollution abatement plan;
___ physical modification of the approved organized sewage collection system;
___ physical modification of the approved underground storage tank system;
___ physical modification of the approved aboveground storage tank system.

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

WPAP Modification Summary	Approved Project	Proposed Modification
Acres	5.613	5.613
Type of Development	Commercial	Commercial
Number of Residential Lots	-	-
Impervious Cover (acres)	3.48	3.562
Impervious Cover (%)	0.62	0.63
Permanent BMPs	sedimentaiton/filtration basin	
Other		

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

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

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

5. X **Attachment B: Narrative of Proposed Modification**. A narrative description of the nature of the proposed modification is provided at the end of this form. It discusses what was approved, including previous modifications, and how this proposed modification will change the approved plan.

6. X **Attachment C: Current site plan of the approved project**. A current site plan showing the existing site development (i.e., current site layout) at the time this application for modification is provided at the end of this form. A site plan detailing the changes proposed in the submitted modification is required elsewhere.

___ The approved construction has not commenced. The original approval letter, and any subsequent modification approval letters are included as Attachment A to document that the approval has not expired.

X The approved construction has commenced and has been completed. Attachment C illustrates that the site was constructed as approved.

___ The approved construction has commenced and has been completed. Attachment C illustrates that the site was **not** constructed as approved.

___ The approved construction has commenced and has **not** been completed. Attachment C illustrates that, thus far, the site was constructed as approved.

___ The approved construction has commenced and has **not** been completed. Attachment C illustrates that, thus far, the site was **not** constructed as approved.

7. ___ The acreage of the approved plan has increased. A Geologic Assessment has been provided for the new acreage.

X Acreage has not been added to **or** removed from the approved plan.

8. X One (1) original and 3 copies of the complete application has been provided.

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

Mark B Hill, PE

Print Name of Customer/Agent

Mark B Hill

Signature of Customer/Agent

12/19/08

Date

ATTACHMENT A TO TCEQ-0590

ORIGINAL APPROVAL LETTER

200806044707 12/12/2008 02:16:12 PM ED WTR RGT 1/10

10/C

Deed Recordation Affidavit
Edwards Aquifer Protection Plan

THE STATE OF TEXAS §
County of Collin §

BEFORE ME, the undersigned authority, on this day personally appeared Thomas D. Scott who, being duly sworn by me, deposes and says:

(1) That my name is Thomas D. Scott and that I own the real property described below.

(2) That said real property is subject to an EDWARDS AQUIFER PROTECTION PLAN which was required under the 30 Texas Administrative Code (TAC) Chapter 213.

(3) That the EDWARDS AQUIFER PROTECTION PLAN for said real property was approved by the Texas Commission on Environmental Quality (TCEQ) on 6/18/1999.

A copy of the letter of approval from the TCEQ is attached to this affidavit as Exhibit A and is incorporated herein by reference.

(4) The said real property is located in Comal County, Texas, and the legal description of the property is as follows: 2590 Loop 337, unit 4, Kirkwood Commercial, Block 1, Lot 1A

LANDOWNER-AFFIANT

SWORN AND SUBSCRIBED TO before me, on this 4 day of December 2008

NOTARY PUBLIC

BECKY ALLEN
MY COMMISSION EXPIRES
May 15, 2011

THE STATE OF Texas §
County of Collin §

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

GIVEN under my hand and seal of office on this 4 day of Dec 2008

NOTARY PUBLIC

Becky Allen
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: May 15 2011

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

NAME OF PROPOSED REGULATED ENTITY: Kirkwood Manor
REGULATED ENTITY LOCATION: 2590 Loop 337, New Braunfels, TX 78130-8502
NAME OF CUSTOMER: Pinnacle Health Properties, LLC
CONTACT PERSON: _____ PHONE: _____
(Please Print)

Customer Reference Number (if issued): CN 601402076 (nine digits)

Regulated Entity Reference Number (if issued): RN 102751195 (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	5.613	Acres	$ 5,000.00
Sewage Collection System		L.F.	$
Lift Stations without sewer lines		Acres	$
Underground or Aboveground Storage Tank Facility		Tanks	$
Piping System(s)(only)		Each	$
Exception		Each	$
Extension of Time		Each	$

Signature _____ Date 12/4/08

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

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

I Thomas D. Scott
Print Name

President
Title - Owner/President/Other

of Preferred Care Health Facilities of Texas II, Inc.
Corporation/Partnership/Entity Name

have authorized Mark B Hill, P.E.
Print Name of Agent/Engineer

of Ford Engineering, Inc.
Print Name of Firm

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

I also understand that:

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

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

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

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

Applicant's Signature

12/4/08
Date

THE STATE OF TX §

County of Collin §

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

GIVEN under my hand and seal of office on this 4 day of Dec, 08.

BECKY ALLEN
MY COMMISSION EXPIRES
May 15, 2011

NOTARY PUBLIC

Becky Allen
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: May 15, 2011

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

June 18, 1999

Mr. Tom Scott
Manager
Pinnacle Health Properties I, LLC
2901 Dallas Parkway, #345, LB 15
Plano, TX 75093

Re: EDWARDS AQUIFER, Comal County
PROJECT: Kirkwood Manor Expansion, Project number 1281.00, Located on the northeast corner of Loop 337 & Hwy 46, New Braunfels, Texas
TYPE: Request for Approval of Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) §213.5(b); Edwards Aquifer Protection Program

Dear Mr. Scott:

The Texas Natural Resource Conservation Commission (TNRCC) has completed its review of the WPAP application for the referenced project that was submitted by Stephen E. Schultz of the Schultz Group on behalf of Pinnacle Health Properties I, LLC to the San Antonio Regional Office on May 6, 1999. Final review of the WPAP submittal was completed after additional material was received on May 10, 1999. The WPAP proposed in the application is in general compliance with 30 TAC § 213.5(b); therefore, approval of the plan is hereby granted subject to applicable state rules and the conditions in this approval letter. *This approval expires two (2) years from the date of this approval unless, prior to the expiration date, construction has commenced on the project or an extension of time has been requested.*

BACKGROUND

A water pollution abatement plan for the subject site was approved under 30 TAC 213.4(c) [formerly 31 TAC 313.3] by letter dated December 10, 1986. The existing building covers 0.94 acres. The existing parking covers 1.16 acres.

PROJECT DESCRIPTION

The proposed commercial project will have an area of 5.613 acres and will consist of the addition of one 27,095 square foot building and 0.79 acres of parking. Approximately 0.30 acres of existing

parking will be removed, and when complete, total parking will be 1.65 acres. Project wastewater from the existing and proposed buildings will be disposed of by conveyance to the existing Kuehler Sewage Treatment Plant owned by New Braunfels Utilities. The proposed impervious cover for the development is approximately 3.372 acres (60.05%). The site is located within the City of New Braunfels, and must conform with applicable codes and requirements of the City of New Braunfels.

GEOLOGY ON SITE

According to the geologic assessment included with the submittal, there are no geologic or manmade features located on the project site. The San Antonio Regional Office site inspection of June 10, 1999, revealed no additional features.

GEOLOGY DOWNGRADIENT OF SITE

According to the geologic assessment included with the submittal, no part of the area downgradient of the site is located within the 100-year floodplain. Therefore no downgradient geologic assessment was required.

PERMANENT POLLUTION ABATEMENT MEASURES

The following measure will be taken to prevent pollution of stormwater originating on-site or up-gradient from the project site and potentially flowing across and off the site after construction:

The full sedimentation/filtration basin is designed in accordance with the 1996 edition of the City of Austin Environmental Design Criteria Manual and is sized to capture the first ½-inch of stormwater run-off from 4.41 acres, providing a total capture volume of 9,000 cubic feet. The filtration system will consist of:

1. 690 square feet of sand, which is 18 inches thick,
2. an underdrain piping wrapped with geotextile membrane, and
3. an impervious liner.

SPECIAL CONDITIONS

1. If any potential sensitive features are encountered during construction, a geologist shall evaluate the significance of the features. The evaluation shall include representative photographs and a description of the feature forwarded to the San Antonio office.

Construction in the vicinity of the features may only continue with written approval from the TNRCC.

2. Placement of hydrocarbon or hazardous substance storage facilities regulated pursuant to 213.5(d) and 213.5(e), requires submittal of all appropriate applications with appropriate fees and must receive prior approval from the TNRCC.

3. The temporary and permanent best management practices (BMPs)for the proposed project have been reviewed by the Commission's staff. As presented to the TNRCC, the BMPs were designed by a Texas Licensed Professional Engineer to be in accordance with the requirements of 30 TAC §213.5(b). Therefore, based on the Texas Licensed Professional Engineer's certification of compliance, the planning materials for construction of the proposed pollution abatement measures are hereby approved.

4. The sedimentation/filtration basins are designed in accordance with the 1996 edition of the City of Austin Environmental Design Criteria Manual. The basins will incorporate sedimentation and filtration as described above.

5. All sediment and or media removed from the partial sedimentation/filtration basins during maintenance activities shall be properly disposed of according to 30 TAC 330 or 30 TAC 335 as applicable.

6. All permanent pollution abatement measures shall be operational prior to commencement of commercial operation.

7. The TNRCC may monitor stormwater discharges from the site to evaluate the adequacy of permanent erosion and sedimentation (E&S) control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

8. The solid waste on this site must be disposed of properly at an authorized facility. Copies of disposal records shall be submitted to the San Antonio regional office of the TNRCC within 14 days of disposal.

STANDARD CONDITIONS

1. During the course of regulated activities related to this project, the applicant or his agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until

such responsibility is legally transferred to another person or entity, upon which that person or entity shall assume responsibility for all provisions and conditions of this approval.

2. Any modification to the activities described in the referenced WPAP application following the date of approval may require the submittal of a WPAP to amend this approval, including the payment of appropriate fees and all information necessary for its review and approval.

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

4. The applicant or his agent shall record this WPAP approval in the county deed records within 30 days of receiving this notice of approval. Proof of deed recordation shall be submitted to the San Antonio Regional Office prior to commencing construction. A suggested format that you may use to deed record the approved WPAP is enclosed.

5. All contractors conducting regulated activities at the 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. 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 TNRCC may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

7. If any significant recharge feature [sensitive feature] 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 potential adverse impacts to water quality.

8. 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.

9. Approval of the design of the sewage collection system for this proposed project shall be obtained from the TNRCC prior to commencement of construction of any sewage collection system.

10. Five wells exist on the site. Any abandoned wells shall be plugged in accordance with 16 TAC §76 or an equivalent method, as approved by the Executive Director.

    Any drill holes resulting from core sampling on-site or down-gradient of the site shall be plugged with native soil, from the bottom of the hole to the top of the hole, so as to not allow water or contaminants to enter the subsurface environment.

11. Pursuant to §26.136 of the Texas Water Code, any violations of the requirements in 30 TAC §213 may result in administrative penalties.

Should clarification of this letter be desired or if we may be of any other assistance, please contact John Mauser of our San Antonio Regional office at 210/403-4024. Please reference project number 1281.

Sincerely,

Jeffrey A. Saitas, P.E.
Executive Director
Texas Natural Resource Conservation Commission

JAS/JKM/eg

Enclosure: Deed Recordation Affidavit

cc: Stephen Schultz, The Schultz Group
Harry Bennett, City of New Braunfels
John Bohuslav, TxDot San Antonio District
Tom Hornseth, Comal County
Greg Ellis, Edwards Aquifer Authority
TNRCC Field Operations, Austin

Filed and Recorded
Official Public Records
Joy Streater, County Clerk
Comal County, Texas
12/12/2008 02:16:12 PM
CASHONE
200806044707

Joy Streater

200806044708 12/12/2008 02:16:13 PM ED WTR RGT 1/11

11/C

Deed Recordation Affidavit
Edwards Aquifer Protection Plan

THE STATE OF TEXAS §
County of Collin §

BEFORE ME, the undersigned authority, on this day personally appeared Thomas D Scott who, being duly sworn by me, deposes and says:

(1) That my name is Thomas D. Scott and that I own the real property described below.

(2) That said real property is subject to an EDWARDS AQUIFER PROTECTION PLAN which was required under the 30 Texas Administrative Code (TAC) Chapter 213.

(3) That the EDWARDS AQUIFER PROTECTION PLAN for said real property was approved by the Texas Commission on Environmental Quality (TCEQ) on 7/27/2004.

A copy of the letter of approval from the TCEQ is attached to this affidavit as Exhibit A and is incorporated herein by reference.

