



Engineering
& Design

SEWER COLLECTION SYSTEM

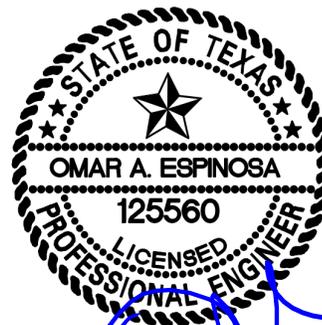
KALLISON RANCH 215 PHASE 3 UNIT 14B

LOCATION: 1,300 LF NORTHWEST OF THE INTERSECTION OF KALLISON
BEND AND CAVVY TRAIL

PLAT NUMBER: 22-11800650

CED JOB NUMBER: 563-01-26

DATE: AUGUST 2023



PREPARED FOR:
PHSA-NW315, LLC
9000 GULF FREEWAY
HOUSTON, TEXAS 77017

PREPARED BY:
OMAR ESPINOSA, P.E

COLLIERS ENGINEERING & DESIGN
3421 PAESANOS PKWY., STE. 200
SAN ANTONIO TEXAS 78231
MAIN: (210) 979-8444
COLLIERSENGINEERING.COM

August 22, 2023

TCEQ Region 13
14250 Judson Rd.
San Antonio, TX 78233-4480

Re: Kallison Ranch 215 Phase 3, Unit 14B
Sewer Collection System

To Whom It May Concern,

Attached is one (1) digital copy of the Sewer Collection System for the above referenced project. This application has been prepared according to the guidelines set forth in 30 TAC Chapter 213, 30 TAC Chapter 17, and its current policies for development over the Edwards Aquifer Recharge Zone.

This Sewer Collection System application is for 223 linear feet of 8" SDR 26 sanitary sewer line. Please review the application for completeness and compliance with the applicable regulations for development over the Recharge Zone of the Edwards Aquifer. Upon acceptance, we request that written approval be provided to our office.

Thank you for your time and consideration in this matter. Should you have any questions or need further information please feel free to contact me.

Sincerely,
Colliers Engineering & Design,



Omar Espinosa, P.E.
Senior Project Manager

Texas Commission on Environmental Quality

Edwards Aquifer Application Cover Page

Our Review of Your Application

The Edwards Aquifer Program staff conducts an administrative and technical review of all applications. The turnaround time for administrative review can be up to 30 days as outlined in 30 TAC 213.4(e). Generally administrative completeness is determined during the intake meeting or within a few days of receipt. The turnaround time for technical review of an administratively complete Edwards Aquifer application is 90 days as outlined in 30 TAC 213.4(e). Please know that the review and approval time is directly impacted by the quality and completeness of the initial application that is received. In order to conduct a timely review, it is imperative that the information provided in an Edwards Aquifer application include final plans, be accurate, complete, and in compliance with [30 TAC 213](#).

Administrative Review

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

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

2. This Edwards Aquifer Application Cover Page form (certified by the applicant or agent) must be included in the application and brought to the administrative review meeting.
3. Administrative reviews are scheduled with program staff who will conduct the review. Applicants or their authorized agent should call the appropriate regional office, according to the county in which the project is located, to schedule a review. The average meeting time is one hour.
4. In the meeting, the application is examined for administrative completeness. Deficiencies will be noted by staff and emailed or faxed to the applicant and authorized agent at the end of the meeting, or shortly after. Administrative deficiencies will cause the application to be deemed incomplete and returned.

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

5. If an application is received by mail, courier service, or otherwise submitted without a review meeting, the administrative review will be conducted within 30 days. The applicant and agent will be contacted with the results of the administrative review. If the application is found to be administratively incomplete, it can be retrieved from the regional office or returned by regular mail. If returned by mail, the regional office may require arrangements for return shipping.
6. If the geologic assessment was completed before October 1, 2004 and the site contains “possibly sensitive” features, the assessment must be updated in accordance with the *Instructions to Geologists* (TCEQ-0585 Instructions).

Technical Review

1. When an application is deemed administratively complete, the technical review period begins. The regional office will distribute copies of the application to the identified affected city, county, and groundwater conservation district whose jurisdiction includes the subject site. These entities and the public have 30 days to provide comments on the application to the regional office. All comments received are reviewed by TCEQ.
2. A site assessment is usually conducted as part of the technical review, to evaluate the geologic assessment and observe existing site conditions. The site must be accessible to our staff. The site boundaries should be

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

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

Mid-Review Modifications

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

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

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

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

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

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

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

1. Regulated Entity Name: Kallison Ranch 215 Phase 3 Unit 14B					2. Regulated Entity No.:					
3. Customer Name: PHSA-NW315, LLC					4. Customer No.: CN605782606					
5. Project Type: (Please circle/check one)		New <input checked="" type="checkbox"/>		Modification			Extension		Exception	
6. Plan Type: (Please circle/check one)		WPAP	CZP	SCS <input checked="" type="checkbox"/>	UST	AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures
7. Land Use: (Please circle/check one)		Residential <input checked="" type="checkbox"/>		Non-residential			8. Site (acres):		4.6	
9. Application Fee:		650		10. Permanent BMP(s):			N/A			
11. SCS (Linear Ft.):		223		12. AST/UST (No. Tanks):			N/A			
13. County:		Bexar		14. Watershed:			Leon Watershed			

Application Distribution

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

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

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

Austin Region			
County:	Hays	Travis	Williamson
Original (1 req.)	—	—	—
Region (1 req.)	—	—	—
County(ies)	—	—	—
Groundwater Conservation District(s)	<input type="checkbox"/> Edwards Aquifer Authority <input type="checkbox"/> Barton Springs/ Edwards Aquifer <input type="checkbox"/> Hays Trinity <input type="checkbox"/> Plum Creek	<input type="checkbox"/> Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	<input type="checkbox"/> Austin <input type="checkbox"/> Buda <input type="checkbox"/> Dripping Springs <input type="checkbox"/> Kyle <input type="checkbox"/> Mountain City <input type="checkbox"/> San Marcos <input type="checkbox"/> Wimberley <input type="checkbox"/> Woodcreek	<input type="checkbox"/> Austin <input type="checkbox"/> Bee Cave <input type="checkbox"/> Pflugerville <input type="checkbox"/> Rollingwood <input type="checkbox"/> Round Rock <input type="checkbox"/> Sunset Valley <input type="checkbox"/> West Lake Hills	<input type="checkbox"/> Austin <input type="checkbox"/> Cedar Park <input type="checkbox"/> Florence <input type="checkbox"/> Georgetown <input type="checkbox"/> Jerrell <input type="checkbox"/> Leander <input type="checkbox"/> Liberty Hill <input type="checkbox"/> Pflugerville <input type="checkbox"/> Round Rock

San Antonio Region					
County:	Bexar	Comal	Kinney	Medina	Uvalde
Original (1 req.)	<u>X</u>	—	—	—	—
Region (1 req.)	<u>X</u>	—	—	—	—
County(ies)	<u>X</u>	—	—	—	—
Groundwater Conservation District(s)	<input checked="" type="checkbox"/> Edwards Aquifer Authority <input type="checkbox"/> Trinity-Glen Rose	<input type="checkbox"/> Edwards Aquifer Authority	<input type="checkbox"/> Kinney	<input type="checkbox"/> EAA <input type="checkbox"/> Medina	<input type="checkbox"/> EAA <input type="checkbox"/> Uvalde
City(ies) Jurisdiction	<input type="checkbox"/> Castle Hills <input type="checkbox"/> Fair Oaks Ranch <input type="checkbox"/> Helotes <input type="checkbox"/> Hill Country Village <input type="checkbox"/> Hollywood Park <input checked="" type="checkbox"/> San Antonio (SAWS) <input type="checkbox"/> Shavano Park	<input type="checkbox"/> Bulverde <input type="checkbox"/> Fair Oaks Ranch <input type="checkbox"/> Garden Ridge <input type="checkbox"/> New Braunfels <input type="checkbox"/> Schertz	NA	<input type="checkbox"/> San Antonio ETJ (SAWS)	NA

I certify that to the best of my knowledge, that the application is complete and accurate. This application is hereby submitted to TCEQ for administrative review and technical review.

OMAR ESPINOSA

Print Name of Customer/Authorized Agent

Signature of Customer/Authorized Agent

7/12/24

Date

****FOR TCEQ INTERNAL USE ONLY****

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

General Information Form

Texas Commission on Environmental Quality

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

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

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

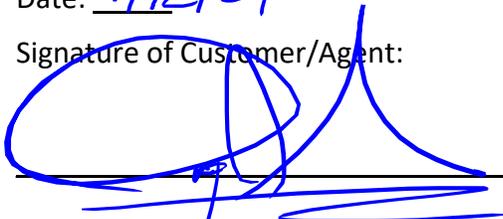
Signature

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

Print Name of Customer/Agent: Omar Espinosa, P.E.

Date: 7/12/24

Signature of Customer/Agent:



Project Information

1. Regulated Entity Name: Kallison Ranch 215 Phase 3 Unit 14B
2. County: Bexar
3. Stream Basin: Leon Watershed
4. Groundwater Conservation District (If applicable): Edwards Aquifer Authority
5. Edwards Aquifer Zone:
 Recharge Zone
 Transition Zone
6. Plan Type:
 WPAP
 SCS
 Modification
 AST
 UST
 Exception Request

7. Customer (Applicant):

Contact Person: David Rittenhouse
Entity: PHSA-NW315, LLC
Mailing Address: 9000 Gulf Freeway
City, State: Houston, TX Zip: 77017
Telephone: (210) 273-8373 FAX: _____
Email Address: David.Rittenhouse@perryhomes.com

8. Agent/Representative (If any):

Contact Person: Omar Espinosa
Entity: Colliers Engineering & Design
Mailing Address: 3421 Paesanos Pkwy
City, State: San Antonio, TX Zip: 78231
Telephone: (210) 979-8444 FAX: (210) 273-8373
Email Address: omar.espinosa@collierseng.com

9. Project Location:

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

10. 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.

Approximately 1,300 LF Northwest of the intersection of Kallison Bend and Cavy Trail.

11. **Attachment A – Road Map.** A road map showing directions to and the location of the project site is attached. The project location and site boundaries are clearly shown on the map.
12. **Attachment B - USGS / Edwards Recharge Zone Map.** A copy of the official 7 ½ minute USGS Quadrangle Map (Scale: 1" = 2000') of the Edwards Recharge Zone is attached. The map(s) clearly show:
- Project site boundaries.
 - USGS Quadrangle Name(s).
 - Boundaries of the Recharge Zone (and Transition Zone, if applicable).
 - Drainage path from the project site to the boundary of the Recharge Zone.
13. **The TCEQ must be able to inspect the project site or the application will be returned.** Sufficient survey staking is provided on the project to allow TCEQ regional staff to locate the boundaries and alignment of the regulated activities and the geologic or manmade features noted in the Geologic Assessment.
- Survey staking will be completed by this date: _____

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

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

15. Existing project site conditions are noted below:

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

Prohibited Activities

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

- (1) Waste disposal wells regulated under 30 TAC Chapter 331 of this title (relating to Underground Injection Control);
- (2) New feedlot/concentrated animal feeding operations, as defined in 30 TAC §213.3;
- (3) Land disposal of Class I wastes, as defined in 30 TAC §335.1;
- (4) The use of sewage holding tanks as parts of organized collection systems; and
- (5) New municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41(b), (c), and (d) of this title (relating to Types of Municipal Solid Waste Facilities).
- (6) New municipal and industrial wastewater discharges into or adjacent to water in the state that would create additional pollutant loading.

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

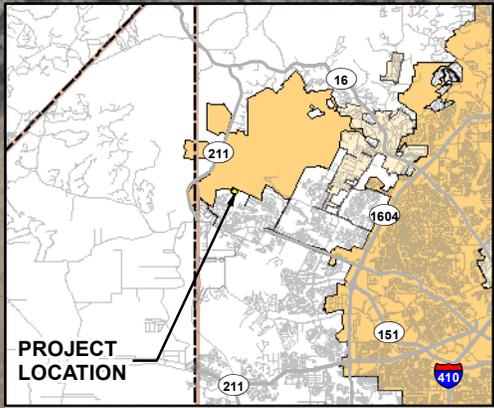
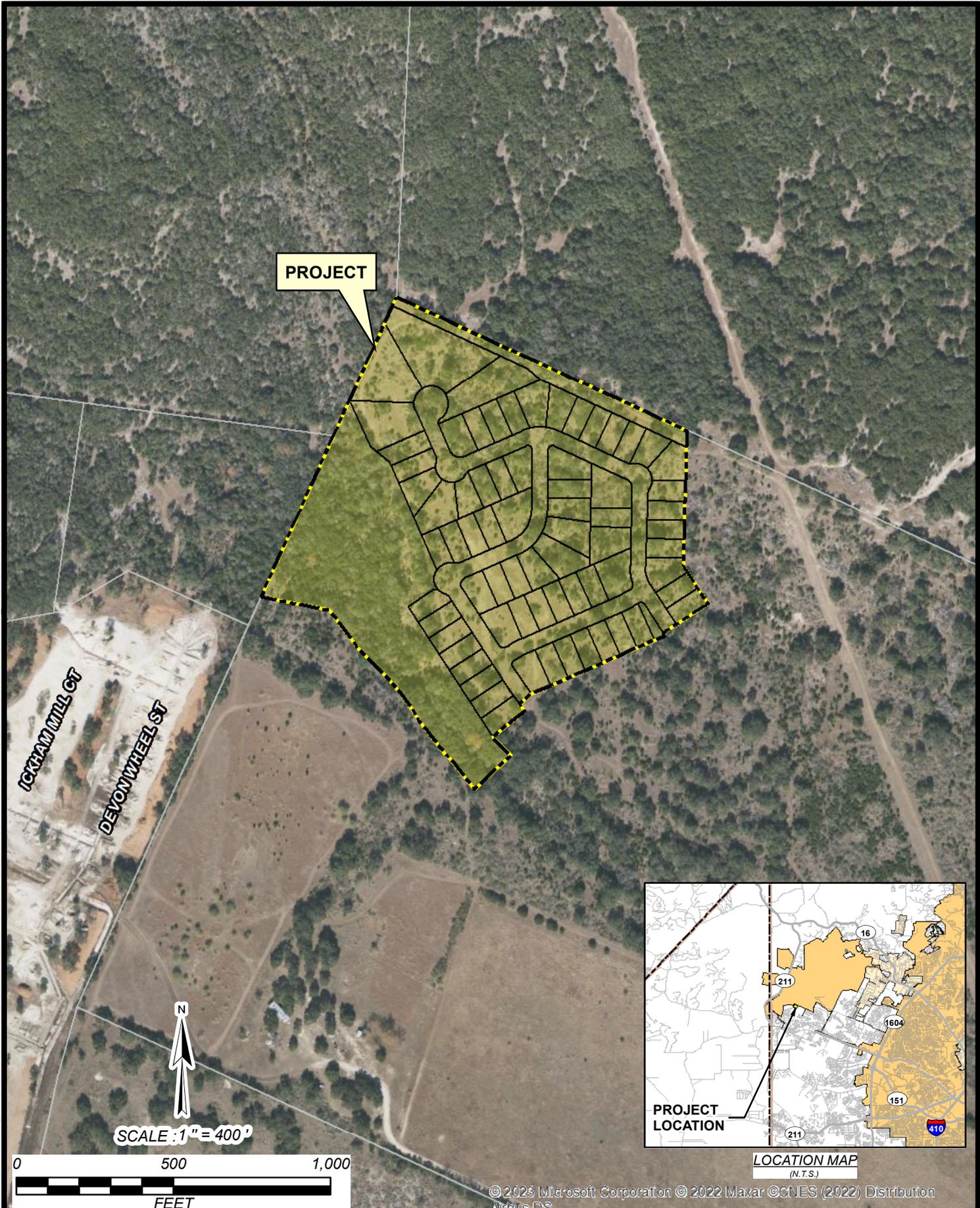
- (1) Waste disposal wells regulated under 30 TAC Chapter 331 (relating to Underground Injection Control);
- (2) Land disposal of Class I wastes, as defined in 30 TAC §335.1; and

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

Administrative Information

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

- For a Water Pollution Abatement Plan or Modification, the total acreage of the site where regulated activities will occur.
 - For an Organized Sewage Collection System Plan or Modification, the total linear footage of all collection system lines.
 - For a UST Facility Plan or Modification or an AST Facility Plan or Modification, the total number of tanks or piping systems.
 - A request for an exception to any substantive portion of the regulations related to the protection of water quality.
 - A request for an extension to a previously approved plan.
19. Application fees are due and payable at the time the application is filed. If the correct fee is not submitted, the TCEQ is not required to consider the application until the correct fee is submitted. Both the fee and the Edwards Aquifer Fee Form have been sent to the Commission's:
- TCEQ cashier
 - Austin Regional Office (for projects in Hays, Travis, and Williamson Counties)
 - San Antonio Regional Office (for projects in Bexar, Comal, Kinney, Medina, and Uvalde Counties)
20. Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.
21. No person shall commence any regulated activity until the Edwards Aquifer Protection Plan(s) for the activity has been filed with and approved by the Executive Director.



LOCATION MAP
(N.T.S.)

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KFW
ENGINEERS + SURVEYING
 FIRM# 9513 FIRM# 10122300
 3421 PAESANOS PKWY, SUITE 200 PHONE (210) 979-8444
 SAN ANTONIO, TEXAS 78231 FAX (210) 979-8441

KALLISON RANCH 215 PHASE 3 UNIT 14B
WATER POLLUTION ABATEMENT PLAN
AERIAL & LOCATION MAP

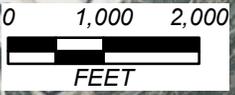
REVISIONS:	ISSUE DATE:
JOB NO. 563-01-26	
DATE: January 2023	DESIGNER:
DRAWN: M.C.	CHECKED: A.P.S.

EX-1

THIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. RELY ONLY ON FINAL HARDCOPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL.



SCALE : 1" = 2,000'



PROJECT

EDWARDS AQUIFER RECHARGE ZONE

EDWARDS AQUIFER TRANSITION ZONE

2,000' Downstream

BIG GERONIMO

WIND GATE PKWY

RANCH VVVV

KALLISON LN

PVT RDAT 15464 FM 471 W
Upper Medio Creek

CULEBRA RD

OLD FM 471 W

TALLEY RD

LEGEND

- Site
- 2,000' Downstream
- Creeks
- Edwards Aquifer
- Mandatory Detention Areas
- FEMA DFIRM**
- 1 PCT Annual Chance Flood Hazard
- 0.2 PCT Annual Chance Flood Hazard
- X, 1 PCT FUTURE CONDITIONS



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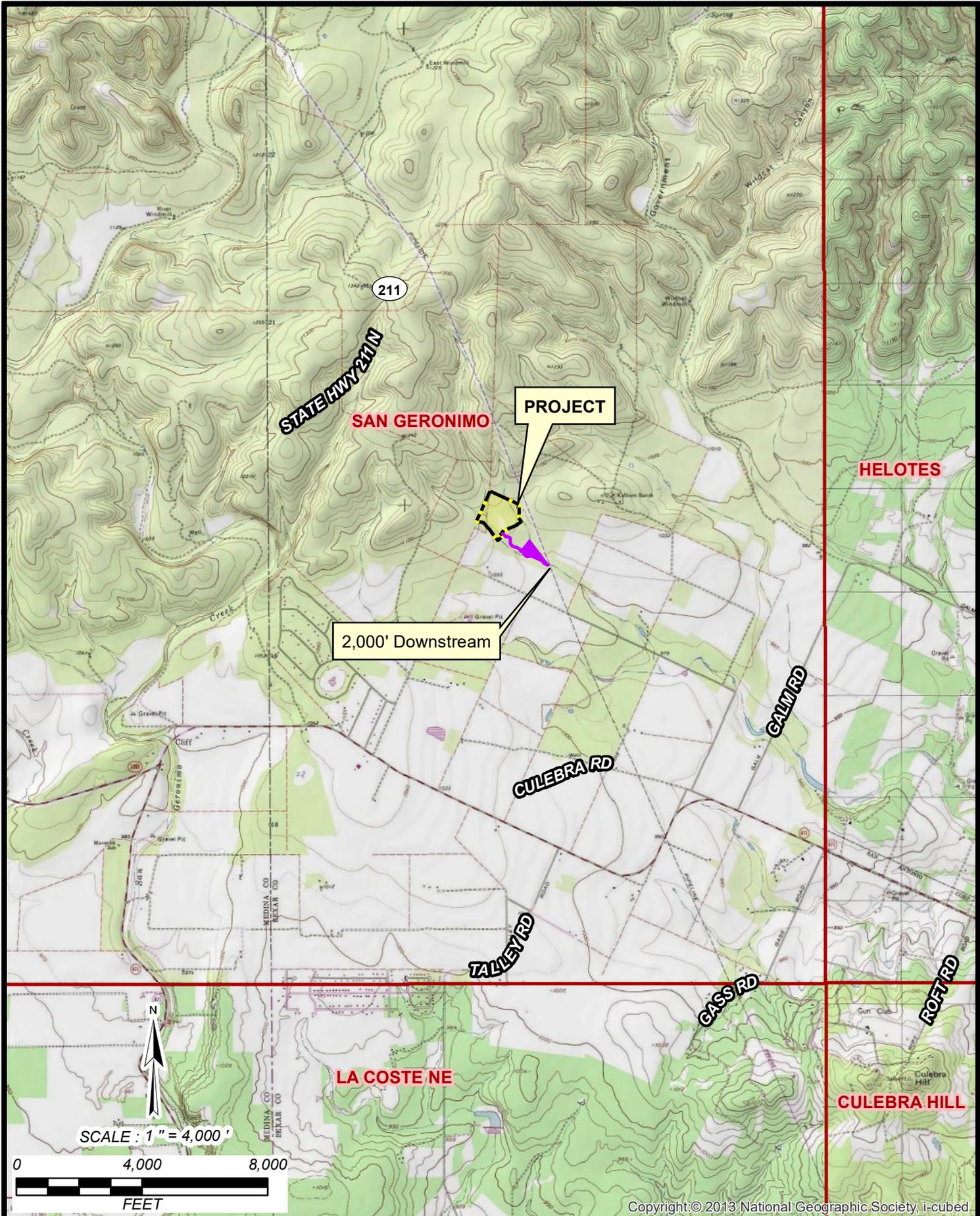
Date: Jan 17, 2023, 11:09:41 AM User ID: MCRUZ
File: M:\6350120\Design\Exhibits\SWPA\PE_X230117\WP-RECHARGE.mxd



3421 PAESANOS PKWY, SUITE 200 PHONE (210) 979-8444
SAN ANTONIO, TEXAS 78231 FAX (210) 979-8441

KALLISON RANCH 215 PHASE 3 UNIT 14B
WATER POLLUTION ABATEMENT PLAN
EDWARDS AQUIFER RECHARGE ZONE

REVISIONS:	ISSUE DATE:	
JOB NO. 563-01-26		
DATE: January 2023	DESIGNER:	
DRAWN: M.C.	CHECKED: A.P.S.	EX-2



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 FIRM# 9513 FIRM# 10122300
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 SAN ANTONIO, TEXAS 78231 FAX (210) 979-8441

KALLISON RANCH 215 PHASE 3 UNIT 14B
WATER POLLUTION ABATEMENT PLAN
USGS QUADRANGLE - SAN GERONIMO

REVISIONS:	ISSUE DATE:
JOB NO. 563-01-26	
DATE: January 2023	DESIGNER:
DRAWN: M.C.	CHECKED: A.P.S.
	EX-3

PROJECT DESCRIPTION

Kallison Ranch 215 Phase 3 Unit 14B is located approximately 1,300 LF Northwest of the intersection of Kallison Bend and Cavy Trail. The portion of Kallison Ranch 215 Phase 3 Unit 14B situated within the Edwards Aquifer Recharge Zone is 4.6 acres and proposes single family residential lots. The project site is located within the Leon watershed, and the San Geronimo USGS quadrangle. The property lies outside the City of San Antonio city limits but within the ETJ. Kallison Ranch 215 Phase 3 Unit 14B is located partially within the Edwards Aquifer Recharge Zone and partially within the Transition Zone. A portion of the site contains the 100-YR floodplain per FEMA firm Panel# 48029C0195G.

The permit for this regulated activity includes the installation of a sewer main extension to provide sanitary sewer service for 8 single family units (total of 8 EDUs) within the Edwards Aquifer recharge zone. The volume of wastewater to be produced by this development within the recharge zone at peak wet weather is approximately 4,000 GPD. The sewer main will be part of the proposed Line B sewer line proposed with Kallison Ranch 215 phase 3 Unit 14B. The wastewater will be treated by the Leon Creek Wastewater Treatment Plant.

The project site (50 ft. envelope around sewer line) is a total of 0.69 acres. The 8 inch sewer main will be SDR 26, and approximately 223. linear feet. Approximately 0.08 acres will be disturbed as a result of installing the sewer main. Silt fencing will be utilized as a temporary best management practice. The silt fence will not be removed until vegetation is established.

There will not be any storage regulated quantities of hazardous materials. San Antonio Water System (SAWS) is the water and sewer service provider for the tract.

Geologic Assessment

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Geologist: Roman C. Pineda,
P.G.

Telephone: (210) 979-8444

Fax: (210) 979-8441

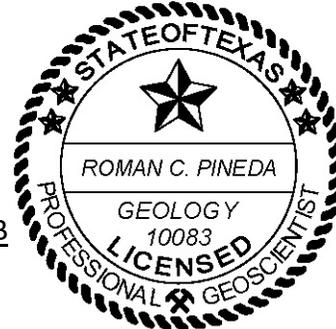
Date: 1/20/2023

Representing: KFW Engineers, TBPE Firm #9513 (Name of Company and TBPG or TBPE registration number)

Signature of Geologist:

Roman C. Pineda

Regulated Entity Name: Kallison Ranch 215 Phase 3 Unit 14B



Project Information

1. Date(s) Geologic Assessment was performed: October 13, 2022

2. Type of Project:

- WPAP
 SCS

- AST
 UST

3. Location of Project:

- Recharge Zone
 Transition Zone
 Contributing Zone within the Transition Zone

4. **Attachment A - Geologic Assessment Table.** Completed Geologic Assessment Table (Form TCEQ-0585-Table) is attached.
5. Soil cover on the project site is summarized in the table below and uses the SCS Hydrologic Soil Groups* (Urban Hydrology for Small Watersheds, Technical Release No. 55, Appendix A, Soil Conservation Service, 1986). If there is more than one soil type on the project site, show each soil type on the site Geologic Map or a separate soils map.

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness(feet)
Patrick soils, 1 to 3 percent slopes (PaB)	B	1-5
Lewisville silty clay, 1 to 3 percent slopes (LvB)	B	3-5

Soil Name	Group*	Thickness(feet)

** 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.

6. **Attachment B – Stratigraphic Column.** A stratigraphic column showing formations, members, and thicknesses is attached. The outcropping unit, if present, should be at the top of the stratigraphic column. Otherwise, the uppermost unit should be at the top of the stratigraphic column.
7. **Attachment C – Site Geology.** A narrative description of the site specific geology including any features identified in the Geologic Assessment Table, a discussion of the potential for fluid movement to the Edwards Aquifer, stratigraphy, structure(s), and karst characteristics is attached.
8. **Attachment D – Site Geologic Map(s).** The Site Geologic Map must be the same scale as the applicant's Site Plan. The minimum scale is 1": 400'
 Applicant's Site Plan Scale: 1" = 100'
 Site Geologic Map Scale: 1" = 100'
 Site Soils Map Scale (if more than 1 soil type): 1" = 400'
9. Method of collecting positional data:
 - Global Positioning System (GPS) technology.
 - Other method(s). Please describe method of data collection: _____

10. The project site and boundaries are clearly shown and labeled on the Site Geologic Map.
11. Surface geologic units are shown and labeled on the Site Geologic Map.
12. Geologic or manmade features were discovered on the project site during the field investigation. They are shown and labeled on the Site Geologic Map and are described in the attached Geologic Assessment Table.
 Geologic or manmade features were not discovered on the project site during the field investigation.
13. The Recharge Zone boundary is shown and labeled, if appropriate.
14. All known wells (test holes, water, oil, unplugged, capped and/or abandoned, etc.): If applicable, the information must agree with Item No. 20 of the WPAP Application Section.
 There are _____ (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
 The wells are not in use and have been properly abandoned.
 The wells are not in use and will be properly abandoned.
 The wells are in use and comply with 16 TAC Chapter 76.
 There are no wells or test holes of any kind known to exist on the project site.

Administrative Information

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

GEOLOGIC ASSESSMENT TABLE						PROJECT NAME: Kallison Ranch 215 Phase 3 Unit 14B													
LOCATION			FEATURE CHARACTERISTICS										EVALUATION		PHYSICAL SETTING				
1A	1B*	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10	11		12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	DIP	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY	CATCHMENT AREA (ACRES)		TOPOGRAPHY
						X	Y	Z		10						<40	≥40	<1.6	≥1.6
No geologic or manmade features were identified within the project limits.																			

* DATUM: NAD 83

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

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

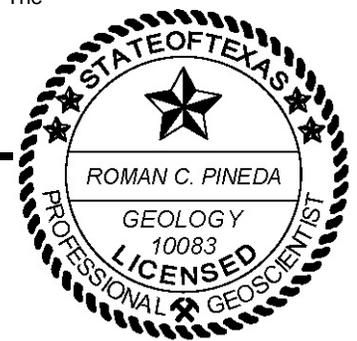
12 TOPOGRAPHY
Cliff, Hilltop, Hillside, Drainage, Floodplain, Streambed

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

Roman C. Pineda

Date 1/20/2023
 Sheet 1 of 1

Attachment A



Kallison Ranch 215 Phase 3 Unit 14B

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

Hydrogeologic subdivision	Group, formation, or member	Hydrologic function	Thickness (feet)	Lithology	Field Identification	Cavern development	Porosity/permeability type				
Upper Cretaceous	Upper confining units	Navarro and Taylor Groups (Knt)	CU	300-600	Gray to Brown Clay and Marly Limestone	Thick, massive bedded	No cavern development	Very low porosity			
		Pecan Gap Chalk (Kpg)	CU	150-200	Chalk and Chalky Marl	Yellow brown and light gray; <i>Exogyra Ponderosa</i>	Essentially non-cavernous	Low porosity/low permeability			
		Austin Chalk (Kau)	CU	200-225	Limestone and argillaceous chalky limestone	Glauconitic; fossiliferous, <i>Gryphaea ancilla</i>	Caves related to structure	Some fracture plane and bedding plane			
		Eagle Ford Group (Kef)	CU	30-50	Brown, flaggy shale and argillaceous limestone	Thin flagstone; petroliferous	None	Primary porosity lost/low permeability			
		Buda Limestone (Kbu)	CU	40-50	Buff, light gray, dense mudstone	Porcelaneous limestone with calcite-filled veins	Minor surface karst	Low porosity/low permeability			
		Del Rio Clay (Kdr)	CU	40-50	Blue-green to yellow-brown clay	Fossiliferous; <i>Ilymatogyra arietina</i>	None	None/primary upper confining unit			
Lower Cretaceous	Edwards Aquifer	Edwards Group	Person Formation (Kep)	I	Georgetown Fonnation (Kgt)	Karst AQ; nokarst CU	2-20	Reddish-brown, gray to light tan marly limestone	Marker fossil; <i>Waconella wacoensis</i>	None	Low porosity/low permeability
				II	Cyclic and marine members, undivided	AQ	80-90	Mudstone to packstone; <i>miliolid</i> 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	Grainstone member	AQ	50-60	<i>Miliolid</i> 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	Dolomite member	AQ	110-130	Mudstone to grainstone; crystalline limestone; chert	Massively bedded light gray, <i>Toucasia</i> 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 <i>miliolid</i> grainstone	Massive, nodular and mottled, <i>Exogyra texana</i>	Large lateral caves at surface; a few caves near Cibolo Creek	Fabric; stratigraphically controlled/large conduit now at surface; no permeability in subsurface

(Modified from Small and Hanson, 1994)

Kallison Ranch 215 Phase 3 Unit 14B

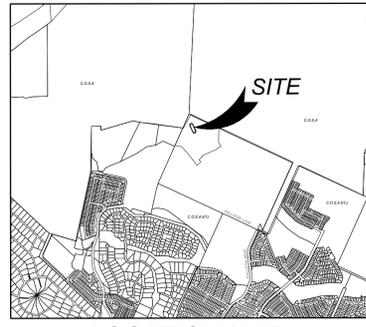
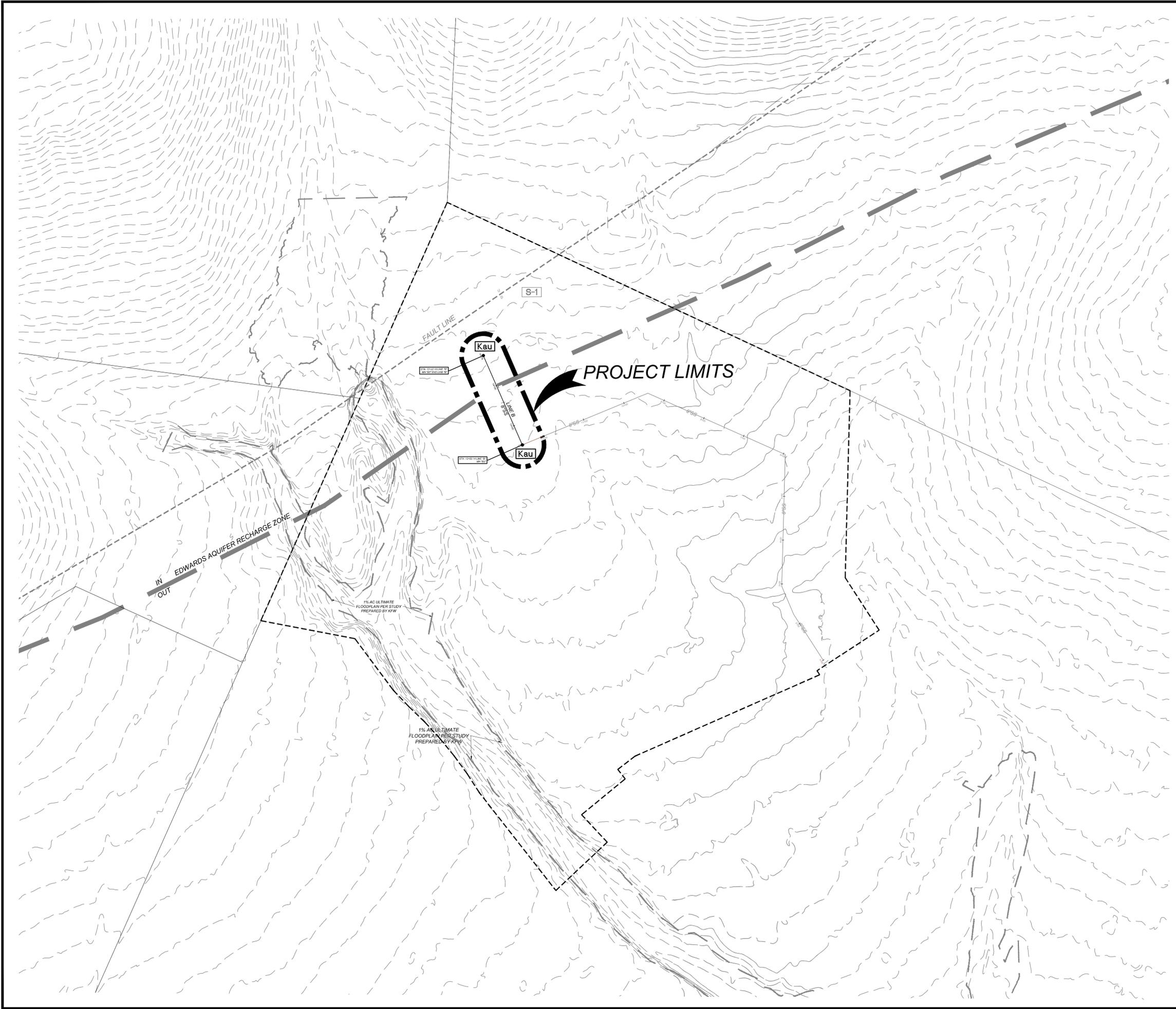
Narrative Description of Site Geology

The overall potential for fluid movement to the Edwards Aquifer for the site is very low. The site lies within the Austin Chalk (Kau). The dominant trend for the site is N45°E, based on an average of the trends of faults within the surrounding area and from published maps (Stein & Ozuna, 1995).

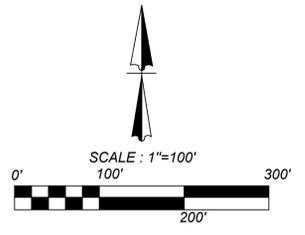
The Kau is characterized as tan argillaceous chalky limestone and fossiliferous *Gryphaea ancilla*. Karst development is typically caves related to geologic structure of the formation. No caves or sinkholes were identified onsite.

No geologic or manmade features were identified onsite.

Date: Jan 20, 2023, 9:25am User ID: jpinet8 File: M:\65171250\design\environmental\GIS\CDP\Kallison Ranch_SCS.dwg



LOCATION MAP
N.T.S.

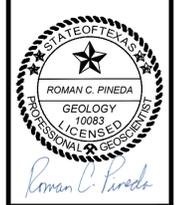


LEGEND	
	ALLUVIUM
	AUSTIN CHALK
	BUDA LIMESTONE
	DEL RIO CLAY
	PERSON FORMATION
	KAINER FORMATION
	GLEN ROSE FORMATION
	POTENTIAL RECHARGE FEATURE
	DRAINAGE PATHWAY
	CONTACT, LOCATED APPROXIMATELY
	FAULT, LOCATED APPROXIMATELY (D, DOWNTHROWN SIDE; U, UPTHROWN SIDE)
	FAULT EXISTENCE UNCERTAIN POSSIBLE FAULT (AS LOCATED BY AERIAL PHOTOGRAPHS)
	STRIKE AND DIP OF BEDDING
	STRIKE AND DIP OF JOINTS
	STRIKE OF VERTICAL JOINTS
	CAVE
	NON-KARST CLOSED DEPRESSION
	SWALLOW HOLE
	SOLUTION CAVITY
	OTHER NATURAL BEDROCK FEATURES: VUGGY ROCK, REEF DEPOSITS
	ZONE
	MAN-MADE FEATURE IN BEDROCK
	WATER WELL
	PROPOSED SANITARY SEWER LINE
	EXISTING SANITARY SEWER LINE
	50' SEWER ENVELOPE
	PROPOSED MANHOLE
	EXISTING MANHOLE

NOTE: THE GEOSCIENTIST SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR PURPOSES OF GEOLOGIC INFORMATION. ALL OTHER INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SIGNED AND SEALED CIVIL ENGINEERING DRAWINGS.

