

QuikTrip Store #4183

Georgetown, Texas

Organized Sewage Collection System Plan

March 2023

TBPE # F-4512

MHE 4183.00

February 14, 2023

Edwards Aquifer Protection Program
Texas Commission on Environmental Quality
Austin Regional Office
12100 Park 35 Circle
Austin, Texas 78753

Re: QuikTrip Store #4183
Georgetown, Texas
Sewage Collection System

To whom it may concern,

Please find the QuikTrip Store 4183 organized Sewage Collection System Plan (SCS) enclosed. The SCS has been prepared in accordance with the Texas Commission on Environmental Quality (30 TAC 217) and current policies for development over the Edwards Aquifer Recharge Zone.

The Sewage Collection System plan applies to 1468 linear feet of sewer system to serve the development.

Please review the attached SCS information for the items it is intended to address, and if acceptable, provide a written approval of the plan in order that construction may begin at the earliest opportunity.

The review fee of \$734 and fee application is included. If you have any questions regarding this information, please call our office.

Sincerely,
Matkin Hoover Engineering & Surveying
TBPE Firm No. F-4512



Garrett D. Keller, P.E.
President & COO

Organized Sewage Collection System Plan Checklist

- **Edwards Aquifer Application Cover Page (TCEQ-20705)**
- **General Information Form (TCEQ-0587)**
 - Attachment A - Road Map
 - Attachment B - USGS / Edwards Recharge Zone Map
 - Attachment C - Project Description
- **Geologic Assessment Form (TCEQ-0585)**
 - Attachment A - Geologic Assessment Table (TCEQ-0585-Table)
 - Attachment B - Stratigraphic Column
 - Attachment C - Site Geology
 - Attachment D - Site Geologic Map(s)
- **Organized Sewage Collection System Plan (TCEQ-0582)**
 - Attachment A - SCS Engineering Design Report
 - Attachment B - Justification and Calculations for Deviation in Straight Alignment Without Manholes
 - Attachment C - Justification for Variance from Maximum Manhole Spacing
 - Attachment D – Calculations for Slopes for Flows Greater Than 10.0 Feet Per Second
 - Site Plan
 - Final Plan and Profile Sheets
- **Lift Station / Force Main System Application (TCEQ-0624) if applicable**
 - Attachment A - Engineering Design Report
 - Site Plan
 - Final Plan and Profile Sheets
- **Temporary Stormwater Section (TCEQ-0602)**
 - Attachment A - Spill Response Actions
 - Attachment B - Potential Sources of Contamination
 - Attachment C - Sequence of Major Activities
 - Attachment D - Temporary Best Management Practices and Measures
 - Attachment E - Request to Temporarily Seal a Feature (if requested)
 - Attachment F - Structural Practices
 - Attachment G - Drainage Area Map
 - Attachment H - Temporary Sediment Pond(s) Plans and Calculations
 - Attachment I - Inspection and Maintenance for BMPs
 - Attachment J - Schedule of Interim and Permanent Soil Stabilization Practices
- **Agent Authorization Form (TCEQ-0599), if application submitted by agent**
- **Application Fee Form (TCEQ-0574)**

- Check Payable to the “Texas Commission on Environmental Quality”
- Core Data Form (TCEQ-10400)

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 if not withdrawn the application will be denied and 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 to you:

- You can withdraw your application, and your fees will be refunded or credited for a resubmittal.
- 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 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 effected 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: QuikTrip Store 4183				2. Regulated Entity No.: RN111592622					
3. Customer Name: QT South, LLC				4. Customer No.: CN605786011					
5. Project Type: (Please circle/check one)	<input checked="" type="radio"/> New	Modification		Extension	Exception				
6. Plan Type: (Please circle/check one)	WPAP	CZP	<input checked="" type="radio"/> [SCS]	UST	AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures
7. Land Use: (Please circle/check one)	Residential		<input checked="" type="radio"/> Non-residential		8. Site (acres):		4.857		
9. Application Fee:	\$ 734		10. Permanent BMP(s):			N/A			
11. SCS (Linear Ft.):	1,468		12. AST/UST (No. Tanks):			N/A			
13. County:	Williamson		14. Watershed:			Lower Berry Creek 120702050303			

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.)	—	—	<u>X</u>
Region (1 req.)	—	—	<u>X</u>
County(ies)	—	—	<u>X</u>
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 checked="" 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.)	—	—	—	—	—
Region (1 req.)	—	—	—	—	—
County(ies)	—	—	—	—	—
Groundwater Conservation District(s)	<input 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 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.

Garrett D Keller, P.E.

Print Name of Customer/Authorized Agent

Garrett Keller

2/22/23

Signature of Customer/Authorized Agent

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):

QuikTrip Store #4183
SCS Application

Section 2 – General Information

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: Garrett D Keller, P.E.

Date: 2/22/23

Signature of Customer/Agent:



Project Information

1. Regulated Entity Name: QuikTrip Store 4183
2. County: Williamson
3. Stream Basin: Lower Berry Creek
4. Groundwater Conservation District (If applicable): N/A
5. Edwards Aquifer Zone:

- Recharge Zone
 Transition Zone

6. Plan Type:

- WPAP
 SCS
 Modification

- AST
 UST
 Exception Request

7. Customer (Applicant):

Contact Person: Kyla Rudd

Entity: QT South, LLC

Mailing Address: 4705 South 129th East Avenue

City, State: Tulsa, OK

Zip: 74134

Telephone: 918-615-7233

FAX: N/A

Email Address: krudd@quiktrip.com

8. Agent/Representative (If any):

Contact Person: Garrett Keller

Entity: Matkin Hoover Engineering & Surveying

Mailing Address: 8 Spencer Road, Suite 100

City, State: Boerne, Texas

Zip: 78006

Telephone: 830 - 249 - 0600

FAX: 830 - 249 - 0099

Email Address: GKeller@matkinhoover.com

9. Project Location:

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

10. The location of the project site is described below. The description provides sufficient detail and clarity so that the TCEQ's Regional staff can easily locate the project and site boundaries for a field investigation.

The property is located on the South corner of the SH 195 and Shell Road intersection in Georgetown, Williamson County, Texas. According to the Williamson County appraisal district (WCAD), the property is located on parcels R600274, R418243, R418242, and R616277 owned by QT South, LLC and has a proposed address of 3930 Shell Road, Georgetown, Williamson County, Texas 78628. A 0.199-acre offsite access road is proposed for the southeast adjoining property (R446512, owner Boss N Vespa, LLC) and two driveways totaling 0.29-acre located within TxDOT and Williamson County right-of-way.

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: _____

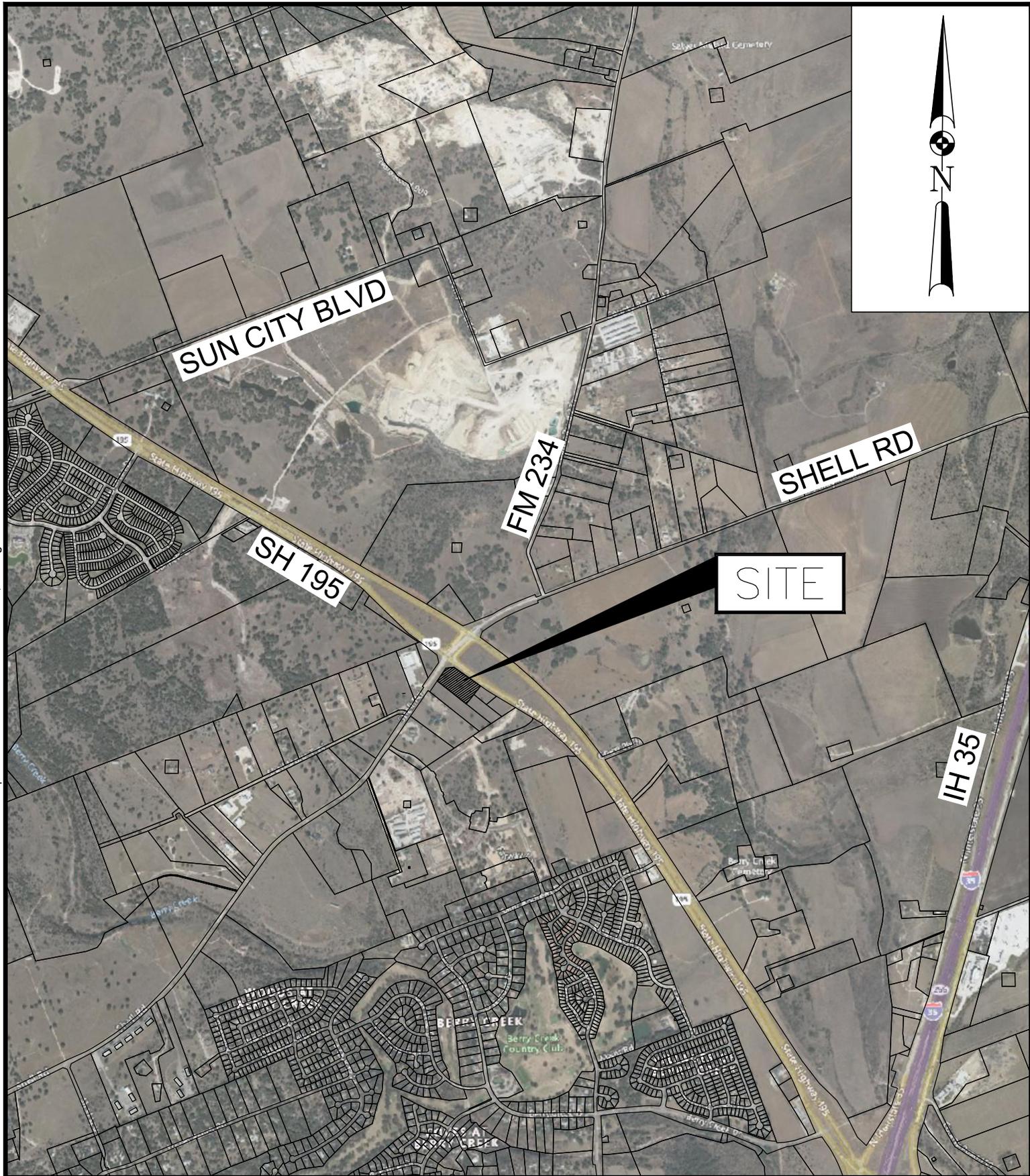
Prohibited Activities

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.

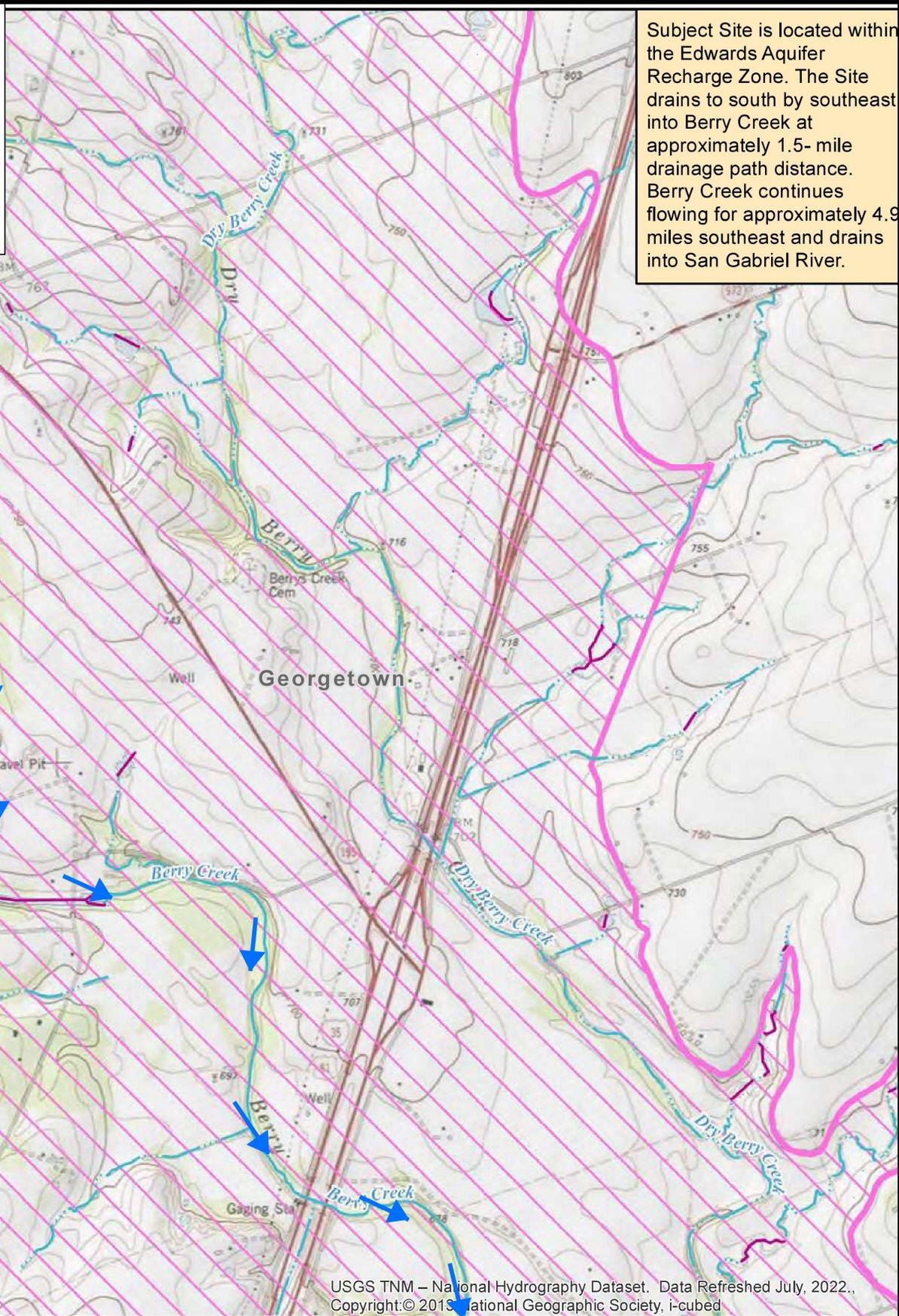


MATKINHOOVER
 ENGINEERING & SURVEYING
 P.O. BOX 54
 8 SPENCER ROAD SUITE 100
 BOERNE, TEXAS 78006
 OFFICE: 830.249.0600 FAX: 830.249.0099
 TEXAS REGISTERED ENGINEERING FIRM F-004512
 CIVIL ENGINEERS SURVEYORS LAND PLANNERS CONSTRUCTION MANAGERS CONSULTANTS

ROAD MAP
 SCALE: 1" = 2000'
 FOR
 QUIKTRIP STORE 4183
 1927 HIGHWAY 195
 GEORGETOWN, TX 78633

ATTACHMENT "A"

PROJECT NO.:	4183.00
DATE:	DEC 2022
DESIGNED:	DJK
CHECKED:	GDK
SHEET:	



Subject Site is located within the Edwards Aquifer Recharge Zone. The Site drains to south by southeast into Berry Creek at approximately 1.5- mile drainage path distance. Berry Creek continues flowing for approximately 4.9 miles southeast and drains into San Gabriel River.

USGS TNM – National Hydrography Dataset. Data Refreshed July, 2022., Copyright:© 2013 National Geographic Society, i-cubed

MATKINHOOVER

P.O. BOX 54
8 SPENCER ROAD SUITE 100
BOERNE, TEXAS 78006
OFFICE: 830.249.0600 FAX: 830.249.0099
TEXAS REGISTERED ENGINEERING FIRM F-004512
CIVIL ENGINEERS SURVEYORS LAND PLANNERS CONSTRUCTION MANAGERS CONSULTANTS

ENGINEERING & SURVEYING

USGS RECHARGE ZONE MAP

SCALE: 1" = 2000'

FOR

**QUIKTRIP STORE 4183
1927 HIGHWAY 195
GEORGETOWN, TX 78633**

ATTACHMENT "B"

PROJECT NO.:	4183.00
DATE:	DEC 2022
DESIGNED:	DJK
CHECKED:	GDK
SHEET:	

QUIKTRIP STORE #4183
PROJECT DESCRIPTION

1. Area of the Site

The proposed sewer collection system (SCS) for the QuikTrip Store #4183 is located on-site and in the public right of way along both Hwy 195 and Shell Road between the QuikTrip store and Scenic Oaks Road consisting of two 8-inch PVC sewer lines, Line A and Line C, respectively. The on-site property is located south of the State Highway 195 (SH -195) and Shell Road intersection in Georgetown, Williamson County, Texas.

Line A is 313 linear feet along SH- 195 and serves as a future sewer connection to the QuikTrip Store following further development in the area. A 2-inch force main (Line B) conveys sewerage from the on-site sanitary sewer service lateral to Line C. Line B is not considered in this application as this line is private and will be abandoned after Line A is connected to the city's sanitary sewer system with future development. Line C is 1,155 linear feet located within the Shell Road right of way connecting the QuikTrip Store to Scenic Oak Road.

The proposed QuikTrip site is 4.857 acres and is comprised of the 4.658-acre on-site property and a 0.199-acre adjacent access (wing) road. According to the Williamson County appraisal district (WCAD), the property is located on parcels R600274, R418243, R418242, and R616277 owned by QT South, LLC and has a proposed address of 3930 Shell Road, Georgetown, Williamson County, Texas 78628.

A 0.199-acre off-site access road is proposed for the southeast adjoining property (R446512, owner Boss N Vespa, LLC).

Although not considered part of the project area, two driveways for accessing the project total 0.29-acre and are located within Texas Department of Transportation (TxDOT) (SH-195) and Williamson County (Shell Road) rights-of-way.

2. Offsite area

Sanitary Sewer Line C is located off-site and is within the Shell Road right of way.

A 0.199-acre off-site access road is proposed for the southeast adjoining property (R446512, owner Boss N Vespa, LLC).

Two driveways for accessing the project total 0.29-acre and are located within Texas Department of Transportation (TxDOT) (SH-195) and Williamson County (Shell Road) rights-of-way.

3. Impervious cover

No impervious cover is proposed as part of the SCS system. The total impervious cover acreage for the site is 3.23 acres.

4. Permanent BMPs

No permanent BMP's are proposed for the SCS; however, the site will utilize an on-site water quality (batch detention) pond as a permanent BMP for stormwater treatment.

5. Proposed site use

QuikTrip Corporation is proposing to develop the Subject Site as a QuikTrip Store Number 4183 (QuikTrip 4183). The subject site will be developed with a single building for retail gas sales and convenience store, an underground storage tank (UST) system, two canopy areas to cover the tank dispensers, trash enclosure, and paved parking and driving lanes.

6. Site history and previous development

According to topographic maps and satellite imagery, the Site remained undeveloped and included an unpaved road since 1995 or earlier. The surrounding area consists of low-intensity residential and commercial developments (3900 Shell Rd & 3901 Shell Road) and undeveloped land.

7. Area to be demolished

There are no structures that require demolition along the length of the proposed sewer collection system. 2 bores under driveways and some pavement cuts will be needed during the construction of Line C.

QuikTrip Store #4183
SCS Application

Section 3 – Geologic Assessment

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

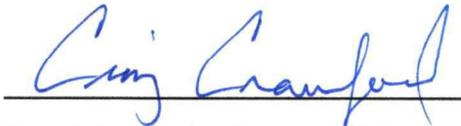
To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Print Name of Geologist: Craig Crawford, PG Telephone: 512.705.5541

Date: January 30th 2023 Fax: _____

Representing: Cambrian Environmental (TBPG Firm # 50484) (Name of Company and TBPG or TBPE registration number)

Signature of Geologist:



Regulated Entity Name: Offsite SCS Utility (for servicing QuikTrip Store #4183)

Project Information

1. Date(s) Geologic Assessment was performed: December 21st 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)
Eckrant (EaD)	D	< 2

* Soil Group Definitions (Abbreviated)

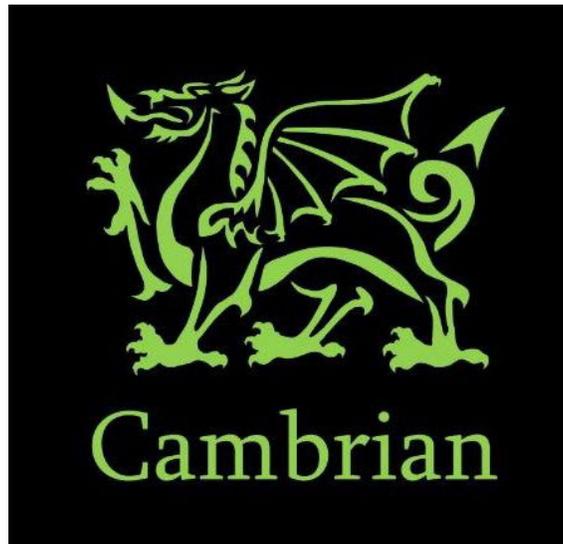
- A. Soils having a high infiltration rate when thoroughly wetted.
- B. Soils having a moderate infiltration rate when thoroughly wetted.
- C. Soils having a slow infiltration rate when thoroughly wetted.
- D. Soils having a very slow infiltration rate when thoroughly wetted.