(4) The said real property is located in Comal County, Texas, and the legal description of the property is as follows: 2590 Loop 337, unit 4, Kirkwood Commercial, Block 1, Lot 1A.

LANDOWNER-AFFIANT

SWORN AND SUBSCRIBED TO before me, on this 4 day of December 2008

NOTARY PUBLIC

BECKY ALLEN
MY COMMISSION EXPIRES
May 15, 2011

THE STATE OF Texas §
County of Collin §

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

GIVEN under my hand and seal of office on this 4 day of Dec 2008

NOTARY PUBLIC

Becky Allen
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: May 15 2011

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

NAME OF PROPOSED REGULATED ENTITY: Kirkwood Manor
REGULATED ENTITY LOCATION: 2590 Loop 337, New Braunfels, TX 78130-8502
NAME OF CUSTOMER: Pinnacle Health Properties, LLC
CONTACT PERSON: _____ PHONE: _____
(Please Print)

Customer Reference Number (if issued): CN 601402076 (nine digits)

Regulated Entity Reference Number (if issued): RN 102751195 (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	5.613	Acres	$ 5,000.00
Sewage Collection System		L.F.	$
Lift Stations without sewer lines		Acres	$
Underground or Aboveground Storage Tank Facility		Tanks	$
Piping System(s)(only)		Each	$
Exception		Each	$
Extension of Time		Each	$

Signature _____ Date 12/4/08

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

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

I Thomas D. Scott
Print Name

President
Title - Owner/President/Other

of Preferred Care Health Facilities of Texas II, Inc.
Corporation/Partnership/Entity Name

have authorized Mark B Hill, P.E.
Print Name of Agent/Engineer

of Ford Engineering, Inc.
Print Name of Firm

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

I also understand that:

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

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

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

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

Applicant's Signature — Date: 12/4/08

THE STATE OF TX §

County of Collin §

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

GIVEN under my hand and seal of office on this 4 day of Dec. 08

BECKY ALLEN
MY COMMISSION EXPIRES
May 15, 2011

NOTARY PUBLIC

Becky Allen
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: May 15, 2011

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

July 27, 2004

Mr. Tom Scott, Manager
Pinnacle Health Properties I, LLC
LB 15
2901 Dallas Parkway, Ste 345
Plano, TX 75093

Re: EDWARDS AQUIFER, Comal County
PROJECT: Kirkwood Manor Expansion, Located on the northeast corner of 2950 Loop 337, New Braunfels, Texas
TYPE: Request for Approval of Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) §213.5(b); Edwards Aquifer Protection Program Project No. 1281.02, RN102751195

Dear Mr. Scott:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the WPAP application for the referenced project that was submitted by Ford Engineering, Inc. on behalf of Pinnacle Health Properties I, LLC to the San Antonio Regional Office on April 28, 2004. Final review of the WPAP submittal was completed after additional material was received on July 26, 2004. The WPAP proposed in the application is in general compliance with 30 TAC § 213.5(b); therefore, approval of the plan is hereby granted subject to applicable state rules and the conditions in this approval letter. *This approval expires two (2) years from the date of this approval unless, prior to the expiration date, construction has commenced on the project or an extension of time has been requested.*

BACKGROUND

A water pollution abatement plan for the subject site was approved under 30 TAC 213.4(c) [formerly 31 TAC 313.3] by letter dated December 10, 1986. The existing building covers 0.94 acres. The existing parking covers 1.16 acres. By letter dated June 18, 1999, a modification to the WPAP was approved. The current application was submitted because the modification was not constructed and the two year term of approval expired on June 18, 2001.

The subject site is 5.613 acres with 2.271 acres of existing impervious cover that pre-dates the requirement of treating stormwater runoff.

PROJECT DESCRIPTION

The proposed commercial project will have an area of 5.613 acres and will consist of 1.69 acres of new impervious cover (expansion of existing assisted living building, sidewalks, driveways and associated

parking). Approximately 0.506 acres of existing parking will be removed, and when complete, net increase in impervious cover will 1.184 acres (21.09%). Project wastewater from the existing and proposed buildings will be disposed of by conveyance to the existing Kuehler Sewage Treatment Plant owned by New Braunfels Utilities. The total impervious cover for the project site will be approximately 3.455 acres (57.2%). The site is located within the City of New Braunfels, and must conform with applicable codes and requirements of the City of New Braunfels.

GEOLOGY ON SITE

According to the geologic assessment included with the submittal, there are three geologic or manmade features located on the project site. All features were assessed as not sensitive. The San Antonio Regional Office did not conduct a site investigation.

PERMANENT POLLUTION ABATEMENT MEASURES

The permanent stormwater treatment measures are sized to capture and treat runoff from 1.49 acres of impervious cover. The following measures will be taken to prevent pollution of stormwater originating on-site or up-gradient from the project site and potentially flowing across and off the site after construction:

Watershed A. The partial sedimentation/filtration basin is designed in accordance with the 1999 edition of the TNRCC's "Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices," and is sized to capture the first 0.15 inches of stormwater run-off from 0.894 acres, providing a total capture volume of 1,834 cubic feet. The filtration system will consist of:

1. 206 square feet of sand, which is 18 inches thick,
2. an underdrain piping wrapped with geotextile membrane, and
3. an impervious liner.

Watershed B. The partial sedimentation/filtration basin is designed in accordance with the 1999 edition of the TNRCC's "Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices," and is sized to capture the first 0.15 inches of stormwater run-off from 0.596 acres, providing a total capture volume of 1,223 cubic feet. The filtration system will consist of:

1. 136 square feet of sand, which is 18 inches thick,
2. an underdrain piping wrapped with geotextile membrane, and
3. an impervious liner.

The approved measures were presented to meet the required 80 percent removal of the increased load in total suspended solids caused by the project. One on-site stormwater detention basin will also be constructed.

SPECIAL CONDITIONS

1. The sedimentation/filtration basins are designed in accordance with the 1999 edition of the TNRCC's "Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices." The basins will incorporate sedimentation and filtration as described above.

2. All sediment and or media removed from the partial sedimentation/filtration basins during maintenance activities shall be properly disposed of according to 30 TAC 330 or 30 TAC 335 as applicable.

3. All permanent pollution abatement measures shall be operational prior to commencement of commercial operation in the approved building addition.

4. Intentional discharges of sediment laden stormwater during construction are not allowed. If dewatering of excavated areas becomes necessary, the discharge will be filtered through appropriately selected temporary best management practices. These may include vegetative filter strips, sediment traps, rock berms, silt fence rings, etc.

STANDARD CONDITIONS

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

Prior to Commencement of Construction:

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

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

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

5. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the San Antonio Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the date on which the regulated activity will commence, the name of the approved plan and file number for the regulated activity, and the name of the prime contractor with the name and telephone number of the contact person.

The executive director will use the notification to determine if the approved plan is eligible for an extension.

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

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:

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

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

10. According to the Geologic Assessment submitted with the 1999 WPAP, there are five test borings on the site. All water wells, including injection, dewatering, and monitoring wells must be in compliance with the requirements of the Texas Department of Licensing and Regulation under Title 16 TAC Chapter 76 (relating to Water Well Drillers and Pump Installers) and all other locally applicable rules, as appropriate.

11. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has

been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.

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

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

After Completion of Construction:

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

15. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner 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.

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

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

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

If additional clarification of this letter be desired or if we may be of any other assistance, please contact [illegible] of our San Antonio Regional office at 210/403-4024. Please reference project number [illegible].

Sincerely,

John Steib
Deputy Director of Compliance & Enforcement Division
Texas Commission on Environmental Quality

[illegible]/eg

Enclosure: Deed Recordation Affidavit

cc: Lawrence Dublin, P.E., Ford Engineering Inc.
Michael Short, City of New Braunfels
Tom Hornseth, Comal County
Greg Ellis, Edwards Aquifer Authority
TCEQ Central Records, MC 212

Filed and Recorded
Official Public Records
Joy Streater, County Clerk
Comal County, Texas
12/12/2008 02:18:13 PM
CASHONE
200806044708

Joy Streater

ATTACHMENT B TO TCEQ-0590

NARRATIVE OF PROPOSED MODIFICATION

In the original WPAP for the Kirkwood Manor Skilled Nursing Facility, two sedimentation/filtration basins were constructed on the east boundary of the site. The two basins were constructed to treat the runoff from and additional wing added to the original building and associated parking area improvements.

The owner wishes to add 21 more parking spaces to the site. Of those 16 spaces are in an area previously considered undeveloped.

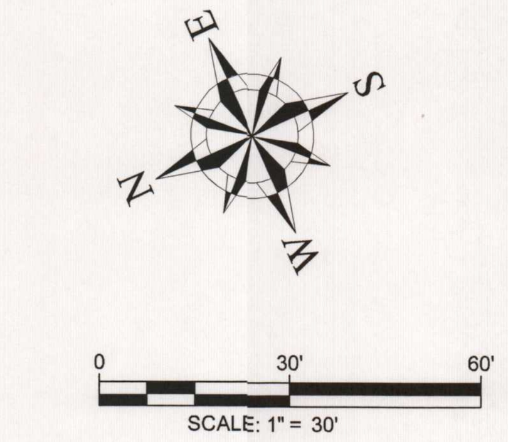
The new parking stalls will contribute to Basin 1. This is an increased required storage of 412 cu-ft for a total of 2613 cu-ft which is still less than the capacity of Basin 1, 2620 cu-ft. It is also an increased required sand filtration area of 23 sf for a total of 229 sf which is still less than the capacity of Basin 1, 243 sf.

Basin 1 has sufficient capacity to accommodate the additional required load due to the addition of 21 parking stalls. No changes will be made to the basin.

ATTACHMENT C TO TCEQ-0590

SITE PLAN

Site Plan Indicating Areas For New Parking



KIRKWOOD MANOR NURSING & REHAB

ADDITIONAL PARKING LAYOUT SITE PLAN

OWNER PROPOSES A TOTAL OF 21 NEW PARKING STALLS. NEW STALLS TO MATCH EXISTING 18'X9' PARKING STALLS.

APPROXIMATE ADDITIONAL IMPERVIOUS AREA = 3,402 ft² (0.078 ac)

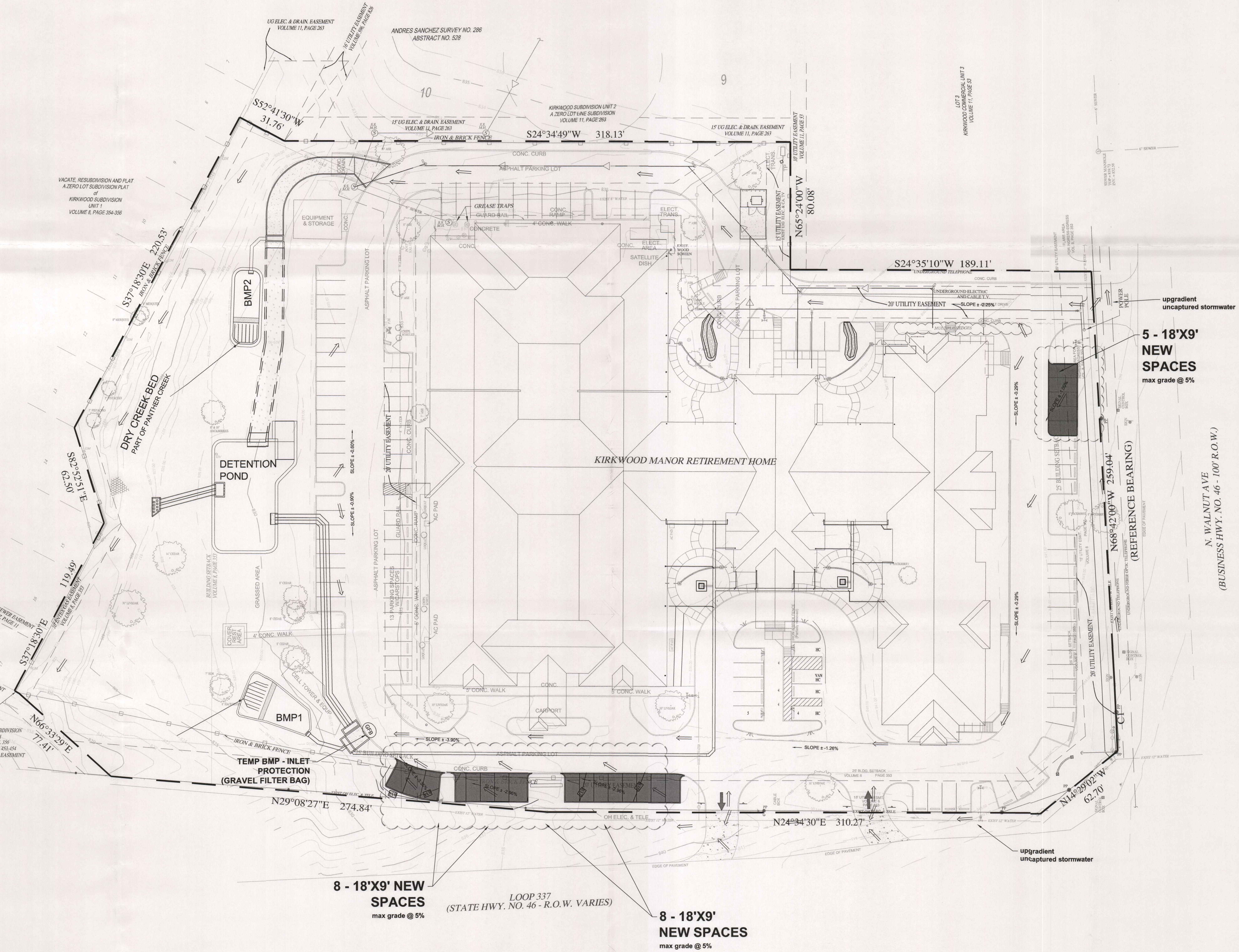
TOTAL SITE = 5.613 ac

THE SITE IS NOT LOCATED WITHIN A FEMA DESIGNATED 100-YEAR FLOOD HAZARD AREA PER FEMA dFIRM PANEL 4854930013E, January 5, 2006

