

Water for a Better Life  
Since 1963

# GREEN VALLEY SPECIAL UTILITY DISTRICT

## CLEARWATER CREEK WASTEWATER TREATMENT FACILITY

### TCEQ DOMESTIC WASTEWATER DISCHARGE PERMIT REQUEST

Owner:  
Green Valley Special Utility District  
P.O. Box 99  
Marion, Texas 78124

**July 2020**



**UTILITY ENGINEERING GROUP**

**Prepared By:**  
Utility Engineering Group, PLLC  
191 N. Union Avenue  
New Braunfels, Texas 78130  
Texas Firm No. 18712  
Phone: (830) 214-0521



*G. Montgomery*



July 28, 2020

Executive Director  
Texas Commission on Environmental Quality  
Applications Review and Processing Team (MC148)  
Building F, Room 2101  
12100 Park 35 Circle  
Austin, Texas 78753

**Re: Permit Application Summary Letter  
Clearwater Creek Wastewater Treatment Plant**

Executive Director,

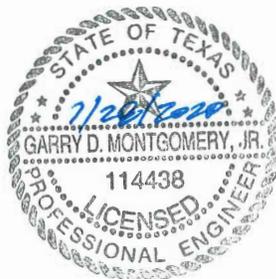
Green Valley Special Utility District (GVSUD) is seeking to obtain a Texas Pollutant Discharge Elimination System (TPDES) permit for the Clearwater Creek Wastewater Treatment Facility.

The proposed Clearwater Creek Wastewater Treatment Plant site is located at 14738 Beyer Path in Bexar County, Texas 78124. GVSUD seeks authorization to dispose of effluent at an average daily flow not to exceed 0.4 million gallons per day (MGD) to Womans Hollow Creek; thence to Martinez Creek in Segment No. 1902A of the San Antonio River Basin.

One original and three copies of the complete permit application are attached. If you have any further questions or need additional information, please do not hesitate to contact us.

Sincerely,

Garry Montgomery, P.E.  
Project Manager  
Utility Engineering Group, PLLC



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Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

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# **DOMESTIC ADMINISTRATIVE REPORT**

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**TEXAS COMMISSION ON ENVIRONMENTAL QUALITY**  
**DOMESTIC WASTEWATER PERMIT APPLICATION**  
**CHECKLIST**

Complete and submit this checklist with the application.

APPLICANT: Green Valley Special Utility District

PERMIT NUMBER:

Indicate if each of the following items is included in your application.

	<b>Y</b>	<b>N</b>		<b>Y</b>	<b>N</b>
Administrative Report 1.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Original USGS Map	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Administrative Report 1.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Affected Landowners Map	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SPIF	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Landowner Disk or Labels	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Core Data Form	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Buffer Zone Map	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Technical Report 1.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Flow Diagram	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Technical Report 1.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Site Drawing	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Worksheet 2.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Original Photographs	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Worksheet 2.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Design Calculations	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Worksheet 3.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Solids Management Plan	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Worksheet 3.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Water Balance	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Worksheet 3.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Worksheet 3.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Worksheet 4.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Worksheet 5.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Worksheet 6.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Worksheet 7.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>			

**For TCEQ Use Only**

Segment Number \_\_\_\_\_ County \_\_\_\_\_  
 Expiration Date \_\_\_\_\_ Region \_\_\_\_\_  
 Permit Number \_\_\_\_\_



**TEXAS COMMISSION ON ENVIRONMENTAL QUALITY**  
**APPLICATION FOR A DOMESTIC WASTEWATER PERMIT**  
**ADMINISTRATIVE REPORT 1.0**

If you have questions about completing this form please contact the Applications Review and Processing Team at 512-239-4671.

**Section 1. Application Fees (Instructions Page 29)**

Indicate the amount submitted for the application fee (check only one).

Flow	New/Major Amendment	Renewal
<0.05 MGD	\$350.00 <input type="checkbox"/>	\$315.00 <input type="checkbox"/>
≥0.05 but <0.10 MGD	\$550.00 <input type="checkbox"/>	\$515.00 <input type="checkbox"/>
≥0.10 but <0.25 MGD	\$850.00 <input type="checkbox"/>	\$815.00 <input type="checkbox"/>
≥0.25 but <0.50 MGD	\$1,250.00 <input checked="" type="checkbox"/>	\$1,215.00 <input type="checkbox"/>
≥0.50 but <1.0 MGD	\$1,650.00 <input type="checkbox"/>	\$1,615.00 <input type="checkbox"/>
≥1.0 MGD	\$2,050.00 <input type="checkbox"/>	\$2,015.00 <input type="checkbox"/>

Minor Amendment (for any flow) \$150.00

**Payment Information:**

Mailed      Check/Money Order Number:   
Check/Money Order Amount:   
Name Printed on Check:   
EPAY      Voucher Number: 472069, 472070  
Copy of Payment Voucher enclosed?      Yes

**Section 2. Type of Application (Instructions Page 29)**

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> New TPDES                   | <input type="checkbox"/> New TLAP                               |
| <input type="checkbox"/> Major Amendment <u>with</u> Renewal    | <input type="checkbox"/> Minor Amendment <u>with</u> Renewal    |
| <input type="checkbox"/> Major Amendment <u>without</u> Renewal | <input type="checkbox"/> Minor Amendment <u>without</u> Renewal |
| <input type="checkbox"/> Renewal without changes                | <input type="checkbox"/> Minor Modification of permit           |

For amendments or modifications, describe the proposed changes:

**For existing permits:**

Permit Number: WQ00  
EPA I.D. (TPDES only): TX

Expiration Date: [REDACTED]

### Section 3. Facility Owner (Applicant) and Co-Applicant Information (Instructions Page 29)

**A. The owner of the facility must apply for the permit.**

What is the Legal Name of the entity (applicant) applying for this permit?

Green Valley Special Utility District

*(The legal name must be spelled exactly as filed with the Texas Secretary of State, County, or in the legal documents forming the entity.)*

If the applicant is currently a customer with the TCEQ, what is the Customer Number (CN)? You may search for your CN on the TCEQ website at <http://www15.tceq.texas.gov/crpub/>

CN: CN600684294

What is the name and title of the person signing the application? The person must be an executive official meeting signatory requirements in 30 TAC § 305.44.

Prefix (Mr., Ms., Miss): Ms.

First and Last Name: Jill Zipp Bennett

Credential (P.E, P.G., Ph.D., etc.): [REDACTED]

Title: President

**B. Co-applicant information.** Complete this section only if another person or entity is required to apply as a co-permittee.

What is the Legal Name of the co-applicant applying for this permit?

N/A

*(The legal name must be spelled exactly as filed with the TX SOS, with the County, or in the legal documents forming the entity.)*

If the co-applicant is currently a customer with the TCEQ, what is the Customer Number (CN)? You may search for your CN on the TCEQ website at:

<http://www15.tceq.texas.gov/crpub/>

CN: [REDACTED]

What is the name and title of the person signing the application? The person must be an executive official meeting signatory requirements in 30 TAC § 305.44.

Prefix (Mr., Ms., Miss): [REDACTED]

First and Last Name: [REDACTED]

Credential (P.E, P.G., Ph.D., etc.): [REDACTED]

Title: [REDACTED]

Provide a brief description of the need for a co-permittee: [REDACTED]

**C. Core Data Form**

Complete the Core Data Form for each customer and include as an attachment. If the customer type selected on the Core Data Form is **Individual**, complete **Attachment 1** of Administrative Report 1.0.

**Attachment:** K

**Section 4. Application Contact Information (Instructions Page 30)**

This is the person(s) TCEQ will contact if additional information is needed about this application. Provide a contact for administrative questions and technical questions.

**A. Prefix (Mr., Ms., Miss):** Mr.

First and Last Name: Pat Allen

Credential (P.E, P.G., Ph.D., etc.): [REDACTED]

Title: General Manager

Organization Name: Green Valley Special Utility District

Mailing Address: P.O. Box 99

City, State, Zip Code: Marion, TX, 78124

Phone No.: (830) 914-2330 Ext.: [REDACTED] Fax No.: (830) 420-4138

E-mail Address: pallen@gvsud.org

Check one or both:  Administrative Contact  Technical Contact

**B. Prefix (Mr., Ms., Miss):** Mr.

First and Last Name: Garry Montgomery

Credential (P.E, P.G., Ph.D., etc.): P.E.

Title: Principal & Project Manager

Organization Name: Utility Engineering Group, PLLC

Mailing Address: 191 N Union Avenue

City, State, Zip Code: New Braunfels, TX, 78130

Phone No.: (830) 214-0521 Ext.: [REDACTED] Fax No.: [REDACTED]

E-mail Address: garrym@uegpros.com

Check one or both:  Administrative Contact  Technical Contact

**Section 5. Permit Contact Information (Instructions Page 30)**

Provide two names of individuals that can be contacted throughout the permit term.

**A. Prefix (Mr., Ms., Miss):** Mr.

First and Last Name: Pat Allen

Credential (P.E, P.G., Ph.D., etc.): [REDACTED]

Title: General Manager  
Organization Name: Green Valley Special Utility District  
Mailing Address: P.O. Box 99  
City, State, Zip Code: Marion, TX, 78124  
Phone No.: (830) 914-2330 Ext.: [REDACTED] Fax No.: (830) 420-4138  
E-mail Address: pallen@gvsud.org

**B. Prefix (Mr., Ms., Miss): Mr**

First and Last Name: Garry Montgomery  
Credential (P.E, P.G., Ph.D., etc.): P.E.  
Title: Principal & Project Manager  
Organization Name: Utility Engineering Group, PLLC  
Mailing Address: 191 N Union Avenue  
City, State, Zip Code: New Braunfels, TX, 78130  
Phone No.: (830) 214-0521 Ext.: [REDACTED] Fax No.: [REDACTED]  
E-mail Address: garrym@uegpros.com

**Section 6. Billing Information (Instructions Page 30)**

The permittee is responsible for paying the annual fee. The annual fee will be assessed to permits ***in effect on September 1 of each year***. The TCEQ will send a bill to the address provided in this section. The permittee is responsible for terminating the permit when it is no longer needed (using form TCEQ-20029).

Prefix (Mr., Ms., Miss): Mr.  
First and Last Name: Pat Allen  
Credential (P.E, P.G., Ph.D., etc.): [REDACTED]  
Title: General Manager  
Organization Name: Green Valley Special Utility District  
Mailing Address: P.O. Box 99  
City, State, Zip Code: Marion, Texas, 78124  
Phone No.: (830) 914-2330 Ext.: [REDACTED] Fax No.: (830) 420-4138  
E-mail Address: pallen@gvsud.org

**Section 7. DMR/MER Contact Information (Instructions Page 31)**

Provide the name and complete mailing address of the person delegated to receive and submit Discharge Monitoring Reports (EPA 3320-1) or maintain Monthly Effluent Reports.

Prefix (Mr., Ms., Miss): Mr.  
First and Last Name: Zachary Willeford  
Credential (P.E, P.G., Ph.D., etc.): [REDACTED]

Title: Plant Operator/ Inspector

Organization Name: Green Valley Special Utility District

Mailing Address: P.O. Box 99

City, State, Zip Code: Marion, TX, 78124

Phone No.: (830) 499-3624 Ext.: [REDACTED]

Fax No.: [REDACTED]

E-mail Address: zwille@gvsud.org

DMR data is required to be submitted electronically. Create an account at:

<https://www.tceq.texas.gov/permitting/netdmr/netdmr.html>.

## Section 8. Public Notice Information (Instructions Page 31)

### A. Individual Publishing the Notices

Prefix (Mr., Ms., Miss): Mr.

First and Last Name: Pat Allen

Credential (P.E, P.G., Ph.D., etc.): [REDACTED]

Title: General Manager

Organization Name: Green Valley Special Utility District

Mailing Address: P.O. Box 99

City, State, Zip Code: Marion, TX, 78124

Phone No.: (830) 914-2330 Ext.: [REDACTED]

Fax No.: (830) 420-4138

E-mail Address: pallen@gvsud.org

### B. Method for Receiving Notice of Receipt and Intent to Obtain a Water Quality Permit Package

Indicate by a check mark the preferred method for receiving the first notice and instructions:

E-mail Address

Fax

Regular Mail

### C. Contact person to be listed in the Notices

Prefix (Mr., Ms., Miss): Mr.

First and Last Name: Pat Allen

Credential (P.E, P.G., Ph.D., etc.): [REDACTED]

Title: General Manager

Organization Name: Green Valley Special Utility District

Phone No.: (830) 914-2330 Ext.: [REDACTED]

E-mail: [pallen@gvsud.org](mailto:pallen@gvsud.org)

**D. Public Viewing Information**

*If the facility or outfall is located in more than one county, a public viewing place for each county must be provided.*

Public building name: St Hedwig City Office

Location within the building: Lobby

Physical Address of Building: 14290 FM 1346

City: St Hedwig County: Bexar

Contact Name: Pat Allen

Phone No.: (830) 914-2330 Ext.:

**E. Bilingual Notice Requirements:**

This information **is required** for **new, major amendment, and renewal applications**. It is not required for minor amendment or minor modification applications.

This section of the application is only used to determine if alternative language notices will be needed. Complete instructions on publishing the alternative language notices will be in your public notice package.

Please call the bilingual/ESL coordinator at the nearest elementary and middle schools and obtain the following information to determine whether an alternative language notices are required.

1. Is a bilingual education program required by the Texas Education Code at the elementary or middle school nearest to the facility or proposed facility?

Yes       No

If **no**, publication of an alternative language notice is not required; **skip to** Section 9 below.

2. Are the students who attend either the elementary school or the middle school enrolled in a bilingual education program at that school?

Yes       No

3. Do the students at these schools attend a bilingual education program at another location?

Yes       No

4. Would the school be required to provide a bilingual education program but the school has waived out of this requirement under 19 TAC §89.1205(g)?

Yes       No

5. If the answer is yes to question 1, 2, 3, or 4, public notices in an alternative language are required. Which language is required by the bilingual program? N/A

**Section 9. Regulated Entity and Permitted Site Information (Instructions Page 33)**

A. If the site is currently regulated by TCEQ, provide the Regulated Entity Number (RN) issued to this site. RN

Search the TCEQ's Central Registry at <http://www15.tceq.texas.gov/crpub/> to determine if the site is currently regulated by TCEQ.

B. Name of project or site (the name known by the community where located):

Clearwater Creek WWTP

C. Owner of treatment facility: Green Valley Special Utility District

Ownership of Facility:  Public  Private  Both  Federal

D. Owner of land where treatment facility is or will be:

Prefix (Mr., Ms., Miss): [REDACTED]

First and Last Name: Green Valley Special Utility District

Mailing Address: PO BOX 99

City, State, Zip Code: Marion, TX 78124

Phone No.: (830) 914-2330

E-mail Address: pallen@gvsud.org

If the landowner is not the same person as the facility owner or co-applicant, attach a lease agreement or deed recorded easement. See instructions.

**Attachment:** [REDACTED]

E. Owner of effluent disposal site:

Prefix (Mr., Ms., Miss): [REDACTED]

First and Last Name: [REDACTED]

Mailing Address: [REDACTED]

City, State, Zip Code: [REDACTED]

Phone No.: [REDACTED] E-mail Address: [REDACTED]

If the landowner is not the same person as the facility owner or co-applicant, attach a lease agreement or deed recorded easement. See instructions.

**Attachment:** [REDACTED]

F. Owner of sewage sludge disposal site (if authorization is requested for sludge disposal on property owned or controlled by the applicant):

Prefix (Mr., Ms., Miss): [REDACTED]

First and Last Name: [REDACTED]

Mailing Address: [REDACTED]

City, State, Zip Code: [REDACTED]

Phone No.: [REDACTED] E-mail Address: [REDACTED]

If the landowner is not the same person as the facility owner or co-applicant, attach a lease agreement or deed recorded easement. See instructions.

Attachment: [REDACTED]

**Section 10. TPDES Discharge Information (Instructions Page 34)**

A. Is the wastewater treatment facility location in the existing permit accurate?

- Yes       No

If **no**, or a **new permit application**, please give an accurate description:

Located at 14738 Beyer Path, Marion, TX 78124

B. Are the point(s) of discharge and the discharge route(s) in the existing permit correct?

- Yes       No

If **no**, or a **new or amendment permit application**, provide an accurate description of the point of discharge and the discharge route to the nearest classified segment as defined in 30 TAC Chapter 307:

Discharges to Womans Hollow Creek; thence to Martinez Creek in Segment No. 1902A of the San Antonio River Basin.

City nearest the outfall(s): St. Hedwig

County in which the outfalls(s) is/are located: Bexar

Outfall Latitude: 29.4751

Longitude: -98.1906

C. Is or will the treated wastewater discharge to a city, county, or state highway right-of-way, or a flood control district drainage ditch?

- Yes       No

If **yes**, indicate by a check mark if:

- Authorization granted       Authorization pending

For **new and amendment** applications, provide copies of letters that show proof of contact and the approval letter upon receipt.

Attachment: [REDACTED]

D. For all applications involving an average daily discharge of 5 MGD or more, provide the names of all counties located within 100 statute miles downstream of the point(s) of discharge.

N/A

**Section 11. TLAP Disposal Information (Instructions Page 36)**

A. For TLAPs, is the location of the effluent disposal site in the existing permit accurate?

- Yes     No

If **no**, or a **new or amendment permit application**, provide an accurate description of the disposal site location:

N/A

B. City nearest the disposal site: N/A

C. County in which the disposal site is located: N/A

D. Disposal Site Latitude: N/A                      Longitude: N/A

E. For TLAPs, describe the routing of effluent from the treatment facility to the disposal site:

N/A

F. For TLAPs, please identify the nearest watercourse to the disposal site to which rainfall runoff might flow if not contained:

N/A

**Section 12. Miscellaneous Information (Instructions Page 37)**

A. Is the facility located on or does the treated effluent cross American Indian Land?

- Yes     No

B. If the existing permit contains an onsite sludge disposal authorization, is the location of the sewage sludge disposal site in the existing permit accurate?

- Yes     No     Not Applicable

If No, or if a new onsite sludge disposal authorization is being requested in this permit application, provide an accurate location description of the sewage sludge disposal site.

C. Did any person formerly employed by the TCEQ represent your company and get paid for service regarding this application?

Yes  No

If yes, list each person formerly employed by the TCEQ who represented your company and was paid for service regarding the application:

D. Do you owe any fees to the TCEQ?

Yes  No

If yes, provide the following information:

Account number:  Amount past due:

E. Do you owe any penalties to the TCEQ?

Yes  No

If yes, please provide the following information:

Enforcement order number:  Amount past due:

### Section 13. Attachments (Instructions Page 38)

Indicate which attachments are included with the Administrative Report. Check all that apply:

- Lease agreement or deed recorded easement, if the land where the treatment facility is located or the effluent disposal site are not owned by the applicant or co-applicant.
- Original full-size USGS Topographic Map with the following information:
  - Applicant's property boundary
  - Treatment facility boundary
  - Labeled point of discharge for each discharge point (TPDES only)
  - Highlighted discharge route for each discharge point (TPDES only)
  - Onsite sewage sludge disposal site (if applicable)
  - Effluent disposal site boundaries (TLAP only)
  - New and future construction (if applicable)
  - 1 mile radius information
  - 3 miles downstream information (TPDES only)
  - All ponds.
- Attachment 1 for Individuals as co-applicants
- Other Attachments. Please specify:

**Section 14. Signature Page (Instructions Page 39)**

*If co-applicants are necessary, each entity must submit an original, separate signature page.*

Permit Number:

Applicant: Green Valley Special Utility District

Certification:

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

I further certify that I am authorized under 30 Texas Administrative Code § 305.44 to sign and submit this document, and can provide documentation in proof of such authorization upon request.

Signatory name (typed or printed): Jill Zipp Bennett

Signatory title: President

Signature: Jill Zipp Bennett Date: 7/23/2020  
(Use blue ink)

Subscribed and Sworn to before me by the said Jill Zipp Bennett  
on this 23rd day of July, 2020.  
My commission expires on the 17th day of March, 2024.

Tracy S. Rappmund  
Notary Public

Guadalupe  
County, Texas



## DOMESTIC ADMINISTRATIVE REPORT 1.1

The following information is required for new and amendment applications.

### Section 1. Affected Landowner Information (Instructions Page 41)

- A. Indicate by a check mark that the landowners map or drawing, with scale, includes the following information, as applicable:
- The applicant's property boundaries
  - The facility site boundaries within the applicant's property boundaries
  - The distance the buffer zone falls into adjacent properties and the property boundaries of the landowners located within the buffer zone
  - The property boundaries of all landowners surrounding the applicant's property (Note: if the application is a major amendment for a lignite mine, the map must include the property boundaries of all landowners adjacent to the new facility (ponds).)
  - The point(s) of discharge and highlighted discharge route(s) clearly shown for one mile downstream
  - The property boundaries of the landowners located on both sides of the discharge route for one full stream mile downstream of the point of discharge
  - The property boundaries of the landowners along the watercourse for a one-half mile radius from the point of discharge if the point of discharge is into a lake, bay, estuary, or affected by tides
  - The boundaries of the effluent disposal site (for example, irrigation area or subsurface drainfield site) and all evaporation/holding ponds within the applicant's property
  - The property boundaries of all landowners surrounding the effluent disposal site
  - The boundaries of the sludge land application site (for land application of sewage sludge for beneficial use) and the property boundaries of landowners surrounding the applicant's property boundaries where the sewage sludge land application site is located
  - The property boundaries of landowners within one-half mile in all directions from the applicant's property boundaries where the sewage sludge disposal site (for example, sludge surface disposal site or sludge monofill) is located
- B.  Indicate by a check mark that a separate list with the landowners' names and mailing addresses cross-referenced to the landowner's map has been provided.
- C. Indicate by a check mark in which format the landowners list is submitted:
- Readable/Writeable CD
  - Four sets of labels
- D. Provide the source of the landowners' names and mailing addresses: Bexar County Appraisal District
- E. As required by *Texas Water Code § 5.115*, is any permanent school fund land affected by this application?
- Yes
  - No

If **yes**, provide the location and foreseeable impacts and effects this application has on the

land(s):

## Section 2. Original Photographs (Instructions Page 44)

Provide original ground level photographs. Indicate with checkmarks that the following information is provided.

- At least one original photograph of the new or expanded treatment unit location
- At least two photographs of the existing/proposed point of discharge and as much area downstream (photo 1) and upstream (photo 2) as can be captured. If the discharge is to an open water body (e.g., lake, bay), the point of discharge should be in the right or left edge of each photograph showing the open water and with as much area on each respective side of the discharge as can be captured.
- At least one photograph of the existing/proposed effluent disposal site
- A plot plan or map showing the location and direction of each photograph

## Section 3. Buffer Zone Map (Instructions Page 44)

A. Buffer zone map. Provide a buffer zone map on 8.5 x 11-inch paper with all of the following information. The applicant's property line and the buffer zone line may be distinguished by using dashes or symbols and appropriate labels.

- The applicant's property boundary;
- The required buffer zone; and
- Each treatment unit; and
- The distance from each treatment unit to the property boundaries.

B. Buffer zone compliance method. Indicate how the buffer zone requirements will be met. Check all that apply.

- Ownership
- Restrictive easement
- Nuisance odor control
- Variance

C. Unsuitable site characteristics. Does the facility comply with the requirements regarding unsuitable site characteristic found in 30 TAC § 309.13(a) through (d)?

- Yes       No

**TEXAS COMMISSION ON ENVIRONMENTAL QUALITY  
SUPPLEMENTAL PERMIT INFORMATION FORM (SPIF)**

**FOR AGENCIES REVIEWING DOMESTIC  
TPDES WASTEWATER PERMIT APPLICATIONS**

**TCEQ USE ONLY:**

Application type: \_\_\_Renewal \_\_\_Major Amendment \_\_\_Minor Amendment \_\_\_New

County: \_\_\_\_\_ Segment Number: \_\_\_\_\_

Admin Complete Date: \_\_\_\_\_

Agency Receiving SPIF:

\_\_\_ Texas Historical Commission

\_\_\_ U.S. Fish and Wildlife

\_\_\_ Texas Parks and Wildlife Department

\_\_\_ U.S. Army Corps of Engineers

**This form applies to TPDES permit applications only.** (Instructions, Page 53)

The SPIF must be completed as a separate document. The TCEQ will mail a copy of the SPIF to each agency as required by the TCEQ agreement with EPA. If any of the items are not completely addressed or further information is needed, you will be contacted to provide the information before the permit is issued. Each item must be completely addressed.

**Do not refer to a response of any item in the permit application form.** Each attachment must be provided with this form separately from the administrative report of the application. The application will not be declared administratively complete without this form being completed in its entirety including all attachments.

The following applies to all applications:

1. Permittee: Green Valley Special Utility District

Permit No. WQ00

EPA ID No. TX

Address of the project (or a location description that includes street/highway, city/vicinity, and county):

Located at 14738 Beyer Path, Marion, TX 78124

Provide the name, address, phone and fax number of an individual that can be contacted to answer specific questions about the property.

Prefix (Mr., Ms., Miss): Mr.

First and Last Name: Pat Allen

Credential (P.E, P.G., Ph.D., etc.): [REDACTED]

Title: General Manager

Mailing Address: P.O. Box 99

City, State, Zip Code: Marion, TX

Phone No.: (830)914-2330 Ext.: [REDACTED] Fax No.: [REDACTED]

E-mail Address: pallen@gvsud.org

2. List the county in which the facility is located: Bexar
3. If the property is publicly owned and the owner is different than the permittee/applicant, please list the owner of the property.

N/A

4. Provide a description of the effluent discharge route. The discharge route must follow the flow of effluent from the point of discharge to the nearest major watercourse (from the point of discharge to a classified segment as defined in 30 TAC Chapter 307). If known, please identify the classified segment number.

Discharges to Womans Hollow Creek; thence to Martinez Creek in Segment No. 1902A of the San Antonio River Basin.

5. Please provide a separate 7.5-minute USGS quadrangle map with the project boundaries plotted and a general location map showing the project area. Please highlight the discharge route from the point of discharge for a distance of one mile downstream. (This map is required in addition to the map in the administrative report).

Provide original photographs of any structures 50 years or older on the property.

Does your project involve any of the following? Check all that apply.