KRW
ENGINEERS + SURVEYING
has joined Coopers Engineering & Design
3421 Passmore Pkwy., Suite 200, San Antonio, TX 78231
TBBE Firm # 5613 • TBBE S. Firm # 1012300

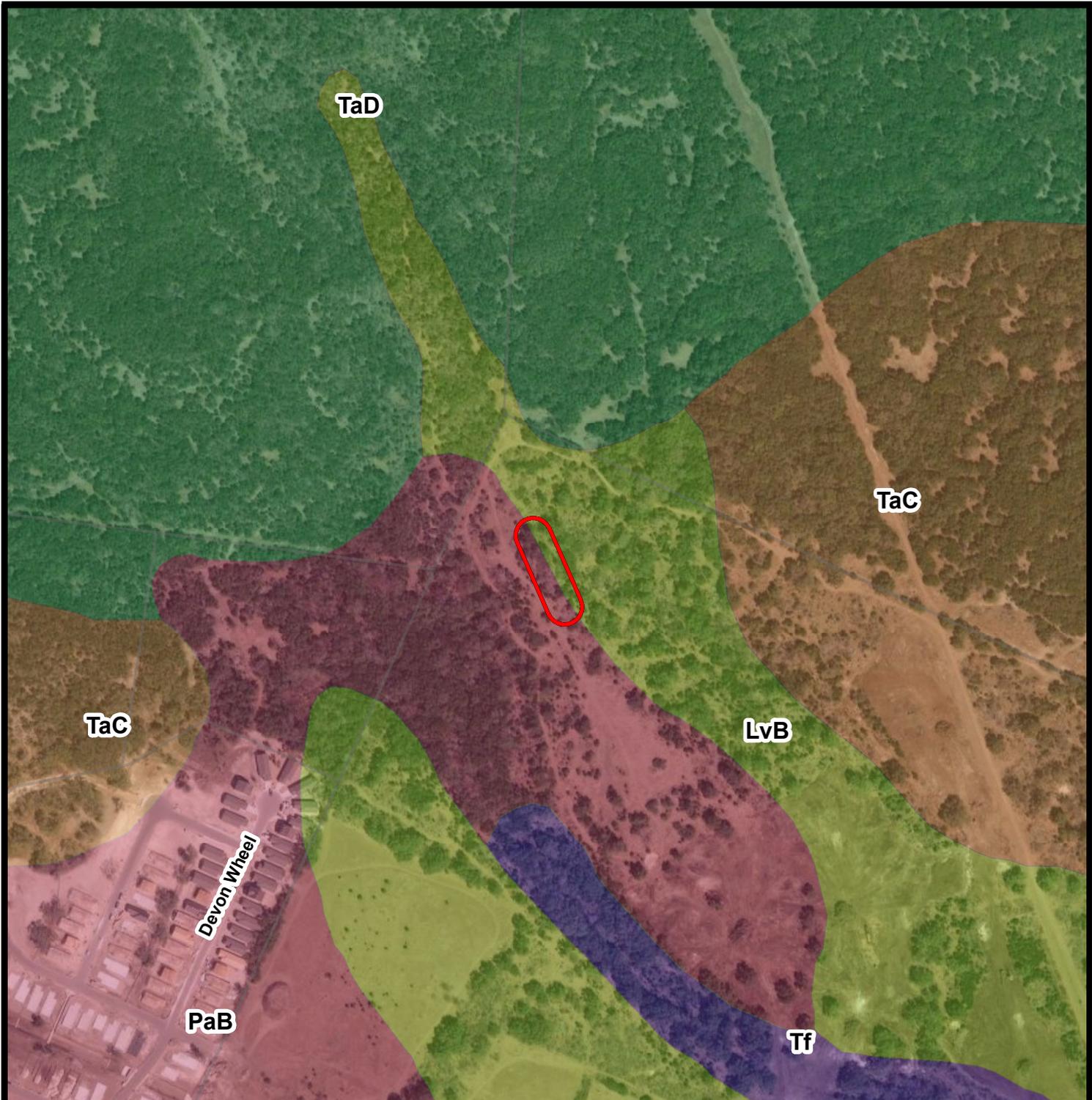
ISSUE DATE
REVISIONS



KALLISON RANCH 215 PHASE 3 UNIT 14B
BEXAR COUNTY, TEXAS
SITE GEOLOGIC MAP

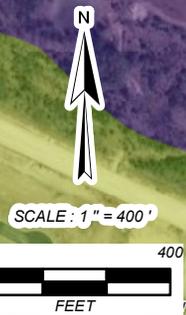
JOB NO.: 563-01-26
DATE: JAN 2023
DRAWN: EU CHECKED: RCP

ATTACHMENT
D



LEGEND

- Project Limits
- Bexar County Soils**
- Eckrant very cobbly clay, 5 to 15 percent slopes
- Eckrant-Rock outcrop association, 8 to 30 percent slopes
- Lewisville silty clay, 1 to 3 percent slopes
- Patrick soils, 1 to 3 percent slopes, rarely flooded
- Tinn and Frio soils, 0 to 1 percent slopes, frequently flooded



Source: Esri, Maxar, Earthstar Geographics, and the

Date: Dec 07, 2022, 3:34:26 PM User ID: eufgwre File: M:\693101280\design\Environment\Bexar\GIS\CAD\Kallison Ranch_SCS_Soils_Survey.mxd



FIRM# 9513 FIRM# 10122300
 3421 PAESANOS PKWY STE. 200 PHONE (210) 979-8444
 SAN ANTONIO, TEXAS 78231 FAX (210) 979-8441

KALLISON RANCH 215 PHASE 3 UNIT 14B
 GEOLOGIC ASSESSMENT
 BEXAR COUNTY SOILS

REVISIONS:	ISSUE DATE:
JOB NO. 563-01-26	
DATE: December 2022	DESIGNER:
DRAWN: E.U.	CHECKED: R.P.

ATTACHMENT E

KALLISON RANCH 215 PHASE 3 UNIT 14B

References

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- Ashworth, J.B., Jan 1983, Ground-Water Availability of the Lower Cretaceous Formations in the Hill Country of South-Central Texas, Texas Department of Water Resources, rept., 273, 12pp.
- Barnes, V.L., 1983, Geologic Atlas of Texas, San Antonio Sheet, Bureau of Economic Geology, The University of Texas at Austin, Texas.
- Collins, E.W., 1995, Geologic Map of the San Geronimo Quad, Texas: University of Texas at Austin, Bureau of Economic Geology, Open-File Map STATEMAP Study Area 5, scale 1:24,000.
- Federal Emergency Management Agency (FEMA), September 28, 2010, Bexar County, Texas and Incorporated areas, Flood Insurance Rate Map (FIRM), Panel 48029C0195G, FEMA, Washington, D.C.
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- Rose, P.R., 1972, Edwards Group, Surface and Subsurface, Central Texas: Bur. Econ. Geol., Rep of Invest. 74, 198 pp.
- Stein, W.G., and Ozuna, G.B., 1995, Geologic Framework and Hydrogeologic Characteristics of the Edwards Aquifer Recharge Zone, Bexar County, Texas: U.S. Geol. Survey, Water – Resources Investigations 95-4030, 8 pp., 2 figs.
- Texas Natural Resource Conservation Commission, 1999, Edwards Aquifer Recharge Zone Map, San Geronimo Quadrangle, TNRCC, San Antonio, Texas.
- United States Department of Agriculture, 1991, Soil Survey – Bexar County, Texas, USDA.
- United States Geologic Survey, 2988, (USGS), San Geronimo Quadrangle, USGS, Denver, Colorado.
- Veni, G., 1988, The Caves of Bexar County, Second Edition, The Texas Memorial Museum, University of Texas, Austin, Texas.
- Veni, George, and Associates, 1994, Geologic Controls in Cave Development and the Distribution of Cave Fauna in the San Antonio, Texas, Region: Report for the Texas Parks and Wildlife Department and U.S. Fish and Wildlife Service, 99 pp.

Organized Sewage Collection System Application

Texas Commission on Environmental Quality

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

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

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

Regulated Entity Name: Kallison Ranch 215 Phase 3 Unit 14B

1. **Attachment A – SCS Engineering Design Report.** This Engineering Design Report is provided to fulfill the requirements of 30 TAC Chapter 217, including 217.10 of Subchapter A, §§217.51 – 217.70 of Subchapter C, and Subchapter D as applicable, and is required to be submitted with this SCS Application Form.

Customer Information

2. The entity and contact person responsible for providing the required engineering certification of testing for this sewage collection system upon completion (including private service connections) and every five years thereafter to the appropriate TCEQ region office pursuant to 30 TAC §213.5(c) is:

Contact Person: David Rittenhouse

Entity: PHSA-NW315, LLC.

Mailing Address: 9000 Gulf Freeway

City, State: Houston, Texas

Zip: 77017

Telephone: (210) 273-8373

Fax: _____

Email Address: David.rittenhouse@perryhomes.com

The appropriate regional office must be informed of any changes in this information within 30 days of the change.

3. The engineer responsible for the design of this sewage collection system is:

Contact Person: Omar Espinosa, P.E.

Texas Licensed Professional Engineer's Number: 125560

Entity: Colliers Engineering & Design

Mailing Address: 3421 Paesanos Pkwy.

City, State: San Antonio, TX

Zip: 78231

Telephone: 210-979-8444

Fax: 210-979-8441

Email Address: omar.espinosa@collierseng.com

Project Information

4. Anticipated type of development to be served (estimated future population to be served, plus adequate allowance for institutional and commercial flows):

- Residential: Number of single-family lots: 8
 Multi-family: Number of residential units: _____
 Commercial
 Industrial
 Off-site system (not associated with any development)
 Other: _____

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

<u>100</u> % Domestic	<u>4,000</u> gallons/day
<u>0</u> % Industrial	<u>0</u> gallons/day
<u>0</u> % Commingled	<u>0</u> gallons/day
Total gallons/day: <u>4,000</u>	

6. Existing and anticipated infiltration/inflow is 708 gallons/day. This will be addressed by:

A low pressure air test conforming to the procedures as described in ASTM C828, ASTM C924, ASTM F1417, or other appropriate procedure with the exception of the testing times ~~will be conducted~~ on all gravity collection pipe. The testing times shall conform to the TCEQ design criteria for sewer systems, 30 TAC 217.57. Manholes will be tested in accordance with 30 TAC 217.58.

7. A Water Pollution Abatement Plan (WPAP) is required for construction of any associated commercial, industrial or residential project located on the Recharge Zone.

- The WPAP application for this development was approved by letter dated _____. A copy of the approval letter is attached.
 The WPAP application for this development was submitted to the TCEQ on _____, but has not been approved.
 A WPAP application is required for an associated project, but it has not been submitted.
 There is no associated project requiring a WPAP application.

8. Pipe description:

Table 1 - Pipe Description

<i>Pipe Diameter(Inches)</i>	<i>Linear Feet (1)</i>	<i>Pipe Material (2)</i>	<i>Specifications (3)</i>
8	223	SDR 26	ASTM D2241, 3139(160 PSI)

Total Linear Feet: 223

- (1) Linear feet - Include stub-outs and double service connections. Do not include private service laterals.
 (2) Pipe Material - If PVC, state SDR value.
 (3) Specifications - ASTM / ANSI / AWWA specification and class numbers should be included.

9. The sewage collection system will convey the wastewater to the ^{Leon} ^{Creek} (name) Treatment Plant. The treatment facility is:

- Existing
- Proposed

10. All components of this sewage collection system will comply with:

- The City of ^{San} ^{Antonio} standard specifications.
- Other. Specifications are attached.

11. No force main(s) and/or lift station(s) are associated with this sewage collection system.
- A force main(s) and/or lift station(s) is associated with this sewage collection system and the **Lift Station/Force Main System Application** form (TCEQ-0624) is included with this application.

Alignment

12. There are no deviations from uniform grade in this sewage collection system without manholes and with open cut construction.
13. There are no deviations from straight alignment in this sewage collection system without manholes.
- Attachment B - Justification and Calculations for Deviation in Straight Alignment without Manholes.** A justification for deviations from straight alignment in this sewage collection system without manholes with documentation from pipe manufacturer allowing pipe curvature is attached.
- For curved sewer lines, all curved sewer line notes (TCEQ-0596) are included on the construction plans for the wastewater collection system.

Manholes and Cleanouts

14. Manholes or clean-outs exist at the end of each sewer line(s). These locations are listed below: (Please attach additional sheet if necessary)

Table 2 - Manholes and Cleanouts

<i>Line</i>	<i>Shown on Sheet</i>	<i>Station</i>	<i>Manhole or Clean-out?</i>
B	6.4 Of	12+52.14	MANHOLE "B5"
B	6.4 Of	14+75.00	MANHOLE "B6"
	Of		

<i>Line</i>	<i>Shown on Sheet</i>	<i>Station</i>	<i>Manhole or Clean-out?</i>
	Of		
	Of		
	Of		

15. Manholes are installed at all Points of Curvature and Points of Termination of a sewer line.
16. The maximum spacing between manholes on this project for each pipe diameter is no greater than:

Pipe Diameter (inches)	Max. Manhole Spacing (feet)
6 - 15	500
16 - 30	800
36 - 48	1000
≥54	2000

- Attachment C – Justification for Variance from Maximum Manhole Spacing.** The maximum spacing between manholes on this project (for each pipe diameter used) is greater than listed in the table above. A justification for any variance from the maximum spacing is attached, and must include a letter from the entity which will operate and maintain the system stating that it has the capability to maintain lines with manhole spacing greater than the allowed spacing.
17. All manholes will be monolithic, cast-in-place concrete.
- The use of pre-cast manholes is requested for this project. The manufacturer's specifications and construction drawings, showing the method of sealing the joints, are attached.

Site Plan Requirements

Items 18 - 25 must be included on the Site Plan.

18. The Site Plan must have a minimum scale of 1" = 400'.
Site Plan Scale: 1" = 100 '.
19. The Site Plan must include the sewage collection system general layout, including manholes with station numbers, and sewer pipe stub outs (if any). Site plan must be overlain by topographic contour lines, using a contour interval of not greater than ten feet and showing the area within both the five-year floodplain and the 100-year floodplain of any drainage way.
20. Lateral stub-outs:
- The location of all lateral stub-outs are shown and labeled.
- No lateral stub-outs will be installed during the construction of this sewer collection system.

21. Location of existing and proposed water lines:

- The entire water distribution system for this project is shown and labeled.
- If not shown on the Site Plan, a Utility Plan is provided showing the entire water and sewer systems.
- There will be no water lines associated with this project.

22. 100-year floodplain:

- After construction is complete, no part of this project will be in or cross a 100-year floodplain, either naturally occurring or manmade. (Do not include streets or concrete-lined channels constructed above of sewer lines.)
- After construction is complete, all sections located within the 100-year floodplain will have water-tight manholes. These locations are listed in the table below and are shown and labeled on the Site Plan. (Do not include streets or concrete-lined channels constructed above sewer lines.)

Table 3 - 100-Year Floodplain

<i>Line</i>	<i>Sheet</i>	<i>Station</i>
	of	to

23. 5-year floodplain:

- After construction is complete, no part of this project will be in or cross a 5-year floodplain, either naturally occurring or man-made. (Do not include streets or concrete-lined channels constructed above sewer lines.)
- After construction is complete, all sections located within the 5-year floodplain will be encased in concrete or capped with concrete. These locations are listed in the table below and are shown and labeled on the Site Plan. (Do not include streets or concrete-lined channels constructed above sewer lines.)

Table 4 - 5-Year Floodplain

<i>Line</i>	<i>Sheet</i>	<i>Station</i>
	of	to

24. Legal boundaries of the site are shown.

25. The ***final plans and technical specifications*** are submitted for the TCEQ’s review. Each sheet of the construction plans and specifications are dated, signed, and sealed by the Texas Licensed Professional Engineer responsible for the design on each sheet.

Items 26 - 33 must be included on the Plan and Profile sheets.

26. All existing or proposed water line crossings and any parallel water lines within 9 feet of sewer lines are listed in the table below. These lines must have the type of pressure rated pipe to be installed shown on the plan and profile sheets. Any request for a variance from the required pressure rated piping at crossings must include a variance approval from 30 TAC Chapter 290.
- There will be no water line crossings.
- There will be no water lines within 9 feet of proposed sewer lines.

Table 5 - Water Line Crossings

<i>Line</i>	<i>Station or Closest Point</i>	<i>Crossing or Parallel</i>	<i>Horizontal Separation Distance</i>	<i>Vertical Separation Distance</i>
B	12+77.14	MAIN CROSSING		2.1'
B	14+22.42	MAIN CROSSING		2.4'

27. Vented Manholes:

- No part** of this sewer line is within the 100-year floodplain and vented manholes are not required by 30 TAC Chapter 217.
- A portion** of this sewer line is within the 100-year floodplain and vented manholes will be provided at less than 1500 foot intervals. These water-tight manholes are listed in the table below and labeled on the appropriate profile sheets.
- A portion** of this sewer line is within the 100-year floodplain and an alternative means of venting shall be provided at less than 1500 feet intervals. A description of the alternative means is described on the following page.
- A portion** of this sewer line is within the 100-year floodplain; however, there is no interval longer than 1500 feet located within. No vented manholes will be used.

Table 6 - Vented Manholes

<i>Line</i>	<i>Manhole</i>	<i>Station</i>	<i>Sheet</i>

<i>Line</i>	<i>Manhole</i>	<i>Station</i>	<i>Sheet</i>

28. Drop manholes:

- There are no drop manholes associated with this project.
- Sewer lines which enter new or existing manholes or "manhole structures" higher than 24 inches above the manhole invert are listed in the table below and labeled on the appropriate profile sheets. These lines meet the requirements of 30 TAC §217.55(l)(2)(H).

Table 7 - Drop Manholes

<i>Line</i>	<i>Manhole</i>	<i>Station</i>	<i>Sheet</i>

29. Sewer line stub-outs (For proposed extensions):

- The placement and markings of all sewer line stub-outs are shown and labeled.
- No sewer line stub-outs are to be installed during the construction of this sewage collection system.

30. Lateral stub-outs (For proposed private service connections):

- The placement and markings of all lateral stub-outs are shown and labeled.
- No lateral stub-outs are to be installed during the construction of this sewage collection system.

31. Minimum flow velocity (From Appendix A)

- Assuming pipes are flowing full; all slopes are designed to produce flows equal to or greater than 2.0 feet per second for this system/line.

32. Maximum flow velocity/slopes (From Appendix A)

- Assuming pipes are flowing full, all slopes are designed to produce maximum flows of less than or equal to 10 feet per second for this system/line.
- Attachment D – Calculations for Slopes for Flows Greater Than 10.0 Feet per Second.** Assuming pipes are flowing full, some slopes produce flows which are greater than 10 feet per second. These locations are listed in the table below. Calculations are attached.

Table 8 - Flows Greater Than 10 Feet per Second

<i>Line</i>	<i>Profile Sheet</i>	<i>Station to Station</i>	<i>FPS</i>	<i>% Slope</i>	<i>Erosion/Shock Protection</i>

33. Assuming pipes are flowing full, where flows are ≥ 10 feet per second, the provisions noted below have been made to protect against pipe displacement by erosion and/or shock under 30 TAC §217.53(l)(2)(B).

- Concrete encasement shown on appropriate Plan and Profile sheets for the locations listed in the table above.
- Steel-reinforced, anchored concrete baffles/retards placed every 50 feet shown on appropriate Plan and Profile sheets for the locations listed in the table above.
- N/A

Administrative Information

- 34. The final plans and technical specifications are submitted for TCEQ review. Each sheet of the construction plans and specifications are dated, signed, and sealed by the Texas Licensed Professional Engineer responsible for the design on each sheet.
- 35. Standard details are shown on the detail sheets, which are dated, signed, and sealed by the Texas Licensed Professional Engineer, as listed in the table below:

Table 9 - Standard Details

<i>Standard Details</i>	<i>Shown on Sheet</i>	
Lateral stub-out marking [Required]	6.8	of
Manhole, showing inverts comply with 30 TAC §217.55(l)(2) [Required]	6.7	of
Alternate method of joining lateral to existing SCS line for potential future connections [Required]	6.8	of
Typical trench cross-sections [Required]	6.7	of
Bolted manholes [Required]	6.7	of
Sewer Service lateral standard details [Required]	6.8	of
Clean-out at end of line [Required, if used]	N/A	of
Baffles or concrete encasement for shock/erosion protection [Required, if flow velocity of any section of pipe >10 fps]	N/A	of
Detail showing Wastewater Line/Water Line Crossing [Required, if crossings are proposed]	6.3-6.5	of
Mandrel detail or specifications showing compliance with 30 TAC §217.57(b) and (c) [Required, if Flexible Pipe is used]	N/A	of

<i>Standard Details</i>	<i>Shown on Sheet</i>
Drop manholes [Required, if a pipe entering a manhole is more than 24 inches above manhole invert]	N/A of

36. All organized sewage collection system general construction notes (TCEQ-0596) are included on the construction plans for this sewage collection system.
37. All proposed sewer lines will be sufficiently surveyed/staked to allow an assessment prior to TCEQ executive director approval. If the alignments of the proposed sewer lines are not walkable on that date, the application will be deemed incomplete and returned.
- Survey staking was completed on this date: _____
38. Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.
39. Any modification of this SCS application will require TCEQ approval, prior to construction, and may require submission of a revised application, with appropriate fees.

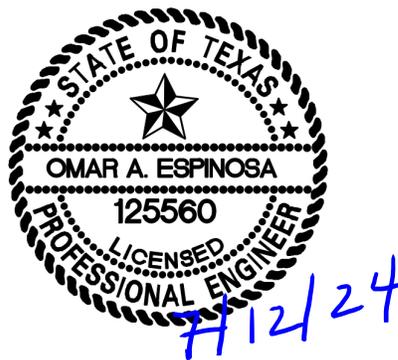
Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Organized Sewage Collection System Application** is hereby submitted for TCEQ review and executive director approval. The system was designed in accordance with the requirements of 30 TAC §213.5(c) and 30 TAC §217 and prepared by:

Print Name of Licensed Professional Engineer: Omar Espinosa, P.E.

Date: 7/12/24

Place engineer's seal here:



Signature of Licensed Professional Engineer:

Appendix A-Flow Velocity Table

Flow Velocity (Flowing Full) All gravity sewer lines on the Edwards Aquifer Recharge Zone shall be designed and constructed with hydraulic slopes sufficient to give a velocity when flowing full of not less than 2.0 feet per second, and not greater than 10 feet per second. The grades shown in the following table are based on Manning's formula and an n factor of 0.013 and shall be the minimum and maximum acceptable slopes unless provisions are made otherwise.

Table 10 - Slope Velocity

Pipe Diameter(Inches)	% Slope required for minimum flow velocity of 2.0 fps	% Slope which produces flow velocity of 10.0 fps
6	0.50	12.35
8	0.33	8.40
10	0.25	6.23
12	0.20	4.88
15	0.15	3.62
18	0.11	2.83
21	0.09	2.30
24	0.08	1.93
27	0.06	1.65
30	0.055	1.43
33	0.05	1.26
36	0.045	1.12
39	0.04	1.01
>39	*	*

*For lines larger than 39 inches in diameter, the slope may be determined by Manning's formula (as shown below) to maintain a minimum velocity greater than 2.0 feet per second when flowing full and a maximum velocity less than 10 feet per second when flowing full.

$$v = \frac{1.49}{n} \times R_h^{0.67} \times \sqrt{S}$$

Figure 1 - Manning's Formula

Where:

v = velocity (ft/sec)

n = Manning's roughness coefficient (0.013)

R_h = hydraulic radius (ft)

S = slope (ft/ft)

KALLISON RANCH 215 PHASE 3 UNIT 14B

BEXAR COUNTY, TEXAS

SANITARY SEWER IMPROVEMENTS

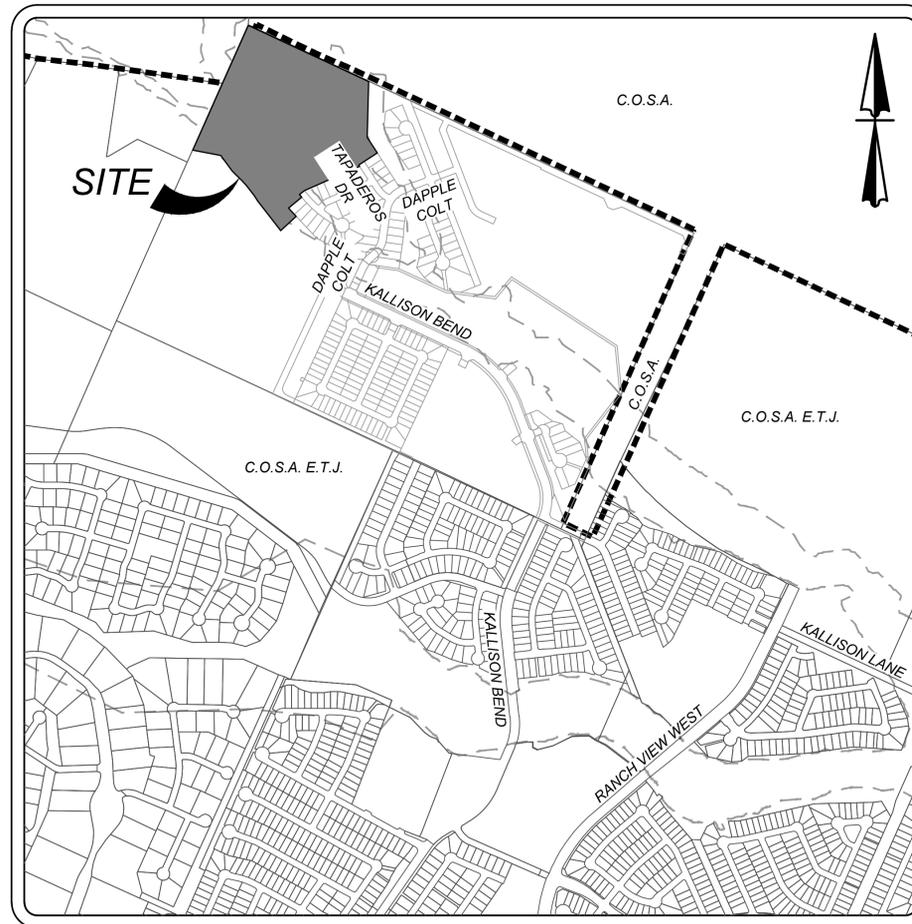
SAWS STANDARD GENERAL CONSTRUCTION NOTES
ASSOCIATED WITH 2021 SAWS STANDARD SPECS
Updated December 14, 2021

General Section

- All materials and construction procedures within the scope of this contract shall be approved by the San Antonio Water System (SAWS) and comply with the Plans, Specifications, General Conditions and with the following as applicable:
 - Current Texas Commission on Environmental Quality (TCEQ) Design Criteria for Domestic Wastewater System, Texas Administrative Code (TAC) Title 30 Part 1 Chapter 217 and "Public Drinking Water", TAC Title 30 Part 1 Chapter 290.
 - Current TXDOT "Standard Specifications for Construction of Highways, Streets and Drainage".
 - Current "San Antonio Water System Standard Specifications for Water and Sanitary Sewer Construction".
 - Current City of San Antonio "Standard Specifications for Public Works Construction".
 - Current City of San Antonio "Utility Excavation Criteria Manual" (UECM).
- The contractor shall not proceed with any pipe installation work until they obtain a copy of the approved Counter Permit or General Construction Permit (GCP) from the consultant and has been notified by SAWS Construction Inspection Division to proceed with the work and has arranged a meeting with the Inspector and consultant for the work requirements. Work completed by the contractor without an approved Counter Permit and/or a GCP will be subject to removal and replacement at the expense of the contractors and/or the developer.
- The Contractor shall obtain the SAWS Standard Details from the SAWS website, http://www.saws.org/business_contr/specs. Unless otherwise noted within the design plans.
- The Contractor is to make arrangements with the SAWS Construction Inspection Division at (210) 233-2973, on notification procedures that will be used to notify affected home residents and/or property owners 48 hours prior to beginning any work.
- Location and depth of existing utilities and service laterals shown on the plans are understood to be approximate. Actual locations and depths must be field verified by the Contractor at least 1 week prior to construction. It shall be the Contractor's responsibility to locate utility service lines as required for construction and to protect them during construction at no cost to SAWS.
- The Contractor shall verify the exact location of underground utilities and drainage structures at least 1-2 weeks prior to construction whether shown on plans or not. Please allow up to 7 business days for locates requesting pipe location markers on SAWS facilities. The following contact information are supplied for verification purposes:
 - SAWS Utility Locates: <http://www.saws.org/Service/Locates>
 - COSA Drainage (210) 207-0724 or (210) 207-6026
 - COSA Traffic Signal Operations (210) 206-8480
 - COSA Traffic Signal Damages (210) 207-3951
 - Texas State Wide One Call Locator 1-800-545-6005 or 811
- The Contractor shall be responsible for restoring existing fences, curbs, streets, driveways, sidewalks, landscaping and structures to its original or better condition if damages are made as a result of the project's construction.
- All work in Texas Department of Transportation (TxDOT) and/or Bexar County right-of-way shall be done in accordance with respective construction specifications and permit requirements.
- The Contractor shall comply with City of San Antonio or other governing municipality's tree ordinances when excavating near trees.
- The Contractor shall not place any waste materials in the 100-year Flood Plain without first obtaining an approved Flood Plain Permit.
- Holiday Work: Contractors will not be allowed to perform SAWS work on SAWS recognized holidays. Request should be sent to contractors@saws.org. Weekend Work: Contractors are required to notify the SAWS Inspection Construction Department 48 hours in advance to request weekend work. Request should be sent to constworkreq@saws.org. Any and all SAWS utility work installed without holiday/weekend approval will be subject to be uncovered for proper inspection.
- Compaction notes (Item 804): The contractor shall be responsible for meeting the compaction requirements on all trench backfill and for paying for the tests performed by a third party. Compaction tests will be done at one location point randomly selected, or as indicated by the SAWS Inspector and/or the test administrator, per each 12-inch loose lift per 400 linear feet at a minimum. This project will not be accepted and finalized by SAWS without this requirement being met and verified by providing all necessary documented test results.
- A copy of all testing reports shall be forwarded to SAWS Construction Inspection Division.

Sewer Notes

- The Contractor is responsible for ensuring that no Sanitary Sewer Overflow (SSO) occurs as a result of their work. All contractor personnel responsible for SSO prevention and control shall be trained on proper response. Should an SSO occur, the contractor shall:
 - Identify the source of the SSO and notify SAWS Emergency Operations Center (EOC) immediately at (210) 233-2014. Provide the address of the spill and an estimated volume or flow.
 - Attempt to eliminate the source of the SSO.
 - Contain sewage from the SSO to the extent of preventing a possible contamination of waterways.
 - Clean up spill site (return contained sewage to the collection system if possible) and properly dispose of contaminated soil/materials.
 - Clean the affected sewer mains and remove any debris.
 - Meet all post-SSO requirements as per the EPA Consent Decree, including line cleaning and televising the affected sewer mains (at SAWS direction) within 24 hours. Should the Contractor fail to address an SSO immediately and to SAWS satisfaction, they will be responsible for all costs incurred by SAWS, including any fines from EPA, TCEQ and/or any other Federal, State or Local Agencies. No separate measurement or payment shall be made for this work. All work shall be done according to guidelines set by the TCEQ and SAWS.
- If bypass pumping is required, the Contractor shall perform such work in accordance with SAWS Standard Specification for Water and Sanitary Sewer Construction, Item No. 864, "Bypass Pumping".
- Prior to tie-ins, any shutdowns of existing force mains of any size must be coordinated with the SAWS Construction Inspection Division at (210) 233-2973 at least one week in advance of the shutdown. The Contractor must also provide a sequence of work as related to the tie-ins; this is at no additional cost to SAWS or the project and it is the responsibility of the Contractor to sequence the work accordingly.
- Sewer pipe where water line crosses shall be 160 psi and meet the requirements of ASTM D2241, TAC 217.53 and TCEQ 290.44(e)(4)(B). Contractor shall center a 20' joint of 160 psi pressure rated PVC at the proposed water crossing.
- ELEVATIONS POSTED FOR TOP OF MANHOLES ARE FOR REFERENCE ONLY: It shall be the responsibility of the Contractor to make allowances and adjustments for top of manholes to match the finished grade of the project's improvements. (NSP)
- Spills, Overflows, or Discharges of Wastewater: All spills, overflows, or discharges of wastewater, recycled water, petroleum products, or chemicals must be reported immediately to the SAWS Inspector assigned to the Counter Permit or General Construction Permit (GCP). This requirement applies to every spill, overflow, or discharge regardless of size.
- Manhole and all pipe testing (including the TV inspection) must be performed and passed prior to Final Field Acceptance by SAWS Construction Inspection Division, as per the SAWS Specifications For Water and Sanitary Sewer Construction.
- All PVC pipe over 14 feet of cover shall be extra strength with minimum pipe stiffness of 115 psi.



LOCATION MAP

N.T.S.

OWNER/DEVELOPER:
PHSA-NW315
9000 GULF FREEWAY
HOUSTON, TX 77234
PHONE: (713) 948 - 7700



KFW
ENGINEERS + SURVEYING

3921 Paesanos Pkwy., Suite 200, San Antonio, TX 78232
Phone #: (210) 979-8444 • Fax #: (210) 979-8441
TBPE Firm #: 9513 • TBPLS Firm #: 10122300

SEWER - WEST SEWERSHED - LEON CREEK W.R.C.

DEVELOPER'S NAME: PHSA-NW315, LLC	
DEVELOPER'S ADDRESS: 9000 GULF FREEWAY	
CITY: HOUSTON	STATE: TEXAS ZIP: 77017
PHONE#: (713) 948-7783	FAX#: TOTAL ACRES: 28.22 ACRES
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TOTAL LINEAR FOOTAGE OF PIPE: 2,795 LF - 8" SDR 26	PLAT NO.: 22-11800650
NUMBER OF LOTS: 70	SAWS JOB#: 22-1729

PLAT NO. 22-11800650

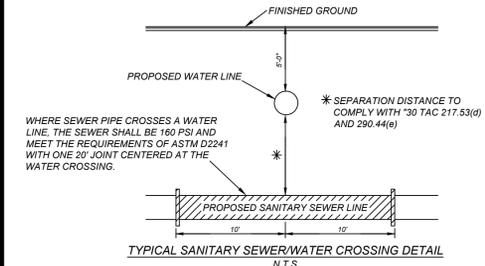
SHEET 6.0

TRENCH EXCAVATION SAFETY PROTECTION

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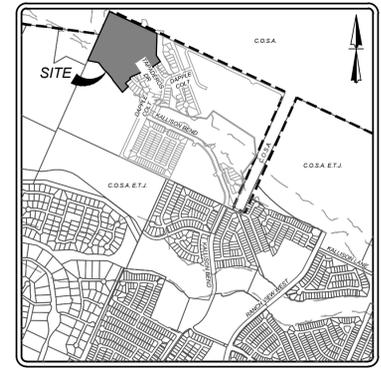


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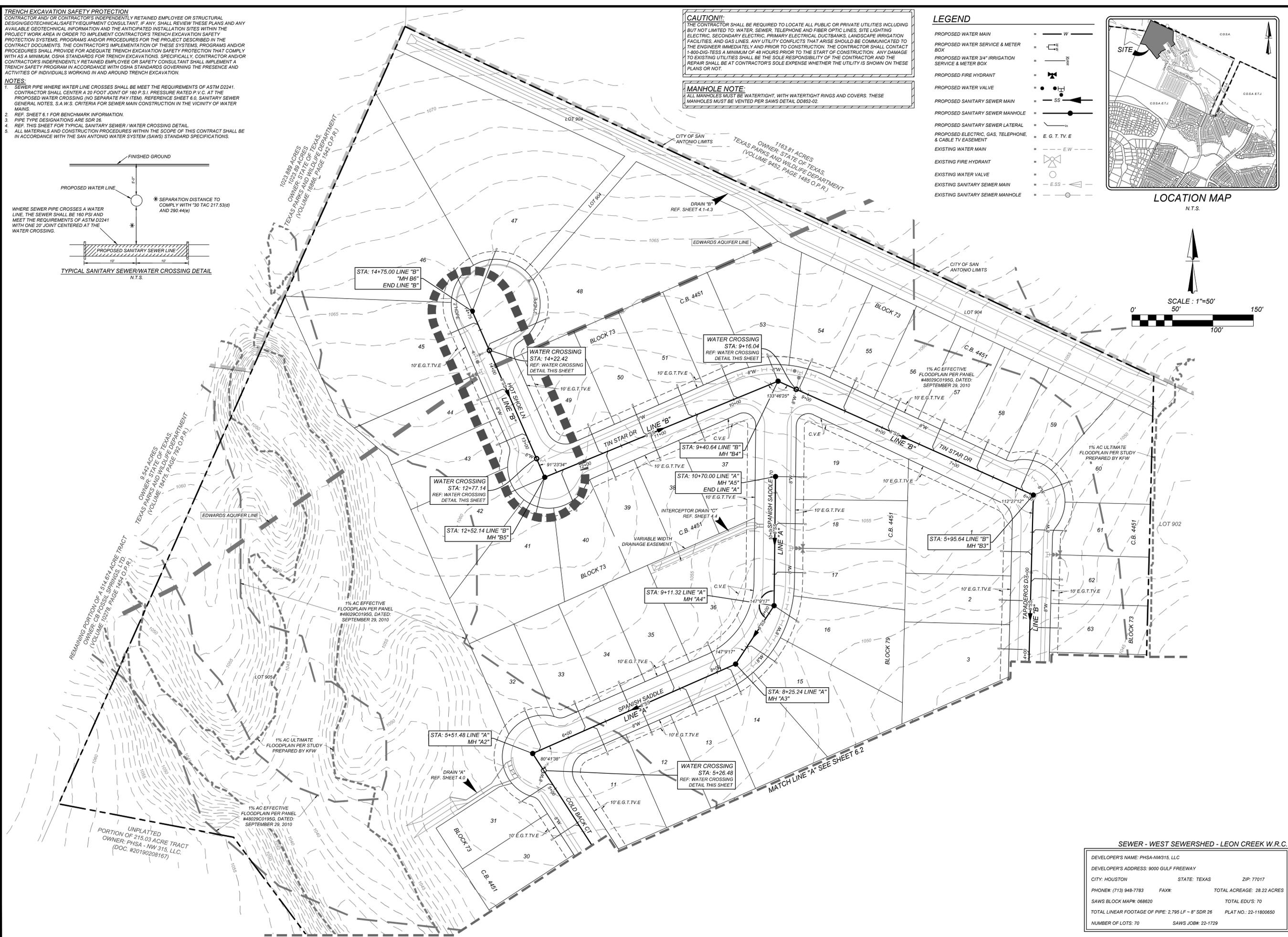
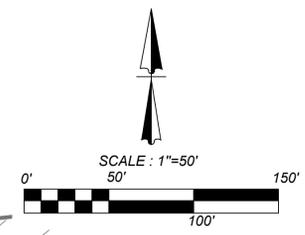
MANHOLE NOTE:
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LEGEND

- PROPOSED WATER MAIN
- PROPOSED WATER SERVICE & METER BOX
- PROPOSED WATER 3/4" IRRIGATION SERVICE & METER BOX
- PROPOSED FIRE HYDRANT
- PROPOSED WATER VALVE
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LOCATION MAP
N.T.S.



KFW ENGINEERS + SURVEYING
has joined Coopers Engineering & Design
3421 Passmore Pkwy, Suite 200, San Antonio, TX 78231
TBBE Firm # 0613 • TBBE S. Firm # 1012300

ISSUE DATE:
REVISIONS:



KALLISON RANCH 215 PHASE 3 UNIT 14B
BEXAR COUNTY, TEXAS
OVERALL SANITARY SEWER PLAN (SHEET 1 OF 2)

SEWER - WEST SEWERSHED - LEON CREEK W.R.C.

DEVELOPER'S NAME: PHSA-NW315, LLC	
DEVELOPER'S ADDRESS: 9000 GULF FREEWAY	
CITY: HOUSTON	STATE: TEXAS ZIP: 77017
PHONE#: (713) 948-7783	FAX#: TOTAL ACREAGE: 28.22 ACRES
SAWS BLOCK MAP#: 068620	TOTAL EDUS: 70
TOTAL LINEAR FOOTAGE OF PIPE: 2,795 LF - 8" SDR 26	PLAT NO.: 22-11800650
NUMBER OF LOTS: 70	SAWS JOB#: 22-1729

PLAT NO.
22-11800650
JOB NO: 563-01-26
DATE: MAY 2022
DRAWN/EB CHECKED/OE
SHEET NUMBER:
6.1

Date: Jun 15, 2023, 10:09am User ID: ebueno File: K:\61317\2023design\KFW\SEWER\CS6300178.dwg

TRENCH EXCAVATION SAFETY PROTECTION

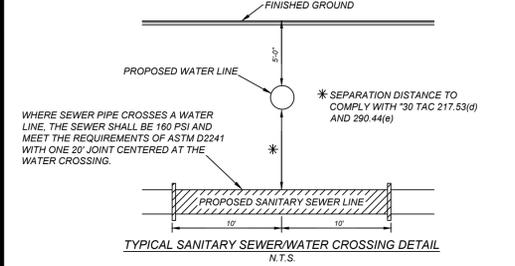
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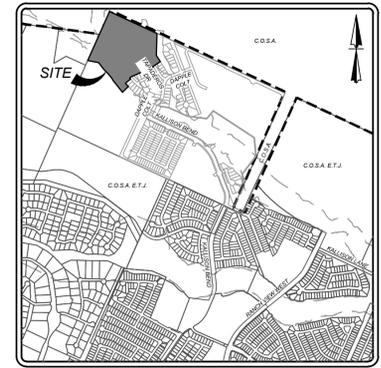
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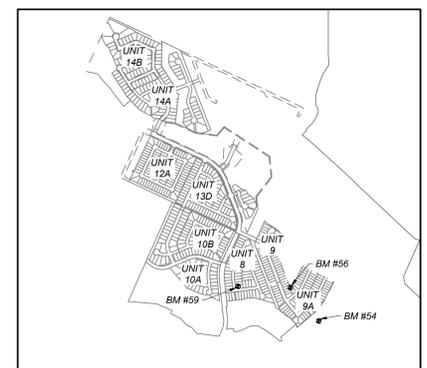
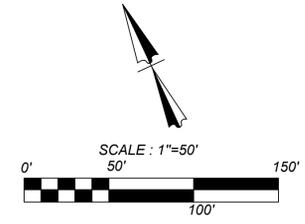


LEGEND

- PROPOSED WATER MAIN = [Symbol]
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- EXISTING SANITARY SEWER MANHOLE = [Symbol]



LOCATION MAP
N.T.S.