SITE HAS NO EXISTING WELL

SITE HAS NO SENSITIVE FEATURES IDENTIFIED ON THE GEOLOGIC ASSESSMENT

840	EXIST CONTOUR
840	PROP CONTOUR
GFB	GRAVEL FILTER BAG
⟸	DRAINAGE PATTERN ARROW
■	AREA DISTURBED BY CONSTRUCTION (any area disturbed by construction activities that is not indicated on this site plan will be immediately revegetated with like vegetation to stabilize the soil)



TCEQ-0592 (Rev. 3/15/07)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

FORD ENGINEERING, INC.

FEI PROJECT 2240.02

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: Kirkwood Manor

REGULATED ENTITY INFORMATION

1. The type of project is:
   - ___ Residential: # of Lots: ___
   - ___ Residential: # of Living Unit Equivalents: ___
   - X Commercial
   - ___ Industrial
   - ___ Other: _____

2. Total site acreage (size of property): 5.613

3. Projected population: 212

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	70,567	÷ 43,560 =	1.62
Parking	72,663	÷ 43,560 =	1.67
Other paved surfaces	11,761	÷ 43,560 =	0.27
Total Impervious Cover	154,991	÷ 43,560 =	3.56
Total Impervious Cover ÷ Total Acreage x 100 =			63 %

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:
100 % Domestic 16,700 gallons/day
___ % Industrial _____ gallons/day
___ % Commingled _____ gallons/day

TOTAL 16,700 gallons/day

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.

__ 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 Kuehler WWTP (name) Treatment Plant. The treatment facility is :

X existing.

__ proposed.

16. NA 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" = 30 '.

18. 100-year floodplain boundaries

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

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

The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s):
FEMA dFIRM Panel 4854930013E, January 5, 2006

19. __ 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.

X 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.):

X There are 0 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply)

X 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.

__ 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. N/A Surface waters (including wetlands).

27. ___ Locations where stormwater discharges to surface water or sensitive features.
X 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:

Mark B Hill, P.E.
Print Name of Customer/Agent

Mark B Hill
Signature of Customer/Agent

12/19/05
Date

ATTACHMENT A TO TCEQ-0584

FACTORS AFFECTING WATER QUALITY

DURING CONSTRUCTION

- Vehicle maintenance operations
- Excavation and grading
- Paving
- Human generated debris
- Construction trash and debris
- Application of excessive fertilizers, herbicides, and pesticides

POST CONSTRUCTION

- Debris and contaminants tracked on site by vehicles
- Human generated debris
- Application of excessive fertilizers, herbicides, and pesticides
- Unusually heavy rainfall events

ATTACHMENT B TO TCEQ FORM 0584

Kirkwood Manor Addition - Hydrology

Area

Total Site 5.613 ac.

Existing Site		C
1.62 ac.	building	0.95
1.86 ac.	asphalt/walk	0.85
2.133 ac.	undeveloped	0.35
	Exist Rational Coefficient	0.69

Proposed Site		
1.62 ac.	building	0.95
1.94 ac.	asphalt/walk	0.85
2.053 ac.	undeveloped	0.35
	Prop Rational Coefficient	0.70

Total Area	**Approximate Rational Coefficient**
5.613 ac.	**0.70**

Rational coefficient adjustment factors

Recurrence Interval	Factor
2-10yr	1
25yr	1.1
50yr	1.2
100yr	1.25

Time of Concentration

Shallow concentrated flow 530 l.f. @ 1.9% ave. slope @ 2.8 fps

Tc 3.2 min

3.2 < 10 min, so use Tc: **10 minutes**

Rainfall Intensity for Comal County

Q=fCiA

Recurrence Interval	Intensity	Estimated Runoff		%Increase	Detention, cfs
2yr	4.96 in/hr	Q2	19.38 cfs	13%	0.20
5yr	6.65 in/hr	Q5	25.98 cfs	13%	0.27
10yr	7.57 in/hr	Q10	29.57 cfs	13%	0.30
25yr	9.07 in/hr	**Q25**	**38.98 cfs**	13%	0.40
50yr	10.39 in/hr	Q50	48.71 cfs	13%	0.50
100yr	11.9 in/hr	Q100	58.11 cfs	13%	0.60

Kirkwood Manor Addition

Area

Total Site 5.613 ac.

Existing Site		Approximate Rational Coefficient	
1.62 ac.	building	0.95	1.539
1.86 ac.	asphalt/walk	0.85	1.581
2.133 ac.	landscaped	0.35	0.74655
Total Area		**Approximate Rational Coefficient**	
5.613 ac.		**0.69**	

Rational coefficient adjustment factors

Recurrence Interval	Factor
2-10yr	1
25yr	1.1
50yr	1.2
100yr	1.25

Time of Concentration

Shallow concentrated flow 530 l.f. @ 1.9% ave. slope @ 2.8 fps

Tc 8 min

3.2 < 10 min, so use Tc: **10 minutes**

Rainfall Intensity for Comal County

Recurrence Interval	Intensity	
2yr	4.96	in/hr
5yr	6.65	in/hr
10yr	7.57	in/hr
25yr	9.07	in/hr
50yr	10.39	in/hr
100yr	11.9	in/hr

Estimated Runoff for Site

Q2	19.18	cfs
Q5	25.71	cfs
Q10	29.27	cfs
Q25	**38.58**	**cfs**
Q50	48.21	cfs
Q100	57.51	cfs

Temporary Stormwater Section

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

REGULATED ENTITY NAME: Kirkwood Manor

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. X **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.

   ___ The are no other potential sources of contamination.

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: PANTHER CANYON

TEMPORARY BEST MANAGEMENT PRACTICES (TBMPs)

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

7. X **ATTACHMENT D - Temporary Best Management Practices and Measures.** A description of the TBMPs and measures that will be used during and after construction are provided at the end of this form. For each activity listed in the sequence of construction, include appropriate control measures and the general timing (or sequence) during the construction process that the measures will be implemented.

X TBMPs and measures will prevent pollution of surface water, groundwater, and stormwater. The construction-phase BMPs for erosion and sediment controls have been designed to retain sediment on site to the extent practicable. The following information has been provided in the attachment at the end of this form

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

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

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

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

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

__ **ATTACHMENT E - Request to Temporarily Seal a Feature.** A request to temporarily seal a feature is provided at the end of this form. The request includes justification as to why no reasonable and practicable alternative exists for each feature.

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

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

10. X **ATTACHMENT G - Drainage Area Map**. A drainage area map is provided at the end of this form to support the following requirements.

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

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

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

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

11. n/a **ATTACHMENT H - Temporary Sediment Pond(s) Plans and Calculations.** Temporary sediment pond or basin construction plans and design calculations for a proposed temporary BMP or measure has been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information must be signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed temporary BMPs and measures are provided as at the end of this form.

12. X **ATTACHMENT I - Inspection and Maintenance for BMPs.** A plan for the inspection of temporary BMPs and measures and for their timely maintenance, repair, and, if necessary, retrofit is provided at the end of this form. A description of documentation procedures and recordkeeping practices is included in the plan.

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

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

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

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

SOIL STABILIZATION PRACTICES

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

17. X **ATTACHMENT J - Schedule of Interim and Permanent Soil Stabilization Practices.** A schedule of the interim and permanent soil stabilization practices for the site is attached at the end of this form.

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

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

ADMINISTRATIVE INFORMATION

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

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

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

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the 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:

Mark B Hill P.E.

Print Name of Customer/Agent

Mark B Hill

Signature of Customer/Agent

12/19/08

Date

ATTACHMENT A TO TCEQ-0602

SPILL RESPONSE ACTIONS
Site Specific:
In order to respond to the event of accidental spills of hazardous materials or hydrocarbons, the contractor will be required to maintain stockpile of sand material in the construction staging area, sized according to the capacity of fuel or oil trucks/reservoirs used for the project. This sand material will be used to provide dikes to contain large spills and to provide an adsorbent material that can be disposed of off the Recharge Zone after the clean up process. The contractor will be required to notify the owner, who will in turn notify the TCEQ in the event of a spill. All contaminated material caused by a spill will be removed from the project and disposed of in accordance with applicable regulations off of the Recharge Zone.

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

ATTACHMENT B TO TCEQ-0602

POTENTIAL SOURCES OF CONTAMINATION

A. Oil, grease, fuel and hydraulic fluid contamination from construction equipment and vehicle leakage. Remedy: Lubrication and fueling will be performed in a designated area in the staging area. This area will be monitored daily for contamination.

B. Miscellaneous trash and litter from construction workers.
Remedy: Designated receptacles will be strategically located and workers will be directed to deposit trash there.

C. Construction debris.
Remedy: Debris will be collected weekly and deposited in bins for offsite disposal. Situations requiring immediate attention will be handled on a case by case basis.

D. Storm water contamination from excess application of fertilizers, herbicides, and pesticides.
Remedy: Fertilizers, herbicides, and pesticides will only be applied when necessary and in accordance with the manufacturers recommendations.

ATTACHMENT C TO TCEQ-0602

SEQUENCE OF MAJOR ACTIVITIES

A. Install pollution prevention measures.

B. Stripping of top soil and grading for parking stalls.
(0.078 acres to be disturbed)

C. Construction Parking stalls

D. Clean-up and removal of temporary BMP

ATTACHMENT D TO TCEQ-0602

TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

Upgradient:
No upgradient due to bar ditches.

Onsite:
Bagged Gravel Curb Inlet Protection will be installed at the inlet that catches the runoff contributing to Basin 1, located on the east side of the property.

The proposed activities and the use of the Bagged Gravel Curb Inlet Protection will not alter the stormwater runoff flows to any naturally-occurring sensitive features identified in the geologic assessment.

Regular maintenance, as provided for in Attachment I, will be performed during the construction period.

Surface Steams/Sensitive Features:
No surface stream/sensitive features onsite. The existing BMP (sand filtration basins) will continue to provide treatment for downstream features.

The flow to sensitive features will not be effected.