- Proposed access roads, utility lines, construction easements
- Visual effects that could damage or detract from a historic property's integrity
- Vibration effects during construction or as a result of project design
- Additional phases of development that are planned for the future
- Sealing caves, fractures, sinkholes, other karst features

- ☒ Disturbance of vegetation or wetlands
- 6. List proposed construction impact (surface acres to be impacted, depth of excavation, sealing of caves, or other karst features):

The construction of the first phase will disturb approximately 3.5 acres of native vegetation and brush on the property. The maximum depth of excavation is 30 feet at the lift station, 15 feet for gravity mains and 4-8 feet for foundations and other infrastructure. No karst features are located within the project area.

- 7. Describe existing disturbances, vegetation, and land use:

The immediate project area will be disturbed however the majority of the plant site's 5 acres will remain in the current condition. The site was previously used for agricultural purposes.

THE FOLLOWING ITEMS APPLY ONLY TO APPLICATIONS FOR NEW TPDES PERMITS AND MAJOR AMENDMENTS TO TPDES PERMITS

- 8. List construction dates of all buildings and structures on the property:

N/A- no construction activities to date.

- 9. Provide a brief history of the property, and name of the architect/builder, if known.

N/A- no construction activities to date, the site was previously used for agricultural purposes with a single family residence on the adjacent tract.

**WATER QUALITY PERMIT  
PAYMENT SUBMITTAL FORM**

Use this form to submit the Application Fee, if the mailing the payment.

- Complete items 1 through 5 below.
- Staple the check or money order in the space provided at the bottom of this document.
- **Do not mail this form with the application form.**
- Do not mail this form to the same address as the application.
- Do not submit a copy of the application with this form as it could cause duplicate permit entries.

**Mail this form and the check or money order to:**

*BY REGULAR U.S. MAIL*

Texas Commission on Environmental Quality  
Financial Administration Division  
Cashier's Office, MC-214  
P.O. Box 13088  
Austin, Texas 78711-3088

*BY OVERNIGHT/EXPRESS MAIL*

Texas Commission on Environmental Quality  
Financial Administration Division  
Cashier's Office, MC-214  
12100 Park 35 Circle  
Austin, Texas 78753

**Fee Code: WQP      Waste Permit No:**

1. Check or Money Order Number: [REDACTED]
2. Check or Money Order Amount:
3. Date of Check or Money Order: [REDACTED]
4. Name on Check or Money Order: [REDACTED]

**5. APPLICATION INFORMATION**

Name of Project or Site: [REDACTED]

Physical Address of Project or Site: [REDACTED]

If the check is for more than one application, attach a list which includes the name of each Project or Site (RE) and Physical Address, exactly as provided on the application.

**Staple Check or Money Order in This Space**

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ATTACHMENT 1

INDIVIDUAL INFORMATION NOT APPLICABLE

**Section 1. Individual Information (Instructions Page 50)**

Complete this attachment if the facility applicant or co-applicant is an individual. Make additional copies of this attachment if both are individuals.

Prefix (Mr., Ms., Miss):

Full legal name (first, middle, last):

Driver's License or State Identification Number:

Date of Birth:

Mailing Address:

City, State, and Zip Code:

Phone Number:  Fax Number:

E-mail Address:

CN:

**For Commission Use Only:**

Customer Number:

Regulated Entity Number:

Permit Number:

### TCEQ ePay Receipt

#### Transaction Information

**Trace Number:** 582EA000395333  
**Date:** 07/28/2020 01:45 PM  
**Payment Method:** ACH - Authorization 0000000000  
**Amount:** \$1,250.00  
**ePay Actor:** Adan Rangel

#### Payment Contact Information

**Name:** Garry Montgomery  
**Company:** Utility Engineering Group Pllc  
**Address:** 191 N Union Ave, New Braunfels, TX 78130  
**Phone:** 830-214-0521

#### Cart Items

Voucher	Fee Description	AR Number	Amount
472069	WW PERMIT - FACILITY WITH FLOW >= .25 & < .50 MGD - NEW AND MAJOR AMENDMENTS		\$1,200.00
472070	30 TAC 305.53B WQ NOTIFICATION FEE		\$50.00

### TCEQ ePay Voucher Receipt

#### Transaction Information

**Voucher Number:** 472069  
**Trace Number:** 582EA000395333  
**Date:** 07/28/2020 01:45 PM  
**Payment Method:** ACH - Authorization 0000000000  
**Amount:** \$1,200.00  
**Fee Type:** WW PERMIT - FACILITY WITH FLOW >= .25 & < .50 MGD - NEW AND MAJOR AMENDMENTS  
**ePay Actor:** Adan Rangel

#### Payment Contact Information

**Name:** Garry Montgomery  
**Company:** Utility Engineering Group Pllc  
**Address:** 191 N Union Ave, New Braunfels, TX 78130  
**Phone:** 830-214-0521

#### Site Information

**Site Name:** CLEARWATER CREEK WWTP  
**Site Location:** 14738 BEYER PATH MARION TX 78124

#### Customer Information

**Customer Name:** GREEN VALLEY SPECIAL UTILITY DISTRICT  
**Customer Address:** P O BOX 99, MARION, TX 78124 0099

### TCEQ ePay Voucher Receipt

#### Transaction Information

<b>Voucher Number:</b>	472070
<b>Trace Number:</b>	582EA000395333
<b>Date:</b>	07/28/2020 01:45 PM
<b>Payment Method:</b>	ACH - Authorization 0000000000
<b>Amount:</b>	\$50.00
<b>Fee Type:</b>	30 TAC 305.53B WQ NOTIFICATION FEE
<b>ePay Actor:</b>	Adan Rangel

#### Payment Contact Information

<b>Name:</b>	Garry Montgomery
<b>Company:</b>	Utility Engineering Group Pllc
<b>Address:</b>	191 N Union Ave, New Braunfels, TX 78130
<b>Phone:</b>	830-214-0521

Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

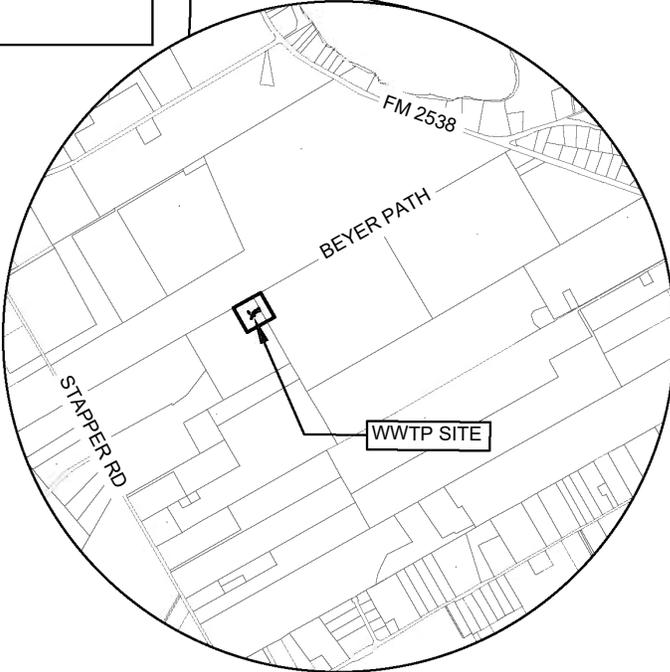
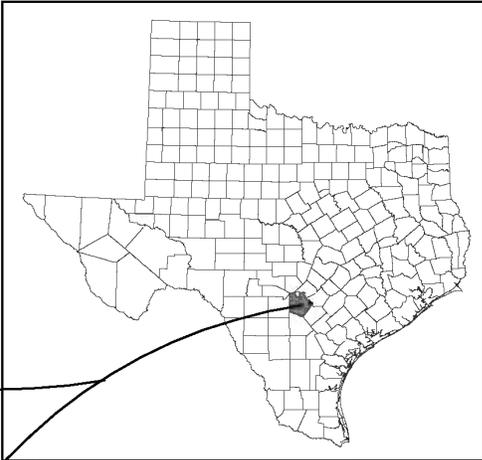
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**SUPPLEMENTAL PERMIT INFORMATION FORM  
(SPIF) MAPS**

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Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

## SPIF – 1 General Location Map



BEXAR COUNTY

P:\Projects\0008\_GVSUD061 - Clearwater Creek WFS & WWFSCAD\Sheets\GENERAL LOCATION MAP.dwg, Jul 15, 2020, 9:41am



**UTILITY  
ENGINEERING  
GROUP PLLC**

256 Comal Ave NEW BRAUNFELS, TEXAS 78130 PH: (830) 214-0521  
Texas Engineering Firm F-18712

SCALE: N.T.S.
DATE: 15 July, 2020
PROJECT NO:
DESIGNED BY:
DRAWN BY:
CHECKED BY:

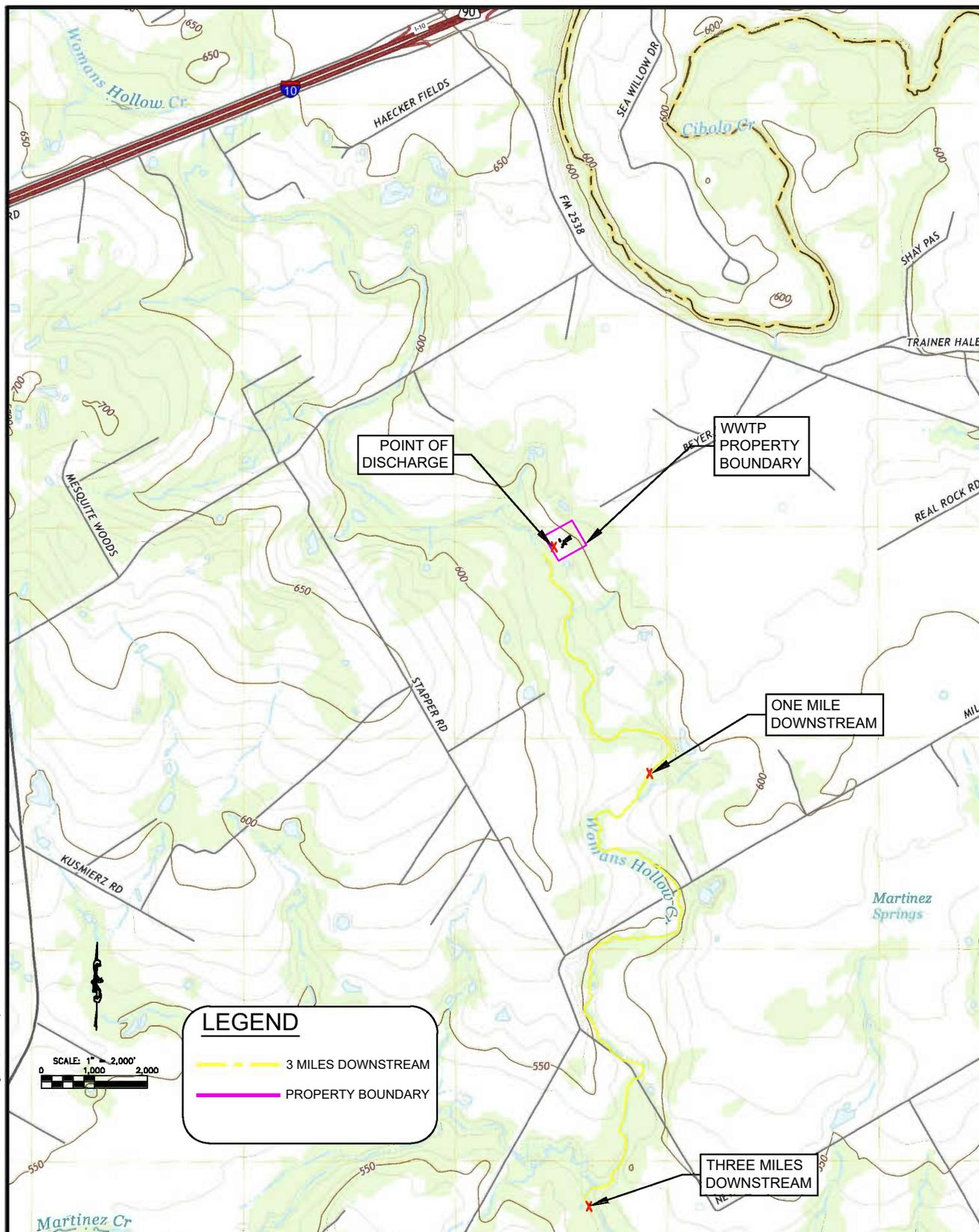
GREEN VALLEY SPECIAL UTILITY DISTRICT

SPF-1  
CLEARWATER CREEK WWTP  
GENERAL LOCATION MAP

SHEET: OF

Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

SPIF – 2 USGS Map



P:\Projects\0008\_GVSUD\01 - Clearwater Creek, WFS & WWFSCAD\USGS MAP.dwg, Jul 28, 2020, 3:27pm



**UTILITY  
ENGINEERING  
GROUP PLLC**

256 Comal Ave NEW BRAUNFELS, TEXAS 78130 PH: (830) 214-0521  
Texas Engineering Firm F-18712

SCALE:
DATE: 28 July, 2020
PROJECT NO:
DESIGNED BY:
DRAWN BY:
CHECKED BY:

GREEN VALLEY SPECIAL UTILITY DISTRICT USGS MAP
CLEARWATER CREEK WWTSP SPIF-2
SHEET: OF

Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

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# DOMESTIC TECHNICAL REPORT

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TEXAS COMMISSION ON ENVIRONMENTAL QUALITY  
DOMESTIC WASTEWATER PERMIT APPLICATION

**DOMESTIC TECHNICAL REPORT 1.0**

The Following Is Required For All Applications  
Renewal, New, And Amendment

**Section 1. Permitted or Proposed Flows (Instructions Page 51)**

**A. Existing/Interim I Phase**

Design Flow (MGD): 0.1

2-Hr Peak Flow (MGD): 0.4

Estimated construction start date: 5/17/2021

Estimated waste disposal start date: 1/3/2022

**B. Interim II Phase**

Design Flow (MGD): 0.2

2-Hr Peak Flow (MGD): 0.8

Estimated construction start date: 5/4/2026

Estimated waste disposal start date: 12/18/2026

**C. Final Phase**

Design Flow (MGD): 0.4

2-Hr Peak Flow (MGD): 1.6

Estimated construction start date: 12/3/2029

Estimated waste disposal start date: 4/7/2031

**D. Current operating phase: Interim I Phase**

Provide the startup date of the facility: 12/06/2021 (Anticipated)

**Section 2. Treatment Process (Instructions Page 51)**

**A. Treatment process description**

Provide a detailed description of the treatment process. **Include the type of treatment plant, mode of operation, and all treatment units.** Start with the

plant's head works and finish with the point of discharge. Include all sludge processing and drying units. **If more than one phase exists or is proposed in the permit, a description of each phase must be provided.** Process description:

Interim I (0.1 MGD phase): Extended Aeration Process: Treatment process includes a Bar Screen, one (1) Aeration Basin, one (1) Clarifier, one (1) Chlorine Contact Chamber, and one (1) sludge digester.  
Interim II (0.2 MGD phase): Extended Aeration Process: Treatment process includes a Bar Screen, two (2) Aeration Basins, one (1) Clarifier, one (1) Chlorine Contact Chamber, and two (2) sludge digesters.  
Final Phase (0.4 MGD phase): Extended Aeration Process: Treatment process includes a Bar Screen, four (4) Aeration Basins, two (2) Clarifiers, two (2) Chlorine Contact Chambers, and three (3) sludge digesters.  
Discharges to Womans Hollow Creek; thence to Martinez Creek in Segment No. 1902A of the San Antonio River Basin.

Port or pipe diameter at the discharge point, in inches: Initial 12", Final 24"

**B. Treatment Units**

In Table 1.0(1), provide the treatment unit type, the number of units, and dimensions (length, width, depth) of each treatment unit, accounting for *all* phases of operation.

**Table 1.0(1) - Treatment Units**

Treatment Unit Type	Number of Units	Dimensions (L x W x D)
Interim I (0.1 MGD)		
Manual Bar Screen	1	
Aeration Basin	1	60'x12'x10.32'
Clarifier	1	33' DIA. X 11.85'
Chlorine Contact Chamber	1	11'x32'x5.83'
Sludge Digester	1	60'x12'x10.67'
Interim II (0.2 MGD)		
Manual Bar Screen	1	
Aeration Basin	2	60'x12'x10.32'
Clarifier	1	33' DIA. X 11.85'
Chlorine Contact Chamber	1	11'x32'x5.83'
Sludge Digester	2	60'x12'x10.67'
Final (0.4 MGD)		

Treatment Unit Type	Number of Units	Dimensions (L x W x D)
Manual Bar Screen	1	
Aeration Basin	4	60'x12'x10.32'
Clarifier	2	33' DIA. X 11.85'
Chlorine Contact Chamber	2	11'x32'x5.83'
Sludge Digester	3	60'x12'x10.67'

**C. Process flow diagrams**

Provide flow diagrams for the existing facilities and **each** proposed phase of construction.

Attachment: B

**Section 3. Site Drawing (Instructions Page 52)**

Provide a site drawing for the facility that shows the following:

- The boundaries of the treatment facility;
- The boundaries of the area served by the treatment facility;
- If land disposal of effluent, the boundaries of the disposal site and all storage/holding ponds; and
- If sludge disposal is authorized in the permit, the boundaries of the land application or disposal site.

Attachment: C

Provide the name and a description of the area served by the treatment facility.

This project will serve new residential, and commercial growth in the Womans Holler Creek Watershed along the IH 10, FM 2538 corridor between San Antonio and Seguin. This project will serve connections within the San Antonio ETJ and outlying areas of Bexar County.

**Section 4. Unbuilt Phases (Instructions Page 52)**

Is the application for a renewal of a permit that contains an unbuilt phase or phases?

Yes  No

**If yes**, does the existing permit contain a phase that has not been constructed

within five years of being authorized by the TCEQ?

Yes  No

If yes, provide a detailed discussion regarding the continued need for the unbuilt phase. Failure to provide sufficient justification may result in the Executive Director recommending denial of the unbuilt phase or phases.

N/A

**Section 5. Closure Plans (Instructions Page 53)**

Have any treatment units been taken out of service permanently, or will any units be taken out of service in the next five years?

Yes  No

If yes, was a closure plan submitted to the TCEQ?

Yes  No

If yes, provide a brief description of the closure and the date of plan approval.

[Redacted]

**Section 6. Permit Specific Requirements (Instructions Page 53)**

For applicants with an existing permit, check the *Other Requirements* or *Special Provisions* of the permit.

**A. Summary transmittal**

Have plans and specifications been approved for the existing facilities and each proposed phase?

Yes  No

If yes, provide the date(s) of approval for each phase: [link here to enter](#)

[Redacted]

Provide information, including dates, on any actions taken to meet a requirement or provision pertaining to the submission of a summary transmittal letter. Provide a copy of an approval letter from the TCEQ, if applicable.

GVSUD is actively designing the WWTP and will finalize the plant once the draft permit is issued and permit limits are confirmed.

### B. Buffer zones

Have the buffer zone requirements been met?

Yes  No

Provide information below, including dates, on any actions taken to meet the conditions of the buffer zone. If available, provide any new documentation relevant to maintaining the buffer zones.

None

### C. Other actions required by the current permit

Does the *Other Requirements* or *Special Provisions* section in the existing permit require submission of any other information or other required actions? Examples include Notification of Completion, progress reports, soil monitoring data, etc.

Yes  No

If **yes**, provide information below on the status of any actions taken to meet the conditions of an *Other Requirement* or *Special Provision*.

[Click here to insert a link.](#)

### D. Grit and grease treatment

#### 1. Acceptance of grit and grease waste

Does the facility have a grit and/or grease processing facility onsite that treats and decants or accepts transported loads of grit and grease waste that

are discharged directly to the wastewater treatment plant prior to any treatment?

Yes  No

**If No**, stop here and continue with Subsection E. Stormwater Management.

## ***2. Grit and grease processing***

Describe below how the grit and grease waste is treated at the facility. In your description, include how and where the grit and grease is introduced to the treatment works and how it is separated or processed. Provide a flow diagram showing how grit and grease is processed at the facility.

N/A

## ***3. Grit disposal***

Does the facility have a Municipal Solid Waste (MSW) registration or permit for grit disposal?

Yes  No

**If No**, contact the TCEQ Municipal Solid Waste team at 512-239-0000. Note: A registration or permit is required for grit disposal. Grit shall not be combined with treatment plant sludge. See the instruction booklet for additional information on grit disposal requirements and restrictions.

Describe the method of grit disposal.

N/A

## ***4. Grease and decanted liquid disposal***

Note: A registration or permit is required for grease disposal. Grease shall not be combined with treatment plant sludge. For more information, contact the TCEQ Municipal Solid Waste team at 512-239-0000.

Describe how the decant and grease are treated and disposed of after grit separation.

N/A

**E. Stormwater management**

**1. Applicability**

Does the facility have a design flow of 1.0 MGD or greater in any phase?

Yes  No

Does the facility have an approved pretreatment program, under 40 CFR Part 403?

Yes  No

**If no to both of the above, then skip to Subsection F, Other Wastes Received.**

**2. MSGP coverage**

Is the stormwater runoff from the WWTP and dedicated lands for sewage disposal currently permitted under the TPDES Multi-Sector General Permit (MSGP), TXR050000?

Yes  No

**If yes, please provide MSGP Authorization Number and skip to Subsection F, Other Wastes Received:**

TXR05 [REDACTED] or TXRNE [REDACTED]

**If no, do you intend to seek coverage under TXR050000?**

Yes  No  will submit once design is finalized

**3. Conditional exclusion**

Alternatively, do you intend to apply for a conditional exclusion from permitting based TXR050000 (Multi Sector General Permit) Part II B.2 or TXR050000 (Multi Sector General Permit) Part V, Sector T 3(b)?

Yes  No

**If yes, please explain below then proceed to Subsection F, Other Wastes Received:**

[Redacted]

**4. Existing coverage in individual permit**

Is your stormwater discharge currently permitted through this individual TPDES or TLAP permit?

Yes  No

If yes, provide a description of stormwater runoff management practices at the site that are authorized in the wastewater permit then skip to Subsection F, Other Wastes Received.

[Redacted]

**5. Zero stormwater discharge**

Do you intend to have no discharge of stormwater via use of evaporation or other means?

Yes  No

If yes, explain below then skip to Subsection F. Other Wastes Received.

[Redacted]

Note: If there is a potential to discharge any stormwater to surface water in the state as the result of any storm event, then permit coverage is required under the MSGP or an individual discharge permit. This requirement applies to all areas of facilities with treatment plants or systems that treat, store, recycle, or reclaim domestic sewage, wastewater or sewage sludge (including dedicated lands for sewage sludge disposal located within the onsite property boundaries) that meet the applicability criteria of above. You have the option of obtaining coverage under the MSGP for direct discharges, (recommended), or obtaining coverage under this individual permit.

**6. Request for coverage in individual permit**

Are you requesting coverage of stormwater discharges associated with your treatment plant under this individual permit?

Yes  No

**If yes**, provide a description of stormwater runoff management practices at the site for which you are requesting authorization in this individual wastewater permit and describe whether you intend to comingle this discharge with your treated effluent or discharge it via a separate dedicated stormwater outfall. Please also indicate if you intend to divert stormwater to the treatment plant headworks and indirectly discharge it to water in the state.

Note: Direct stormwater discharges to waters in the state authorized through this individual permit will require the development and implementation of a stormwater pollution prevention plan (SWPPP) and will be subject to additional monitoring and reporting requirements. Indirect discharges of stormwater via headworks recycling will require compliance with all individual permit requirements including 2-hour peak flow limitations. All stormwater discharge authorization requests will require additional information during the technical review of your application.

**F. Discharges to the Lake Houston Watershed**

Does the facility discharge in the Lake Houston watershed?

Yes  No

If yes, a Sewage Sludge Solids Management Plan is required. See Example 5 in the instructions.

**G. Other wastes received including sludge from other WWTPs and septic waste**

***1. Acceptance of sludge from other WWTPs***

Does the facility accept or will it accept sludge from other treatment plants at the facility site?

Yes  No

**If yes, attach sewage sludge solids management plan. See Example 5 of the instructions.**

In addition, provide the date that the plant started accepting sludge or is anticipated to start accepting sludge, an estimate of monthly sludge acceptance (gallons or millions of gallons), an estimate of the BOD<sub>5</sub> concentration of the sludge, and the design BOD<sub>5</sub> concentration of the

influent from the collection system. Also note if this information has or has not changed since the last permit action.

Note: Permits that accept sludge from other wastewater treatment plants may be required to have influent flow and organic loading monitoring.

## **2. Acceptance of septic waste**

Is the facility accepting or will it accept septic waste?

Yes  No

**If yes**, does the facility have a Type V processing unit?

Yes  No

**If yes**, does the unit have a Municipal Solid Waste permit?

Yes  No

**If yes to any of the above**, provide a the date that the plant started accepting septic waste, or is anticipated to start accepting septic waste, an estimate of monthly septic waste acceptance (gallons or millions of gallons), an estimate of the BOD<sub>5</sub> concentration of the septic waste, and the design BOD<sub>5</sub> concentration of the influent from the collection system. Also note if this information has or has not changed since the last permit action.

Note: Permits that accept sludge from other wastewater treatment plants may be required to have influent flow and organic loading monitoring.

## **3. Acceptance of other wastes (not including septic, grease, grit, or RCRA, CERCLA or as discharged by IUs listed in Worksheet 6)**

Is the facility accepting or will it accept wastes that are not domestic in nature excluding the categories listed above?

Yes  No

**If yes**, provide the date that the plant started accepting the waste, an estimate how much waste is accepted on a monthly basis (gallons or millions of gallons), a description of the entities generating the waste, and any

distinguishing chemical or other physical characteristic of the waste. Also note if this information has or has not changed since the last permit action.

**Section 7. Pollutant Analysis of Treated Effluent (Instructions Page 58)**

Is the facility in operation?

Yes  No

If **no**, this section is not applicable. Proceed to Section 8.

If **yes**, provide effluent analysis data for the listed pollutants. **Wastewater treatment facilities** complete Table 1.0(2). **Water treatment facilities** discharging filter backwash water, complete Table 1.0(3).

Note: The sample date must be within 1 year of application submission.