BENCHMARK MAP
SCALE: NOT-TO-SCALE

BENCHMARKS

BM # 54	DESC: SET BENCHMARK X W/ PK LEVELED
N: 13742064.98	
E: 2041409.92	
ELEV: 996.28	
BM # 56	DESC: SET BENCHMARK
N: 13742653.48	
E: 2040909.44	
ELEV: 1003.83	
BM # 59	DESC: SET BENCHMARK
N: 13742674.89	
E: 2039980.53	
ELEV: 1001.68	

CONTRACTOR TO RUN LEVEL LOOP THROUGH BMS PROVIDED TO CONFIRM BEFORE CONSTRUCTION. CONTACT ENGINEER/SURVEYOR IMMEDIATELY IF ELEVATIONS DO NOT MATCH THOSE SHOWN.

SEWER - WEST SEWERSHED - LEON CREEK W.R.C.

DEVELOPER'S NAME: PHSA-NW315, LLC	
DEVELOPER'S ADDRESS: 9000 GULF FREEWAY	
CITY: HOUSTON	STATE: TEXAS ZIP: 77017
PHONE#: (713) 948-7783	FAX#: TOTAL ACREAGE: 28.22 ACRES
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KALLISON RANCH 215 PHASE 3 UNIT 14B
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OVERALL SANITARY SEWER PLAN (SHEET 2 OF 2)

PLAT NO.
22-11800650

JOB NO. 563-01-26
DATE: MAY 2022
DRAWN/EB CHECKED/OE

SHEET NUMBER:
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OPEN SPACE NOTE:

LOTS 902, BLOCK 62, (0.05 ACRE PERMEABLE), 904, BLOCK 74, (11.52 ACRE PERMEABLE), & 901, BLOCK 65, (0.06 ACRE PERMEABLE), IS DESIGNATED AS ACCESS, OPEN SPACE, ELECTRIC, GAS, TELEPHONE, CABLE TV, WATER, SANITARY SEWER, DRAINAGE & LANDSCAPE EASEMENT.

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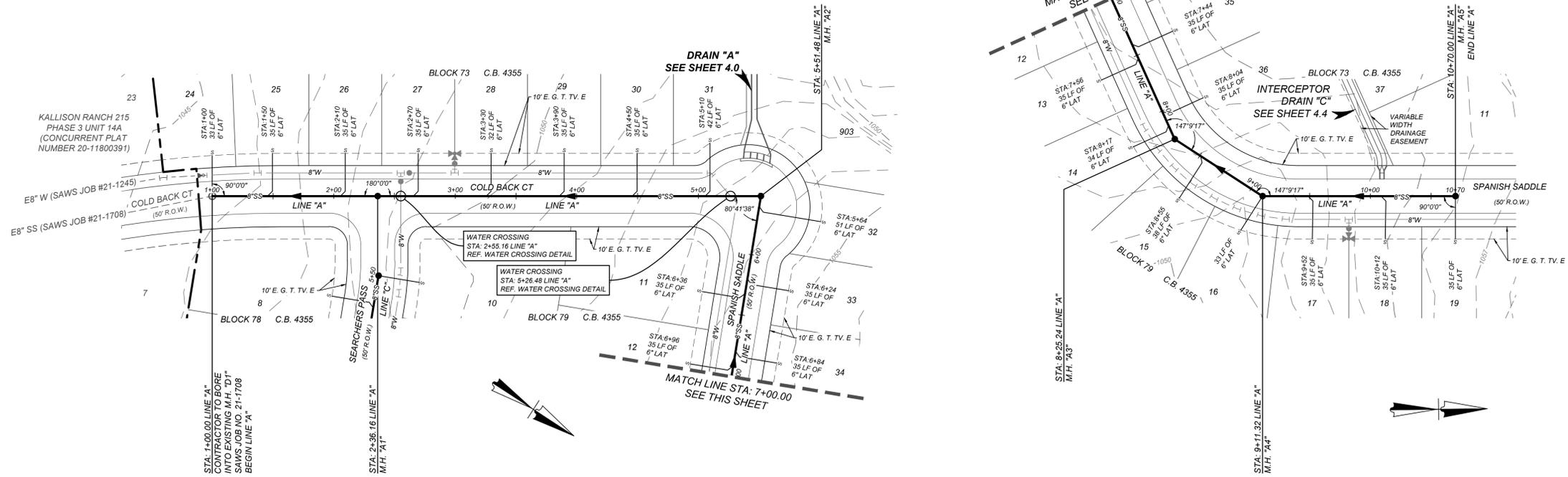
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 NUMBER OF LOTS: 70 SAWS JOB#: 22-1729



TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTORS INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL SAFETY EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY CONTRACT DOCUMENTS, INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!!

THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING, ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

MANHOLE NOTE:

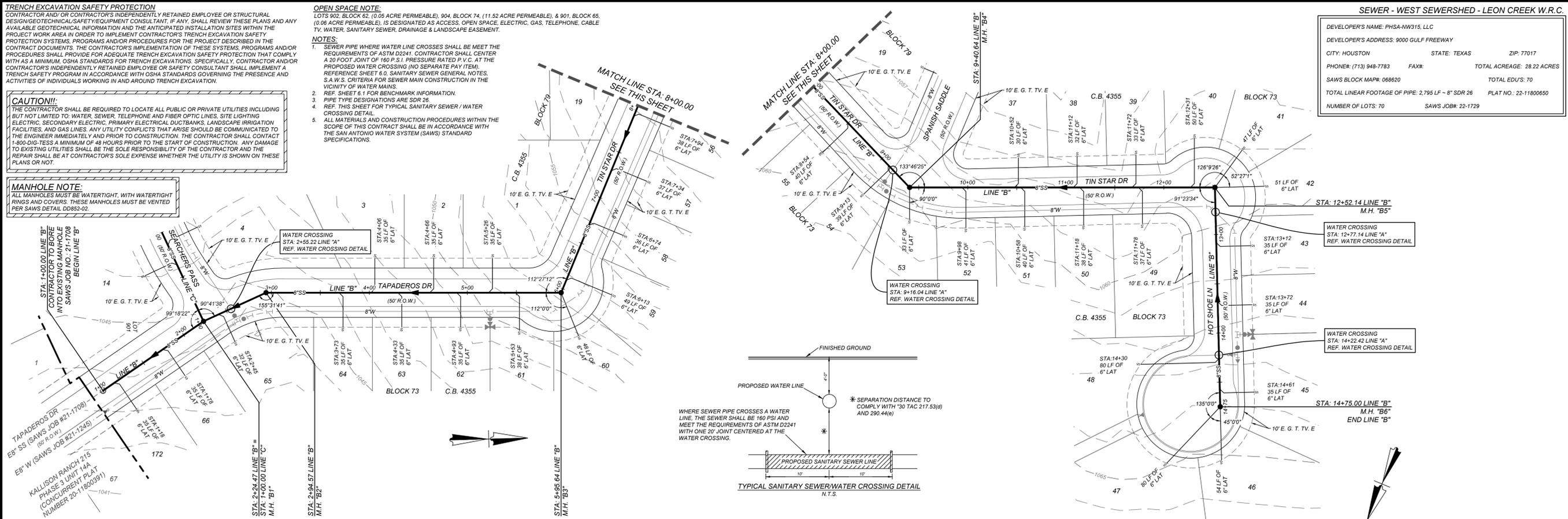
ALL MANHOLES MUST BE WATERTIGHT, WITH WATERTIGHT RINGS AND COVERS. THESE MANHOLES MUST BE VENTED PER SAWS DETAIL D0852-02.

OPEN SPACE NOTE:

LOTS 902, BLOCK 62, (0.05 ACRE PERMEABLE), 904, BLOCK 74, (11.52 ACRE PERMEABLE), & 901, BLOCK 65, (0.06 ACRE PERMEABLE), IS DESIGNATED AS ACCESS, OPEN SPACE, ELECTRIC, GAS, TELEPHONE, CABLE TV, WATER, SANITARY SEWER, DRAINAGE & LANDSCAPE EASEMENT.

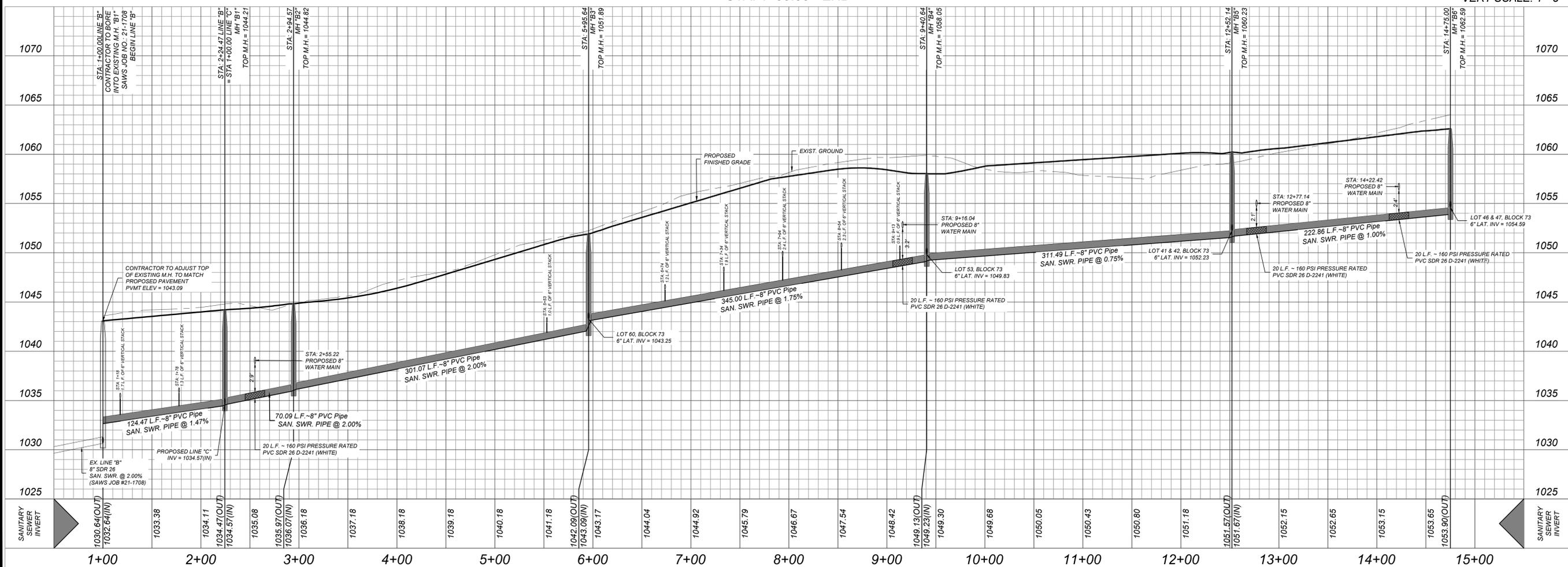
NOTES:

- SEWER PIPE WHERE WATER LINE CROSSES SHALL MEET THE REQUIREMENTS OF ASTM D2241. CONTRACTOR SHALL CENTER A 20 FOOT JOINT OF 60 P.S.I. PRESSURE RATED P.V.C. AT THE PROPOSED WATER CROSSING (NO SEPARATE PAY ITEM). REFERENCE SHEET 6.0, SANITARY SEWER GENERAL NOTES, S.A.W.S. CRITERIA FOR SEWER MAIN CONSTRUCTION IN THE VICINITY OF WATER MAINS.
- REF. SHEET 6.1 FOR BENCHMARK INFORMATION.
- PIPE TYPE DESIGNATIONS ARE SDR 26.
- REF. THIS SHEET FOR TYPICAL SANITARY SEWER / WATER CROSSING DETAIL.
- ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL BE IN ACCORDANCE WITH THE SAN ANTONIO WATER SYSTEM (SAWS) STANDARD SPECIFICATIONS.



LINE "B"
STA: 1+00.00 - END

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



SEWER - WEST SEWERSHED - LEON CREEK W.R.C.

DEVELOPER'S NAME: PHSA-NW315, LLC
 DEVELOPER'S ADDRESS: 9000 GULF FREEWAY
 CITY: HOUSTON STATE: TEXAS ZIP: 77017
 PHONE: (713) 948-7783 FAX: TOTAL ACREAGE: 28.22 ACRES
 SAWS BLOCK MAP#: 068620 TOTAL EDU'S: 70
 TOTAL LINEAR FOOTAGE OF PIPE: 2,795 LF - 8" SDR 26 PLAT NO.: 22-11800650
 NUMBER OF LOTS: 70 SAWS JOB#: 22-1729

ENGINEERS + SURVEYING
 has joined Coopers Engineering & Design
 2421 Pasadena Pkwy, Suite 200, San Antonio, TX 78241
 TBB# 01016613 • TBB# S Firm # 1012300

STATE OF TEXAS
 OMBUDSMAN
 12550
 LICENSE
 PROFESSIONAL
 5/14/23

KALLISON RANCH 215 PHASE 3 UNIT 14B
 BEXAR COUNTY, TEXAS
LINE "B" PLAN & PROFILE

PLAT NO. 22-11800650
 JOB NO. 563-01-26
 DATE: MAY 2022
 DRAWN/EB CHECKED/OE
 SHEET NUMBER: 6.4

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THIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. RELY ONLY ON FINAL HARDCOPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL.

TRENCH EXCAVATION SAFETY PROTECTION

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MANHOLE NOTE:

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OPEN SPACE NOTE:

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NOTES:

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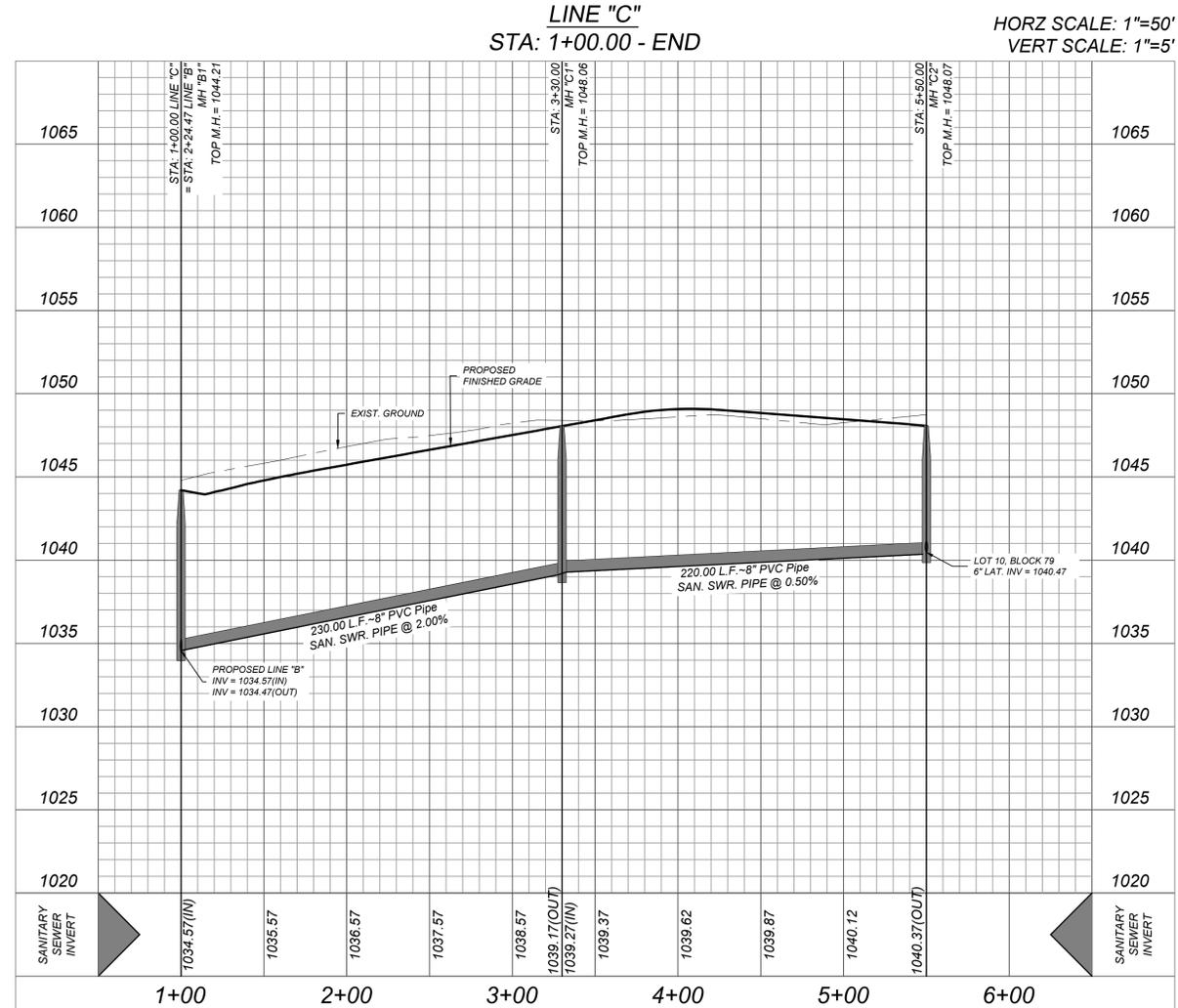
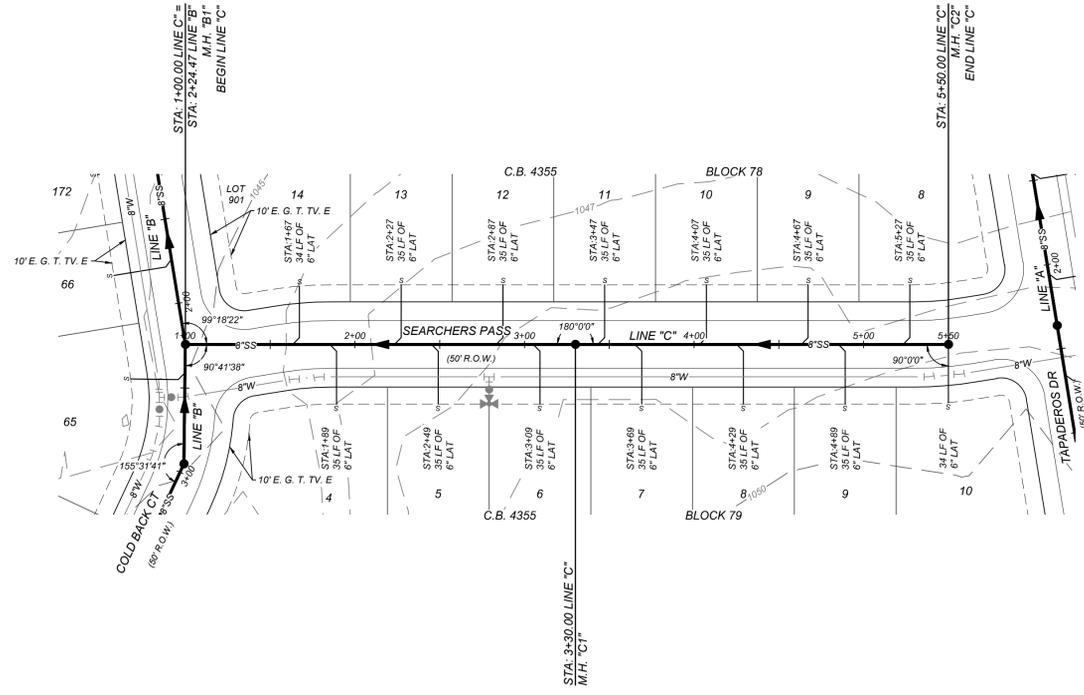
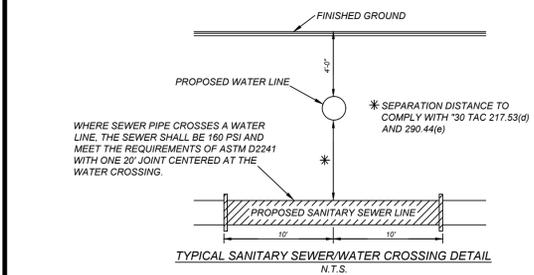
SEWER - WEST SEWERSHED - LEON CREEK W.R.C.

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K&W ENGINEERS + SURVEYING
 has joined Coopers Engineering & Design
 2421 Pasadena Pkwy., Suite 200, San Antonio, TX 78231
 TBBE Firm # 6513 • TBBE S. Firm # 1012300

ISSUE DATE: _____
 REVISIONS: _____

STATE OF TEXAS
 MARIA ESPINOZA
 125660
 LICENSED PROFESSIONAL ENGINEER
 CIVIL
 5/4/23



Date: May 02, 2023, 2:25pm User ID: aplanasara File: K:\6513\1626design\civil\sewer\SP16507125.dwg

KALLISON RANCH 215 PHASE 3 UNIT 14B
 BEXAR COUNTY, TEXAS
 LINE "C" PLAN & PROFILE

PLAT NO.
 22-11800650

JOB NO: 563-01-26
 DATE: MAY 2022
 DRAWN/EB CHECKED/OE
 SHEET NUMBER:
6.5

Edwards Aquifer Protection Program Construction Notes – Legal Disclaimer

The following listed "construction notes" are intended to be advisory in nature only and do not constitute an approval or conditional approval by the Executive Director, nor do they constitute a comprehensive listing of rules or conditions to be followed during construction. Further actions may be required to achieve compliance with TCEQ regulations found in Title 30, Texas Administrative Code, Chapters 213 and 217, as well as local ordinances and regulations providing for the protection of water quality. Additionally, nothing contained in the following listed "construction notes" restricts the powers of the Executive Director, the commission or any other governmental entity to prevent, correct, or curtail activities that result or may result in pollution of the Edwards Aquifer or hydrologically connected surface waters. The holder of any Edwards Aquifer Protection Plan containing "construction notes" is still responsible for compliance with Title 30, Texas Administrative Code, Chapters 213 or any other applicable TCEQ regulation, as well as all conditions of an Edwards Aquifer Protection Plan through all phases of plan implementation. Failure to comply with any condition of the Executive Director's approval, whether or not in contradiction of any "construction notes," is a violation of TCEQ regulations and any violation is subject to administrative rules, orders, and penalties as provided under Title 30, Texas Administrative Code § 213.10 (relating to Enforcement). Such violations may also be subject to civil penalties and injunction. The following listed "construction notes" in no way represent an approved exception by the Executive Director to any part of Title 30 Texas Administrative Code, Chapters 213 and 217, or any other TCEQ applicable regulation.

1. This Organized Sewage Collection System (SCS) must be constructed in accordance with 30 Texas Administrative Code (TAC) §213.5(c), the Texas Commission on Environmental Quality's (TCEQ) Edwards Aquifer Rules and any local government standard specifications.

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

3. A written notice of construction must be submitted to the presiding TCEQ regional office at least 48 hours prior to the start of any regulated activities. This notice must include:

- the name of the approved project;
- the activity start date; and
- the contact information of the prime contractor.

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

5. Prior to beginning any construction activity, all temporary erosion and sedimentation (E&S) control measures must be properly installed and maintained in accordance with the manufacturers specifications. These controls must remain in place until the disturbed areas have been permanently stabilized.

6. If any sensitive features are discovered during the wastewater line trenching activities, all related activities near the sensitive feature must be suspended immediately. The applicant must immediately notify the appropriate regional office of the TCEQ of the feature discovered. A geologist's assessment of the location and extent of the feature discovered must be reported to that regional office in writing and the applicant must submit a plan for ensuring the structural integrity of the sewer line or for modifying the proposed collection system alignment around the feature. The regulated activities near the sensitive feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the sensitive feature and the Edwards Aquifer from any potentially adverse impacts to water quality while maintaining the structural integrity of the line.

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

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

9. All manholes constructed or rehabilitated on this project must have watertight size on size resilient connectors allowing for differential settlement. If manholes are constructed within the 100-year floodplain, the cover must have a gasket and be bolted to the ring. Where gasketed manhole covers are required for more than three manholes in sequence or for more than 1500 feet, alternate means of venting will be provided. Bricks are not an acceptable construction material for any portion of the manhole. The diameter of the manholes must be a minimum of four feet and the manhole for entry must have a minimum clear opening diameter of 30 inches. These dimensions and other details showing compliance with the commission's rules concerning manholes and sewer line/manhole inverts described in 30 TAC §217.55 are included on SAWS WEBSITE, HTTP://WWW.SAWS.ORG/BUSINESS_CENTER/SPECS. It is suggested that entrance into manholes in excess of four feet deep be accomplished by means of a portable ladder. The inclusion of steps in a manhole is prohibited.

10. Where water lines and new sewer line are installed with a separation distance closer than nine feet (i.e., water lines crossing wastewater lines, water lines paralleling wastewater lines, or water lines next to manholes) the installation must meet the requirements of 30 TAC §217.53(d) (Pipe Design) and 30 TAC §290.44(e) (Water Distribution).

11. Where sewers lines deviate from straight alignment and uniform grade all curvature of sewer pipe must be achieved by the following procedure which is recommended by the pipe manufacturer: .
If pipe flexure is proposed, the following method of preventing deflection of the joint must be used: N/A.
Specific care must be taken to ensure that the joint is placed in the center of the trench and properly bedded in accordance with 30 TAC §217.54.

12. New sewage collection system lines must be constructed with stub outs for the connection of anticipated extensions. The location of such stub outs must be marked on the ground such that their location can be easily determined at the time of connection of the extensions. Such stub outs must be manufactured wyes or tees that are compatible in size and material with both the sewer line and the extension. At the time of original construction, new stub-outs must be constructed sufficiently to extend beyond the end of the street pavement. All stub-outs must be sealed with a manufactured cap to prevent leakage. Extensions that were not anticipated at the time of original construction or that are to be connected to an existing sewer line not furnished with stub outs must be connected using a manufactured saddle and in accordance with accepted plumbing techniques.
If no stub-out is present an alternate method of joining laterals is shown in the detail on SAWS WEBSITE, HTTP://WWW.SAWS.ORG/BUSINESS_CENTER/SPECS. (For potential future laterals).
The private service lateral stub-outs must be installed as shown on the plan and profile sheets on Plan Sheet 6.3 to 6.5 and marked after backfilling as shown in the detail on PSAWS WEBSITE, HTTP://WWW.SAWS.ORG/BUSINESS_CENTER/SPECS.

13. Trenching, bedding and backfill must conform with 30 TAC §217.54. The bedding and backfill for flexible pipe must comply with the standards of ASTM D-2321, Classes I A, I B, II or III. Rigid pipe bedding must comply with the requirements of ASTM C 12 (ANSI A 106.2) classes A, B or C.

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

15. All sewer lines must be tested in accordance with 30 TAC §217.57. The engineer must retain copies of all test results which must be made available to the executive director upon request. The engineer must certify in writing that all wastewater lines have passed all required testing to the appropriate regional office within 30 days of test completion and prior to use of the new collection system. Testing method will be:
(a) For a collection system pipe that will transport wastewater by gravity flow, the design must specify an infiltration and exfiltration test or a low-pressure air test. A test must conform to the following requirements:

- (1) Low Pressure Air Test.
 - (A) A low pressure air test must follow the procedures described in American Society For Testing And Materials (ASTM) C-828, ASTM C- 924, or ASTM F-1417 or other procedure approved by the executive director, except as to testing times as required in Table C.3 in subparagraph (C) of this paragraph or Equation C.3 in subparagraph (B)(ii) of this paragraph.
 - (B) For sections of collection system pipe less than 36 inch average inside diameter, the following procedure must apply, unless a pipe is to be tested as required by paragraph (2) of this subsection.
 - (i) A pipe must be pressurized to 3.5 pounds per square inch (psi) greater than the pressure exerted by groundwater above the pipe.
 - (ii) Once the pressure is stabilized, the minimum time allowable for the pressure to drop from 3.5 psi gauge to 2.5 psi gauge is computed from the following equation:

Equation C.3

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

Where:

T = time for pressure to drop 1.0 pound per square inch gauge in seconds
K = 0.000419 X D X L, but not less than 1.0
D = average inside pipe diameter in inches
L = length of line of same size being tested, in feet
Q = rate of loss, 0.0015 cubic feet per minute per square foot internal surface
(C) Since a K value of less than 1.0 may not be used, the minimum testing time for each pipe diameter is shown in the following Table C.3:

PIPE DIAMETER (INCHES)	MINIMUM TIME (SECONDS)	LENGTH FOR MINIMUM (FEET)	TIME FOR LONGER LENGTH (SECONDS/FOOT)
6	340	398	0.855
8	454	298	1.520
10	567	239	2.374
12	680	199	3.419
15	850	159	5.342
18	1020	133	7.693
21	1190	114	10.471
24	1360	100	13.676
27	1530	88	17.309
30	1700	80	21.369
33	1870	72	25.856

- (D) An owner may stop a test if no pressure loss has occurred during the first 25% of the calculated testing time.
- (E) If any pressure loss or leakage has occurred during the first 25% of a testing period, then the test must continue for the entire test duration as outlined above or until failure.
- (F) Wastewater collection system pipes with a 27 inch or larger average inside diameter may be air tested at each joint instead of following the procedure outlined in this section.
- (G) A testing procedure for pipe with an inside diameter greater than 33 inches must be approved by the executive director.
- (2) Infiltration/Exfiltration Test.
 - (A) The total exfiltration, as determined by a hydrostatic head test, must not exceed 50 gallons per inch of diameter per mile of pipe per 24 hours at a minimum test head of 2.0 feet above the crown of a pipe at an upstream manhole.
 - (B) An owner shall use an infiltration test in lieu of an exfiltration test when pipes are installed below the groundwater level.
 - (C) The total exfiltration, as determined by a hydrostatic head test, must not exceed 50 gallons per inch diameter per mile of pipe per 24 hours at a minimum test head of two feet above the crown of a pipe at an upstream manhole, or at least two feet above existing groundwater level, whichever is greater.
 - (D) For construction within a 25-year flood plain, the infiltration or exfiltration must not exceed 10 gallons per inch diameter per mile of pipe per 24 hours at the same minimum test head as in subparagraph (C) of this paragraph.
 - (E) If the quantity of infiltration or exfiltration exceeds the maximum quantity specified, an owner shall undertake remedial action in order to reduce the infiltration or exfiltration to an amount within the limits specified. An owner shall retest a pipe following a remediation action.

- (b) If a gravity collection pipe is composed of flexible pipe, deflection testing is also required. The following procedures must be followed:
 - (1) For a collection pipe with inside diameter less than 27 inches, deflection measurement requires a rigid mandrel.
 - (A) Mandrel Sizing.
 - (i) A rigid mandrel must have an outside diameter (OD) not less than 95% of the base inside diameter (ID) or average ID of a pipe, as specified in the appropriate standard by the ASTMs, American Water Works Association, UNI-BELL, or American National Standards Institute, or any related appendix.
 - (ii) If a mandrel sizing diameter is not specified in the appropriate standard, the mandrel must have an OD equal to 95% of the ID of a pipe. In this case, the ID of the pipe, for the purpose of determining the OD of the mandrel, must equal be the average outside diameter minus two minimum wall thicknesses for OD controlled pipe and the average inside diameter for ID controlled pipe.
 - (iii) All dimensions must meet the appropriate standard.
 - (B) Mandrel Design.
 - (i) A rigid mandrel must be constructed of a metal or a rigid plastic material that can withstand 200 psi without being deformed.
 - (ii) A mandrel must have nine or more odd number of runners or legs.
 - (iii) A barrel section length must equal at least 75% of the inside diameter of a pipe.
 - (iv) Each size mandrel must use a separate proving ring.
 - (C) Method Options.
 - (i) An adjustable or flexible mandrel is prohibited.
 - (ii) A test may not use television inspection as a substitute for a deflection test.
 - (iii) If requested, the executive director may approve the use of a deflectometer or a mandrel with removable legs or runners on a case-by-case basis.
 - (2) For a gravity collection system pipe with an inside diameter 27 inches and greater, other test methods may be used to determine vertical deflection.
 - (3) A deflection test method must be accurate to within plus or minus 0.2% deflection.
 - (4) An owner shall not conduct a deflection test until at least 30 days after the final backfill.
 - (5) Gravity collection system pipe deflection must not exceed five percent (5%).

(6) If a pipe section fails a deflection test, an owner shall correct the problem and conduct a second test after the final backfill has been in place at least 30 days.

16. All manholes must be tested to meet or exceed the requirements of 30 TAC §217.58.
 - (a) All manholes must pass a leakage test.
 - (b) An owner shall test each manhole (after assembly and backfilling) for leakage, separate and independent of the collection system pipes, by hydrostatic exfiltration testing, vacuum testing, or other method approved by the executive director.
 - (1) Hydrostatic Testing.
 - (A) The maximum leakage for hydrostatic testing or any alternative test methods is 0.025 gallons per foot diameter per foot of manhole depth per hour.
 - (B) To perform a hydrostatic exfiltration test, an owner shall seal all wastewater pipes coming into a manhole with an internal pipe plug, fill the manhole with water, and maintain the test for at least one hour.
 - (C) A test for concrete manholes may use a 24-hour wetting period before testing to allow saturation of the concrete.
 - (2) Vacuum Testing.
 - (A) To perform a vacuum test, an owner shall plug all lift holes and exterior joints with a non-shrink grout and plug all pipes entering a manhole.
 - (B) No grout must be placed in horizontal joints before testing.
 - (C) Stub-outs, manhole boots, and pipe plugs must be secured to prevent movement while a vacuum is drawn.
 - (D) An owner shall use a minimum 60 inch/lb torque wrench to tighten the external clamps that secure a test cover to the top of a manhole.
 - (E) A test head must be placed at the inside of the top of a cone section, and the seal inflated in accordance with the manufacturer's recommendations.
 - (F) There must be a vacuum of 10 inches of mercury inside a manhole to perform a valid test.
 - (G) A test does not begin until after the vacuum pump is off.
 - (H) A manhole passes the test if after 2.0 minutes and with all valves closed, the vacuum is at least 9.0 inches of mercury.

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

Austin Regional Office
12100 Park 35 Circle, Building A
Austin, Texas 78753-1808
Phone (512) 339-2929
Fax (512) 339-3795

San Antonio Regional Office
14250 Judson Road
San Antonio, Texas 78233-4480
Phone (210) 490-3096
Fax (210) 545-4329

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

I. WHERE A SEWER MAIN CROSSES OVER A WATER MAIN AND THE SEPARATION DISTANCE IS LESS THAN NINE (9) FEET, ALL PORTIONS OF THE SEWER MAIN WITHIN NINE (9) FEET OF THE WATER LINE SHALL BE CONSTRUCTED USING 150 PSI PRESSURE RATED DUCTILE IRON, CAST IRON OR PVC PIPE AND JOINED WITH EQUALLY PRESSURE RATED PRESSURE RING GASKET CONNECTIONS OR CORROSION PROTECTED MECHANICAL COUPLING DEVICES OF A CAST IRON OR DUCTILE IRON MATERIAL. A SECTION OF 150 PSI PRESSURE RATED PIPE AT LEAST EIGHTEEN (18) FEET IN LENGTH MAY BE CENTERED ON THE WATER MAIN IN LIEU OF PIPE CONNECTION REQUIREMENTS. (NO SEPARATE PAY ITEM.)

II. WHERE A SEMI-RIGID OR RIGID SEWER MAIN CROSSES UNDER A WATER MAIN AND THE SEPARATION DISTANCE IS LESS THAN NINE FEET BUT GREATER THAN TWO FEET, THE INITIAL BACKFILL SHALL BE CEMENT STABILIZED SAND (TWO OR MORE BAGS OF CEMENT PER CUBIC YARD OF SAND) FOR ALL SECTIONS OF THE SEWER WITHIN NINE FEET OF THE WATER MAIN.

III. WHERE A SEWER MAIN CROSSES UNDER A WATER MAIN AND THE SEPARATION DISTANCE IS LESS THAN TWO FEET, THE SEWER MAIN SHALL BE CONSTRUCTED OF CAST IRON, DUCTILE IRON, OR PVC WITH A MINIMUM PRESSURE RATING OF 150 PSI WITHIN NINE FEET OF THE WATER MAIN. SHALL HAVE A SEGMENT OF SEWER PIPE CENTERED ON THE WATER MAIN, SHALL BE PLACED NO CLOSER THAN SIX INCHES BETWEEN OUTER DIAMETERS, AND SHALL BE JOINED WITH PRESSURE RING GASKET CONNECTIONS OR CORROSION PROTECTED MECHANICAL COUPLING DEVICES OF A CAST IRON OR DUCTILE IRON MATERIAL. A SECTION CENTERED ON THE WATER MAIN IN LIEU OF PIPE CONNECTION REQUIREMENTS. (NO SEPARATE PAY ITEM)

IV. WHERE A SEWER MAIN PARALLELS A WATER MAIN AND THE SEPARATION DISTANCE IS LESS THAN NINE FEET, THE SEWER MAIN SHALL BE BELOW THE WATER MAIN, SHALL BE CONSTRUCTED OF CAST IRON, DUCTILE IRON, OR PVC WITH A MINIMUM PRESSURE RATING OF 150 PSI FOR BOTH PIPE AND JOINTS FOR A DISTANCE OF NINE FEET BEYOND THE POINT OF CONFLICT, SHALL MAINTAIN A MINIMUM SEPARATION DISTANCE BETWEEN OUTER DIAMETERS OF TWO FEET VERTICALLY AND FOUR FEET HORIZONTALLY, AND SHALL BE JOINED WITH PRESSURE RING GASKET CONNECTIONS OR CORROSION PROTECTED MECHANICAL COUPLING DEVICES OF A CAST IRON OR DUCTILE IRON MATERIAL.

V. SANITARY SEWER MANHOLES SHALL NOT BE INSTALLED ANY CLOSER THAN NINE FEET TO WATER MAINS.

30 TAC 217.58 "TESTING REQUIREMENTS FOR MANHOLES"

- (a) All manholes must pass a leakage test.
- (b) An owner shall test each manhole (after assembly and backfilling) for leakage, separate and independent of the collection system pipes, by hydrostatic exfiltration testing, vacuum testing, or other method approved by the executive director.
 - (1) Hydrostatic Testing.
 - (A) The maximum leakage for hydrostatic testing or any alternative test methods is 0.025 gallons per foot diameter per foot of manhole depth per hour.
 - (B) To perform a hydrostatic exfiltration test, an owner shall seal all wastewater pipes coming into a manhole with an internal pipe plug, fill the manhole with water, and maintain the test for at least one hour.
 - (C) A test for concrete manholes may use a 24-hour wetting period before testing to allow saturation of the concrete.
 - (2) Vacuum Testing.
 - (A) To perform a vacuum test, an owner shall plug all lift holes and exterior joints with a non-shrink grout and plug all pipes entering a manhole.
 - (B) No grout must be placed in horizontal joints before testing.
 - (C) Stub-outs, manhole boots, and pipe plugs must be secured to prevent movement while a vacuum is drawn.
 - (D) An owner shall use a minimum 60 inch/lb torque wrench to tighten the external clamps that secure a test cover to the top of a manhole.
 - (E) A test head must be placed at the inside of the top of a cone section, and the seal inflated in accordance with the manufacturer's recommendations.
 - (F) There must be a vacuum of 10 inches of mercury inside a manhole to perform a valid test.
 - (G) A test does not begin until after the vacuum pump is off.
 - (H) A manhole passes the test if after 2.0 minutes and with all valves closed, the vacuum is at least 9.0 inches of mercury.

COMPACTION NOTE:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TESTS WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY SAWS INSPECTOR/TEST ADMINISTRATOR, PER EACH 12 INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. PERMITS AND/OR WILL NOT BE ACCEPTED AND FINALIZED BY SAWS WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.

SEWER - WEST SEWERSHED - LEON CREEK W.R.C.