ATTACHMENT E TO TCEQ-0602

REQUEST TO TEMPORARILY SEAL A FEATURE

NOT USED

ATTACHMENT F TO TCEQ-0602

Structural Practices

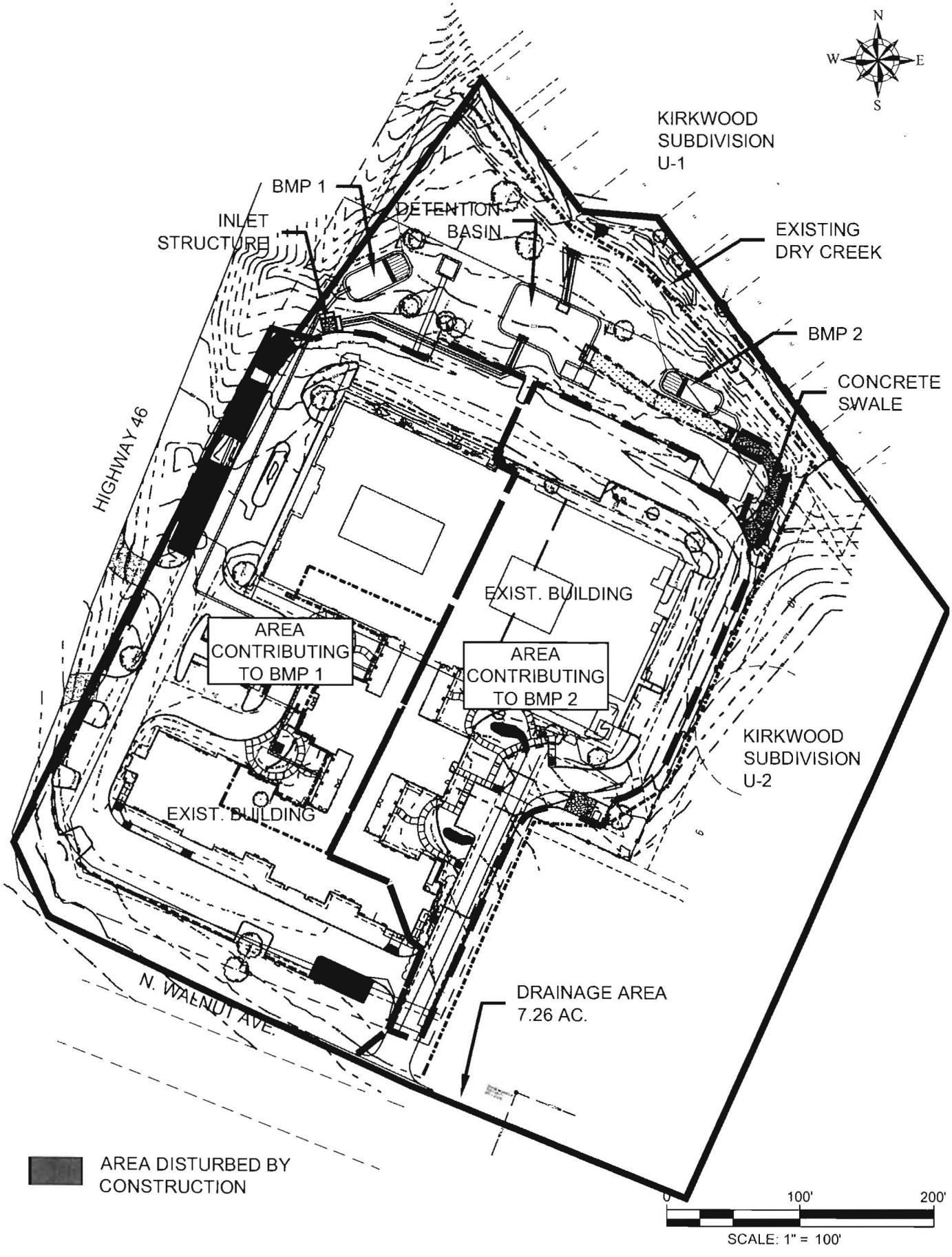
The development of the site would eliminate flows across exposed soils, other than the rainfall directly on the area of the exposed soil. Once the new parking stalls are in place, the relatively small area of disturbance would not be expected to result in significant amounts of pollutant discharge that could not be adequately handled by the silt fencing.

There will be no placement of structural practices in flood plains

ATTACHMENT G TO TCEQ-0602

DRAINAGE AREA MAP

DRAINAGE AREA MAP



ATTACHMENT H TO TCEQ-0602

TEMPORARY SEDIMENT POND(S) PLANS AND CALCULATIONS

NOT USED

ATTACHMENT I TO TCEQ-0602

INSPECTION AND MAINTENANCE FOR BMPs

CURB INLET PROTECTION

(1) Inspection should be made weekly and after each rainfall. Repair or replacement of Bagged Gravel Inlet Protection should be made promptly as needed by the contractor. Use inspection form below. Maintain record of inspection with onsite copy of WPAP.

(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 gravel filter bags, and replaces as necessary.

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

INSPECTION REPORT

Prevention Measure Pollution	INSPECTED IN COMPLIANCE	Corrective Action Required	
		Description (Use additional sheet if required)	Date Completed
Best Management Practices			
Natural vegetation buffer strip			
Temporary vegetation			
Permanent vegetation			
Sediment control basin			
Silt fences			
Rock berms			
Gravel filter bags			
Drain inlet protection			
Other structural controls			
Vehicle exits (off-site tracking)			
Material storage areas			
Equipment areas (leaks, spills)			
Concrete washout pit (leaks, failure)			
General site cleanliness			
Trash receptacles			
Evidence of Erosion			
Site preparation			
Roadway or parking lot construction			
Drainage construction			
Utility construction			
Building construction			
Landscaping activities			
Major Observations			
Sediment discharges from site			
BMP's requiring maintenance			
BMP's requiring modification			
Additional BMP's required			

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

"I further certify I am an authorized signatory in accordance with the provisions of 30 TAC §305.128"

Inspector's Name | Inspector's Signature | Date

Name of Owner/Operator (Firm) | Authorized Signature | Date

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

ATTACHMENT J TO TCEQ-0602

SCHEDULE OF INTERIM AND PERMINANT SOIL STABILIZATION PRACTICES

1. Existing areas that are disturbed will receive the treatment to replace vegetation lost during construction.

2. 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 the site. In areas experiencing droughts where the initiation of the 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.

3. Daily records will be kept, detailing among other things, beginning of major grading operations, cessation of construction, either temporary or permanent, and dates when stabilization measures are implemented.

4. It is not anticipated that interim soil stabilization practices will be required.

5. See following page for inspection report

Inspection Report

Prevention Measure Pollution	INSPECTED IN COMPLIANCE	Corrective Action Required	
		Description (Use additional sheet if required)	Date Completed
Best Management Practices			
Natural vegetation buffer strip			
Temporary vegetation			
Permanent vegetation			
Sediment control basin			
Silt fences			
Rock berms			
Gravel filter bags			
Drain inlet protection			
Other structural controls			
Vehicle exits (off-site tracking)			
Material storage areas			
Equipment areas (leaks, spills)			
Concrete washout pit (leaks, failure)			
General site cleanliness			
Trash receptacles			
Evidence of Erosion			
Site preparation			
Roadway or parking lot construction			
Drainage construction			
Utility construction			
Building construction			
Landscaping activities			
Major Observations			
Sediment discharges from site			
BMP's requiring maintenance			
BMP's requiring modification			
Additional BMP's required			

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

"I further certify I am an authorized signatory in accordance with the provisions of 30 TAC §305.128"

Inspector's Name	Inspector's Signature	Date
Name of Owner/Operator (Firm)	Authorized Signature	Date

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

RESPONSIBLE PARTY FORM

Prevention Measure Pollution	Responsible Party name and Phone Number										
BEST MANAGEMENT PRACTICES											
SW3P Modification & Records											
Natural vegetation buffer strip											
Temporary vegetation											
Permanent vegetation											
Sediment control basin											
Silt fences											
Rock berms											
Gravel filter bags											
Drain inlet protection											
Other structural controls											
Vehicle exits (off-site tracking)											
Material storage areas											
Equipment areas (leaks, spills)											
Concrete washout pit (leaks, failure)											
Construction debris											
General site cleanliness											
Trash receptacles											
Inspections											
POTENTIAL EROSION SOURCES											
Clearing											
Grading											
Excavation											
Drainage construction											
Utility construction											
Roadway or parking lot construction											
Foundation construction											
Building construction											
Landscaping activities											

Identify responsible parties and indicate responsible party for each pollution prevention item listed above by marking an X under the Responsible Party Name.

Permanent Stormwater Section

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

REGULATED ENTITY NAME: Kirkwood Manor

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. — 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. — 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. __ **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. __ **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:

Mark B Hill, P.E.

Print Name of Customer/Agent

Signature of Customer/Agent

12/19/08

Date

ATTACHMENT A TO TCEQ-0600

20% OR LESS IMPERVIOUS COVER WAIVER

NOT REQUESTED

ATTACHMENT B TO TCEQ-0600

BMPs FOR UP-GRADIENT STORMWATER

Upgradient stormwater would specifically be from the tract directly adjacent to and northeast of this site. This stormwater will be diverted around this site via the existing drainage way as it presently does.

ATTACHMENT C TO TCEQ-0600

BMPS FOR ON-SITE STORMWATER

The existing BMP for the on-site stormwater runoff of the Kirkwood Manor Expansion consists of two concrete sand filtration basins located at the downgradient end of the property. The anticipated pollutants would be oil and grease from the vehicles of the patrons parked on the property and the suspended solids and sediments brought on site by the vehicles.

The basins are sized to capture the first 0.17 inches of runoff, based on an impervious cover of up to 63%, providing a minimum of 80% removal of the pollutants, based on the design criteria of the TNRCC Technical Guidance Manual.

The sizing and design of the basin is for the 5.613 acre site.

ATTACHMENT D TO TCEQ-0600

BMPS FOR SURFACE STREAMS

The existing sand filtration system will remove the additional potential pollutants caused by the new parking stalls from entering the surface streams, located considerably north of the site.

Three geologic features were identified on the site: two closed depressions and one sanitary sewer manhole. These features are stated to be not sensitive. The grading of the site will exclude the depressions and the manhole is outside of any drainage way and will be sealed.

ATTACHMENT E TO TCEQ-0600

REQUEST TO SEAL FEATURES

NOT REQUIRED

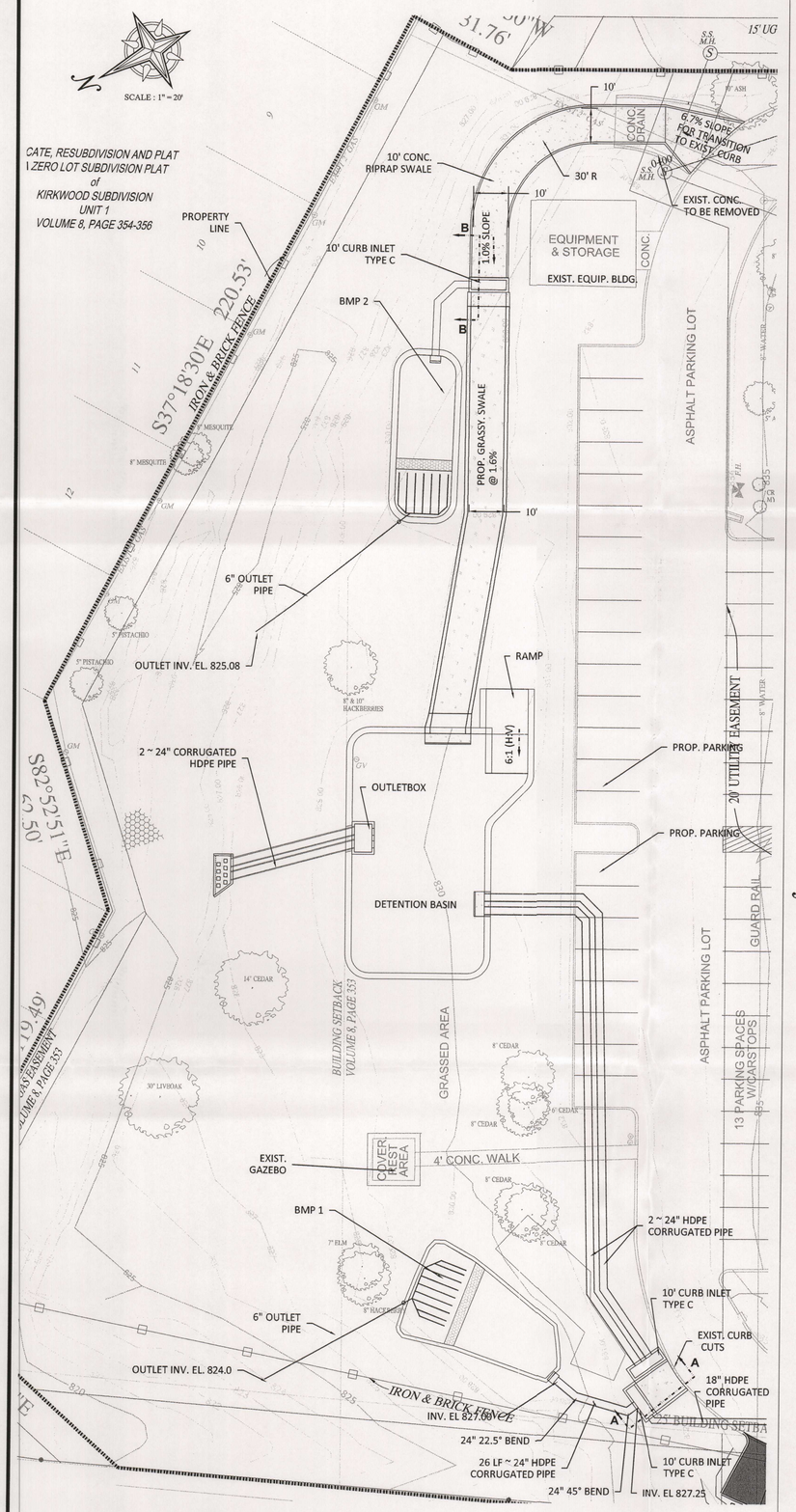
ATTACHMENT F TO TCEQ-0600

CONSTRUCTION PLANS:

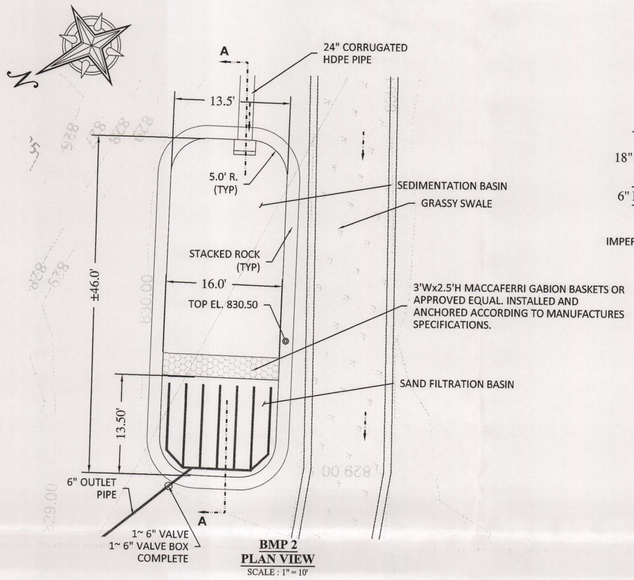
Existing BMPs from approved WPAP to be utilized. As built plans are provided as signed by Mark Hill P.E.

CALCULATIONS:

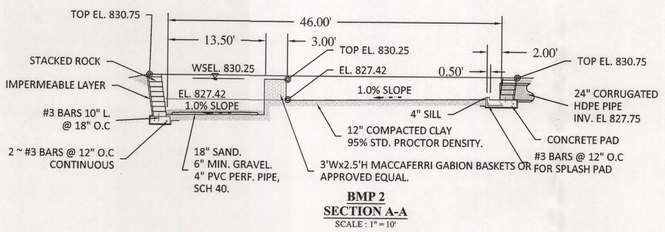
See attached Proposed Conditions BMP calculations
Ultimate Capacity BMP calculations



NOTE:
THE TOPOGRAPHY, LOCATION OF EXISTING FEATURES, AND LOCATION OF PROPOSED BUILDINGS AND SITE LAYOUT HAVE BEEN BASED UPON A FIELD SURVEY PERFORMED BY SCHULTZ GROUP, INC. ON THE 26TH OF JANUARY, 2004. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY IN THE FIELD ALL ELEVATIONS AND LOCATIONS OF UTILITIES PRIOR TO CONSTRUCTION. FOR QUESTIONS RELATED TO THE SURVEY, CONTACT THE SCHULTZ GROUP, (830) 606-3912.

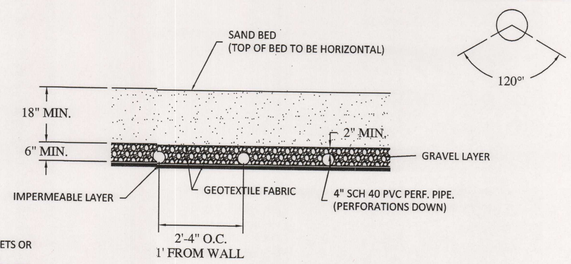


BMP 2
PLAN VIEW
SCALE : 1" = 10'



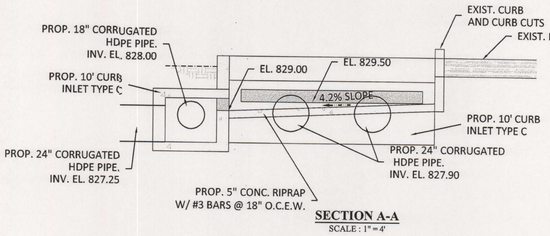
BMP 2
SECTION A-A
SCALE : 1" = 10'

PERFORATION LAYOUT

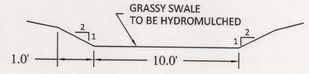


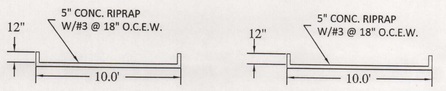
SAND BED PROFILE

1. THE SAND LAYER SHALL BE COMPARABLE TO "WASHED CONCRETE SAND".
2. THE GRAVEL LAYER SHALL BE 0.5 TO 1.5 INCH DIAMETER WASHED ROUNDED RIVER GRAVEL. MUST PROVIDE 2 INCH MIN. COVER OVER UNDERDRAIN PIPES.
3. THE SAND AND GRAVEL LAYERS AND THE GRAVEL AND IMPERMEABLE LAYERS MUST BE SEPARATED BY A NONWOVEN GEOTEXTILE FABRIC THAT MEETS THE FOLLOWING SPECIFICATIONS:
   - PROPERTY TEST METHOD UNIT SPECIFICATION (MIN)
   - UNIT WEIGHT: 8 OZ/YD2
   - FILTRATION RATE: 0.08 IN/SEC
   - PUNCTURE STRENGTH (ASTM D-751): 125 LB
   - MULLEN BURST STRENGTH (ASTM D-751) 400 PSI
   - TENSILE STRENGTH (ASTM D-1682): 200 LB
   - EQUIV. OPENING SIZE: US STANDARD SIEVE NO. 80
4. ALL UNDERDRAIN PIPING SHALL BE 4" SCHEDULE 40 PVC PIPE WITH ROWS OF PERFORATIONS AS A MAXIMUM OF EVERY 6 INCHES. CLEANOUTS ARE REQUIRED AT ALL END OF PIPES, AND SHOULD BE ACCESSIBLE AT ALL TIMES. THE COLLECTOR DRAIN AND OUTLET PIPE SHALL BE 6" SCHEDULE 40 PVC.
5. A FIXED VERTICAL SEDIMENT DEPTH MARKER SHOULD BE INSTALLED ADJACENT TO THE GABIONS. THE MARKER SHOULD HAVE A RED STRIPE AT THE APPROPRIATE ELEVATION TO INDICATE WHEN 20% OF BASIN VOLUME HAS FILLED WITH SEDIMENT; AN ELEVATION OF 827.50 FOR BMP1, AND AN ELEVATION OF 828.25 FOR BMP2.



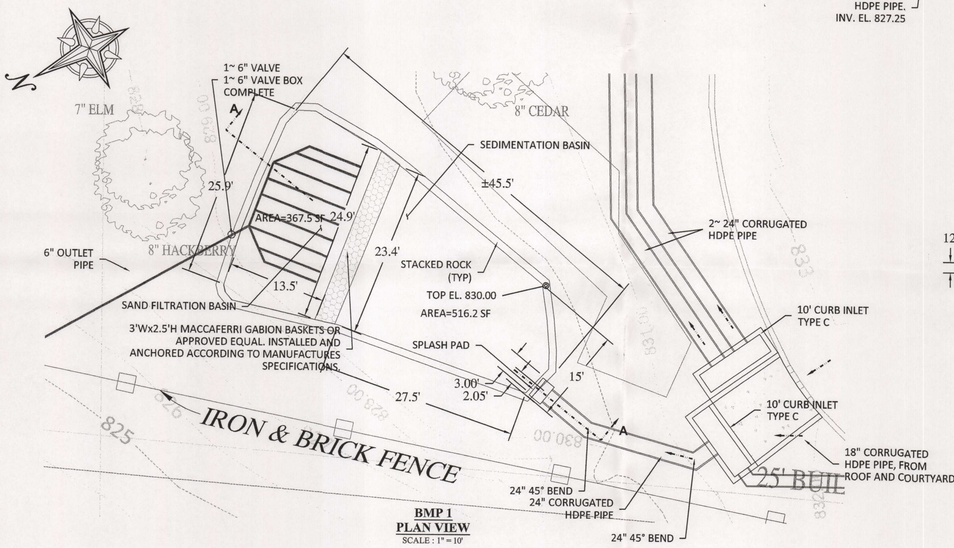
SECTION A-A
SCALE : 1" = 4'



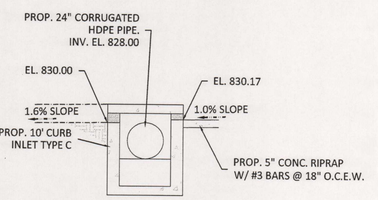


TYPICAL SWALE SECTIONS

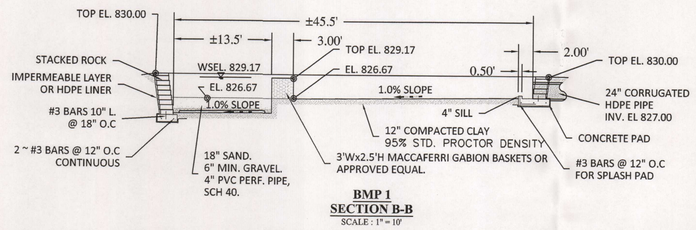
SWALE SECTIONS FOR LENGTH OF 20' RADIUS



BMP 1
PLAN VIEW
SCALE : 1" = 10'



SECTION B-B
SCALE : 1" = 4'



BMP 1
SECTION B-B
SCALE : 1" = 10'

PLAN OF RECORD
DATE 12/22/06

MARK B. HILL
94904
LICENSED PROFESSIONAL ENGINEER

FORD ENGINEERING INC.
ENGINEERING • SURVEYING • PLANNING
10927 WYE DRIVE, SUITE 104, SAN ANTONIO, TEXAS 78217, (210) 590-4777
www.fordengineering.com
F.E.I. PROJECT NO.: 2190.00

PROJECT:

KIRKWOOD MANOR SKILLED NURSING ADDITION

NEW BRAUNFELS
TEXAS

CNP DEVELOPMENT
1452 Hughes Road
Suite 100
Grapevine, TX 76051
Ph. (817) 329-6600
Fax (817) 410-5171
www.cmpainc.com

ISSUED FOR:
CONSTRUCTION

LOEB & ASSOCIATES ARCHITECTS
4626 EVERGREEN STREET
BELLAIRE, TX 77401
TEL (281) 703-1362
FAX (713) 664-0635
zloeb@loebarchitects.com

PROJECT NO: 2302
DRAWN: MH
CHECKED: LCD
DATE: 08/09/2004

REVISIONS
NUMBER: DATE:

SHEET NO:
C-10

SEDIMENTATION/ FILTRATION BASIN

TCEQ ~ Edward Aquifer Rules:
Best Management Practices Design

Must achieve 80% reduction in the increase in TSS in stormwater loading.

Project Site:

County:	Comal	
Average Annual Precip.:	33	in.
Total Site	5.613	ac.
Area Draining to BMP1	3.368	ac.
Area Draining to BMP2	2.245	

County	Average Annual Precip. (inches)
Bexar	30
Comal	33
Hays	33
Kinney	22
Medina	28
Travis	32
Uvalde	25
Williamson	32

BMP 1

Background Pollutant Load

Undeveloped Acreage:	0.894	ac.
Undeveloped Ave. TSS conc.:	80	mg/l
Developed Acreage:	2.474	ac.
fraction impervious cover (developed):	0.58	decimal
Developed Ave. TSS conc.:	170	mg/l
Rv, Exist. Runoff Coeff.:	0.40	

Pollutant Load: 1282.2 lbs

Post Development Load

Acreage:	3.368	ac.
Fraction prop. Impervious Cover:	0.63	decimal
Prop Ave. TSS conc.:	170	mg/l
Rv, Prop. Runoff Coeff.:	0.46	

Pollutant Load: 1943.5 lbs

Required TSS Removal: 529.1 lbs

BMP	TSS Removal Eff. %
Retention Irrigation	100
Extended Detention Basin	75
Grassy Swales	70
Vegetative Filter Strip	85
Sand Filter Sytem	89
Wet Basin	93
Constucted Wetland	93

(Equations 3.6)

Solve for Fraction of Load Captured required to meet TSS removal

BMP Stucture: Sand Filter

Efficiency of BMP:	89	%
Load Removed by BMP:	529	lbs
Fraction of site treated:	0.76	decimal
Fraction of load to be captured by BMP:	0.40	decimal

Kirkwood Manor - Modified WPAP
TCEQ BMP Capacity

Use % Impervious Cover of site & % Load that must be captured to find Inches of runoff to be captured by basin.