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" = 60'
 Site Geologic Map Scale: 1" = 60'
 Site Soils Map Scale (if more than 1 soil type): 1" = 250'
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.



**Narrative Description of Site-Specific Geology for an
Offsite Sewage Collection System (SCS) Utility Line
Located at the Intersection of SH 195 and Shell Road,
Georgetown, Williamson County, Texas**

Prepared for:

MATKIN HOOVER

Prepared by:

Cambrian Environmental

January 30th, 2023

**NARRATIVE DESCRIPTION OF SITE-SPECIFIC GEOLOGY FOR AN OFFSITE
SEWAGE COLLECTION SYSTEM (SCS) UTILITY LINE LOCATED NEAR THE
INTERSECTION OF SH 195 AND SHELL ROAD, GEORGETOWN, WILLIAMSON
COUNTY, TEXAS**

Prepared for:

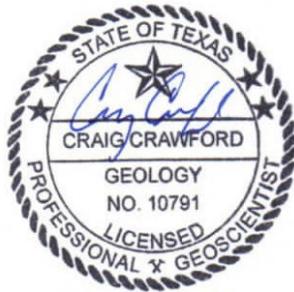
MATKIN HOOVER
1701 Williams Drive
Georgetown, Texas 78628

Prepared by:

Craig Crawford, P.G.

Cambrian Environmental
4422 Pack Saddle Pass
Suite 204
Austin, Texas 78745

TX Geoscience Firm Registration #50484



As a licensed professional geoscientist,
I attest that the contents of this report
are complete and accurate to the best
of my knowledge.

January 30th, 2023



NARRATIVE DESCRIPTION OF SITE-SPECIFIC GEOLOGY FOR AN OFFSITE SEWAGE COLLECTION SYSTEM (SCS) UTILITY LINE LOCATED NEAR THE INTERSECTION OF SH 195 AND SHELL ROAD, GEORGETOWN, WILLIAMSON COUNTY, TEXAS

INTRODUCTION

This narrative Geologic Assessment accompanies the Texas Commission on Environmental Quality (TCEQ) Geologic Assessment Form TCEQ-0585 completed for approximately 1460 feet of an offsite sewage collection system (SCS) utility located in Georgetown, Williamson County, Texas (Site Location Map). The project area is located approximately 2 miles west of Interstate Highway (IH) 35, on the south side of State Highway (SH) 195 and south of its intersection with Shell Road. Cambrian understands that the wastewater line is proposed to service a gas station (QuikTrip Store # 4183).

METHODOLOGY

A Cambrian Environmental Registered Professional Geoscientist (License # 10791) conducted a field survey for a Geologic Assessment on the 21st of December 2023. The pedestrian survey was completed by walking parallel transects spaced approximately 50 feet apart as directed by the TCEQ in the Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones (Rev. 10-01-04). Closer spacing was used where vegetation inhibited clear observation. All potential karst features, including depressions, holes, and animal burrows, were carefully examined for evidence of subsurface extent. A number of techniques were used for this effort, including probing with a digging implement to determine the thickness and consistency of fill material and feeling for the presence of air flow, which may indicate the presence of a subsurface void space. Other techniques included making observations of any notable characteristics of the feature site such as the presence of various types of vegetation or a semi-circular burrow mound produced by the activities of small mammals. The locations of any discovered features were recorded with a handheld GPS unit. We also conducted due diligence activities as called for under the City of Georgetown Edwards Aquifer Recharge Zone Water Quality Ordinance. Additionally, Cambrian also conducted the Geologic Assessment (report dated 4th November 2022) for the above-mentioned 10-acre gas station site (QuikTrip # 4183) proposed for development and which this SCS is intended to service, and information from this investigation was considered and incorporated in this assessment.

RESULTS

Soils

Soils mapped on the property consist of the Eckrant (EaD) series soils² (Figure 2). The Eckrant series soils are within the “D” classification of the hydrologic soil groups. Type “D” soils have a very slow infiltration rate (very high runoff potential) when thoroughly wet. The Eckrant series soils occur on uplands, and typically the surface layer is about 13 inches thick. The upper part of this soil profile is dark grayish brown cobbly clay, and the lower part is dark brown cobbly clay. The underlying material is coarsely fractured indurated limestone.

¹ United States Department of Agriculture, Natural Resource Conservation Service. Online Web Soil Survey, Williamson County, Texas. <http://websoilsurvey.sc.egov.usda.gov/>

Geology

The bedrock lithology underlying the site consists of the Georgetown and Edwards Limestones, and the tract is located entirely within the Edwards Aquifer Recharge Zone (Figure 3). The Georgetown Limestone is the upper confining unit of the lithologies that comprise the Edwards Aquifer, and the Edwards Limestone is the primary karstic unit in this area. No native bedrock outcrops were observed along the utility alignment, and the bedrock appears to be obscured by a thin layer of soil and the associated vegetation. The geology of the property has been mapped most recently at a useful scale by Collins (2005) and we find his interpretation of the geology to be generally accurate.²

Recharge into the aquifer primarily occurs in areas where the Edwards Group and upper confining units are exposed at the surface. Most recharge is from direct infiltration via precipitation and streamflow loss. Recharge occurs predominantly along secondary porosity features such as faults, fractures, and karst features (caves, solution cavities, sinkholes, etc.). Karst features are commonly formed along joints, fractures, and bedding plane surfaces in the Edwards Group (which is stratigraphically below the Georgetown Limestone). No faults are mapped within the project area, and none were directly observed during the pedestrian survey. However, some of the available geologic maps indicate one fault may occur several hundred feet west-northwest of the alignment of this utility (on the opposite side of Shell Road). No potential recharge features were identified during the pedestrian survey. A review of the Texas Water Development Board's groundwater data base did not produce any results for any wells located on this property.³

Site Hydrogeologic Assessment

In the absence of discrete recharge features, the likelihood of recharge occurring within the project area limits and contributing to the main body of the aquifer is thought to be low. However, precipitation events significant enough to initiate runoff could ultimately drain towards either Berry Creek or Dry Berry Creek, where it may recharge into the aquifer via karst features or faults located within the channel beds (which are downstream and off-site). Should any karst features be discovered during the construction phase of the project, they should be reported to TCEQ to determine the appropriate mitigation measures.

² Collins, E.W., 2005, Geologic Map of the West Half of the Taylor 30x60 Quadrangle: Central Texas Urban Corridor, Encompassing Round Rock, Georgetown, Salado, Briggs, Liberty Hill, and Leander. Bureau of Economic Geology, The University of Texas at Austin. Austin, Texas 78713-8924.

³ <https://www3.twdb.texas.gov/apps/WaterDataInteractive/GroundWaterDataViewer>

City of Georgetown Ordinance

No springs or streams were identified on the property during the pedestrian survey, and therefore no occupied site protection, or spring or stream buffer protection measures will be required for the property.

All regulated activities within the recharge zone must follow water quality best management practices, and development of the property will need to comply with the water quality protection measures as outlined in Section 8 of the Ordinance.

Stratigraphic Column

*Shaded areas represent lithologies underlying the project area

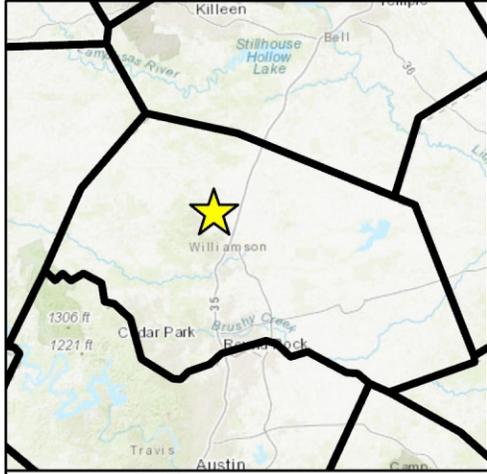
	Map Symbol	Stratigraphic Unit	Maximum thickness	
Upper Cretaceous	Kbu	Buda Limestone		
	Kdr	Del Rio Clay	60 feet	
	Kgt	Georgetown Limestone	100 feet	Edwards Aquifer
Ked	Edwards Group Limestone	200 feet		
Lower Cretaceous	Kcp	Comanche Peak Limestone	50 feet	
	Kwa	Walnut Formation	150 feet	



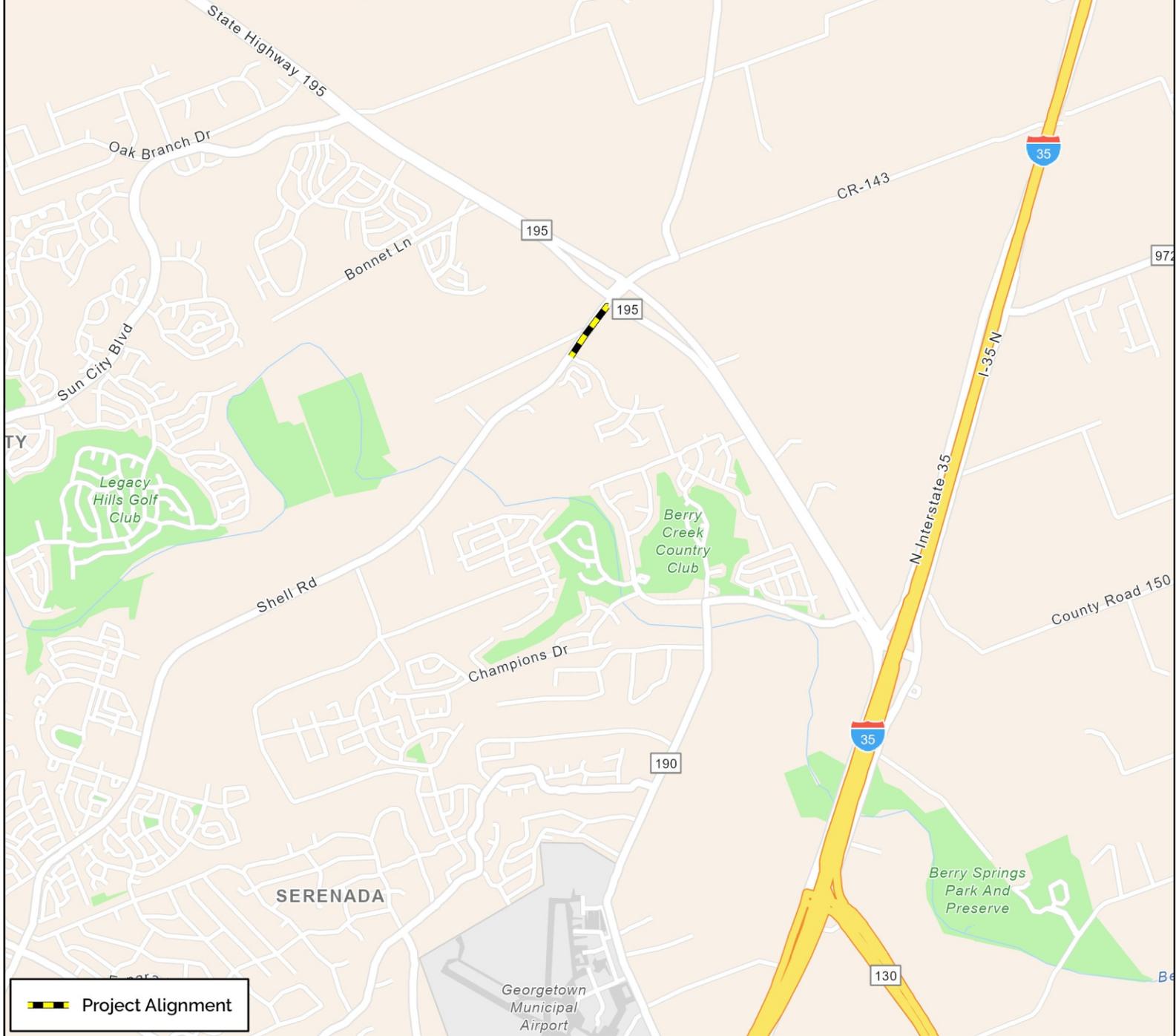
Photo 1 - View of the project site.



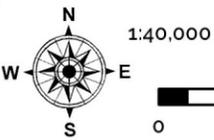
Photo 2 - View of the project site.



Williamson County



 Project Alignment



Coordinate System: NAD 1983
StatePlane Texas South Central
FIPS 4204 Feet
1:40,000
0 2,000 4,000 6,000 8,000 Feet

Site Location Map



GsB

Shell Road

TX 195

GeB

EaD

Cross and Crown Lutheran Church

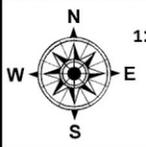
Shell Stone Trail

Shell Road

Scenic Drive

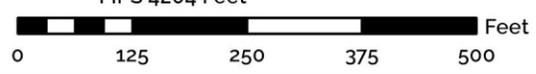
EeB

-  EaD - Eckrant cobbly clay, 1 to 8 percent slopes
-  EeB - Eckrant extremely stony clay, 0 to 3 percent slopes
-  GeB - Georgetown clay loam, 0 to 2 percent slopes
-  GsB - Georgetown stony clay loam, 1 to 3 percent slopes
-  Project Alignment

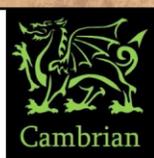


1:2,500

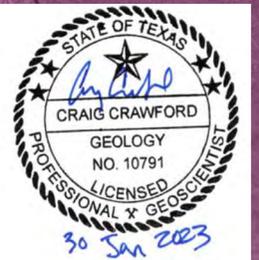
Coordinate System: NAD 1983
 StatePlane Texas South Central
 FIPS 4204 Feet



Site Soils Map

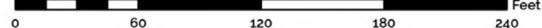


Edwards Aquifer Recharge Zone



-  Ked- Edwards Limestone
-  Kgt- Georgetown Formation
-  Two-foot Contours
-  Project Alignment

1" = 60' Coordinate System: NAD 1983 StatePlane
Texas South Central FIPS 4204 Feet



Site Geologic Map



QuikTrip Store #4183
SCS Application

Section 4 – SCS Application

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: QuikTrip Store 4183

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: Kyla Rudd

Entity: QuikTrip Store 4183

Mailing Address: 4705 South 129th East Avenue

City, State: Tulsa, OK

Zip: 74134

Telephone: 918-615-7233

Fax: N/A

Email Address: krudd@quiktrip.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: Garrett D Keller, P.E.

Texas Licensed Professional Engineer's Number: 111511

Entity: MatkinHoover Engineering & Surveying

Mailing Address: 8 Spencer Road

City, State: Boerne, Texas

Zip: 78006

Telephone: (830) 249-0600

Fax: N/A

Email Address: gkeller@matkinhoover.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: _____
 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:

100 % Domestic 6,000 gallons/day
 _____% Industrial _____gallons/day
 _____% Commingled _____gallons/day
 Total gallons/day: 6,000

6. Existing and anticipated infiltration/inflow is 14,098 gallons/day. This will be addressed by: Berry Creek WWTP.

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 1/13/2023. 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	313	PVC	SDR 26
8	1155	PVC	SDR 26

Total Linear Feet: 1468

- (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 Berry Creek WWTP (name) Treatment Plant. The treatment facility is:

- Existing
- Proposed

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

- The City of Georgetown 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>
A	48 Of 92	1+72.73	Manhole
A	48 Of 92	4+09.21	Cleanout
A	48 Of 92	4+12.47	Manhole
C	50 Of 92	1+04.95	Manhole
C	50 Of 92	5+33.94	Manhole
C	51 Of 92	9+27.88	Manhole
C	52 Of 92	12+59.43	Manhole

<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" = 60'.
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>
C	1+50.00	Crossing	N/A	TBD
C	8+20.00	Crossing	N/A	TBD

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

Standard Details	Shown on Sheet
Lateral stub-out marking [Required]	N/A of N/A
Manhole, showing inverts comply with 30 TAC §217.55(l)(2) [Required]	84 of 92
Alternate method of joining lateral to existing SCS line for potential future connections [Required]	84 of 92
Typical trench cross-sections [Required]	84 of 92
Bolted manholes [Required]	84 of 92
Sewer Service lateral standard details [Required]	N/A of N/A
Clean-out at end of line [Required, if used]	85 of 92
Baffles or concrete encasement for shock/erosion protection [Required, if flow velocity of any section of pipe >10 fps]	N/A of N/A
Detail showing Wastewater Line/Water Line Crossing [Required, if crossings are proposed]	83 of 92
Mandrel detail or specifications showing compliance with 30 TAC §217.57(b) and (c) [Required, if Flexible Pipe is used]	83 of 92

Standard Details	Shown on Sheet
Drop manholes [Required, if a pipe entering a manhole is more than 24 inches above manhole invert]	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: Garrett D. Keller, P.E.

Date: 3/8/23

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)
Rh = hydraulic radius (ft)
S = slope (ft/ft)

Jon Niermann, *Chairman*
Emily Lindley, *Commissioner*
Bobby Janecka, *Commissioner*
Erin E. Chancellor, *Interim Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

January 13, 2023

Ms. Kyla Rudd
QT South, LLC
4705 S. 129th East Ave.
Tulsa, OK 74134-7005

Re: Edwards Aquifer, Williamson County

NAME OF PROJECT: QuikTrip 4183; Located 3930 Shell Road; Georgetown, Texas

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

Edwards Aquifer Protection Program ID No. 11003320; Regulated Entity No. RN111592622

Dear Ms. Rudd:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the WPAP application for the above-referenced project submitted to Austin Regional Office by Apex Companies, LLC on behalf of QT South, LLC on October 21, 2022. Final review of the WPAP was completed after additional material was received on January 10, 2023. As presented to the TCEQ, the Temporary Best Management Practices (BMPs) were selected and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

PROJECT DESCRIPTION

The proposed commercial project will have an approximate area of 4.86 acres. It will include one commercial building for retail gas sales and convenience store, parking, drive lanes, an underground storage tank system (EAPP ID No. 11003319), water quality facilities, and associated appurtenances. The impervious cover will be 3.23 acres (66.5 percent). Project wastewater will be disposed of by conveyance to the existing Pecan Branch Wastewater Treatment Plant.

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PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, a batch detention basin, designed using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005), will be constructed to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 2,811 pounds of TSS generated from the 3.23 acres of impervious cover. The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project.

GEOLOGY

According to the Geologic Assessment (GA) included with the application, the surficial geologic unit underlying the site is the Georgetown Limestone. There are no geologically sensitive features on site. The Austin Regional Office site assessment conducted on December 13, 2022, revealed the site to be generally as described by the GA.

SPECIAL CONDITIONS

- I. All permanent pollution abatement measures shall be operational prior to occupancy of the facility.
- II. All sediment and/or media removed from the permanent BMP during maintenance activities shall be properly disposed of according to 30 TAC 330 or 30 TAC 335, as applicable.

STANDARD CONDITIONS

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

Prior to Commencement of Construction:

4. Within 60 days of receiving written approval of an Edwards Aquifer Protection Plan, the applicant must submit to the Austin Regional Office, proof of recordation of notice in the county deed records, with the volume and page number(s) of the county deed records of the county in which the property is located. A description of the property boundaries shall be included in the deed recordation in the county deed records. A suggested form (Deed Recordation Affidavit, TCEQ-0625) that you may use to deed record the approved WPAP is enclosed.
5. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved WPAP and this notice of approval shall be maintained at the project location until all regulated activities are completed.