DEVELOPER'S NAME: PHSANW315, LLC			
DEVELOPER'S ADDRESS: 9000 GULF FREEWAY			
CITY: HOUSTON	STATE: TEXAS	ZIP: 77017	
PHONE#: (713) 948-7783	FAX#:	TOTAL ACREAGE: 28.22 ACRES	
SAWS BLOCK MAP#: 068620		TOTAL EDU'S: 70	
TOTAL LINEAR FOOTAGE OF PIPE: 2,795 LF ~ 8" SDR 26		PLAT NO.: 22-11800650	
NUMBER OF LOTS: 70	SAWS JOB#: 22-12729		



ISSUE DATE:

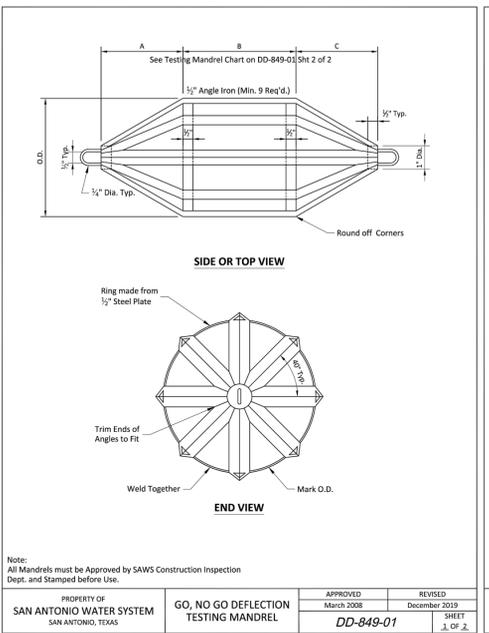
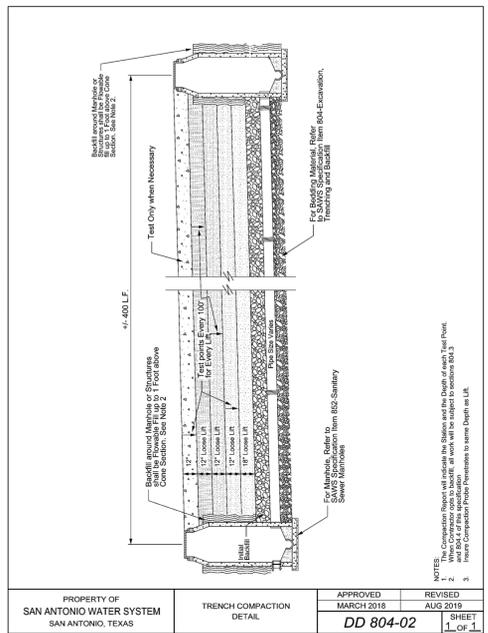
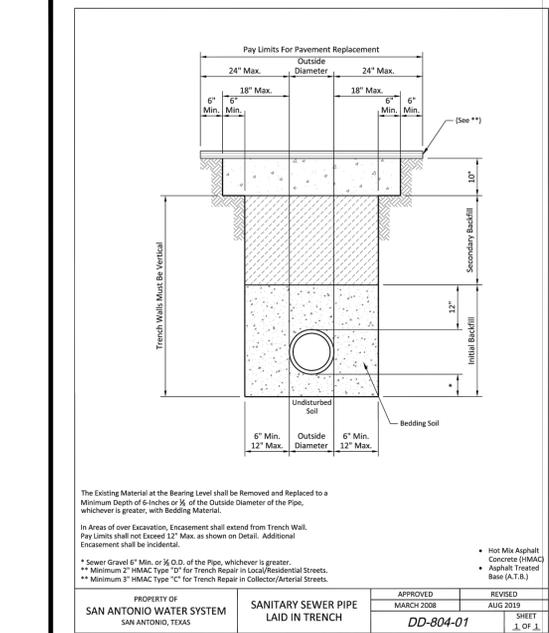
REVISIONS:



KALLISON RANCH 215 PHASE 3 UNIT 14B
BEXAR COUNTY, TEXAS
SANITARY SEWER PLAN NOTES

PLAT NO.
22-11800650

JOB NO: 563-01-26
DATE: MAY 2022
DRAWN/EB CHECKED/OE
SHEET NUMBER:

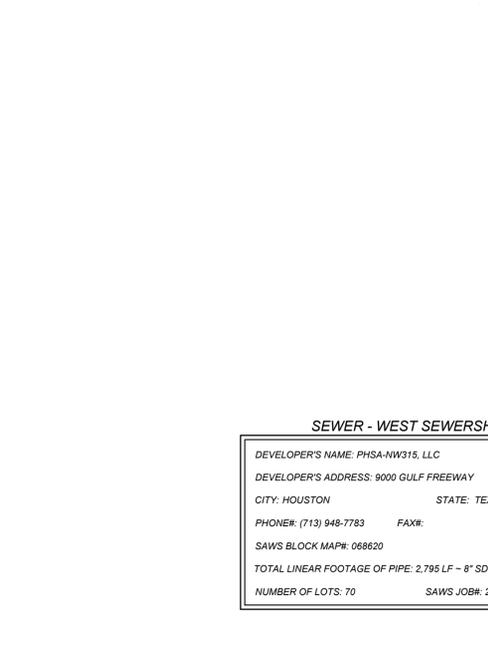
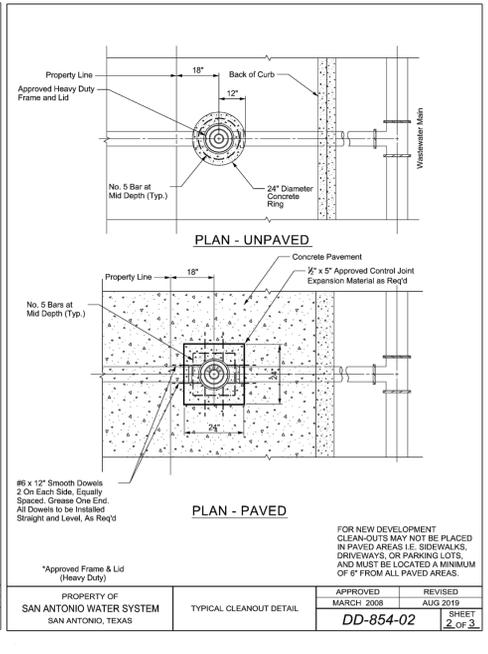
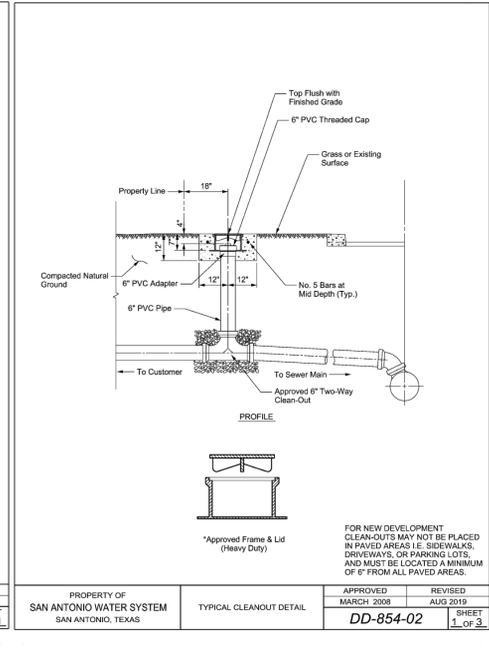
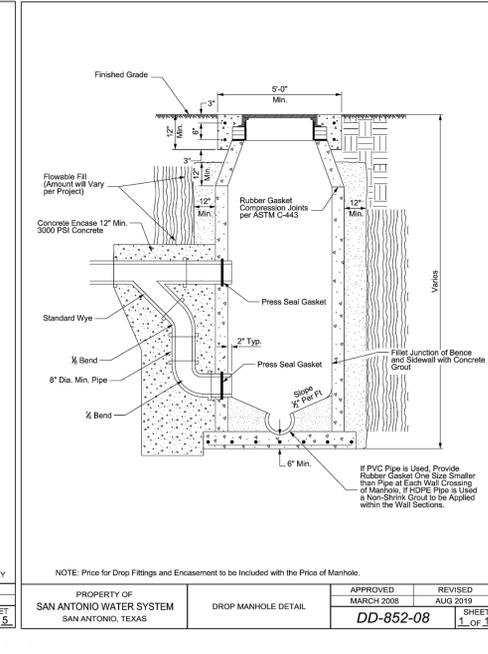
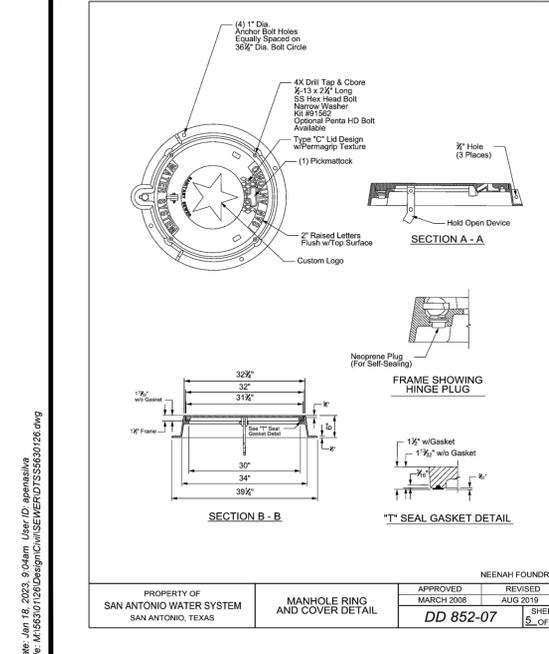
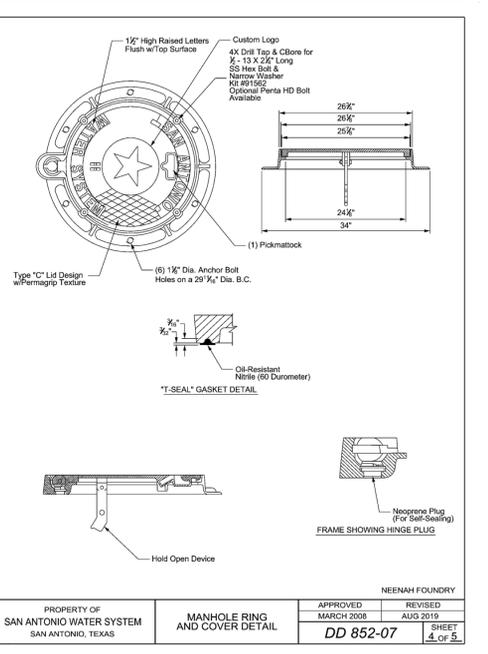
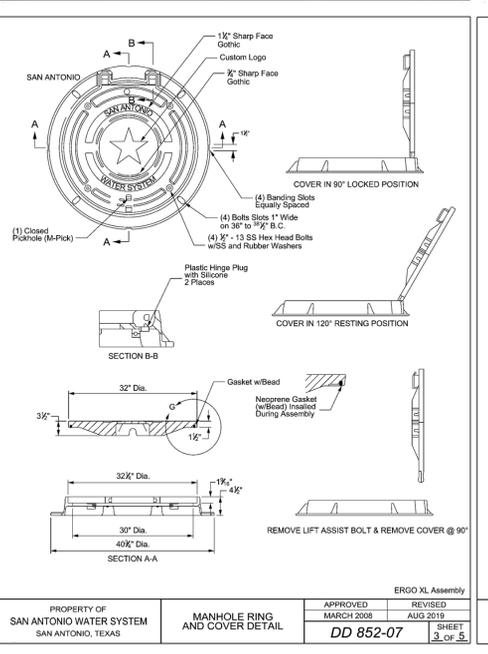
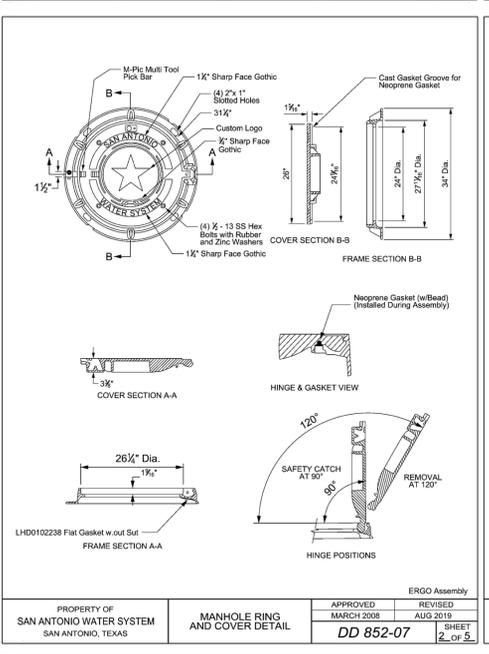
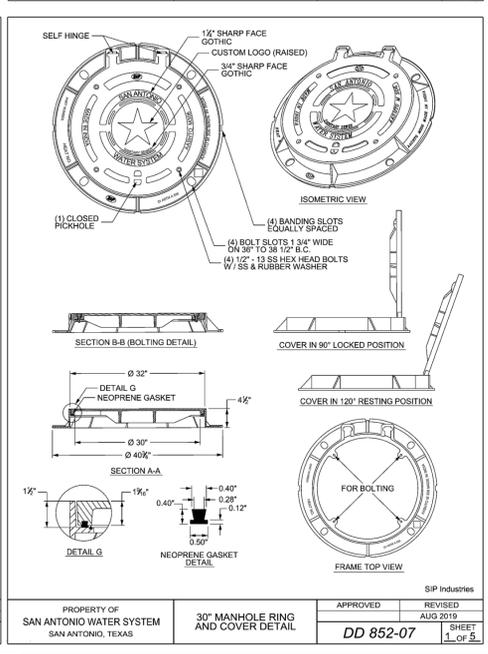
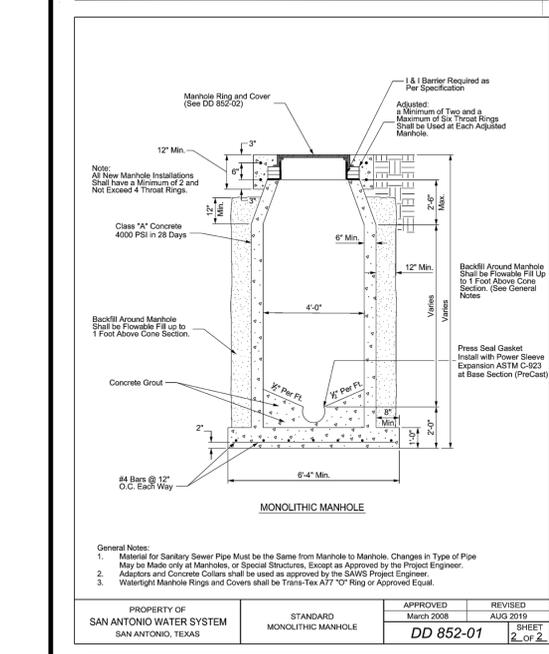
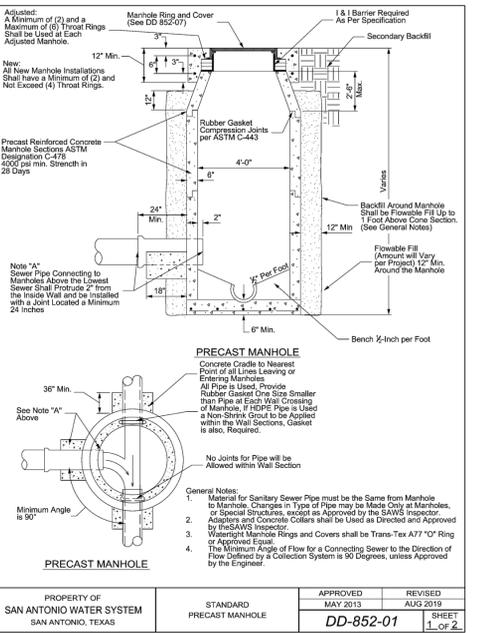


GO, NO GO DEFLECTION TESTING MANDREL CHART

SIZE	A	B*	PVC (SDR -26)	PVC (SDR -26)
6"	4.0"	4.5"	5.50	4.79
8"	5.5"	6"	7.37	6.66
10"	7.0"	7.5"	9.21	8.50
12"	8.0"	9"	10.96	10.25
15"	10.0"	11"	13.42	12.71
18"	12.0"	13.5"	---	---
21"	14.0"	16"	---	---
24"	16.0"	18"	---	---
27"	18.0"	20"	---	---

*Minimum Length

Notes:
PVC Pipes and Fittings 6" to 15" in Diameter shall Conform to ASTM D-2341
PVC Pipes and Fittings 18" to 27" in Diameter shall Conform to ASTM F-679
This information is provided as a reference. All deflection testing shall be done in accordance with TCEQ Chapter 217.

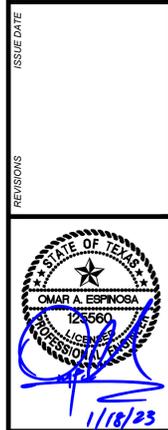
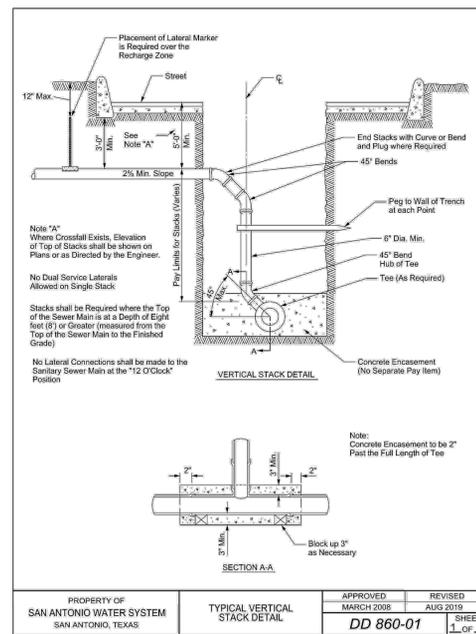
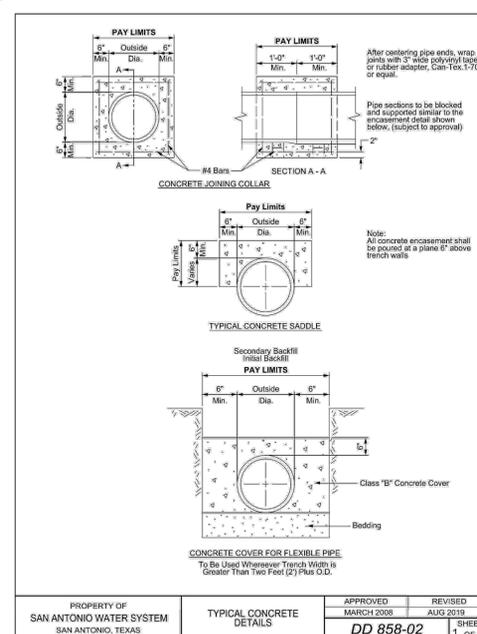
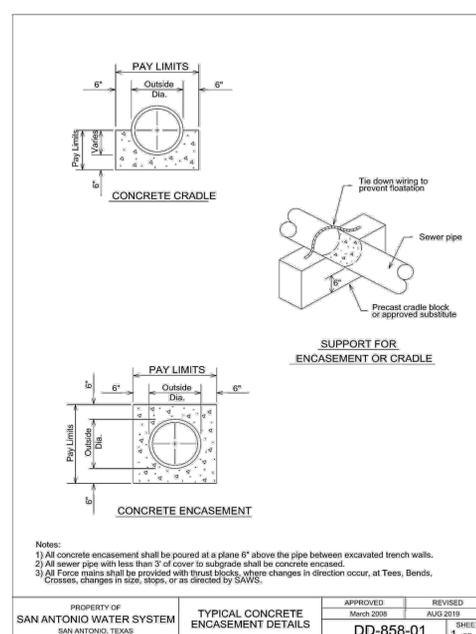
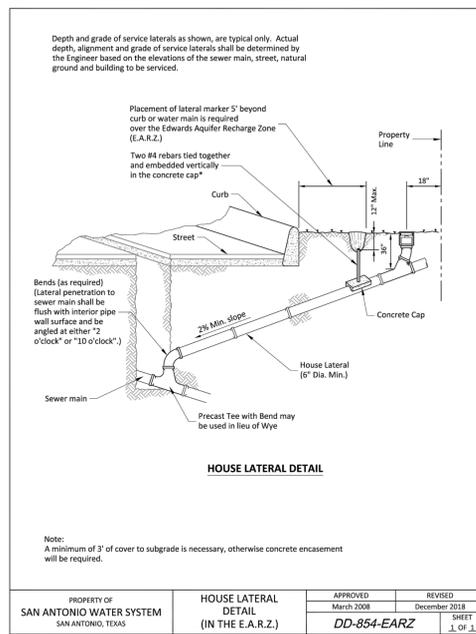
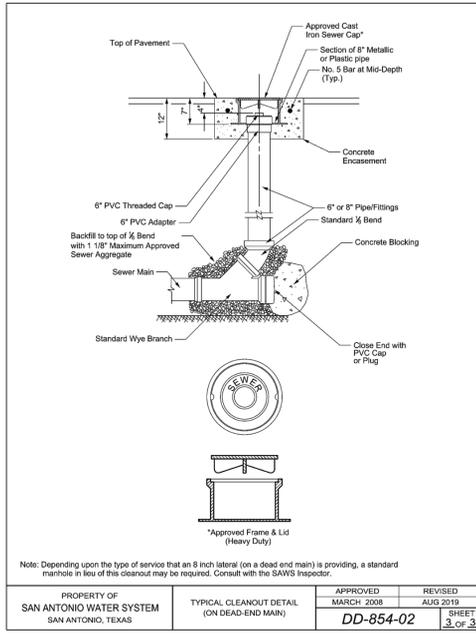


K&W
ENGINEERS + SURVEYING
INC.
has joined Coopers & Lybrand
3421 Pasadena Pkwy., Suite 200, San Antonio, TX 78211
Tel: 214-343-1111 • Fax: 214-343-1111
TBE# Form # 0513 • TBE# Form # 1012300

ISSUE DATE: _____
REVISIONS: _____

11/18/23

KALLISON RANCH 215 PHASE 3 UNIT 14B
BEXAR COUNTY, TEXAS
SANITARY SEWER PLAN DETAILS (1 OF 2)



KALLISON RANCH 215 PHASE 3 UNIT 14B
BEXAR COUNTY, TEXAS
SANITARY SEWER PLAN DETAILS (2 OF 2)

SEWER - WEST SEWERSHED - LEON CREEK W.R.C.

DEVELOPER'S NAME: PHSA-NW315, LLC
DEVELOPER'S ADDRESS: 9000 GULF FREEWAY
CITY: HOUSTON STATE: TEXAS ZIP: 77017
PHONE#: (713) 948-7783 FAX#: TOTAL ACREAGE: 28.22 ACRES
SAWS BLOCK MAP#: 068620 TOTAL EDU'S: 70
TOTAL LINEAR FOOTAGE OF PIPE: 2,795 LF - 8" SDR 26 PLAT NO.: 22-11800650
NUMBER OF LOTS: 70 SAWS JOB#: 22-1729

PLAT NO.
22-11800650
JOB NO: 563-01-26
DATE: MAY 2022
DRAWN: EB CHECKED: OE
SHEET NUMBER:
6.8

**KALLISON RANCH 215 PHASE 3 UNIT 14B
SCS**

ENGINEERING DESIGN REPORT

ENGINEERING DESIGN REPORT

8" PVC PIPE

TCEQ Engineering Design Report
(PEPP-SA EDR v4.0)

For

Kallison Ranch 215 Phase 3 Unit 14B
Organized Sewage Collection System



August 2023

[Handwritten signature in blue ink]
7/12/24

Prepared By:
COLLIERS ENGINEERING & DESIGN
3421 PAESANOS PKWY.
SAN ANTONIO, TX 78231
TBPE Registration Number: 9513

TABLE OF CONTENTS

Table of Contents	2
PVC Pipe Standards	3
Proposed Type of Pipe	4
Flow Capacity Analysis	4
Minimum and Maximum Grades for Pipes	5
Minimum and Maximum Velocities for the Proposed System	5
Average Values for Modulus of Soil Reaction, E'	6
Pipe Bedding Class	7
Pipe Bedding Angle	8
Live Load Determination	8
Prism Load Determination	9
Buckling Pressure (Allowable)	10
Buckling Pressure (Installed Condition)	11
Wall Crushing Calculation	12
Deflection Analysis: Leonhardt's Zeta Factor	14
Pipe Stiffness	15
Predicted Pipe Deflection	16
Pipe Strain	17
TCEQ Pipe Bedding and Trenching Requirements	19
Manhole Specifications	21

ATTACHMENTS

Attachment A: Wastewater/Sewage Calculations	28
Attachment B: Sewer Availability Documentation	29
Attachment C: General Wastewater Notes	30

PVC PIPE STANDARDS

The American Society for Testing and Materials (ASTM) also known as ASTM International (Reference: www.astm.org) governs the manufacturing specifications for Polyvinyl Chloride (PVC) pipes, including the dimension ratio and water pressure allowable for use of each pipe, through its D-2241 standard. ASTM D-2241 lists its pipe dimensions and pipe classes using the “SDR” mark up, such as SDR-13.5, SDR-21, SDR-26 and SDR-41. The SDR refers to the standard dimension ratio (SDR) of the outside pipe diameter and the wall thickness. This project specifies the use of SDR-26 PVC pipe, which are to meet the ASTM pressure rating of greater than 150 psi and fall in the size category listed below. ASTM D-2241 standards must be meticulously adhered to by all PVC pipe manufacturers and is recognized as the standard during PVC pressure pipe testing and quality checks. Other in-depth information can be found published in Thermoplastic Pressure Pipe Design and Selection UNI-TR-7, by the Uni-Bell PVC Pipe Association.

SDR 26 Pipe Size Matrix (Per ASTM D-2241)			
Size (in)	O.D. (in)	Calc I.D. (in)	Thickness (in)
4	4.5	4.154	0.173
6	6.625	6.115	0.255
8	8.625	7.961	0.332
10	10.75	9.924	0.413
12	12.75	11.77	0.49
16	16	14.77	0.615

PROPOSED TYPE OF PIPE

Type I, Grade I, Polyvinyl Chloride (PVC) Specifications:

Size of Pipe: 8.00 in.

SDR 26 Properties

Pipe Compliance:	ASTM D-2241
Joint Compliance:	ASTM D-3139
Cell Classification:	12454
Minimum Tensile Strength (psi):	7,000
Minimum Modulus of Elasticity (psi):	400,000
Calculated Inner Diameter (in) = (Outer Diameter - 2t)	7.961
Outer Diameter (inch):	8.625
Wall Thickness (inch):	0.332
Mean Pipe Diameter (in) = (Outer Diameter - Thickness)	8.293
Approximate Trenching Width (feet):	2.72

Minimum Pipe Depth (Cover) used (feet): **7.67**

Maximum Pipe Depth (Cover) used (feet): **8.06**

FLOW/CAPACITY ANALYSIS

Proposed Waste Water Usage: **4,000.00 GPD**

Q_{max} (As determined in Attachment A) = 0.006 CFS

$$Q_{full} = \frac{1.486}{n} \times A \times R^{\frac{2}{3}} \times \sqrt{S}$$

A = Cross-Sectional Area, (ft²) = 0.346

S = Slope, decimal, minimum used = 0.010

R_h = hydraulic radius = 0.166

For the Specified Pipe at the Minimum Design Slope, the full flow is

$$Q_{full} = 1.193 \text{ CFS}$$

$$0.006 < 1.193$$

Design meets TCEQ Guidelines

MINIMUM AND MAXIMUM GRADES FOR PIPES (30 TAC §217.53(1)(2)(A))

Minimum and Maximum Pipe Slopes		
Size of Pipe	Minimum Slope (%)	Maximum Slope (%)
6	0.5	12.35
8	0.33	8.4
10	0.25	6.23
12	0.2	4.88
15	0.15	3.62
18	0.11	2.83
21	0.09	2.3
24	0.08	1.93
27	0.06	1.65
30	0.055	1.43
33	0.05	1.26
36	0.045	1.12
39	0.04	1.01
>39	*	*

* For pipes larger than 39 inches in diameter, the slope is determined by Manning's formula to maintain a velocity greater than **2.0 feet per second** and less than **10.0 feet per second** when flowing full.

MINIMUM AND MAXIMUM VELOCITY FOR THE PROPOSED SYSTEM:

So, using 8.00 inch PVC Pipe:

$V = \frac{1.49}{n} \times R_h^{0.67} \times \sqrt{S}$	V = velocity (ft/sec)	=	(solve)
	n = Manning's coefficient	=	0.013
	Calc. Inner Diameter (in)	=	7.961
	A = Cross-Sectional Area, ft ²	=	0.346
	Wp = Wetted Perimeter, ft	=	2.084
	R _h = hydraulic radius, A/Wp	=	0.166
	S = slope (ft/ft)	=	0.010

Minimum Slope Used (%): **1.00** Maximum Slope Used (%): **1.00**

V_{min} = 3.46 ft/sec V_{max} = 3.46 ft/sec

3.46 > **2.00** ft/sec **3.46** < **10.00** ft/sec

Design meets TCEQ Guidelines

Design meets TCEQ Guidelines

AVERAGE VALUES OF MODULUS OF SOIL REACTION, E'

Soil type-pipe bedding material (Unified Classification System)	Dumped	E' for Degree of Compaction of Bedding, in pounds per square inch		
		Slight <85% Proctor, <40% relative density	Moderate 85%-95% Proctor, 40%-70% relative density	High, >95% Proctor, >70% relative density
(1)	(2)	(3)	(4)	(5)
Fine-grained Soils (LL>50 _s) Soils with medium to high plasticity CH, MH, CH-MH	No data available; consult a competent soils engineer; Otherwise use E=0			
Fine-grained Soils (LL<50) Soils with medium to no plasticity, CL, ML, ML-CL, with less than 25% coarse-grained particles	50	200	400	1000
Fine-grained Soils (LL<50) Soils with medium to no plasticity, CL, ML, ML-CL, with more than 25% coarse-grained particles	100	400	1000	2000
Coarse-grained Soils with Fines GM, GC, SM, SC ^c contains more than 12% fines				
Coarse-grained Soils with Little or no Fines GW, GP, SW, SP ^c contains less than 12% fines	200	1000	2000	3000
Crushed Rock	1000	3000	3000	3000
Accuracy in Terms of Percentage Deflection	± 2	± 2	± 1	± 0.5

Taken from: Howard, Amster K. "Soil Reaction for Buried Flexible Pipe"
U.S. Bureau of Reclamation, Denver, CO and the American Society of Civil Engineers.

Modulus of Soil Reaction for the in-situ soil is determined to be = 3000 psi

PIPE BEDDING CLASS

Taken from the American Society for Testing and Material (ASTM) D 2321 and American Association of State Highway and Transportation Officials (AASHTO) M43, and as published on Table 7, in Deflection: The Pipe/Soil Mechanism UNI-TR-1-97, Uni-Bell PVC Pipe Association, Pg 24.

Pipe Embedment Material					E', psi (kPa) for Degree of Embedment Compaction					
ASTM D 2321*		ASTM D 2487		AASHTO M43 Notation	Min. Std. Proctor Density (%)	Lift Placement Depth	Dumped	Slightly < 85%	Moderate 85% - 95%	High > 95%
Class	Description	Notation	Description							
IA	Open-graded, clean manufactured aggregates	N/A	Angular crushed stone or rock, crushed gravel, crushed slag; large voids with little or no fines	5 56	Dumped	18" (0.45 m)	1000 (6,900)	3000 (20,700)	3000 (20,700)	3000 (20,700)
IB	Dense-graded, clean manufactured, processed aggregates	N/A	Angular crushed stone or other Class IA material and stone/sand mixtures; little or no fines							
II	Clean, coarse-grained soils	GW	Well-graded gravel, gravel/sand mixtures; little or no fines	57 6 67	85%	12" (0.30 m)	N/R	1000 (6,900)	2000 (13,800)	3000 (20,700)
		GP	Poorly graded gravel, gravel/sand mixtures; little or no fines							
		SW	Well-graded sands, gravelly sands; little or no fines							
		SP	Poorly graded sands, gravelly sands; little or no fines							
III	Coarse-grained soils with fines	GM	Silty gravels, gravel/sand/silt mixtures	Gravel and sand with <10% fines	90%	9" (0.20 m)	N/R	N/R	1000 (6,900)	2000 (13,800)
		GC	Clayey gravels, gravel/sand/clay mixtures							
		SM	Silty sands, sand/silt mixtures							
		SC	Clayey sands, sand/clay mixtures							

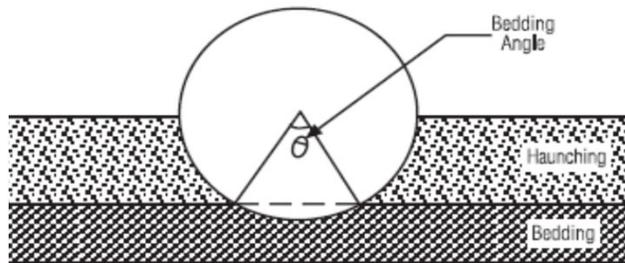
NOTE:

Per TCEQ guidelines, a contractor is allowed to use ASTM D 2321 Bedding Class 1A, 1B, II, or III at no less than 85% percent compaction. To grant the contractor its ability to make the proper judgment of which bedding class to use, the calculations provided in this Engineering Design Report reflect the use of **Bedding Class III, at 85%-95%** compaction, with an E' value of 1000 psi. This provides the "worst case" scenario for the SCS line. All other Bedding Class options will provide an improved value for the zeta factor as well as pipe deflection.

For Bedding Class III, 85%-95% Compaction, $E_b = 1000$ psi

PIPE BEDDING ANGLE

As Published on Figure 8 and Table 5, in Deflection: The Pipe/Soil Mechanism UNI-TR-1-97, Uni-Bell PVC Pipe Association, Pgs 18-19.



Bedding Constant Values

Bedding Angle, degrees	Bedding Constant
0	0.110
30	0.108
45	0.105
60	0.102
90	0.096
120	0.090
180	0.083

LIVE LOAD DETERMINATION

Source: AASHTO H20 and E80 Loads and as Published on Table 4, in Deflection: The Pipe/Soil Mechanism UNI-TR-1-97, Uni-Bell PVC Pipe Association, Pg 14.

Height of Cover (ft)	Live Load Transferred to Pipe, lb/in ²			Height of Cover (ft)	Live Load Transferred to Pipe, lb/in ²		
	Highway H20 ¹	Railway E80 ²	Airport ³		Highway H20 ¹	Railway E80 ²	Airport ³
1	12.50			14	*	4.17	3.06
2	5.56	26.39	13.14	16	*	3.47	2.29
3	4.17	23.61	12.28	18	*	2.78	1.91
4	2.78	18.40	11.27	20	*	2.08	1.53
5	1.74	16.67	10.09	22	*	1.91	1.14
6	1.39	15.63	8.79	24	*	1.74	1.05
7	1.22	12.15	7.85	26	*	1.39	*
8	0.69	11.11	6.93	28	*	1.04	*
10	*	7.64	6.09	30	*	0.69	*
12	*	5.56	4.76	35	*	*	*
				40	*	*	*

¹ Simulates 20 ton truck + impact

² Simulates 80,000 lb/ft railway load + impact

³ 180,000 lbs. dual tandem gear assembly, 26 inch spacing between tires and 66 inch center-to-center spacing between fore and aft tires under a rigid pavement 12 inches thick + impact.

* Negligible live load influence

PRISM LOAD DETERMINATION

Also referred to as the ‘dead’ load, the prism load is the pressure acting on the pipe by the weight of the soil column above a given section of the pipe. The following prism load columns are industry standards as referenced from Table 3, Deflection: The Pipe/Soil Mechanism UNI-TR-1-97, Uni-Bell PVC Pipe Association, Pg 13.

Table 3 Prism Load Soil Pressure (lbs/in ²)					
Height of Cover (ft)	Soil Unit Weight (lb/ft ³)				
	100	110	120	125	130
1	0.69	0.76	0.83	0.87	0.90
2	1.39	1.53	1.67	1.74	1.81
3	2.08	2.29	2.50	2.60	2.71
4	2.78	3.06	3.33	3.47	3.61
5	3.47	3.82	4.17	4.34	4.51
6	4.17	4.58	5.00	5.21	5.42
7	4.86	5.35	5.83	6.08	6.32
8	5.56	6.11	6.67	6.94	7.22
9	6.25	6.88	7.50	7.81	8.13
10	6.94	7.64	8.33	8.68	9.03
11	7.64	8.40	9.17	9.55	9.93
12	8.33	9.17	10.00	10.42	10.83
13	9.03	9.93	10.83	11.28	11.74
14	9.72	10.69	11.67	12.15	12.64
15	10.42	11.46	12.50	13.02	13.54
16	11.11	12.22	13.33	13.89	14.44
17	11.81	12.99	14.17	14.76	15.35
18	12.50	13.75	15.00	15.63	16.25
19	13.19	14.51	15.83	16.49	17.15
20	13.89	15.28	16.67	17.36	18.06
21	14.58	16.04	17.50	18.23	18.96
22	15.28	16.81	18.33	19.10	19.86
23	15.97	17.57	19.17	19.97	20.76
24	16.67	18.33	20.00	20.83	21.67
25	17.36	19.10	20.83	21.70	22.57
26	18.06	19.86	21.67	22.57	23.47
27	18.75	20.63	22.50	23.44	24.38
28	19.44	21.39	23.33	24.31	25.28
29	20.14	22.15	24.17	25.17	26.18
30	20.83	22.92	25.00	26.04	27.08
31	21.53	23.68	25.83	26.91	27.99
32	22.22	24.44	26.67	27.78	28.89
33	22.92	25.21	27.50	28.65	29.79
34	23.61	25.97	28.33	29.51	30.69
35	24.31	26.74	29.17	30.38	31.60
36	25.00	27.50	30.00	31.25	32.50
37	25.69	28.26	30.83	32.12	33.40
38	26.39	29.03	31.67	32.99	34.31
39	27.08	29.79	32.50	33.85	35.21
40	27.78	30.56	33.33	34.72	36.11
41	28.47	31.32	34.17	35.59	37.01
42	29.17	32.08	35.00	36.46	37.92
43	29.86	32.85	35.83	37.33	38.82
44	30.56	33.61	36.67	38.19	39.72
45	31.25	34.38	37.50	39.06	40.63
46	31.94	35.14	38.33	39.93	41.53
47	32.64	35.90	39.17	40.80	42.43
48	33.33	36.67	40.00	41.67	43.33
49	34.03	37.43	40.83	42.53	44.24
50	34.72	38.19	41.67	43.40	45.14

Note that the Prism Loads are calculated based upon the Marston Theory of Loads, developed by Professor Anson Marston, circa 1913, and is calculated using the formula:

$$P = \frac{\gamma_s * H}{144}$$

This formula determines the earth load on a flexible pipe and is regarded as a conservative approach to determining the dead load placed upon a buried flexible pipe.

At maximum burial depth of 8.06 feet, prism load = 6.67 psi

BUCKLING PRESSURE (ALLOWABLE)

- Where: q_a = Allowable buckling pressure (psi)
 h = Height of soil above top of pipe (in) = 96.72 in
 H = Depth of burial, feet, from ground surface to top of pipe
 B' = Empirical coefficient of elastic support
 E_b = Modulus of soil reaction for the bedding material (psi)
 E = Modulus of elasticity of the pipe material (psi)
 I = Moment of inertia of the pipe, per linear inch of pipe (in³)
 t = Pipe wall thickness (in)
 D = Mean Pipe Diameter (in) $D = 8.293$ in

Solving for the Empirical coefficient of elastic support, given by Luscher in 1966, as referenced on Pg 113 of Moser, A.P., Buried Pipe Design. 2nd Ed., McGraw-Hill:

$$B' = \frac{4(h^2 + Dh)}{1.5(2h + D)^2} \qquad I = \left(\frac{t^3}{12}\right) = \left(\frac{\text{inches}^3}{\text{in}_{linear}}\right) =$$

$$B' = \frac{40627.4}{61044.3} = 0.666 \qquad I = \frac{0.03659}{12} = 0.0030$$

Using the Allowable Buckling Pressure Equation as shown in Moser, A.P., Buried Pipe Design. 2nd Ed., McGraw-Hill, Pg 112, and an initial factor of safety (SF) of 2.5, the Allowable Buckling Pressure is then:

$$q_a = \frac{1}{FS} * \sqrt{32 * R_w * B' * E_b * \left(E * \frac{I}{D^3}\right)} \qquad \text{Where,}$$

$$R_w = 1 - 0.33(h_w / h)$$

$$q_a = \frac{1}{2.5} \sqrt{\left[32 \right] \left[1 \right] \left[0.666 \right] \left[1000 \right] \left[400000 \frac{0.0030}{570.34} \right]}$$

$$q_a = 85.37 \quad \text{psi}$$

BUCKLING PRESSURE (INSTALLED CONDITION)

Where:	q_p	=	Pressure applied to pipe under installed conditions (psi)	
	γ_w	=	Specific Weight of Water = 0.0361 (pci)	
	γ_s	=	Specific Weight of Soil (pcf)	
	W_c	=	Vertical Soil Load on the pipe per unit length (lb/in)	
	L_L	=	Live load as determined from chart	
	hw	=	Height of Groundwater above pipe, typically = 0	
	D	=	Mean Pipe Diameter (in)	D = 8.293 in
	t	=	Pipe Wall Thickness (in)	t = 0.332 in

The Vertical Soil Load can be calculated using Equation 6.6 of Uni-Bell's Handbook of PVC Pipe , Ch VI Superimposed Loads on Buried Pipe, Pg 183

$$W_c = H \times \gamma_s \times (D + t)$$

Where: $\gamma_s = 120$ Value taken from:

$$W_c = \left[8.06 \right] \left[12 \text{ in/ft} \right] \left[120.00 \right] \left[\frac{1 \text{ ft}^3}{1728 \text{ in}^3} \right] \left[8.63 \right]$$

$$W_c = 57.93 \text{ lb/in}$$

At Max Pipe Depth (H) of 8.06 ft

Using the Equation on Pg 114 of Moser, A.P., Buried Pipe Design. 2nd Ed., McGraw-Hill, Pressure Applied to Pipe under installed conditions at its deepest installed depth (Note, since hw = 0, the Water Buoyancy Factor (R_w) = 1) is calculated to be:

$$q_p = \gamma_w h_w + R_w \left(\frac{W_c}{D + t} \right) + L_L \text{ and } L_L = 0.69 \quad R_w = 1 - 0.33(h_w / h)$$

$$q_p = 0.0361 \times 0 + 1 \times \left[\frac{58.62}{8.625} \right]$$

$$q_p = 6.80 \text{ psi}$$

Note: The pressure applied to the pipe under installed conditions is less than the Allowable Buckling Pressure of the specified pipe, (i.e.. $q_a > q_p$) therefore the design is acceptable for installation.