Runoff Depth, in.	% Impervious Cover of Postdeveloped Site								
	20%	30%	40%	50%	60%	70%	80%	90%	100%
0.00	0	0	0	0	0	0	0	0	0
0.10	57	49	45	40	33	25	21	17	9
0.30	90	79	75	70	61	53	48	43	34
0.50	100	98	92	87	83	78	73	68	64
0.75	100	100	98	95	91	87	85	82	79
1.00	100	100	100	100	97	93	90	86	83
1.50	100	100	100	100	100	100	96	92	88
2.00	100	100	100	100	100	100	100	95	93
3.00	100	100	100	100	100	100	100	100	98
4.00	100	100	100	100	100	100	100	100	100
	% Load to be captured								

Note: % load captured relates to Complete Fraction of Load Captured previous page, use linear interpolation.

Inches of Runoff to be Captured:	0.17	in.	Match Index 2.00
Water Quality Volume:	2079	ft^3	
Lost to Siltation	20%		
Design Water Quality Volume	**2494**	**ft^3**	

Sand Filtration Basin - BMP1

Basin Dimensions:

The basin is considered full or partial: **Partial**

Bottom Area	953	
Top Area	953	
Bottom Elev	826.67	ft
Top of Pond	830	ft
Gabion Area	58.5	
Top of Gabion	829.5	
Volume	**2531**	**ft3**
Depth, w/freeboard	3.33	ft, (not including filter media)

Greater than Design Capture Volume

If partial, the basins are separated by: Gabion wall.

Note: "full" means a wall & riser pipe separates the sedimentation and filtration basin. "Patial" means a porous structure separates the two basins. If "full", sedimentation basin should hold entire design capture volume. If "partial", the sum of the two basins should equal design capture volume.

Sand Filter Design

Sand bed thickness	1.5	ft
Height of water above sandbed	2.83	ft
Drawdown time	2	days
Permeablity of sand	2	ft/day
Req surface area of sand filter:	220.36	ft^2
Sand bed Area (built)	**243.7**	**ft^2**

Permeablility of Sand	
Full sedimentation	3.5 ft/day
Partial sedimentation	2 ft/day

TCEQ ~ Edward Aquifer Rules:
Best Management Practices Design

Must achieve 80% reduction in the increase in TSS in stormwater loading.

Project Site:

County:	Comal	
Average Annual Precip.:	33	in.
Total Site	5.613	ac.
Area Draining to BMP1	3.368	ac.
Area Draining to BMP2	2.245	

County	Average Annual Precip. (inches)
Bexar	30
Comal	33
Hays	33
Kinney	22
Medina	28
Travis	32
Uvalde	25
Williamson	32

BMP 2

Background Pollutant Load

Undeveloped Acreage:	0.596	ac.
Undeveloped Ave. TSS conc.:	80	mg/l
Developed Acreage:	1.649	ac.
fraction impervious cover (developed):	0.58	decimal
Developed Ave. TSS conc.:	170	mg/l
Rv, Exist. Runoff Coeff.:	0.40	

Pollutant Load: 854.6 lbs

Post Development Load

Acreage:	2.245	ac.
Fraction prop. Impervious Cover:	0.63	decimal
Prop Ave. TSS conc.:	170	mg/l
Rv, Prop. Runoff Coeff.:	0.46	

Pollutant Load: 1301.3 lbs

Required TSS Removal: 357.3 lbs

BMP	TSS Removal Eff. %
Retention Irrigation	100
Extended Detention Basin	75
Grassy Swales	70
Vegetative Filter Strip	85
Sand Filter Sytem	89
Wet Basin	93
Constucted Wetland	93

(Equations 3.6)

Solve for Fraction of Load Captured required to meet TSS removal

BMP Stucture: Sand Filter

Efficiency of BMP:	89	%
Load Removed by BMP:	357	lbs
Fraction of site treated:	0.76	decimal
Fraction of load to be captured by BMP:	0.41	decimal

Use % Impervious Cover of site & % Load that must be captured to find Inches of runoff to be captured by basin.

Runoff Depth, in.	% Impervious Cover of Postdeveloped Site								
	20%	30%	40%	50%	60%	70%	80%	90%	100%
0.00	0	0	0	0	0	0	0	0	0
0.10	57	49	45	40	33	25	21	17	9
0.30	90	79	75	70	61	53	48	43	34
0.50	100	98	92	87	83	78	73	68	64
0.75	100	100	98	95	91	87	85	82	79
1.00	100	100	100	100	97	93	90	86	83
1.50	100	100	100	100	100	100	96	92	88
2.00	100	100	100	100	100	100	100	95	93
3.00	100	100	100	100	100	100	100	100	98
4.00	100	100	100	100	100	100	100	100	100
	% Load to be captured								

Note: % load captured relates to Complete Fraction of Load Captured previous page, use linear interpolation.

Inches of Runoff to be Captured:	0.17 in.	Match Index	2.00
Water Quality Volume:	1415 ft^3		
Lost to Siltation	20%		
Design Water Quality Volume	**1698 ft^3**		

Sand Filtration Basin - BMP2

Basin Dimensions:

The basin is considered full or partial: **Partial**

Bottom Area	694
Top Area	694.5
Bottom Elev	827.42 ft
Top of Pond	830.75 ft
Gabion Area	49.5
Top of Gabion	830.25
Volume	**1825 ft3**
Depth, w/freeboard	3.33 ft, (not including filter media)

Greater than Design Capture Volume

If partial, the basins are separated by: Gabion wall.

Note: "full" means a wall & riser pipe separates the sedimentation and filtration basin. "Patial" means a porous structure separates the two basins. If "full", sedimentation basin should hold entire design capture volume. If "partial", the sum of the two basins should equal design capture volume.

Sand Filter Design

Sand bed thickness	1.5 ft
Height of water above sandbed	2.83 ft
Drawdown time	2 days
Permeablity of sand	2 ft/day
Req surface area of sand filter:	150.04 ft^2
Sand bed Area (built)	**205.2 ft^2**

Permeablility of Sand	
Full sedimentation	3.5 ft/day
Partial sedimentation	2 ft/day

TCEQ ~ Edward Aquifer Rules:
Best Management Practices Design

Must achieve 80% reduction in the increase in TSS in stormwater loading.

Project Site:

County:	Comal	
Average Annual Precip.:	33	in.
Total Site	5.613	ac.
Area Draining to BMP1	3.368	ac.
Area Draining to BMP2	2.245	

County	Average Annual Precip. (inches)
Bexar	30
Comal	33
Hays	33
Kinney	22
Medina	28
Travis	32
Uvalde	25
Williamson	32

BMP 1

Background Pollutant Load

Undeveloped Acreage:	0.894	ac.
Undeveloped Ave. TSS conc.:	80	mg/l
Developed Acreage:	2.474	ac.
fraction impervious cover (developed):	0.58	decimal
Developed Ave. TSS conc.:	170	mg/l
Rv, Exist. Runoff Coeff.:	0.40	

Pollutant Load: 1282.2 lbs

Post Development Load Ultimate for Pond size

Acreage:	3.368	ac.
Fraction prop. Impervious Cover:	0.63	decimal
Prop Ave. TSS conc.:	170	mg/l
Rv, Prop. Runoff Coeff.:	0.46	

Pollutant Load: 1943.5 lbs

Required TSS Removal: 529.1 lbs

BMP	TSS Removal Eff. %
Retention Irrigation	100
Extended Detention Basin	75
Grassy Swales	70
Vegetative Filter Strip	85
Sand Filter Sytem	89
Wet Basin	93
Constucted Wetland	93

(Equations 3.6)

Solve for Fraction of Load Captured required to meet TSS removal

BMP Stucture: Sand Filter

Efficiency of BMP:	89	%
Load Removed by BMP:	529	lbs
Fraction of site treated:	0.76	decimal
Fraction of load to be captured by BMP:	0.40	decimal

Kirkwood Manor -Modified WPAP
TCEQ BMP Ultimate Capacity

Use % Impervious Cover of site & % Load that must be captured to find Inches of runoff to be captured by basin.

Runoff Depth, in.	% Impervious Cover of Postdeveloped Site								
	20%	30%	40%	50%	60%	70%	80%	90%	100%
0.00	0	0	0	0	0	0	0	0	0
0.10	57	49	45	40	33	25	21	17	9
0.30	90	79	75	70	61	53	48	43	34
0.50	100	98	92	87	83	78	73	68	64
0.75	100	100	98	95	91	87	85	82	79
1.00	100	100	100	100	97	93	90	86	83
1.50	100	100	100	100	100	100	96	92	88
2.00	100	100	100	100	100	100	100	95	93
3.00	100	100	100	100	100	100	100	100	98
4.00	100	100	100	100	100	100	100	100	100
	% Load to be captured								

Note: % load captured relates to Complete Fraction of Load Captured previous page, use linear interpolation.

Inches of Runoff to be Captured:	0.17 in.	Match Index	2.00
Water Quality Volume:	2079 ft^3		
Lost to Siltation	20%		
Design Water Quality Volume	**2494 ft^3**		

No additional increase in impervious cover may occur. With current addition of parking stalls, the site contributing to the Basin 1 is at maximum development.

Sand Filtration Basin - BMP1

Basin Dimensions:

The basin is considered full or partial: **Partial**

Bottom Area	952.9	
Top Area	953.9	
Bottom Elev	826.67	ft
Top of Pond	830	ft
Gabion Area	70.18	
Top of Gabion	829.5	
Volume	**2500**	**ft3**
Depth, w/freeboard	3.33	ft, (not including filter media)

Greater than Design Capture Volume

If partial, the basins are separated by: Gabion wall.

Note: "full" means a wall & riser pipe separates the sedimentation and filtration basin. "Patial" means a porous structure separates the two basins. If "full", sedimentation basin should hold entire design capture volume. If "partial", the sum of the two basins should equal design capture volume.

Sand Filter Design

Sand bed thickness	1.5	ft
Height of water above sandbed	2.83	ft
Drawdown time	2	days
Permeablity of sand	2	ft/day
Req surface area of sand filter:	220.36	ft^2
Sand bed Area (built)	**367.5**	**ft^2**

Permeablility of Sand	
Full sedimentation	3.5 ft/day
Partial sedimentation	2 ft/day

TCEQ ~ Edward Aquifer Rules:
Best Management Practices Design

Must achieve 80% reduction in the increase in TSS in stormwater loading.

Project Site:

County:	Comal	
Average Annual Precip.:	33	in.
Total Site	5.613	ac.
Area Draining to BMP1	3.368	ac.
Area Draining to BMP2	2.245	

County	Average Annual Precip. (inches)
Bexar	30
Comal	33
Hays	33
Kinney	22
Medina	28
Travis	32
Uvalde	25
Williamson	32

BMP 2

Background Pollutant Load

Undeveloped Acreage:	0.596	ac.
Undeveloped Ave. TSS conc.:	80	mg/l
Developed Acreage:	1.649	ac.
fraction impervious cover (developed):	0.58	decimal
Developed Ave. TSS conc.:	170	mg/l
Rv, Exist. Runoff Coeff.:	0.40	

Pollutant Load:	854.6	lbs

1.423	ac impervoius cover
4.5	parking spaces
162	(18'x9')
1.440	ac ult impervious cover
0.64	% impervious

Post Development Load

Acreage:	2.245	ac.
Fraction prop. Impervious Cover:	0.64	decimal
Prop Ave. TSS conc.:	170	mg/l
Rv, Prop. Runoff Coeff.:	0.47	

Pollutant Load:	1323.0	lbs
Required TSS Removal:	374.7	lbs

BMP	TSS Removal Eff. %
Retention Irrigation	100
Extended Detention Basin	75
Grassy Swales	70
Vegetative Filter Strip	85
Sand Filter Sytem	89
Wet Basin	93
Constucted Wetland	93

(Equations 3.6)

Solve for Fraction of Load Captured required to meet TSS removal

BMP Stucture: Sand Filter

Efficiency of BMP:	89	%
Load Removed by BMP:	375	lbs
Fraction of site treated:	0.76	decimal
Fraction of load to be captured by BMP:	0.42	decimal

Kirkwood Manor -Modified WPAP
TCEQ BMP Ultimate Capacity

Use % Impervious Cover of site & % Load that must be captured to find Inches of runoff to be captured by basin.