6. Modification to the activities described in the referenced WPAP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
7. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the Austin Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the date on which the regulated activity will commence, the name of the approved plan and program ID number for the regulated activity, and the name of the prime contractor with the name and telephone number of the contact person. The executive director will use the notification to determine if the approved plan is eligible for an extension.
8. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved WPAP, must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.
9. All borings with depths greater than or equal to 20 feet must be plugged with non-shrink grout from the bottom of the hole to within three (3) feet of the surface. The remainder of the hole must be backfilled with cuttings from the boring. All borings less than 20 feet must be backfilled with cuttings from the boring. All borings must be backfilled or plugged within four (4) days of completion of the drilling operation. Voids may be filled with gravel.

During Construction:

10. During the course of regulated activities related to this project, the applicant or agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.
11. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 6, above.
12. If any sensitive feature (caves, solution cavities, sink holes, etc.) is discovered during construction, all regulated activities near the feature must be suspended immediately. The applicant or his agent must immediately notify the Austin Regional Office of the discovery of the feature. Regulated activities near the feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the feature and the aquifer from potentially adverse impacts to water quality. The plan must be sealed, signed, and dated by a Texas Licensed Professional Engineer.
13. All water wells, including injection, dewatering, and monitoring wells must be in compliance with the requirements of the Texas Department of Licensing and Regulation under Title 16 TAC Chapter 76 (relating to Water Well Drillers and Pump Installers) and all other locally applicable rules, as appropriate.

14. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.
15. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.
16. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
17. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.

After Completion of Construction:

18. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the Austin Regional Office within 30 days of site completion.
19. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. The regulated entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred. A copy of the transfer of responsibility must be filed with the executive director through Austin Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.
20. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Edwards Aquifer protection plan. If the new owner intends to commence any new regulated activity on the site, a new Edwards Aquifer protection plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.
21. An Edwards Aquifer protection plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Edwards Aquifer protection plan must be submitted to the Austin Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.
22. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

Ms. Kyla Rudd
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January 13, 2023

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Ryan Soutter of the Edwards Aquifer Protection Program of the Austin Regional Office at (512) 339-2929.

Sincerely,



Lillian Butler, Section Manager
Edwards Aquifer Protection Program
Texas Commission on Environmental Quality

LIB/rts

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

cc: Mr. Aaron Brewer, P.G.; Apex Companies, LLC

**Change in Responsibility for Maintenance
on Permanent Best Management Practices and Measures**

The applicant is no longer responsible for maintaining the permanent best management practice (BMP) and other measures. The project information and the new entity responsible for maintenance is listed below.

Customer: _____

Regulated Entity Name: _____

Site Address: _____

City, Texas, Zip: _____

County: _____

Approval Letter Date: _____

BMPs for the project: _____

New Responsible Party: _____

Name of contact: _____

Mailing Address: _____

City, State: _____ Zip: _____

Telephone: _____ FAX: _____

Signature of New Responsible Party Date

I acknowledge and understand that I am assuming full responsibility for maintaining all permanent best management practices and measures approved by the TCEQ for the site, until another entity assumes such obligations in writing or ownership is transferred.

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

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

Deed Recordation Affidavit
Edwards Aquifer Protection Plan

THE STATE OF TEXAS §

County of _____ §

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

- (1) That my name is _____ and that I own the real property described below.
- (2) That said real property is subject to an EDWARDS AQUIFER PROTECTION PLAN which was required under the 30 Texas Administrative Code (TAC) Chapter 213.
- (3) That the EDWARDS AQUIFER PROTECTION PLAN for said real property was approved by the Texas Commission on Environmental Quality (TCEQ) on _____.

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

- (4) The said real property is located in _____ County, Texas, and the legal description of the property is as follows:

LANDOWNER-AFFIANT

SWORN AND SUBSCRIBED TO before me, on this __ day of _____, _____.

NOTARY PUBLIC

THE STATE OF _____ §

County of _____ §

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

GIVEN under my hand and seal of office on this __ day of _____, _____.

NOTARY PUBLIC

Typed or Printed Name of Notary

MY COMMISSION EXPIRES: _____

QUIKTRIP STORE #4183
DESIGN REPORT

The following Engineering Design Report (EDR) for the QUICKTRIP Store #4183 Sewer Sewage Collection System, is in compliance with the 30 TAC Chapter 217, Subchapter A, Rule 217.10 "Final Engineering Design Report", and 30 TAC Chapter 217, Subchapter C, Rule 217.55 "Manholes and Related Structures". Information provided on this form will follow the order provided by item (e) "The report for a wastewater collection system must include the following:", located in 30 TAC Chapter 217, Subchapter A, Rule 217.10 "Final Engineering Design Report". The intent of the design report is to meet the Texas Commission on Environmental Quality (TCEQ) plan review of SCS applications.

This project consists of 1,468 LF of proposed sewer line into the existing Dove Springs Wastewater Treatment Plant. The sewage collection system will service approximately 5,726 GPD.

(e-1) X Map showing the current service area, the proposed service area, and any area proposed for future expansion.

- Attachment C158- "**Sewer Collection System (SCS) Site Plan**"- shows the current service area for the Berry Creek WWTP.

(e-2) X The topographical features of the current, the proposed, and any future service areas. (Refer to Attachment "**SCS Site Plan**" and "**Sanitary Sewer Plan and Profile Sheets: C153 – C157** for Topographic details)

(e-3) X A description of how the design flow was determined. (Attachment – "**Capacity Design**")

The design flow for QuikTrip Store #4183, SCS, was derived using the CDM Smith "Water and Wastewater System Recommended Design Criteria" 2014 section C.2.

- Inflow/Infiltration rates are derived from section C.2.1.3 which includes an approximation of 1,000 gallons/acre/day. This provides a multiplier of 0.004726547 gpd/ft², for a contributing area of ± 4.857 acres.
- Peak dry weather flow calculations are derived from formula provided by section C.2. Refer to attachment for commercial, and the associated flow values used for design.
- Peak wet weather flow is obtained by adding inflow and infiltration to the peak dry weather flow. These calculations were derived from formula provided by section C.2. Refer to attachment for commercial, and the associated flow values used for design.

(e-4) X The minimum and maximum grades for each size and type of pipe. (Refer to Attachment "**Capacity Design – Minimum and Maximum Slope Table**")

Pipe sizing and minimum/maximum grades for QuikTrip Store #4183 SCS, was derived using the CDM Smith "Water and Wastewater System Recommended Design Criteria" 2014 section C.2.2.

- **1.6.3.B.2.b "Percent Pipe Full at Design Flow"**, requires a minimum diameter of eight (8) inches for all gravity lines sewer mains. QuikTrip Store #4183 sanitary sewer system contains 8" lines. Minimum

allowable slopes for mains in the conformance with the DACS table provided and shown on (Refer to Attachment “**Capacity Design – Minimum and Maximum Slope Table**”)

(e-5) X Calculations of expected minimum and maximum velocities in the system for each size and type of a pipe. (Refer to attachment “**Capacity Design –Flow Velocity Table**”)

Minimum maximum velocities for QuikTrip Store #4183 SCS, was derived using CDM SMITH TABLE C-8 2014, "Minimum and Maximum Slope for Gravity Sewer".

- **2.9.3, B-3, “Design Velocities”** requires a minimum design velocity calculated using the Peak Dry Weather flow not be less than two (2) feet per second (fps). The maximum design velocity calculated using the Peak Wet Weather Flow should not exceed ten (10) fps. Slopes per pipe diameter size comply with Appendix A, listed above to meet minimum and maximum velocity requirements.

(e-6) X The proposed system’s effect on an associated existing system’s capacity.

- The proposed system for the entire system will discharge at peak wet weather flow rate of 546 gpm (Refer to attachment - “**Capacity Design**”).

(e-7) X The existing and anticipated inflow and infiltration, the hydraulic effect of the inflow and infiltration on the proposed and existing systems, any inflow and infiltration flow rate monitoring, and any inflow and infiltration abatement measures.

- The QuikTrip Store #4183 sanitary sewer design complies with design standards to prevent infiltration into the system. This will be prevented through sealing manholes (where required), by means of gasketing and bolts shown in the utility detail sheets attached.

(e-8) N/A A description of the ability of the existing and proposed trunk and interceptor wastewater collection systems and lift stations to handle the peak flow.

(e-9) X The capability of the receiving treatment facility to receive and adequately treat the anticipated peak flow. The proposed system for the entire subdivision will discharge at peak wet weather flow rate of 546 gpm (Refer to attachment - “**Capacity Design**”).

(e-10) X An engineering analysis showing compliance with structural design, minimization of odor-causing conditions, and the pipe design requirements of 217.55 of this title (relating to Manholes and Related Structures)

30 TAC 217, Subchapter C, Rule 217.55 Manholes and Related Structures

217.55(a) Manholes for the proposed wastewater system are included at all points of change in alignment, grade, size, intersection of all pipes, and at the end of all pipes that may be extended at a future date.
(Complied – Refer to SCS Site Plan)

217.55(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 **(Complied – Refer to SCS Site Plan)**

217.55(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. (N/A)

217.55(d) Cleanout installations must pass all applicable testing requirements outlined for gravity collection pipes in 217.57 of this title (relating to Testing Requirements for Installation of Gravity Collection System Pipes). (N/A)

217.55(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. **(Pre-cast Concrete. Location in submittal: C571)**

217.55(f) The use of bricks to adjust a manhole cover to grade or construct a manhole is prohibited. **(Complied)**

217.55(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.

The maximum manhole spacing allowed by the TCEQ are as follows:

Pipe Diameter (in)	Maximum Manhole Spacing (ft)
6 - 15	500
18 - 30	800
36 - 48	1000
54 or Larger	2000

Indicate what the maximum spacing in this project will be for each proposed diameter of pipe.
Pipe Diameter: 8" Max. Spacing: 429'

217.55(h) Tunnels are exempt from manhole spacing requirements because of construction constraints. (N/A)

217.55(i) An intersection of three or more collection pipes must have a manhole. **(Complied)**

217.55(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. **(See below)**

Manhole covers which lie within a 100-year flood plain must be sealed and gasketed or otherwise provided with adequate protection against inflow. Such measures should also be provided to any manholes lying in drainage ways or streets subject to carrying drainage flows. Will this requirement be met? N/A

(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.

(1) Manhole Covers:

- (A) A manhole where personnel entry is anticipated requires at least a 30 inch diameter clear opening. **(Complied – Refer to Sheet C571)**
- (B) A manhole located within a 100-year flood plain must have a means of preventing inflow. **(N/A – No manholes are within the 100-year flood plain. Refer to FEMA F.I.R.M. Map #48491C0285F dated 12/20/2019).**
- (C) A manhole cover construction must be constructed of impervious material. **(Complied)**
- (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. **(Complied)**

(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. **(Complied – Refer to Sheet C571)**
- (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. **(Complied – Refer to Sheet C571)**
- (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. **(N/A)**
- (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. **(N/A)**
- (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. **(Complied)**
- (F) A bench provided above a channel must slope at a minimum of 0.5 inch per foot. **(Complied)**
- (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. **(Complied)**
- (H) A wastewater collection system pipe entering a manhole more than 24 inches above an invert must have a drop pipe. **(Complied)**
- (m) The inclusion of steps in a manhole is prohibited. **(N/A)**
- (n) 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. **(Location in submittal: Plan sheet C570)**

- (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. (N/A)
- (p) Cleanouts. The size of a cleanout must be equal to the size of the wastewater collection system main. (N/A)

Structural Analysis of Wastewater System, 30 TAC, 217.53 Pipe Design.

Proposed Pipe Information:

S-1) List all the pipe diameters proposed for this project. Specify the total linear feet of pipe proposed for each listed diameter, the pipe material proposed for each diameter, the national standard specifications (ASTM, AWWA, ANSI, etc...) which govern each proposed pipe material and the appropriate national standard specifications for joints which correspond to each of these proposed materials.

Pipe Diameter	Linear Feet	Pipe Material	National Standard Specification for Pipe Material	National Standard for Pipe Joints
8"	313	PVC SDR 26	ASTM 2241	ASTM D3139
8"	1155	PVC SDR 26	ASTM 2241	ASTM D3139

Utility Trench Information:

- S-2) For purposes of TCEQ review, flexible materials include, but are not limited to, plastics, PVC, ABS, fiberglass, and, polyethylene. If the design does not include flexible pipe, skip to T13. If the design includes flexible pipe materials, the specified bedding must comply with ASTM D-2321 class IA, IB, II or III for materials and densification. A minimum of 6 inches of bedding is required for all pipe. Will the proposed project comply with these requirements? Yes
- S-3) The trench width must be minimized while still allowing adequate width for proper compaction of backfill, and while still ensuring that at least 6 inches of backfill exists on each side of the pipe. Will this be accomplished? Yes
- S-4) For each diameter of pipe, indicate minimum and maximum trench width:
Pipe Diameter: 8" Min. Trench Width: 24" Max. Trench Width: 36"
- S-5) Will the trench walls be vertical to at least one foot above the pipe? Yes

Location in submittal: Plan sheets **C571**
- S-6) Will the backfill be free of stones greater than 6 inches in diameter and free of organic or any other unstable material? Yes

General Requirements: 30 TAC 217.53

Structural Analysis: 30 TAC 217.53(k)
Flexible Pipe Design

Live Load Analysis:

For the purposes of this application, the minimum depth of burial for gravity sanitary sewer pipe, from the ground surface to the crown of the pipe (H) is 2 feet. Does the submitted design comply with this minimum H? **Yes**

Live Load due to H-25 or HS-25 vehicle loading per AASHTO Table 5-3 (N/A)

(L_v) = 3 cover = 5.21 psi

Live Load due to 100-yr surface water elevation in water quality pond (See Attachment for L₁ calculation) **N/A**

S-7) Indicate maximum anticipated L₁ as determined in T63: **N/A**

S-8) Are all proposed flexible pipe materials capable of supporting this L₁? **N/A**

S-9) Indicate source of maximum L₁: **N/A**

Buckling Analysis:

S-10) Calculate allowable and predicted buckling pressure based on Moser's book. Predicted and allowable buckling pressures must be calculated for each size of pipe and type of flexible pipe material. For the purposes of this application form, the buckling analysis must be performed using the method outlined below. The method of calculating allowable buckling pressure provided below is only valid for lines which are installed at depths of 2 ft ≤ H ≤ 80 feet, and where the groundwater elevation is below the ground surface.

- a) Calculate allowable bucking pressure as follows:
(Areas where groundwater elevation is below the ground surface)

$$q_a = 0.4 \sqrt[2]{32 * R_W * B' * (E * \frac{I}{D^3})} \quad \text{Equation (1)}$$
$$q_a = 0.4 \sqrt[2]{32 * 1.00 * 0.69 * (400,000 * \frac{0.00305}{7.921^3})} = 115.98 \text{ (8" PVC SDR 26 160 PSI)}$$

See attachment for q_a calculation.

$$R_W = 1 - 0.33 * \left(\frac{h_w}{h}\right) \quad \text{Equation (2)}$$

For unsaturated: $R_W = 1 - 0.33 * \left(\frac{0}{123.42}\right) = 1.00$ (8" PVC SDR 26 160 PSI)

For fully saturated $h_w = h$: $R_w = 1 - 0.33 * (1) = 0.67$ **N/A**

$$B' = \frac{1}{1+4*e^{-0.213H}} \text{ Equation (3)}$$

See attachment for B' calculation.*

$$I = \left(\frac{t^3}{12}\right) \left(\frac{\text{inches}^4}{\text{inch}_{\text{Linear}}}\right) \text{ Equation (4)}$$

See attachment for I calculation.

q_a = allowable buckling pressure, pounds per square inch (psi)

h = height of soil surface above top of pipe in inches (in)

h_w = height of water surface above top of pipe in inches (in) (groundwater elevation)

R_w = Water buoyancy factor. If $h_w = 0$, $R_w = 1$. If $0 \leq h_w \leq h$ (groundwater elevation is between the top of the pipe and the ground surface), calculate R_w with Equation 2

H = Depth of burial in feet (ft) from ground surface to crown 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 wall cross section per linear inch of pipe, $\text{inch}^4/\text{linear inch} = \text{inch}^3$. For solid wall pipe, I can be calculated with equation 4. If the pipe used is not solid wall pipe (for example a pipe with a ribbed cross section), the proper moment of inertia formula must be obtained from the manufacturer.

t = pipe structural wall thickness (in)

D = mean pipe diameter (in)

b) Calculate pressure applied to pipe under installed conditions:

$$q_P = \gamma_w * h_w + R_w * \left(\frac{W_c}{D}\right) + L_1 \text{ Equation (5)}$$

$$q_P = 0.0361 * 0 + 1 * \left(\frac{73.68}{8}\right) + 0 = 9.30 \text{ ("Worst Case" Max. Depth - 8" PVC SDR 26 160 PSI)}$$

$$W_c = \gamma_s * H * \frac{(D+t)}{144} \text{ Equation (6)}$$

$$W_c = 125 * 10.29 * \frac{8+0.332}{144} = 73.68 \text{ ("Worst Case" Max. Depth - 8" PVC SDR 26 160 PSI)}$$

q_p = pressure applied to pipe under installed conditions (psi)

γ_w = 0.0361 pounds per cubic inch (pci), specific weight of water

γ_s = specific weight of soil in pounds per cubic foot (pcf)

W_c = vertical soil load on the pipe per unit length in pounds per linear inch (lb/in)

L_l = Live load as determined in T63 (see attached Capacity Design)

S-11) Report q_a and q_p for each pipe diameter proposed and for each type of pipe material proposed:

$$\gamma_s = 125 \text{ pcf} ; h_w = 0 ; t = 0.332'' \text{ (8'' PVC SDR 26 160 PSI);}$$

Pipe Diameter: **8''** Pipe Material: **PVC SDR 26 160 PSI** q_a : **115.98** q_p : **9.30**

S-12) If $q_a \geq q_p$, specified pipe is acceptable for the proposed installation. If $q_a < q_p$, the wall thickness of the pipe must be increased and/or a pipe with a larger modulus of elasticity (E) must be used. Make the appropriate modifications and repeat the buckling analysis, showing that for the upgraded pipe, $q_a \geq q_p$. Does all the pipe proposed for this project meet these requirements? **Yes**

Wall Crushing:

S-13) If no concrete cradled flexible pipe is proposed for the submitted project, skip to T73. If any flexible pipe will be installed in rigid cradle (e.g. concrete), calculate the maximum depth that the pipe can be buried before wall crushing (or failure by ring compression) will occur using the method outlined below. It should be noted that cement stabilized sand or soil is not considered a rigid cradle for purposes of TCEQ review: No concrete cradle proposed, calculations shown for information only.

$$H = \frac{24 * P_c * A}{\gamma_s * D_o} \text{ Equation (7)}$$

$$H = \frac{24 * 4000 * 3.984}{125 * 8.625} = 354.75' \text{ (8'' PVC SDR 26 160 PSI)}$$

D_o = outside pipe diameter, 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, $\frac{in^2}{ft}$

γ_s = specific weight of soil in pounds per cubic foot (pcf)

H = Depth of burial in feet (ft) from ground surface to crown of pipe.

24 = conversions and coefficients

- S-14) Will all pipe installations proposed for this project have an H less than or equal to the maximum allowable H calculated in S-13 and greater than or equal to 2 feet? **Yes** Report maximum allowable H, (H_a), and the maximum H which is proposed, (H), for each proposed pipe diameter and each type of flexible pipe material. **N/A**

Pipe Diameter: **8"** Pipe Material: **PVC SDR 26 ASTM D-2241** H_a : **354.75 ft** H: **10.29 ft**

Tensile Strength:

- S-15) The project specifications need to indicate minimum allowable tensile **strength** in psi for each flexible pipe material. If PVC pipe is proposed, specify cell class:

Pipe Material: **PVC SDR 26 CL 160** Tensile Strength: **7,000** Cell Class (PVC only): **12364/12454**
"Handbook of PVC Pipe, Design and Construction" Table 2.1 pg. 14-15.

Strain:

- S-16) Are the conditions of this installation such that strain-related failure will not be a problem? **Yes** If any proposed flexible pipe material is considered to be susceptible to strain-related failure at less than 5% long-term deflection provide analysis for predicted strain due to hoop stress and bending strain.