WALL CRUSHING CALCULATION

Where:	D_o	=	outside pipe diameter, in.	=	8.625 in
	P_c	=	Compressive stress or hydrostatic design basis (HDB). For typical PVC pipe assume 4,000 psi. For any other pipe material the HDB must be supplied by the pipe manufacturer.		
	A	=	surface area of the pipe wall, in. ² /ft	=	0.332 in. ² /ft
	γ_s	=	specific weight of soil, pcf,	=	120 pcf
	H	=	Depth of burial (ft) from ground surface to crown of pipe		

Using the Wall Crushing and Wall Thrust equations, as referenced in Plastic Pipe Design Manual published by Vylon Pipe, Pg 14 the Wall Crushing due to compressive stress can be found using the following:

$$P_c = \frac{T}{A} \quad \text{where T, Thrust, is calculated as } T = \frac{P_y D}{2}$$

Substituting the Thrust equation into the Wall Crushing equation:

$$P_c = \frac{\frac{P_y D}{2}}{A} = \frac{P_y D}{2A}$$

From the Marston Equation determining the Prism Load Calculation (See previous section on Prism Load), substitute the equation for P_y :

$$P_c = \frac{\frac{\gamma_s * H}{2A} D}{2A} \quad \text{Rearranging this equation, it becomes: } 2AP_c = \frac{\gamma_s * H}{144} D$$

$$\text{And simplifies to: } 288AP_c = \gamma_s HD$$

Note that the Surface Area of the Pipe Wall, A, is per unit length in inches² per foot, a conversion factor (from feet to inches) of 12 must be applied, therefore,

$$24AP_c = \gamma_s HD$$

Solving for H, the equation becomes:

$$H = \frac{24 * P_c * A}{\gamma_s * D_o}$$

(Continued on next page)

Using this equation, and converting all units, solve for “height” of the soil column, or in other words, the depth of burial of the PVC pipe:

$$H = \frac{[24] [4000] [0.332]}{120 \times 8.625} = 30.79$$

$$H = 30.79 \text{ feet}$$

Note: The resulting Wall Crushing will occur at a greater depth than the deepest burial depth of the proposed SCS lines, therefore pipe design is acceptable.

DEFLECTION ANALYSIS: LEONHARDT'S ZETA FACTOR

The Leonhardt's Zeta Factor Equation can be calculated using Equation 7.32 of Uni-Bell's Handbook of PVC Pipe, Ch VII Design of Buried PVC Pipe, Pg 268

Where:	Do	=	Pipe Outer Diameter, in	=	8.625
	B	=	Trench Width, in,	=	32.63 in
	E _b	=	Modulus of soil reaction, bedding material (psi)	=	1000
	E _n	=	Modulus of soil reaction for the in-situ soil (psi)	=	3000

$$zeta = \frac{1.44}{f + [1.44 - f] \times \left[\frac{E_b}{E'_n} \right]}$$

where,

$$f = \frac{\frac{B}{Do} - 1}{1.154 + 0.444 \left[\frac{B}{Do} - 1 \right]}$$

$$f = \frac{2.782609}{2.387478} = 1.1655$$

Substituting f into the zeta equation:

$$zeta = \frac{1.44}{[1.166] + [0.274] \times [0.333]}$$

The Leonhardt Zeta factor is then determined as: **1.146**

PIPE STIFFNESS (Figure: 30 TAC §217.53(k)(3))

Using Equation B.1, as directed in 30 TAC §217.53(k)(3), to Calculate the Pipe Stiffness:

$$PS = C \times RSC \times \left(\frac{8.337}{D} \right)$$

Where: PS = Pipe Stiffness, for SDR-26 PVC (psi) = 115 psi
C = Conversion factor = 0.8
RSC = Ring Stiffness Constant
D = Mean Pipe Diameter (in), D = 8.293 in

The RSC can be supplied by the manufacturer or calculated by rearranging Equation B.1

$$RSC = \frac{PS}{C \times \left(\frac{8.337}{D} \right)}$$

$$RSC = \frac{115}{0.804245}$$

$$RSC = 142.991$$

PREDICTED PIPE DEFLECTION

Using the Modified Iowa Equation, referenced and published by the Uni-Bell PVC Pipe association and found at <http://www.uni-bell.org/faq.html>, and Equation 14 of Deflection: The Pipe/Soil Mechanism UNI-TR-1-97, Uni-Bell PVC Pipe Association Pgs 17, the predicted pipe deflection can be calculated.

Where:	% $\Delta Y/D$	=	Predicted % vertical deflection under load
	P	=	Prism Load, psi
	K	=	Bedding angle constant, Assumed to = 0.096
	W'	=	Live Load, psi, = 0.69 At max depth (ft) : 8.06
	DR	=	Dimension Ratio = 26
	E	=	Modulus of tensile elasticity of the pipe material, psi
	E'	=	Modulus of Soil Reaction (zeta x Eb) = 1145.58
	D _L	=	Deflection Lag Factor = 1.5

And using the Modified Iowa Equation:

$$(\%) \frac{\Delta Y}{D} = \frac{(D_L KP + KW') \times 100}{[2E / (3(DR - 1)^3)] + 0.061 E'}$$

$$\text{Where, Prism Load, } P = \frac{\gamma_s * H}{144}$$

and/or from previous chart, prism load = 6.67 psi

The Predicted Deflection is determined as:

$$(\%) \frac{\Delta Y}{D} = \frac{[[[1.5 \times 0.640] + 0.06624] \times 100]}{\left[\frac{800000}{46875} \right] + [0.061 \times 1145.58]} = 1.18 \%$$

NOTE: 1.18 < 5%, therefore pipe design is acceptable

A deflection lag factor of 1.0 is typical for new pipes. Over the life of the pipe, the pipe will tend to deflect. Therefore, 1.5 is a conservative factor for the 50 year life.

PIPE STRAIN

Pipe strain is also known as the elongation of the pipe over the original length of the pipe. Under normal loading conditions of the PVC pipe, the variable that affects the elongation or straining of the pipe stems from the either the flexure or deflection (i.e.. bending) of the pipe within the bedding material (i.e. increased or excessive pipe deflection causing the pipe to elongate) or hoop stress within the pipe wall. Please note that pipe strain is not generally known to be the limiting performance factor during pipe failure. For this system, pipe deflection is limited to 5% for a SDR 26 pipe. This 5% deflection value is the industry accepted value placing the pipe within its straining limits. Therefore, as the calculated deflection above is shown to be less than 5%, the pipe and bedding class used in this system is within the acceptable straining limits for this pipe.

However, total Pipe strain is calculated as the combination of the before mentioned hoop stress and the maximum strain due to deflection. Both items are calculated below using Equations 15 and 16 found in Deflection: the Pipe/Soil Mechanism, UNI-TR-1-97, Published by the Uni-Bell PVC Pipe Association (Pgs 28-30):

Where:	ϵ_h	=	Maximum Pipe Strain due to Hoop Stress, in/in
	P	=	Pressure on the pipe (Live + Prism Loads), psi
	E	=	Modulus of Elasticity of the Pipe, psi
	t	=	Pipe Wall thickness (in) = 0.332
	D	=	Pipe Diameter, Outer (in) = 8.625

$$\epsilon_h = \frac{PD}{2tE}$$

Using the maximum cover for both live loads and prism loads as well as the previous unit weight of the soil:

$$\epsilon_h = \frac{[0.69 + 6.67] \times 8.625}{2 \times 0.332 \times 400,000} = 2.390E-04 \frac{\text{in}}{\text{in}}$$

(Continued on following page)

Where:	ϵ_f	=	Maximum Pipe Strain due to Ring Deflection, in/in
	ΔY	=	Change in vertical pipe diameter under load, in, (numerator in the deflection equation, but in decimal form)
	t	=	Pipe Wall thickness (in) = 0.332
	D	=	Pipe Diameter, Outer (in) = 8.625
	DR	=	Dimension Ratio, PVC Pipe= 26

$$\epsilon_f = \frac{t}{D} \left[\frac{3\Delta Y / D}{1 - 2\Delta Y / D} \right] = \frac{1}{DR} \left[\frac{3\Delta Y}{D - 2\Delta Y} \right]$$

$$\epsilon_f = \frac{0.332}{8.625} \times \frac{308.016}{8.625 - 205.344} = -0.06027 \frac{\text{in}}{\text{in}}$$

$$\epsilon_{total} = -0.0600 \frac{\text{in}}{\text{in}}$$

TCEQ PIPE BEDDING AND TRENCHING REQUIREMENTS (30 TAC 217.54)

****These notes are provided in the Construction Documents on Plan Sheets 6.7 and 6.8**

a. Pipe Embedment

1. A rigid pipe must be laid with the adequate bedding, haunching, and initial backfill to support the anticipated load. The bedding classes that are allowed are A, B, or C, as described in American Society for Testing and Materials (ASTM) C 12, American National Standards Institute (ANSI) A 106.2, Water Environment Federation Manual of Practice No. 9 or American Society of Civil Engineers (ASCE) MOP 37.
2. A flexible pipe must be laid with the adequate bedding, haunching, and initial backfill to support the anticipated load. The bedding classes that are allowed are IA, IB, II, or III, as described in ASTM D-2321 or ANSI K65.171.
3. Debris, large clods, or stones that are greater than six inches in diameter, organic matter, or other unstable materials are prohibited as bedding, haunching, or initial backfill.
4. Backfill must not disturb the alignment of a collection system pipe.
5. If trenching encounters significant fracture, fault zones, caves, or solutional modification to the rock strata, an owner must halt construction until an engineer prepares a written report detailing how construction will accommodate these site conditions.

b. Compaction.

1. Compaction of an embedment envelope must meet the manufacturer's recommendations for the collection system pipe used in a project.
2. Compaction of an embedment envelope must provide the modulus of soil reaction for the bedding material necessary to ensure a wastewater collection system pipe's structural integrity as required by §217.53 of this title (relating to Pipe Design).
3. The placement of the backfill above a pipe must not affect the structural integrity of a pipe.

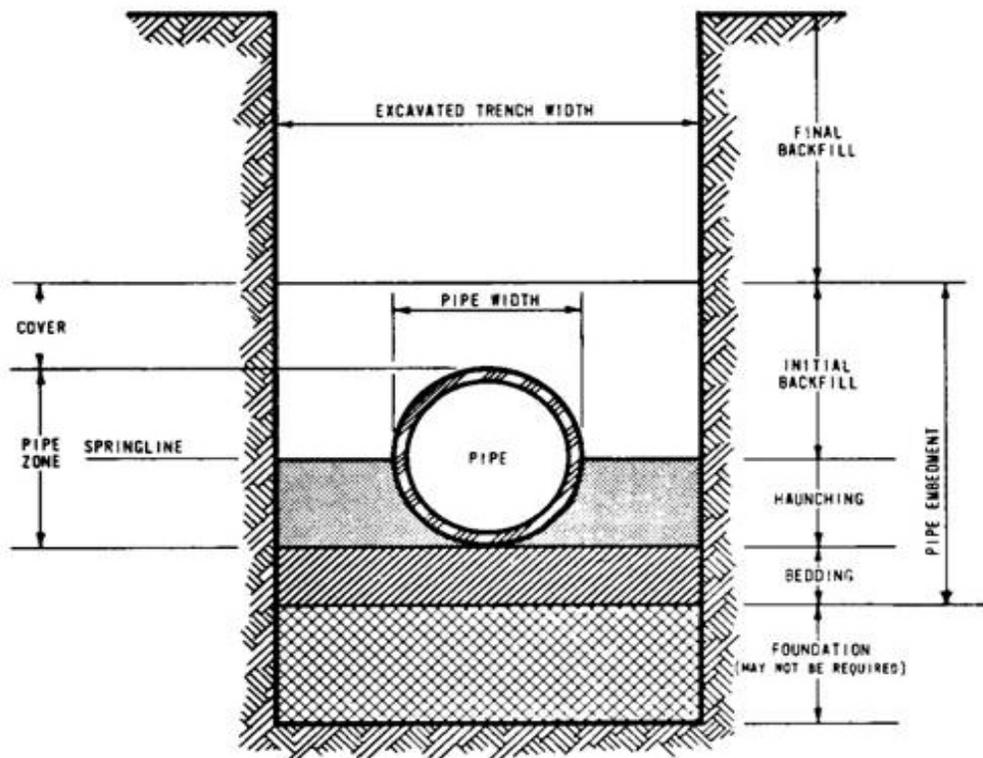
c. Envelope Size.

1. A minimum clearance of 6.0 inches below and on each side of the bell of all pipes to the trench walls and floor is required.
2. The embedment material used for haunching and initial backfill must be installed to a minimum depth of 12 inches above the crown of a pipe.

d. Trench Width.

1. The width of a trench must allow a pipe to be laid and jointed properly and must allow the backfill to be placed and compacted as needed.
2. The maximum and minimum trench width needed for safety and a pipe's structural integrity must be included in the report.
3. The width of a trench must be sufficient to properly and safely place and compact haunching materials.
4. The space between a pipe and a trench wall must be wider than the compaction equipment used in the pipe zone.

TRENCH CROSS-SECTION (30 TAC 217.54)



NOTE:

Trenching Details along with 30 TAC 217.54 are annotated in the Construction Documents/Plan Sheets on [Sheet 6.7](#)

MANHOLE SPECIFICATIONS

30 TAC 217.55 Requirements with design comments:

- a. An owner must include manholes in a wastewater collection system at:
 1. All points of change in alignment, grade, or size;
 2. At the intersection of all pipes; and
 3. At the end of all pipes that may be extended at a future date.
- b. Manholes placed at the end of a wastewater collection system pipe that may be extended in the future must include pipe stub outs with plugs.
- c. A clean-out with watertight plugs may be installed in lieu of a manhole at the end of a wastewater collection system pipe if no extensions are anticipated. **(Clean outs not used in-lieu of manholes)**
Cleanout installations must pass all applicable testing requirements outlined for
- d. gravity collection pipes in §217.57 of this title (relating to Testing Requirements for Installation of Gravity Collection System Pipes). **(Clean outs not used in lieu of manholes)**
- e. A manhole must be made of monolithic, cast-in-place concrete, fiberglass, pre-cast concrete, high-density polyethylene, or equivalent material that provides adequate structural integrity. **(See the Pre-Cast Manhole Details following these construction notes)**
- f. The use of bricks to adjust a manhole cover to grade or construct a manhole is prohibited. **(Not Applicable)**
- g. Manholes may be spaced no further apart than the distances specified in the following table for a wastewater collection system with straight alignment and uniform grades, unless a variance based on the availability of cleaning equipment that is capable of servicing greater distances is granted by the executive director. **(Manholes are spaced no greater than 500 L.F.)**

Pipe Diameter	Maximum Manhole
6-15	500
18-30	800
36-48	1000
54 or larger	2000

- h. Tunnels are exempt from manhole spacing requirements because of construction constraints. **(Not applicable)**

- i. An intersection of three or more collection pipes must have a manhole. **(Maintained throughout the design of the SCS)**
- j. A manhole must not be located in the flow path of a watercourse, or in an area where ponding of surface water is probable. **(Maintained throughout the design of the SCS)**
- k. The inside diameter of a manhole must be no less than 48 inches. A manhole diameter must be sufficient to allow personnel and equipment to enter, exit, and work in the manhole and to allow proper joining of the collection system pipes in the manhole wall. **(See Manhole Details following these notes)**
- l. Manholes must meet the following requirements for covers, inlets, and bases.

- 1. Manhole Covers

- A. A manhole where personnel entry is anticipated requires at least a 30 inch diameter clear opening. **(Covers to have 32” Openings per SAWS Specifications on Sheet 6.7)**
- B. A manhole located within a 100-year flood plain must have a means of preventing inflow. **(Not Applicable)**
- C.
A manhole cover construction must be constructed of impervious material. **(See Details Sheet 6.7)**
- D. A manhole cover that is located in a roadway must meet or exceed the American Association of State Highways and Transportation Officials standard M-306 for load bearing. **(See Manhole Details following these construction notes)**

- 2. Manhole Inverts

- A. The bottom of a manhole must contain a U-shaped channel that is a smooth continuation of the inlet and outlet pipes. **(See Details Sheet 6.7)**
- B. A manhole connected to a pipe less than 15 inches in diameter must have a channel depth equal to at least half the largest pipe's diameter **(Not Applicable)**
- C. A manhole connected to a pipe at least 15 inches in diameter but not more than 24 inches in diameter must have a channel depth equal to at least three-fourths of the largest pipe's diameter **(Not Applicable)**
- D.
A manhole connected to a pipe greater than 24 inches in diameter must have a channel depth equal to at least the largest pipe's diameter **(Not applicable for this project).**

- E. A manhole with pipes of different sizes must have the tops of the pipes at the same elevation and flow channels in the invert sloped on an even slope from pipe to pipe. **(Not applicable for this project)**
- F. A bench provided above a channel must slope at a minimum of 0.5 inch per foot. **(Self Explanatory)**
- G. An invert must be filleted to prevent solids from being deposited if a wastewater collection system pipe enters a manhole higher than 24 inches above a manhole invert. **(See Detail Sheet 6.7)**
- H. A wastewater collection system pipe entering a manhole more than 24 inches above an invert must have a drop pipe. **(Not Applicable)**
- m. The inclusion of steps in a manhole is prohibited.
 - Connections. A manhole-pipe connection must use watertight, size-on-size resilient connectors that allow for differential settlement and must conform to American Society for Testing and Materials C-923. **(See Details Sheet 6.7 and 6.6 General Notes)**
 - o. Venting. An owner must use an alternate means of venting if manholes are at more than 1,500 foot intervals and gasketed manhole covers are required for more than three manholes in sequence. Vents must meet the following requirements: **(Not Applicable to this project)**
 1. Vent design must minimize inflow;
 2. Vents must be located above a 100-year flood event elevation; and
 3. Tunnels must be vented in compliance with this subsection.
 - p. Cleanouts. The size of a cleanout must be equal to the size of the wastewater collection system main. **(Not applicable to this project)**

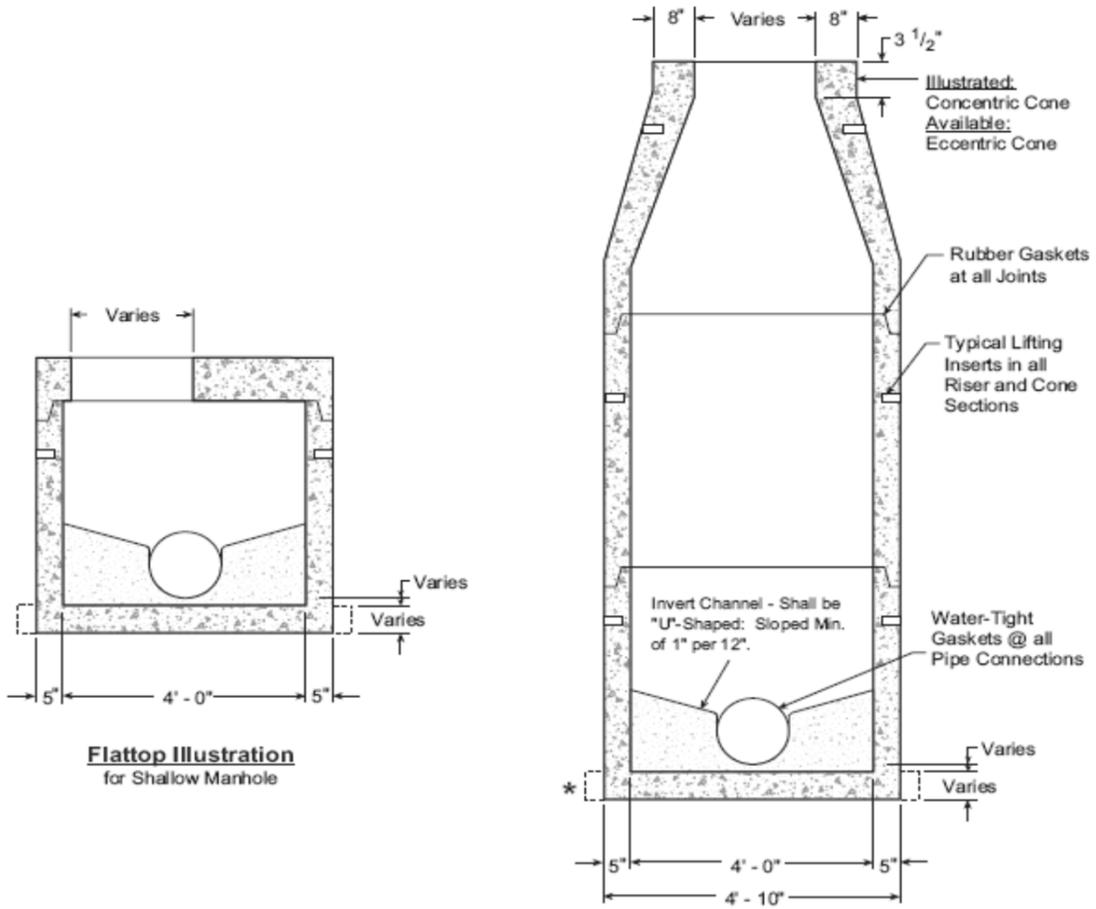
Precast Manhole Information:

Hanson Pipe and Precast

Hanson Building Products West
 300 E John Carpenter Freeway
 11th floor
 Irving, TX 75062
 972.653.5500

San Antonio Metro Area Contact:
 210.661.2351
 866.426.7661

Precast Manholes



Flattop Illustration
for Shallow Manhole

Section View
4' I.D. Manhole - Regular Base
with Reducing Cone

Materials & Features

HOLES AS SPECIFIED: Max diameter = 32"
 CONCRETE: 5,000 PSI, 28 day strength.
 REINFORCING: Meets or exceeds ASTM C478 requirements.
 Average weight of 24" depth base w/8" invert = 4,500 lbs.
 Estimated weight of riser and cone sections = 870 lbs. / vt. ft.

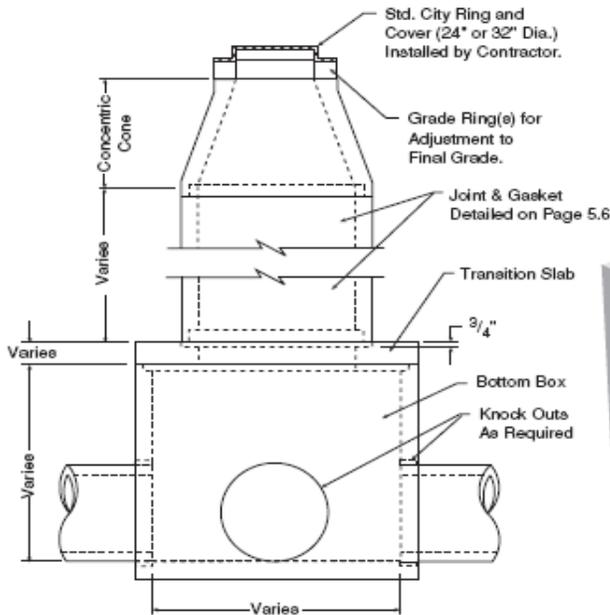
* - Extended base is available to meet local requirements.
 In the event a boot is loose contact your Hanson representative to resolve.

"Manufactured to your specifications."

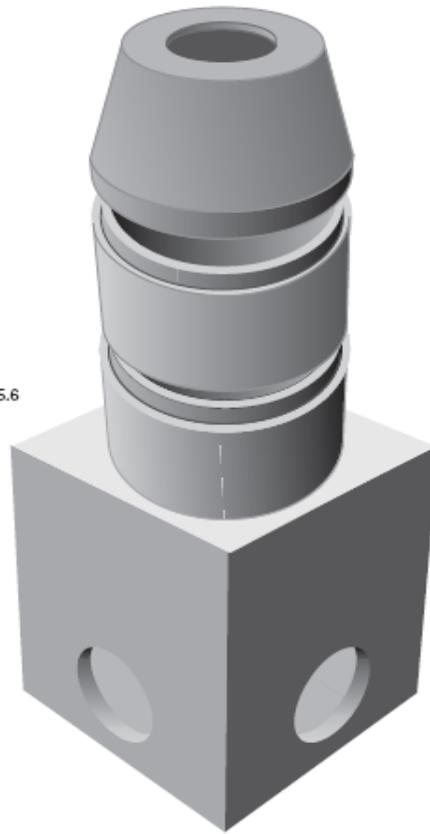
-No Scale-
 All dimensions subject to allowable specification tolerances.

TITLE	PLANT	STATE	SECTION/PAGE	DATE	
4' I.D. Manhole Regular Base w/ Reducing Cone	All Plants	TX	5.5	07-01-06	

Precast Manholes



Side View



Isometric View

Materials & Features

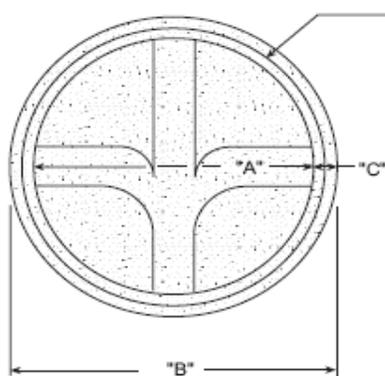
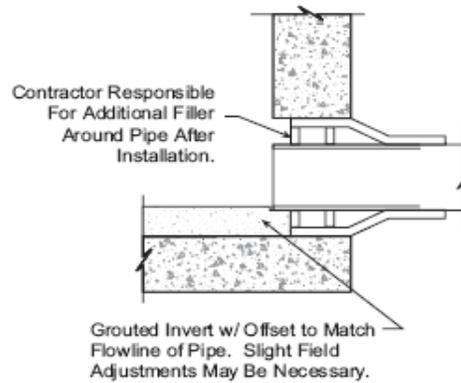
CONCRETE: 5,000 PSI in 28 days.
 REINFORCING STEEL: per ASTM A-615 / A-185
 REINFORCING to meet AASHTO HS 20-44 Loading.
 BASE DESIGN EQUAL TO OR EXCEEDS ASTM C-957
 RISER DESIGN EQUAL TO OR EXCEEDS ASTM C-478
 In the event a boot is loose contact your Hanson representative to resolve.

-No Scale-
 All dimensions subject to allowable specification tolerances.

TITLE	PLANT	STATE	SECTION/PAGE	DATE	
Type "C" Manhole	Houston San Antonio	TX	5.11	07-01-06	

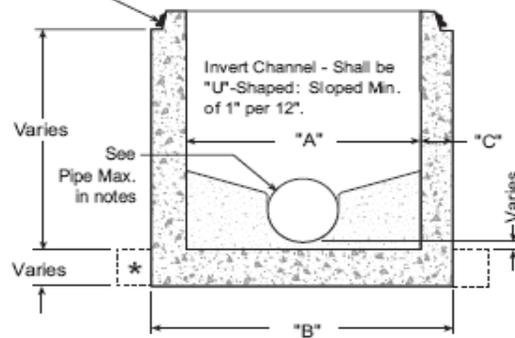
Precast Manholes

For Pipe Entering the Manhole at Excessive Depths Above the Flow Line Out, the Contractor May be Responsible for Grout Work Necessary to Bring Channel up to Flow Line on Inlet Pipe.



Plan View

Rubber Gasket



Section View

Materials & Features

HOLES AS SPECIFIED:

- For 4' I.D. max. diameter = 32"
- For 5' I.D. max. diameter = 40"
- For 6' I.D. max. diameter = 54"

CONCRETE: 5,000 PSI, 28 day strength.

REINFORCING: Meets or exceeds ASTM C478 requirements.

Average weight of 24" depth base w/8" invert = 4,500 lbs.

Water-tight gaskets at all pipe connections.

* - Regular base shown: Extended base also available.

In the event a boot is loose contact your Hanson representative to resolve.

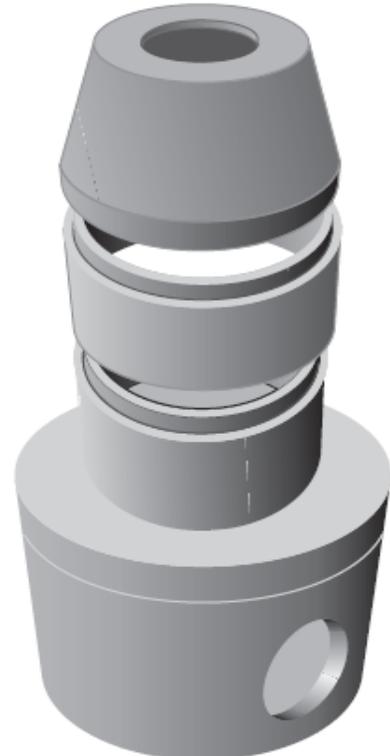
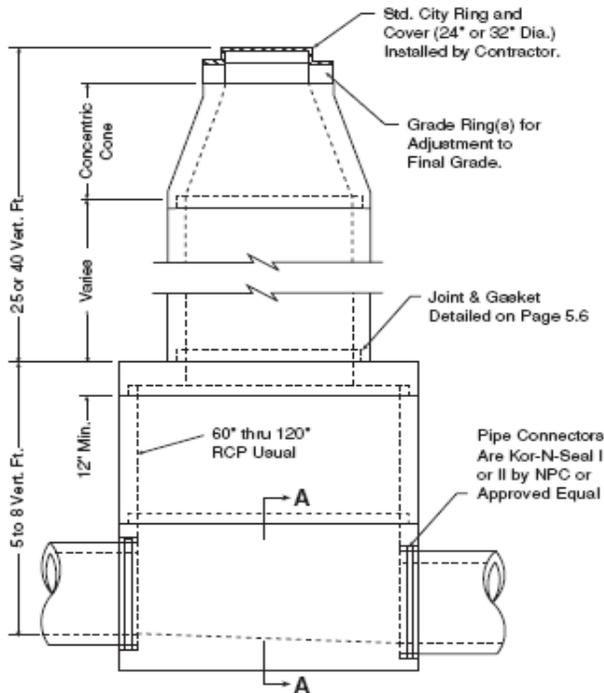
Pipe Size	I.D. "A"	O.D. "B"	Wall Thk. "C"
4'	4' - 0"	4' - 10"	5"
5'	5' - 0"	6' - 0"	6"
6'	6' - 0"	7' - 2"	7"

-No Scale-

All dimensions subject to allowable specification tolerances.

TITLE	PLANT	STATE	SECTION/PAGE	DATE	
Details: 4', 5' & 6' I.D. Precast Regular Manhole Base	All Plants	TX	5.7	07-01-06	

Precast Manholes



Isometric View

w/ Precast Base

<p>Section A-A</p>	<p>Base Slab Reinforcing</p> <p>30' Deep Structure 60"ø - 6" Thick Slab min. - #5 @ 8" ea.way 72"ø - 8" Thick Slab min. - #5 @ 8" ea.way 84"ø - 8" Thick Slab min. - #5 @ 6" ea.way 96"ø - 10" Thick Slab min. - #5 @ 6" ea.way</p> <p>45' Deep Structure 60"ø - 8" Thick Slab min. - #5 @ 8" ea.way 72"ø - 8" Thick Slab min. - #5 @ 8" ea.way 84"ø - 10" Thick Slab min. - #5 @ 6" ea.way 96"ø - 12" Thick Slab min. - #5 @ 6" ea.way</p> <p>All Reinforcing has 1 1/2" cover from top of slab.</p>
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Materials & Features

CONCRETE: 5,000 PSI in 28 days.
 REINFORCING STEEL: per ASTM A-615, Grade 60.
 REINFORCING to meet AASHTO HS 20-44 Loading.
 DESIGN EQUAL TO OR EXCEEDS ASTM C-478
 In the event a boot is loose contact your Hanson representative to resolve.

Note:

- Inverts shall be specifically sized for connecting pipes; and shall be U-Shaped with the min. depth 3/4 of the largest pipe diameter.

-No Scale-
 All dimensions subject to allowable specification tolerances.

TITLE	PLANT	STATE	SECTN.PAGE	DATE	
30 & 45 Ft. Depth 60" thru 96" Large Base Manhole	Houston San Antonio	TX	5.10	07-01-06	

ATTACHMENT A
WASTEWATER / SEWAGE CALCULATIONS

KALLISON RANCH 215 PHASE 3 UNIT 14B --- SCS REPORT

WASTEWATER/SEWAGE CALCULATIONS:

NUMBER OF LOTS WITHIN SUBDIVISION:

8

NUMBER OF EDU'S:

SAN ANTONIO WATER SYSTEM CRITERIA: 1 EDU PER LOT

$$\frac{1 \text{ EDU} *}{\text{LOT}} \quad 8 \text{ LOTS} = \quad 8 \text{ EDU'S}$$

PEAK WET WEATHER FLOW:

PEAK WET WEATHER FLOW = PEAK DRY WEATHER + I&I

PEAK DRY WEATHER FLOW = 2.5 * AVERAGE DAILY FLOW

PEAK DRY WEATHER:

AVG. DAILY WASTEWATER FLOW (ADF) IS 200 GALLONS PER DAY/EDU
(SAN ANTONIO WATER SYSTEM UTILITY SERVICE REGULATIONS)

$$2.5 * 200 \frac{\text{GAL/DAY} *}{\text{EDU}} \quad 8 \text{ EDU'S} = \quad \underline{\underline{4,000}} \quad \text{GAL/DAY}$$

INFLOW & INFILTRATION:

300 GAL PER ACRE/DAY

2.6 ACRES CONTRIBUTING

$$\text{I\&I} = \quad \underline{\underline{780}} \quad \text{GAL/DAY}$$

PEAK WET WEATHER:

$$4,000 \quad + \quad 780 \quad (\text{GAL / DAY}) = \quad 4,780 \quad \text{GAL/DAY}$$

$$4,780 \quad \frac{\text{GAL}}{\text{DAY}} \quad * \quad \frac{1 \text{ CF}}{7.48 \text{ GAL}} = \quad 639.04 \quad \frac{\text{CF}}{\text{DAY}}$$

$$639.04 \quad \frac{\text{CF}}{\text{DAY}} \quad * \frac{1 \text{ DAY} *}{24 \text{ HR}} \quad \frac{1 \text{ HR} *}{60 \text{ MIN.}} \quad \frac{1 \text{ MIN.}}{60 \text{ SEC.}} = \quad \underline{\underline{0.0074}} \quad \text{CUBIC FEET/SEC}$$

ATTACHMENT B
SEWER AVAILABILITY DOCUMENTATION

UTILITY SERVICE AGREEMENT

STATE OF TEXAS §
 §
COUNTY OF BEXAR §

This Utility Service Agreement (“Agreement”) is entered into by and between the San Antonio Water System Board of Trustees, through Resolution Number 15-161, acting by and through its President/Chief Executive Officer (“SAWS”) and One KR Venture, L.P. acting by and through Jeff Gilpatrick, (“Developer”) together the Parties (“Parties”).

Recitals

Whereas, Developer has requested that SAWS provide Water and Wastewater service (the “Services”) to an approximate 512-acre tract of land, (the 512-Acre Kallison Tract” or “Tract”), which is located inside SAWS’ water CCN, outside SAWS’ wastewater CCN, and does require oversizing by SAWS, therefore, Board action is required; and

Whereas, the Tract is located over the Edwards Aquifer Recharge or Contributing Zone, which is not located within the 5-mile Awareness Zone of Camp Bullis, such Tract being more particularly described in Attachment VI hereto, as accepted by SAWS; and

Whereas, SAWS desires to provide the Services to the Developer pursuant to this Agreement, the SAWS Utility Service Regulations, and all applicable local, state, and federal regulations, as amended.

Now Therefore, The Parties Hereto Agree To The Following Terms and Conditions:

1.00 Interpretation of Agreement.

1.01 The Parties acknowledge that the Services contemplated by this Agreement shall be provided in accordance with the SAWS Utility Service Regulations, Design Criteria, Schedules, Attachments and Instruments thereto, as amended (together “USR”). In the event the specific terms of this Agreement are in conflict with the USR, the specific terms of this Agreement shall apply. The above notwithstanding, for the specific conflicting terms to prevail, the conflict must be expressly noted in the Agreement. The Parties further acknowledge that this Agreement is subject to future acts of the City Council of the City of San Antonio with respect to the adoption or amendment of impact fee ordinances/resolutions.

1.02 The Parties agree that the purpose of this Agreement is the reservation of the designated water supply and /or wastewater discharge capacity for the Tract. Any rights that the Developer claims arise under Chapter 245, Texas Local Government Code, that are related to this Agreement shall comply with the Unified Development Code Article IV, Division 1, Chapter 35-410 and applicable requirements in Article VII, Division 2 *Vested Rights*, which are dependent upon the provision of written information that provides the City of San Antonio fair notice of the project, provided that such written information includes a description of each land use (residential, multi-family, commercial or industrial) by acreage. If Developer intends to rely on this USA as its

application for the purposes of vested rights under Chapter 245, then please contact Development Services Department, Land Entitlement team at 210-207-1111 or 1901 S. Alamo, San Antonio, TX. 78204. Further, this information must be included in the supporting engineering report in conformance with the Utility Service Regulations, which may be amended, or repealed and replaced, from time to time. In no event shall those Utility Service Regulations replace or conflict with the City's Unified Development Code, Article IV, Division 1, Chapter 35-410 and applicable requirements in Article VII, Division 2 *Vested Rights*.

2.00 Obligation Conditioned.

The obligation of SAWS to provide the Services is conditioned upon present rules, regulations and statutes of the United States of America and the State of Texas and any court order that directly affects the SAWS' Regional Water Production and Distribution System and/or Regional Wastewater Transportation and Treatment System and/or the utility infrastructure directly servicing the Tract. Developer acknowledges that if the rules, regulations and statutes of the United States of America and/or the State of Texas that are in effect upon the execution date of this Agreement are repealed, revised or amended to such an extent that SAWS becomes incapable of, or prevented from, providing the Services, then no liability of any nature is to be imposed upon SAWS as a result of SAWS' compliance with such legal or regulatory mandates. SAWS agrees that it will use its best efforts to prevent the enactment of such legal or regulatory mandates.

3.00 Term.

3.01 The term of this Agreement shall be seven (7) years from the Effective Date if the Developer complies with the requirements set out in G.C. 19.00 (attached) within the time period therein stated. This Agreement shall automatically expire if Developer fails to comply with the requirements of G.C. 19.00 within the time period therein provided. The term of this Agreement may be extended to fifteen (15) years from the Effective Date, if Developer complies with the requirements to extend the term set forth in G.C. 19.00 within the time period therein stated. Certain obligations of SAWS (described in Section 3.03 below) may survive the expiration of the term of this Agreement, to the extent that Developer has (i) paid all applicable impact fees for the Services at the then-current rate, and (ii) complied with all On-Site and Off-Site utility infrastructure requirements of this Agreement (described in the Special Conditions), including over-sizing requirements.

3.02 To the extent that SAWS' obligations do not survive the expiration of this Agreement, Developer understands and agrees that a new Utility Service Agreement must be entered into with SAWS to receive the Services for the development project that is the subject of this Agreement.