**Table 1.0(2) - Pollutant Analysis for Wastewater Treatment Facilities**

Pollutant	Average Conc.	Max Conc.	No. of Samples	Sample Type	Sample Date/Time
CBOD <sub>5</sub> , mg/l					
Total Suspended Solids, mg/l					
Ammonia Nitrogen, mg/l					
Nitrate Nitrogen, mg/l					
Total Kjeldahl Nitrogen, mg/l					
Sulfate, mg/l					
Chloride, mg/l					
Total Phosphorus, mg/l					
pH, standard units					
Dissolved Oxygen*, mg/l					
Chlorine Residual, mg/l					
<i>E.coli</i> (CFU/100ml) freshwater					
Enterococci (CFU/100ml)					

Pollutant	Average Conc.	Max Conc.	No. of Samples	Sample Type	Sample Date/Time
saltwater					
Total Dissolved Solids, mg/l					
Electrical Conductivity, $\mu$ mohs/cm, †					
Oil & Grease, mg/l					
Alkalinity (CaCO <sub>3</sub> )*, mg/l					

\*TPDES permits only

†TLAP permits only

**Table 1.0(3) - Pollutant Analysis for Water Treatment Facilities**

Pollutant	Average Conc.	Max Conc.	No. of Samples	Sample Type	Sample Date/Time
Total Suspended Solids, mg/l					
Total Dissolved Solids, mg/l					
pH, standard units					
Fluoride, mg/l					
Aluminum, mg/l					
Alkalinity (CaCO <sub>3</sub> ), mg/l					

### **Section 8. Facility Operator (Instructions Page 60)**

Facility Operator Name: Zachary W. Willeford

Facility Operator's License Classification and Level: Wastewater Treatment Operator Class B

Facility Operator's License Number: WW0061138

### **Section 9. Sewage Sludge Management and Disposal (Instructions Page 60)**

#### **A. Sludge disposal method**

Identify the current or anticipated sludge disposal method or methods from the

following list. Check all that apply.

- Permitted landfill
- Permitted or Registered land application site for beneficial use
- Land application for beneficial use authorized in the wastewater permit
- Permitted sludge processing facility
- Marketing and distribution as authorized in the wastewater permit
- Composting as authorized in the wastewater permit
- Permitted surface disposal site (sludge monofill)
- Surface disposal site (sludge monofill) authorized in the wastewater permit
- Transported to another permitted wastewater treatment plant or permitted sludge processing facility. If you selected this method, a written statement or contractual agreement from the wastewater treatment plant or permitted sludge processing facility accepting the sludge must be included with this application.
- Other:

**B. Sludge disposal site**

Disposal site name: To be determined, will be an authorized, permitted, disposal site.

TCEQ permit or registration number:

County where disposal site is located:

**C. Sludge transportation method**

Method of transportation (truck, train, pipe, other): Truck

Name of the hauler: To be determined, will be an authorized, permitted, hauler.

Hauler registration number:

Sludge is transported as a:

- Liquid       semi-liquid       semi-solid       solid

## Section 10. Permit Authorization for Sewage Sludge Disposal (Instructions Page 60)

### A. Beneficial use authorization

Does the existing permit include authorization for land application of sewage sludge for beneficial use?

Yes  No

If yes, are you requesting to continue this authorization to land apply sewage sludge for beneficial use?

Yes  No

If yes, is the completed **Application for Permit for Beneficial Land Use of Sewage Sludge (TCEQ Form No. 10451)** attached to this permit application (see the instructions for details)?

Yes  No

### B. Sludge processing authorization

Does the existing permit include authorization for any of the following sludge processing, storage or disposal options?

Sludge Composting Yes  No

Marketing and Distribution of sludge Yes  No

Sludge Surface Disposal or Sludge Monofill Yes  No

Temporary storage in sludge lagoons Yes  No

If yes to any of the above sludge options and the applicant is requesting to continue this authorization, is the completed **Domestic Wastewater Permit Application: Sewage Sludge Technical Report (TCEQ Form No. 10056)** attached to this permit application?

Yes  No

## Section 11. Sewage Sludge Lagoons (Instructions Page 61)

Does this facility include sewage sludge lagoons?

Yes  No

If yes, complete the remainder of this section. If no, proceed to Section 12.

### A. Location information

The following maps are required to be submitted as part of the application. For each map, provide the Attachment Number.

- Original General Highway (County) Map:

**Attachment:** [click here to enter text](#)

- USDA Natural Resources Conservation Service Soil Map:

**Attachment:** [click here to enter text](#)

- Federal Emergency Management Map:

**Attachment:** [click here to enter text](#)

- Site map:

**Attachment:** [click here to enter text](#)

Discuss in a description if any of the following exist within the lagoon area. Check all that apply.

- Overlap a designated 100-year frequency flood plain
- Soils with flooding classification
- Overlap an unstable area
- Wetlands
- Located less than 60 meters from a fault
- None of the above

**Attachment:** [click here to enter text](#)

If a portion of the lagoon(s) is located within the 100-year frequency flood plain, provide the protective measures to be utilized including type and size of protective structures:

### B. Temporary storage information

Provide the results for the pollutant screening of sludge lagoons. These results are in addition to pollutant results in Section 7 of Technical Report 1.0.

Nitrate Nitrogen, mg/kg: [click here to enter text](#)

Total Kjeldahl Nitrogen, mg/kg: [click here to enter text](#)

Total Nitrogen (=nitrate nitrogen + TKN), mg/kg: [click here to enter text](#)

Phosphorus, mg/kg: [click here to enter text](#)

Potassium, mg/kg: [click here to enter text](#)

pH, standard units:

Ammonia Nitrogen mg/kg:

Arsenic:

Cadmium:

Chromium:

Copper:

Lead:

Mercury:

Molybdenum:

Nickel:

Selenium:

Zinc:

Total PCBs:

Provide the following information:

Volume and frequency of sludge to the lagoon(s):

Total dry tons stored in the lagoons(s) per 365-day period:

Total dry tons stored in the lagoons(s) over the life of the unit:

### C. Liner information

Does the active/proposed sludge lagoon(s) have a liner with a maximum hydraulic conductivity of  $1 \times 10^{-7}$  cm/sec?

Yes  No

If yes, describe the liner below. Please note that a liner is required.

### D. Site development plan

Provide a detailed description of the methods used to deposit sludge in the lagoon(s):

Attach the following documents to the application.

- Plan view and cross-section of the sludge lagoon(s)  
**Attachment:** [REDACTED]
- Copy of the closure plan  
**Attachment:** [REDACTED]
- Copy of deed recordation for the site  
**Attachment:** [REDACTED]
- Size of the sludge lagoon(s) in surface acres and capacity in cubic feet and gallons  
**Attachment:** [REDACTED]
- Description of the method of controlling infiltration of groundwater and surface water from entering the site  
**Attachment:** [REDACTED]
- Procedures to prevent the occurrence of nuisance conditions  
**Attachment:** [REDACTED]

**E. Groundwater monitoring**

Is groundwater monitoring currently conducted at this site, or are any wells available for groundwater monitoring, or are groundwater monitoring data otherwise available for the sludge lagoon(s)?

Yes  No

If groundwater monitoring data are available, provide a copy. Provide a profile of soil types encountered down to the groundwater table and the depth to the shallowest groundwater as a separate attachment.

Attachment: [REDACTED]

**Section 12. Authorizations/Compliance/Enforcement  
(Instructions Page 63)**

**A. Additional authorizations**

Does the permittee have additional authorizations for this facility, such as reuse authorization, sludge permit, etc?

Yes  No

If yes, provide the TCEQ authorization number and description of the authorization:

**B. Permittee enforcement status**

Is the permittee currently under enforcement for this facility?

Yes  No

Is the permittee required to meet an implementation schedule for compliance or enforcement?

Yes  No

If yes to either question, provide a brief summary of the enforcement, the implementation schedule, and the current status:

**Section 13. RCRA/CERCLA Wastes (Instructions Page 63)**

**A. RCRA hazardous wastes**

Has the facility received in the past three years, does it currently receive, or will it receive RCRA hazardous waste?

Yes  No

**B. Remediation activity wastewater**

Has the facility received in the past three years, does it currently receive, or will it receive CERCLA wastewater, RCRA remediation/corrective action wastewater or other remediation activity wastewater?

Yes  No

**C. Details about wastes received**

If yes to either Subsection A or B above, provide detailed information concerning these wastes with the application.

Attachment:



**Section 14. Laboratory Accreditation (Instructions Page 64)**

All laboratory tests performed must meet the requirements of *30 TAC Chapter 25, Environmental Testing Laboratory Accreditation and Certification*, which includes the following general exemptions from National Environmental Laboratory Accreditation Program (NELAP) certification requirements:

- The laboratory is an in-house laboratory and is:
  - periodically inspected by the TCEQ; or
  - located in another state and is accredited or inspected by that state; or
  - performing work for another company with a unit located in the same site; or
  - performing pro bono work for a governmental agency or charitable organization.
- The laboratory is accredited under federal law.
- The data are needed for emergency-response activities, and a laboratory accredited under the Texas Laboratory Accreditation Program is not available.
- The laboratory supplies data for which the TCEQ does not offer accreditation.

The applicant should review *30 TAC Chapter 25* for specific requirements.

The following certification statement shall be signed and submitted with every application. See the *Signature Page* section in the Instructions, for a list of designated representatives who may sign the certification.

**CERTIFICATION:**

I certify that all laboratory tests submitted with this application meet the requirements of *30 TAC Chapter 25, Environmental Testing Laboratory Accreditation and Certification*.

Printed Name: N/A WWTP facility not operational at this time.

Title:

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

# DOMESTIC TECHNICAL REPORT 1.1

The following is required for new and amendment applications

## Section 1. Justification for Permit (Instructions Page 66)

### A. Justification of permit need

Provide a detailed discussion regarding the need for any phase(s) not currently permitted. Failure to provide sufficient justification may result in the Executive Director recommending denial of the proposed phase(s) or permit.

This requested permit is proposed to support planned residential and commercial growth in GVSUD's sewer CCN area. GVSUD holds sewer CCN for proposed service area. The current contract for service equates to 950 EDUs of service or 232,750 gpm.

### B. Regionalization of facilities

Provide the following information concerning the potential for regionalization of domestic wastewater treatment facilities:

#### 1. Municipally incorporated areas

If the applicant is a city, then Item 1 is not applicable. Proceed to Item 2 Utility CCN areas.

Is any portion of the proposed service area located in an incorporated city?

Yes  No  Not Applicable

If yes, within the city limits of: San Antonio, Schertz, St Hedwig

If yes, attach correspondence from the city.

Attachment: T. Letters were sent. Responses are pending.

If consent to provide service is available from the city, attach a justification for the proposed facility and a cost analysis of expenditures that includes the cost of connecting to the city versus the cost of the proposed facility or expansion attached.

Attachment: City responses are pending.

#### 2. Utility CCN areas

Is any portion of the proposed service area located inside another utility's CCN area?

Yes  No

**If yes**, attach a justification for the proposed facility and a cost analysis of expenditures that includes the cost of connecting to the CCN facilities versus the cost of the proposed facility or expansion.

Attachment: [REDACTED]

### 3. *Nearby WWTPs or collection systems*

Are there any domestic permitted wastewater treatment facilities or collection systems located within a three-mile radius of the proposed facility?

Yes  No

**If yes**, attach a list of these facilities that includes the permittee's name and permit number, and an area map showing the location of these facilities.

Attachment: I

**If yes**, attach copies of your certified letters to these facilities **and** their response letters concerning connection with their system.

Attachment: 'I'. Letters were sent. Responses are pending.

Does a permitted domestic wastewater treatment facility or a collection system located within three (3) miles of the proposed facility currently have the capacity to accept or is willing to expand to accept the volume of wastewater proposed in this application?

Yes  No

**If yes**, attach an analysis of expenditures required to connect to a permitted wastewater treatment facility or collection system located within 3 miles versus the cost of the proposed facility or expansion.

Attachment: [REDACTED]

## Section 2. Organic Loading (Instructions Page 67)

Is this facility in operation?

Yes  No

**If no**, proceed to Item B, Proposed Organic Loading.

**If yes**, provide organic loading information in Item A, Current Organic

Loading

**A. Current organic loading**

Facility Design Flow (flow being requested in application): [REDACTED]  
 [REDACTED]

Average Influent Organic Strength or BOD<sub>5</sub> Concentration in mg/l: [REDACTED]  
 [REDACTED]

Average Influent Loading (lbs/day = total average flow X average BOD<sub>5</sub> conc. X 8.34): [REDACTED]

Provide the source of the average organic strength or BOD<sub>5</sub> concentration.

**B. Proposed organic loading**

This table must be completed if this application is for a facility that is not in operation or if this application is to request an increased flow that will impact organic loading.

**Table 1.1(1) - Design Organic Loading**

Source	Total Average Flow (MGD)	Influent BOD <sub>5</sub> Concentration (mg/l)
Municipality		
Subdivision	0.4	350
Trailer park - transient		
Mobile home park		
School with cafeteria and showers		
School with cafeteria, no showers		
Recreational park,		

Source	Total Average Flow (MGD)	Influent BOD <sub>5</sub> Concentration (mg/l)
overnight use		
Recreational park, day use		
Office building or factory		
Motel		
Restaurant		
Hospital		
Nursing home		
Other		
TOTAL FLOW from all sources	0.4	
AVERAGE BOD <sub>5</sub> from all sources		350

**Section 3. Proposed Effluent Quality and Disinfection (Instructions Page 68)**

**A. Existing/Interim I Phase Design Effluent Quality**

Biochemical Oxygen Demand (5-day), mg/l: 10

Total Suspended Solids, mg/l: 15

Ammonia Nitrogen, mg/l: 3

Total Phosphorus, mg/l: 1

Dissolved Oxygen, mg/l: 6

Other:  

**B. Interim II Phase Design Effluent Quality**

Biochemical Oxygen Demand (5-day), mg/l: 10

Total Suspended Solids, mg/l: 15

Ammonia Nitrogen, mg/l: 3

Total Phosphorus, mg/l: 1

Dissolved Oxygen, mg/l: 6

Other:

### C. Final Phase Design Effluent Quality

Biochemical Oxygen Demand (5-day), mg/l: 10

Total Suspended Solids, mg/l: 15

Ammonia Nitrogen, mg/l: 3

Total Phosphorus, mg/l: 1

Dissolved Oxygen, mg/l: 6

Other:

### D. Disinfection Method

Identify the proposed method of disinfection.

Chlorine: 1 mg/l after 20 minutes detention time at peak flow

Dechlorination process:

Ultraviolet Light: 20 seconds contact time at peak flow

Other:

## Section 4. Design Calculations (Instructions Page 68)

Attach design calculations and plant features for each proposed phase. Example 4 of the instructions includes sample design calculations and plant features.

Attachment: E

## Section 5. Facility Site (Instructions Page 68)

### A. 100-year floodplain

Will the proposed facilities be located above the 100-year frequency flood level?

Yes  No

**If no**, describe measures used to protect the facility during a flood event. Include a site map showing the location of the treatment plant within the 100-year frequency flood level. If applicable, provide the size and types of protective structures.

Provide the source(s) used to determine 100-year frequency flood plain.

Flood Insurance Rate Map for Guadalupe County, Panel 455, Community Map No. 48029C0455G. Eff. 9/29/2010.

For a new or expansion of a facility, will a wetland or part of a wetland be filled?

Yes  No

**If yes**, has the applicant applied for a US Corps of Engineers 404 Dredge and Fill Permit?

Yes  No

**If yes**, provide the permit number:

**If no**, provide the approximate date you anticipate submitting your application to the Corps:

**B. Wind rose**

Attach a wind rose. **Attachment:** F

**Section 6. Permit Authorization for Sewage Sludge Disposal (Instructions Page 69)**

**A. Beneficial use authorization**

Are you requesting to include authorization to land apply sewage sludge for beneficial use on property located adjacent to the wastewater treatment facility under the wastewater permit?

Yes  No

**If yes**, attach the completed Application for Permit for Beneficial Land Use of Sewage Sludge (TCEQ Form No. 10451)

**Attachment:**

**B. Sludge processing authorization**

Identify the sludge processing, storage or disposal options that will be

conducted at the wastewater treatment facility:

- Sludge Composting
- Marketing and Distribution of sludge
- Sludge Surface Disposal or Sludge Monofill

**If any of the above** sludge options are selected, attach a completed DOMESTIC WASTEWATER PERMIT APPLICATION: SEWAGE SLUDGE TECHNICAL REPORT (TCEQ Form No. 10056).

**Attachment:** [REDACTED]

## Section 7. Sewage Sludge Solids Management Plan (Instructions Page 69)

Attach a solids management plan to the application.

Attachment: G

The sewage sludge solids management plan must contain the following information:

- Treatment units and processes dimensions and capacities
- Solids generated at 100, 75, 50, and 25 percent of design flow
- Mixed liquor suspended solids operating range at design and projected actual flow
- Quantity of solids to be removed and a schedule for solids removal
- Identification and ownership of the ultimate sludge disposal site
- For facultative lagoons, design life calculations, monitoring well locations and depths, and the ultimate disposal method for the sludge from the facultative lagoon

An example of a sewage sludge solids management plan has been included as Example 5 of the instructions.

# DOMESTIC TECHNICAL REPORT WORKSHEET 2.0

## RECEIVING WATERS

The following is required for all TPDES permit applications

### Section 1. Domestic Drinking Water Supply (Instructions Page 73)

Is there a surface water intake for domestic drinking water supply located within 5 miles downstream from the point or proposed point of discharge?

Yes  No

If yes, provide the following:

Owner of the drinking water supply: \_\_\_\_\_

Distance and direction to the intake: \_\_\_\_\_

Attach a USGS map that identifies the location of the intake.

Attachment: \_\_\_\_\_

### Section 2. Discharge into Tidally Affected Waters (Instructions Page 73)

Does the facility discharge into tidally affected waters?

Yes  No

If yes, complete the remainder of this section. If no, proceed to Section 3.

#### A. Receiving water outfall

Width of the receiving water at the outfall, in feet: \_\_\_\_\_

#### B. Oyster waters

Are there oyster waters in the vicinity of the discharge?

Yes  No

If yes, provide the distance and direction from outfall(s).

#### C. Sea grasses

Are there any sea grasses within the vicinity of the point of discharge?

Yes  No

If yes, provide the distance and direction from the outfall(s).

### Section 3. Classified Segments (Instructions Page 73)

Is the discharge directly into (or within 300 feet of) a classified segment?

Yes  No

If yes, this Worksheet is complete.

If no, complete Sections 4 and 5 of this Worksheet.

### Section 4. Description of Immediate Receiving Waters (Instructions Page 75)

Name of the immediate receiving waters: Womans Hollow Creek

#### A. Receiving water type

Identify the appropriate description of the receiving waters.

- Stream
- Freshwater Swamp or Marsh
- Lake or Pond

Surface area, in acres:

Average depth of the entire water body, in feet:

Average depth of water body within a 500-foot radius of discharge point, in feet:

- Man-made Channel or Ditch
- Open Bay
- Tidal Stream, Bayou, or Marsh

- Other, specify: Wet Weather Creek

**B. Flow characteristics**

If a stream, man-made channel or ditch was checked above, provide the following. For existing discharges, check one of the following that best characterizes the area *upstream* of the discharge. For new discharges, characterize the area *downstream* of the discharge (check one).

- Intermittent - dry for at least one week during most years
- Intermittent with Perennial Pools - enduring pools with sufficient habitat to maintain significant aquatic life uses
- Perennial - normally flowing

Check the method used to characterize the area upstream (or downstream for new dischargers).

- USGS flow records
- Historical observation by adjacent landowners
- Personal observation
- Other, specify: click here to enter text!

**C. Downstream perennial confluences**

List the names of all perennial streams that join the receiving water within three miles downstream of the discharge point.

<u>None</u>
-------------

**D. Downstream characteristics**

Do the receiving water characteristics change within three miles downstream of the discharge (e.g., natural or man-made dams, ponds, reservoirs, etc.)?

- Yes  No

If yes, discuss how.

Click here to enter text

**E. Normal dry weather characteristics**

Provide general observations of the water body during normal dry weather conditions.

Slow shallow running creek with perennial pools.

Date and time of observation: May 7, 2020

Was the water body influenced by stormwater runoff during observations?

Yes  No

**Section 5. General Characteristics of the Waterbody (Instructions Page 74)**

**A. Upstream influences**

Is the immediate receiving water upstream of the discharge or proposed discharge site influenced by any of the following? Check all that apply.

- |   |   |
|---|---|
| <input type="checkbox"/> Oil field activities | <input type="checkbox"/> Urban runoff                           |
| <input type="checkbox"/> Upstream discharges  | <input checked="" type="checkbox"/> Agricultural runoff         |
| <input type="checkbox"/> Septic tanks         | <input type="checkbox"/> Other(s), specify <input type="text"/> |

**B. Waterbody uses**

Observed or evidences of the following uses. Check all that apply.

- |  |   |
|--|---|
| <input type="checkbox"/> Livestock watering    | <input type="checkbox"/> Contact recreation     |
| <input type="checkbox"/> Irrigation withdrawal | <input type="checkbox"/> Non-contact recreation |
| <input type="checkbox"/> Fishing               | <input type="checkbox"/> Navigation             |

- Domestic water supply
- Industrial water supply
- Park activities
- Other(s), specify

**C. Waterbody aesthetics**

Check one of the following that best describes the aesthetics of the receiving water and the surrounding area.

- Wilderness: outstanding natural beauty; usually wooded or unpastured area; water clarity exceptional
- Natural Area: trees and/or native vegetation; some development evident (from fields, pastures, dwellings); water clarity discolored
- Common Setting: not offensive; developed but uncluttered; water may be colored or turbid
- Offensive: stream does not enhance aesthetics; cluttered; highly developed; dumping areas; water discolored

# DOMESTIC WORKSHEET 2.1

## STREAM PHYSICAL CHARACTERISTICS

**Required for new applications, major facilities, and applications adding an outfall**

Worksheet 2.1 is not required for discharges to intermittent streams or discharges directly to (or within 300 feet of) a classified segment.

### Section 1. General Information (Instructions Page 75)

Date of study:  Time of study:

Stream name:

Location:

Type of stream upstream of existing discharge or downstream of proposed discharge (check one).

- Perennial  Intermittent with perennial pools

### Section 2. Data Collection (Instructions Page 75)

Number of stream bends that are well defined:

Number of stream bends that are moderately defined:

Number of stream bends that are poorly defined:

Number of riffles:

Evidence of flow fluctuations (check one):

- Minor  moderate  severe

Indicate the observed stream uses and if there is evidence of flow fluctuations or channel obstruction/modification.

### Stream transects

In the table below, provide the following information for each transect downstream of the existing or proposed discharges. Use a separate row for each transect.

**Table 2.1(1) - Stream Transect Records**

<b>Stream type at transect</b> Select riffle, run, glide, or pool. See Instructions, Definitions section.	<b>Transect location</b>	<b>Water surface width (ft)</b>	<b>Stream depths (ft)</b> at 4 to 10 points along each transect from the channel bed to the water surface. Separate the measurements with commas.
Choose an item.			

**Section 3. Summarize Measurements (Instructions Page 76)**

Streambed slope of entire reach, from USGS map in feet/feet:

Approximate drainage area above the most downstream transect (from USGS

map or county highway map, in square miles):

Length of stream evaluated, in feet:

Number of lateral transects made:

Average stream width, in feet:

Average stream depth, in feet:

Average stream velocity, in feet/second:

Instantaneous stream flow, in cubic feet/second:

Indicate flow measurement method (type of meter, floating chip timed over a fixed distance, etc.):

Size of pools (large, small, moderate, none):

Maximum pool depth, in feet:

## DOMESTIC WORKSHEET 3.0

### LAND DISPOSAL OF EFFLUENT

**The following is required for all permit applications  
Renewal, New, and Amendments**

#### Section 1. Type of Disposal System (Instructions Page 77)

Identify the method of land disposal:

- |  |  |
|--|--|
| <input type="checkbox"/> Surface application         | <input type="checkbox"/> Subsurface application                |
| <input type="checkbox"/> Irrigation                  | <input type="checkbox"/> Subsurface soils absorption           |
| <input type="checkbox"/> Drip irrigation system      | <input type="checkbox"/> Subsurface area drip dispersal system |
| <input type="checkbox"/> Evaporation                 |  |
| <input type="checkbox"/> Evapotranspiration beds     |  |
| <input type="checkbox"/> Other (describe in detail): |  |

**NOTE: All applicants without authorization or proposing new/amended subsurface disposal MUST complete and submit Worksheet 7.0.**

For existing authorizations, provide Registration Number:

#### Section 2. Land Application Site(s) (Instructions Page 77)

In table 3.0(1), provide the requested information for the land application sites. Include the agricultural or cover crop type (wheat, cotton, alfalfa, bermuda grass, native grasses, etc.), land use (golf course, hayland, pastureland, park, row crop, etc.), irrigation area, amount of effluent applied, and whether or not the public has access to the area. Specify the amount of land area and the amount of effluent that will be allotted to each agricultural or cover crop, if more than one crop will be used.

*Table 3.0(1) - Land Application Site Crops*

Crop Type & Land Use	Irrigation Area (acres)	Effluent Application (GPD)	Public Access? Y/N

Crop Type & Land Use	Irrigation Area (acres)	Effluent Application (GPD)	Public Access? Y/N

**Section 3. Storage and Evaporation Lagoons/Ponds (Instructions Page 77)**

*Table 3.0(2) - Storage and Evaporation Ponds*

Pond Number	Surface Area (acres)	Storage Volume (acre-feet)	Dimensions	Liner Type

Attach a copy of a liner certification that was prepared, signed, and sealed by a Texas licensed professional engineer for each pond.

Attachment: [Redacted]

**Section 4. Flood and Runoff Protection (Instructions Page 77)**

Is the land application site within the 100-year frequency flood level?

Yes  No

If yes, describe how the site will be protected from inundation.

Provide the source used to determine the 100-year frequency flood level:

[Redacted]

Provide a description of tailwater controls and rainfall run-on controls used for the land application site.

[Redacted]

### **Section 5. Annual Cropping Plan (Instructions Page 77)**

Attach an Annual Cropping Plan which includes a discussion of each of the following items. If not applicable, provide a detailed explanation indicating why.