Runoff Depth, in.	% Impervious Cover of Postdeveloped Site								
	20%	30%	40%	50%	60%	70%	80%	90%	100%
0.00	0	0	0	0	0	0	0	0	0
0.10	57	49	45	40	33	25	21	17	9
0.30	90	79	75	70	61	53	48	43	34
0.50	100	98	92	87	83	78	73	68	64
0.75	100	100	98	95	91	87	85	82	79
1.00	100	100	100	100	97	93	90	86	83
1.50	100	100	100	100	100	100	96	92	88
2.00	100	100	100	100	100	100	100	95	93
3.00	100	100	100	100	100	100	100	100	98
4.00	100	100	100	100	100	100	100	100	100
	% Load to be captured								

Note: % load captured relates to Complete Fraction of Load Captured previous page, use linear interpolation.

Inches of Runoff to be Captured:	0.19 in.	Match Index	2.00
Water Quality Volume:	1524 ft^3		
Lost to Siltation	20%		
Design Water Quality Volume	**1829 ft^3**		

For ultimate buildout of contributing acreage an additional 0.038 acres or 10~ 18'X9' parking stalls may be added to contribute to the site contibuting to Basin 2. Current layout of building, greenspace, and parking would possibly permit 5 additonal spaces without removal of trees.

Sand Filtration Basin - BMP2

Basin Dimensions:

The basin is considered full or partial: **Partial**

Bottom Area	694	
Top Area	695	
Bottom Elev	827.42 ft	
Top of Pond	830.75 ft	
Gabion Area	48.3	
Top of Gabion	830.25	
Volume	**1829 ft3**	Greater than Design Capture Volume
Depth, w/freeboard	3.33 ft, (not including filter media)	

If partial, the basins are separated by: Gabion wall.

Note: 'full" means a wall & riser pipe separates the sedimentation and filtration basin. "Patial" means a porous structure separates the two basins. If "full", sedimentation basin should hold entire design capture volume. If "partial", the sum of the two basins should equal design capture volume.

Sand Filter Design

Sand bed thickness	1.5	ft
Height of water above sandbed	2.83	ft
Drawdown time	2	days
Permeablity of sand	2	ft/day
Req surface area of sand filter:	161.59	ft^2
Sand bed Area (built)	**205.2**	ft^2

Permeablility of Sand	
Full sedimentation	3.5 ft/day
Partial sedimentation	2 ft/day

ATTACHMENT G TO TCEQ-0600

INSPECTION, MAINTENANCE, REPAIR, AND RETROFIT
Not Required

ATTACHMENT H TO TCEQ-0600

PILOT-SCALE FIELD TESTING PLAN

NOT REQUIRED

ATTACHMENT I TO TCEQ-0600

MEASURES FOR MINIMIZING SURFACE STREAM CONTAMINATION

The existing sand filtration basins will minimize surface stream contamination by removing at least 80% of the potential pollutants. The rate of stormwater discharge from the site would not be more than the pre-developed stormwater discharge rate for the 5.631 acre site. The pre-developed stormwater discharge rate is 29.29 cubic feet per second for a 25-year frequency design storm. The stormwater runoff rate, when fully developed, would be 38 cubic feet per second. However, the sand filtration basins capture the first 0.17 inches of storm water runoff, along with the existing detention basin as required by the City of New Braunfels, have the results of the runoff at the same rate as the pre-developed stormwater runoff rate.

Based on the above, the existing sand filtration basins and detention basin minimizes the potential for downgradient surface stream contamination and hold the runoff rate for stormwater discharging from the site.

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

I Thomas D. Scott
Print Name

President
Title - Owner/President/Other

of Preferred Care Health Facilities of Texas II, Inc.
Corporation/Partnership/Entity Name

have authorized Mark B Hill, P.E.
Print Name of Agent/Engineer

of Ford Engineering, Inc.
Print Name of Firm

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

I also understand that:

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

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

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

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

Applicant's Signature — Date: 12/4/08

THE STATE OF TX §

County of Collin §

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

GIVEN under my hand and seal of office on this 4 day of Dec. 08.

BECKY ALLEN
MY COMMISSION EXPIRES
May 15, 2011

NOTARY PUBLIC

Becky Allen
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: May 15, 2011

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

NAME OF PROPOSED REGULATED ENTITY: Kirkwood Manor
REGULATED ENTITY LOCATION: 2590 Loop 337, New Braunfels, TX 78130-8502
NAME OF CUSTOMER: Pinnacle Health Properties, LLC
CONTACT PERSON: _____ PHONE: _____
(Please Print)

Customer Reference Number (if issued): CN 601402076 (nine digits)

Regulated Entity Reference Number (if issued): RN 102751195 (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	5.613	Acres	$ 5,000.00
Sewage Collection System		L.F.	$
Lift Stations without sewer lines		Acres	$
Underground or Aboveground Storage Tank Facility		Tanks	$
Piping System(s)(only)		Each	$
Exception		Each	$
Extension of Time		Each	$

Signature

12/4/08
Date

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

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

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program
Application Fee Schedule
30 TAC 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

KIRKWOOD MANOR
2590 LOOP 337
NEW BRAUNFELS, TX 78130

DATE	CHECK NO.
12/17/2008	262399

11-24
1210 (8)

Five Thousand & No/100

COPY

Account Number

PAY TO THE ORDER OF

TEXAS COMMISSION ON ENVIRONMENTAL QUAL

12100 PARK 35 CIRCLE
building A, 3rd floor TCEQ-CASHIER
AUSTIN, TX 78753

$5,000.00

Mindy Proctor

Wells Fargo Bank, N.A.
Plano, Texas 75093

Security features are included. Details on back.

MP

⑈262399⑈ ⑆121000248⑆ 4121086797⑈

Kirkwood Manor

Date	12/17/2008	Check Number	262399

Invoice ID	Invoice Description	Amount Due	Discount	Payment
[12/12/08] MCR121208		$5,000.00	$0.00	$5,000.00

Vendor ID	Pay To Name	Amount Due Total	Discount Total	Payment Total
262716 2050	TEXAS COMMISSION ON ENVIRONMEI	$5,000.00	$0.00	$5,000.00

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)*

☐ 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: Modification of WPAP

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

☒ Yes ☐ No — Modification of Approved Plan submittal

3. Customer Reference Number *(if issued)*: CN 601402076

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

4. Regulated Entity Reference Number *(if issued)*: RN 102751195

SECTION II: Customer Information

5. Effective Date for Customer Information Updates (mm/dd/yyyy): 05/06/1999

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

☒ 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) ☒ 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)*

☐ 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)*

24. Street Address of the Regulated Entity: *(No P.O. Boxes)*							
	City		State		ZIP		ZIP + 4	
25. Mailing Address:							
	City		State		ZIP		ZIP + 4	

26. E-Mail Address:		
27. Telephone Number	28. Extension or Code	29. Fax Number *(if applicable)*
( ) -		( ) -

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)

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

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

35. Description to Physical Location:			
36. Nearest City	County	State	Nearest ZIP Code

37. Latitude (N) In Decimal:			38. Longitude (W) In Decimal:		
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

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
☐ 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:	Mark B Hill, PE	41. Title:	Agent

42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(210)590-4777		(210)590-4940	mark@fordengineering.com

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 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:	Ford Engineering	Job Title:	Owner Agent
Name *(In Print)*:	Mark B Hill	Phone:	(210)590-4777
Signature:	Mark B Hill	Date:	12/19/2008

Edwards Aquifer Administrative Check-In Cover Sheet

Regulated Entity Name:	PARKWOOD MEADOW		
Date Administratively Complete:			
Application Received from:		Correct Number of Copies:	Y N
Application Received by:	SMM	Review Time Spent:	1.5
EAPP File Number:	RFI	County:	COMAL
Customer Number:	CN604[illegible]	Regulated Entity Number:	RN[illegible]

PROJECT TYPE	PLAN TYPE/CHECKLIST	LAND USE	PERMANENT BMP's	CORRECT FEE/FORM
New	AST	Residential	Sand Filter Basin	Fee Paid: [illegible]
Exception	CZP	Commercial	Aqualogic	Acreage: 5.63
Extension of Time	SCS		Vegetative Filter Strip	SCS LF:
Modification	WPAP		Mixed	# Tanks:
Tech, RFI, Other	UST		OTHER:	
Cave				

Signatures of the applicant or authorized agent on all forms (fee form and NOI may be unsigned)

Agent Authorization Form ◦ Legal Name of the Customer ◦ Signed by customer or additional authorization by land owner	Check Payable to the "Texas Commission on Environmental Quality" ◦ Check must be signed ◦ Check will not be accepted if over 90 days old

Core Data Form all fields complete
◦ Federal Tax ID No.
◦ Customer verified by SOS database (may accept article of incorporation from another State)

NOTES: - SIGNATURE(S)

= AGENT AUTHORIZATION FORM

- CORE DATA FORM SIGNATURE

General Information Form – Administrative Review Checklist

Item #	Topic	Deficient	Comments
-	Current Form Used		TCEQ-0587 Form signed by appropriate party
-	Reg. Entity Name		
-	County		
-	Stream		
1	Customer Info.		Consistent with Agent Authorization Form and Core Data Form Fax number provided
2	City Limits		
3	Project Location		
4	Attachment A: Road Map		Site shown on map
5	Attachment B: USGS Map		Site shown on map Quadrangle Name 1inch = 2000 feet Recharge/Transition Zone boundary shown Drainage path from project to boundary of Recharge Zone
6	Survey Staking		
7	Attachment C: Project Description		Total site area and total impervious cover Proposed site use (commercial, residential) Information agrees throughout plan Description mentions the number of buildings/lots, off-site areas and history of previous development at the site
8	Existing Conditions		
9	Prohibited Activities		
10	Prohibited Activities		
11	Fee Schedule		
12	Fees Paid To		
13	Application Copies		
14	Regulated Activities		

Geologic Assessment – Administrative Review Checklist

Item #	Topic	Deficient	Comments
-	Current Form Used		TCEQ-0585 Form signed by appropriate party
-	Reg. Entity Name		
-	Project Type		
-	Project Location		
1	Geologic Table		Current version 7.0-el 2 Geologist signed and sealed
2	Soil Groups		
3	Stratigraphic Column		Stratigraphic column detailing formation, members and thickness
4	Site Geology		Provide site specific geology and discussion of potential for fluid movement, stratigraphy, structure, karst characteristics
5	Site Map(s)		Map scales equals map scale of site plan Geologist signed and sealed
6	Data Collect Method		
7	Map: Site Marked		Site specific project area detailed
8	Geo Map: Formation		
9	Geo Map: Features Marked		All features shown and labeled
10	R.Z. Boundary		
11	Wells		Agrees with Item #20 of WPAP Application Section
12	Application Copies		
-	Signature & Seal		Geologist signed and sealed all maps, forms and tables

Modification of a Previously Approved Plan

Item #	Topic	Deficient	Comments
-	Current Form Used		TCEQ-0590 Form signed by appropriate party
1	Reg. Entity Name		
2	Original Name		
3	Attachment A: Original Letter		Original Approval letter for the site provided Any additional modification letters provided
4	Modification		
5	Attachment B: Narrative		Description of all the changes proposed Consistent information provided throughout plan
6	Original Project		Consistent information provided throughout plan
7	Proposed Mod.		Legal boundaries of the site shown
8	Attachment C: Site Plan		Shown on the site plan map: Scale 100 year floodplain Existing and/or final contours Wells Sensitive features Drainage patterns/slope percents/drainage areas Areas of soil disturbance and soil not disturbed Temporary and permanent (if applicable) BMPs Areas of soil stabilization Surface waters and discharge to surface waters/sensitive features TCEQ Construction Notes
9	Application Copies		