3.03 To the extent that Developer timely pays all applicable impact fees and complies with all On-Site and Off-Site utility infrastructure requirements prior to the expiration of this Agreement, the following obligations will survive expiration of this Agreement:

- (i) SAWS' recognition of the EDUs referenced as the subject of this agreement as Guaranteed Capacity.
- (ii) SAWS' continued recognition of impact fee credits previously earned by the Developer pursuant to Sections 15.8 and 15.9 of the USR.

- (iii) SAWS' continued provision of the Services to retail customers located in the Tract, so long as such customers pay for the services and comply with the regulations applicable to individual customers.

4.00 Entire Agreement.

The following documents attached hereto and incorporated herein are as fully a part of this Agreement as if herein repeated in full, together with this Agreement, comprise the Agreement in its entirety:

Attachment I:	General Conditions
Attachment II:	Special Conditions
Attachment III:	Description of Proposed Water and/or Wastewater Infrastructure
Attachment IV:	Board Summary & Recommendation and Resolution (if necessary)
Attachment V:	Developer Water and/or Wastewater Master Plan (if necessary)
Attachment VI:	Engineering Study Including Description of the Tract
Attachment VII:	Lift Station & Force Main Supplemental Agreement (if necessary)
Attachment VIII:	Water Recycling and Conservation Plan (if necessary)

Any of the above attachments that are created and submitted by the Developer as an attachment to this USA shall be limited to providing relevant engineering, planning or managing information for the purposes of setting aside or reserving water and/or wastewater service capacity as specified in the body of this USA, the General Conditions and the Special Conditions. Developer agrees that it will not attempt to rely on, and SAWS does not authorize, any of the contents of any attachments created and submitted by the Developer as a basis for claiming rights under Chapter 245 of the Texas Local Government Code, except as specifically required by Section 1.02 of this USA.

Developer understands that this Agreement, including, its General Conditions, Special Conditions and Attachments, is subject to the Texas Public Information Act; and, therefore, agrees that it will not claim that any of the information contained herein is subject to any third party exception under that Act.

5.00 Developer's Obligations.

The Developer acknowledges and agrees that the capacity provided by this Agreement runs with the land and shall be an appurtenance to the Tract. The Developer acknowledges that recordation of this Agreement in the Real Property Records of the County in which the Tract is located within three (3) years of the Effective Date of this Agreement is required; otherwise, this Agreement will automatically terminate. Developer shall record the Agreement and the delivery of a recorded copy to the Director within three (3) years of the Effective date of this Agreement or before any transfer of property or EDUs as specified in G.C. 20.00, whichever is sooner, is required. The Developer shall maintain records of EDU's remaining on the Tract pursuant to the approved Developer Master Plan. Developer shall provide SAWS with such records upon SAWS written request.

6.00 Indemnity.

TO THE EXTENT ALLOWED BY LAW AND TEXAS CONSTITUTION, THE DEVELOPER FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD HARMLESS SAWS AND ITS SUCCESSOR AND ASSIGNS FROM THE CLAIMS OF THIRD PARTIES ARISING OUT OF SAWS' RECOGNITION OF THE TRANSFER OF CAPACITY UNDER THIS AGREEMENT TO DEVELOPER'S SUBSEQUENT PURCHASERS, SUCCESSORS AND ASSIGNS.

7.00 Notices.

Any notice, request, demand, report, certificate or other instrument which may be required or permitted to be furnished to or served upon the parties shall be deemed sufficiently given or furnished or served if in writing and deposited in the United States mail, registered or certified, return receipt requested, addressed to such party at the address set forth below:

IF TO SAN ANTONIO WATER SYSTEM:

**SAN ANTONIO WATER SYSTEM
POST OFFICE BOX 2449
SAN ANTONIO, TEXAS 78298-2449
ATTN: SAM MILLS, P.E., DIRECTOR, INFRASTRUCTURE PLANNING**

IF TO DEVELOPER:

**One KR Venture, L.P.
13809 Research Blvd., Ste. 655
Austin, TX, 78750
Attn: Jeff Gilpatrick**

8.00 Severability.

If for any reason any one or more paragraph of this Agreement are held legally invalid, such judgment shall not prejudice, affect impair or invalidate the remaining paragraphs of the Agreement as a whole, but shall be confined to the specific sections, clauses, or paragraphs of this contract held legally invalid.

9.00 Effective Date.

The Effective Date of this Agreement shall be the date signed by the authorized representative of the San Antonio Water System.

10.00 Ownership.

By signing this Agreement the Developer represents and warrants that it is the owner of the Tract or has the authority of the Tract owner to develop the area. Any misrepresentation of authority or ownership by Developer shall make this Agreement voidable by SAWS. If the Developer does not own the Tract, then the Developer must provide documentation from the owner of the Tract to show that Developer has the proper authority to develop the Tract.

ACCEPTED AND AGREED TO IN ALL THINGS:

San Antonio Water System

Signature: [Signature]

Print Name: Robert R. Puente

Title: President/ Chief Executive Officer

Date: 8-8-16

Developer

Signature: [Signature]

Print Name: Todd Etter

Title: Executive Vice President of WDFII, Inc, its manager of HLLII Development, LLC, its general partner of OneKR Venture, L.P.

Date: July 25, 2016

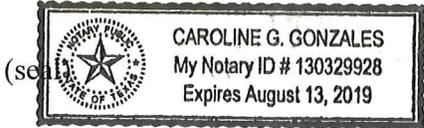
ACKNOWLEDGEMENTS

STATE OF TEXAS, COUNTY OF BEXAR

§

BEFORE ME, the undersigned Notary Public, on this day personally appeared Robert R. Puente known to me to be the person whose name is subscribed to the foregoing instrument and that he has executed the same as President/CEO for the purposes and consideration therein expressed and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this 8th day of August, 20156



[Signature]

Notary Public

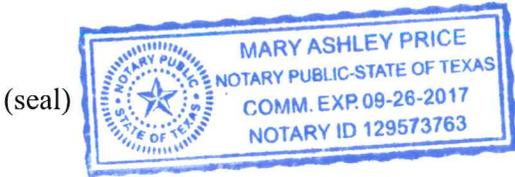
STATE OF TEXAS, COUNTY OF ~~BEXAR~~ TARRANT

[WAPP]

§

BEFORE ME, the undersigned Notary Public, on this day personally appeared Todd Etter known to me to be the person whose name is subscribed to the foregoing instrument and that he has executed the same as Executive Vice President of WDFII, Inc, its manager of HLLII Development, LLC, its general partner of OneKR Venture, L.P. for the purposes and consideration therein expressed and in the capacity therein stated. [WAPP]

GIVEN UNDER MY HAND AND SEAL OF OFFICE this 25th day of July, 20152016 [WAPP]



[Signature]

Notary Public

GENERAL CONDITIONS OF THE UTILITY SERVICE AGREEMENT

G.C.1.00 Definitions.

G.C.1.01 Developer.

Owner of the tract, his subsequent purchasers, successors, and/or assigns.

G.C.1.02 Director of Infrastructure Planning.

The Director of Infrastructure Planning of the San Antonio Water System or his/her designated representative.

G.C. 1.03 Definition of Terms.

Unless defined in the Utility Service Agreement (the "Agreement"), the terms used in this General Conditions of the Utility Service Agreement (the "General Conditions") shall have the same definitions and meaning as those set out in Chapter 2, Definitions, of the Utility Service Regulations ("USR"). In the event a term is specifically defined in the General Conditions, and the definition is in conflict with that found in the USR, and such conflict is acknowledged in the General Conditions, the definition set out in the General Conditions shall apply.

G.C.2.00 Required Submittals.

If determined to be necessary by the Director of Infrastructure Planning ("Director"), the Developer hereby agrees to submit the following documents prior to the execution of the Agreement: Developer Master Plan, Developer Utility Layout, Water Recycling and Conservation Plan, and Engineering Report. The Parties agree that such documents are included instruments to the Agreement. The submittal of such documents is a condition precedent to plat recordation and initiation of Services. Developer shall modify such documents as may be reasonably required by the Director. Such documents shall be updated as required by the Director and the USR.

G.C.3.00 Dedication to SAWS.

The Developer agrees to dedicate, grant, and convey to SAWS all rights, title and interest of Developer in both the Off-Site and On-Site utility infrastructure that the Developer is required to construct under the Special Conditions of the Utility Service Agreement (the "Special Conditions"), and to dedicate, grant, and convey to SAWS easements for such utility infrastructure. Upon written acceptance of Off-Site and On-Site utility infrastructure by SAWS, the infrastructure shall be owned, operated and maintained by SAWS.

G.C.4.00 Design and Construction Requirements.

The design and construction of all Off-Site and On-Site utility infrastructure shall, at a minimum, comply with the requirements established by SAWS, including the USR, the City of San Antonio, the County of Bexar, the State of Texas, and any agency thereof with jurisdiction, including but not limited to the Texas Commission on Environmental Quality and the Texas Department of Health. Off-Site and On-Site utility infrastructure shall be constructed under the inspection of SAWS. Provision of the Services to the Tract shall not commence until the Director has accepted and approved Off-Site and On-Site utility infrastructure in writing.

G.C.5.00 Joint Venture Agreements.

In the event the Developer enters into a Joint Venture Agreement covering the costs for supplying the Services to the Tract, the Developer shall send a copy of such agreement to the attention of the Director.

G.C.6.00 Assignment.

This Agreement may not be assigned in whole or in part; however, Developer may assign, convey or transfer EDU capacity ("EDU capacity transfer") to buyers of portions of the Tract in accordance with the terms in G.C. 20.00.

G.C.7.00 Event of Foreclosure.

In the event Developer's interest in the Tract described in Attachment VI are extinguished by an act of foreclosure, and the foreclosing party has supplied sufficient evidence to SAWS that they are the successor in interest to the Tract as a result of such foreclosure, and that there are no lawsuits pending concerning the Tract, SAWS shall consider the foreclosing party a successor in interest if the foreclosing party executes a utility service agreement with SAWS after the Director determines that the execution of such an agreement will not be adverse to SAWS' interest.

G.C.8.00 Payment for Provision of Utility Service.

In the event payment for the Services provided to a subdivision plat within the Tract is not billed by SAWS, the amount of the monthly fees for the provision of the Services will be those charged to the various customer classifications as set by City Ordinances, with the billing and collection thereof on behalf of SAWS, being the responsibility of the billing utility purveyor. To facilitate this arrangement, Developer is to insert into any utility agreement with whatever utility purveyor is to bill for utility services to a subdivision plat within the Tract, a provision requiring said purveyor to enter into a Contract with SAWS to bill and collect SAWS' monthly utility services fees and transmit said fees to SAWS. The billing utility purveyor shall advise customers that delinquent non-payment of any of SAWS' fees will result in interruption and/or termination of the Services provided by SAWS, in accordance with applicable interruption and termination policies and procedures, as amended. SAWS shall not be obligated to provide the Services to any plat within the Tract unless and until the utility purveyor has executed a contract with SAWS to provide for the billing and collection of the Services provided by SAWS.

G.C.9.00 Enforcement of Industrial Waste Ordinance if Required by SAWS.

The Developer shall cause to be recorded in the Deed and Plat Records of the counties in which the Tract is located, a restrictive covenant covering the entire Tract. This restrictive covenant shall run with the land in the Tract described in Attachment VI. Such covenant shall contain language expressly granting to SAWS the right, should SAWS so elect, to enforce and or otherwise pursue to the extent provided at law or in equity, the provisions of the City's Industrial Waste Ordinance No. 57214, as amended or as may be amended (codified as Chapter 34, Article V, Division 3 of the City Code). SAWS' right shall include, to the extent provided at law or in equity, the right to inspection, sampling and monitoring of the collection system to assure ordinance compliance.

Recordation of the Covenant shall be a condition precedent for SAWS' provision of the Services to any portion of said Tract.

G.C.10.00 Oversizing.

Developer must pay for all mains and other utility facilities needed to serve the Tract. SAWS may require the installation of oversized water mains and wastewater mains and related facilities. SAWS' requirements for oversizing, if any, are set forth in the Special Conditions. SAWS will execute a trilateral contract with Developer and a contractor for the construction of oversized facilities. Contracts for the construction of oversized facilities must be competitively bid as required by law. SAWS will reimburse the Developer for the oversize construction cost differential upon completion of the approved facility installation and SAWS' acceptance of such facility. SAWS will determine whether to provide such reimbursement in the form of a cash reimbursement or in credits to be applied to impact fees. All oversizing shall be done in accordance with the USR.

G.C.11.00 Off-Site /On-Site Facilities.

Developer shall construct and install all required Off-Site and On-Site utility infrastructure in accordance with the USR and Special Conditions, at no cost to SAWS. Any specific requirements related to the facilities are set forth in the Special Conditions.

G.C.12.00 Impact Fee Payment.

Developer agrees that the Agreement does not constitute an assessment of impact fees. Developer agrees to pay all applicable impact fees at the time and in the amount prescribed by ordinance or resolution of the City Council of the City of San Antonio and the USR, as amended. An estimate of the impact fees for the development Tract is provided in the Special Conditions. The estimate does not constitute an assessment of impact fees, and the amount of impact fees is subject to change by the City Council of the City of San Antonio as provided by law.

G.C.13.00 SAWS' Obligation to Supply Service.

To the extent that Developer pays all applicable impact fees and complies with all Off-Site and On-Site utility infrastructure requirements, Developer shall be entitled to the permanent use and benefit of the Services and is entitled to receive immediate service from any existing facilities with actual capacity to serve the development for which impact fees were paid, subject to compliance with other valid regulations. If, after collecting the impact fees, there is no actual capacity in existing facilities to provide the Services, SAWS will provide the Services within a reasonable period of time not to exceed five (5) years, as prescribed by Chapter 395 of the Local Government Code, as amended. In the event Services are required by Developer earlier than the five (5) year period, Developer and SAWS may agree that Developer may construct or finance the capital improvements or facility expansions required to provide Services, and the costs incurred or funds advanced will be credited against impact fees otherwise due from the new development or reimbursed to Developer from impact fees paid from other new developments that will use such capital improvements or facility expansions, which fees shall be collected and reimbursed to Developer at the time the other new development records its plat.

G.C.14.00 Facility Design and Construction.

The Developer shall design and construct all On-Site and Off-Site utility infrastructure described in the Special Conditions, including any oversizing, in accordance with the USR and all applicable local, state and federal requirements. Developer further recognizes that SAWS' approval in all respects as to facility right-of-way adequacy, location, size, grade and invert elevation is a condition precedent to any further obligation of SAWS. Specific design and construction requirements are set forth in the Special Conditions.

G.C.15.00 Use of Capacity by SAWS.

Developer understands that capacity in Off-Site and On-Site utility infrastructure resulting from the Agreement for the Tract may be utilized by SAWS for other tracts requesting service from SAWS. SAWS shall keep accurate records of the capacity provided to the Tract under the Agreement, whether Set-Aside or Guaranteed Capacity, and in no event will Developer be denied capacity as a result of SAWS' utilization of such capacity for another tract. Set-Aside capacity shall not survive the expiration of the Agreement.

G.C.16.00 Utility Master Plan Requirements.

The Developer will prepare a utility master plan, which details the water and/or wastewater systems for the Tract pursuant to the USR, as amended.

G.C.17.00 Phased Utility Master Plans.

If the Developer's water and/or wastewater systems are to be installed in phases or units, the Developer shall submit overall utility master plans to SAWS for review and approval. The overall utility master plan(s) shall be submitted before the first construction phase is submitted for plat approval. The overall utility master plan(s) shall show the development phases or units including the sequence and a timetable for build-out. The Developer shall also provide

SAWS with a digital version of the proposed recorded plat, as submitted for plat recordation in a format acceptable to SAWS, for each phase or unit of the development project.

G.C.18.00 Conformance of Plans to Utility Master Plan.

All water and wastewater system facilities to serve the Tract shall be designed and constructed in conformance with the approved utility master plan. Changes in the water and wastewater system design shall be resubmitted to SAWS for written approval.

G.C.19.00 Timing Requirements for Submission of Plans.

Developer shall have three (3) years from the Effective Date of the Agreement to complete and submit the required utility master plan and to start construction of the Off-Site and On-Site utility infrastructure described in the Special Conditions. Developer agrees that the Agreement for the provision of Services shall automatically expire if Developer has not submitted a utility master plan and started construction of required Off-Site and On-Site utility infrastructure within three (3) years of the Effective Date of the Agreement, and a new request for the Services must be submitted to SAWS, which SAWS will grant based on then existing policies and regulations. In the event Developer meets the above-mentioned requirements within the three (3) year period provided, the Agreement shall remain in effect for seven (7) years from the Effective Date. If Developer submits a revised Utility Master Plan in accordance with the USR prior to the expiration of the seven (7) year period, the Agreement for the provision of Services may be extended to a maximum term of fifteen (15) years from the Effective Date.

G.C. 20.00 EDU Transfers.

The transfer of EDU capacity outside the original boundaries of this Utility Service Agreement will not be allowed. The San Antonio Water System considers this Agreement to run with the land; however, EDU capacity transfers to subdivided tracts within the Tract of this Agreement are the responsibility of the Developer and approval of such transfers is not required by the San Antonio Water System. The Developer shall maintain an accounting of the EDU capacity that is used by the Developer and/or transferred after the effective date of this Agreement to portions of the Tract. If the Developer sells a portion of the Tract and transfers part of the EDU capacity contained in this Agreement, then that EDU capacity transfer must be included in the deed, bill of sale or instrument conveying the land and the Developer must require the buyer of the land who receives the allocated EDUs to record the instrument effectuating the transfer. Developer may file a Master Development Plan or an EDU Plan, prepared by an engineer, that shows specific EDU capacity allocations within the Tract and shall ensure that the Master Development Plan or EDU Plan is attached to this Agreement and properly recorded. SAWS will recognize the capacity allocations within the Master Development Plan or EDU Plan so long as those allocations are within the parameters of this Agreement. For properties that have areas of unplanned use, the demand will be calculated at four (4) EDUs per acre unless the engineering report specifies otherwise or there is not enough EDU capacity remaining for the Tract to allocate four (4) EDUs per acre.

In no event will the System be responsible to 3rd parties for providing water supply or wastewater discharge capacity beyond the total EDU capacity identified in this Agreement for the Tract. Developer expressly disclaims, releases and holds harmless SAWS from any liability, damages, costs or fees, and agrees to indemnify SAWS for any liability, including, costs and attorney's fees, associated with any dispute related to the transfer of all or a portion of EDU capacity approved for the Tract in this Utility Services Agreement.

G.C. 21.00 Camp Bullis Awareness Zone.

In the event that the Tract is located within, or partially within, the Camp Bullis Awareness Zone, the Developer acknowledges that certain lighting regulations may apply within at least a 3-mile radius of Camp Bullis, commonly referred to as down-lighting or dark sky lighting, and Developer will comply with those regulations. Developer agrees to comply with any local, state or federal law, rule or regulation related to the protection of the environment or endangered species, including but not limited to, any site assessments or surveys and notice to the United States Fish & Wildlife when required by law, rule or regulation. Developer acknowledges that any required assessment, survey or notice shall be current or updated as may be required by law, rule or regulation.

SPECIAL CONDITIONS OF THE UTILITY SERVICE AGREEMENT

WATER SERVICE

S.C.1.00 Tract Location and Ultimate Demand.

512 Acre Kallison Tract, a 512.00-acre tract outside the City limits, is located along Culebra Rd. extending north to Government Canyon, as shown in Attachment VI (the "Tract"). The tract is located over the Edwards Aquifer Recharge or Contributing Zone and is not located within the 5-mile Awareness Zone of Camp Bullis. The proposed Tract is located inside SAWS' water CCN, outside SAWS' wastewater CCN and does require oversizing by SAWS, therefore, Board Action is required.

This Utility Service Agreement replaces and terminates, for the mutual benefit of SAWS and the Developer, the Utility Service Agreement dated January 6, 2006 between Bexar Metropolitan Water District and One KR Venture, LLC. SAWS recognizes that the requirements for maintaining validity of the January 6, 2006 Utility Service Agreement were in progress of being fulfilled by the Developer.

The ultimate demand from the proposed development, on SAWS' water infrastructure, shall not exceed 3,866 equivalent dwelling units (EDUs) of water supply.

S.C.2.00 Infrastructure Requirements.

Water Supply to the tract shall be from SAWS Pressure Zone 8 and SAWS Pressure Zone 11T. The flow capacity of a 24-inch main is required to supply water to the 512.00-acre Tract, in conformance with SAWS' Utility Service Regulations (USR).

Pressure Zone 8:

- The Developer shall construct a series of on-site looped 8-inch and 12-inch mains and connect to the existing looped 16-inch main which extends from Kallison Bend through the Tract to the existing 20-inch along the eastern boundary of the Tract.
- The Developer will be required to extend approximately 3,200-feet of PZ 8 12-inch main from the existing 20-inch running along the eastern boundary of the Tract, traverse through the Tract and stub out toward the County Line Booster Station PZ 11T, as illustrated in the water exhibit of Attachment III. (Segment A)
 - Note: There is a proposed PZ 8 12-inch main, which extends from the existing 30-inch within the adjacent Windgate property to the western boundary of this Tract. The Developer is required to connect the proposed 12-inch main (Segment A) to the proposed 12-inch main within the adjacent Windgate property to supply a PZ 8 redundant feed for the Tract. If the proposed 12-inch within the Windgate property has not been constructed,

then the Developer must provide a stub out and an easement in order for a future connection to be made to the proposed 12-inch main within the adjacent Windgate property.

- The Developer will be required to construct approximately 3,500-feet of 12-inch border main along the northern right-of-way of Culebra Rd. from the existing 24-inch near the intersection of Kallison Bend and Culebra Road along the entire southern frontage of the Tract (1,300 LF oversized).
- The Developer will be required to construct approximately 3,200 LF of 12-inch approach main from the existing 16-inch main near the intersection of Talley Road and Old FM 471 and tie-in to proposed 24-inch border main.
 - Note: There is a proposed 24-inch main constructed by the Kallison NISD along Old Culebra Road. If this main is constructed and accepted by SAWS, then the Developer can extend a 12-inch main from the proposed 12-inch border main (1,300 LF oversized) and tie-in to the 24-inch main constructed by the Kallison NISD.

The Developer shall then connect services to the proposed on-site looped PZ 8-inch and 12-inch mains and to the proposed PZ 8 border main along Culebra Rd.

Pressure Zone 11T:

In order to serve approximately 280 connections in PZ 11T, the Developer will be required to construct a PZ11T County Line Booster Station having a minimum pump capacity of 2.25 MGD (oversized) and 20,000 gallon hydrotank (oversized) to provide domestic and fire protection to the northern portions of the tract with elevations at or higher than 1040 feet.

The Developer will be required to construct approximately 8,200 LF of 12-inch main from the proposed PZ 8 12-inch main (Segment A), traverse through the northern portion of the Tract and connect to the proposed PZ 11T Booster Station.

- The Developer will be required to install a Division Valve (DV) near the 1040 feet elevation as illustrated in the water exhibit of Attachment III.

The Developer shall then connect services to the proposed 8-inch and 12-inch mains traversing through the northern portion of the Tract at or above elevation 1080 feet.

S.C. 3.00 SAWS Master Plan and Oversizing Requirements.

SAWS' Water Infrastructure Plan and the anticipated growth in this area require a 24-inch main along Culebra Rd. between Kallison Bend & Culebra Rd. and Old F.M. 471 & Culebra Rd. In conformance with SAWS' USR, SAWS shall require that approximately 1,300-feet of required 12-inch main, along Culebra Rd. between Kallison Bend & Culebra Rd. and Old F.M. 471 & Culebra Rd, be oversized to a 24-inch main. The total estimated cost of the oversized main is \$343,200.00 The Developer's estimated share is 25%, a cost of \$85,800.00; and SAWS' estimated share is 75%, a cost of \$257,400.00.

Special Conditions of USA
USA-12049 512 Acre Kallison Tract
08/26/15, Page 2 of 6

Preparer's Initials SM

SAWS' Water Infrastructure Plan and the anticipated growth in this area require the PZ11T County Line Booster Station with 5.00 MGD of High Service Pump capacity and 30,000 gallons of hydrotank storage. The total estimated cost of the facility is \$1,287,310.00. The Developer's estimated share is 49.6%, a cost of \$638,778.00; and SAWS' estimated share is 50.4%, a cost of \$648,532.00.

S.C.4.00 Impact Fee Credit Eligibility.

The 24-inch main is an impact fee eligible Capital Improvement Project in the current impact fees study; hence, the Developer is eligible for impact fee credits for their share of the cost for the 24-inch main.

The PZ11T County Line Booster Station is included in the current impact fees study; therefore the Developer is eligible for impact fee credits for their share of the cost for the booster pump station.

S.C.5.00 Engineering Study Report and/or Pro-Rata Refund Eligibility.

The engineering study report "512 Acre Kallison Tract, Utility Service Agreement Engineering Report", by KFW Engineers & Surveying, dated February 2015 is included as Attachment VI.

S.C.6.00 Developer On-Site and/or Off-Site Requirements.

The Developer shall acquire any right-of-way or easements, and install all On-Site utility infrastructure required to serve the Tract in accordance with SAWS' USR, solely at the Developer's cost. Other On-Site requirements within the Tract will be determined at such time as the engineer submits an overall Utility Master Plan, and any subsequent revisions, for the Tract.

S.C.7.00 Requirement to Install Approved Pressure Regulators and/or Booster Pumps.

N/A

S.C.8.00 Time for Water Impact Fee Assessment and Payment.

Water Impact Fees will be assessed at the rates in effect at the time of plat recordation or the latest date allowed by law. Impact fees will be collected at either the time of plat recordation or connection to the SAWS' water system, at the discretion of the Developer.

S.C.9.00 Water Impact Fee Estimates Based Upon Current Charges.

Following is an estimate of impact fees for the provision of Services contemplated under the Agreement, which are based on current impact fee rates. This estimate shall not constitute an assessment of impact fees and impact fee rates are subject to change by the San Antonio City Council.

Type of Impact Fee	EDUs	\$/EDUs	Current Total
Flow Development	3,866	\$1,182.00	\$4,569,612.00
System Development Middle	3,586	\$799.00	\$2,865,214.00
System Development High	280	\$883.00	\$247,240.00
Water Supply	3,866	\$2,796.00	\$10,809,336.00
Total			\$18,491,402.00

S.C.10.00 Pro-Rata Charge Requirement.

Developer shall be required to pay a Pro-Rata Charge pursuant to the USR, as amended, prior to connection to the SAWS water system if Developer is tying into a main that is subject to a pro-rata refund.

SPECIAL CONDITIONS OF THE UTILITY SERVICE AGREEMENT

WASTEWATER SERVICE

S.C.1.00 Tract Location and Ultimate Demand.

512 Acre Kallison Tract, a 512-acre tract outside the City limits, is located along Culebra Rd. extending north to Government Canyon, as shown in Attachment VI (the "Tract") and lies within SAWS' Upper Collection and Treatment Area (UCTA). The tract is located over the Edwards Aquifer Recharge or Contributing Zone and is not located within the 5-mile Awareness Zone of Camp Bullis. The proposed Tract is located inside SAWS' water CCN, outside SAWS' wastewater CCN and does not require oversized by SAWS, therefore, Board Action is required.

A portion of the 512-acre Kallison Tract is within the existing Kallison Ranch Tract (1,542-acres; sewer only). According to the Engineering Report dated February 2015 prepared by KFW Engineers, the existing Kallison Ranch allocated 2,492 EDU's of sanitary sewer capacity to the proposed 512-acre Kallison Tract, as listed below. The EDU allocation per the Engineering Report is illustrated in the following table:

Original USA Name	Original Acreage	Acres Allocated to 512-acre Kallison Tract	Total EDUs	EDUs Transferred to 512-acre Kallison Tract	Remaining EDUs in Original USA
Kallison Ranch	1,542	298	7,560	2,492	5,068

In order for SAWS to recognize the allocation of EDU's, through this USA, the developer must comply with the terms of G.C. 20.00.

The ultimate demand from the proposed development, on SAWS' wastewater infrastructure, shall not exceed 2,492 equivalent dwelling units (EDUs) of wastewater discharge.

S.C.2.00 Infrastructure Requirements.

The Tract is situated within SAWS' Upper Collection and Treatment Area (UCTA) and lies within the Upper Culebra Creek Watershed. The capacity of an 18-inch gravity main at 0.14 percent minimum slope is required to provide wastewater service to the tract, in conformance with SAWS' USB. The Developer shall connect to the existing 21-inch gravity sewer main located to the east of the tract. The Developer may connect a maximum of 2,492 EDUs of total capacity to the existing 21-inch gravity sewer main to the east of the tract.

S.C.3.00 SAWS Master Plan and Oversizing Requirements.

N/A.

S.C.4.00 Impact Fee Credit Eligibility.

N/A.

S.C.5.00 Engineering Study Report and/or Pro-Rata Refund Eligibility.

The engineering study report "512 Acre Kallison Tract, Utility Service Agreement Engineering Report", by KFW Engineers & Surveying, dated February 2015 is included as Attachment VI.

S.C.6.00 Developer On-Site and/or Off-Site Requirements.

The Developer will also be required to acquire any right-of-way and easements, install all On-Site and Off-Site utility infrastructure, and upgrade existing lift stations necessary to serve the Tract in accordance with SAWS' USR, solely at the Developer's cost. Other On-Site utility infrastructure requirements within the Tract will be determined at such time as the engineer submits an overall Utility Master Plan, and any subsequent revisions, for the Tract.

S.C.7.00 Lift Stations and Force Mains.

N/A

S.C.8.00 Time for Wastewater Impact Fee Assessment and Payment.

Wastewater Impact Fees will be assessed at the rates in effect at the time of plat recordation or the latest date allowed by law. Wastewater Impact Fees will be collected at either the time of plat recordation or connection to the SAWS wastewater system, at the discretion of the Developer.

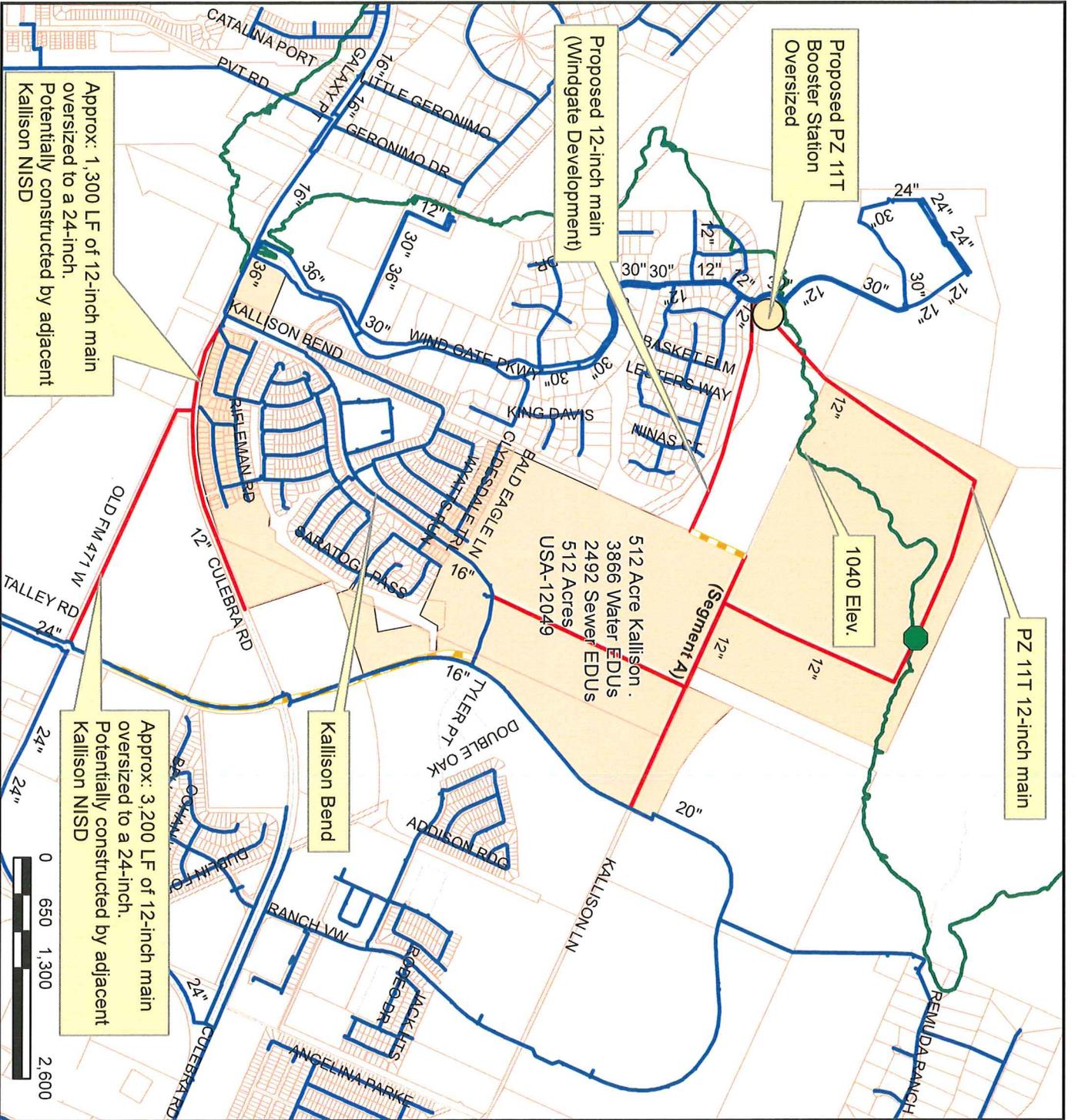
S.C.9.00 Wastewater Impact Fee Estimates Based Upon Current Charges.

Following is an estimate of impact fees for the provision of Services contemplated under the Agreement, which are based on impact fee rates in effect as of the Effective Date of the Agreement. This estimate shall not constitute an assessment of impact fees and impact fee rates are subject to change by action of the San Antonio City Council as permitted by law.

Type of Impact Fee	EDUs	\$/EDUs	Current Total
Wastewater Collection Upper	2,492	\$2,520.00	\$6,279,840.00
Wastewater Treatment Dos Rios/Leon Creek	2,492	\$786.00	\$1,958,712.00
Total			\$8,238,552.00

S.C.10.00 Pro-Rata Payment Fee Requirement.

Developer shall be required to pay a pro-rata fee pursuant to the USR, as amended, prior to connection to the wastewater system, if Developer is tapping into a main that is subject to a pro-rata refund.



Attachment III:
 USA-12049
 512-Acre Kallison Tract
 Proposed Water Infrastructure Map
 512 Acres



Legend

- Existing Water Main
- Proposed Water Mains
- Proposed Division Valve (DV)
- USA Tract
- Parcels Update
- Proposed Easement
- 1040 Elevation

Project Location



SAWS UTILIZES MAP DISCLAIMERS
 This utility map is for reference only. The information may not represent what actually has been constructed. SAWS explicitly disclaims any representation of the accuracy, errors, omissions, or inaccuracies in the map regardless of how caused. Field verification should be done as necessary. SAWS prohibits the reproduction or sale of this document. This SAWS or published in any form or media, or transferred to another without the written permission of the San Antonio Water System (SAWS).