Deflection Analysis:

- S-17) Indicate E_b (modulus of soil reaction for the bedding material) in psi. If E_b is greater than 750 psi, justification must be provided: **2,000 psi**

How was E_b determined or estimated? **"AWWA , M23 Manual" Table 4-5 pg. 30.**

- S-18) Indicate $E'n$ (modulus of soil reaction for the in-situ soil) in psi: **5,000 psi**

How was $E'n$ determined or estimated? **"Table 5 – E'native for Various Native Soil Conditions"**
(Reference: American Concrete Pipe Association, Page 20)

- S-19) Calculate the ratio of bedding modulus to soil modulus:

$$E_b/E'n = \frac{2,000 \text{ psi}}{5,000 \text{ psi}} = \mathbf{0.40}$$

If this ratio is greater than 1.25, a zeta factor must be calculated, where zeta is a factor which corrects for the effect of in-situ soil on pipe stability. If the ratio of bedding modulus to soil modulus is less than or equal to 1.25, assume zeta = **1.0**.

S-20) Where native soil is significantly weaker than bedding material, or where predicted deflection approaches 5%, the effect of native soil must be quantified using Leonhardt's Zeta factor. Zeta must be determined for each diameter of pipe and corresponding trench width. Zeta may be estimated graphically or calculated directly. If zeta is estimated graphically, identify the source for tables, figures, etc...(including page numbers and table numbers or figure numbers for each source) which were used to estimate zeta.

Calculations:

$$zeta = \frac{1.44}{f + (1.44 - f) * \left(\frac{E_b}{E'_n}\right)} \quad \text{Equation (8)}$$

$$zeta = \frac{1.44}{0.99 + (1.44 - 0.99) * \left(\frac{2,000}{5,000}\right)} = 1.00 \quad 8'' \text{ PIPE}$$

$$f = \frac{\frac{b}{d_a} - 1}{1.154 + 0.444 * \left(\frac{b}{d_a} - 1\right)} \quad \text{Equation (9)}$$

$$f = \frac{\frac{24}{8} - 1}{1.154 + 0.444 * \left(\frac{24}{8} - 1\right)} = 0.99 \quad 8'' \text{ PIPE}$$

f = pipe/trench width coefficient

b = trench width

d_a = pipe diameter

E_b = modulus of soil reaction for the bedding material (psi)

E'_n = modulus of soil reaction for the in-situ soil (psi)

S-21) For each size of pipe, report zeta factor determined:

Pipe Diameter: **8"** Trench Width: **24"** zeta: **1.00**

S-22) Determine pipe stiffness (P_s) in psi. P_s can be determined either by parallel plate test at 5% deflection, based on manufacturer's data or national reference standards; or, calculated using either equation 10 or equation 11. As an example, the minimum pipe stiffness at 5% deflection for PVC pipe less than 15 inches in diameter meeting ASTM D 3034, is 46 psi for SDR-35 and 115 psi for SDR 26. If equation 11 is used, the ring stiffness constant (RSC) is provided by the pipe manufacturer. Show calculations, or provide proper references, for each size of pipe and for each flexible pipe material.

$$P_s = \frac{EI}{0.149 * r^3} \quad \text{Equation (10)}$$

or

$$P_s = 0.80 * RSC * \left(\frac{8.337}{D}\right) \quad \text{Equation (11)}$$

E = modulus of elasticity of the pipe material (psi)

I = moment of inertia of the pipe wall cross section per linear inch of pipe, $\text{inch}^4/\text{linear inch} = \text{inch}^3$.
For solid wall pipe, I can be calculated with equation 4. If the pipe used is not solid wall pipe (for example a pipe with a ribbed cross section), the proper moment of inertia formula must be obtained from the manufacturer.

D = mean pipe diameter (in)

r = mean radius (in)

S-23) Report P_s for each pipe size and each type of flexible pipe material as determined.

Pipe Diameter: **8"** Pipe Material: **PVC SDR 26/ASTM D-2241** P_s : **160 psi**

S-24) Because the terms in the denominator of the modified Iowa formula (Equation 13) are added, it is theoretically possible to have zero pipe stiffness ($P_s=0$) and still predict flexible pipe deflections less than 5%. In order to ensure that the stiffness being provided to the installation has a reasonable contribution from pipe stiffness, and does not rely solely on the stiffness provided by the soil stiffness factor (SSF), the ratio of P_s/SSF must be calculated. If $P_s/SSF < 0.15$, S-22 and S-23 must be repeated such that a higher stiffness pipe is chosen for each portion of the project where $P_s/SSF < 0.15$. The P_s/SSF ratio(s) must then be recalculated for the new higher stiffness pipe. This process must be repeated until $P_s/SSF \geq 0.15$ exists for all proposed pipe sizes and for all types of flexible pipe materials.

$$\frac{P_s}{SSF} = \frac{P_s}{(0.061 * \text{zeta} * E_b)} \geq 0.15 \quad \text{Equation (12)}$$

$$\frac{P_s}{SSF} = \frac{160}{(0.061 * 1 * 2,000)} = 1.31 \geq 0.15 \quad (8" \text{ PVC SDR 26 } 160 \text{ PSI})$$

E_b = modulus of soil reaction for the bedding material (psi) [from T76]

zeta = 1.0, or a value calculated with the method in T79

SSF = soil stiffness factor ($0.061 * \text{zeta} * E_b$)

S-25) Indicate the final values calculated for P_s/SSF for each diameter of pipe and for each pipe material:

Pipe Diameter: **8"** Pipe Material: **PVC SDR 26/ASTM D-2241** P_s/SSF : **1.31**

- S-26) Do all proposed pipe sizes and flexible pipe materials have a pipe stiffness to soil stiffness factor ratio of greater than or equal to 0.15? Yes
- S-27) Calculate and report predicted deflection. Predicted deflection must be calculated for each size of pipe and type of flexible pipe material. For the purposes of this application form, predicted deflection must be calculated using the method outlined below. Show calculations and report calculated maximum deflection for each size of pipe and type of flexible pipe material. Maximum allowable deflection in installed lines is 5%, as determined by the deflection analysis and verified by a mandrel test. Some conservatism should be employed in determining allowable predicted deflections. This conservatism is necessary to allow for variability in the quality of installation.

$$\frac{\Delta Y}{D(\%)} = \frac{K*(L_p+L_1)*100}{(0.149*P_s)+(0.061*zeta*E_b)} \quad \text{Equation (13)}$$

$$\frac{\Delta Y}{D(\%)} = \frac{0.11*(13.39+0.00)*100}{(0.149*160)+(0.061*1.00*2,000)} = 0.84\% \quad (8'' \text{ PVC SDR 26 160 PSI})$$

See attachment for calculation.

$\frac{\Delta Y}{D(\%)}$ = Predicted % vertical deflection under load.

ΔY = Change in vertical pipe diameter under load

D = Undeformed mean pipe diameter (in)

$$L_p = \frac{\gamma_s * H}{144} * 1.5 \quad \text{Equation (14)}$$

$$L_p = \frac{125*10.29}{144} * 1.5 = 13.39 \quad (8'' \text{ PVC SDR 26 160 PSI, H=10.31 ft})$$

K = Bedding angle constant. Assumed to be 0.110 unless otherwise justified.

γ_s = Unit weight of soil (pcf). γ_s less than 120 pcf must be justified.

H = Depth of burial (ft) from ground surface to crown of pipe.

L_p = Prism load (psi). If prism load is calculated using Marston's load formula, or other formulas less conservative than the one provided above, the load should be multiplied by a deflection lag factor $D_L = 1.5$ to account for long-term deflection of the pipe as the bedding consolidates
S-27) Report the final pipe diameters, types of pipe material proposed for each diameter, type of pipe material, pipe stiffness for each pipe material (P_s), zeta factors assumed or calculated for each pipe diameter, modulus of the pipe bedding material (E_b) and % deflection predicted for each pipe size and type of pipe material.

QUIKTRIP STORE #4183
DESIGN REPORT

	Type of Pipe Material	P _s (psi)	zeta Factor Assumed or Calculated	E _b (psi)	% Deflection
Pipe Diameter 1	8" PVC SDR 26/ASTM D-2241	160	1.00	2,000	0.84

S-28) Do all pipes proposed for this project have a maximum predicted deflection of 5.0%? Yes

217.10(e)(11) X A description of the areas not initially served by a project, and the projected means of providing service to these areas, including special provisions incorporated in the present plans for future expansion.

- Refer to Attachment - **“No future areas served by this development.”**
- 217.10(e)(12) N/A The calculations and curves showing the operating characteristics of all system lift stations at minimum, maximum, and design flows during both present and future conditions.

217.10(e)(13) N/A The safety considerations incorporated into a project design, including ventilation, entrances, working areas, and explosion prevention

Place engineer's seal here:



Garrett D. Keller, P.E.

Print Name of Licensed Professional Engineer



Signature of Licensed Professional Engineer

4/14/23

Date

QT4138 SCS - Capacity Design

Peak Dry Weather Flow (Qpd)

MH-A-Z **Size** **Flow Calculation:** **Design Parameters**

	GPD	GPM
Funits =	0	0.00
F(Com) =	6,000	4.17
Ftot =	6,000	4.16

(DACS; Water, Reuse Water, and Wastewater; (00295200).DOC)

Peak Dry Weather Flow @ Apartment Connection

= 4.16 gpm

$$Q_{pdwf} = \frac{[(18 + (0.018 \times F)^{0.5}) / (4 + (0.018 \times F)^{0.5})] \times F}{1}$$

Peaking Factor = n/a, base flow based on City of Round Rock bypass pumping rate

Peak Wet Weather Flow (Qpw)

Flow Calculation: @ Apartment Connection

Inflow/Infiltration

	GPD	GPM
PDWF =	6,000	4.16
INI =		9.79
Ftot =		13.95

INI	GPM	ACRES
1000	0.694444444	14.1
Area GPM		9.79

1000gal/ac/day pre CDM Smith GUS Manual

(DACS; Water, Reuse Water, and Wastewater; (00295200).DOC)

Peak Wet Weather Flow = Inflow Q + Waste Q (@ Apartment Connection)

= 13.95 gpm

Peaking Factor = n/a, base flow based on City of Georgetown bypass pumping rate

Peak Dry Weather Minimum and Maximum Flow Capacities

Capacity Calculation:

Manning's "n" value: n = **0.013**

Minimum Slope Values per Appendix A, Flow Velocity Table

Main Size (in.)	Inside dia (in.)	Min Slope (%)	Area (ft^2)	Hydraulic Radius (ft)	R^(2/3) (ft)	S^(1/2) (ft/ft)	Q (Full) (cfs)	Max Pipe %	Flow Velocity	Q max at min slope (gpm)
8.625	7.921	0.35	0.34	0.17	0.30	0.059	0.70	65.00	2.03	238.00

SDR 26, CL 160

FlowRate > 2fps (Acceptable)

Maximum Slope Values per Appendix A, Flow Velocity Table

Main Size (in.)	Inside dia (in.)	Max Slope (%)	Area (ft^2)	Hydraulic Radius (ft)	R^(2/3) (ft)	S^(1/2) (ft/ft)	Q (Full) (cfs)	Max Pipe %	Flow Velocity	Q max at max slope (gpm)
8.625	7.921	1.00	0.34	0.17	0.30	0.100	1.18	65.00	3.43	402.00

SDR 26, CL 160

FlowRate < 10fps (Acceptable)

Peak Wet Weather Minimum and Maximum Flow Capacities

Capacity Calculation:

Manning's "n" value: n = **0.013**

Minimum Slope Values per Appendix A, Flow Velocity Table

Main Size (in.)	Inside dia (in.)	Min Slope (%)	Area (ft^2)	Hydraulic Radius (ft)	R^(2/3) (ft)	S^(1/2) (ft/ft)	Q (Full) (cfs)	Max Pipe %	Flow Velocity	Q max at min slope (gpm)
8.625	7.921	0.35	0.34	0.17	0.30	0.059	0.70	85.00	2.32	323.00

SDR 26, CL 160

Qpw < 85% Qfull (Acceptable)

Maximum Slope Values per Appendix A, Flow Velocity Table

Main Size (in.)	Inside dia (in.)	Max Slope (%)	Area (ft^2)	Hydraulic Radius (ft)	R^(2/3) (ft)	S^(1/2) (ft/ft)	Q (Full) (cfs)	Max Pipe %	Flow Velocity	Q max at max slope (gpm)
8.625	7.921	1.00	0.34	0.17	0.30	0.100	1.18	85.00	3.91	546.00

SDR 26, CL 160

FlowRate < 10fps (Acceptable)

DACS; Water, Reuse Water, and Wastewater; (00295200).DOC "Percent Pipe Full at Design Flow

Note: 1. DACS; Water, Reuse Water, and Wastewater; (00295200).DOC, "For all wastewater gravity lines, the peak WWF (design flow) is not to exceed 85 percent of the capacity of the pipe flowing full."

Flow Velocity Table

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.

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	3.52
18	0.11	2.83
21	0.09	2.30
24	0.08	1.93
27	0.06	1.55
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.

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

Where:

- v = velocity (ft/sec)
- n = Manning's roughness coefficient (0.013)
- R_h = hydraulic radius (ft)
- S = slope (ft/ft)

Flow Velocity Table provided by TCEQ for 0582 - Organized Sewage Collection System (SCS) Application

	SDR 26 160 PSI	SDR 26 160 PSI	SDR 26 160 PSI	SDR 26 160 PSI
	Worse Case Line A, Sta: 1+45.88 (Deepest Depth of Cover)	Line A, Sta: 3+49.06 (Minimum Depth of Cover and Max Live Load)	Worse Case Line C, Sta: 9+60.51 (Deepest Depth of Cover)	Line C, Sta: 12+41.12 (Minimum Depth of Cover and Max Live Load)

General				
E (psi) =	400000	400000	400000	400000
Eb (psi) =	2000	2000	2000	2000
E'n (psi) =	5000	5000	5000	5000
Ys (pcf) =	125	125	125	125
Yw (pcf) =	0.0361	0.0361	0.0361	0.0361
(pcf) =	62.4	62.4	62.4	62.4
b (min trench width)(in) =	24	24	24	24
Pc =	4000	4000	4000	4000
K =	0.11	0.11	0.11	0.11
Total length of Pipe (ft.) =	313.00	313.00	1155.00	1155.00
SCS Cost	\$156.50	\$156.50	\$577.50	\$577.50

Type of Pipe	ASTM 2241	ASTM 2241	ASTM 3034	ASTM 3034
SDR	26 CL 160	26 CL 160	26 CL 160	26 CL 160
D (Pipe Diameter) (in)	7.921	7.921	7.921	7.921
length of Pipe (LF)	313.00	313.00	1155.00	1155.00
Do (outside Dia.) (in)	8.625	8.625	8.625	8.625
T (thickness) (in)	0.332	0.332	0.332	0.332
(Fill Height) H (ft)	10.29	5.24	6.08	3
(Fill Height) h (in)	123.42	62.88	72.96	36.00
hw (in)	0	0	0	0
Pipe Stiffness Ps (psi)	160	160	160	160
Surface Water Depth (SWD) (in)	0	0	0	0

Equations					
T68) Allowable Buckling Pressure					
$q_a = 0.4 * \sqrt[3]{32 * R_w * B' * E_b * (E * I / D^3)}$ Allowable Buckling Pressure (psi)	qa	115.98	91.80	96.38	79.10
$R_w = 1 - 0.33 * (h_w / h)$ Water Buoyancy Factor	Rw	1.00	1.00	1.00	1.00
$B' = \frac{I}{I + 4 * e^{-0.213 H}}$ Empirical Coefficient of Elastic Support	B'	0.69	0.43	0.48	0.32
$I = (t^3 / 12) * (\text{inches}^4 / \text{Linch})$ Moment of Inertia of the Pipe Wall Cross Section (in ⁴)	I	0.00305	0.00305	0.00305	0.00305
$L_l = \frac{\gamma_w * SWD}{1.44}$ Live Load (psi)	L_l	0.00	0.00	0.00	0.00
$q_p = \gamma_w * h_w + R_w * (W_c / D) + L_l$ Pressure Applied to Pipe Under Installed Conditions (psi)	qp	9.30	4.74	5.50	2.71
$W_c = \gamma_s * H * (D + t) / 1.44$ Vertical Soil Load on the Pipe (lb/in)	Wc	73.68	37.54	43.56	21.49
	TEST: if qa < qp wrong	Acceptable	Acceptable	Acceptable	Acceptable
T71) Concrete Cradle					
	Ha	354.75	354.75	354.75	354.75
$H_a = (2.4 * P_c * A) / (\gamma_s * D_o)$	A	3.984	3.984	3.984	3.984
	Test if Hp > Ha	Acceptable	Acceptable	Acceptable	Acceptable
T78) Ratio of Bedding Modulus to Soil Modulus:					
	Eb/E'n	0.40	0.40	0.40	0.40
T79) Zeta Factor					
$zeta = \frac{1.44}{f + (1.44 - f) * (E_b / E_n)}$	zeta	1.00	1.00	1.00	1.00
$f = \frac{b / d_o - 1}{1.154 + 0.444 * (b / d_o - 1)}$	f	0.99	0.99	0.99	0.99

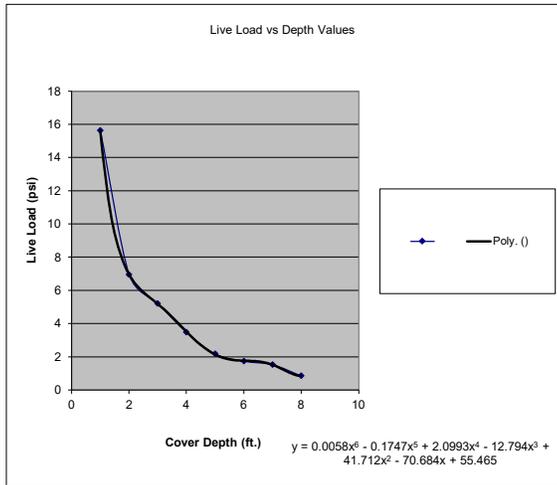
T83) Pipe Stiffness					
$\frac{P_s}{SSF} = \frac{P_s}{(0.061 * zeta * E_b)} \geq 0.15$	SSF	122.00	122.00	122.00	122.00
	Ps/SSF	1.31	1.31	1.31	1.31
	Test if >0.15	Acceptable	Acceptable	Acceptable	Acceptable
T86) Deflection					
$\Delta Y / D (\%) = \frac{K * (L_p + L_1) * 100}{(0.149 * P_s) + (0.061 * zeta * E_b)}$ $L_p = \frac{\gamma_s * H}{144} * 1.5$ Note: Deflection Lag Factor = 1.5 (as shown above)	ΔY	122.00	122.00	122.00	122.00
	D(%)	145.84	145.84	145.84	145.84
	$\Delta Y/D(\%)$	0.84%	0.84%	0.84%	0.84%
	Lp	Acceptable	Acceptable	Acceptable	Acceptable