Modification of a Previously Approved Plan Checklist

- General Information Form (*TCEQ-0587*)
- Geologic Assessment Form (*TCEQ-0585*)
- Modification of a Previously Approved Plan (*TCEQ-0590*)
- Application Form (appropriate for the modification):
  - *TCEQ-0575* Aboveground Storage Tank Facility Plan
  - *TCEQ-0582* Sewage Collection System Plan
  - *TCEQ-0583* Underground Storage Tank Facility Plan
  - *TCEQ-0584* Water Pollution Abatement Plan
  - *TCEQ-0591* Lift Stations
- Temporary Stormwater Section (*TCEQ-0602*), as necessary
- Permanent Stormwater Section (*TCEQ-0600*), as necessary
- Agent Authorization Form (*TCEQ-0599*), if application submitted by agent
- Fee Application Form (*TCEQ-0574*)
- Check Payable to the "Texas Commission on Environmental Quality"
- Core Data Form (*TCEQ-10400*)

Water Pollution Abatement Plan – Administrative Review Checklist

Item #	Topic	Deficient	Comments
-	Current Form Used		TCEQ-0584 Form signed by appropriate party
-	Reg. Entity Name		
1	Project Type		
2	Total Site Acreage		Consistent throughout plan
3	Projected Population		
4	Impervious Cover Table		Consistent with impervious cover amounts stated in project description
5	Attachment A: W.Q. Factors		Discussion of any factors affecting water quality Discussion of ultimate land use
6	Inert Materials		
7	Road Project: Type		
8	Road : Type		
9	Road: Length		
10	Road: Length		
11	Road: Rest Stop		
12	Road: Maintenance		
13	Attachment B: Stormwater		Description of runoff characteristics (volume and character) Runoff coefficient pre/post construction
14	Wastewater		Volume and character of wastewater stated
15	Wastewater		Attachment C: Suitability Letter if OSSF from Authorized Agent WWTP identified
16	Service Laterals		
-	Site Plan		Legal boundaries of the site shown
17	Site Plan: Scale		Scale is shown on site plan map Scale equal to geologic map scale
18	Site Plan: 100 Year Floodplain		100 year floodplain is shown on site plan map Map source provided
19	Site Plan: Contours		Contours (existing and/or final) are shown on site plan map
20	Site Plan: Wells		All wells are shown on site plan map Agrees with Item #11 on Geologic Assessment Form
21	Site Plan: Features		All sensitive features are shown on site plan map Attachment C provided with justification if no GA performed
22	Site Plan: Drainage/Slopes		Drainage patterns are shown on the site plan map Slopes percents are provide on site plan map (if major grading activities) Clearly outline and label: upgradient stormwater, un-captured stormwater and each permanent BMP capture area

23	Site Plan: Soil Disturbance		Areas of soil disturbance are shown on the site plan map Areas of soil not to be disturbed are shown on the site plan map
24	Site Plan: BMPs		Temporary and permanent BMP controls and specific details are shown on site plan map BMPs for upgradient stormwater are shown on the site plan map
25	Site Plan: Soil Stabilization		Locations where soil stabilization will occur is shown on site plan map
26	Site Plan: Surface Waters		Surface waters are shown on site plan map
27	Site Plan: Surface Waters		Location of discharge to surface water or sensitive features are shown on site plan map N/A
28	Application Copies		
29	Mod. Statement		

Temporary Stormwater Section – Administrative Review Checklist

Item #	Topic	Deficient	Comments
-	Current Form Used	A	TCEQ-0602 Form signed by appropriate party
-	Reg. Entity Name		
1	Hazard Substances		
2	Attachment A: Spill Response	A C	Describe measures to contain spill Site specific
3	AST Setback	A	
4	Attachment B: Contaminate Source		Describe all activities that may be potential source of contamination
5	Attachment C: Seq. of Activities		Description of sequence of activity and estimates total area disturbed for each activity
6	Receiving Waters		
7	Attachment D: Temp. BMPs	A A A A	Describe temporary BMPs and measures and consistent with site plan Addresses each item below: A) BMPs to prevent pollution of waters (upgradient) B) BMPs to prevent pollution of waters (onsite) C) BMPs to prevent pollution of surface streams/sensitive features D) BMPs to maintain flow to sensitive features
8	Attachment E: Temp. Feature Seal		
9	Attachment F: Structural Practices		Describe the structural practices Consistent with measures shown on the site plan
10	Attachment G: Drainage Map		Drainage area map provided Existing conditions and post grading Indicate common drainage areas greater than 10 acres
11	Attachment H: Temp. Sed. Pond		Provided if existing drainage basin is >10 acres Construction Plans and calculations provided Signed and sealed by TX P.E. Consistent with sequence of activities
12	Attachment I: Inspect/Maintain	T A	Site specific Inspection, Maintenance, Repair and Retrofit plan provided Describes or provides recordkeeping practices and inspection frequency
13	Selection/Install		
14	Fugitive Sediment		
15	Sediment Traps		
16	Pollutant Source		
17	Attachment J: Soil Stabilization		Schedule and practices used for interim and permanent soil stabilization Consistent with measures shown on the site plan
18	Records		
19	Soil Stabilization		
20	Structural Controls		
21	Sensitive Features		
22	Sensitive Features		

Permanent Stormwater Section – Administrative Review Checklist

Item #	Topic	Deficient	Comments
-	Current Form Used		TCEQ-0600 Form signed by appropriate party
-	Reg. Entity Name		
1	Permanent BMPs		
2	80% TSS Statement		Use current TGM
3	BMP Certification		
4	Single family <20% I.C.		
5	Permanent BMPs <20% I.C. Waiver		Attachment A: 20% or less I.C. waiver
6	Attachment B: Up-gradient Stormwater		Describe BMPs and measures used to prevent pollution of upgradient stormwater Consistent with measures shown on the site plan
7	Attachment C: On-Site Stormwater		Description of the BMPs and measures used to prevent pollution of onsite stormwater Consistent with measures shown on the site plan
8	Attachment D: Surface Streams		Description of the BMPs and measures used to prevent pollution of surface streams Consistent with measures shown on the site plan
9	Sensitive Features Flow/Seal		Consistent with features shown on the site plan Protection measures shown on the site plan are consistent with the current TGM Attachment E included with justification if not providing protection measures or setbacks from sensitive features
10	Attachment F: Construction Plans		Plans and designs provided, signed and sealed by a TX P.E. Construction Plans: Design and Required TSS Removal Calculations, TCEQ WPAP Construction Notes, BMP and measures, and appropriate details
11	Attachment G: Inspection Maintain		Signed by applicant Address inspection, maintenance, repair and retrofit and recordkeeping procedures for permanent BMPs (including BMPs for sensitive features) Site and BMP specifics
12	Design Statement		Attachment H: Pilot-Scale Field Testing Plan
13	Attachment I: Surface Stream		Describe measures used to prevent pollution and prevent change in the way in which water enters a stream Consistent with measures shown on the site plan
14	Maintain BMPs		
15	Responsibility		
-	General structural BMPs (water quality ponds)		Shown on construction plans: Maintenance access ramps Access drive Staging area

			Basin liner label and specifications Side slope ratio label Inflow/Outflow structure with elevations Erosion/velocity protection Splitter box detail Water quality volume/elevation Stage storage (elevation capacity) table
-	Sand Filter Basin		Shown on construction plans: Layout of underdrain system and sand/gravel layer Sand and piping specifications Sand filter area Water depth Shut off valve
-	Wet Basin		Shown on construction plans: Vegetation specifications Water depth Water source
-	Retention Irrigation		Shown on construction plans: Pump and wet well system Alarms Intake riser Detention time Irrigation pipes, sprinkler system, valves Irrigation area and vegetation
-	Vegetative Filter Strips		Shown on construction plans: Impervious cover/filter strip transition detail Minimum vegetative cover Slope

Comments on Kirkwood Manor (EAPP 1281.00 and 1281.02)

Part 1:

The parking spaces are areas identified as undeveloped in the original plan. Per 30 TAC 213.4(j)((3), "any development of land previously identified as undeveloped in the original water pollution abatement plan" is required to have a modification to the plan. Therefore, the proposed addition of 21 parking spaces requires a modification to the approved WPAP.

As understood, the TSS load for the site (calculated using the TCEQ's 1999 guidance manual), will increase by 58 pounds/year from 814 pounds/year to 872 pounds/year. See the table below.

Basin	TSS	Designed		Approved (minimum required)		Constructed		Proposed TSS	With proposed increase in impervious cover	
		WQV (ft^3)	Filter (ft^2)	WQV (ft^3)	Filter (ft^2)	WQV (ft^3)	Filter (ft^2)		WQV (ft^3)	Filter (ft^2)
1	488	2640	206	1834	206	2620	243	506	2612	229
2	326	1760	137	1223	136	2022	205	326	1467	138

In the modification application, show calculations that demonstrate that basin 1 can treat 506 pounds, and provide the maximum TSS load and associated impervious cover that each basin will be capable of treating.

Part 2:

In reviewing the files, the following information is also needed:

6/18/99 approval letter deed recordation (Standard Condition 4)

7/27/04 approval letter deed recordation (Standard Condition 2)

7/27/04 approval letter water quality basin certification (Standard Condition 14)

Mark Hill

From: John Mauser [JMAUSER@tceq.state.tx.us]
Sent: Wednesday, November 05, 2008 10:48 AM
To: Mark Hill
Subject: Re: Kirkwood Manor WPAP - New Braunfels (EAPP 1281.00 &1281.02)
Attachments: 1281.03 email comments 11_5_08.doc

Follow Up Flag: Follow up
Flag Status: Completed

Mar,

Please see my comments on the attached file.

J.

>>> "Mark Hill" <Mark@fordengineering.com> 11/4/2008 4:56 PM >>>
John,

We spoke on the phone on October 14th about the WPAP for Kirkwood Manor located at the intersection of Loop 337 and Walnut Avenue in New Bruanfels. The WPAP was approved in July of 2004, and the construction/improvements included in that WPAP was completed in October of 2005 (RN102751195). The owner of the facility would like to add some parking. When you and I spoke on the phone, you said to send you a 8x11 site plan and the calculations and you would then be able to tell me if the owner will need to do a Modification to the WPAP or if a technical letter would be sufficient, or if there was more or less that needed to be submitted. The owner has just signed a contract for me to do this work and so I have looked at the calculations. Here is a breakdown of the site. I have included a PDF of the site as it has been illustrated to me by the owner.

The owner proposes to add a total of 21 new parking stalls. The new stalls are to match the existing 18'x9' parking stalls. Approximate additional impervious area = 3,402 sf (0.078 ac). Total site is 5.613 ac

Existing Pollutant Load

Acreage:

5.613

ac.

Fraction prop. Impervious Cover

0.62

decimal

Prop Ave. TSS conc.

170

mg/l

Rv, Prop. Runoff Coeff.

0.44

Pollutant Load

3154

lbs

Required TSS Removal

814

lbs

Required Design Capture Volume

3 ,668

cu-ft

Required Filtration Area

344

sf

(Based on WPAP approved by the TCEQ on July 27, 2004, Edwards Aquifer Protection Program File No. 1281.02, RN102751195)

Existing site has two (2) sedimentation/sand filtration basins. Basins were sized with some additional storage volume and sand filtration surface area to account for minor additions of impervious areas.

% of Treated Site Captured

Required Volume

Required Sand Filtration Area

Existing Volume

Existing Sand Filtration Area

Basin 1 (BMP 1)

60

2201 cu-ft

206 sf

2620 cu-ft

243 sf

Basin 2 (BMP 2)

40

1467 cu-ft

138 sf

2022 cu-ft

205 sf

With the addition of the new parking stalls the following New Pollutant Load must be handled with the existing structures.

Acreage:

5.613

ac.

Fraction prop. Impervious Cover

0.63

decimal

Prop Ave. TSS conc.

170

mg/l

Rv, Prop. Runoff Coeff.

0.45

Pollutant Load

3226

lbs

Required TSS Removal

871.5

lbs

Required Design Capture Volume

4080

cu-ft

Required Filtration Area

382.5

sf

The new parking stalls will contribute to Basin 1. This is an increased required storage of 412 cu-ft for a total of 2613 cu-ft which is still less than the capacity of Basin 1, 2620 cu-ft. It is also an increased required sand filtration area of 23 sf for a total of 229 sf which is still less than the capacity of Basin 1, 243 sf.

I've attached PDFs of the site plan and the spreadsheet as you requested on the phone.

Basin 1 has sufficient capacity to accommodate the additional required load due to the addition of 21 parking stalls.

What will the owner need to provide to be allowed to proceed with his new parking?

Thank you, and feel free to call me to discuss this.

Mark B. Hill, P.E.

Ford Engineering, Inc.

10927 Wye Drive Ste 104

San Antonio, Tx 78217

Ph.: (210) 590-4777

Fax: (210) 590-4940

www.fordengineering.com <http://www.fordengineering.com/>