Approx: 1,300 LF of 12-inch main oversized to a 24-inch. Potentially constructed by adjacent Kallison NISD

Approx: 3,200 LF of 12-inch main oversized to a 24-inch. Potentially constructed by adjacent Kallison NISD

Proposed 12-inch main (Windgate Development)

Proposed PZ 11T Booster Station Oversized

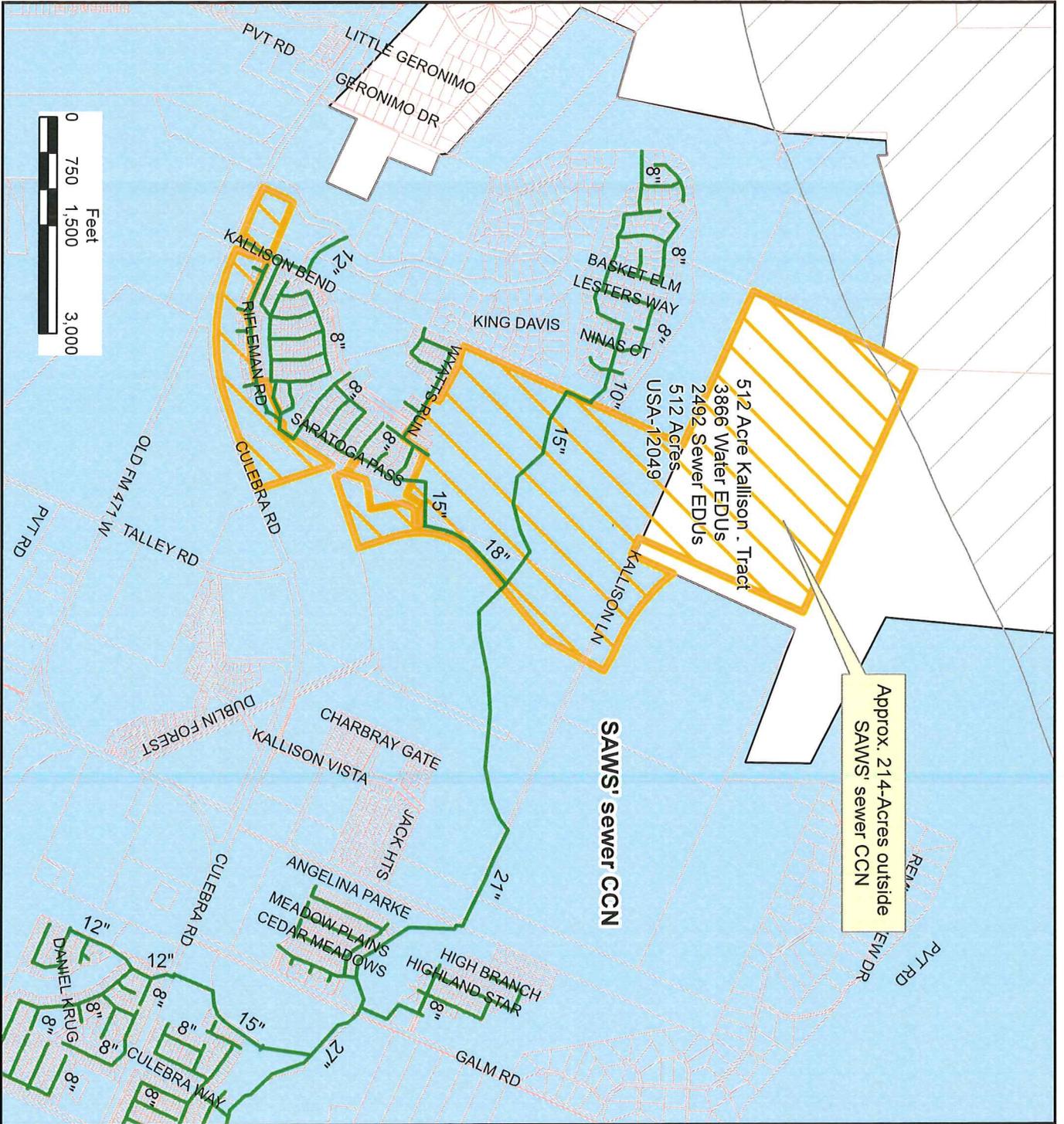
PZ 11T 12-inch main

1040 Elev.

Kallison Bend

512 Acre Kallison
 3866 Water EDUs
 2492 Sewer EDUs
 512 Acres
 USA-12049

(Segment A)



Approx: 214-Acres outside
SAWS' sewer CCN

512 Acre Kallison . Tract
3866 Water EDUs
2492 Sewer EDUs
512 Acres
USA-12049

SAWS' sewer CCN



Attachment III:
USA-12049
512 Acre Kallison Tract
Proposed Sewer Infrastructure Map
512 Acres

- Legend**
- Existing Sewer Main
 - USA
 - Parcels Update
 - Recharge Zone
 - SAWS' sewer CCN



SAWS' UTILITY MAP DISCLAIMER
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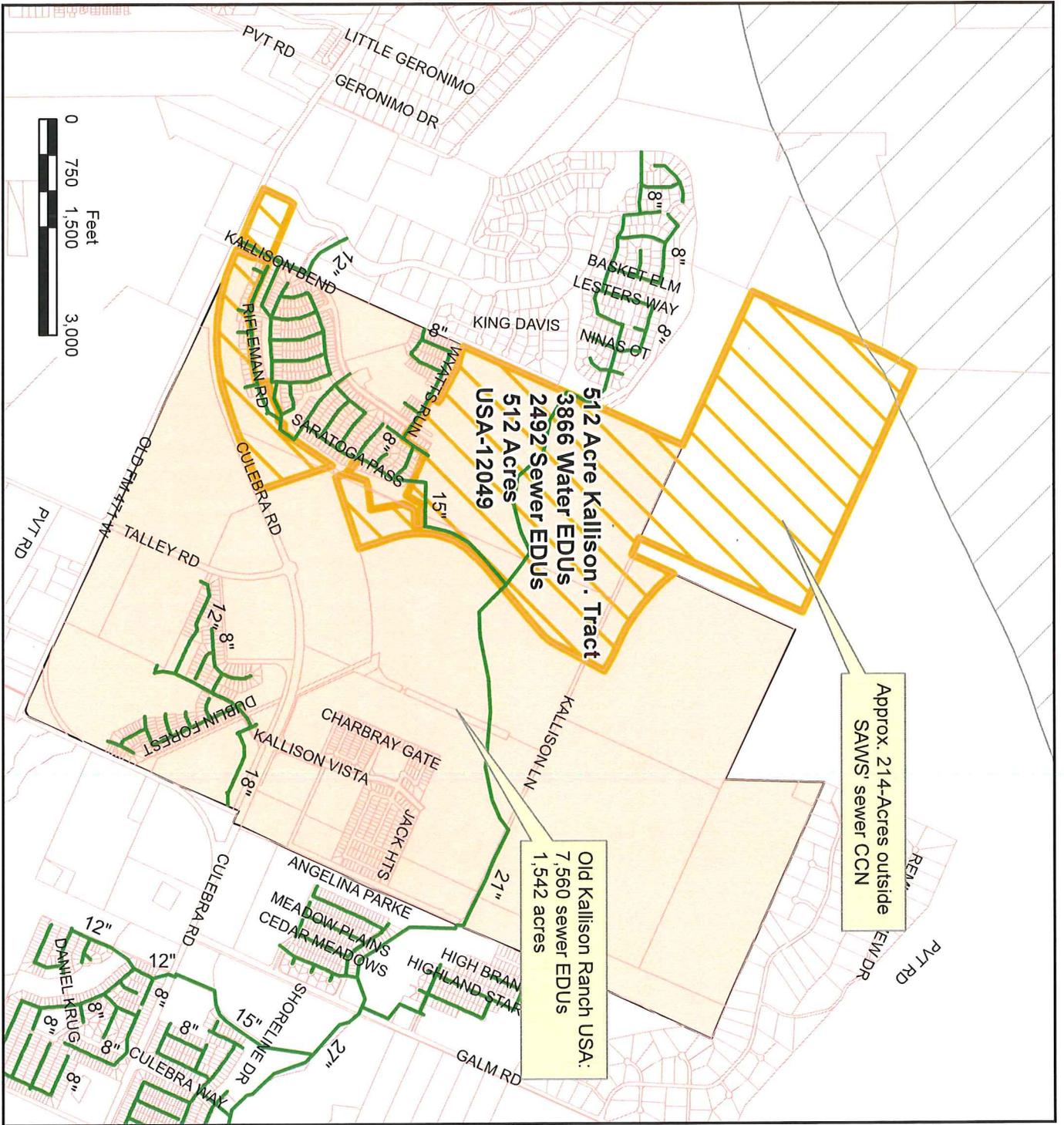


Legend

- Existing Sewer Main
- USA
- Parcels Update
- Recharge Zone

Project Location

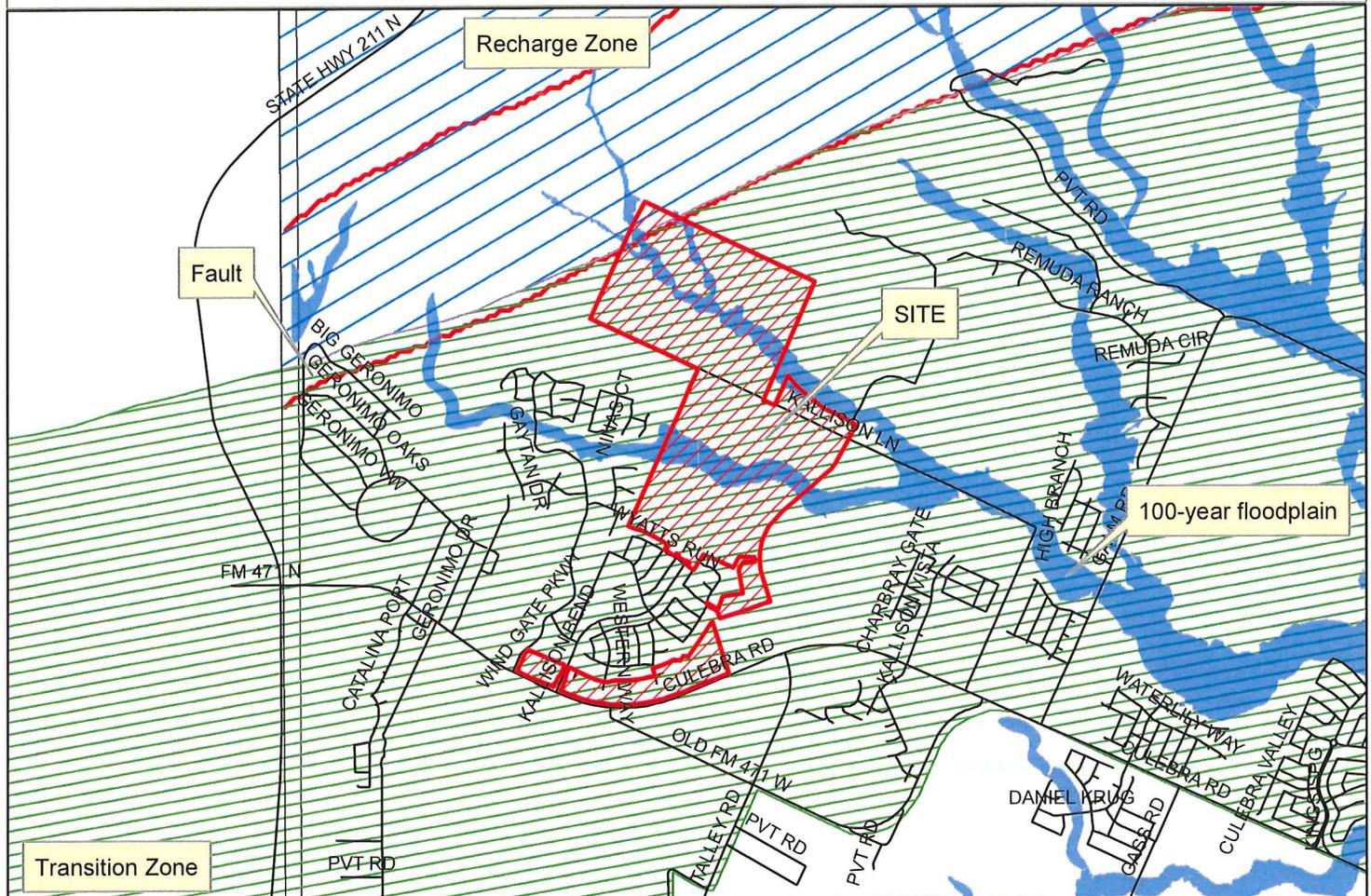
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ENVIRONMENTAL EVALUATION

EDWARDS AQUIFER RECHARGE / TRANSITION ZONE

512 ACRE KALLISON TRACT (512.0 ACRES)



Geologic and Site Condition Summary:

The site is located within Bexar County
 The northwest portion of the site is located within the Edwards Aquifer Recharge Zone the remainder is within the Transition Zone
 The site is located within the Dolomitic Member of the Edwards Aquifer
 A portion of the site is within the 100-year floodplain

Land Use Summary:

Tract is located within the City of San Antonio ETJ
 Category Status: Awaiting submission
 Aquifer Protection Plan: Awaiting submission
 Master Development Plan (MDP): Approved 12/04/09
 Zoning Status: Outside City of San Antonio City Limits
 Plat: Awaiting submission
 Water Pollution Plan (WPAP): Awaiting submission
 Development Type: Mixed

RESOLUTION NO. 15-161

OF THE SAN ANTONIO WATER SYSTEM BOARD OF TRUSTEES APPROVING A UTILITY SERVICE AGREEMENT TO PROVIDE WATER AND/OR WASTEWATER SERVICES TO THE SPECIFIED TRACT OF LAND REQUIRING OVERSIZING OF MAINS AND/OR ARE LOCATED OUTSIDE THE SAN ANTONIO WATER SYSTEM WATER AND/OR WASTEWATER CERTIFICATE OF CONVENIENCE AND NECESSITY (CCN), SUBJECT TO THE EXPIRATION OF SUCH AGREEMENTS IF NOT EXERCISED IN THIRTY-SIX MONTHS; FINDING THE RESOLUTION TO HAVE BEEN CONSIDERED PURSUANT TO THE LAWS GOVERNING OPEN MEETINGS; PROVIDING A SEVERABILITY CLAUSE; AND ESTABLISHING AN EFFECTIVE DATE

WHEREAS, the Developer Customers, specified in the table below, have requested the San Antonio Water System (the "System") to provide water and/or wastewater service(s), and have satisfied the requirements of the Board's Regulations for Developer Customers Applicant; and

No.	Tract Name	Developer	Acres	W EDUs	WW EDUs	CoSA / CoSA ETJ / Outside	EARZ /CZ	District Special Project (BMWD)	Board Reason	W CCN	WW CCN
1	20.53 Acre Mixed Use Project	1404 Properties	20.53	165	165	CoSA ETJ	CZ	No	OVR/CCN	In	Out
2	512 Acres Kallison Tract	One KR Venture, LLC	512.00	3,866	2,492	CoSA ETJ	EARZ	No	OVR/CCN	In	Out
3	Summerhill Phase II	Velma Development, LLC	61.54	340	0	CoSA	No	No	OVR	In	Out
4	11.92 Potranco Road	Mendez Group, LLC	11.92	183	183	CoSA ETJ	No	Yes	OVR	In	In
Totals			605.99	4,554	2,840						

WHEREAS, the Rentz Dietz-Elkhorn Tract that was included in the publicly posted agenda was pulled and no action was taken on the Utility Service Agreement by the System's Board of Trustees; and

WHEREAS, the Developer Customer's provisions to acquire water and/or wastewater services within the System's jurisdiction is generally illustrated in the attached Project Site Maps; and

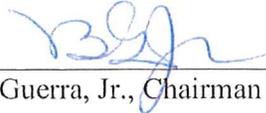
WHEREAS, the Developer Customer is obligated to pay the prescribed fees and to comply with other applicable requirements as set forth in the Regulations for Water and/or Wastewater Service; and

WHEREAS, the San Antonio Water System Board of Trustees desires (i) to approve the Utility Service Agreement and to provide water and/or wastewater services to tract of land requiring oversizing of mains and/or are located outside the System's water and/or wastewater Certificate of Convenience and Necessity, and (ii) to provide that the agreements will be honored for a period of thirty-six months, and that if not exercised during this period, the Utility Service Agreements will expire; now, therefore:

BE IT RESOLVED BY THE SAN ANTONIO WATER SYSTEM BOARD OF TRUSTEES:

1. That the San Antonio Water System hereby approves the Utility Service Agreement and agrees to provide water and/or wastewater services to tracts of land requiring oversizing of mains and/or are located outside the System's water and/or wastewater Certificate of Convenience and Necessity as generally illustrated in the attached Project Site Maps hereto, on a Developer Customer basis as provided for in the Board's Regulations, applicable amendments to the Regulations, and any other applicable federal, state or local regulations.
2. That the agreements shall be honored for a period of thirty-six months, and if not exercised during this thirty-six-month period, the utility service agreements will expire.
3. It is officially found, determined and declared that the meeting at which this resolution is adopted was open to the public, and that public notice of the time, place and subject matter of the public business to be conducted at such meeting, including this resolution, was given to all as required by the Texas Codes Annotated, as amended, Title 5, Chapter 551, Government Code.
4. If any part, section, paragraph, sentence, phrase or word of this resolution is for any reason held to be unconstitutional, illegal, inoperative or invalid, or if any exception to or limitation upon any general provision herein contained is held to be unconstitutional, illegal, invalid or ineffective, the remainder of this resolution shall nevertheless stand effective and valid as if it had been enacted without the portion held to be unconstitutional, illegal, invalid or ineffective.
5. This resolution shall take effect immediately from and after its passage.

PASSED AND APPROVED this 7th day of July, 2015.



Berto Guerra, Jr., Chairman

ATTEST:


Patricia E. Merritt, Secretary

Doc# 20160157216 Fees: \$110.00
08/12/2016 12:40PM # Pages 22
Filed & Recorded in the Official
Public Records of BEXAR COUNTY
GERARD C. RICKHOFF COUNTY CLERK

Any provision herein which restricts the sale, or use of the described real property because of race is invalid and unenforceable under Federal law STATE OF TEXAS, COUNTY OF BEXAR
I hereby Certify that this instrument was FILED in File Number Sequence on this date and at the time stamped hereon by me and was duly RECORDED in the Official Public Record of Real Property of Bexar County, Texas on:

AUG 12 2016




COUNTY CLERK BEXAR COUNTY, TEXAS

ATTACHMENT C
GENERAL WASTEWATER NOTES

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

Edwards Aquifer Protection Program Construction Notes – Legal Disclaimer

The following/listed “construction notes” are intended to be advisory in nature only and do not constitute an approval or conditional approval by the Executive Director, nor do they constitute a comprehensive listing of rules or conditions to be followed during construction. Further actions may be required to achieve compliance with TCEQ regulations found in Title 30, Texas Administrative Code, Chapters 213 and 217, as well as local ordinances and regulations providing for the protection of water quality. Additionally, nothing contained in the following/listed “construction notes” restricts the powers of the Executive Director, the commission or any other governmental entity to prevent, correct, or curtail activities that result or may result in pollution of the Edwards Aquifer or hydrologically connected surface waters. The holder of any Edwards Aquifer Protection Plan containing “construction notes” is still responsible for compliance with Title 30, Texas Administrative Code, Chapters 213 or any other applicable TCEQ regulation, as well as all conditions of an Edwards Aquifer Protection Plan through all phases of plan implementation. Failure to comply with any condition of the Executive Director’s approval, whether or not in contradiction of any “construction notes,” is a violation of TCEQ regulations and any violation is subject to administrative rules, orders, and penalties as provided under Title 30, Texas Administrative Code § 213.10 (relating to Enforcement). Such violations may also be subject to civil penalties and injunction. The following/listed “construction notes” in no way represent an approved exception by the Executive Director to any part of Title 30 Texas Administrative Code, Chapters 213 and 217, or any other TCEQ applicable regulation.

1. This Organized Sewage Collection System (SCS) must be constructed in accordance with 30 Texas Administrative Code (TAC) §213.5(c), the Texas Commission on Environmental Quality’s (TCEQ) Edwards Aquifer Rules and any local government standard specifications.
2. All contractors conducting regulated activities associated with this proposed regulated project must be provided with copies of the SCS plan and the TCEQ letter indicating the specific conditions of its approval. During the course of these regulated activities, the contractors must be required to keep on-site copies of the plan and the approval letter.
3. A written notice of construction must be submitted to the presiding TCEQ regional office at least 48 hours prior to the start of any regulated activities. This notice must include:
 - the name of the approved project;
 - the activity start date; and
 - the contact information of the prime contractor.
4. Any modification to the activities described in the referenced SCS application following the date of approval may require the submittal of an SCS application to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval.
5. Prior to beginning any construction activity, all temporary erosion and sedimentation (E&S) control measures must be properly installed and maintained in accordance with the manufacturers specifications. These controls must remain in place until the disturbed areas have been permanently stabilized.
6. If any sensitive features are discovered during the wastewater line trenching activities, all regulated activities near the sensitive feature must be suspended immediately. The applicant must immediately notify the appropriate regional office of the TCEQ of the feature discovered. A geologist’s assessment of the location and extent of the feature discovered must be reported to that regional office in writing and the applicant must submit a plan for ensuring the structural integrity of the sewer line or for modifying the proposed collection system alignment around the feature. The regulated activities near the sensitive feature may not proceed until the

executive director has reviewed and approved the methods proposed to protect the sensitive feature and the Edwards Aquifer from any potentially adverse impacts to water quality while maintaining the structural integrity of the line.

7. Sewer lines located within or crossing the 5-year floodplain of a drainage way will be protected from inundation and stream velocities which could cause erosion and scouring of backfill. The trench must be capped with concrete to prevent scouring of backfill, or the sewer lines must be encased in concrete. All concrete shall have a minimum thickness of 6 inches.
8. Blasting procedures for protection of existing sewer lines and other utilities will be in accordance with the National Fire Protection Association criteria. Sand is not allowed as bedding or backfill in trenches that have been blasted. If any existing sewer lines are damaged, the lines must be repaired and retested.
9. All manholes constructed or rehabilitated on this project must have watertight size on size resilient connectors allowing for differential settlement. If manholes are constructed within the 100-year floodplain, the cover must have a gasket and be bolted to the ring. Where gasketed manhole covers are required for more than three manholes in sequence or for more than 1500 feet, alternate means of venting will be provided. Bricks are not an acceptable construction material for any portion of the manhole.

The diameter of the manholes must be a minimum of four feet and the manhole for entry must have a minimum clear opening diameter of 30 inches. These dimensions and other details showing compliance with the commission's rules concerning manholes and sewer line/manhole inverts described in 30 TAC §217.55 are included on Plan Sheet 6.7 of 6.8.

It is suggested that entrance into manholes in excess of four feet deep be accomplished by means of a portable ladder. The inclusion of steps in a manhole is prohibited.

10. Where water lines and new sewer line are installed with a separation distance closer than nine feet (i.e., water lines crossing wastewater lines, water lines paralleling wastewater lines, or water lines next to manholes) the installation must meet the requirements of 30 TAC §217.53(d) (Pipe Design) and 30 TAC §290.44(e) (Water Distribution).
11. Where sewers lines deviate from straight alignment and uniform grade all curvature of sewer pipe must be achieved by the following procedure which is recommended by the pipe manufacturer: N/A.

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

Specific care must be taken to ensure that the joint is placed in the center of the trench and properly bedded in accordance with 30 TAC §217.54.

12. New sewage collection system lines must be constructed with stub outs for the connection of anticipated extensions. The location of such stub outs must be marked on the ground such that their location can be easily determined at the time of connection of the extensions. Such stub outs must be manufactured wyes or tees that are compatible in size and material with both the sewer line and the extension. At the time of original construction, new stub-outs must be constructed sufficiently to extend beyond the end of the street pavement. All stub-outs must be sealed with a manufactured cap to prevent leakage. Extensions that were not anticipated at the time of original construction or that are to be connected to an existing sewer line not furnished with stub outs must be connected using a manufactured saddle and in accordance with accepted plumbing techniques.

If no stub-out is present an alternate method of joining laterals is shown in the detail on Plan Sheet 6.8 of 6.8. (For potential future laterals).

The private service lateral stub-outs must be installed as shown on the plan and profile sheets on Plan Sheet 6.8 of 6.8 and marked after backfilling as shown in the detail on Plan Sheet 6.7 of 6.8.

13. Trenching, bedding and backfill must conform with 30 TAC §217.54. The bedding and backfill for flexible pipe must comply with the standards of ASTM D-2321, Classes IA, IB, II or III. Rigid pipe bedding must comply with the requirements of ASTM C 12 (ANSI A 106.2) classes A, B or C.
14. Sewer lines must be tested from manhole to manhole. When a new sewer line is connected to an existing stub or clean-out, it must be tested from existing manhole to new manhole. If a stub or clean-out is used at the end of the proposed sewer line, no private service attachments may be connected between the last manhole and the cleanout unless it can be certified as conforming with the provisions of 30 TAC §213.5(c)(3)(E).
15. All sewer lines must be tested in accordance with 30 TAC §217.57. The engineer must retain copies of all test results which must be made available to the executive director upon request. The engineer must certify in writing that all wastewater lines have passed all required testing to the appropriate regional office within 30 days of test completion and prior to use of the new collection system. Testing method will be:
 - (a) For a collection system pipe that will transport wastewater by gravity flow, the design must specify an infiltration and exfiltration test or a low-pressure air test. A test must conform to the following requirements:
 - (1) *Low Pressure Air Test.*
 - (A) A low pressure air test must follow the procedures described in American Society For Testing And Materials (ASTM) C-828, ASTM C-924, or ASTM F-1417 or other procedure approved by the executive director, except as to testing times as required in Table C.3 in subparagraph (C) of this paragraph or Equation C.3 in subparagraph (B)(ii) of this paragraph.
 - (B) For sections of collection system pipe less than 36 inch average inside diameter, the following procedure must apply, unless a pipe is to be tested as required by paragraph (2) of this subsection.
 - (i) A pipe must be pressurized to 3.5 pounds per square inch (psi) greater than the pressure exerted by groundwater above the pipe.
 - (ii) Once the pressure is stabilized, the minimum time allowable for the pressure to drop from 3.5 psi gauge to 2.5 psi gauge is computed from the following equation:

Equation C.3

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

Where:

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

L = length of line of same size being tested, in feet
 Q = rate of loss, 0.0015 cubic feet per minute per square foot internal surface

(C) Since a K value of less than 1.0 may not be used, the minimum testing time for each pipe diameter is shown in the following Table C.3:

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

- (D) An owner may stop a test if no pressure loss has occurred during the first 25% of the calculated testing time.
- (E) If any pressure loss or leakage has occurred during the first 25% of a testing period, then the test must continue for the entire test duration as outlined above or until failure.
- (F) Wastewater collection system pipes with a 27 inch or larger average inside diameter may be air tested at each joint instead of following the procedure outlined in this section.
- (G) A testing procedure for pipe with an inside diameter greater than 33 inches must be approved by the executive director.

(2) *Infiltration/Exfiltration Test.*

- (A) The total exfiltration, as determined by a hydrostatic head test, must not exceed 50 gallons per inch of diameter per mile of pipe per 24 hours at a minimum test head of 2.0 feet above the crown of a pipe at an upstream manhole.
- (B) An owner shall use an infiltration test in lieu of an exfiltration test when pipes are installed below the groundwater level.
- (C) The total exfiltration, as determined by a hydrostatic head test, must not exceed 50 gallons per inch diameter per mile of pipe per 24 hours at a minimum test head of two feet above the crown of a pipe at an upstream manhole, or at least two feet above existing groundwater level, whichever is greater.
- (D) For construction within a 25-year flood plain, the infiltration or exfiltration must not exceed 10 gallons per inch diameter per mile of pipe per 24 hours at the same minimum test head as in subparagraph (C) of this paragraph.
- (E) If the quantity of infiltration or exfiltration exceeds the maximum quantity specified, an owner shall undertake remedial action in order to reduce

the infiltration or exfiltration to an amount within the limits specified. An owner shall retest a pipe following a remediation action.

- (b) If a gravity collection pipe is composed of flexible pipe, deflection testing is also required. The following procedures must be followed:
 - (1) For a collection pipe with inside diameter less than 27 inches, deflection measurement requires a rigid mandrel.
 - (A) *Mandrel Sizing.*
 - (i) A rigid mandrel must have an outside diameter (OD) not less than 95% of the base inside diameter (ID) or average ID of a pipe, as specified in the appropriate standard by the ASTMs, American Water Works Association, UNI-BELL, or American National Standards Institute, or any related appendix.
 - (ii) If a mandrel sizing diameter is not specified in the appropriate standard, the mandrel must have an OD equal to 95% of the ID of a pipe. In this case, the ID of the pipe, for the purpose of determining the OD of the mandrel, must equal be the average outside diameter minus two minimum wall thicknesses for OD controlled pipe and the average inside diameter for ID controlled pipe.
 - (iii) All dimensions must meet the appropriate standard.
 - (B) *Mandrel Design.*
 - (i) A rigid mandrel must be constructed of a metal or a rigid plastic material that can withstand 200 psi without being deformed.
 - (ii) A mandrel must have nine or more odd number of runners or legs.
 - (iii) A barrel section length must equal at least 75% of the inside diameter of a pipe.
 - (iv) Each size mandrel must use a separate proving ring.
 - (C) *Method Options.*
 - (i) An adjustable or flexible mandrel is prohibited.
 - (ii) A test may not use television inspection as a substitute for a deflection test.
 - (iii) If requested, the executive director may approve the use of a deflectometer or a mandrel with removable legs or runners on a case-by-case basis.
 - (2) For a gravity collection system pipe with an inside diameter 27 inches and greater, other test methods may be used to determine vertical deflection.
 - (3) A deflection test method must be accurate to within plus or minus 0.2% deflection.
 - (4) An owner shall not conduct a deflection test until at least 30 days after the final backfill.
 - (5) Gravity collection system pipe deflection must not exceed five percent (5%).
 - (6) If a pipe section fails a deflection test, an owner shall correct the problem and conduct a second test after the final backfill has been in place at least 30 days.

16. All manholes must be tested to meet or exceed the requirements of 30 TAC §217.58.

- (a) All manholes must pass a leakage test.
- (b) An owner shall test each manhole (after assembly and backfilling) for leakage, separate and independent of the collection system pipes, by hydrostatic exfiltration testing, vacuum testing, or other method approved by the executive director.
 - (1) Hydrostatic Testing.

- (A) The maximum leakage for hydrostatic testing or any alternative test methods is 0.025 gallons per foot diameter per foot of manhole depth per hour.
- (B) To perform a hydrostatic exfiltration test, an owner shall seal all wastewater pipes coming into a manhole with an internal pipe plug, fill the manhole with water, and maintain the test for at least one hour.
- (C) A test for concrete manholes may use a 24-hour wetting period before testing to allow saturation of the concrete.

(2) Vacuum Testing.

- (A) To perform a vacuum test, an owner shall plug all lift holes and exterior joints with a non-shrink grout and plug all pipes entering a manhole.
- (B) No grout must be placed in horizontal joints before testing.
- (C) Stub-outs, manhole boots, and pipe plugs must be secured to prevent movement while a vacuum is drawn.
- (D) An owner shall use a minimum 60 inch/lb torque wrench to tighten the external clamps that secure a test cover to the top of a manhole.
- (E) A test head must be placed at the inside of the top of a cone section, and the seal inflated in accordance with the manufacturer's recommendations.
- (F) There must be a vacuum of 10 inches of mercury inside a manhole to perform a valid test.
- (G) A test does not begin until after the vacuum pump is off.
- (H) A manhole passes the test if after 2.0 minutes and with all valves closed, the vacuum is at least 9.0 inches of mercury.

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

<p>Austin Regional Office 12100 Park 35 Circle, Building A Austin, Texas 78753-1808 Phone (512) 339-2929 Fax (512) 339-3795</p>	<p>San Antonio Regional Office 14250 Judson Road San Antonio, Texas 78233-4480 Phone (210) 490-3096 Fax (210) 545-4329</p>
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THESE GENERAL CONSTRUCTION NOTES MUST BE INCLUDED ON THE CONSTRUCTION PLANS PROVIDED TO THE CONTRACTOR AND ALL SUBCONTRACTORS.

No deviation in straight alignment without a manhole is proposed with this sewer plan.

**Request for variance from manhole spacing is not necessary
with this sewer design.**

Slopes for this sewer system will not produce flows greater than 10 feet per second.

Temporary Stormwater Section

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: Omar Espinosa, P.E.

Date: 7/12/24

Signature of Customer/Agent:



Regulated Entity Name: Kallison Ranch 215 Phase 3 Unit 14B

Project Information

Potential Sources of Contamination

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

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

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

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

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

- Aboveground storage tanks with a cumulative storage capacity between 250 gallons and 499 gallons will be stored on the site for less than one (1) year.
- Aboveground storage tanks with a cumulative storage capacity of 500 gallons or more will be stored on the site. An Aboveground Storage Tank Facility Plan application must be submitted to the appropriate regional office of the TCEQ prior to moving the tanks onto the project.
- Fuels and hazardous substances will not be stored on the site.
- 2. **Attachment A - Spill Response Actions.** A site specific description of the measures to be taken to contain any spill of hydrocarbons or hazardous substances is attached.
- 3. Temporary aboveground storage tank systems of 250 gallons or more cumulative storage capacity must be located a minimum horizontal distance of 150 feet from any domestic, industrial, irrigation, or public water supply well, or other sensitive feature.
- 4. **Attachment B - Potential Sources of Contamination.** A description of any activities or processes which may be a potential source of contamination affecting surface water quality is attached.

Sequence of Construction

- 5. **Attachment C - Sequence of Major Activities.** A description of the sequence of major activities which will disturb soils for major portions of the site (grubbing, excavation, grading, utilities, and infrastructure installation) is attached.
 - For each activity described, an estimate (in acres) of the total area of the site to be disturbed by each activity is given.
 - For each activity described, include a description of appropriate temporary control measures and the general timing (or sequence) during the construction process that the measures will be implemented.
- 6. Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: Culebra Creek

Temporary Best Management Practices (TBMPs)

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

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

- A description of how BMPs and measures will prevent pollution of surface water, groundwater or stormwater that originates upgradient from the site and flows across the site.
 - A description of how BMPs and measures will prevent pollution of surface water or groundwater that originates on-site or flows off site, including pollution caused by contaminated stormwater runoff from the site.
 - A description of how BMPs and measures will prevent pollutants from entering surface streams, sensitive features, or the aquifer.
 - A description of how, to the maximum extent practicable, BMPs and measures will maintain flow to naturally-occurring sensitive features identified in either the geologic assessment, TCEQ inspections, or during excavation, blasting, or construction.
8. The temporary sealing of a naturally-occurring sensitive feature which accepts recharge to the Edwards Aquifer as a temporary pollution abatement measure during active construction should be avoided.
- Attachment E - Request to Temporarily Seal a Feature.** A request to temporarily seal a feature is attached. The request includes justification as to why no reasonable and practicable alternative exists for each feature.
 - There will be no temporary sealing of naturally-occurring sensitive features on the site.
9. **Attachment F - Structural Practices.** A description of the structural practices that will be used to divert flows away from exposed soils, to store flows, or to otherwise limit runoff discharge of pollutants from exposed areas of the site is attached. Placement of structural practices in floodplains has been avoided.
10. **Attachment G - Drainage Area Map.** A drainage area map supporting the following requirements is attached:
- For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin will be provided.
 - For areas that will have more than 10 acres within a common drainage area disturbed at one time, a smaller sediment basin and/or sediment trap(s) will be used.
 - For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin or other equivalent controls are not attainable, but other TBMPs and measures will be used in combination to protect down slope and side slope boundaries of the construction area.
 - There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. A smaller sediment basin and/or sediment trap(s) will be used in combination with other erosion and sediment controls within each disturbed drainage area.

- There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. Erosion and sediment controls other than sediment basins or sediment traps within each disturbed drainage area will be used.
11. **Attachment H - Temporary Sediment Pond(s) Plans and Calculations.** Temporary sediment pond or basin construction plans and design calculations for a proposed temporary BMP or measure have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information must be signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed temporary BMPs and measures are attached.
- N/A
12. **Attachment I - Inspection and Maintenance for BMPs.** A plan for the inspection of each temporary BMP(s) and measure(s) and for their timely maintenance, repairs, and, if necessary, retrofit is attached. A description of the documentation procedures, recordkeeping practices, and inspection frequency are included in the plan and are specific to the site and/or BMP.
13. All control measures must be properly selected, installed, and maintained in accordance with the manufacturer's specifications and good engineering practices. If periodic inspections by the applicant or the executive director, or other information indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations.
14. If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain).
15. Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50%. A permanent stake will be provided that can indicate when the sediment occupies 50% of the basin volume.
16. Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).

Soil Stabilization Practices

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

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

18. Records must be kept at the site of the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
19. Stabilization practices must be initiated as soon as practicable where construction activities have temporarily or permanently ceased.

Administrative Information

20. All structural controls will be inspected and maintained according to the submitted and approved operation and maintenance plan for the project.
21. If any geologic or manmade features, such as caves, faults, sinkholes, etc., are discovered, all regulated activities near the feature will be immediately suspended. The appropriate TCEQ Regional Office shall be immediately notified. Regulated activities must cease and not continue until the TCEQ has reviewed and approved the methods proposed to protect the aquifer from any adverse impacts.
22. Silt fences, diversion berms, and other temporary erosion and sediment controls will be constructed and maintained as appropriate to prevent pollutants from entering sensitive features discovered during construction.

SPILL RESPONSE ACTIONS

If there is an accidental spill on site, the contractor shall respond with appropriate action. The contractor will be required to contact the owner and in turn the owner will contact the TCEQ in the event of a spill on site. In addition to the following guidance, reference the latest version of TCEQ's Technical Guidance Manual (TGM) RG-348 Section 1.4.16.

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 runoff 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. Specific spill response procedures are outlined below for each spill category (Minor – Hazardous).

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:
 - Contain the spread of the spill.
 - Recover spilled materials.
 - 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 not limited to, the City Police Department, County Sheriff Office, Fire Departments, etc.

Vehicle and Equipment Maintenance

1. If maintenance must occur onsite, use a designated area and a secondary containment, located away from drainage courses, to prevent the runoff of stormwater and the runoff of spills.
2. Regularly inspect onsite vehicles and equipment for leaks and repair immediately
3. Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment onsite.
4. Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
5. Place drip pans or absorbent materials under paving equipment when not in use.
6. Use absorbent materials on small spills rather than hosing down or burying the spill. Remove the absorbent materials promptly and dispose of properly.
7. Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around.
8. Oil filters disposed of in trashcans or dumpsters can leak oil and pollute stormwater. Place the oil filter in a funnel over a waste oil-recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask the oil supplier or recycler about recycling oil filters.
9. Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Vehicle and Equipment Fueling

1. If fueling must occur on site, use designated areas, located away from drainage courses, to prevent the runoff of stormwater and the runoff of spills.
2. Discourage "topping off" of fuel tanks.
3. Always use secondary containment, such as a drain pan, when fueling to catch spills/ leaks.

POTENTIAL SOURCES OF CONTAMINATION

During Construction:

1. Oil, grease, fuel, and hydraulic fluid contamination from construction equipment and vehicle dripping.
2. Hydrocarbons from paving operations.
3. Miscellaneous trash and litter from construction workers and material wrappings.
4. Construction debris.
5. Silt leaving the site.

Ultimate Use:

1. Pollutants from vehicles utilizing the roadways
2. Stormwater runoff contamination from fertilizers, herbicides, and pesticides used to maintain landscaping and lawns.
3. Dumping of hazardous materials into the storm drain system by the general public.

SEQUENCE OF MAJOR ACTIVITIES

Intended Schedule or Sequence of Major Activities:

1. Mobilization of the contractor's equipment.
2. Installation of temporary BMP's as described in attachment "D" of this section.
3. Site clearing and grubbing activities for streets, drains, detention ponds, and utilities.
 - a. 3.79 Acres
4. Rough subgrade preparation: earthwork, grading, street and drainage excavation and embankment
 - a. 3.79 Acres
5. Trenching and installation of utilities
 - a. 0.08 Acres
6. Final street prep, curbing, and paving activities
 - a. 0.25 Acres
7. Home construction
 - a. 0.47 Acres
8. Topsoil, irrigation and landscaping
 - a. 2.62 Acres
9. Site cleanup and removal of temporary BMP's

TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

A: A majority of the upgradient runoff will be intercepted by earthen swales along the property lines and directed to the natural lows. The upgradient drainage area flowing onto the site is undeveloped and vegetation is well established so additional sedimentation is not anticipated to originate from upstream.

B: Temporary BMPs will be installed prior to soil disturbing construction activity. Silt fencing and natural vegetated buffers will be placed along the down-gradient sides of the property to prevent silt from escaping the construction area. Rock berms will be placed in the drainage lows where runoff is concentrated. A temporary construction entrance will be placed at the site entry/exit point to reduce tracking onto adjoining streets. A construction staging area will be used onsite to perform all vehicle maintenance and for equipment and material storage. A concrete truck washout pit will be placed on site to provide containment and easier clean up of waste from concrete operations.

Practices may also be implemented on site for interim and permanent stabilization. Stabilization practices may include but are not limited to: establishment of temporary vegetation, establishment of permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of existing trees and vegetation, and other similar measures.

C: There are no existing surface streams or sensitive features within the site, therefore additional temporary BMP's are not required.

D: There are no sensitive features identified within this site, therefore additional temporary BMP's are not required. If a naturally-occurring sensitive feature is identified during construction all activity will be stopped and the contractor should notify TCEQ.

REQUEST TO TEMPORARILY SEAL A FEATURE

There will be no temporary sealing of any naturally occurring features on site.

STRUCTURAL PRACTICES

Structural BMPs will be used to limit runoff discharge of pollutants from exposed areas of the site. BMPs will be installed prior to soil disturbing construction activity. Silt fencing will be placed along the down-gradient sides of the property to prevent silt from escaping the construction area. A temporary construction entrance will be placed at the site entry/exit point to reduce tracking onto adjoining streets. A construction staging area will be used onsite to perform all vehicle maintenance and for equipment and material storage. A concrete truck washout pit will be placed on site to provide containment and easier clean up of waste from concrete operations. The location of all structural temporary BMP's is shown on the Site Plan, **EX-1.0** and details and specifications are provided in **EX-1.1** which can be found at the end of this report under the appropriate tab.

DRAINAGE AREA MAP

A drainage area map is included with this report as **Attachment G**.

TEMPORARY SEDIMENT POND(S) PLANS AND CALCULATIONS

Temporary sediment basin and/or traps are not proposed; however other temporary BMPs and measures will be used in combination to protect down slope and side slope boundaries of the construction area.

INSPECTION AND MAINTENANCE FOR BMP'S

MAINTENANCE

All temporary and permanent erosion and sediment control BMPs will be maintained and repaired as needed to assure continued performance of their intended function. All maintenance and repair of BMPs will be conducted in accordance with manufacturers' specifications.

All temporary erosion and sediment control BMPs will be removed within 30 days after final site stabilization is achieved or after the temporary BMPs are no longer needed. Trapped sediment will be removed or stabilized on site. Disturbed soil areas resulting from removal of BMPs or vegetation will be permanently stabilized as soon as possible.

Erosion and sediment controls are designed to prevent soil erosion and sediment migration offsite, to the extent practicable, which may result from construction activity. This design considers local topography, soil type, and rainfall.

Control measures must be installed and maintained according to the manufacturer's specifications. If periodic inspections or other information indicates a control has been used inappropriately, or incorrectly, the permittee must replace or modify the control for site situations.

Sediment must be removed from sediment traps or sedimentation ponds when design capacity has been reduced by 50%.

If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize off-site impacts, and whenever feasible, prior to the next rain event.

The controls must be installed, maintained, and operated in a manner that will limit, to the extent practicable, offsite transport of litter, construction debris, and construction materials.

INSPECTIONS

An inspection will be performed by the qualified personnel, as designated by the permittee, on a weekly basis and after any rainfall event. An inspection and maintenance report shall be made per inspection. An inspection form has been included in this report. Based on the inspection results, the controls shall be corrected before the next scheduled inspection.

A log of inspection results will be maintained on-site and will include the name of the inspector, date, major observations, and necessary corrective measures. Reports of maintenance and inspection activities will be maintained on-site, in conformance with the TPDES permit conditions. Reports must identify any incidents of non-compliance. Where a report does not identify any incidents of non-compliance, the report must

contain a certification that the facility or site is in compliance with the SCS. This report must be signed by the responsible party.

Major observations shall, at a minimum, include the following:

The locations of discharges of sediment or other pollutants from the site;

Locations of BMPs that need to be maintained;

Locations of BMPs that failed to operate as designed or proved inadequate for a particular location;

Location where additional BMP's are needed;

All needed repairs or modifications will be reported to the contractors to permit the timely implementation of required actions. Necessary repairs or modifications will be implemented within seven days of inspection. The SCS will be modified within seven days to reflect any modifications to measures as a result of inspection.

The SCS must be amended whenever there is a change in design, construction, operation or maintenance that has a significant effect on the discharge of pollutants to the waters of the United States that was not addressed in the SCS.

The SCS must be amended when inspections or investigations by site operations, local, state or federal officials indicate that the SCS is proving ineffective in eliminating or significantly minimizing pollutants from the construction site or otherwise is not achieving the general objectives of controlling pollutants in storm water discharges associated with construction activity.