**Attachment:** [Redacted]

- Soils map with crops
- Cool and warm season plant species
- Crop yield goals
- Crop growing season
- Crop nutrient requirements
- Additional fertilizer requirements
- Minimum/maximum harvest height (for grass crops)
- Supplemental watering requirements
- Crop salt tolerances
- Harvesting method/number of harvests
- Justification for not removing existing vegetation to be irrigated

### **Section 6. Well and Map Information (Instructions Page 78)**

Attach a USGS map with the following information shown and labeled. If not applicable, provide a detailed explanation (on a separate page) indicating why.

**Attachment:** [Redacted]

- The boundaries of the land application site(s)
- Waste disposal or treatment facility site(s)
- On-site buildings

- Buffer zones
- Effluent storage and tailwater control facilities
- All water wells within 1 mile of the disposal site or property boundaries
- All springs and seeps onsite and within 500 feet of the property boundaries
- All surface waters in the state onsite and within 500 feet of the property boundaries
- All faults and sinkholes onsite and within 500 feet of the property

List and cross reference all water wells shown on the USGS map in the following table. Attach additional pages as necessary to include all of the wells.

**Table 3.0(3) - Water Well Data**

Well ID	Well Use	Producing? Y/N	Open, cased, capped, or plugged?	Proposed Best Management Practice
			Choose an item.	
			Choose an item.	
			Choose an item.	
			Choose an item.	
			Choose an item.	

If water quality data or well log information is available please include the information in an attachment listed by Well ID.

**Attachment:** [REDACTED]

**Section 7. Groundwater Quality (Instructions Page 79)**

Attach a Groundwater Quality Technical Report which assesses the impact of the wastewater disposal system on groundwater. This report shall include an evaluation of the water wells (including the information in the well table provided in Item 6. above), the wastewater application rate, and pond liners. Indicate by a check mark that this report is provided.

**Attachment:** [REDACTED]

Are groundwater monitoring wells available onsite? Yes  No

Do you plan to install ground water monitoring wells or lysimeters around the land application site? Yes  No

If yes, then provide the proposed location of the monitoring wells or lysimeters on a site map.

Attachment:

**Section 8. Soil Map and Soil Analyses (Instructions Page 79)**

**A. Soil map**

Attach a USDA Soil Survey map that shows the area to be used for effluent disposal.

Attachment:

**B. Soil analyses**

Attach the laboratory results sheets from the soil analyses. **Note:** for renewal applications, the current annual soil analyses required by the permit are acceptable as long as the test date is less than one year prior to the submission of the application.

Attachment:

List all USDA designated soil series on the proposed land application site. Attach additional pages as necessary.

*Table 3.0(4) - Soil Data*

Soil Series	Depth from Surface	Permeability	Available Water Capacity	Curve Number



<b>Date</b>	<b>30 Day Avg Flow MGD</b>	<b>BOD<sub>5</sub> mg/l</b>	<b>TSS mg/l</b>	<b>pH</b>	<b>Chlorine Residual mg/l</b>	<b>Acres irrigated</b>

Provide a discussion of all persistent excursions above the permitted limits and any corrective actions taken.

## DOMESTIC WORKSHEET 3.1

### SURFACE LAND DISPOSAL OF EFFLUENT

The following is required for new and major amendment applications.  
Renewal and minor amendments applicants may be asked for the worksheet on a case by case basis.

#### Section 1. Surface Disposal (Instructions Page 81)

Complete the item that applies for the method of disposal being used.

##### A. Irrigation

Area under irrigation, in acres:

Design application frequency:

hours/day  And days/week

Land grade (slope):

average percent (%):

maximum percent (%):

Design application rate in acre-feet/acre/year:

Design total nitrogen loading rate, in lbs N/acre/year:

Soil conductivity (mmhos/cm):

Method of application:

Attach a separate engineering report with the water balance and storage volume calculations, method of application, irrigation efficiency, and nitrogen balance.

Attachment:

##### B. Evaporation ponds

Daily average effluent flow into ponds, in gallons per day:

Attach a separate engineering report with the water balance and storage volume calculations.

Attachment:

### C. Evapotranspiration beds

Number of beds:

Area of bed(s), in acres:

Depth of bed(s), in feet:

Void ratio of soil in the beds:

Storage volume within the beds, in acre-feet:

Attach a separate engineering report with the water balance and storage volume calculations, and a description of the lining.

Attachment:

### D. Overland flow

Area used for application, in acres:

Slopes for application area, percent (%):

Design application rate, in gpm/foot of slope width:

Slope length, in feet:

Design BOD<sub>5</sub> loading rate, in lbs BOD<sub>5</sub>/acre/day:

Design application frequency:

hours/day:  **And** days/week:

Attach a separate engineering report with the method of application and design requirements according to *30 TAC Chapter 217*.

Attachment:

## Section 2. Edwards Aquifer (Instructions Page 82)

Is the facility subject to *30 TAC Chapter 213*, Edwards Aquifer Rules?

Yes  No

**If yes**, attach a report concerning the recharge zone.

Attachment:

## DOMESTIC WORKSHEET 3.2

### SUBSURFACE LAND DISPOSAL OF EFFLUENT

The following is required for new and major amendment applications. Renewal and minor amendments may require the worksheet on a case by case basis.

**NOTE: All applicants proposing new/amended subsurface disposal MUST complete and submit Worksheet 7.0. This worksheet applies to any subsurface disposal system that does not meet the definition of a subsurface area drip dispersal system as defined in 30 TAC Chapter 222, *Subsurface Area Drip Dispersal System*.**

#### Section 1. Subsurface Application (Instructions Page 83)

Identify the type of system:

- Conventional Gravity Drainfield, Beds, or Trenches (new systems must be less than 5,000 GPD)
- Low Pressure Dosing
- Other, specify:

Application area, in acres:

Area of drainfield, in square feet:

Application rate, in gal/square foot/day:

Depth to groundwater, in feet:

Area of trench, in square feet:

Dosing duration per area, in hours:

Number of beds:

Dosing amount per area, in inches/day:

Infiltration rate, in inches/hour:

Storage volume, in gallons:

Area of bed(s), in square feet:

Soil Classification:

Attach a separate engineering report with the information required in 30 TAC § 309.20, excluding the requirements of § 309.20 b(3)(A) and (B) design analysis which may be asked for on a case by case basis. Include a description of the schedule of dosing basin rotation.

Attachment: [click here to download](#)

**Section 2. Edwards Aquifer (Instructions Page 83)**

Is the subsurface system located on the Edwards Aquifer Recharge Zone as mapped by the TCEQ?

Yes  No

Is the subsurface system located on the Edwards Aquifer Transition Zone as mapped by the TCEQ?

Yes  No

**If yes to either question**, the subsurface system may be prohibited by 30 TAC §213.8. Please call the Municipal Permits Team, at 512-239-4671, to schedule a pre-application meeting.

### DOMESTIC WORKSHEET 3.3 N/A

#### SUBSURFACE AREA DRIP DISPERSAL SYSTEM (SADDS) LAND DISPOSAL OF EFFLUENT

The following is required for new and major amendment subsurface area drip dispersal system applications. Renewal and minor amendments may require the worksheet on a case by case basis.

**NOTE: All applicants proposing new or amended subsurface disposal MUST complete and submit Worksheet 7.0. This worksheet applies to any subsurface disposal system that meets the definition of a subsurface area drip dispersal system as defined in 30 TAC Chapter 222, Subsurface Area Drip Dispersal System.**

#### Section 1. Administrative Information (Instructions Page 84)

- A. Provide the legal name of all corporations or other business entities managed, owned, or otherwise closely related to the owner of the treatment facility.

[Redacted]

- B. Is the owner of the land where the treatment facility is located the same as the owner of the treatment facility?

Yes  No

If **no**, provide the legal name of all corporations or other business entities managed, owned, or otherwise closely related to the owner of the land where the treatment facility is located.

[Redacted]

- C. Owner of the subsurface area drip dispersal system:

[Redacted]

- D. Is the owner of the subsurface area drip dispersal system the same as the owner of the wastewater treatment facility or the site where the wastewater treatment facility is located?

Yes  No

If **no**, identify the names of all corporations or other business entities managed, owned, or otherwise closely related to the entity identified in Item 1.C.

[Redacted]

E. Owner of the land where the subsurface area drip dispersal system is located:

[Redacted]

F. Is the owner of the land where the subsurface area drip dispersal system is located the same as owner of the wastewater treatment facility, the site where the wastewater treatment facility is located, or the owner of the subsurface area drip dispersal system?

Yes  No

If **no**, identify the name of all corporations or other business entities managed, owned, or otherwise closely related to the entity identified in item 1.E.

[Redacted]

## Section 2. Subsurface Area Drip Dispersal System (Instructions Page 84)

### A. Type of system

Subsurface Drip Irrigation

Surface Drip Irrigation

Other, specify: [Redacted]

### B. Irrigation operations

Application area, in acres: [Redacted]

Infiltration Rate, in inches/hour: [Redacted]

Average slope of the application area, percent (%): [Redacted]

Maximum slope of the application area, percent (%): [Redacted]

Storage volume, in gallons: [Redacted]

Major soil series: [Redacted]

Depth to groundwater, in feet: [Redacted]

### C. Application rate

Is the facility located **west** of the boundary shown in 30 TAC § 222.83 and also using a vegetative cover of non-native grasses over seeded with cool season grasses during the winter months (October-March)?

Yes  No

If **yes**, then the facility may propose a hydraulic application rate not to exceed 0.1 gal/square foot/day.

Is the facility located **east** of the boundary shown in *30 TAC § 222.83* or in any part of the state when the vegetative cover is any crop other than non-native grasses?

Yes  No

If **yes**, the facility must use the formula in *30 TAC §222.83* to calculate the maximum hydraulic application rate.

Do you plan to submit an alternative method to calculate the hydraulic application rate for approval by the executive director?

Yes  No

Hydraulic application rate, in gal/square foot/day:

Nitrogen application rate, in lbs/gal/day:

#### **D. Dosing information**

Number of doses per day:

Dosing duration per area, in hours:

Rest period between doses, in hours:

Dosing amount per area, in inches/day:

Number of zones:

Does the proposed subsurface drip irrigation system use tree vegetative cover as a crop?

Yes  No

If **yes**, provide a vegetation survey by a certified arborist. Please call the Water Quality Assessment Team at (512) 239-4671 to schedule a pre-application meeting.

Attachment:

### **Section 3. Required Plans (Instructions Page 84)**

#### **A. Recharge feature plan**

Attach a Recharge Feature Plan with all information required in *30 TAC §222.79*.

Attachment:

**B. Soil evaluation**

Attach a Soil Evaluation with all information required in *30 TAC §222.73*.

Attachment:

**C. Site preparation plan**

Attach a Site Preparation Plan with all information required in *30 TAC §222.75*.

Attachment:

**D. Soil sampling/testing**

Attach soil sampling and testing that includes all information required in *30 TAC §222.157*.

Attachment:

**Section 4. Floodway Designation (Instructions Page 85)**

**A. Site location**

Is the existing/proposed land application site within a designated floodway?

Yes       No

**B. Flood map**

Attach either the FEMA flood map or alternate information used to determine the floodway.

Attachment:

**Section 5. Surface Waters in the State (Instructions Page 85)**

**A. Buffer Map**

Attach a map showing appropriate buffers on surface waters in the state, water wells, and springs/seeps.

Attachment:

**B. Buffer variance request**

Do you plan to request a buffer variance from water wells or waters in the state?

Yes       No

If yes, then attach the additional information required in 30 TAC § 222.81(c).

Attachment: [click here to enter text](#)

### Section 6. Edwards Aquifer (Instructions Page 85)

A. Is the SADDs located on the Edwards Aquifer Recharge Zone as mapped by the TCEQ?

Yes  No

B. Is the SADDs located on the Edwards Aquifer Transition Zone as mapped by the TCEQ?

Yes  No

If yes to either question, then the SADDs may be prohibited by 30 TAC §213.8. Please call the Municipal Permits Team at 512-239-4671 to schedule a pre-application meeting.

## DOMESTIC WORKSHEET 4.0

### POLLUTANT ANALYSES REQUIREMENTS\*

The following is required for facilities with a permitted or proposed flow of 1.0 MGD or greater, facilities with an approved pretreatment program, or facilities classified as a major facility. See instructions for further details.

This worksheet is not required for minor amendments without renewal

### Section 1. Toxic Pollutants (Instructions Page 87)

For pollutants identified in Table 4.0(1), indicate the type of sample.

Grab  Composite

Date and time sample(s) collected: N/A

*Table 4.0(1) - Toxics Analysis*

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Acrylonitrile				50
Aldrin				0.01
Aluminum				2.5
Anthracene				10
Antimony				5
Arsenic				0.5
Barium				3
Benzene				10
Benzidine				50
Benzo(a)anthracene				5

<b>Pollutant</b>	<b>AVG Effluent Conc. (µg/l)</b>	<b>MAX Effluent Conc. (µg/l)</b>	<b>Number of Samples</b>	<b>MAL (µg/l)</b>
Benzo(a)pyrene				5
Bis(2-chloroethyl)ether				10
Bis(2-ethylhexyl)phthalate				10
Bromodichloromethane				10
Bromoform				10
Cadmium				1
Carbon Tetrachloride				2
Carbaryl				5
Chlordane*				0.2
Chlorobenzene				10
Chlorodibromomethane				10
Chloroform				10
Chlorpyrifos				0.05
Chromium (Total)				3
Chromium (Tri) (*1)				N/A
Chromium (Hex)				3
Copper				2
Chrysene				5
p-Chloro-m-Cresol				10
4,6-Dinitro-o-Cresol				50
p-Cresol				10
Cyanide (*2)				10

<b>Pollutant</b>	<b>AVG Effluent Conc. (µg/l)</b>	<b>MAX Effluent Conc. (µg/l)</b>	<b>Number of Samples</b>	<b>MAL (µg/l)</b>
4,4'- DDD				0.1
4,4'- DDE				0.1
4,4'- DDT				0.02
2,4-D				0.7
Demeton (O and S)				0.20
Diazinon				0.5/0.1
1,2-Dibromoethane				10
m-Dichlorobenzene				10
o-Dichlorobenzene				10
p-Dichlorobenzene				10
3,3'-Dichlorobenzidine				5
1,2-Dichloroethane				10
1,1-Dichloroethylene				10
Dichloromethane				20
1,2-Dichloropropane				10
1,3-Dichloropropene				10
Dicofol				1
Dieldrin				0.02
2,4-Dimethylphenol				10
Di-n-Butyl Phthalate				10
Diuron				0.09
Endosulfan I (alpha)				0.01

<b>Pollutant</b>	<b>AVG Effluent Conc. (µg/l)</b>	<b>MAX Effluent Conc. (µg/l)</b>	<b>Number of Samples</b>	<b>MAL (µg/l)</b>
Endosulfan II (beta)				0.02
Endosulfan Sulfate				0.1
Endrin				0.02
Ethylbenzene				10
Fluoride				500
Guthion				0.1
Heptachlor				0.01
Heptachlor Epoxide				0.01
Hexachlorobenzene				5
Hexachlorobutadiene				10
Hexachlorocyclohexane (alpha)				0.05
Hexachlorocyclohexane (beta)				0.05
gamma-Hexachlorocyclohexane (Lindane)				0.05
Hexachlorocyclopentadiene				10
Hexachloroethane				20
Hexachlorophene				10
Lead				0.5
Malathion				0.1
Mercury				0.005
Methoxychlor				2
Methyl Ethyl Ketone				50

<b>Pollutant</b>	<b>AVG Effluent Conc. (µg/l)</b>	<b>MAX Effluent Conc. (µg/l)</b>	<b>Number of Samples</b>	<b>MAL (µg/l)</b>
Mirex				0.02
Nickel				2
Nitrate-Nitrogen				100
Nitrobenzene				10
N-Nitrosodiethylamine				20
N-Nitroso-di-n-Butylamine				20
Nonylphenol				333
Parathion (ethyl)				0.1
Pentachlorobenzene				20
Pentachlorophenol				5
Phenanthrene				10
Polychlorinated Biphenyls (PCB's) (*3)				0.2
Pyridine				20
Selenium				5
Silver				0.5
1,2,4,5-Tetrachlorobenzene				20
1,1,2,2-Tetrachloroethane				10
Tetrachloroethylene				10
Thallium				0.5
Toluene				10
Toxaphene				0.3

<b>Pollutant</b>	<b>AVG Effluent Conc. (µg/l)</b>	<b>MAX Effluent Conc. (µg/l)</b>	<b>Number of Samples</b>	<b>MAL (µg/l)</b>
2,4,5-TP (Silvex)				0.3
Tributyltin (see instructions for explanation)				0.01
1,1,1-Trichloroethane				10
1,1,2-Trichloroethane				10
Trichloroethylene				10
2,4,5-Trichlorophenol				50
TTHM (Total Trihalomethanes)				10
Vinyl Chloride				10
Zinc				5

(\*1) Determined by subtracting hexavalent Cr from total Cr.

(\*2) Cyanide, amenable to chlorination or weak-acid dissociable.

(\*3) The sum of seven PCB congeners 1242, 1254, 1221, 1232, 1248, 1260, and 1016.

## Section 2. Priority Pollutants

For pollutants identified in Tables 4.0(2)A-E, indicate type of sample.

Grab  Composite

Date and time sample(s) collected:

**Table 4.0(2)A - Metals, Cyanide, Phenols**

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Antimony				5
Arsenic				0.5
Beryllium				0.5
Cadmium				1
Chromium (Total)				3
Chromium (Hex)				3
Chromium (Tri) (*1)				N/A
Copper				2
Lead				0.5
Mercury				0.005
Nickel				2
Selenium				5
Silver				0.5
Thallium				0.5
Zinc				5
Cyanide (*2)				10
Phenols, Total				10

(\*1) Determined by subtracting hexavalent Cr from total Cr.

(\*2) Cyanide, amenable to chlorination or weak-acid dissociable

**Table 4.0(2)B - Volatile Compounds**

<b>Pollutant</b>	<b>AVG Effluent Conc. (µg/l)</b>	<b>MAX Effluent Conc. (µg/l)</b>	<b>Number of Samples</b>	<b>MAL (µg/l)</b>
Acrolein				50
Acrylonitrile				50
Benzene				10
Bromoform				10
Carbon Tetrachloride				2
Chlorobenzene				10
Chlorodibromomethane				10
Chloroethane				50
2-Chloroethylvinyl Ether				10
Chloroform				10
Dichlorobromomethane [Bromodichloromethane]				10
1,1-Dichloroethane				10
1,2-Dichloroethane				10
1,1-Dichloroethylene				10
1,2-Dichloropropane				10
1,3-Dichloropropylene [1,3-Dichloropropene]				10
1,2-Trans-Dichloroethylene				10
Ethylbenzene				10
Methyl Bromide				50
Methyl Chloride				50
Methylene Chloride				20
1,1,2,2-Tetrachloroethane				10
Tetrachloroethylene				10
Toluene				10

<b>Pollutant</b>	<b>AVG Effluent Conc. (µg/l)</b>	<b>MAX Effluent Conc. (µg/l)</b>	<b>Number of Samples</b>	<b>MAL (µg/l)</b>
1,1,1-Trichloroethane				10
1,1,2-Trichloroethane				10
Trichloroethylene				10
Vinyl Chloride				10

**Table 4.0(2)C - Acid Compounds**

<b>Pollutant</b>	<b>AVG Effluent Conc. (µg/l)</b>	<b>MAX Effluent Conc. (µg/l)</b>	<b>Number of Samples</b>	<b>MAL (µg/l)</b>
2-Chlorophenol				10
2,4-Dichlorophenol				10
2,4-Dimethylphenol				10
4,6-Dinitro-o-Cresol				50
2,4-Dinitrophenol				50
2-Nitrophenol				20
4-Nitrophenol				50
P-Chloro-m-Cresol				10
Pentalchlorophenol				5
Phenol				10
2,4,6-Trichlorophenol				10

**Table 4.0(2)D - Base/Neutral Compounds**

<b>Pollutant</b>	<b>AVG Effluent Conc. (µg/l)</b>	<b>MAX Effluent Conc. (µg/l)</b>	<b>Number of Samples</b>	<b>MAL (µg/l)</b>
Acenaphthene				10
Acenaphthylene				10
Anthracene				10
Benzidine				50
Benzo(a)Anthracene				5
Benzo(a)Pyrene				5
3,4-Benzofluoranthene				10
Benzo(ghi)Perylene				20
Benzo(k)Fluoranthene				5
Bis(2-Chloroethoxy)Methane				10
Bis(2-Chloroethyl)Ether				10
Bis(2-Chloroisopropyl)Ether				10
Bis(2-Ethylhexyl)Phthalate				10
4-Bromophenyl Phenyl Ether				10
Butyl benzyl Phthalate				10
2-Chloronaphthalene				10
4-Chlorophenyl phenyl ether				10
Chrysene				5
Dibenzo(a,h)Anthracene				5
1,2-(o)Dichlorobenzene				10
1,3-(m)Dichlorobenzene				10
1,4-(p)Dichlorobenzene				10
3,3-Dichlorobenzidine				5
Diethyl Phthalate				10
Dimethyl Phthalate				10
Di-n-Butyl Phthalate				10

<b>Pollutant</b>	<b>AVG Effluent Conc. (µg/l)</b>	<b>MAX Effluent Conc. (µg/l)</b>	<b>Number of Samples</b>	<b>MAL (µg/l)</b>
2,4-Dinitrotoluene				10
2,6-Dinitrotoluene				10
Di-n-Octyl Phthalate				10
1,2-Diphenylhydrazine (as Azo- benzene)				20
Fluoranthene				10
Fluorene				10
Hexachlorobenzene				5
Hexachlorobutadiene				10
Hexachlorocyclo-pentadiene				10
Hexachloroethane				20
Indeno(1,2,3-cd)pyrene				5
Isophorone				10
Naphthalene				10
Nitrobenzene				10
N-Nitrosodimethylamine				50
N-Nitrosodi-n-Propylamine				20
N-Nitrosodiphenylamine				20
Phenanthrene				10
Pyrene				10
1,2,4-Trichlorobenzene				10

**Table 4.0(2)E - Pesticides**

<b>Pollutant</b>	<b>AVG Effluent Conc. (µg/l)</b>	<b>MAX Effluent Conc. (µg/l)</b>	<b>Number of Samples</b>	<b>MAL (µg/l)</b>
Aldrin				0.01
alpha-BHC (Hexachlorocyclohexane)				0.05
beta-BHC (Hexachlorocyclohexane)				0.05
gamma-BHC (Hexachlorocyclohexane)				0.05
delta-BHC (Hexachlorocyclohexane)				0.05
Chlordane				0.2
4,4-DDT				0.02
4,4-DDE				0.1
4,4,-DDD				0.1
Dieldrin				0.02
Endosulfan I (alpha)				0.01
Endosulfan II (beta)				0.02
Endosulfan Sulfate				0.1
Endrin				0.02
Endrin Aldehyde				0.1
Heptachlor				0.01
Heptachlor Epoxide				0.01
PCB-1242				0.2
PCB-1254				0.2
PCB-1221				0.2
PCB-1232				0.2
PCB-1248				0.2

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
PCB-1260				0.2
PCB-1016				0.2
Toxaphene				0.3

\* For PCBS, if all are non-detects, enter the highest non-detect preceded by a "<".

### Section 3. Dioxin/Furan Compounds

A. Indicate which of the following compounds from may be present in the influent from a contributing industrial user or significant industrial user. Check all that apply.

- 2,4,5-trichlorophenoxy acetic acid  
Common Name 2,4,5-T, CASRN 93-76-5
- 2-(2,4,5-trichlorophenoxy) propanoic acid  
Common Name Silvex or 2,4,5-TP, CASRN 93-72-1
- 2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloropropionate  
Common Name Erbon, CASRN 136-25-4
- 0,0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothioate  
Common Name Ronnel, CASRN 299-84-3
- 2,4,5-trichlorophenol  
Common Name TCP, CASRN 95-95-4
- hexachlorophene  
Common Name HCP, CASRN 70-30-4

For each compound identified, provide a brief description of the conditions of its/their presence at the facility.

B. Do you know or have any reason to believe that 2,3,7,8 Tetrachlorodibenzo-P-Dioxin (TCDD) or any congeners of TCDD may be present in your effluent?

Yes  No

If yes, provide a brief description of the conditions for its presence.

If any of the compounds in Subsection A or B are present, complete Table 4.0(2)F.

For pollutants identified in Table 4.0(2)F, indicate the type of sample.

Grab  Composite

Date and time sample(s) collected:

**TABLE 4.0(2)F - DIOXIN/FURAN COMPOUNDS**

Compound	Toxic Equivalency Factors	Wastewater Concentration (ppq)	Wastewater Equivalents (ppq)	Sludge Concentration (ppt)	Sludge Equivalents (ppt)	MAL (ppq)
2,3,7,8 TCDD	1					10
1,2,3,7,8	0.5					50
2,3,7,8 HxCDDs	0.1					50
1,2,3,4,6,7,8 HpCDD	0.01					50
2,3,7,8 TCDF	0.1					10
1,2,3,7,8 PeCDF	0.05					50
2,3,4,7,8 PeCDF	0.5					50
2,3,7,8 HxCDFs	0.1					50
2,3,4,7,8	0.01					50
OCDD	0.0003					100
OCDF	0.0003					100
PCB 77	0.0001					0.5
PCB 81	0.0003					0.5
PCB 126	0.1					0.5
PCB 169	0.03					0.5
Total						

## DOMESTIC WORKSHEET 5.0

### TOXICITY TESTING REQUIREMENTS

**The following is required for facilities with a currently-operating design flow greater than or equal to 1.0 MGD, with an EPA-approved pretreatment program (or those that are required to have one under 40 CFR Part 403), or are required by the TCEQ to perform Whole Effluent Toxicity testing. This worksheet is not required for minor amendments without renewal.**

#### Section 1. Required Tests (Instructions Page 97)

Indicate the number of 7-day chronic or 48-hour acute Whole Effluent Toxicity (WET) tests performed in the four and one-half years prior to submission of the application.

7-day Chronic:

48-hour Acute:

#### Section 2. Toxicity Reduction Evaluations (TREs)

Has this facility completed a TRE in the past four and a half years? Or is the facility currently performing a TRE?