T-63) Live Load Analysis

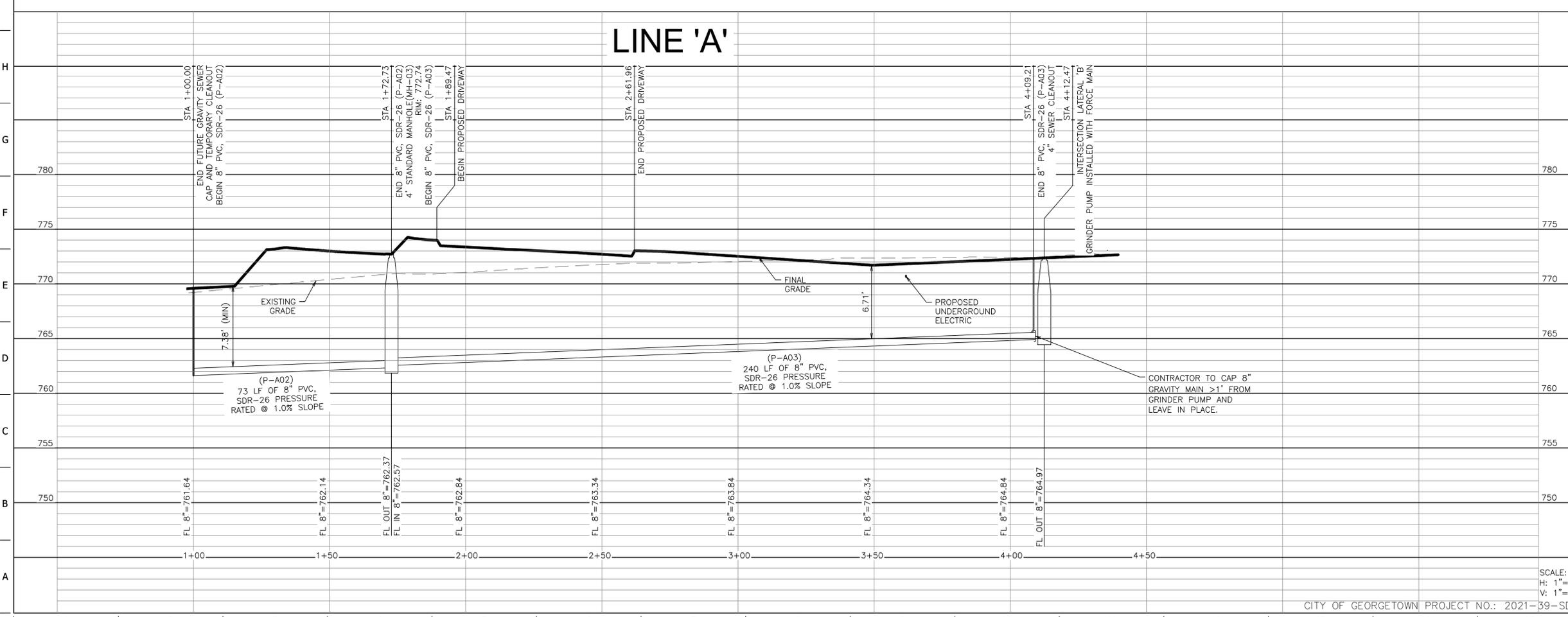
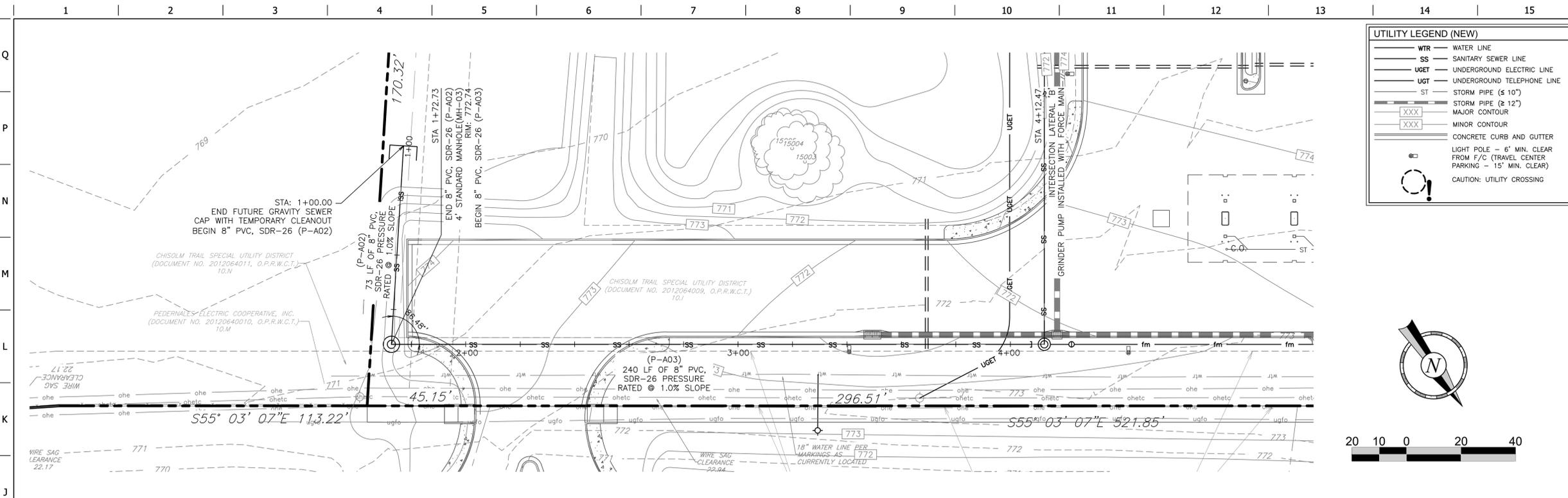
Vehicle Live Load (Lv)	Cover(ft)	Live Load (psi)
1	1	15.63
2	2	6.95
3	3	5.21
4	4	3.48
5	5	2.18
6	6	1.74
7	7	1.53
8	8	0.86

(Reference Table 2-7 Live Load Data AASHTO H-25)

SDR 26	(min depth of cover, ft.)	(through interpolation)
	3	



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JOSHUA VALENTA
114592
LICENSED PROFESSIONAL ENGINEER
i1612015

PROJECT NO.: 4183.01

MATKINHOOPER
ENGINEERING & SURVEYING
8 SPENCER ROAD, SUITE 100
BUREAU, TEXAS 76008
CONTACT: JVA@MATKINHOOPER.COM
P: 817-852-5555
F: 817-852-5555

QuikTrip No. 4183
3930 SHELL ROAD
GEORGETOWN, TX

QT

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PROTOTYPE: P-110 (05/01/22)
DIVISION: 82
VERSION: 001
DESIGNED BY: C. WOOD
DRAWN BY: CWR
REVIEWED BY: JJV

REV	DATE	DESCRIPTION

ORIGINAL ISSUE DATE:

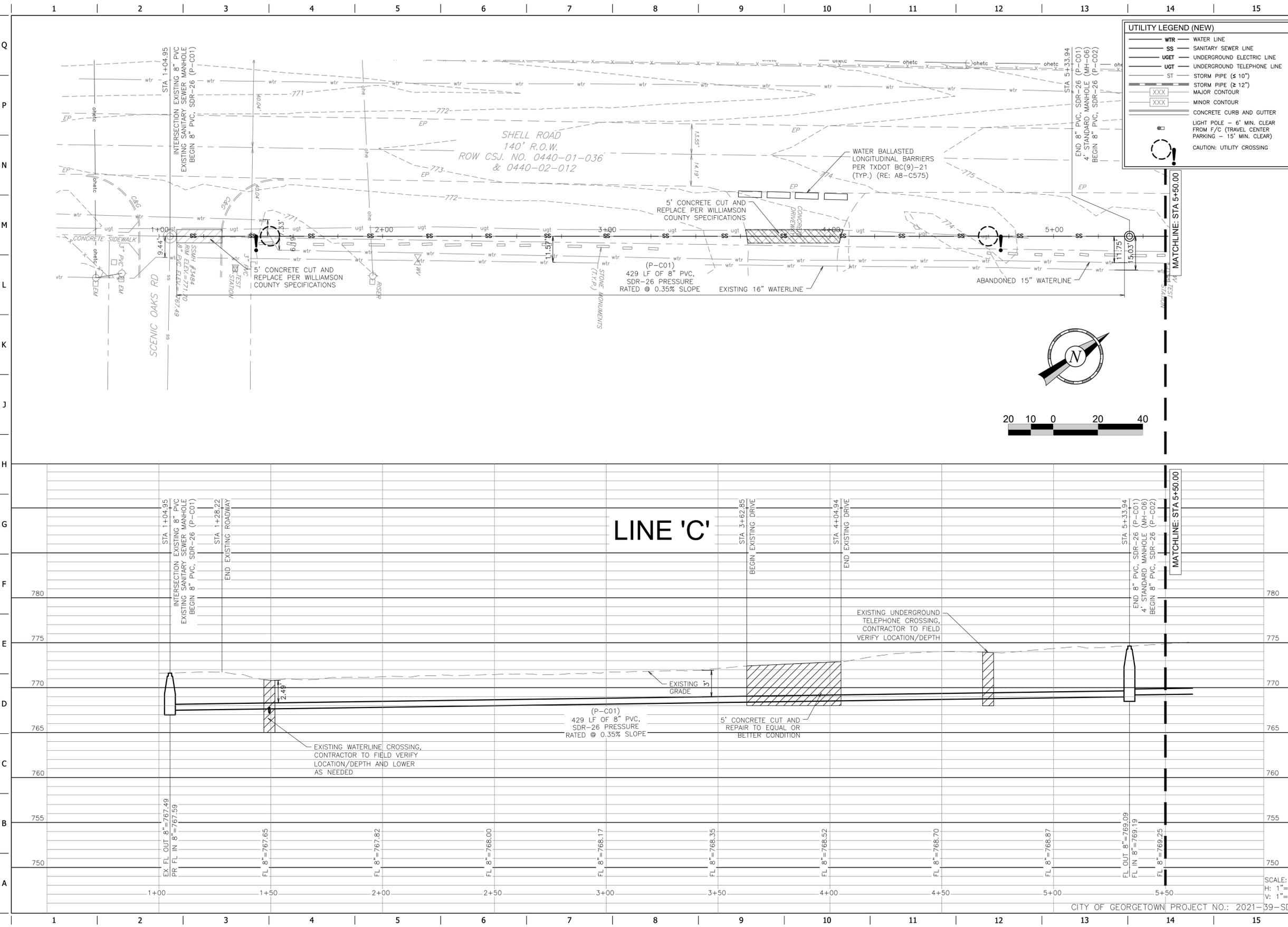
SHEET TITLE:
SANITARY SEWER PROFILE
SHEET 1

SHEET NUMBER:
C153
48 OF 93

SCALE:
H: 1"=20'
V: 1"=5'

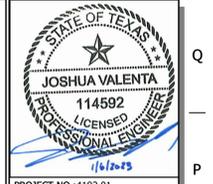
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UTILITY LEGEND (NEW)

- WTR - WATER LINE
- SS - SANITARY SEWER LINE
- UGET - UNDERGROUND ELECTRIC LINE
- UGT - UNDERGROUND TELEPHONE LINE
- ST - STORM PIPE (≤ 10")
- ST - STORM PIPE (≥ 12")
- XXXX - MAJOR CONTOUR
- XXXX - MINOR CONTOUR
- CONCRETE CURB AND GUTTER
- LIGHT POLE - 6' MIN. CLEAR FROM F/C (TRAVEL CENTER)
- PARKING - 15' MIN. CLEAR
- CAUTION: UTILITY CROSSING



MATKINHOVER
ENGINEERING & SURVEYING
8 SPENCER ROAD, SUITE 100
BIRMINGHAM, TEXAS 76008
CONTACT: MATKINHOVER.COM
TEXAS REGISTERED ENGINEERING FIRM
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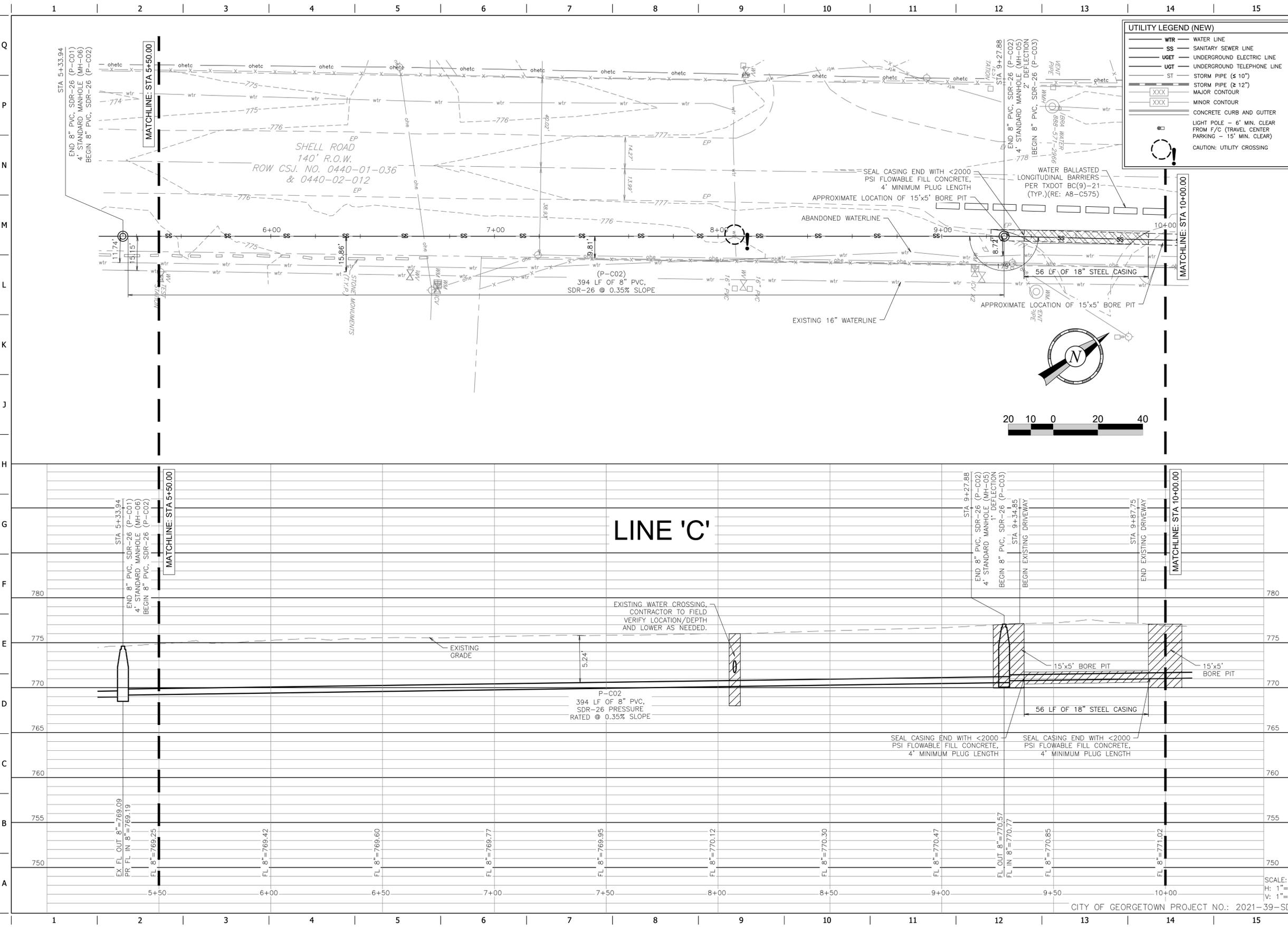
REV	DATE	DESCRIPTION

SHEET TITLE:
SANITARY SEWER PROFILE SHEET 3

SHEET NUMBER:
C155
50 OF 93

CITY OF GEORGETOWN PROJECT NO.: 2021-39-SDP

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UTILITY LEGEND (NEW)

- WTR — WATER LINE
- SS — SANITARY SEWER LINE
- UGET — UNDERGROUND ELECTRIC LINE
- UGT — UNDERGROUND TELEPHONE LINE
- ST — STORM PIPE (≤ 10")
- (thick) — STORM PIPE (≥ 12")
- (dashed) — MAJOR CONTOUR
- (dotted) — MINOR CONTOUR
- (solid) — CONCRETE CURB AND GUTTER
- (solid) — LIGHT POLE — 6' MIN. CLEAR FROM F/C (TRAVEL CENTER) PARKING — 15' MIN. CLEAR
- (solid) — CAUTION: UTILITY CROSSING

STATE OF TEXAS
JOSHUA VALENTA
 114592
 LICENSED PROFESSIONAL ENGINEER
 1/6/2015

PROJECT NO.: 4183.01

MATKINHOOPER
 ENGINEERING & SURVEYING
 8 SPENCER ROAD, SUITE 100
 BUREAU, TEXAS 76008
 CONTACT: JVA@MATKINHOOPER.COM
 TEXAS REGISTERED ENGINEERING FIRM
 P-00462 SURVEYING FIRM P-1004900

QuikTrip No. 4183
 3930 SHELL ROAD
 GEORGETOWN, TX

QT

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 DIVISION: 82
 VERSION: 001
 DESIGNED BY: C. WOOD
 DRAWN BY: CWR
 REVIEWED BY: JJV

REV	DATE	DESCRIPTION

ORIGINAL ISSUE DATE:

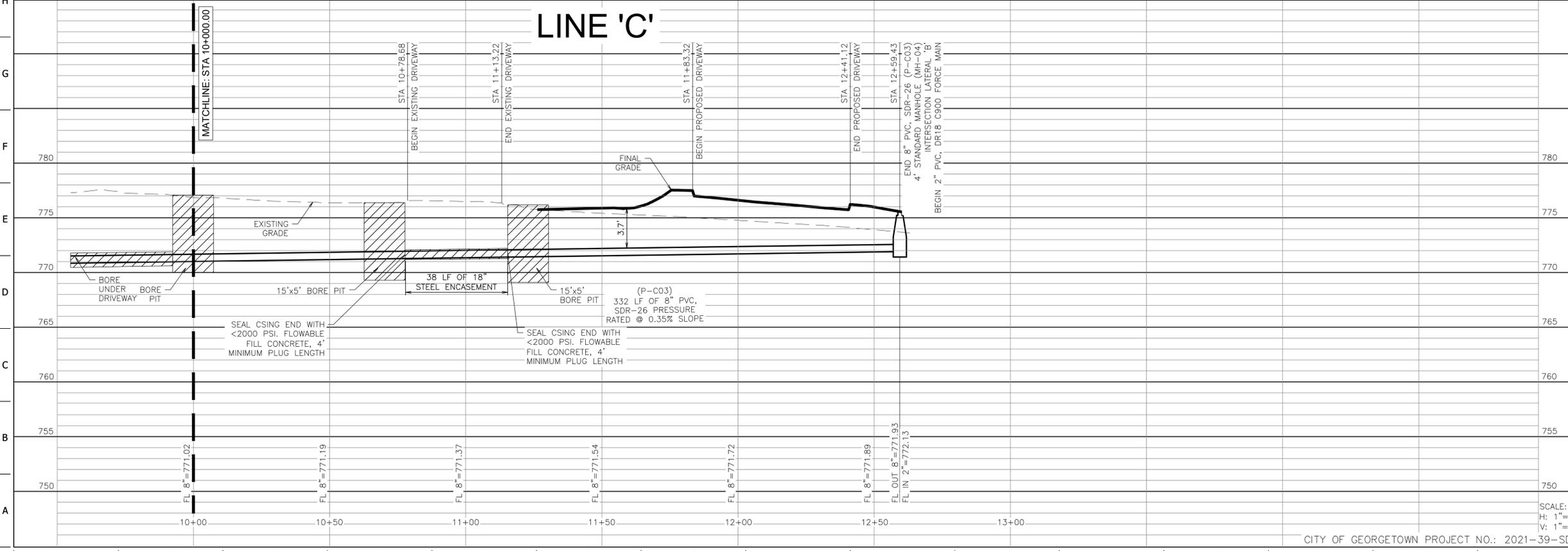
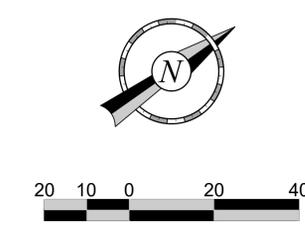
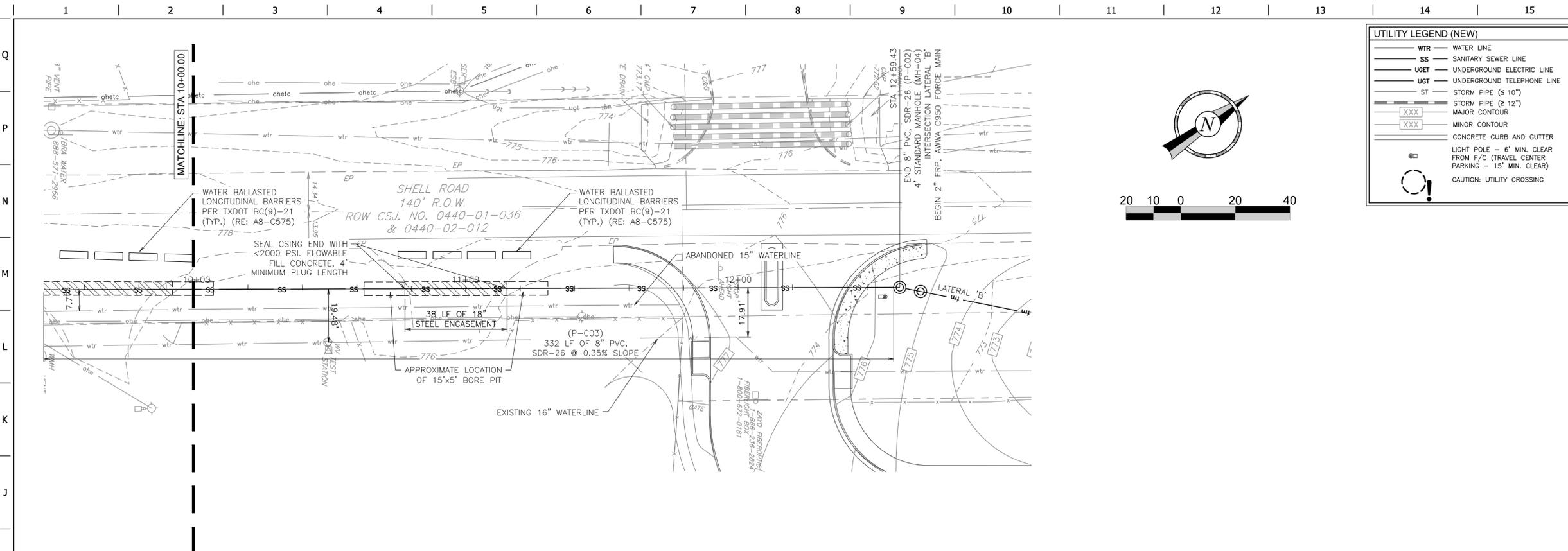
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 SANITARY SEWER PROFILE
 SHEET 4