INSPECTION FORM

Project Name: Owner (s)/Operator (s): Permit Numbers(s): Inspection Date:	NOT APPLICABLE	IN COMPLIANCE	NEEDS CORRECTION	COMMENTS
RECORD KEEPING				
SWP3 Current				
NOI and Permit Posted				
BEST MANAGEMENT PRACTICES (BMPs)				
Vegetative Buffers				
Soil Covering(Including mulch and temporary vegetation)				
Outlet Protection				
Sediment Control Basins				
Silt Fence				
Stabilized Entrances/Exits				
Construction Staging Areas				
Inlet Protection				
Gravel Filter Bags				
Vegetated Filter Strip				
Concrete Truck Washout Pit				
Trash Receptacles				
General Site Cleanliness				
Other _____				
Other _____				
Other _____				

MAJOR OBSERVATIONS

CERTIFICATION

"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 gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

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

INSPECTOR NAME/SIGNATURE:
(Inspector must attach a brief summary of qualifications to this report.)

DATE:

OWNER NAME/SIGNATURE:

DATE:

SCHEDULE OF INTERIM AND PERMANENT SOIL STABILIZATION

Construction practices shall disturb the minimal amount of existing ground cover as required for land clearing, grading, and construction activity for the shortest amount of time possible to minimize the potential of erosion and sedimentation from the site. Existing vegetation shall be maintained and left in place until it is necessary to disturb for construction activity. For this project the following stabilization practices will be implemented:

1. Hydraulic Mulch and Seeding: Disturbed areas subject to erosion shall be stabilized with hydraulic mulch and/or seeded and watered to provide interim stabilization. For areas that are not to be sodded as per the project landscaping plan, a minimum of 85% vegetative cover will be established to provide permanent stabilization.
2. Sodding and Wood Mulch: As per the project landscaping plan, Sodding and wood mulch will be applied to landscaped areas to provide permanent stabilization prior to project completion.

Records of the following shall be maintained by the permittee in the attached Project Timeline:

- a) The dates when major grading activities occur;
- b) The dates when construction activities temporarily or permanently cease on a portion of the site;
- c) The dates when stabilization measures are initiated.

Stabilization measures must be initiated as soon as practical in portions of the site where construction activities have temporarily or permanently ceased, and except as provided in the following, must be initiated no more that fourteen (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 temporarily or permanently ceased is precluded by snow cover or frozen ground conditions, stabilization measures must be initiated as soon as practical.

Where construction activity on a portion of the site is temporarily ceased and earth disturbing activities will be resumed within twenty-one (21) days, temporary stabilization measures do not have to be initiated on that portion of the site. In arid areas (areas with an average rainfall of 0-10 inches), semiarid areas (areas with an average annual rainfall of 10 to 20 inches), and areas experiencing droughts where the initiation of stabilization measures by the 14th day after construction activity has temporarily or permanently ceased is precluded by seasonably arid conditions, stabilization measures must be initiated as soon as practical.

PROJECT TIMELINE

DATES WHEN MAJOR GRADING ACTIVITIES OCCUR	
Date	Construction Activity

DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE	
Date	Construction Activity

DATES WHEN STABILIZATION MEASURES ARE INITIATED	
Date	Stabilization Activity

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

I David Rittenhouse
Print Name

Vice President Land
Title - Owner/President/Other

of PHSA-NW315, LLC
Corporation/Partnership/Entity Name

have authorized Omar Espinosa, P.E.
Print Name of Agent/Engineer

of Colliers Engineering & Design
Print Name of Firm

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

I also understand that:

1. The applicant is responsible for compliance with 30 Texas Administrative Code Chapter 213 and any condition of the TCEQ's approval letter. The TCEQ is authorized to assess administrative penalties of up to \$10,000 per day per violation.
2. For those submitting an application who are not the property owner, but who have the right to control and possess the property, additional authorization is required from the owner.
3. Application fees are due and payable at the time the application is submitted. The application fee must be sent to the TCEQ cashier or to the appropriate regional office. The application will not be considered until the correct fee is received by the commission.
4. A notarized copy of the Agent Authorization Form must be provided for the person preparing the application, and this form must accompany the completed application.
5. No person shall commence any regulated activity on the Edwards Aquifer Recharge Zone, Contributing Zone or Transition Zone until the appropriate application for the activity has been filed with and approved by the Executive Director.

SIGNATURE PAGE:

[Handwritten Signature]
Applicant's Signature

3-1-24
Date

THE STATE OF TX §

County of Comal §

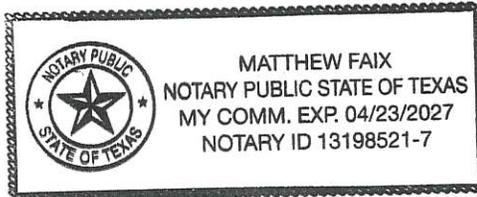
BEFORE ME, the undersigned authority, on this day personally appeared David Pittenhouse known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that (s)he executed same for the purpose and consideration therein expressed.

GIVEN under my hand and seal of office on this 1st day of March, 2024.

[Handwritten Signature]
NOTARY PUBLIC

Matthew Faix
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 4/23/2027



Application Fee Form

Texas Commission on Environmental Quality

Name of Proposed Regulated Entity: Kallison Ranch 215 Phase 3 Unit 14B

Regulated Entity Location: Approximately 1,300 LF NW of the int. of Kallison Bend & Cavy Trail

Name of Customer: PHSA-NW315, LLC

Contact Person: David Rittenhouse

Phone: 210-273-8373

Customer Reference Number (if issued): CN 605782606

Regulated Entity Reference Number (if issued): RN N/A

Austin Regional Office (3373)

Hays

Travis

Williamson

San Antonio Regional Office (3362)

Bexar

Medina

Uvalde

Comal

Kinney

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

Austin Regional Office

San Antonio Regional Office

Mailed to: TCEQ - Cashier

Overnight Delivery to: TCEQ - Cashier

Revenues Section

12100 Park 35 Circle

Mail Code 214

Building A, 3rd Floor

P.O. Box 13088

Austin, TX 78753

Austin, TX 78711-3088

(512)239-0357

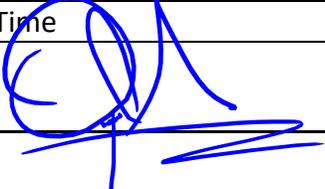
Site Location (Check All That Apply):

Recharge Zone

Contributing Zone

Transition Zone

<i>Type of Plan</i>	<i>Size</i>	<i>Fee Due</i>
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	Acres	\$
Sewage Collection System	223 L.F.	\$ 650
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: 7/12/24

Application Fee Schedule

Texas Commission on Environmental Quality

Edwards Aquifer Protection Program 30 TAC Chapter 213 (effective 05/01/2008)

Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

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

Organized Sewage Collection Systems and Modifications

<i>Project</i>	<i>Cost per Linear Foot</i>	<i>Minimum Fee- Maximum Fee</i>
Sewage Collection Systems	\$0.50	\$650 - \$6,500

Underground and Aboveground Storage Tank System Facility Plans and Modifications

<i>Project</i>	<i>Cost per Tank or Piping System</i>	<i>Minimum Fee- Maximum Fee</i>
Underground and Aboveground Storage Tank Facility	\$650	\$650 - \$6,500

Exception Requests

<i>Project</i>	<i>Fee</i>
Exception Request	\$500

Extension of Time Requests

<i>Project</i>	<i>Fee</i>
Extension of Time Request	\$150



TCEQ Core Data Form

For detailed instructions on completing 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.)		
<input checked="" type="checkbox"/> New Permit, Registration or Authorization (Core Data Form should be submitted with the program application.)		
<input type="checkbox"/> Renewal (Core Data Form should be submitted with the renewal form)		<input type="checkbox"/> Other
2. Customer Reference Number (if issued)	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number (if issued)
CN 605782606		RN

SECTION II: Customer Information

4. General Customer Information		5. Effective Date for Customer Information Updates (mm/dd/yyyy)		
<input type="checkbox"/> New Customer <input checked="" type="checkbox"/> Update to Customer Information <input type="checkbox"/> Change in Regulated Entity Ownership <input type="checkbox"/> Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)				
<i>The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).</i>				
6. Customer Legal Name (If an individual, print last name first: eg: Doe, John)			<i>If new Customer, enter previous Customer below:</i>	
PHSA-NW 315, LLC				
7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)		9. Federal Tax ID	10. DUNS Number (if applicable)
0803383660	32071536356		(9 digits) 842586335	
11. Type of Customer:		<input type="checkbox"/> Corporation	<input type="checkbox"/> Individual	Partnership: <input type="checkbox"/> General <input checked="" type="checkbox"/> Limited
Government: <input type="checkbox"/> City <input type="checkbox"/> County <input type="checkbox"/> Federal <input type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> Other		<input type="checkbox"/> Sole Proprietorship		<input type="checkbox"/> Other:
12. Number of Employees			13. Independently Owned and Operated?	
<input checked="" type="checkbox"/> 0-20 <input type="checkbox"/> 21-100 <input type="checkbox"/> 101-250 <input type="checkbox"/> 251-500 <input type="checkbox"/> 501 and higher			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
14. Customer Role (Proposed or Actual) – as it relates to the Regulated Entity listed on this form. Please check one of the following				
<input checked="" type="checkbox"/> Owner <input type="checkbox"/> Operator <input type="checkbox"/> Owner & Operator <input type="checkbox"/> Other: <input type="checkbox"/> Occupational Licensee <input type="checkbox"/> Responsible Party <input type="checkbox"/> VCP/BSA Applicant				
15. Mailing Address:		9000 Gulf Freeway		
City	Houston	State	TX	ZIP 77017 ZIP + 4 7018
16. Country Mailing Information (if outside USA)			17. E-Mail Address (if applicable)	
			david.rittenhouse@perryhomes.com	
18. Telephone Number		19. Extension or Code		20. Fax Number (if applicable)

SECTION III: Regulated Entity Information

21. General Regulated Entity Information <i>(If 'New Regulated Entity' is selected, a new permit application is also required.)</i>							
<input checked="" type="checkbox"/> New Regulated Entity <input type="checkbox"/> Update to Regulated Entity Name <input type="checkbox"/> Update to Regulated Entity Information							
<i>The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).</i>							
22. Regulated Entity Name <i>(Enter name of the site where the regulated action is taking place.)</i>							
Kallison Ranch 215 Phase 3 Unit 14B							
23. Street Address of the Regulated Entity: <i>(No PO Boxes)</i>							
		City		State		ZIP	
						ZIP + 4	
24. County							

If no Street Address is provided, fields 25-28 are required.

25. Description to Physical Location:		The site is located approximately 1,300 LF Northwest of the intersection of Kallison Bend and Cavy Trail					
26. Nearest City			State		Nearest ZIP Code		
San Antonio			TX		78254		
<i>Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).</i>							
27. Latitude (N) In Decimal:		29.54		28. Longitude (W) In Decimal:		-98.78	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds		
29	32	28	98	46	59		
29. Primary SIC Code (4 digits)		30. Secondary SIC Code (4 digits)		31. Primary NAICS Code (5 or 6 digits)		32. Secondary NAICS Code (5 or 6 digits)	
1521				236115			
33. What is the Primary Business of this entity? <i>(Do not repeat the SIC or NAICS description.)</i>							
Single Family Residential							
34. Mailing Address:		9000 Gulf Freeway					
		City	Houston	State	TX	ZIP	77017
						ZIP + 4	7018
35. E-Mail Address:		david.rittenhouse@perryhomes.com					
36. Telephone Number			37. Extension or Code		38. Fax Number <i>(if applicable)</i>		
(210) 273-8373					() -		

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

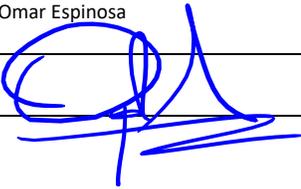
<input type="checkbox"/> Dam Safety	<input type="checkbox"/> Districts	<input checked="" type="checkbox"/> Edwards Aquifer	<input type="checkbox"/> Emissions Inventory Air	<input type="checkbox"/> Industrial Hazardous Waste
<input type="checkbox"/> Municipal Solid Waste	<input type="checkbox"/> New Source Review Air	<input type="checkbox"/> OSSF	<input type="checkbox"/> Petroleum Storage Tank	<input type="checkbox"/> PWS
<input type="checkbox"/> Sludge	<input type="checkbox"/> Storm Water	<input type="checkbox"/> Title V Air	<input type="checkbox"/> Tires	<input type="checkbox"/> Used Oil
<input type="checkbox"/> Voluntary Cleanup	<input type="checkbox"/> Wastewater	<input type="checkbox"/> Wastewater Agriculture	<input type="checkbox"/> Water Rights	<input type="checkbox"/> Other:

SECTION IV: Preparer Information

40. Name:	Omar Espinosa	41. Title:	Senior Project Manager
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(210) 979-8444		() -	omar.espinosa@collierseng.com

SECTION V: Authorized Signature

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

Company:	Colliers Engineering & Design	Job Title:	Senior Project Manager
Name (In Print):	Omar Espinosa	Phone:	(210) 979- 8444
Signature:		Date:	7/12/24

NOTICE OF CONFIDENTIALITY RIGHTS: IF YOU ARE A NATURAL PERSON, YOU MAY REMOVE OR STRIKE ANY OR ALL OF THE FOLLOWING INFORMATION FROM THIS INSTRUMENT BEFORE IT IS FILED FOR RECORD IN THE PUBLIC RECORDS: YOUR SOCIAL SECURITY NUMBER AND/OR YOUR DRIVER'S LICENSE NUMBER.

THE STATE OF TEXAS §
 §
COUNTY OF BEXAR §

CORRECTION
SPECIAL WARRANTY DEED

CHICAGO TITLE GF# 4300141901505-4KJ

ONE KR VENTURE, L.P., a Texas limited partnership ("*Grantor*"), for and in consideration of the sum of Ten and No/100 Dollars (\$10.00) paid to Grantor by PHSA – NW 315, LLC, a Texas limited liability company ("*Grantee*"), whose address is 9000 Gulf Freeway, Houston, Texas 77017 and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, has, subject to the exceptions hereinafter set forth, GRANTED, SOLD, and CONVEYED and does hereby GRANT, SELL and CONVEY unto Grantee those certain tracts of land located in Bexar County, Texas, more particularly described in Exhibit A attached hereto and incorporated herein by reference (the "*Land*"), together with together with all and singular rights and appurtenances pertaining to the Land including all of Grantor's right, title, and interest (but only to the extent such rights and property interests relate to the Land) in and to strips or gores, adjacent streets, roads, alleys, rights-of-way and any easements, licenses, reservations, privileges and rights of ingress and egress easements relating to any of the Land, and together with all, if any, buildings, structures and other improvements located thereon and all fixtures attached or affixed, actually or constructively, thereto or to any such buildings, structures or other improvements. All of the above described property, rights and interests are hereinafter collectively referred to as the "*Property*."

This conveyance is made and accepted subject to all matters set forth or described in Exhibit B attached hereto and incorporated herein by reference, to the extent they are valid and subsisting and affect the Property, and all liens securing the payment of taxes or assessments for 2019 and all subsequent years, which Grantee assumes and agrees to pay.

THIS CONVEYANCE IS MADE WITHOUT RECOURSE, COVENANT OR WARRANTY BY OR AGAINST GRANTOR, OF ANY KIND, EXPRESS, IMPLIED OR STATUTORY, AND THE PROPERTY SHALL BE CONVEYED AND TRANSFERRED TO GRANTEE "AS IS, WHERE IS AND WITH ALL FAULTS" EXCEPT AS OTHERWISE PROVIDED IN THE PURCHASE AND SALE CONTRACT DATED ON OR ABOUT JUNE 19, 2019 BETWEEN GRANTOR AND GRANTEE.

TO HAVE AND TO HOLD the Property, together with all rights and appurtenances pertaining thereto unto, Grantee and Grantee's successors and assigns forever; and, subject to the matters herein set forth, Grantor does hereby bind itself and its successors and assigns to warrant and forever defend the Property unto Grantee and Grantee's successors and assigns, against every person whomsoever lawfully claiming or to claim the same or any part thereof, by, through or under Grantor, but not otherwise.

This Correction Special Warranty Deed is given to correct the legal description set forth in Exhibit "A" to in the original Special Warranty Deed which was recorded under Document Number 20190196401 of the Real Property Records of Bexar County Texas.

GRANTOR AND GRANTEE DESIRE TO MAKE AND EXECUTE THIS CORRECTION SPECIAL WARRANTY DEED IN ORDER TO CORRECT THE LEGAL DESCRIPTION AS REFERENCED IN THE ORIGINAL SPECIAL WARRANTY DEED. THIS CORRECTION SPECIAL WARRANTY DEED SUPERSEDES AND REPLACES THE ORIGINAL SPECIAL WARRANTY DEED IN ITS ENTIRETY. THE EFFECTIVE DATE OF THIS CORRECTION DEED RELATES BACK TO THE EFFECTIVE DATE OF THE ORIGINAL SPECIAL WARRANTY DEED.

EXECUTED to be effective on the 27th day of September 2019.

GRANTOR:

ONE KR VENTURE, L.P.,
a Texas limited partnership

By: HLL II Development, L.L.C.,
a Texas limited liability company,
its General Partner

By: United Development Funding, II, Inc.,
a Delaware corporation,
its Manager

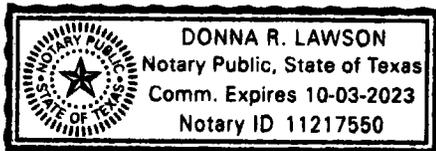
By: [Signature]
Name: Todd Etter
Title: Executive Vice President

STATE OF TEXAS §
 §
COUNTY OF TARRANT §

BEFORE ME, the undersigned authority, on this day personally appeared Todd Etter, the EVP of United Development Funding II, Inc., a Delaware corporation, which is the Manager of HLL II Development, L.L.C., a Texas limited liability company, which is the General Partner of One KR Venture, L.P., a Texas limited partnership, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purpose and consideration and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this 15th day of October 2019.

[SEAL]



[Signature]
Notary Public, State of Texas

GRANTEE:

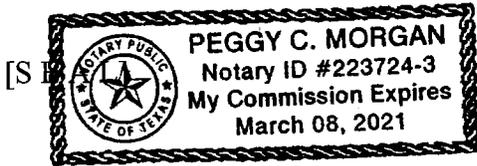
PHSA – NW 315, LLC,
a Texas limited liability company

By: *Michael C. Brisch*
Name: **MICHAEL C. BRISCH**
Title: **CHIEF LEGAL AND
ADMINISTRATIVE OFFICER**

STATE OF TEXAS §
 §
COUNTY OF HARRIS §

This instrument was acknowledged before me this 15th day of October^{pm}, 2019, by Michael C. Brisch, the Chief Legal and Administrative Officer of PHSA – NW 315, LLC, a Texas limited liability company, on behalf of said limited liability company.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this 15th day of October^{pm}, 2019.



Peggy C. Morgan
Notary Public, State of Texas

EXHIBIT A

LEGAL DESCRIPTION OF LAND



**FIELD NOTES
FOR
A 100.3 ACRE TRACT**

A 100.3 acre tract of land out of the J.J. Sanchez Survey No. 83, Abstract No. 666, County Block 4451 of Bexar County, Texas and a portion of the remainder of a 741.0 acre tract of land, called Tract 2 both conveyed to One KR Venture, L.P. both being of record in Volume 11566 Page 1545, of the Official Public Records of Real Property of Bexar County, Texas (OPRBCT) and being more particularly described by metes and bounds as follows:

BEGINNING at a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying" at the southwest termination point of Kallison Lane in the north line of a 741.0 acre tract, for a southeast corner of the 215.03 acre tract of land conveyed to MMNG Investments, LP of record in Volume 18008 Page 1546 of the OPRBCT and the tract described herein, from which a found 1/2" iron rod stamped "Brown" for the northeast corner of the 215.03 acre tract of land and an interior corner of a 1163.81 acre tract of land conveyed to the State of Texas, Texas Parks and Wildlife Department of record in Volume 9542, Page 1485 of the OPRBCT bears N 24°17'06" E, a distance of 2485.29 feet;

THENCE: S 64°56'49" E along and with the south right-of-way line of Kallison Lane and the north line of the 741.0 acre tract, a distance of 198.45 feet to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for the northwest corner of a 39.67 acre tract of land conveyed Perry Homes, LLC of record in Document No. 20180083773 of the OPRBCT, being a proposed plat of Kallison Ranch Unit 9, the northeast corner of the remaining portion of the 741.0 acre tract and the tract described herein;

THENCE: into and across the 741.0 acre tract, along and with the southwest lines of the proposed Kallison Ranch Unit 9, the following eight (8) courses:

1. S 24°19'59" W, a distance of 55.59 feet to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an interior corner of the tract described herein,
2. S 21°11'52" E, a distance of 805.44 feet, to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein,
3. S 21°26'52" E, a distance of 472.41 feet, to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein,
4. S 64°30'17" E, a distance of 55.99 feet, a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein,
5. S 42°35'34" E, a distance of 70.44 feet, to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein,
6. S 70°08'02" E, a distance of 46.07 feet, to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein,

7. **S 44°44'18" E**, a distance of **162.81 feet** to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein, and
8. **S 35°34'20" E**, a distance of **80.39 feet**, to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying" in the northwest right of way line of Ranch View West, an 86' right-of-way, of record in Volume 9724 Pages 103-104 of Deed and Plat Records of Bexar County Texas (DPRBCT), for the southeast corner of proposed Kallison Ranch Phase1, Unit 9 and a northeast corner of the tract described herein;

THENCE: S 50°40'44" W, along and with the southeast line of the remaining portion of the 741.0 acre tract and the northwest right-of-way line of Ranch View West, a distance of **397.23 feet** to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for the northeast corner of a 17.23 acre tract of land conveyed to Perry Homes, LLC of record in Document No. 20170218899 of the OPRBCT, being a proposed plat of Kallison Ranch Phase 1 Unit 6, a southeast corner of the remaining portion of the 741.0 acre tract and the tract described herein;

THENCE: into and across the 741.0 acre tract, along and with the proposed Kallison Ranch Phase 1 Unit 6, the following nineteen (19) courses:

1. **N 53°01'55" W**, a distance of **335.88 feet** to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein,
2. **N 63°47'52" W**, a distance of **87.83 feet** to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein,
3. **N 56°12'11" W**, a distance of **58.12 feet** to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein,
4. **S 88°06'37" W**, a distance of **130.79 feet** to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein,
5. **S 64°01'51" W**, a distance of **164.47 feet** to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein,
6. **S 75°30'10" W**, a distance of **123.79 feet** to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein,
7. **N 64°58'01" W**, a distance of **40.21 feet** to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an exterior corner of the tract described herein,
8. **N 01°54'08" E**, a distance of **40.41 feet** to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an interior corner of the tract described herein,
9. **N 88°05'52" W**, a distance of **40.10 feet** to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein,



10. **S 81°30'48" W**, a distance of **89.87 feet** to a set **1/2"** iron rod with Blue Plastic Cap Stamped "KFW Surveying", for the northwest corner of Kallison Ranch, Phase 1, Unit 6, an interior corner and point of curvature to the right of the tract described herein,
11. with a non-tangent curve to the **right** having an arc of **59.80 feet**, a radius of **535.00 feet**, a delta of **06°24'15"** and a chord bears **S 19°41'31"W**, a distance of **59.77 feet** to a set **1/2"** iron rod with Blue Plastic Cap Stamped "KFW Surveying", for a point of tangency of the tract described herein,
12. **S 22°53'39" W**, a distance of **314.01 feet** to a set **1/2"** iron rod with Blue Plastic Cap Stamped "KFW Surveying", for point of curvature to the right of the tract described herein,
13. with a curve to the **right** having an arc of **332.16 feet**, a radius of **535.00 feet**, a delta of **35°34'23"** and a chord bears **S 40°40'50"W**, a distance of **326.85 feet** to a set **1/2"** iron rod with Blue Plastic Cap Stamped "KFW Surveying", for a point of tangency of the tract described herein,
14. **S 58°28'02" W**, a distance of **54.19 feet** to a set **1/2"** iron rod with Blue Plastic Cap Stamped "KFW Surveying", for a westerly corner of Kallison Ranch, Phase 1, Unit 6 and point of curvature to the left of the tract described herein,
15. with a curve to the **left** having an arc of **39.27 feet**, a radius of **25.00 feet**, a delta of **90°00'00"** and a chord bears **S 13°28'02"W**, a distance of **35.36 feet** to a set **1/2"** iron rod with Blue Plastic Cap Stamped "KFW Surveying", for the southeast corner of Kallison Ranch, Phase 1, Unit 6 and a point of tangency of the tract described herein,
16. **S 31°31'58" E**, a distance of **21.89 feet** to a set **1/2"** iron rod with Blue Plastic Cap Stamped "KFW Surveying", for point of curvature to the left of the tract described herein,
17. with a curve to the **left** having an arc of **76.16 feet**, a radius of **125.00 feet**, a delta of **34°54'40"** and a chord bears **S 48°59'18"E**, a distance of **74.99 feet** to a set **1/2"** iron rod with Blue Plastic Cap Stamped "KFW Surveying", for a point of tangency of the tract described herein,
18. **S 66°26'38" E**, a distance of **585.74 feet** to a set **1/2"** iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein, and
19. **N 75°18'02" E**, a distance of **85.27 feet**, to a set **1/2"** iron rod with Blue Plastic Cap Stamped "KFW Surveying" in the northwest right of way line of Ranch View West, an 86' right-of-way, of record in Volume 9724 Pages 96-98 of DPRBCT, for the southeast corner of Kallison Ranch, Phase 1, Unit 6 and a northeast corner of the tract described herein;

THENCE: along and with the southeast line of the remaining portion of the 741.0 acre tract and the west right-of-way line of Ranch View West, with a non-tangent curve to the **left** having an arc of **112.85 feet**, a radius of **1193.00 feet**, a delta of **05°25'11"** and a chord bears **S 22°45'54"W**, a distance of **112.81 feet** to a set **1/2"** iron rod with Blue Plastic Cap Stamped "KFW Surveying", for the northeast corner Kallison Ranch Phase 1, Unit 2C, a plat of record in Volume 20001 Page 796 of



the DPRBCT, a southeast corner of the remaining portion of the 741.0 acre tract and the tract described herein;

THENCE: along and with the northeast line of Kallison Ranch Phase 1, Unit 2C, the northeast and northwest lines of Kallison Ranch Phase 1, Unit 2B-1, a plat of record in Volume 9718 Page 18 of the DPRBCT and the south lines of the 741.0 acre tract, the following six (6) courses:

1. **N 66°26'38" W**, at a distance of **287.19 feet** passing a set **1/2"** iron rod with a Blue Plastic Cap Stamped "KFW Surveying" and continuing for a total distance of **658.79 feet** to a set **1/2"** iron rod with Blue Plastic Cap Stamped "KFW Surveying", for point of curvature to the right of the tract described herein,
2. with a curve to the **right** having an arc of **102.77 feet**, a radius of **185.00 feet**, a delta of **31°49'43"** and a chord bears **N 50°31'46"W**, a distance of **101.45 feet** to a set **1/2"** iron rod with Blue Plastic Cap Stamped "KFW Surveying", for a point of tangency of the tract described herein,
3. **N 34°36'55" W**, a distance of **29.18 feet** to a set **1/2"** iron rod with Blue Plastic Cap Stamped "KFW Surveying", for point of curvature to the left of the tract described herein,
4. with a curve to the **left** having an arc of **38.25 feet**, a radius of **25.00 feet**, a delta of **87°39'13"** and a chord bears **N 77°42'39"W**, a distance of **34.62 feet** to a set **1/2"** iron rod with Blue Plastic Cap Stamped "KFW Surveying", for a point of tangency of the tract described herein,
5. **S 58°28'02" W**, a distance of **63.60 feet** to a set **1/2"** iron rod with Blue Plastic Cap Stamped "KFW Surveying", for point of curvature to the left of the tract described herein, and
6. with a curve to the **left** having an arc of **102.93 feet**, a radius of **365.00 feet**, a delta of **16°09'28"** and a chord bears **S 50°23'18"W**, a distance of **102.59 feet** to a set **1/2"** iron rod with Blue Plastic Cap Stamped "KFW Surveying", for the northeast corner of Kallison Bend, a 70' right-of-way, of the Kallison Ranch Phase 1, Road C, a plat of record in Volume 9728 Page 27 of the DPRBCT and a southerly corner of the remaining portion of the 741.0 acre tract and the tract described herein;

THENCE: along and with the common lines of Kallison Ranch Phase 1, Road C and the 741.0 acre tract, the following two (2) courses:

1. **N 47°41'26" W**, a distance of **70.00 feet** to a set **1/2"** iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an interior corner and point of curvature to the left of the tract described herein, and
2. with a non-tangent curve to the **left** having an arc of **3.97 feet**, a radius of **435.00 feet**, a delta of **00°31'22"** and a chord bears **S 42°02'53"W**, a distance of **3.97 feet** to a set **1/2"** iron rod with Blue Plastic Cap Stamped "KFW Surveying", for a southeast corner of the tract described herein;



THENCE: into and across the 741.0 acre tract, along and with a proposed plat of Kallison Ranch Phase 1, Unit 5B, a 10.03 acre tract, the following ten (10) courses:

1. **N 68°52'55" W**, a distance of **61.61 feet** to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for a southerly southwest corner of the tract described herein,
2. **N 34°59'16" E**, a distance of **3.34 feet** to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for a point of curvature to the left of the tract described herein,
3. with a curve to the left having an arc of **28.49 feet**, a radius of **117.73 feet**, a delta of **13°52'03"** and a chord bears **N 28°03'14"E**, a distance of **28.42 feet** to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for a point of tangency of the tract described herein,
4. **N 21°07'13" E**, a distance of **652.80 feet** to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an interior corner of the tract described herein,
5. **N 82°42'53" W**, a distance of **24.98 feet** to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein,
6. **N 40°50'20" W**, a distance of **144.93 feet** to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein,
7. **N 71°13'18" W**, a distance of **52.30 feet** to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein,
8. **N 54°09'09" W**, a distance of **50.00 feet** to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein,
9. **N 44°01'50" W**, a distance of **160.99 feet** to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein, and
10. **N 63°54'02" W**, a distance of **181.08 feet** to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for the northeast corner of Kallison Ranch Phase 1, Unit 5A, a plat of record in Volume 9728 Pages 83-85 of the DPRBCT, the northwest corner of the proposed Kallison Ranch Phase 1, Unit 5B and an angle point of the tract described herein;

THENCE: along and with the common line of Kallison Ranch Phase 1, Unit 5A and the 741.0 acre tract, the following eight (8) courses:

1. **N 61°28'24" W**, a distance of **139.91 feet** to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein,
2. **N 78°16'59" W**, a distance of **259.20 feet** to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein,

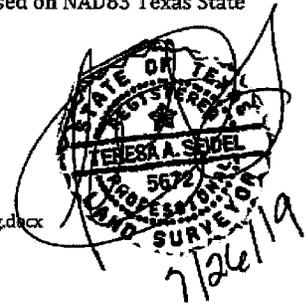


- 3. S 89°48'44" W, a distance of 73.78 feet to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein,
- 4. S 80°29'27" W, a distance of 50.67 feet to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein,
- 5. S 89°48'44" W, a distance of 100.00 feet to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein,
- 6. N 72°59'10" W, a distance of 88.12 feet to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein,
- 7. N 56°18'33" W, a distance of 61.02 feet to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying", for an angle point of the tract described herein, and
- 8. N 90°00'00" W, a distance of 42.64 feet to a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying" in the east line of a 1.916 acre tract of land, called Tract F as conveyed to One KR Venture, L.P. of record in Volume 12558 Page 408 both of the Official Public Records of Bexar County, Texas, for the westerly southwest corner of the tract described herein;

THENCE: N 24° 07' 38" E along and with the northwest line of the 741.0 acre tract, a distance of 1965.78 feet to a found 1/2" iron rod in a southwest line of the 215.03 acre tract of land, for the northwest corner of the 741.0 acre tract and the tract described herein, from which a found 1/2" iron rod for the southwest corner of the 215.03 acre tract and an interior corner of a remaining portion of the 514.674 acre tract conveyed to CB Fossil Springs, LTD of record in Volume 10278, Page 1454 of the OPRBCT bears N 64°53'48" W, a distance of 2343.44 feet;

THENCE: S 64° 59' 49" E along and with a southwest line of the 215.03 acre tract and a northeast line of the 741.0 acre tract, a distance of 1427.23 feet to the **POINT OF BEGINNING** and containing 100.3 acres or 4,066,866 square feet more or less, in Bexar County, Texas. Said tract being described in accordance with a survey prepared by KFW Surveying. Bearings are based on NAD83 Texas State Plane South Central Zone.

Job No.: 12-099
 Prepared by: KFW Surveying
 Date: June 18, 2019
 File: S:\Draw 2012\12-099 Kallison Ranch\DOCS\FN 100.3AC remaining.dwg





**FIELD NOTES
FOR
A 215.03 ACRES**

A 215.03 acre tract of land, being all of a 215.03 acre tract of land, conveyed to MMNG Investements, LP of record in Volume 18008 Page 1546 of the Official Public Records of Bexar County, Texas and out of the J.J. Sanchez Survey No. 83, Abstract No. 666, County Block 4451 of Bexar County, Texas and being more particularly described by metes and bounds as follows:

BEGINNING at a set 1/2" iron rod with Blue Plastic Cap Stamped "KFW Surveying" at the southwest termination point of Kallison Lane and in the north line of a 741.0 acre tract of land, called Tract 2 and conveyed to One KR Venture, L.P. of record in Volume 11566 Page 1545 of the Official Public Records of Bexar County, Texas and for a southeast corner of the 215.03 acre tract of land and the tract described herein;

THENCE: N 64°59'49" W along and with a southwest line of the 215.03 acre tract and a northeast line of the 741.0 acre tract, a distance of 1427.23 feet to a found 1/2" iron rod with a cap stamped "BROWN", for the common corner of the 741.0 acre tract and the remaining portion of a 514.674 acre tract conveyed to CB Fossil Springs, LTD of record in Volume 10278 Page 1454 of the Official Public Records of Bexar County, Texas and an angle point of the tract described herein;

THENCE: N 64°53'48" W along and with the common line of the 514.674 acre tract and the 215.03 acre tract, a distance of 2343.44 feet to a found 1/2" iron rod, for an interior corner of the 514.674 acre tract and the southwest corner of the 215.03 acre tract and the tract described herein;

THENCE: N 24°07'31" E continuing along and with the common line of the 514.674 acre tract, a 9.542 acre tract as conveyed to Texas Parks and Wildlife Department of record in Volume 18475, Page 792 of the Official Public Records of Bexar County, Texas, and the 215.03 acre tract, at a distance of 2011.94 feet passing a found 1/2" iron rod, for the northeast corner of the 9.542 acre tract and a southeast corner of a 1023.889 acre tract, Tract 7, conveyed to the Texas Parks and Wildlife Department of record in Volume 16866 Page 1542 of the Official Public Records of Bexar County, Texas and continuing for a total distance of 2477.32 feet to a metal disc monument stamped "NW83" for a common corner of the 1023.889 acre tract and a 1163.81 acre tract conveyed to the State of Texas, Texas Parks and Wildlife Department of record in Volume 9452 Page 1485 of the Official Public Records of Bexar County, Texas and the 215.03 acre tract, for the northwest corner of the tract described herein;

THENCE: Along and with the common line of the 1163.81 acre tract and the 215.03 acre tract the following (2) calls and distances:

1. **S 65°03'25" E**, a distance of **3777.47** feet to a found 1/2" iron rod with a cap stamped "BROWN", for an interior corner of the 1163.81 acre tract and the northeast corner of the 215.03 acre tract and the tract described herein, and
2. **S 24°17'06" W**, a distance of **2485.29** feet to the **POINT OF BEGINNING** and containing **215.03** acres, in Bexar County, Texas and being described in accordance with a survey prepared by KFW Surveying.

Job No.: 14-091
Prepared by: KFW Surveying
Date: September 5, 2014
Revised: July 24, 2019
File: S:\Draw 2014\14-091 214 Acre Kallison ALTA\DOCS\FN 215.03 AC.doc

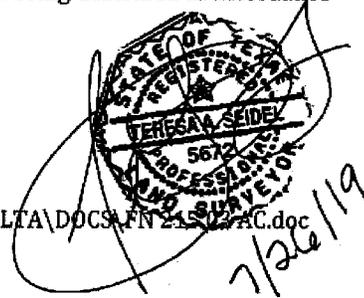


EXHIBIT B

PERMITTED EXCEPTIONS

1. Volume 11113, Page 2324, Volume 12330, Page 758, Volume 17374, Page 1942, Volume 18009, Page 197, Real Property Records, Bexar County, Texas. (Tract 1); Omitting any covenants or restrictions, if any, including but not limited to those based upon race, color, religion, sex, sexual orientation, familial status, marital status, disability, handicap, national origin, ancestry, or source of income, as set forth in applicable state or federal laws, except to the extent that said covenant or restriction is permitted by applicable law.
2. Easement(s) as provided therein, recorded in Volume 7615, Page 93, Deed Records, Bexar County, Texas, and as assigned in Volume 3978, Page 773, Real Property Records, Bexar County, Texas. (Tract 1)
3. Easement(s) as provided therein, (Blanket), recorded in Volume 2493, Page 325, Deed Records, Bexar County, Texas.(Tract 1)
4. Easements, as provided therein, granted to Perry Homes, LLC, recorded in Document No. 20180083739, Official Public Records, Bexar County, Texas.
5. Easements, as provided therein, granted to Perry Homes, LLC, recorded in Document No. 20180083740, Official Public Records, Bexar County, Texas
6. Terms and provisions of Post closing Agreement recorded in Volume 11113, Page 2281, Real Property Records, Bexar County, Texas.
7. Terms and provisions of Utility Service Agreement, recorded in Volume 12043, Page 133, Real Property Records, Bexar County, Texas.
8. Easement(s), as provided therein, granted to Lo-Vaca Gathering Company, recorded in Volume 6059, Page 233 and Volume 6141, Page 744, Deed Records, Bexar County, Texas. Further affected by amendment of easement recorded in Volume 6483, Page 722 and Volume 6779, Page 101, Real Property Records, Bexar County, Texas. (Tract 2)
9. Open space variable width drainage easement, Lot 901, Block 163, C.B.4451, shown on plat recorded in Volume 9724, Page 103, Deed and Plat Records, Bexar County, Texas (Tract 1)
10. Variable width drainage easement, shown on plat recorded in Volume 9724, Page 103-104, Deed and Plat Records, Bexar County, Texas (Tract 1)
11. Landscaping and fill easement, 15 feet wide, shown on plat recorded in Volume 9724, Pages 96-98, Deed and Plat Records, Bexar County, Texas (Tract 1)
12. Variable width drainage easement, shown on plat recorded in Volume 9659, Pages 9-11, Deed and Plat Records, Bexar County, Texas. (Tract 1)
13. Permanent sanitary sewer easement, 16 feet wide, recorded in Volume 11663, Page 1350, Real Property Records, Bexar County, Texas. (Tract 1)
14. Variable width drainage easement, to expire upon incorporation into public street right-of-way, shown on plat recorded in Volume 9724, Pages 103-104, Deed and Plat Records, Bexar County, Texas (Tract 1)
15. Any rights, interests, or claims which may exist or arise by reason of the following matters disclosed by survey.

Job No.: 14-091
Dated: September 26, 2019
Prepared by: Teresa A. Seidel
Matters shown: Overhead utility line with guy and power pole and electric meter, in the southwest portion of the property. (Tract 2)

16. Covenants, conditions and restrictions set forth and contained in the Amended and Restated Development Area Declaration recorded in Volume 17374, Page 1942 and Volume 18009, Page 197, Real Property Records, Bexar County, Texas. Affected by the Kallison Ranch I Notice of Addition of Land to Property recorded 9/30/, 2019 in Document No. 20190196149, Official Public Records, Bexar County, Texas.

File Information

**eFILED IN THE OFFICIAL PUBLIC eRECORDS OF BEXAR COUNTY
LUCY ADAME-CLARK, BEXAR COUNTY CLERK**

Document Number: 20190208167
Recorded Date: October 16, 2019
Recorded Time: 10:50 AM
Total Pages: 15
Total Fees: \$78.00

**** THIS PAGE IS PART OF THE DOCUMENT ****

**** Do Not Remove ****

Any provision herein which restricts the sale or use of the described real property because of race is invalid and unenforceable under Federal law

STATE OF TEXAS, COUNTY OF BEXAR

I hereby Certify that this instrument was eFILED in File Number Sequence on this date and at the time stamped hereon by me and was duly eRECORDED in the Official Public Record of Bexar County, Texas on: 10/16/2019 10:50 AM



Lucy Adame-Clark
Lucy Adame-Clark
Bexar County Clerk