Yes  No

**If yes**, describe the progress to date, if applicable, in identifying and confirming the toxicant.



## DOMESTIC WORKSHEET 6.0

### INDUSTRIAL WASTE CONTRIBUTION

The following is required for all publicly owned treatment works (POTWs)

#### Section 1. All POTWs (Instructions Page 99)

##### A. Industrial users

Provide the number of each of the following types of industrial users (IUs) that discharge to your POTW and the daily flows from each user. See the Instructions for definitions of Categorical IUs, Significant IUs - non-categorical, and Other IUs.

**If there are no users, enter 0 (zero).**

Categorical IUs:

Number of IUs: 0

Average Daily Flows, in MGD: 0

Significant IUs - non-categorical:

Number of IUs: 0

Average Daily Flows, in MGD: 0

Other IUs:

Number of IUs: 0

Average Daily Flows, in MGD: 0

##### B. Treatment plant interference

In the past three years, has your POTW experienced treatment plant interference (see instructions)?

Yes  No

**If yes**, identify the dates, duration, description of interference, and probable cause(s) and possible source(s) of each interference event. Include the names of the IUs that may have caused the interference.

**C. Treatment plant pass through**

In the past three years, has your POTW experienced pass through (see instructions)?

Yes  No

If yes, identify the dates, duration, a description of the pollutants passing through the treatment plant, and probable cause(s) and possible source(s) of each pass through event. Include the names of the IUs that may have caused pass through.

**D. Pretreatment program**

Does your POTW have an approved pretreatment program?

Yes  No

If yes, complete Section 2 only of this Worksheet.

Is your POTW required to develop an approved pretreatment program?

Yes  No

If yes, complete Section 2.c. and 2.d. only, and skip Section 3.

If no to either question above, skip Section 2 and complete Section 3 for each significant industrial user and categorical industrial user.

**Section 2. POTWs with Approved Programs or Those Required to Develop a Program (Instructions Page 100)**

**A. Substantial modifications**

Have there been any **substantial modifications** to the approved pretreatment program that have not been submitted to the TCEQ for approval according to 40 CFR §403.18?

Yes  No

If yes, identify the modifications that have not been submitted to TCEQ, including the purpose of the modification.

Click here to enter text

**B. Non-substantial modifications**

Have there been any **non-substantial modifications** to the approved pretreatment program that have not been submitted to TCEQ for review and acceptance?

Yes  No

If yes, identify all non-substantial modifications that have not been submitted to TCEQ, including the purpose of the modification.

Click here to enter text

**C. Effluent parameters above the MAL**

In Table 6.0(1), list all parameters measured above the MAL in the POTW's effluent monitoring during the last three years. Submit an attachment if necessary.

**Table 6.0(1) - Parameters Above the MAL**

Pollutant	Concentration	MAL	Units	Date

**D. Industrial user interruptions**

Has any SIU, CIU, or other IU caused or contributed to any problems (excluding interferences or pass throughs) at your POTW in the past three years?

Yes  No

If yes, identify the industry, describe each episode, including dates, duration, description of the problems, and probable pollutants.

**Section 3. Significant Industrial User (SIU) Information and Categorical Industrial User (CIU) (Instructions Page 100)**

**A. General information**

Company Name: None

SIC Code:

Telephone number:  Fax number:

Contact name:

Address:

City, State, and Zip Code:

**B. Process information**

Describe the industrial processes or other activities that affect or contribute to the SIU(s) or CIU(s) discharge (i.e., process and non-process wastewater).

**C. Product and service information**

Provide a description of the principal product(s) or services performed.

click here to enter text

**D. Flow rate information**

See the Instructions for definitions of “process” and “non-process wastewater.”

Process Wastewater:

Discharge, in gallons/day:

Discharge Type:  Continuous  Batch  Intermittent

Non-Process Wastewater:

Discharge, in gallons/day:

Discharge Type:  Continuous  Batch  Intermittent

**E. Pretreatment standards**

Is the SIU or CIU subject to technically based local limits as defined in the instructions?

Yes  No

Is the SIU or CIU subject to categorical pretreatment standards found in *40 CFR Parts 405-471*?

Yes  No

**If subject to categorical pretreatment standards**, indicate the applicable category and subcategory for each categorical process.

Category:   
Subcategories:

Category:   
Subcategories:

Category:   
Subcategories:

Category:   
Subcategories:

Category:   
Subcategories:

**F. Industrial user interruptions**

Has the SIU or CIU caused or contributed to any problems (e.g., interferences, pass through, odors, corrosion, blockages) at your POTW in the past three years?

Yes       No

**If yes**, identify the SIU, describe each episode, including dates, duration, description of problems, and probable pollutants.

<a href="#">Link here to enter text</a>
---

**WORKSHEET 7.0**      N/A

**TEXAS COMMISSION ON ENVIRONMENTAL QUALITY  
CLASS V INJECTION WELL INVENTORY/AUTHORIZATION FORM**

Submit to:  
TCEQ  
IUC Permits Team  
Radioactive Materials Division  
MC-233  
PO Box 13087  
Austin, Texas 78711-3087  
512-239-6466

For TCEQ Use Only
Reg. No. _____
Date Received _____
Date Authorized _____

**Section 1. General Information (Instructions Page 102)**

**1. TCEQ Program Area**

Program Area (PST, VCP, IHW, etc.):

Program ID:

Contact Name:

Phone Number:

**2. Agent/Consultant Contact Information**

Contact Name:

Address:

City, State, and Zip Code:

Phone Number:

**3. Owner/Operator Contact Information**

Owner       Operator

Owner/Operator Name:

Contact Name:

Address:

City, State, and Zip Code:

Phone Number:

**4. Facility Contact Information**

Facility Name:

Address:

City, State, and Zip Code:

Location description (if no address is available):

Facility Contact Person:

Phone Number:

**5. Latitude and Longitude, in degrees-minutes-seconds**

Latitude:  Longitude:

Method of determination (GPS, TOPO, etc.):

Attach topographic quadrangle map as attachment A.

**6. Well Information**

Type of Well Construction, select one:

- Vertical Injection
- Subsurface Fluid Distribution System
- Infiltration Gallery
- Temporary Injection Points
- Other, Specify:

Number of Injection Wells:

**7. Purpose**

Detailed Description regarding purpose of Injection System:

Attach a Site Map as Attachment B (Attach the Approved Remediation Plan, if appropriate.)

**8. Water Well Driller/Installer**

Water Well Driller/Installer Name:

City, State, and Zip Code:

Phone Number:

License Number:

## Section 2. Proposed Down Hole Design

Attach a diagram signed and sealed by a licensed engineer as Attachment C.

*Table 7.0(1) -Down Hole Design Table*

Name of String	Size	Setting Depth	Sacks Cement/Grout - Slurry Volume - Top of Cement	Hole Size	Weight (lbs/ft) PVC/Steel
Casing					
Tubing					
Screen					

## Section 3. Proposed Trench System, Subsurface Fluid Distribution System, or Infiltration Gallery

Attach a diagram signed and sealed by a licensed engineer as Attachment D.

System(s) Dimensions:

System(s) Construction:

## Section 4. Site Hydrogeological and Injection Zone Data

1. Name of Contaminated Aquifer:
2. Receiving Formation Name of Injection Zone:
3. Well/Trench Total Depth:
4. Surface Elevation:
5. Depth to Ground Water:
6. Injection Zone Depth:
7. Injection Zone vertically isolated geologically? Yes  No

Impervious Strata between Injection Zone and nearest Underground Source of Drinking Water:

Name:

Thickness:

8. Provide a list of contaminants and the levels (ppm) in contaminated aquifer

Attach as Attachment E.

9. Horizontal and Vertical extent of contamination and injection plume

Attach as Attachment F.

10. Formation (Injection Zone) Water Chemistry (Background levels) TDS, etc.

Attach as Attachment G.

11. Injection Fluid Chemistry in PPM at point of injection

Attach as Attachment H.

12. Lowest Known Depth of Ground Water with < 10,000 PPM TDS: [REDACTED]

13. Maximum injection Rate/Volume/Pressure: [REDACTED]

14. Water wells within 1/4 mile radius (attach map as Attachment I): [REDACTED]

15. Injection wells within 1/4 mile radius (attach map as Attachment J): [REDACTED]

16. Monitor wells within 1/4 mile radius (attach drillers logs and map as Attachment K): [REDACTED]

17. Sampling frequency: [REDACTED]

18. Known hazardous components in injection fluid: [REDACTED]

**Section 5. Site History**

1. Type of Facility: [REDACTED]

2. Contamination Dates: [REDACTED]

3. Original Contamination (VOCs, TPH, BTEX, etc.) and Concentrations (attach as Attachment L): [REDACTED]

4. Previous Remediation: [REDACTED]

Attach results of any previous remediation as attachment M

**NOTE: Authorization Form should be completed in detail and authorization given by the TCEQ before construction, operation, and/or conversion can begin. Attach additional pages as necessary.**

***Class V Injection Well Designations***

5A07 Heat Pump/AC return (IW used for groundwater to heat and/or cool buildings)

5A19 Industrial Cooling Water Return Flow (IW used to cool industrial process)

- equipment)
- 5B22 Salt Water Intrusion Barrier (IW used to inject fluids to prevent the intrusion of salt water into an aquifer)
  - 5D02 Storm Water Drainage (IW designed for the disposal of rain water)
  - 5D04 Industrial Stormwater Drainage Wells (IW designed for the disposal of rain water associated with industrial facilities)
  - 5F01 Agricultural Drainage (IW that receive agricultural runoff)
  - 5R21 Aquifer Recharge (IW used to inject fluids to recharge an aquifer)
  - 5S23 Subsidence Control Wells (IW used to control land subsidence caused by ground water withdrawal)
  - 5W09 Untreated Sewage
  - 5W10 Large Capacity Cesspools (Cesspools that are designed for 5,000 gpd or greater)
  - 5W11 Large Capacity Septic systems (Septic systems designed for 5,000 gpd or greater)
  - 5W12 WTPP disposal
  - 5W20 Industrial Process Waste Disposal Wells
  - 5W31 Septic System (Well Disposal method)
  - 5W32 Septic System Drainfield Disposal
  - 5X13 Mine Backfill (IW used to control subsidence, dispose of mining byproducts, and/or fill sections of a mine)
  - 5X25 Experimental Wells (Pilot Test) (IW used to test new technologies or tracer dye studies)
  - 5X26 Aquifer Remediation (IW used to clean up, treat, or prevent contamination of a USDW)
  - 5X27 Other Wells
  - 5X28 Motor Vehicle Waste Disposal Wells (IW used to dispose of waste from a motor vehicle site - These are currently banned)
  - 5X29 Abandoned Drinking Water Wells (waste disposal)

Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

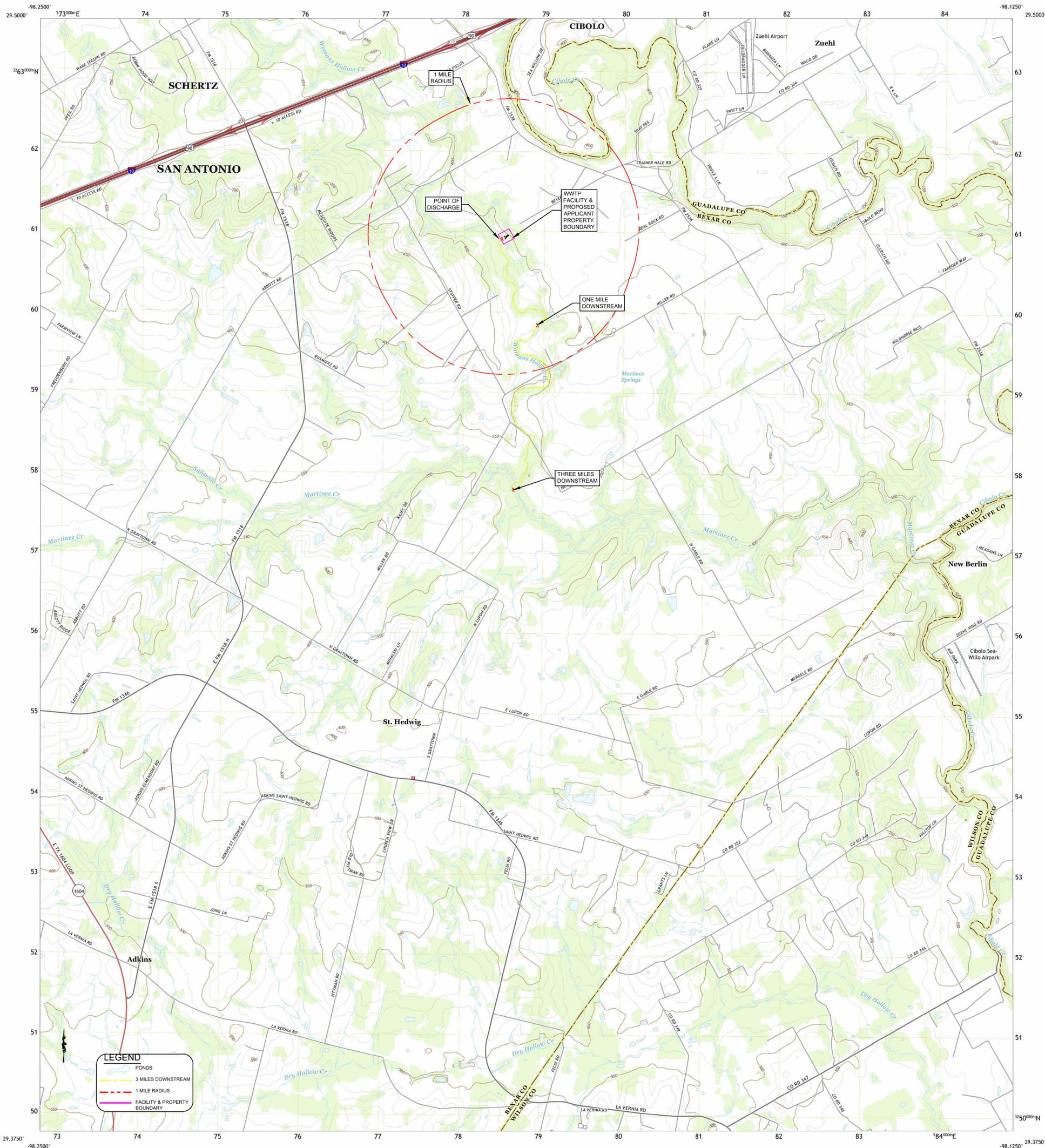
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## **ATTACHMENTS**

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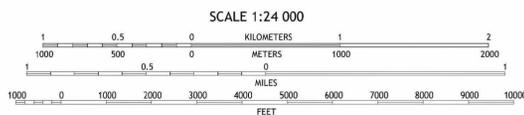
Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

Attachment A: USGS Map Exhibit



Produced by the United States Geological Survey  
North American Datum of 1983 (NAD83)  
World Geodetic System of 1984 (WGS84). Projection and  
1 000-meter grid (Universal Transverse Mercator, Zone 14R)  
This map is not a legal document. Boundaries may be  
generalized for this map scale. Private lands within government  
reservations may not be shown. Obtain permission before  
entering private lands.

Imagery.....NAIP, September 2016 - November 2016  
Roads.....U.S. Census Bureau, 2015  
Names.....GNS, 1979 - 2003  
Hydrography.....National Hydrography Dataset, 2000 - 2018  
Contours.....National Elevation Dataset, 2003  
Boundaries.....Multiple sources; see metadata file 2016 - 2017  
Wetlands.....FWS National Wetlands Inventory 1983



1	2	3	1 Schertz
2	3	4	2 Marion
3	4	5	3 McQueeney
4	5	6	4 Martinez
5	6	7	5 New Berlin
6	7	8	6 Elmendorf
7	8		7 La Vernia SW
8			8 La Vernia

ADJOINING QUADRANGLES

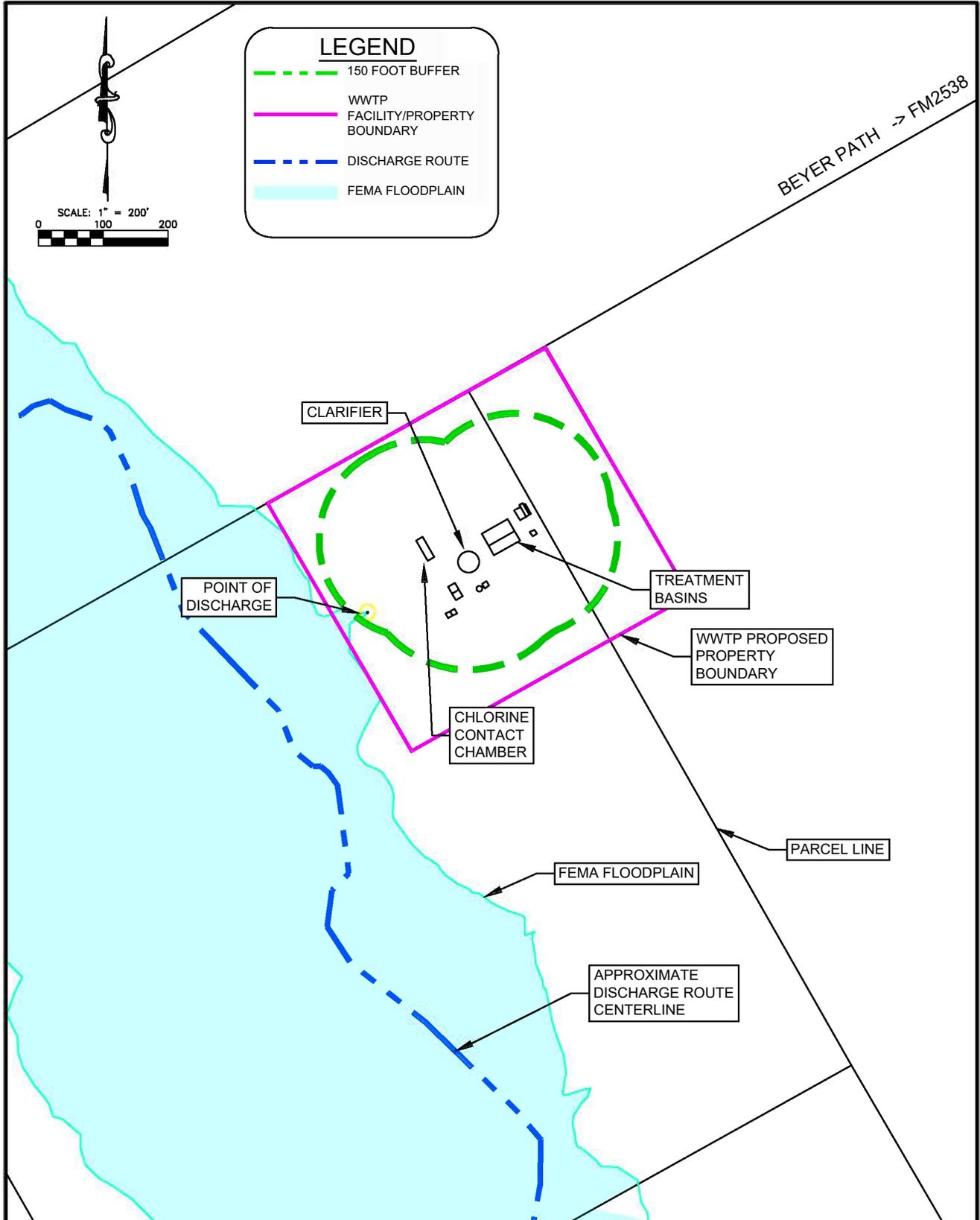
ROAD CLASSIFICATION	
Expressway	Local Connector
Secondary Hwy	Local Road
Ramp	4WD
Interstate Route	US Route
	State Route

SAINT HEDWIG, TX  
2019



Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

## Attachment B: Site Drawing



P:\Projects\0008 GVSUD\01 - Clearwater Creek WWS& WWFSCAD\06\SSITE MAP.dwg, Jul 15, 2020 - 9:20am



**UTILITY ENGINEERING GROUP PLLC**

256 Comal Ave NEW BRAUNFELS, TEXAS 78130 PH: (830) 214-0521  
Texas Engineering Firm F-18712

SCALE:	
DATE:	15 July, 2020
PROJECT NO:	
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	

GREEN VALLEY SPECIAL UTILITY DISTRICT

CLEARWATER CREEK WWTP

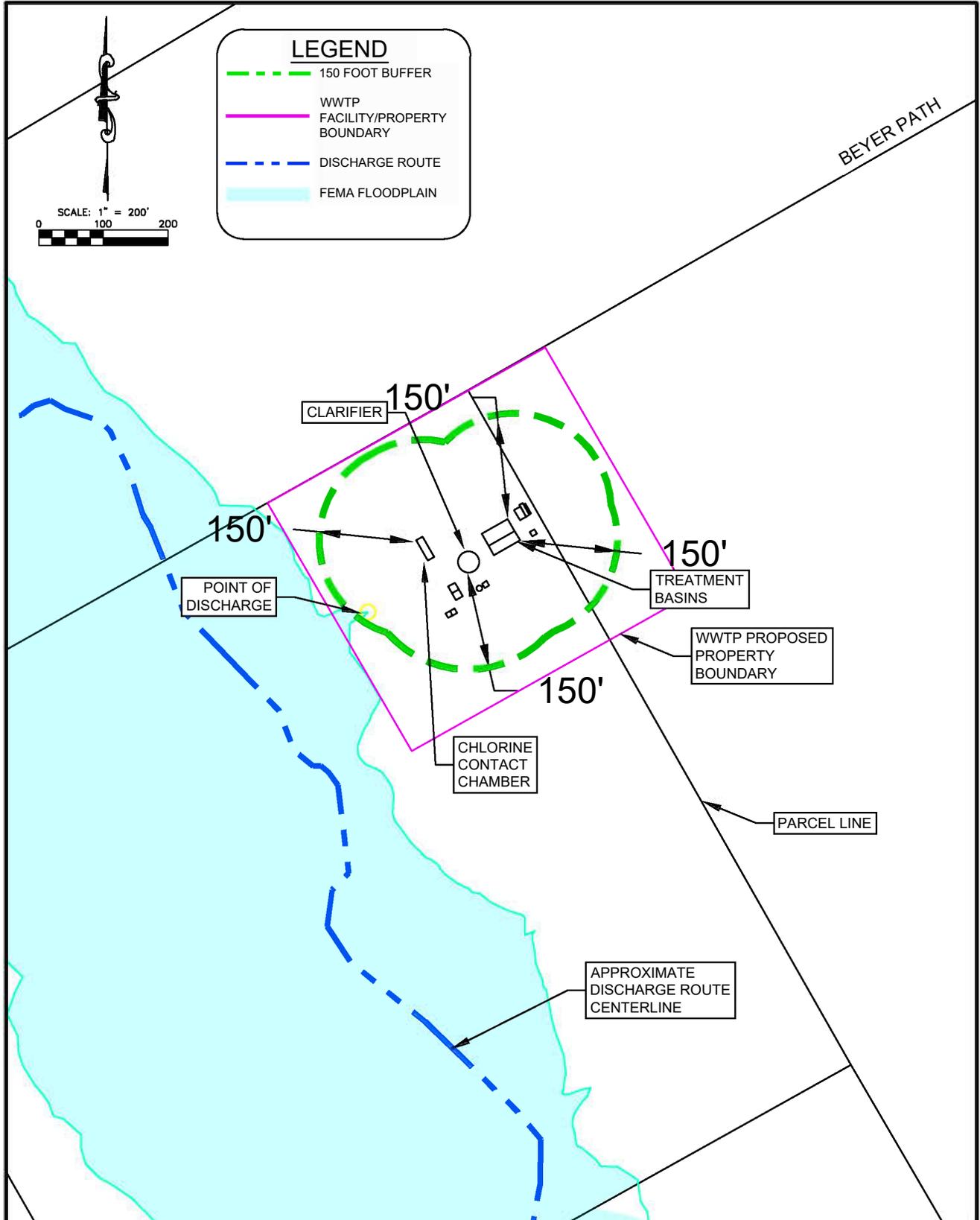
SITE MAP

INITIAL 0.1 MGD PHASE

SHEET: OF

Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

## Attachment C: Buffer Zone Map



P:\Projects\0006 GVSUD01 - Clearwater Creek WFS & WWFSCAD\Sheet\BUFFER MAP.dwg, Jul 15, 2020 - 9:14am



**UTILITY  
ENGINEERING  
GROUP PLLC**

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Texas Engineering Firm F-18712

SCALE:	
DATE:	15 July, 2020
PROJECT NO:	
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	