SHEET NUMBER:
C156
 51 OF 93

SCALE:
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CITY OF GEORGETOWN PROJECT NO.: 2021-39-SDP

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STATE OF TEXAS
 JOSHUA VALENTA
 114592
 LICENSED PROFESSIONAL ENGINEER
 1/6/2015
 PROJECT NO.: 4183.01
MATKINHOOPER
 ENGINEERING & SURVEYING
 8 SPENCER ROAD, SUITE 100
 BUREAU, TEXAS 76008
 CONTACT: JVA@MATKINHOOPER.COM
 TEXAS REGISTERED ENGINEERING FIRM
 F-004626 SURVEYING FIRM F-00264900

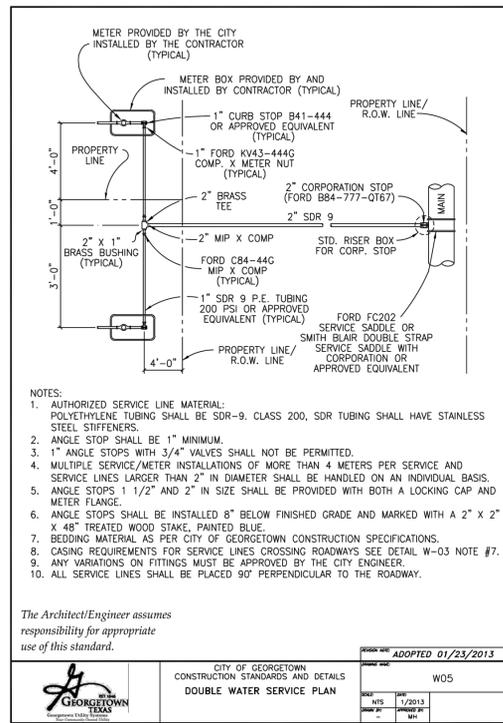
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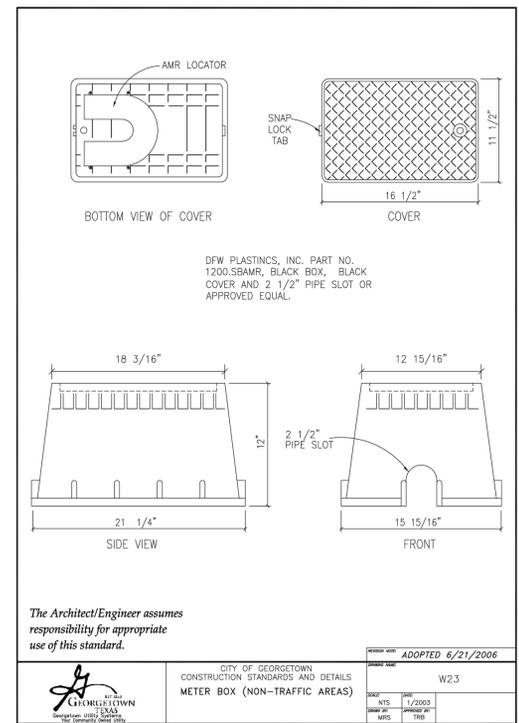
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 SHEET 5
 SHEET NUMBER:
C157
 52 OF 93

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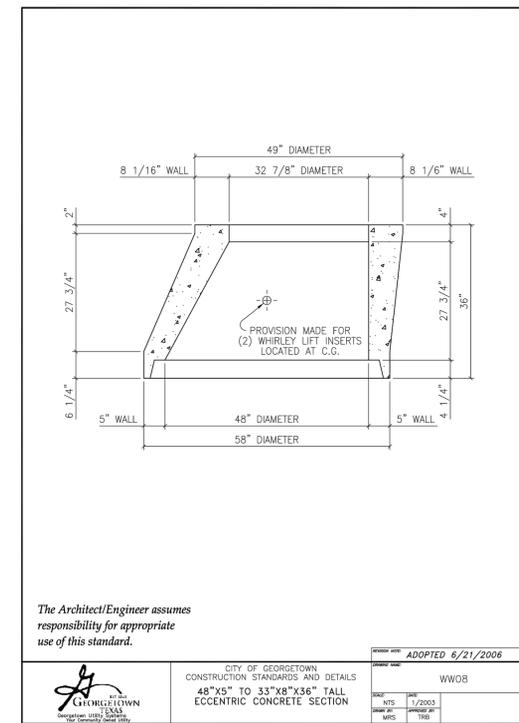
H1 GEORGETOWN WATER SERVICE CONNECTION

NTS SN: 001



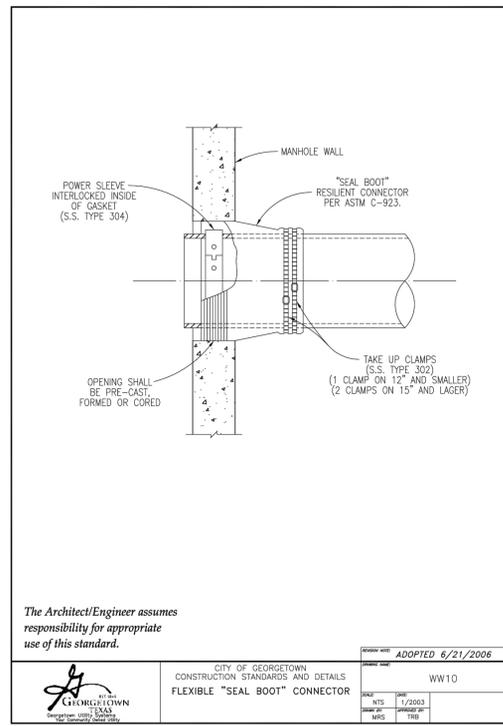
H6 GEORGETOWN STANDARD METER BOX

NTS SN: 001



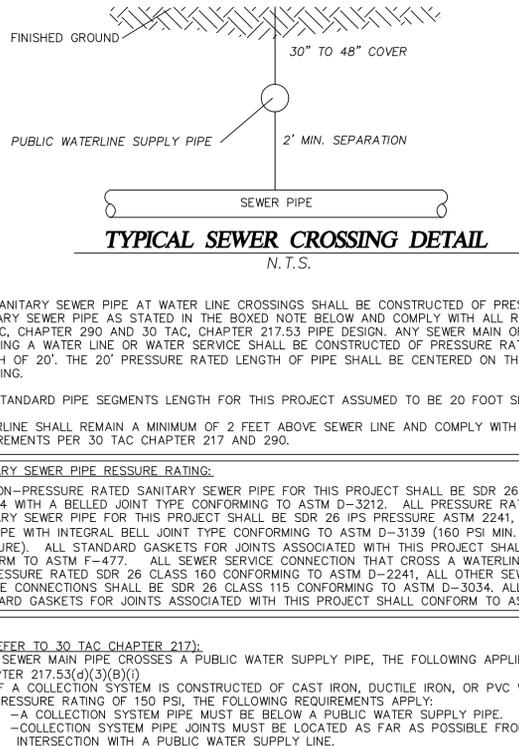
H11 GEORGETOWN ECCENTRIC CONCRETE SECTION

NTS SN: 001



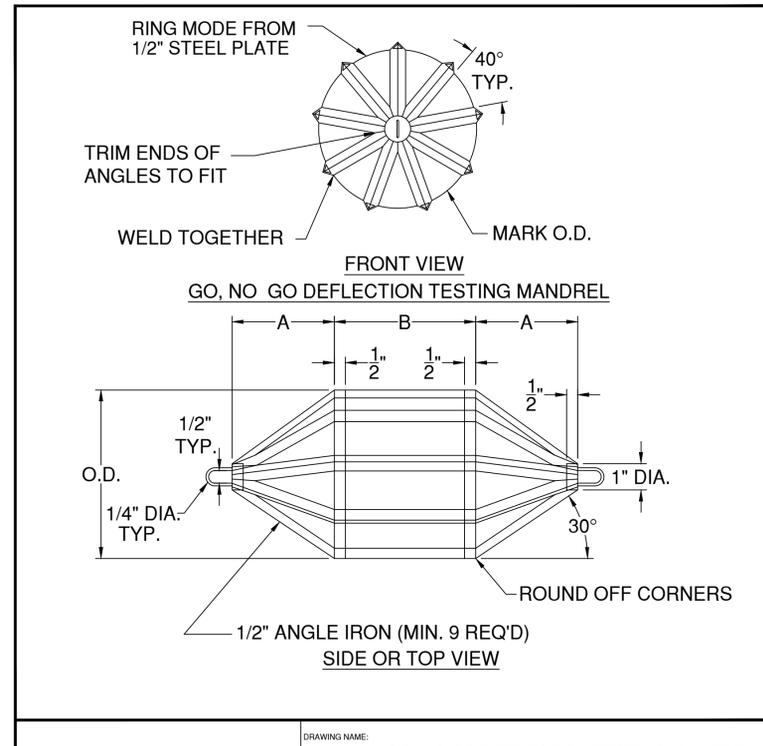
A1 GEORGETOWN FLEXIBLE SEAL BOOT CONNECTION

NTS SN: 001



A6 TYPICAL CROSSING DETAIL

NTS SN: 001



A11 MANDREL DETAIL

NTS SN: 001

CITY OF GEORGETOWN PROJECT NO.: 2021-39-SDP



PROJECT NO.: 4183.01

MATKINHOOPER
ENGINEERING
& SURVEYING

8 SPENCER ROAD, SUITE 103
BUDA, TEXAS 78608
TEL: 781.233.8888
CONTACT: JVA@MATKINHOOPER.COM

TEXAS REGISTERED ENGINEERING FIRM
LICENSE NO. 114592-0001

QuikTrip No. 4183

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DIVISION: 82

VERSION: 001

DESIGNED BY: C. WOOD

DRAWN BY: CWR

REVIEWED BY: JJV

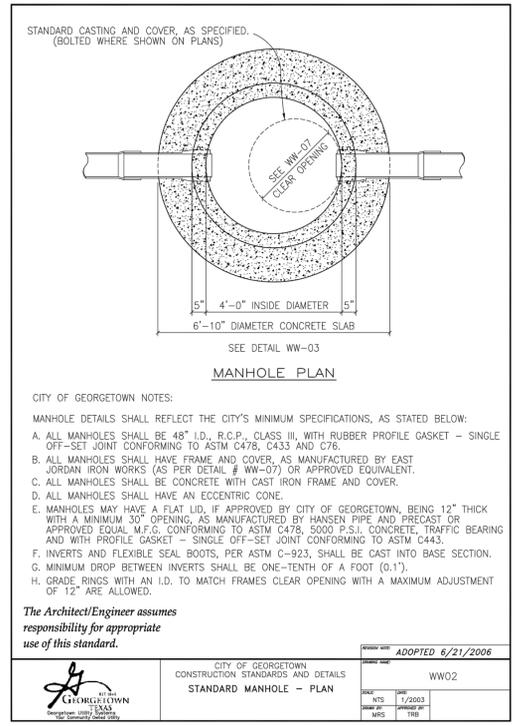
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CITY OF GEORGETOWN
UTILITY DETAILS SHEET 1

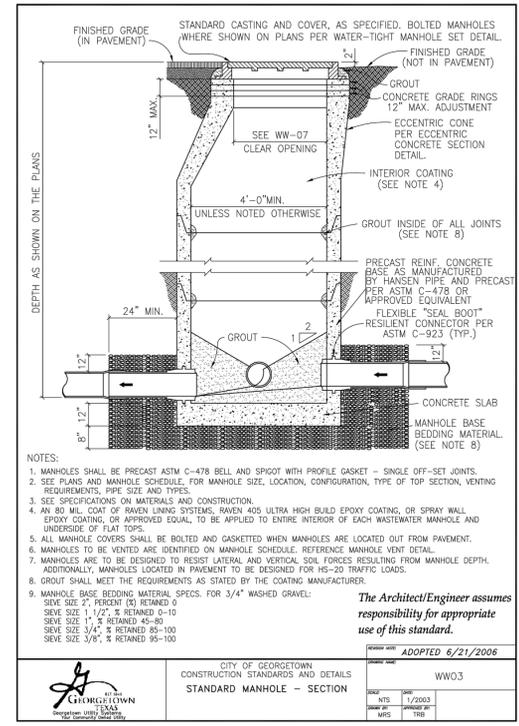
SHEET NUMBER:
C570

83 OF 93

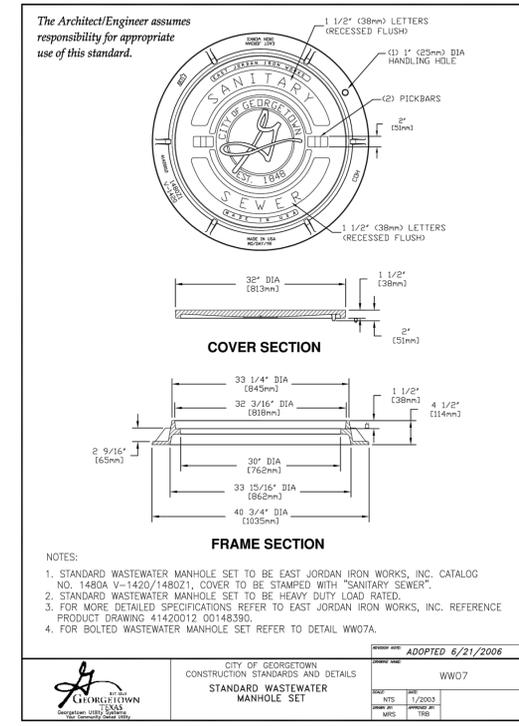
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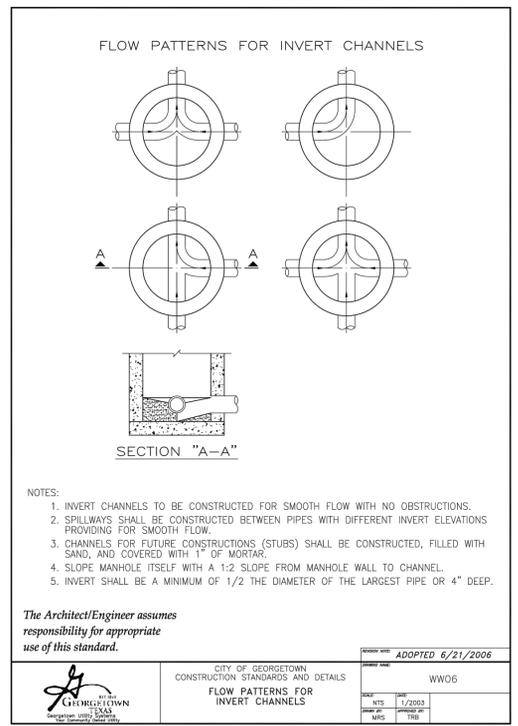
H1 GEORGETOWN STANDARD MANHOLE PLAN
 NTS SN: 001



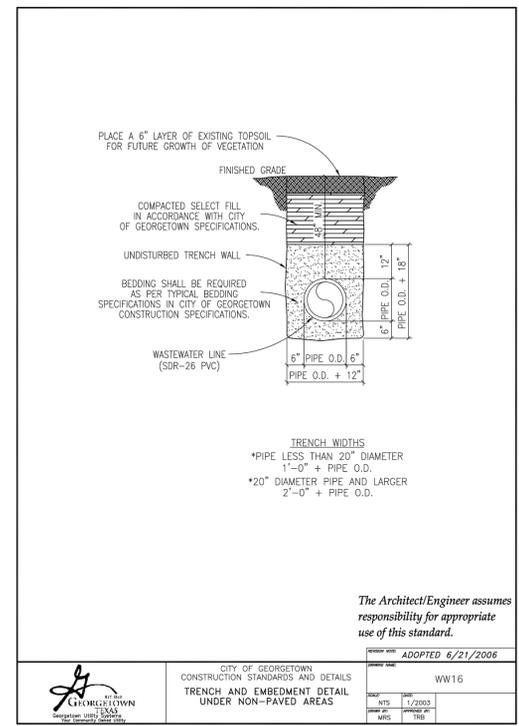
H6 GEORGETOWN STANDARD MANHOLE SECTION
 NTS SN: 001



H11 GEORGETOWN STANDARD MANHOLE LID
 NTS SN: 001

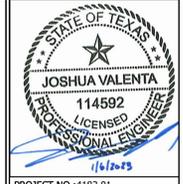


A1 GEORGETOWN FLEXIBLE SEAL BOOT CONNECTION
 NTS SN: 001



A6 GEORGETOWN SANITARY SEWER TRENCHING DETAIL
 NTS SN: 001

A11 NOT USED
 NTS SN: 001



PROJECT NO. 4183.01

MATKINHOOPER
 ENGINEERING & SURVEYING
 8 SPENCER ROAD, SUITE 103
 EUBANK, TEXAS 75006
 CONTACT: @MATKINHOOPER.COM
 TEXAS REGISTERED ENGINEERING FIRM
 LICENSE NO. 114592

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 3930 SHELL ROAD
 GEORGETOWN, TX



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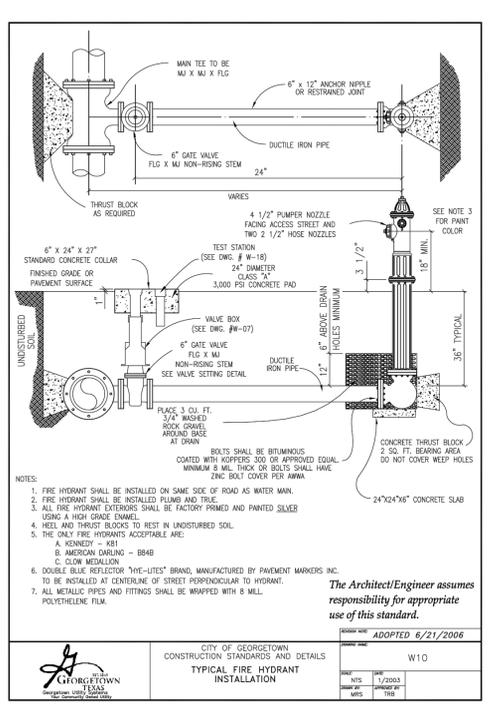
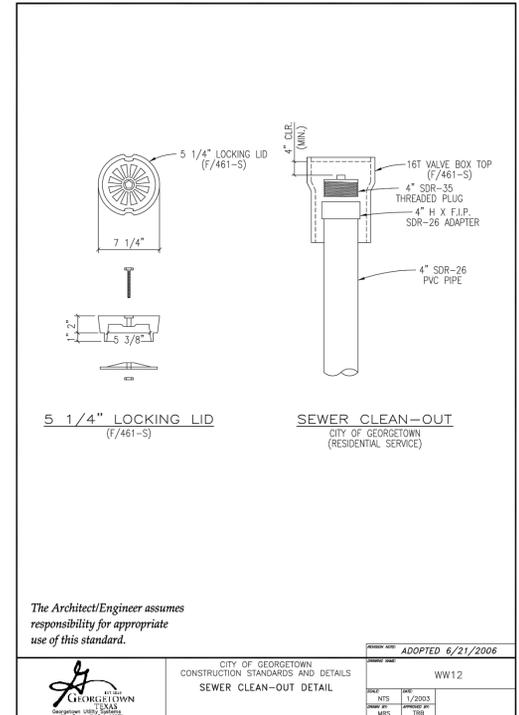
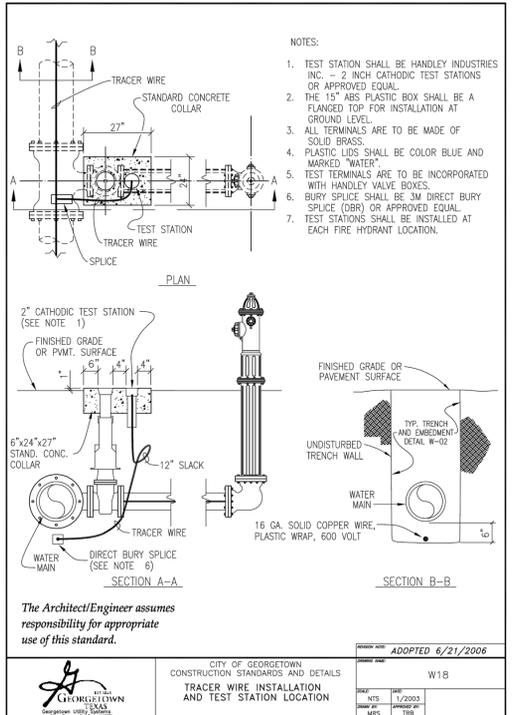
PROTOTYPE: P-110 (05/01/22)
 DIVISION: 82
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 DESIGNED BY: C. WOOD
 DRAWN BY: CWR
 REVIEWED BY: JJV