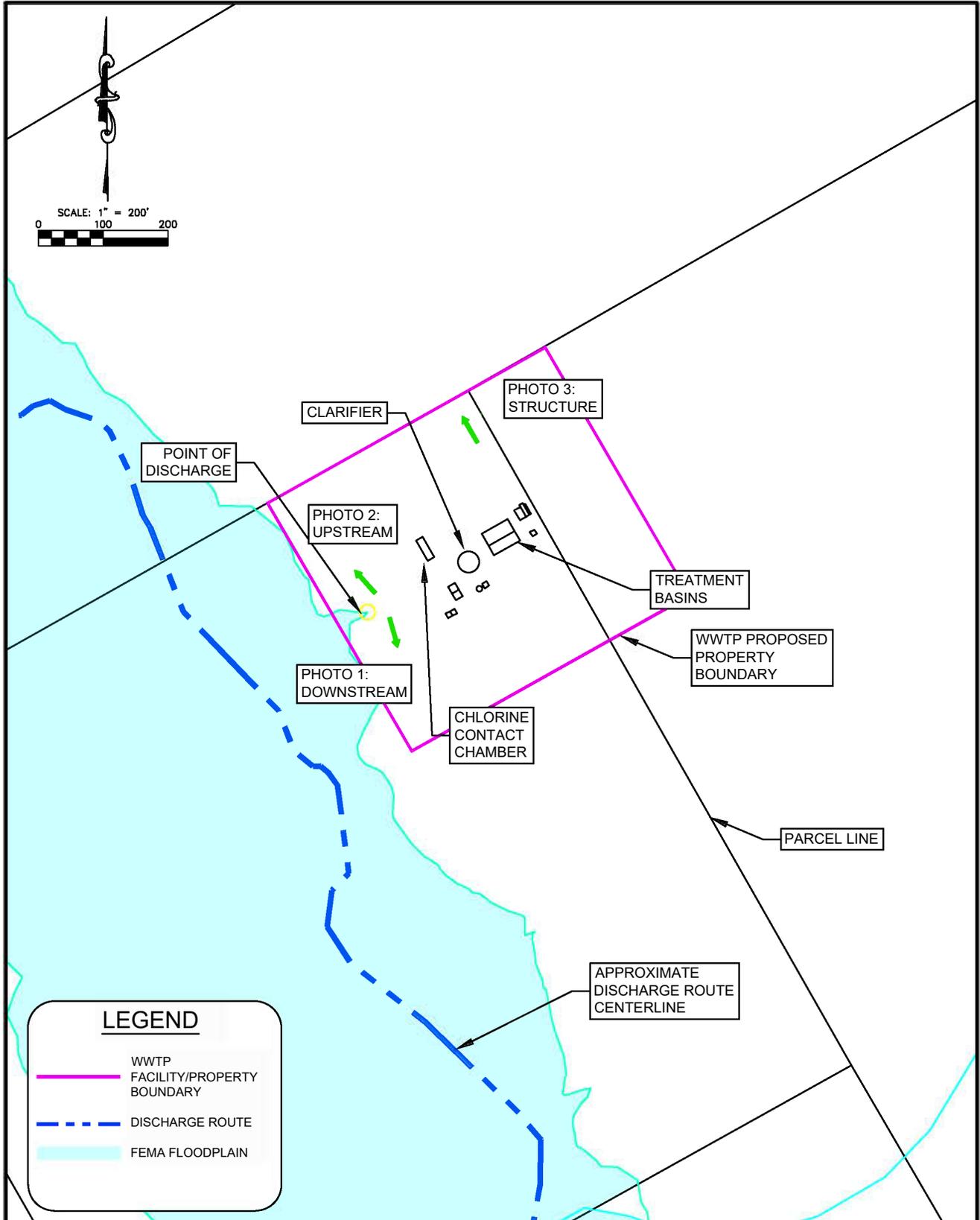
GREEN VALLEY SPECIAL UTILITY DISTRICT

CLEARWATER CREEK WWTP  
BUFFER MAP

SHEET: OF

Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

## Attachment D: Original Photographs



P:\Projects\0008\_GVSUD\01 - Clearwater Creek WWS& WWSF\CAD\Sheet\Plot Plan.dwg, Jul 15, 2020, 9:18am

**LEGEND**

- WWTP FACILITY/PROPERTY BOUNDARY
- - - DISCHARGE ROUTE
- FEMA FLOODPLAIN



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Texas Engineering Firm F-18712

SCALE:	
DATE:	15 July, 2020
PROJECT NO:	
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	

GREEN VALLEY SPECIAL UTILITY DISTRICT
CLEARWATER CREEK WWTTP PLOT PLAN
SHEET:    OF



PHOTO 1: DOWNSTREAM



PHOTO 2: UPSTREAM

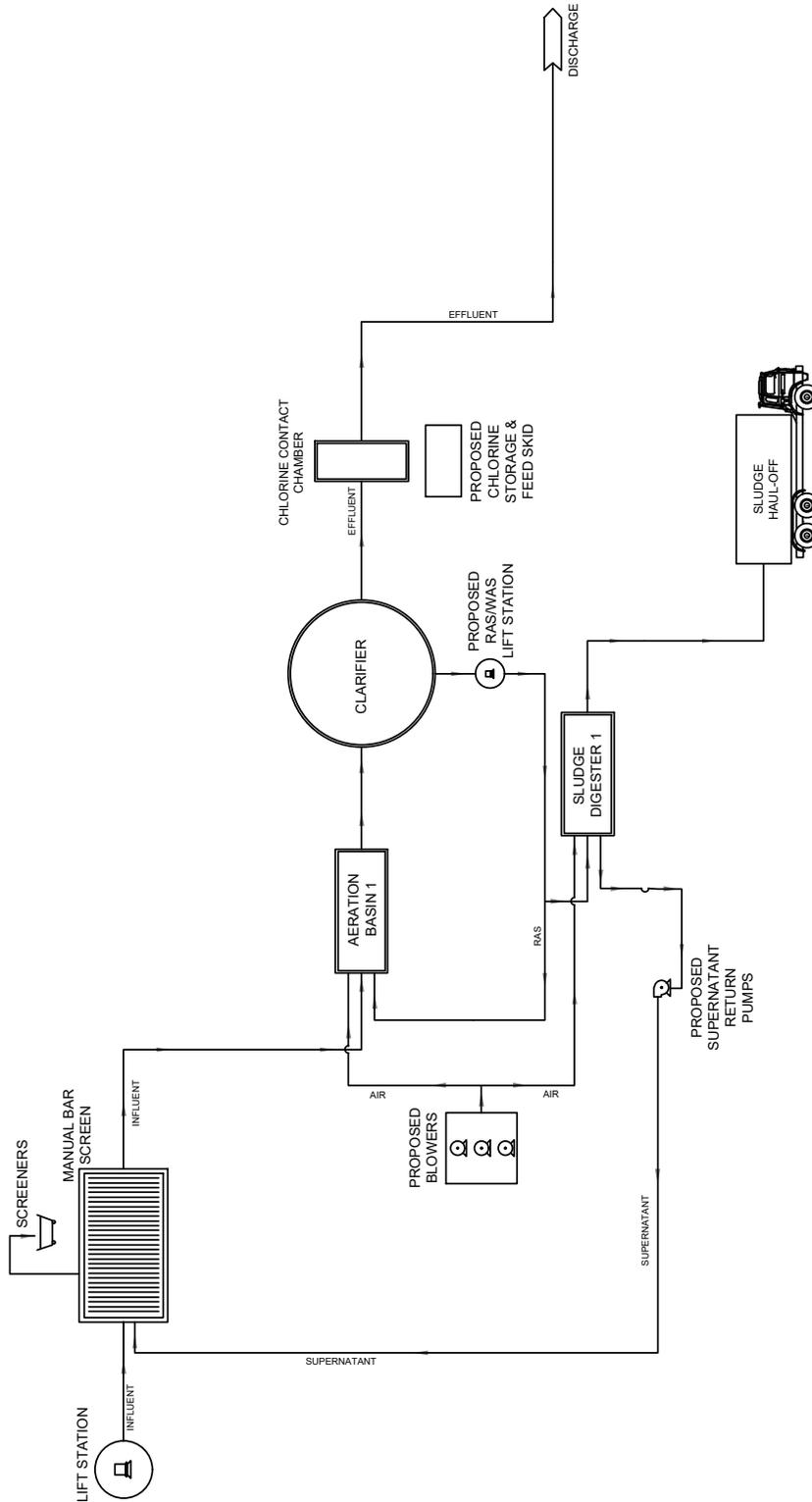


PHOTO 3: STRUCTURE

Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

## Attachment E: Flow Diagrams

P:\Projects\0606 GVSUD\061 - Clearwater Creek WFS & WWFS\CAD\Sheet\FLOW DIAGRAM.dwg, Jul 07, 2020 - 5:05pm



**UTILITY  
ENGINEERING  
GROUP PLLC**

256 Comal Ave NEW BRAUNFELS, TEXAS 78130 PH: (830) 214-0521  
Texas Engineering Firm F-18712

SCALE:	
DATE:	07 July, 2020
PROJECT NO:	
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	

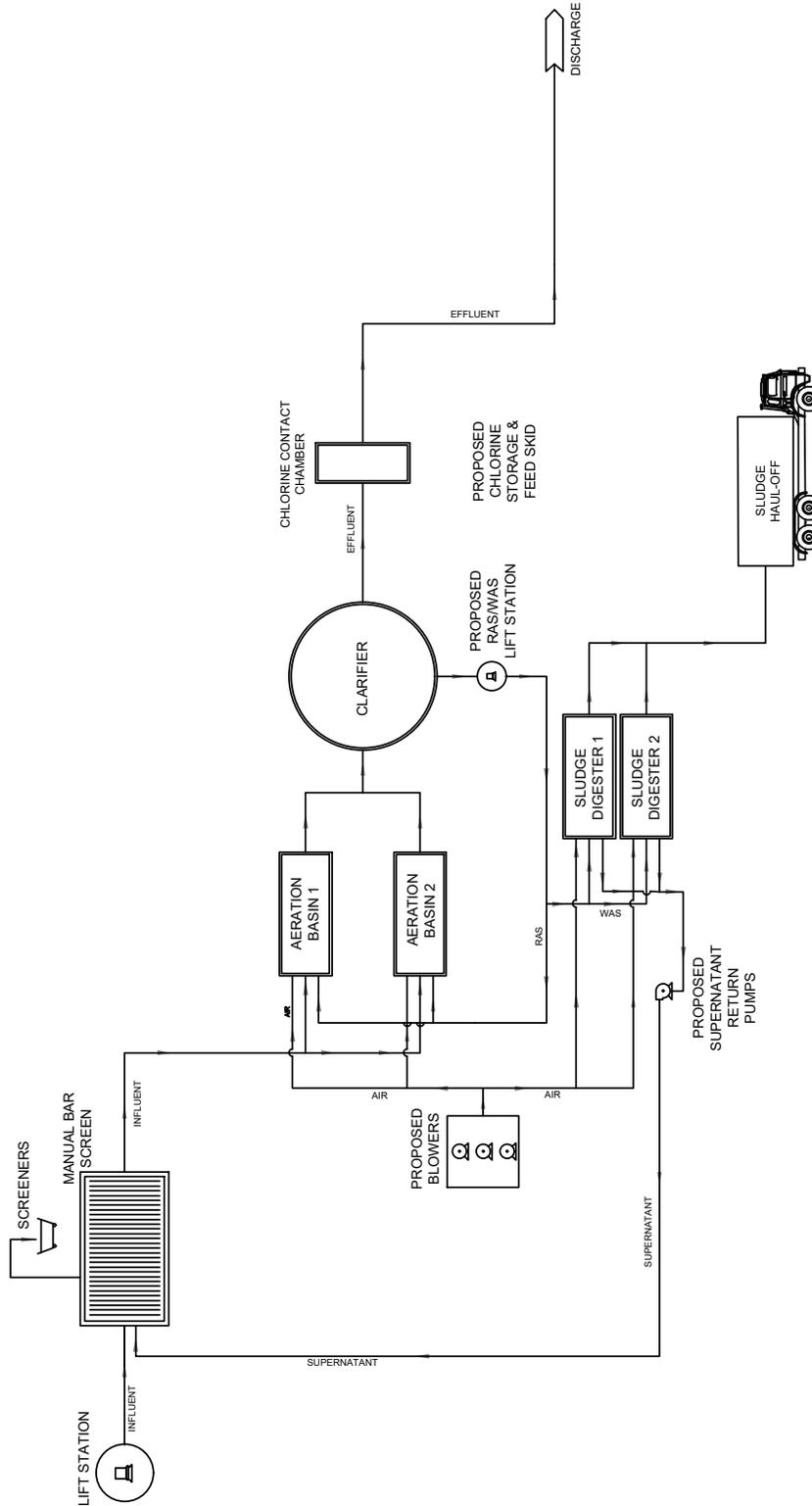
GREEN VALLEY SPECIAL UTILITY DISTRICT

CLEARWATER CREEK WWTP  
FLOW DIAGRAM INITIAL PHASE

0.1 MGD

SHEET: 1 OF 1

P:\Projects\0606 GVSUD\061 - Clearwater Creek WFS & WWFSCAD\Sheet\FLOW DIAGRAM.dwg, Jul 07, 2020 - 5:05pm



**UTILITY  
ENGINEERING  
GROUP PLLC**

256 Comal Ave NEW BRAUNFELS, TEXAS 78130 PH: (830) 214-0521  
Texas Engineering Firm F-18712

SCALE:

DATE: 07 July, 2020

PROJECT NO:

DESIGNED BY:

DRAWN BY:

CHECKED BY:

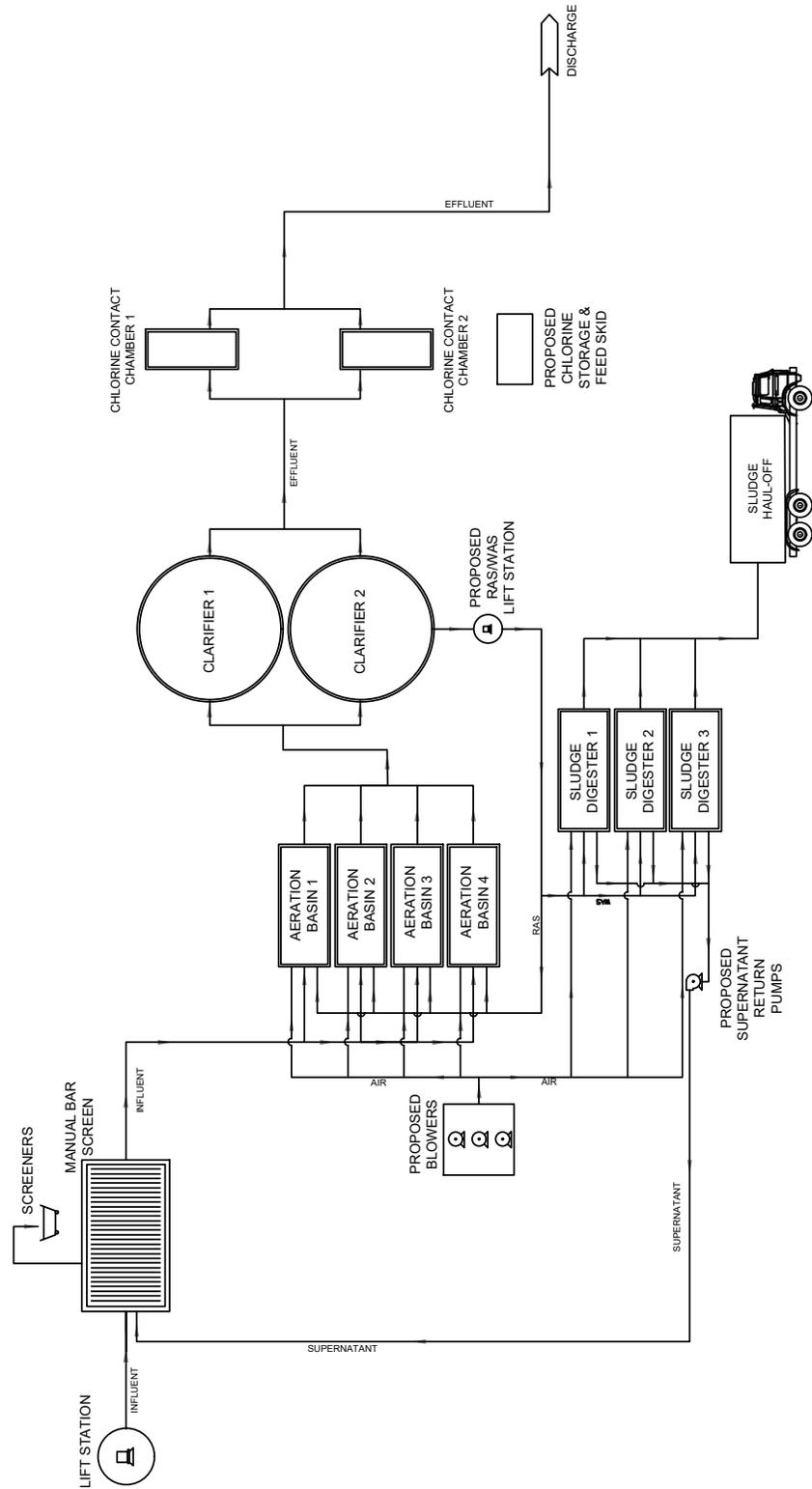
GREEN VALLEY SPECIAL UTILITY DISTRICT

CLEARWATER CREEK WWTP  
FLOW DIAGRAM INTERIM PHASE

0.2 MGD

SHEET: 1 OF 1

P:\Projects\0606 GVSUD\061 - Clearwater Creek WFS & WWFS\CAD\Sheet\FLOW DIAGRAM.dwg, Jul 07, 2020 - 5:05pm



**UTILITY  
ENGINEERING  
GROUP PLLC**

256 Comal Ave NEW BRAUNFELS, TEXAS 78130 PH: (830) 214-0521  
Texas Engineering Firm F-18712

SCALE:	
DATE:	07 July, 2020
PROJECT NO:	
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	

GREEN VALLEY SPECIAL UTILITY DISTRICT

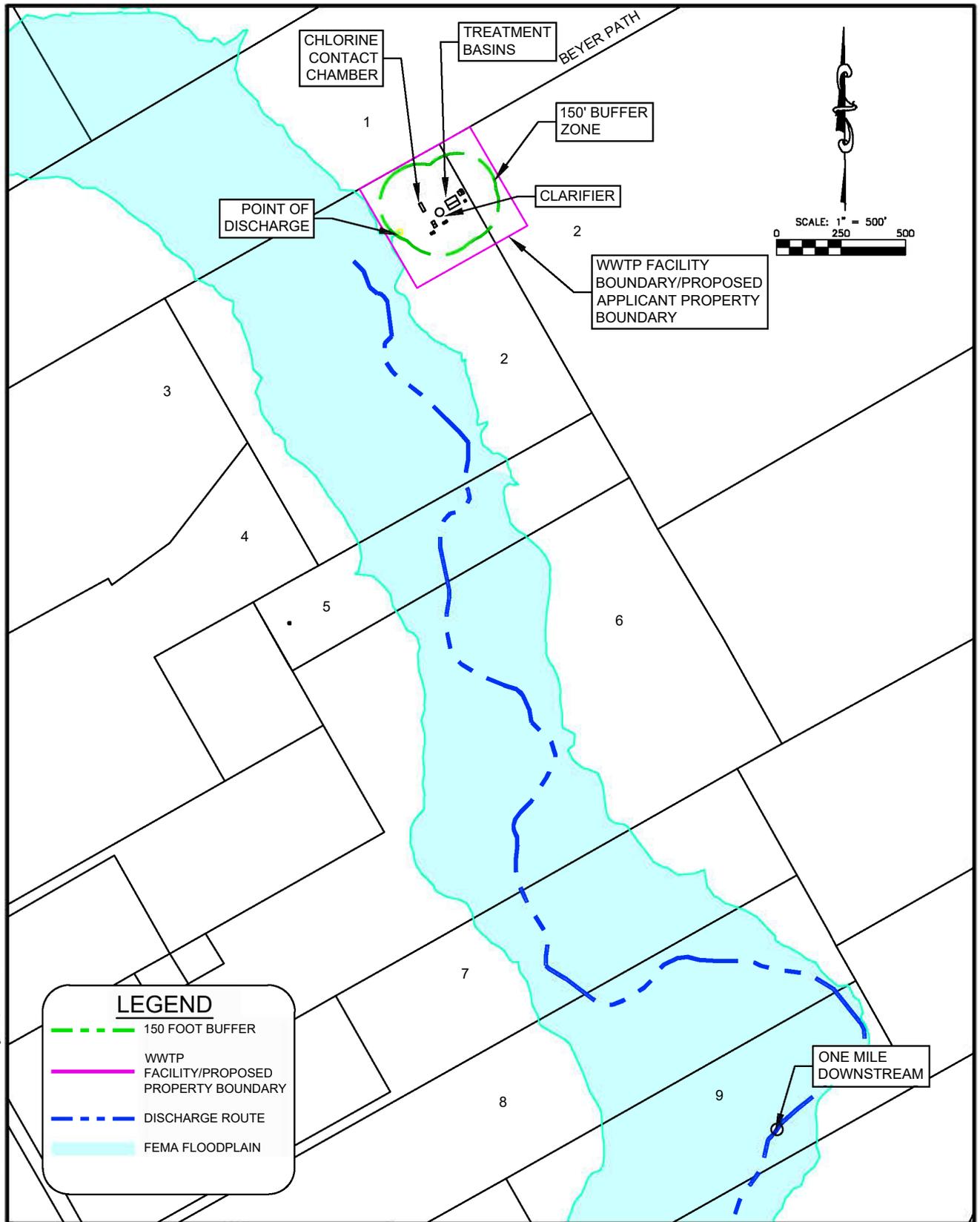
CLEARWATER CREEK WWTP  
FLOW DIAGRAM FINAL PHASE

0.4 MGD

SHEET: 1 OF 1

Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

## Attachment F: Affected Landowner Information



**LEGEND**

- 150 FOOT BUFFER
- WWTP FACILITY/PROPOSED PROPERTY BOUNDARY
- DISCHARGE ROUTE
- FEMA FLOODPLAIN

P:\Projects\0008\_GVSUD\01 - Clearwater Creek WFS & WWFSCAD\01.LANDOWNER MAP.dwg, Oct 19, 2020 - 11:01am



**UTILITY  
ENGINEERING  
GROUP PLLC**

191 N Union Ave NEW BRAUNFELS, TEXAS 78130 PH: (830) 214-0521  
Texas Engineering Firm F-18712

SCALE:	
DATE:	19 October, 2020
PROJECT NO:	
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	

GREEN VALLEY SPECIAL UTILITY DISTRICT

CLEARWATER CREEK WWTP  
LANDOWNER MAP

SHEET: OF

**GREEN VALLEY SPECIAL UTILITY DISTRICT  
 CLEARWATER WASTEWATER PERMIT APPLICATION  
 AFFECTED LANDOWNER INFORMATION**

<b>Map ID</b>	<b>Landowner Name and Address</b>
1	WINKLEMANN LIVING TRUST 15391 BEXAR BOWLING MARION 78124
2	SA KOSTA BROWNE LTD & FAIR OAKS MOSAIC 6812 WEST AVE STE 100 SAN ANTONIO 78213-1855
3	ZUNKER JEFFERY A 3812 BROUGHTON SCHERTZ 78154-2908
4	SCHEEL GERALDINE Z 8006 STURDY OAKS TRL LIVE OAK 78233-2423
5	MAPLES PAULA L 4280 STAPPER RD UNIT 3 SAINT HEDWIG 78152-8288
6	ELLIOTT MICHAEL W & SUTTON CAROLYN & DUNCAN HAZEL J 4060 STAPPER RD SAINT HEDWIG 78152-9732
7	WILKS PATRICK WARREN & ALICIA JOY 3418 RIDGE ASH SAN ANTONIO 78247-4505
8	KOSUB PAUL JOSEPH & MARTHA WIEGAND KOSUB 3740 STAPPER RD SAINT HEDWIG 78152-9730
9	KOSUB MARTHA 3740 STAPPER RD SAINT HEDWIG 78152-9730

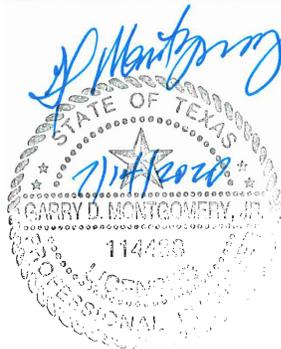
Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

Attachment G: Design Calculations/ Sewage Sludge  
Solids Management Plan

**CLEARWATER CREEK  
WASTEWATER TREATMENT FACILITY  
PRELIMINARY DESIGN CALCULATIONS**

**Prepared For:  
Green Valley Special Utility District**

Prepared by:  
Utility Engineering Group, PLLC  
Texas Registered Engineering Firm: 18712  
191 N Union Ave.  
New Braunfels, TX, 78130  
830-214-0521



**GREEN VALLEY SUD  
DESIGN CALCULATIONS  
SUMMARY**

**PARAMETERS**

**Description:** Interim I thru Final: Activated sludge process utilizing the conventional aeration to treat municipal wastewater. System to include aeration, clarifier, chlorine contact, and sludge holding basins.

**Influent Flows:**

	<b>Interim I</b>	<b>Interim II</b>	<b>Final</b>
Average Daily (gpd):	100,000	200,000	400,000
Peak Daily (2-Hr Peak) (gpd):	400,000	800,000	1,600,000

**Influent Flow Characteristics:**

BOD <sub>5</sub> (mg/l)=	300	300	300
TSS (mg/l)=	300	300	300
NH <sub>3</sub> N (mg/l)=	45	45	45
Total Nitrogen (mg/l)=	70	70	70

**Effluent Water Quality Parameters:**

BOD <sub>5</sub> (mg/l)=	10	10	10
TSS (mg/l)=	15	15	15
NH <sub>3</sub> N (mg/l)=	3	3	3
Chlorine Residual (after 20 minutes) (mg/l)=	1	1	1
Dissolved Oxygen (mg/l)	6	6	6
Total Phosphorus (mg/l)	1	1	1
E. coli (cfu)	126	126	126

**PROPOSED FACILITIES**

	<b>Interim I</b>	<b>Interim II</b>	<b>Final</b>
<b>Process:</b>			
Total Plant BOD <sub>5</sub> Loading (lbs/day):	241.9	483.7	967.4
TSS Loading (lbs/day):	237.7	475.4	950.8
MLSS (mg/l):	3,000	3,000	3,000
Hydraulic Retention Time (days):	0.56	0.56	0.56
Sludge Residence Time (days):	11.76	11.76	11.76
Food to Mass Ratio:	0.180	0.180	0.180
Sludge Yield (lbs/day):	110	220	440
Sludge Yield (gpd) @ 1.5%:	880	1,760	3,520
<b>Aeration Basin:</b>			
Max Organic Loading (lbs/day/1,000 cf):	35	35	35
Proposed Organic Loading (lbs/day/1,000 cf):	32.55	32.55	32.55
Minimum Required Volume (cf):	6,910	13,821	27,641
Proposed Volume (cf):	7,430	14,861	29,722

**GREEN VALLEY SUD  
DESIGN CALCULATIONS  
SUMMARY**

	Interim I	Interim II	Final
<b>Clarifier:</b>			
Max Surface Loading at PDF (gpd/sf):	1,200	1,200	1,200
Proposed Surface Loading at PDF (gpd/sf):	475	949	949
Max Surface Loading at ADF (gpd/sf):	600	600	600
Proposed Surface Loading at ADF (gpd/sf):	119	237	237
Min Detention Time at PDF (hrs):	1.8	1.8	1.8
Proposed Detention Time at PDF (hrs):	4.48	2.24	2.24
Min Detention Time at ADF (hrs):	3.6	3.6	3.6
Proposed Detention Time at ADF (hrs):	17.93	8.96	8.96
Minimum Required Surface Area (sf):	333	667	1,333
Proposed Surface Area (sf):	843	843	1,685
Minimum Required Volume (cf):	4,010	8,021	16,042
Proposed Volume (cf):	9,986	9,986	19,973
Stilling Well Diameter (ft)	4.00	4.00	4.00
Stilling Well Velocity at PDF (ft/s)	0.049	0.098	0.197
Minimum Required Weir Length (ft)	20.000	40.000	80.000
Proposed Weir Length (ft)	97.389	97.389	97.389
<b>Chlorine Contact Basin:</b>			
Min Detention Time at PDF (min):	20	20	20
Detention Time Provided at PDF (min):	55.26	27.63	27.63
Minimum Required Volume (cf):	742.7	1,485.3	2,970.7
Proposed Volume (cf):	2,052.2	2,052.2	4,104.3
<b>Sludge Holding Basin:</b>			
Minimum Required Volume (cf):	4,837	9,674	19,349
Proposed Volume (cf):	7,682	15,365	23,047
Proposed Detention Time (days):	65.30	65.30	48.98
<b>Air Supply:</b>			
Min Air Supply - Aeration (scfm):	838	3,354	3,354
Min Air Supply - Digester (scfm):	230	461	691
Min Air Supply - Air Lift Pumps (scfm):	70	140	245
Min Total Air Supply (scfm):	1,139	3,955	4,290

**GREEN VALLEY SUD  
DESIGN CALCULATIONS  
SIZING CALCULATIONS**

**AERATION BASIN**

	<b>Interim I</b>	<b>Interim II</b>	<b>Final</b>
Minimum Volume Required:	6,910 cf	13,821 cf	27,641 cf
No. of Basins:	1	2	4
Proposed SWD:	10.32 ft	10.32 ft	10.32 ft
Length (Ea. Basin):	60 ft	60 ft	60 ft
Width (Ea. Basin):	12 ft	12 ft	12 ft
<b>Proposed Volume:</b>	<b>7,430 cf</b>	<b>14,861 cf</b>	<b>29,722 cf</b>

**SLUDGE DIGESTER**

	<b>Interim I</b>	<b>Interim II</b>	<b>Final</b>
Minimum Volume Required:	4,837 cf	9,674 cf	19,349 cf
No. of Basins:	1	2	3
Proposed SWD:	10.67 ft	10.67 ft	10.67 ft
Length (Ea. Basin):	60 ft	60 ft	60 ft
Width (Ea. Basin):	12 ft	12 ft	12 ft
<b>Proposed Volume:</b>	<b>7,682 cf</b>	<b>15,365 cf</b>	<b>23,047 cf</b>

**CLARIFIER**

	<b>Interim I</b>	<b>Interim II</b>	<b>Final</b>
Minimum Surface Area Required:	333 sf	667 sf	1,333 sf
Minimum Volume Required:	4,010 cf	8,021 cf	16,042 cf
No. of Clarifiers:	1	1	2
Proposed SWD:	11.85 ft	11.85 ft	11.85 ft
Proposed Diameter:	33 ft	33 ft	33 ft
Proposed Stilling Well Diameter:	4 ft	4 ft	4 ft
Proposed Weir Diameter:	31 ft	31 ft	31 ft
Proposed Weir Length:	97.39 ft	97.39 ft	97.39 ft
<b>Proposed Area:</b>	<b>843 sf</b>	<b>843 sf</b>	<b>1,685 sf</b>
<b>Proposed Volume:</b>	<b>9,986 cf</b>	<b>9,986 cf</b>	<b>19,973 cf</b>

**CHLORINE CONTACT**

	<b>Interim I</b>	<b>Interim II</b>	<b>Final</b>
Minimum Volume Required:	742.7 cf	1,485.3 cf	2,970.7 cf
No. of Basins:	1	1	2
Proposed SWD:	5.83 ft	5.83 ft	5.83 ft
Width (Ea. Basin):	32 ft	32 ft	32 ft
Length (Ea. Basin):	11 ft	11 ft	11 ft
Total Volume:	2,052.16 cf	2,052.16 cf	4,104.32 cf
<b>Proposed Volume:</b>	<b>2,052.16 cf</b>	<b>2,052.16 cf</b>	<b>4,104.32 cf</b>

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
INTERIM PHASE I**

**PARAMETERS**

<i>Influent:</i>		<i>Effluent:</i>	
Q =	100,000 GPD	S =	10 mg/l, BOD <sub>5eff</sub>
Q <sub>p1</sub> =	400,000 GPD to Headworks	TSS <sub>eff</sub> =	15 mg/l
Q <sub>p2</sub> =	400,000 GPD downstream of Infl EQ (N/A)	NH <sub>3</sub> N =	2 mg/l
S <sub>o</sub> =	300 mg/l, BOD <sub>5infl</sub>	Chlorine Residual =	1 mg/l @ 20 min det
TSS <sub>infl</sub> =	300 mg/l	Total Phosphorus =	1 mg/l
Chemical Oxygen Demand (COD) =	545 mg/l		
TKN =	70 mg/l		
NH <sub>3</sub> N =	45 mg/l		
Organic N <sub>14°C</sub> =	25 mg/l		
Winter Temp. Min. =	14 °C		
Summer Temp. Max. =	29 °C		
MLSS =	3,000 mg/l, conc. Of suspended solids in aeration tank		
MLVSS =	70 % of MLSS		
MLVSS (X) =	2100 mg/l, conc. Of volatile suspended solids in aeration tank		

**COEFFICIENTS**

θ <sub>c</sub> =	30	days, mean cell residence time
Y =	0.4	maximum yield coefficient, range: 0.3 - 0.5 (Metcalf & Eddy Table 8-10)
Y <sub>n</sub> =	0.12	g VSS / g NH <sub>4</sub> -N, range: 0.1 - 0.15 (Metcalf & Eddy Table 8-11)
K <sub>o</sub> =	0.5	g / m <sup>3</sup> , range: 0.40 - 0.60 (Metcalf & Eddy Table 8-11)
k <sub>d</sub> =	0.12	day <sup>-1</sup> , endogenous decay coefficient, range: 0.06 - 0.2 (Metcalf & Eddy Table 8-10)
K <sub>d</sub> =	1.04	unitless, range: 1.03 - 1.08 (Metcalf & Eddy Table 8-10)
K <sub>d, 14°C</sub> =	0.095	g/g*d
K <sub>dn</sub> =	0.080	g VSS / g VSS*d, range: 0.05 - 0.15 (Metcalf & Eddy Table 8-10)
K <sub>dn</sub> =	1.04	unitless, range: 1.03 - 1.08 (Metcalf & Eddy Table 8-11)
K <sub>dn, 14°C</sub> =	0.063	g/g*d
K <sub>n</sub> =	0.740	g NH <sub>4</sub> -N / m <sup>3</sup> , range: 0.5 - 1.0 (Metcalf & Eddy Table 8-11)
K <sub>n</sub> =	1.053	unitless, range: 1.03 - 1.123 (Metcalf & Eddy Table 8-11)
K <sub>n, 14°C</sub> =	0.543	g / m <sup>3</sup>
μ <sub>mn</sub> =	0.750	g VSS / g VSS*d, range: 0.20 - 0.90 (Metcalf & Eddy Table 8-11)
μ <sub>n</sub> =	1.070	unitless, range: 1.06 - 1.123 (Metcalf & Eddy Table 8-11)
μ <sub>m, 14°C</sub> =	0.500	g / g*d
f <sub>d</sub> =	0.150	unitless, range: 0.08 - 0.2 (Metcalf & Eddy Table 8-10)

**DESIGN CALCULATIONS**

**A. BOD<sub>5</sub> Loading**

$$F = \frac{8.34 \times Q \times (S_o - S)}{10^6}$$

F = 241.9 lb BOD<sub>5</sub> / day

**B. TSS Loading**

$$TSS = \frac{8.34 \times Q \times (TSS_{inf} - TSS_{eff})}{10^6}$$

TSS = 237.7 lb TSS / day

**C. Micro-organism Mass in Aeration Basin**

$$M_v = F \times \frac{\theta_c \times Y}{1 + (k_d \times \theta_c)}$$

M<sub>v</sub> = 631 lb

**D. Aeration Volume**

$$V = \frac{Q \times \theta_c}{X} \times \frac{Y \times (S_o - S)}{1 + (k_d \times \theta_c)}$$

V = 36,024.84 gal  
4,816 cf

Max. Organic Loading: 35 lbs BOD<sub>5</sub>/day/1000 cf  
(TCEQ Chap. 217.154, Conventional)

V = 6,910 cf

**Minimum V = 6,910 cf**

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
INTERIM PHASE I**

**E. Wastewater Characteristics**

$$\begin{aligned} \text{bCOD} &= 1.6(\text{BOD}) = 480 \text{ mg/l (Biodegradable COD)} \\ \text{nbCOD} &= \text{COD} - \text{bCOD} = 65 \text{ mg/l (non-biodegradable COD)} \end{aligned}$$

$$\begin{aligned} \text{iTSS} &= \text{TSS} - \text{VSS} \\ \text{TSS} &= 300 \text{ mg/l} \\ \text{VSS} &= 210 \text{ mg/l} \\ \text{iTSS} &= 90 \text{ mg/l} \end{aligned}$$

$$\frac{\text{bpCOD}}{\text{pCOD}} = \frac{(\text{bCOD} \div \text{BOD}) \times (\text{BOD} - \text{sBOD})}{\text{COD} - \text{sCOD}}$$

sBOD: soluble BOD  
sCOD: soluble COD  
bpCOD: Biodegradable particulate COD  
pCOD: Particulate COD

$$\begin{aligned} \text{Assume: sCOD} &= 33\% \text{ of COD} = 180 \text{ mg/l} \\ \text{Assume: sBOD} &= 33\% \text{ of BOD} = 99 \text{ mg/l} \end{aligned}$$

$$\text{bpCOD/pCOD} = 0.88$$

$$\text{nbVSS} = \left[ 1 - \left( \frac{\text{bpCOD}}{\text{pCOD}} \right) \right] \times \text{BOD}$$

$$\text{nbVSS} = 36.0 \text{ mg/l (non-biodegradable VSS)}$$

**F. Sludge Retention Time**

$$(P_{X,TSS})SRT = \frac{QY(S_o - S)SRT}{[1 + (k_d)SRT](0.85)} + Q(\text{nbVSS})SRT + \frac{QY_n(NO_x)SRT}{[1 + (k_{dn})SRT](0.85)} + \frac{(f_d)(k_d)Q(Y)(S_o - S)SRT^2}{[1 + (k_d)SRT](0.85)} + Q(\text{TSS}_o - \text{VSS}_o)SRT$$

$$(P_{X,TSS}) \times SRT = (V) \times (X_{MLSS})$$

$$\begin{aligned} X_{MLSS} &= 3,000 \text{ g/m}^3 \\ V &= 7,430 \text{ cf} = 210.41 \text{ m}^3 \end{aligned}$$

$$(P_{X,TSS})SRT = 631,216 \text{ g}$$

$$\begin{aligned} \text{Assume } S_o &= S_o - S \\ S_o = \text{bCOD} &= 480 \text{ g/m}^3 \end{aligned}$$

$$\text{Assume } \text{Nox} \approx 80\% \text{ of TKN} = 56.0 \text{ g/m}^3$$

$$\text{SRT} = 11.755285 \text{ days}$$

**H. Sludge Yield**

$$P_{X,TSS} = \frac{(V)(MLSS)}{SRT}$$

$$P_{X,TSS} = 110 \text{ lbs/day}$$

$$Q_{\text{Sludge}} = \frac{P_{X,TSS}}{8.34 \times \text{Percent Solids}}$$

$$\text{Assume Percent Solids} = 1.5 \%$$

$$Q_{\text{sludge}} = 880 \text{ gal/day}$$

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
INTERIM PHASE I**

**I. Nitrification**

$$K_n \ln \frac{N_o}{N_t} + (N_o - N_t) = X_n \left( \frac{\mu_{mn}}{Y_n} \right) \left( \frac{DO}{k_o + DO} \right) t$$

No = Initial NH4-N concentration (mg/L)  
 Nt = NH4-N concentration at time t (mg/L)  
 Xn = Nitrifying bacteria concentration (mg/L)  
 DO = Dissolved Oxygen concentration = 4.0 mg/L

$$NO_x = TKN_o - N_e - 0.12 P_{x,bio} / Q$$

NOx = Nitrogen oxidized (mg/L)  
 TKNo = Influent TKN (mg/L)  
 Ne = Effluent NH4-N (mg/L)  
 Px,bio = Nitrogen in cell tissue

$$P_{x,bio} = \frac{QY(S_o - S)}{1 + (k_d)SRT} + \frac{QY_n(NO_x)}{1 + (k_{dn})SRT} + \frac{(f_d)(k_d)QY(S_o - S)SRT}{1 + (k_d)SRT}$$

Q = 100,000 gpd = 378.5 m<sup>3</sup>/day  
 So - S = 480 g/m<sup>3</sup> (from SRT calculation)  
 Nox = 56.0 g/m<sup>3</sup> (from SRT calculation)  
 SRT = 11.755285 days  
 Px,bio = 41,573 g/day = 41.6 kg/day  
 NOx = 54.8 g/m<sup>3</sup>

$$P_{x,TSS} = \left( \frac{P_{x,BIO}}{0.85} \right) + Q \times (nbVSS) + Q \times (T_{SSo} - V_{SSo})$$

TSSo = 300 mg/l  
 VSSo = TSSo x MLVSS(%) = 210 mg/l  
 Px,TSS = 96.61 kg/day

$$V = \frac{(P_{x,TSS} \times SRT)}{MLSS}$$

Minimum Volume Required = 378.5 m<sup>3</sup> = 13,366.3 cf

**E. Nitrification**

pH: 7.2  
 DO (mg/L): 4.0 Dissolved Oxygen  
 Ko: 0.5 Half-Saturation coefficient for DO (Metcalf & Eddy Table 8-11)  
 Temp (°C): 14.0  
 Effluent NH3 (mg/L): 2.0

Temperature Term, Tt: 0.91  
 DO Term, DOT: 0.89  
 pH Term, pHt: 1.00  
 Kn: 0.36 Half-Saturation coefficient for oxidation of ammonia  
 NH3 Term, NH3t: 0.85  
 Nitrifier Growth Rate (days<sup>-1</sup>): 0.34  
 Aerobic SRT Required (days): 2.93

Tt=e<sup>(0.098\*(T-15))</sup>  
 DOT=DO/(Ko+DO)  
 pHt=1-0.833<sup>(7.2-pH)</sup>  
 Kn=10<sup>(0.051\*T-1.158)</sup>  
 NH3t=NH3/(Kn+NH3)  
 Growth Rate=0.5\*T<sup>1.2</sup>\*pH<sup>1.2</sup>\*DOT<sup>1.2</sup>\*NH3t  
 SRT=1/Nitrifier Growth Rate

Safety Factor: 2.0 Typical Range: 1.5 - 2.5  
**Min Required Aerobic SRT (days): 5.9**  
**Minimum Aerobic Volume (cf): 3,442.46 For Nitrification**

**J. Clarifier**

Max Surface Loading: 1,200 gpd/sf at Peak Flow (TCEQ Chap. 217.154, Conventional, secondary enhanced)  
 Max Surface Loading: 600 gpd/sf at Design Flow  
 Min Detention Time: 1.8 hrs at Peak Flow  
 Min Detention Time: 3.6 hrs at Design Flow  
 Max Weir Loading: 20,000 gpd/lf at Peak Flow

**Minimum Surface Area: 333 sf**  
**Minimum Volume: 30,000 gallons = 4010.4 cf**  
**Minimum Weir Length: 20 lf**

**K. Return Activated Sludge**

**Minimum Rate: 50% of Design Flow = 34.7 gpm**  
**Maximum Rate: 100% of Design Flow = 69.4 gpm**

**Provide: 2 6" Air Lift Pumps or 1 8" Air Lift Pumps**

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
INTERIM PHASE I**

**L. Sludge Holding Basin**

Minimum SRT:	15 days
- SRT w/Treatment:	11.755285 days
Minimum Sludge Holding SRT:	3.2447146 days

Minimum Sludge Holding Detention Time: 7 days (for operations)

Minimum Sludge Holding Volume using SRT	6,160 gallons =	823.5 cf
Minimum Sludge Holding Volume using 20-cf/lbs BOD/Day	36,185 gallons =	4,837.2 cf

**Minimum Sludge Holding Volume: 36,185 gallons = 4,837.2 cf**

**M. Chlorine Contact Basin**

Minimum Detention Time: 20 minutes at Peak Flow

**Minimum Volume: 5,555.56 gallons = 742.7 cf**

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
INTERIM PHASE I**

**N. Aeration**

1. Aeration Basins

Minimum oxygen requirement = 3,200 scf per lb BOD<sub>5</sub> per day @ 10' submergence and 20 deg C

Diffuser Submergence Depth (ft)	Airflow Correction Factor
8	1.82
10	1.56
12	1.00
15	0.91
18	0.73
20	0.64

Diffuser Submergence Depth = 10 ft  
Correction Factor = 1.56

**Minimum oxygen requirement = 838 scfm @ 20 deg C**

2. Digester

Oxygen Requirement = 30 scfm per 1,000 ft<sup>3</sup>

**Minimum oxygen requirement = 230 scfm**

3. Air Lift Pumps

**Minimum air requirement = 70 scfm**

4. Other

Initial Mixing = 25 scfm  
Post Aeration = 41.04 scfm (20 scfm per 1,000-cf)  
**Minimum air requirement = 66.0432 scfm**

4. Total

**Total Air Flow Requirement = 1,205 scfm**  
Proposed Blower = 3,000 SCFM

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
INTERIM PHASE I**

**O. Fine Screen**

Bar Spacing:	0.25	in				
Average Flow Rate:	0.1	MGD				
Approximate Volume of Screenings:	13	cf/MG				
Anticipated Volume of Screenings:	1.3	cf per day			0.34	CY Per Week

**COARSE SCREEN (BYPASS/OVERFLOW BAR SCREEN)**

<b>Influent Flow Rate</b>								
Average Influent Flow Rate:	0.10	MGD	=	69	gpm	=	0.155	cfs
Peak Influent Flow Rate:	0.40	MGD	=	278	gpm	=	0.619	cfs

<b>Channel Geometry</b>			
Channel Width:	3.00	ft	
Design Channel Flow Depth:	0.2	ft	
Max. Channel Depth:	0.3	ft	

<b>Bar Rack Geometry</b>			
Bar Size:	0.250	in	
Clear Space Between Bars:	0.750	in	
Incline Angle:	45	degrees	
No. of Bars in Rack:	35		
Clear Space:	2.2708333	sf per ft of channel depth	

<b>Headloss thru Bar Screen</b>			
Channel Area (Avg):	0.5	sf	
Channel Area (Max):	1.0	sf	
Approach Velocity (Avg):	0.309	fps (using design channel depth)	
Approach Velocity (Peak):	0.619	fps (using max. channel depth)	
Bar Screen Area (Avg):	0.38	sf	
Bar Screen Area (Max):	0.76	sf	
Velocity Through Bars (Avg):	0.41	fps (using design channel depth)	
Velocity Through Bars (Max):	0.82	fps (using max. channel depth)	

$$HeadLoss = \frac{V^2 - v^2}{0.7 \times 2 \times g}$$

V= Velocity of flow through openings in rack  
v= Approach velocity  
g= Acceleration of gravity, 32.2

<i>Assuming No Clogging:</i>		<i>Assuming Clogging:</i>			
Head Loss (Design):	0.0016	ft	Clogging Factor:	0.500	
Head Loss (Max):	0.0063	ft	Head Loss (Design):	0.006	ft
			Head Loss (Max):	0.025	ft

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
SLUDGE MANAGEMENT PLANT  
INTERIM I PHASE**

**Dimensions and Capacities of Sludge Holding**

Average Anticipated Sludge Yield:	880 gal/day		
Minimum Sludge Retention Time:	15	days	
SRT from Treatment Basins:	11.75529	days	
Minimum SRT needed in Sludge Holding:	3.244715	days	
Prop Sludge Holding Basins:	57,468	gal =	7,682 cubic feet
Proposed Sludge Holding SRT:	65.30	days	
Total Proposed Sludge Retention Time:	77.06	days	

**Solids Generated**

BOD <sub>5</sub> Removal	Influent concentration =	300	mg/l
	Effluent concentration =	10	mg/l
	Net removal =	290	mg/l

MLSS Operating Range = 3,000 mg/l

BOD <sub>5</sub> removed	242	lbs/day
Dry Sludge Produced	110	lbs/day
Wet Sludge Produced*	73	lbs/day
Wet Sludge Produced*	880	gal/day

\*Assuming Percent Solids in Sludge: 1.5 % Solids

Length of Sustained Peak (days)	Peaking Factor	Waste Sludge Mass Loading (lbs/day)	Total Sustained Loading (lb)
1	2.4	264	264
2	2.1	231	462
3	1.9	209	628
4	1.8	198	793
5	1.7	187	936
7	1.65	182	1,272
14	1.32	145	2,035
15	1.3	143	2,147
365	1	110	40,184

**Process:**

Activated sludge process utilizing the conventional aeration mode will be utilized. Sludge will be wasted from the clarifiers to the sludge digester basin. Sludge will be hauled by a licensed hauler to a TCEQ registered disposal site.

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
INTERIM PHASE II**

**PARAMETERS**

<i>Influent:</i>		<i>Effluent:</i>	
Q =	200,000 GPD	S =	10 mg/l, BOD <sub>5eff</sub>
Q <sub>p1</sub> =	800,000 GPD to Headworks	TSS <sub>eff</sub> =	15 mg/l
Q <sub>p2</sub> =	800,000 GPD downstream of Infl EQ (N/A)	NH <sub>3</sub> N =	2 mg/l
S <sub>o</sub> =	300 mg/l, BOD <sub>5infl</sub>	Chlorine Residual =	1 mg/l @ 20 min det
TSS <sub>infl</sub> =	300 mg/l	Total Phosphorus =	1 mg/l
Chemical Oxygen Demand (COD) =	545 mg/l		
TKN =	70 mg/l		
NH <sub>3</sub> N =	45 mg/l		
Organic N <sub>14°C</sub> =	25 mg/l		
Winter Temp. Min. =	14 °C		
Summer Temp. Max. =	29 °C		
MLSS =	3,000 mg/l, conc. Of suspended solids in aeration tank		
MLVSS =	70 % of MLSS		
MLVSS (X) =	2100 mg/l, conc. Of volatile suspended solids in aeration tank		

**COEFFICIENTS**

θ <sub>c</sub> =	30	days, mean cell residence time
Y =	0.4	maximum yield coefficient, range: 0.3 - 0.5 (Metcalf & Eddy Table 8-10)
Y <sub>n</sub> =	0.12	g VSS / g NH <sub>4</sub> -N, range: 0.1 - 0.15 (Metcalf & Eddy Table 8-11)
K <sub>o</sub> =	0.5	g / m <sup>3</sup> , range: 0.40 - 0.60 (Metcalf & Eddy Table 8-11)
k <sub>d</sub> =	0.12	day <sup>-1</sup> , endogenous decay coefficient, range: 0.06 - 0.2 (Metcalf & Eddy Table 8-10)
K <sub>d</sub> =	1.04	unitless, range: 1.03 - 1.08 (Metcalf & Eddy Table 8-10)
K <sub>d, 14°C</sub> =	0.095	g/g*d
K <sub>dn</sub> =	0.080	g VSS / g VSS*d, range: 0.05 - 0.15 (Metcalf & Eddy Table 8-10)
K <sub>dn</sub> =	1.04	unitless, range: 1.03 - 1.08 (Metcalf & Eddy Table 8-11)
K <sub>dn, 14°C</sub> =	0.063	g/g*d
K <sub>n</sub> =	0.740	g NH <sub>4</sub> -N / m <sup>3</sup> , range: 0.5 - 1.0 (Metcalf & Eddy Table 8-11)
K <sub>n</sub> =	1.053	unitless, range: 1.03 - 1.123 (Metcalf & Eddy Table 8-11)
K <sub>n, 14°C</sub> =	0.543	g / m <sup>3</sup>
μ <sub>mn</sub> =	0.750	g VSS / g VSS*d, range: 0.20 - 0.90 (Metcalf & Eddy Table 8-11)
μ <sub>n</sub> =	1.070	unitless, range: 1.06 - 1.123 (Metcalf & Eddy Table 8-11)
μ <sub>m, 14°C</sub> =	0.500	g / g*d
f <sub>d</sub> =	0.150	unitless, range: 0.08 - 0.2 (Metcalf & Eddy Table 8-10)

**DESIGN CALCULATIONS**

**A. BOD<sub>5</sub> Loading**

$$F = \frac{8.34 \times Q \times (S_o - S)}{10^6}$$

F = 483.7 lb BOD<sub>5</sub> / day

**B. TSS Loading**

$$TSS = \frac{8.34 \times Q \times (TSS_{inf} - TSS_{eff})}{10^6}$$

TSS = 475.4 lb TSS / day

**C. Micro-organism Mass in Aeration Basin**

$$M_v = F \times \frac{\theta_c \times Y}{1 + (k_d \times \theta_c)}$$

M<sub>v</sub> = 1262 lb

**D. Aeration Volume**

$$V = \frac{Q \times \theta_c}{X} \times \frac{Y \times (S_o - S)}{1 + (k_d \times \theta_c)}$$

V = 72,049.69 gal  
9,632 cf

Max. Organic Loading: 35 lbs BOD<sub>5</sub>/day/1000 cf  
(TCEQ Chap. 217.154, Conventional)