REV	DATE	DESCRIPTION

SHEET TITLE:
 CITY OF GEORGETOWN
 UTILITY DETAILS SHEET 2

SHEET NUMBER:
C571
 84 OF 93

FILE LOCATION: Z:\PROJECTS\QUIKTRIP\4183 - QuikTrip Store 4183 - 195 & Shell Road, Georgetown\Design Plans\C - Plans\QA_Details - Misc\Details City of Georgetown.dwg USER: cromsey DATE: 3/5/2023 9:21 AM PLOTTED: 3/5/2023 9:31 AM

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P															N
H1	GEORGETOWN FIRE HYDRANT				H6	GEORGETOWN SEWER CLEANOUT				H11	GEORGETOWN TRACER WIRE				
NTS	SN: 001				NTS	SN: 001				NTS	SN: 001				
A1	NOT USED				A6	NOT USED				A11	NOT USED				
NTS	SN: 001				NTS	SN: 001				NTS	SN: 001				

STATE OF TEXAS

JOSHUA VALENTA
 114592
 LICENSED PROFESSIONAL ENGINEER
 1/16/2015

PROJECT NO.: 4183.01

MATKINHOOPER
 ENGINEERING & SURVEYING
 8 SPENCER ROAD, SUITE 100
 BUENEN, TEXAS 78009
 CONTACT: @MATKINHOOPER.COM
 TEXAS REG. NO. 114592, LICENSE EXPIRES 12/31/2024

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REV	DATE	DESCRIPTION

SHEET TITLE:
 CITY OF GEORGETOWN
 UTILITY DETAILS SHEET 3

SHEET NUMBER:
C572

85 OF 93

FILE LOCATION: Z:\PROJECTS\QUIKTRIP\4183 - QuikTrip Store 4183 - 195 & Shell Road, Georgetown\Design Plans\C... Plans\QA_Details - Misc\DETAILS CITY OF GEORGETOWN.dwg TAB NAME: UTILITY Notes USER: cromsey SWD: 3/31/2023 9:21 AM PLOTTED: 3/31/2023 9:31 AM

Grid lines 1-15 and A-Q. Main drawing area containing technical specifications and 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...

- 1. THIS ORGANIZED SEWAGE COLLECTION SYSTEM (OSCS) MUST BE CONSTRUCTED IN ACCORDANCE WITH 30 TEXAS ADMINISTRATIVE CODE (TAC) §213.5(C)...
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...

- (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...
(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...

- 16. ALL MANHOLES MUST BE TESTED TO MEET OR EXCEED THE REQUIREMENTS OF 30 TAC §217.58...
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 0.020 GALLONS PER FOOT DIAMETER PER FOOT OF MANHOLE DEPTH PER HOUR...

AUSTIN REGIONAL OFFICE 12100 PARK 35 CIRCLE, BUILDING A AUSTIN, TEXAS 78753-1808 PHONE (512) 339-2929 FAC (512) 339-3795

SAN ANTONIO REGIONAL OFFICE 14250 JUDDSON ROAD SAN ANTONIO, TEXAS 78233-4480 PHONE (210) 490-3096 FAC (210) 545-4329

WASTEWATER NOTES: 1. ALL NON-PRESSURE RATED SANITARY SEWER PIPE FOR THIS PROJECT SHALL BE SDR 26 PVC ASTM D-3034 WITH A BELLED JOINT TYPE CONFORMING TO ASTM D-3212...

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... IT IS SUGGESTED THAT ENTRANCE INTO MANHOLES IN EXCESS OF FOUR FEET DEEP BE ACCOMPLISHED BY MEANS OF A PORTABLE LADDER...

12. NEW SEWAGE COLLECTION SYSTEM LINES MUST BE CONSTRUCTED WITH STUB OUTS FOR THE CONNECTION OF ANTICIPATED EXTENSIONS... IF NO STUB-OUT IS PRESENT AN ALTERNATE METHOD OF JOINING LATERALS IS SHOWN IN THE DETAIL ON PLAN SHEET NA...

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 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...

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...

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-428, ASTM C-824, OR ASTM F-1417 OR OTHER PROCEDURE APPROVED BY THE EXECUTIVE DIRECTOR...

EQUATION C.3 WHERE: T = 0.085 * D * K / Q T = TIME FOR PRESSURE TO DROP 1.0 POUND PER SQUARE INCH GAUGE IN SECONDS K = 0.000419 X D X L, BUT NOT LESS THAN 1.0 D = AVERAGE INSIDE PIPE DIAMETER IN INCHES L = LENGTH OF LINE OF SAME SIZE BEING TESTED, IN FEET Q = RATE OF LOSS, 0.0015 CUBIC FEET PER MINUTE PER SQUARE FOOT INTERNAL SURFACE

Table with 4 columns: PIPE DIAMETER (INCHES), MINIMUM TIME (SECONDS), MAXIMUM LENGTH FOR MINIMUM TIME (FEET), TIME FOR LONGER LENGTH (SECONDS/FOOT). Rows for diameters 6, 8, 10, 12, 15, 18, 21, 24, 27, 30, 33.

- (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.



PROJECT NO.: 4183.01 MATKINHOOPER ENGINEERING & SURVEYING 8 SPENCER ROAD, SUITE 100 BUDA, TEXAS 78608 CONTACT: (512) 261-1100

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Table with 2 columns: PROPERTY, VALUE. Rows: PROTOTYPE: P-110 (05/01/22), DIVISION: 82, VERSION: 001, DESIGNED BY: C. WOOD, DRAWN BY: CVR, REVIEWED BY: JJV

Table with 2 columns: REV, DATE, DESCRIPTION. Includes ORIGINAL ISSUE DATE column.

SHEET TITLE: TCEQ SCS CONSTRUCTION NOTES

SHEET NUMBER: C574 870F 93

QuikTrip Store #4183
SCS Application

Section 5 – Temporary Stormwater

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: Garrett D Keller, P.E.

Date: 2/22/23

Signature of Customer/Agent:



Regulated Entity Name: QuikTrip Store #4183

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: Lower Berry 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.

General Response Actions

1. All leaks and spills should be cleaned immediately.
2. Rags, mops, and absorbent material may all be used to cleanup a spill.
3. If these materials are used to clean a hazardous material, then they must be disposed of as hazardous waste.
4. Never hose down or bury dry material spills.

Minor Spills

If a minor spill occurs (typically small quantities of oil, gasoline, etc.) the following actions should be taken.

1. Contain the spread of the spill
2. Recover spilled materials
3. Clean the contaminated area and properly dispose of contaminated materials

Semi-Significant Spills

If a semi-significant spill occurs the following actions should be taken.

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

If a significant or hazardous spill occurs in reportable quantities the following actions should be taken.

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 1-800-424-8802 or via the webpage at https://www.tceq.texas.gov/response/spills/spill_rq.html
3. Notification should first be made by telephone and followed up with a written report.
4. The services of a spills contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site.
5. Other agencies which may need to be consulted include, but are not limited to, the City Police Department, County Sheriff Office, Fire Departments, etc.

QUIKTRIP 4183
POTENTIAL SOURCES OF CONTAMINATION

Potential sources of contamination that may occur are:

- Oil, grease, fuel, and hydraulic fluid from construction equipment and vehicle drippings
- Miscellaneous trash and litter from construction workers and material wrappings
- Construction debris
- Excess application of fertilizers, herbicides, and pesticides

Preventative measures that will be taken to reduce contamination are:

- Vehicle maintenance will be performed within the construction staging area
- Trash containers will be placed throughout the site to encourage proper trash disposal if necessary
- Construction debris will be monitored daily by the contractor. Debris will be collected weekly and placed in disposal bins. Situations requiring immediate attention will be addressed on a case by case basis
- Fertilizers, herbicides, and pesticides will be applied only when necessary and in accordance with manufacturer's directions

QUIKTRIP 4183
SEQUENCE OF MAJOR ACTIVITIES

Site and Utility Construction

1. Mobilization of the contractor's equipment. (.5 acres disturbed)
2. Installation of temporary best management practices as described in attachment "D" of this section (Silt Fence, Construction Entrance, and Rock Berms).
3. Construction of permanent best management practices. (Batch Detention Pond. See Permanent Stormwater Section Attachment "F")
4. Trenching and installation of utilities.
5. Construction of driveways, sidewalks, and site improvements
6. Establishment of permanent soil stabilization on disturbed areas for road and utility construction.
7. Removal of Temporary BMP's.

- a. All upgradient stormwater entering the site will be treated by the BMPs that will prevent pollution of surface water or groundwater that originates on-site or flows off site. See a list of these BMPs in section “b.”

- b. The BMPs that will prevent pollution of surface water or groundwater that originates on-site or flows off site are:
 - i. **Temporary Construction Entrance/Exit** – The installation of a stabilized construction entrance/exit will reduce the dispersion of sediment from the site. See Sheet 2 of the WPAP Site Plan which contains a copy of Section 1.4.2 from the Edwards Aquifer Rules: Technical Guidance on Best Management Practices for materials, installation, common trouble points, inspection and maintenance.
 - ii. **Silt Fence** – The erection of silt fence along the boundary of construction activities will provide temporary erosion and sedimentation control. See Sheet 2 of the WPAP Site Plan which contains a copy of Section 1.4.3 from the Edwards Aquifer Rules: Technical Guidance on Best Management Practices for materials, installation, common trouble points, inspection and maintenance.
 - iii. **Rock Berm** – The use of rock berms throughout the site will provide temporary erosion and sedimentation control. See Sheet 2 of the WPAP Site Plan which contains a copy of Section 1.4.5 from the Edwards Aquifer Rules: Technical Guidance on Best Management Practices for materials, installation, common trouble points, inspection and maintenance.
 - iv. **Inlet Protection** – The installation of inlet protection consisting of permeable barriers will provide removal of sediment prior to it entering storm drain inlets. Install protection at storm sewer inlets that are operable during construction. Inlet protection materials should be approved by local jurisdiction prior to installation and should ensure that flows are treated and able to enter the storm drain without causing local flooding.
 - v. **Construction Staging Area** – The construction staging area will provide on-site pollution prevention.
 - vi. **Concrete Truck Washout Pit** – A concrete truck washout pit aids in the final cleanup and prevents unnecessary discharge of concrete residue from contaminating the storm water runoff. See Sheet 2 of the WPAP Site Plan which contains a copy of Section 1.4.18 from the Edwards Aquifer Rules: Technical Guidance on Best Management Practices for materials, installation, common trouble points, inspection and maintenance.

- c. Silt fence and rock berms (see section “b”) will be used to prevent sediment-laden runoff from entering sensitive features on this site and surface streams off the site.

- d.** The flow to the natural sensitive features on this site, to a maximum practical extent, will not be disturbed. No clearing, excavation or grading will occur within the buffer zone of the sensitive feature. If another naturally occurring sensitive feature is identified during construction all activity will be stopped and the contractor should notify TCEQ.

QUIKTRIP 4183
STRUCTURAL PRACTICES

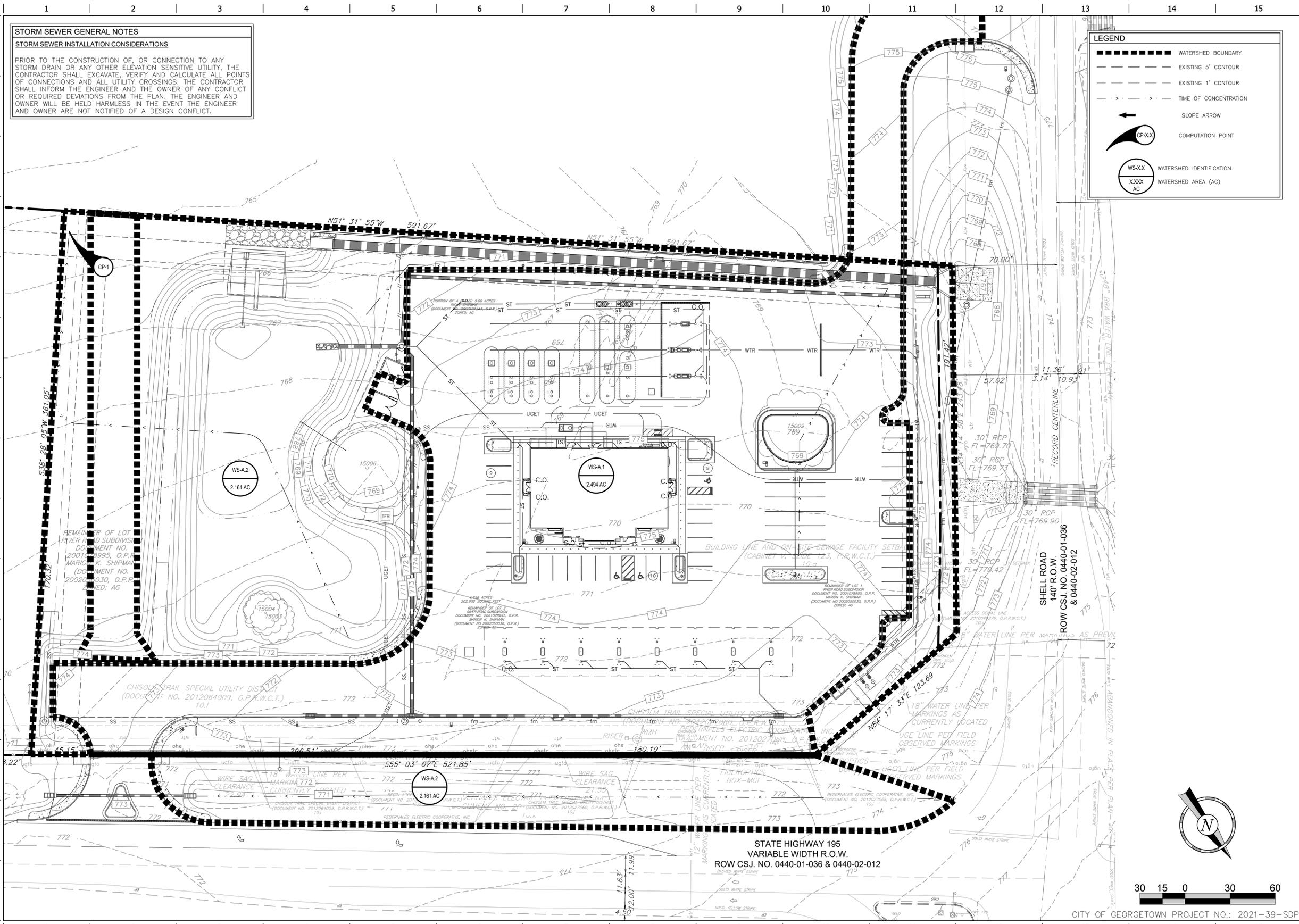
Structural practices installed to prevent the runoff of pollutants from exposed areas of the site are:

- Silt fence
- Inlet Protection
- Stabilized Construction Entrance/Exit
- Construction Staging Area
- Concrete Truck Washout Pit
- Rock Berm

For the majority of the disturbed soil within the limits of this project, silt fence will capture and hold sediment laden runoff.

Placement of these structure practices within the floodplain will be avoided.

FILE LOCATION: Z:\PROJECTS\QUIKTRIP\4183 - 195 & Shell Road, Georgetown\Design Plans\C... Plans\62-4183 Civil.dwg TAB NAME: Post dev Map USER: Cramsey SAVER: 2/28/2023 5:20 PM PLOTTED: 2/28/2023 5:23 PM



STORM SEWER GENERAL NOTES
STORM SEWER INSTALLATION CONSIDERATIONS
 PRIOR TO THE CONSTRUCTION OF, OR CONNECTION TO ANY STORM DRAIN OR ANY OTHER ELEVATION SENSITIVE UTILITY, THE CONTRACTOR SHALL EXCAVATE, VERIFY AND CALCULATE ALL POINTS OF CONNECTIONS AND ALL UTILITY CROSSINGS. THE CONTRACTOR SHALL INFORM THE ENGINEER AND THE OWNER OF ANY CONFLICT OR REQUIRED DEVIATIONS FROM THE PLAN. THE ENGINEER AND OWNER WILL BE HELD HARMLESS IN THE EVENT THE ENGINEER AND OWNER ARE NOT NOTIFIED OF A DESIGN CONFLICT.

LEGEND

- WATERSHED BOUNDARY
- EXISTING 5' CONTOUR
- EXISTING 1' CONTOUR
- TIME OF CONCENTRATION
- SLOPE ARROW
- COMPUTATION POINT
- WATERSHED IDENTIFICATION
- WATERSHED AREA (AC)

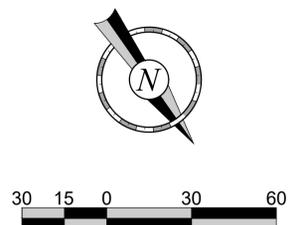
STATE OF TEXAS
 JOSHUA VALENTA
 114592
 LICENSED PROFESSIONAL ENGINEER
 1/6/2015
 PROJECT NO.: 4183.01
MATKINHOOPER
 ENGINEERING & SURVEYING
 8 SPENCER ROAD, SUITE 100
 BUREAU, TEXAS 76008
 CONTACT: JVA@MATKINHOOPER.COM
 TEXAS REGISTERED ENGINEERING FIRM
 F-00492 SURVEYING FIRM F-0084900

QuikTrip No. 4183
 3930 SHELL ROAD
 GEORGETOWN, TX

QT
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 PROTOTYPE: P-110 (05/01/22)
 DIVISION: 82
 VERSION: 001
 DESIGNED BY: C. WOOD
 DRAWN BY: CWR
 REVIEWED BY: JJV

REV	DATE	DESCRIPTION

SHEET TITLE:
 POST-DEVELOPMENT WATERSHED MAP
 SHEET NUMBER:
C122
 32 OF 92



CITY OF GEORGETOWN PROJECT NO.: 2021-39-SDP

FILE LOCATION: Z:\PROJECTS\QUICKTRIP\4183 - QuikTrip Store 4183 - 195 & Shell Road, Georgetown\Design Plans\C... Plans\62-4183 Civil.dwg TAB NAME: General Notes USER: Cramsey SAVED: 2/28/2023 5:20 PM PLOTTED: 2/28/2023 5:23 PM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

EXISTING CONDITIONS - MASTER DRAINAGE ANALYSIS CALCULATIONS (SCS Method) - City of Georgetown, Texas																							
Governing References:		City of Georgetown Drainage and Erosion Control Design Manual, 2004		Manning's: Table 4-2	24-hr P2= 4.20	Travel Time: eq. 4-3; TC = 1.00 L + Tch	Average Velocity: eq. 4-4; Tc = 1.00 L + Tch	Travel Time: eq. 4-5	Travel Time: eq. 4-8	eq. 4-3; TC = 1.00 L + Tch	eq. 4-9; Tlag = 0.61c	DESIGN STORM ANALYSIS METHODOLOGY SCS Method for drainage areas with detention; Flow rates calculated using HEC-HMS 4.8											
WATERSHEDS				OVERLAND FLOW				SHALLOW CONCENTRATED FLOW				CHANNEL				LAG TIME				Peak Flow; Q (c.f.s.) PER FREQUENCY STORM			
COMP. POINT	CONTRIBUTING AREAS	AREA ACREAGE (Ac.)	CN	n	L (ft)	s (%)	Tsh (min)	PAVED (Y/N)	L (ft)	s (%)	vel. (ft/s)	Tsc (min)	L (ft)	s (%)	vel. (ft/s)	Tch (min)	TC (Min)	Tlag (Min)	2	10	25	100	
CP-1	WS-A	4.655	80	0.130	100	1.0%	10.1	N	538	1.8%	1.0	4.1				N/A	14	8.4	8.1	13.2	16.9	36.1	

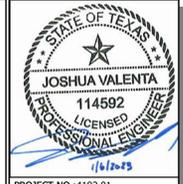
PROPOSED CONDITIONS - MASTER DRAINAGE ANALYSIS CALCULATIONS (SCS Method) - City of Georgetown, Texas																							
Governing References:		City of Georgetown Drainage and Erosion Control Design Manual, 2004		Manning's: Table 4-2	24-hr P2= 4.20	Travel Time: eq. 4-3; TC = 1.00 L + Tch	Average Velocity: eq. 4-4; Tc = 1.00 L + Tch	Travel Time: eq. 4-5	Travel Time: eq. 4-8	eq. 4-3; TC = 1.00 L + Tch	eq. 4-9; Tlag = 0.61c	DESIGN STORM ANALYSIS METHODOLOGY SCS Method for drainage areas with detention; Flow rates calculated using HEC-HMS 4.8											
WATERSHEDS				OVERLAND FLOW				SHALLOW CONCENTRATED FLOW				CHANNEL				LAG TIME				Peak Flow; Q (c.f.s.) PER FREQUENCY STORM			
COMP. POINT	CONTRIBUTING AREAS	AREA ACREAGE (Ac.)	CN	n	L (ft)	s (%)	Tsh (min)	PAVED (Y/N)	L (ft)	s (%)	vel. (ft/s)	Tsc (min)	L (ft)	s (%)	vel. (ft/s)	Tch (min)	TC (Min)	Tlag (Min)	2	10	25	100	
CP-1	WS-A.1 WS-A.2	4.655	93	0.011	100	1.0%	1.4	Y	700	1.0%	5.0	5.7				N/A	7	4.2	5.8	9.3	14.3	27.8	

PROPOSED CN CALCULATION TABLE (SOIL GROUP D)				
WS-A.1	WS-A.2	4.66	AC	100%
IMPERVIOUS (70% Entire Site)		3.259	AC	70%
PERVIOUS		1.40	AC	30%
PAVEMENT CN=				98
GOOD GRASS CN=				80
CALCULATED CN =				93

PROPOSED CONDITIONS (NO DETENTION) - MASTER DRAINAGE ANALYSIS CALCULATIONS (SCS Method) - City of Georgetown, Texas																							
Governing References:		City of Georgetown Drainage and Erosion Control Design Manual, 2004		Manning's: Table 4-2	24-hr P2= 4.20	Travel Time: eq. 4-3; TC = 1.00 L + Tch	Average Velocity: eq. 4-4; Tc = 1.00 L + Tch	Travel Time: eq. 4-5	Travel Time: eq. 4-8	eq. 4-3; TC = 1.00 L + Tch	eq. 4-9; Tlag = 0.61c	DESIGN STORM ANALYSIS METHODOLOGY SCS Method for drainage areas with detention; Flow rates calculated using HEC-HMS 4.8											
WATERSHEDS				OVERLAND FLOW				SHALLOW CONCENTRATED FLOW				CHANNEL				LAG TIME				Peak Flow; Q (c.f.s.) PER FREQUENCY STORM			
COMP. POINT	CONTRIBUTING AREAS	AREA ACREAGE (Ac.)	CN	n	L (ft)	s (%)	Tsh (min)	PAVED (Y/N)	L (ft)	s (%)	vel. (ft/s)	Tsc (min)	L (ft)	s (%)	vel. (ft/s)	Tch (min)	TC (Min)	Tlag (Min)	2	10	25	100	
CP-1.1	WS-A.1 WS-A.2	4.655	0.011	100	1.0%	1.4	Y	700	1.0%	5.0	5.7					N/A	7	4.2	17.2	17.5	21.4	52.5	

Predevelopment v. Post-Development (NRCS Unit Hydrograph Method)					
		Storm Event Frequency			
		2-year (cfs)	10-year (cfs)	25-year (cfs)	100-year (cfs)
WS-A (CP-1)	Predevelopment	8.1	13.2	16.9	36.1
	Post-Development without Detention	17.2	17.5	21.4	52.5
	Post-Development with Detention	5.8	9.3	14.3	27.8
	Difference (w/o Det)	9.1	4.3	4.5	16.4
	Percent Change	112.3%	32.6%	26.6%	45.4%
WS-A (CP-1)	Predevelopment	8.1	13.2	16.9	36.1
	Post-Development without Detention	17.2	17.5	21.4	52.5
	Post-Development with Detention	5.8	9.3	14.3	27.8
	Difference (w Det)	-2.3	-3.9	-2.6	-8.3
	Percent Change	-28.4%	-29.5%	-15.4%	-23.0%

MASTER DRAINAGE ANALYSIS CALCULATIONS (Rational Method) - City of Georgetown, Texas																							
Governing References:		City of Georgetown; Drainage Design Manual, 2004		Manning's: Table 2-4	24-hr P2= 4.20	Travel Time: eq. 2-2; TC = 1.00 L + Tch	Average Velocity: eq. 2-3; Tc = 1.00 L + Tch	Travel Time: eq. 2-4	Section 2.2.2; TC = 1.00 L + Tch	DESIGN STORM ANALYSIS METHODOLOGY Rational Method (Q = C*I*A) for Drainage areas less than 200 acres;													
WATERSHEDS				OVERLAND FLOW				SHALLOW CONCENTRATED FLOW				CHANNEL				LAG TIME				Peak Flow; Q (c.f.s.) PER FREQUENCY STORM			
COMP. POINT	CONTRIBUTING AREAS	AREA ACREAGE (Ac.)	CN	n	L (ft)	s (%)	Tsh (min)	PAVED (Y/N)	L (ft)	s (%)	vel. (ft/s)	Tsc (min)	L (ft)	s (%)	vel. (ft/s)	Tch (min)	TC (Min)	Tlag (Min)	2	5	25	100	
1	WS-1	0.122	0.011				N/A	Y				N/A				N/A	5		0.8	0.9	1.2	1.4	
Building																Rainfall Intensity (I):	6.479	7.680	9.839	11.880			
																Runoff Coefficient (C):	0.97	0.97	0.97	0.97			
2	WS-2	0.046	0.011				N/A	Y				N/A				N/A	5		0.3	0.3	0.4	0.5	
TC Canopy																Rainfall Intensity (I):	6.479	7.680	9.839	11.880			
																Runoff Coefficient (C):	0.97	0.97	0.97	0.97			
3	WS-3	0.154	0.011				N/A	Y				N/A				N/A	5		1.0	1.1	1.5	1.8	
Auto Canopy																Rainfall Intensity (I):	6.479	7.680	9.839	11.880			
																Runoff Coefficient (C):	0.97	0.97	0.97	0.97			
4	WS-4	0.699	0.011				N/A	Y				N/A				N/A	5		4.4	5.2	6.7	8.1	
MH-D02																Rainfall Intensity (I):	6.479	7.680	9.839	11.880			
																Runoff Coefficient (C):	0.97	0.97	0.97	0.97			
5	WS-5	0.248	0.011				N/A	Y				N/A				N/A	5		1.6	1.8	2.4	2.9	
CI-A03																Rainfall Intensity (I):	6.479	7.680	9.839	11.880			
																Runoff Coefficient (C):	0.97	0.97	0.97	0.97			
6	WS-6	0.690	0.011				N/A	Y				N/A				N/A	5		4.3	5.1	6.6	8.0	
CI-B01																Rainfall Intensity (I):	6.479	7.680	9.839	11.880			
																Runoff Coefficient (C):	0.97	0.97	0.97	0.97			
7	WS-7	0.663	0.011				N/A	Y				N/A				N/A	5		4.2	4.9	6.3	7.6	
CI-B02																Rainfall Intensity (I):	6.479	7.680	9.839	11.880			
																Runoff Coefficient (C):	0.97	0.97	0.97	0.97			
8	WS-8	0.441	0.011				N/A	Y				N/A				N/A	5		2.8	3.3	4.2	5.1	
CI-D02																Rainfall Intensity (I):	6.479	7.680	9.839	11.880			
																Runoff Coefficient (C):	0.97	0.97	0.97	0.97			



PROJECT NO.: 4183.01
MATKINHOOPER
 ENGINEERING & SURVEYING
 8 SPENCER ROAD, SUITE 100
 BOJONE, TEXAS 76008
 CONTACT: @MATKINHOOPER.COM
 TEXAS REGISTERED ENGINEERING FIRM
 P-004676 SURVEYING FIRM P-004600

QuikTrip No. 4183
 3930 SHELL ROAD
 GEORGETOWN, TX



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PROTOTYPE: P-110 (05/01/22)
 DIVISION: 82
 VERSION: 001
 DESIGNED BY: C. WOOD
 DRAWN BY: CWR
 REVIEWED BY: JJV

REV	DATE	DESCRIPTION

SHEET TITLE:
 TIME OF CONCENTRATION
 CALCULATIONS

SHEET NUMBER:
C123
 31 OF 92

Designated and qualified person(s) shall inspect Pollution Control Measures every seven days and within 24 hours after a storm event. An inspection report that summarized the scope of the inspection, names and qualifications of personnel conducting the inspection, date of inspection, major observations, and actions taken as a result of the inspection shall be recorded and maintained as part of the Storm Water T.P.D.E.S. Plan. A copy of the inspection report form is provided as page 2 of this attachment. Inspection and Maintenance Guidelines are as follows:

Construction Entrance:

- (1) The entrance should be maintained in a condition, which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment.
- (2) All sediment spilled, dropped, washed or tracked onto public rights-of-way should be removed immediately by contractor.
- (3) When necessary, wheels should be cleaned to remove sediment prior to entrance onto public right-of-way.
- (4) When washing is required, it should be done on an area stabilized with crushed stone that drains into an approved sediment trap or sediment basin.
- (5) All sediment should be prevented from entering any storm drain, ditch or water course by using approved methods.

Inlet Protection:

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

Silt Fence:

- (1) Inspect all fencing weekly, and after any rainfall.
- (2) Remove sediment when buildup reaches 6 inches.
- (3) Replace any torn fabric or install a second line of fencing parallel to the torn section.
- (4) Replace or repair any sections crushed or collapsed in the course of construction activity. If a section of fence is obstructing vehicular access, consider relocating it to a spot where it will provide equal protection, but will not obstruct vehicles. A triangular filter dike may be preferable to a silt fence at common vehicle access points.
- (5) When construction is complete, the sediment should be disposed of in a manner that will not cause additional siltation and the prior location of the silt fence should be revegetated. The fence itself should be disposed of in an approved landfill.

QUIKTRIP 4183
INSPECTION AND MAINTENANCE FOR BMPs (ATTACHMENT I)

Temporary/Permanent Vegetation:

- (1) Permanent vegetation should be inspected weekly and after each rain event to locate and repair any erosion.
- (2) Erosion from storms or other damage should be repaired as soon as practical by regrading the area and applying new seed.
- (3) If the vegetated cover is less than 80%, the area should be reseeded.

Rock Berm:

- (1) Inspection should be made weekly and after each rainfall by the responsible party. For installations in streambeds, additional daily inspections should be made.
- (2) Remove sediment and other debris when buildup reaches 6 inches and dispose of the accumulated silt in an approved manner that will not cause any additional siltation.
- (3) Repair any loose wire sheathing.
- (4) The berm should be reshaped as needed during inspection.
- (5) The berm should be replaced when the structure ceases to function as intended due to silt accumulation among the rocks, washout, construction traffic damage, etc.
- (6) The rock berm should be left in place until all upstream areas are stabilized and accumulated silt removed.

INSPECTION REPORT

Approved Inspection intervals:

- i. Conducted once every 7 days AND within 24 hours after rainfall event greater than 0.5 inch

PROJECT NAME _____
REPORT # _____ DATE _____
INSPECTOR _____ TITLE _____
REASON FOR INSPECTION (CHECK ONE) Weekly _____ Or ½” Rain _____
DATE OF LAST RAINFALL _____ AMOUNT _____

SITE CONDITIONS:

EROSION AND SEDIMENTATION CONTROLS	IN CONFORMANCE	EFFECTIVE
Concrete Washout Area	Yes/No/Na	Yes/No
Construction Entrance	Yes/No/Na	Yes/No
Permanent Vegetation	Yes/No/Na	Yes/No
Silt Fence	Yes/No/Na	Yes/No
Rock Berm	Yes/No/Na	Yes/No
Inlet Protection	Yes/No/Na	Yes/No

RECOMMENDED REMEDIAL ACTIONS:

COMMENTS:

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

INSPECTOR: _____ DATE: _____

Soil stabilization practices will be used to reduce the amount of erosion from the site. Only the areas essential for immediate construction should be cleared. This will keep a buffer zone around the area of construction as these areas will remain undisturbed until construction begins there.

Interim soil stabilization areas are determined in the field. Temporary vegetation will be used as an aid to control erosion on critical sites during establishment period of protective vegetation when construction is temporarily ceased.

Permanent soil stabilization areas are indicated on the included Site Plan. Permanent seeding will take place in these areas when construction is permanently ceased.

Stabilization practices should be installed according to the following rules:

- Stabilization measures shall be initiated as soon as practical in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased.
- Where the initiation of stabilization measures by the 14th day after construction activity temporarily or permanently ceased is precluded by weather conditions, stabilization measures shall be initiated as soon as practical.
- In areas experiencing droughts where the initiation of stabilization measure by the 14th day after construction activity has temporarily or permanently ceased is precluded by seasonal arid conditions, stabilization measures shall be initiated as soon as practical.
- Bare soils should be seeded or otherwise stabilized within 14 calendar days after final grading or where construction activity has temporarily ceased for more than 21 days.

QuikTrip Store #4183
SCS Application

Section 6 – Agent Authorization Form

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

I Wesley Wright
Print Name

SYSTEMS ENGINEERING DIRECTOR
Title - Owner/President/Other

of _____
City of Georgetown
Corporation/Partnership/Entity Name

have authorized Garrett Keller
Print Name of Agent/Engineer

of _____
Matkin Hoover Engineering
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:

[Signature]
Applicant's Signature

01/10/23
Date

THE STATE OF TEXAS §
County of WILLIAMSON §

BEFORE ME, the undersigned authority, on this day personally appeared WESLEY WRIGHT 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 10 day of JANUARY, 2023.

[Signature]
NOTARY PUBLIC

SHEILA K. MITCHELL
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 11-10-2025



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

I _____ Kyla Rudd _____
Print Name

_____ Environmental Project Manager _____
Title - Owner/President/Other

of _____ QT South, LLC _____
Corporation/Partnership/Entity Name

have authorized _____ Garrett Keller _____
Print Name of Agent/Engineer

of _____ Matkin Hoover Engineering _____
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:

Kyle Rudd
Applicant's Signature

1/16/2023
Date

THE STATE OF Oklahoma §

County of Tulsa §

BEFORE ME, the undersigned authority, on this day personally appeared Kyla Rudd 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 16 day of January, 2023.



Paige Hefflin
NOTARY PUBLIC

Paige Hefflin
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 11/06/24

QuikTrip Store #4183
SCS Application

Section 7 – Application Fee

Application Fee Form

Texas Commission on Environmental Quality

Name of Proposed Regulated Entity: QuikTrip Store #4183

Regulated Entity Location: 3920 Shell Rd, Georgetown

Name of Customer: QT South, LLC

Contact Person: Kyla Rudd

Phone: 918-615-7700

Customer Reference Number (if issued): CN 605786011

Regulated Entity Reference Number (if issued): RN 111592622

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

Type of Plan	Size	Fee Due
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	\$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	Acres	\$
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	Acres	\$
Sewage Collection System	1468 L.F.	\$ 734
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: _____

Kyla Rudd
2/22/23

Date: _____

Application Fee Schedule

Texas Commission on Environmental Quality

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

Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

Project	Project Area in Acres	Fee
One Single Family Residential Dwelling	< 5	\$650
Multiple Single Family Residential and Parks	< 5	\$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

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

Underground and Aboveground Storage Tank System Facility Plans and Modifications

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

Exception Requests

Project	Fee
Exception Request	\$500

Extension of Time Requests

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

QuikTrip Store #4183
SCS Application

Section 9 – TCEQ Core Data Form



TCEQ Core Data Form

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

SECTION I: General Information

1. Reason for Submission (If other is checked please describe in space provided.)		
<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 605786011		RN 111592622

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 Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)		<input type="checkbox"/> Change in Regulated Entity Ownership	
The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).			
6. Customer Legal Name (If an individual, print last name first: eg: Doe, John)		If new Customer, enter previous Customer below:	
QUIKTRIP CORPORATION			
7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number (if applicable)
12299906	17306753751	73-0675375	
11. Type of Customer:	<input checked="" type="checkbox"/> Corporation	<input type="checkbox"/> Individual	Partnership: <input type="checkbox"/> General <input type="checkbox"/> Limited
Government: <input type="checkbox"/> City <input type="checkbox"/> County <input type="checkbox"/> Federal <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 type="checkbox"/> 0-20 <input type="checkbox"/> 21-100 <input type="checkbox"/> 101-250 <input type="checkbox"/> 251-500 <input checked="" 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 type="checkbox"/> Owner		<input type="checkbox"/> Operator	
<input type="checkbox"/> Occupational Licensee		<input checked="" type="checkbox"/> Owner & Operator	
<input type="checkbox"/> Responsible Party		<input type="checkbox"/> Voluntary Cleanup Applicant	
<input type="checkbox"/> Other:			
15. Mailing Address:	QT South, LLC		
	4705 SOUTH 129TH EAST AVENUE		
	City	TUSLA	State OK ZIP 74134 ZIP + 4
16. Country Mailing Information (if outside USA)		17. E-Mail Address (if applicable)	
		krudd@quiktrip.com	
18. Telephone Number	19. Extension or Code	20. Fax Number (if applicable)	
(918) 615-7233		() -	

SECTION III: Regulated Entity Information

21. General Regulated Entity Information (If 'New Regulated Entity' is selected below this form should be accompanied by a permit application)	
<input type="checkbox"/> New Regulated Entity <input type="checkbox"/> Update to Regulated Entity Name <input checked="" type="checkbox"/> Update to Regulated Entity Information	
The Regulated Entity Name submitted may be updated in order to meet TCEQ Agency Data Standards (removal of organizational endings such as Inc, LP, or LLC.)	
22. Regulated Entity Name (Enter name of the site where the regulated action is taking place.)	

23. Street Address of the Regulated Entity: <i>(No PO Boxes)</i>	QUIKTRIP 4183							
	3930 SHELL RD.							
24. County	City	GEORGETOWN	State	TX	ZIP	78628	ZIP + 4	9249

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:								
26. Nearest City						State	Nearest ZIP Code	
27. Latitude (N) In Decimal:				28. Longitude (W) In Decimal:				
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds			
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)			
5541			447110					
33. What is the Primary Business of this entity? <i>(Do not repeat the SIC or NAICS description.)</i>								
Gas Station with convenience store								
34. Mailing Address:	4705 SOUTH 129 th EAST AVENUE							
	City	TULSA	State	OK	ZIP	74134	ZIP + 4	
35. E-Mail Address:		krudd@quiktrip.com						
36. Telephone Number			37. Extension or Code		38. Fax Number <i>(if applicable)</i>			
(918) 615-7233					() -			

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"/> Waste Water	<input type="checkbox"/> Wastewater Agriculture	<input type="checkbox"/> Water Rights	<input type="checkbox"/> Other:

SECTION IV: Preparer Information

40. Name:	Garrett D Keller	41. Title:	President & COO
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(830) 249-0600		() -	gkeller@matkinhoover.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:	Matkin Hoover Engineering and Surveying	Job Title:	President & COO
Name <i>(In Print)</i> :	Garrett D. Keller	Phone:	(830) 249-0600
Signature:		Date:	4/14/23