V = 13,821 cf

**Minimum V = 13,821 cf**

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
INTERIM PHASE II**

**E. Wastewater Characteristics**

$$\begin{aligned} \text{bCOD} &= 1.6(\text{BOD}) = 480 \text{ mg/l (Biodegradable COD)} \\ \text{nbCOD} &= \text{COD} - \text{bCOD} = 65 \text{ mg/l (non-biodegradable COD)} \end{aligned}$$

$$\begin{aligned} \text{iTSS} &= \text{TSS} - \text{VSS} \\ \text{TSS} &= 300 \text{ mg/l} \\ \text{VSS} &= 210 \text{ mg/l} \\ \text{iTSS} &= 90 \text{ mg/l} \end{aligned}$$

$$\frac{\text{bpCOD}}{\text{pCOD}} = \frac{(\text{bCOD} \div \text{BOD}) \times (\text{BOD} - \text{sBOD})}{\text{COD} - \text{sCOD}}$$

sBOD: soluble BOD  
sCOD: soluble COD  
bpCOD: Biodegradable particulate COD  
pCOD: Particulate COD

$$\begin{aligned} \text{Assume: sCOD} &= 33\% \text{ of COD} = 180 \text{ mg/l} \\ \text{Assume: sBOD} &= 33\% \text{ of BOD} = 99 \text{ mg/l} \end{aligned}$$

$$\text{bpCOD/pCOD} = 0.88$$

$$\text{nbVSS} = \left[ 1 - \left( \frac{\text{bpCOD}}{\text{pCOD}} \right) \right] \times \text{BOD}$$

$$\text{nbVSS} = 36.0 \text{ mg/l (non-biodegradable VSS)}$$

**F. Sludge Retention Time**

$$(P_{X,TSS})SRT = \frac{QY(S_o - S)SRT}{[1 + (k_d)SRT](0.85)} + Q(\text{nbVSS})SRT + \frac{QY_n(NO_x)SRT}{[1 + (k_{dn})SRT](0.85)} + \frac{(f_d)(k_d)Q(Y)(S_o - S)SRT^2}{[1 + (k_d)SRT](0.85)} + Q(\text{TSS}_o - \text{VSS}_o)SRT$$

$$(P_{X,TSS}) \times SRT = (V) \times (X_{MLSS})$$

$$\begin{aligned} X_{MLSS} &= 3,000 \text{ g/m}^3 \\ V &= 14,861 \text{ cf} = 420.81 \text{ m}^3 \end{aligned}$$

$$(P_{X,TSS})SRT = 1,262,432 \text{ g}$$

$$\begin{aligned} \text{Assume } S_o &= S_o - S \\ S_o = \text{bCOD} &= 480 \text{ g/m}^3 \end{aligned}$$

$$\text{Assume } \text{Nox} \approx 80\% \text{ of TKN} = 56.0 \text{ g/m}^3$$

$$\text{SRT} = 11.755285 \text{ days}$$

**H. Sludge Yield**

$$P_{X,TSS} = \frac{(V)(MLSS)}{SRT}$$

$$P_{X,TSS} = 220 \text{ lbs/day}$$

$$Q_{\text{Sludge}} = \frac{P_{X,TSS}}{8.34 \times \text{Percent Solids}}$$

Assume Percent Solids = 1.5 %

$$Q_{\text{sludge}} = 1,760 \text{ gal/day}$$

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
INTERIM PHASE II**

**I. Nitrification**

$$K_n \ln \frac{N_o}{N_t} + (N_o - N_t) = X_n \left( \frac{\mu_{mn}}{Y_n} \right) \left( \frac{DO}{k_o + DO} \right) t$$

No = Initial NH4-N concentration (mg/L)  
 Nt = NH4-N concentration at time t (mg/L)  
 Xn = Nitrifying bacteria concentration (mg/L)  
 DO = Dissolved Oxygen concentration = 4.0 mg/L

$$NO_x = TKN_o - N_e - 0.12 P_{x,bio} / Q$$

NOx = Nitrogen oxidized (mg/L)  
 TKNo = Influent TKN (mg/L)  
 Ne = Effluent NH4-N (mg/L)  
 Px,bio = Nitrogen in cell tissue

$$P_{x,bio} = \frac{QY(S_o - S)}{1 + (k_d)SRT} + \frac{QY_n(NO_x)}{1 + (k_{dn})SRT} + \frac{(f_d)(k_d)QY(S_o - S)SRT}{1 + (k_d)SRT}$$

Q = 200,000 gpd = 757.1 m<sup>3</sup>/day  
 So - S = 480 g/m<sup>3</sup> (from SRT calculation)  
 Nox = 56.0 g/m<sup>3</sup> (from SRT calculation)  
 SRT = 11.755285 days  
 Px,bio = 83,146 g/day = 83.1 kg/day  
 NOx = 54.8 g/m<sup>3</sup>

$$P_{x,TSS} = \left( \frac{P_{x,BIO}}{0.85} \right) + Q \times (nbVSS) + Q \times (T_{SSo} - V_{SSo})$$

TSSo = 300 mg/l  
 VSSo = TSSo x MLVSS(%) = 210 mg/l  
 Px,TSS = 193.21 kg/day

$$V = \frac{(P_{x,TSS} \times SRT)}{MLSS}$$

Minimum Volume Required = 757.1 m<sup>3</sup> = 26,732.6 cf

**E. Nitrification**

pH: 7.2  
 DO (mg/L): 4.0 Dissolved Oxygen  
 Ko: 0.5 Half-Saturation coefficient for DO (Metcalf & Eddy Table 8-11)  
 Temp (°C): 14.0  
 Effluent NH3 (mg/L): 2.0

Temperature Term, Tt: 0.91  
 DO Term, DOT: 0.89  
 pH Term, pHt: 1.00  
 Kn: 0.36 Half-Saturation coefficient for oxidation of ammonia  
 NH3 Term, NH3t: 0.85  
 Nitrifier Growth Rate (days<sup>-1</sup>): 0.34  
 Aerobic SRT Required (days): 2.93

Tt=e<sup>(0.098\*(T-15))</sup>  
 DOT=DO/(Ko+DO)  
 pHt=1-0.833<sup>(7.2-pH)</sup>  
 Kn=10<sup>(0.051\*T-1.158)</sup>  
 NH3t=NH3/(Kn+NH3)  
 Growth Rate=0.5\*T\*pH\*DOT\*NH3t  
 SRT=1/Nitrifier Growth Rate

Safety Factor: 2.0 Typical Range: 1.5 - 2.5  
**Min Required Aerobic SRT (days): 5.9**  
**Minimum Aerobic Volume (cf): 6,884.91 For Nitrification**

**J. Clarifier**

Max Surface Loading: 1,200 gpd/sf at Peak Flow (TCEQ Chap. 217.154, Conventional, secondary enhanced)  
 Max Surface Loading: 600 gpd/sf at Design Flow  
 Min Detention Time: 1.8 hrs at Peak Flow  
 Min Detention Time: 3.6 hrs at Design Flow  
 Max Weir Loading: 20,000 gpd/lf at Peak Flow

**Minimum Surface Area: 667 sf**  
**Minimum Volume: 60,000 gallons = 8020.9 cf**  
**Minimum Weir Length: 40 lf**

**K. Return Activated Sludge**

**Minimum Rate: 50% of Design Flow = 69.4 gpm**  
**Maximum Rate: 100% of Design Flow = 138.9 gpm**

**Provide: 4 6" Air Lift Pumps or 2 8" Air Lift Pumps**

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
INTERIM PHASE II**

**L. Sludge Holding Basin**

Minimum SRT:	15 days
- SRT w/Treatment:	11.755285 days
Minimum Sludge Holding SRT:	3.2447146 days

Minimum Sludge Holding Detention Time: 7 days (for operations)

Minimum Sludge Holding Volume using SRT	12,321 gallons =	1,647.0 cf
Minimum Sludge Holding Volume using 20-cf/lbs BOD/Day	72,369 gallons =	9,674.4 cf

**Minimum Sludge Holding Volume: 72,369 gallons = 9,674.4 cf**

**M. Chlorine Contact Basin**

Minimum Detention Time: 20 minutes at Peak Flow

**Minimum Volume: 11,111.11 gallons = 1,485.3 cf**

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
INTERIM PHASE II**

**N. Aeration**

1. Aeration Basins

Minimum oxygen requirement = 3,200 scf per lb BOD<sub>5</sub> per day @ 10' submergence and 20 deg C

Diffuser Submergence Depth (ft)	Airflow Correction Factor
8	1.82
10	1.56
12	1.00
15	0.91
18	0.73
20	0.64

Diffuser Submergence Depth = 10 ft  
Correction Factor = 1.56

**Minimum oxygen requirement = 1,677 scfm @ 20 deg C**

2. Digester

Oxygen Requirement = 30 scfm per 1,000 ft<sup>3</sup>

**Minimum oxygen requirement = 461 scfm**

3. Air Lift Pumps

**Minimum air requirement = 140 scfm**

4. Other

Initial Mixing = 25 scfm

Post Aeration = 41.04 scfm (20 scfm per 1,000-cf)

**Minimum air requirement = 66.0432 scfm**

4. Total

**Total Air Flow Requirement = 2,344 scfm**  
Proposed Blower = 3,000 SCFM

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
INTERIM PHASE II**

**O. Fine Screen**

Bar Spacing:	0.25	in			
Average Flow Rate:	0.2	MGD			
Approximate Volume of Screenings:	13	cf/MG			
Anticipated Volume of Screenings:	2.6	cf per day		0.67	CY Per Week

**COARSE SCREEN (BYPASS/OVERFLOW BAR SCREEN)**

<b>Influent Flow Rate</b>								
Average Influent Flow Rate:	0.20	MGD	=	139	gpm	=	0.309	cfs
Peak Influent Flow Rate:	0.80	MGD	=	556	gpm	=	1.238	cfs

<b>Channel Geometry</b>			
Channel Width:	3.00	ft	
Design Channel Flow Depth:	0.2	ft	
Max. Channel Depth:	0.3	ft	

<b>Bar Rack Geometry</b>			
Bar Size:	0.250	in	
Clear Space Between Bars:	0.750	in	
Incline Angle:	45	degrees	
No. of Bars in Rack:	35		
Clear Space:	2.2708333	sf per ft of channel depth	

<b>Headloss thru Bar Screen</b>			
Channel Area (Avg):	0.5	sf	
Channel Area (Max):	1.0	sf	
Approach Velocity (Avg):	0.619	fps (using design channel depth)	
Approach Velocity (Peak):	1.238	fps (using max. channel depth)	
Bar Screen Area (Avg):	0.38	sf	
Bar Screen Area (Max):	0.76	sf	
Velocity Through Bars (Avg):	0.82	fps (using design channel depth)	
Velocity Through Bars (Max):	1.64	fps (using max. channel depth)	

$$HeadLoss = \frac{V^2 - v^2}{0.7 \times 2 \times g}$$

V= Velocity of flow through openings in rack  
v= Approach velocity  
g= Acceleration of gravity, 32.2

<i>Assuming No Clogging:</i>		<i>Assuming Clogging:</i>	
Head Loss (Design):	0.0063 ft	Clogging Factor:	0.500
Head Loss (Max):	0.0253 ft	Head Loss (Design):	0.025 ft
		Head Loss (Max):	0.101 ft

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
SLUDGE MANAGEMENT PLANT  
INTERIM II PHASE**

**Dimensions and Capacities of Sludge Holding**

Average Anticipated Sludge Yield:	1,760 gal/day	
Minimum Sludge Retention Time:	15 days	
SRT from Treatment Basins:	11.76 days	
Minimum SRT needed in Sludge Holding:	3.244715 days	
Prop Sludge Holding Basins:	114,936 gal =	15,365 cubic feet
Proposed Sludge Holding SRT:	65.30 days	
Total Proposed Sludge Retention Time:	77.06 days	

**Solids Generated**

BOD5 Removal	Influent concentration =	300 mg/l
	Effluent concentration =	10 mg/l
	Net removal =	290 mg/l

MLSS Operating Range = 3,000 mg/l

BOD5 removed	484 lbs/day
Dry Sludge Produced	220 lbs/day
Wet Sludge Produced*	147 lbs/day
Wet Sludge Produced*	1,760 gal/day

\*Assuming Percent Solids in Sludge: 1.5 % Solids

Length of Sustained Peak (days)	Peaking Factor	Waste Sludge Mass Loading (lbs/day)	Total Sustained Loading (lb)
1	2.4	528	528
2	2.1	462	925
3	1.9	418	1,255
4	1.8	396	1,585
5	1.7	374	1,872
7	1.65	363	2,543
14	1.32	291	4,069
15	1.3	286	4,294
365	1	220	80,368

**Process:**

Activated sludge process utilizing the conventional aeration mode will be utilized. Sludge will be wasted from the clarifiers to the sludge digester basin. Sludge will be hauled by a licensed hauler to a TCEQ registered disposal site.

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
FINAL PHASE**

**PARAMETERS**

<i>Influent:</i>			<i>Effluent:</i>		
Q =	400,000	GPD	S =	10	mg/l, BOD <sub>5eff</sub>
Q <sub>p1</sub> =	1,600,000	GPD to Headworks	TS <sub>Seff</sub> =	15	mg/l
Q <sub>p2</sub> =	1,600,000	GPD downstream of Infl EQ (N/A)	NH <sub>3</sub> N =	2	mg/l
S <sub>o</sub> =	300	mg/l, BOD <sub>5</sub> infl	Chlorine Residual =	1	mg/l @ 20 min det
TSS <sub>infl</sub> =	300	mg/l	Total Phosphorus =	1	mg/l
Chemical Oxygen Demand (COD) =	545	mg/l	.3-.8 (BOD/COD), used 0.55		
TKN =	70	mg/l			
NH <sub>3</sub> N =	45	mg/l			
Organic N <sub>14°C</sub> =	25	mg/l			
Winter Temp. Min. =	14	°C			
Summer Temp. Max. =	29	°C			
MLSS =	3,000	mg/l, conc. Of suspended solids in aeration tank			
MLVSS =	70	% of MLSS			
MLVSS (X) =	2100	mg/l, conc. Of volatile suspended solids in aeration tank			

**COEFFICIENTS**

θ <sub>c</sub> =	30	days, mean cell residence time
Y =	0.4	maximum yield coefficient, range: 0.3 - 0.5 (Metcalf & Eddy Table 8-10)
Y <sub>n</sub> =	0.12	g VSS / g NH <sub>4</sub> -N, range: 0.1 - 0.15 (Metcalf & Eddy Table 8-11)
K <sub>o</sub> =	0.5	g / m <sup>3</sup> , range: 0.40 - 0.60 (Metcalf & Eddy Table 8-11)
K <sub>d</sub> =	0.12	day <sup>-1</sup> , endogenous decay coefficient, range: 0.06 - 0.2 (Metcalf & Eddy Table 8-10)
K <sub>d</sub> =	1.04	unitless, range: 1.03 - 1.08 (Metcalf & Eddy Table 8-10)
K <sub>d, 14°C</sub> =	0.095	g/g*d
K <sub>dn</sub> =	0.080	g VSS / g VSS*d, range: 0.05 - 0.15 (Metcalf & Eddy Table 8-10)
K <sub>dn</sub> =	1.04	unitless, range: 1.03 - 1.08 (Metcalf & Eddy Table 8-11)
K <sub>dn, 14°C</sub> =	0.063	g/g*d
K <sub>n</sub> =	0.740	g NH <sub>4</sub> -N / m <sup>3</sup> , range: 0.5 - 1.0 (Metcalf & Eddy Table 8-11)
K <sub>n</sub> =	1.053	unitless, range: 1.03 - 1.123 (Metcalf & Eddy Table 8-11)
K <sub>n, 14°C</sub> =	0.543	g / m <sup>3</sup>
μ <sub>mn</sub> =	0.750	g VSS / g VSS*d, range: 0.20 - 0.90 (Metcalf & Eddy Table 8-11)
μ <sub>n</sub> =	1.070	unitless, range: 1.06 - 1.123 (Metcalf & Eddy Table 8-11)
μ <sub>m, 14°C</sub> =	0.500	g / g*d
f <sub>d</sub> =	0.150	unitless, range: 0.08 - 0.2 (Metcalf & Eddy Table 8-10)

**DESIGN CALCULATIONS**

**A. BOD<sub>5</sub> Loading**

$$F = \frac{8.34 \times Q \times (S_o - S)}{10^6}$$

F = **967.4** lb BOD<sub>5</sub> / day

**B. TSS Loading**

$$TSS = \frac{8.34 \times Q \times (TSS_{inf} - TSS_{eff})}{10^6}$$

TSS = **950.8** lb TSS / day

**C. Micro-organism Mass in Aeration Basin**

$$M_v = F \times \frac{\theta_c \times Y}{1 + (k_d \times \theta_c)}$$

M<sub>v</sub> = **2524** lb

**D. Aeration Volume**

$$V = \frac{Q \times \theta_c}{X} \times \frac{Y \times (S_o - S)}{1 + (k_d \times \theta_c)}$$

V = 144,099.38 gal  
19,263 cf

Max. Organic Loading: 35 lbs BOD<sub>5</sub>/day/1000 cf  
(TCEQ Chap. 217.154, Conventional)

V = 27,641 cf

**Minimum V = 27,641 cf**

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
FINAL PHASE**

**E. Wastewater Characteristics**

$$\begin{aligned} \text{bCOD} &= 1.6(\text{BOD}) = 480 \text{ mg/l (Biodegradable COD)} \\ \text{nbCOD} &= \text{COD} - \text{bCOD} = 65 \text{ mg/l (non-biodegradable COD)} \end{aligned}$$

$$\begin{aligned} \text{iTSS} &= \text{TSS} - \text{VSS} \\ \text{TSS} &= 300 \text{ mg/l} \\ \text{VSS} &= 210 \text{ mg/l} \\ \text{iTSS} &= 90 \text{ mg/l} \end{aligned}$$

$$\frac{\text{bpCOD}}{\text{pCOD}} = \frac{(\text{bCOD} \div \text{BOD}) \times (\text{BOD} - \text{sBOD})}{\text{COD} - \text{sCOD}}$$

sBOD: soluble BOD  
sCOD: soluble COD  
bpCOD: Biodegradable particulate COD  
pCOD: Particulate COD

$$\begin{aligned} \text{Assume: sCOD} &= 33\% \text{ of COD} = 180 \text{ mg/l} \\ \text{Assume: sBOD} &= 33\% \text{ of BOD} = 99 \text{ mg/l} \end{aligned}$$

$$\text{bpCOD/pCOD} = 0.88$$

$$\text{nbVSS} = \left[ 1 - \left( \frac{\text{bpCOD}}{\text{pCOD}} \right) \right] \times \text{BOD}$$

$$\text{nbVSS} = 36.0 \text{ mg/l (non-biodegradable VSS)}$$

**F. Sludge Retention Time**

$$(P_{X,TSS})SRT = \frac{QY(S_o - S)SRT}{[1 + (k_d)SRT](0.85)} + Q(\text{nbVSS})SRT + \frac{QY_n(\text{NO}_x)SRT}{[1 + (k_{dn})SRT](0.85)} + \frac{(f_d)(k_d)Q(Y)(S_o - S)SRT^2}{[1 + (k_d)SRT](0.85)} + Q(\text{TSS}_o - \text{VSS}_o)SRT$$

$$(P_{X,TSS}) \times SRT = (V) \times (X_{MIS})$$

$$\begin{aligned} \text{XMLSS} &= 3,000 \text{ g/m}^3 \\ V &= 7,430 \text{ cf} = 210.41 \text{ m}^3 \end{aligned}$$

$$(P_{X,TSS})SRT = 631,216 \text{ g}$$

$$\begin{aligned} \text{Assume } S_o &\approx S_o - S \\ S_o &= \text{bCOD} = 480 \text{ g/m}^3 \end{aligned}$$

$$\text{Assume } \text{Nox} \approx 80\% \text{ of TKN} = 56.0 \text{ g/m}^3$$

$$\text{SRT} = 11.755285 \text{ days}$$

**H. Sludge Yield**

$$P_{X,TSS} = \frac{(V)(\text{MLSS})}{\text{SRT}}$$

$$P_{X,TSS} = 440 \text{ lbs/day}$$

$$Q_{\text{Sludge}} = \frac{P_{X,TSS}}{8.34 \times \text{Percent Solids}}$$

$$\text{Assume Percent Solids} = 1.5 \%$$

$$Q_{\text{sludge}} = 3,520 \text{ gal/day}$$

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
FINAL PHASE**

**I. Nitrification**

$$K_n \ln \frac{N_o}{N_t} + (N_o - N_t) = X_n \left( \frac{\mu_{mn}}{Y_n} \right) \left( \frac{DO}{k_o + DO} \right) t$$

No = Initial NH4-N concentration (mg/L)  
 Nt = NH4-N concentration at time t (mg/L)  
 Xn = Nitrifying bacteria concentration (mg/L)  
 DO = Dissolved Oxygen concentration = 4.0 mg/L

$$NO_x = TKN_o - N_e - 0.12 P_{x,bio} / Q$$

NOx = Nitrogen oxidized (mg/L)  
 TKNo = Influent TKN (mg/L)  
 Ne = Effluent NH4-N (mg/L)  
 Px,bio = Nitrogen in cell tissue

$$P_{x,bio} = \frac{QY(S_o - S)}{1 + (k_d)SRT} + \frac{QY_n(NO_x)}{1 + (k_{dn})SRT} + \frac{(f_d)(k_d)QY(S_o - S)SRT}{1 + (k_d)SRT}$$

Q = 400,000 gpd = 1,514.2 m<sup>3</sup>/day  
 So - S = 480 g/m<sup>3</sup> (from SRT calculation)  
 Nox = 56.0 g/m<sup>3</sup> (from SRT calculation)  
 SRT = 11.7552854 days  
 Px,bio = 166,291 g/day = 166.3 kg/day  
 NOx = 54.8 g/m<sup>3</sup>

$$P_{x,TSS} = \left( \frac{P_{x,BIO}}{0.85} \right) + Q \times (nbVSS) + Q \times (T_{SSo} - V_{SSo})$$

TSSo = 300 mg/l  
 VSSo = TSSo x MLVSS(%) = 210 mg/l  
 Px,TSS = 386.42 kg/day

$$V = \frac{(P_{x,TSS} \times SRT)}{MLSS}$$

Minimum Volume Required = 1,514.2 m<sup>3</sup> = 53,465.1 cf

**E. Nitrification**

pH: 7.2  
 DO (mg/L): 4.0 Dissolved Oxygen  
 Ko: 0.5 Half-Saturation coefficient for DO (Metcalf & Eddy Table 8-11)  
 Temp (°C): 14.0  
 Effluent NH3 (mg/L): 2.0

Temperature Term, Tt: 0.91  
 DO Term, DOT: 0.89  
 pH Term, pHt: 1.00  
 Kn: 0.36 Half-Saturation coefficient for oxidation of ammonia  
 NH3 Term, NH3t: 0.85  
 Nitrifier Growth Rate (days<sup>-1</sup>): 0.34  
 Aerobic SRT Required (days): 2.93

Tt=e<sup>(0.098\*(T-15))</sup>  
 DOT=DO/(Ko+DO)  
 pHt=1-0.833<sup>(7.2-pH)</sup>  
 Kn=10<sup>(0.051\*T-1.158)</sup>  
 NH3t=NH3/(Kn+NH3)  
 Growth Rate=0.5\*Tt\*pHt\*DOT\*NH3t  
 SRT=1/Nitrifier Growth Rate

Safety Factor: 2.0 Typical Range: 1.5 - 2.5  
**Min Required Aerobic SRT (days): 5.9**  
**Minimum Aerobic Volume (cf): 13,769.82 For Nitrification**

**J. Clarifier**

Max Surface Loading: 1,200 gpd/sf at Peak Flow (TCEQ Chap. 217.154, Conventional, secondary enhanced)  
 Max Surface Loading: 600 gpd/sf at Design Flow  
 Min Detention Time: 1.8 hrs at Peak Flow  
 Min Detention Time: 3.6 hrs at Design Flow  
 Max Weir Loading: 20,000 gpd/lf at Peak Flow

**Minimum Surface Area: 1,333 sf**  
**Minimum Volume: 120,000 gallons = 16041.7 cf**

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
FINAL PHASE**

Minimum Weir Length: 80 lf

**K. Return Activated Sludge**

<b>Minimum Rate:</b>	50% of Design Flow =	138.9	gpm	
<b>Maximum Rate:</b>	100% of Design Flow =	277.8	gpm	
<b>Provide:</b>	7	6" Air Lift Pumps or	4	8" Air Lift Pumps

**L. Sludge Holding Basin**

Minimum SRT:	15 days	
- SRT w/Treatment:	11.755285 days	
Minimum Sludge Holding SRT:	3.2447146 days	

Minimum Sludge Holding Detention Time: 7 days (for operations)

Minimum Sludge Holding Volume using SRT	24,641 gallons =	3,294.0 cf
Minimum Sludge Holding Volume using 20-cf/lbs BOD/Day	144,739 gallons =	19,348.8 cf

**Minimum Sludge Holding Volume: 144,739 gallons = 19,348.8 cf**

**M. Chlorine Contact Basin**

Minimum Detention Time: 20 minutes at Peak Flow

**Minimum Volume: 22,222.22 gallons = 2,970.7 cf**

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
FINAL PHASE**

**N. Aeration**

1. Aeration Basins

Minimum oxygen requirement = 3,200 scf per lb BOD<sub>5</sub> per day @ 10' submergence and 20 deg C

Diffuser Submergence Depth (ft)	Airflow Correction Factor
8	1.82
10	1.56
12	1.00
15	0.91
18	0.73
20	0.64

Diffuser Submergence Depth = 10 ft  
Correction Factor = 1.56

**Minimum oxygen requirement = 3,354 scfm @ 20 deg C**

2. Digester

Oxygen Requirement = 30 scfm per 1,000 ft<sup>3</sup>

**Minimum oxygen requirement = 691 scfm**

3. Air Lift Pumps

**Minimum air requirement = 245 scfm**

4. Other

Initial Mixing = 25 scfm  
Post Aeration = 82.09 scfm (20 scfm per 1,000-cf)

**Minimum air requirement = 107.0864 scfm**

4. Total

**Total Air Flow Requirement = 4,397 scfm**  
Proposed Blower = 3,000 SCFM

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
FINAL PHASE**

**O. Fine Screen**

Bar Spacing:	0.25	in		
Average Flow Rate:	0.4	MGD		
Approximate Volume of Screenings:	13	cf/MG		
Anticipated Volume of Screenings:	5.2	cf per day	1.35	CY Per Week

**COARSE SCREEN (BYPASS/OVERFLOW BAR SCREEN)**

**Influent Flow Rate**

Average Influent Flow Rate:	0.40	MGD	=	278	gpm	=	0.619	cfs
Peak Influent Flow Rate:	1.60	MGD	=	1111	gpm	=	2.476	cfs

**Channel Geometry**

Channel Width:	3.00	ft
Design Channel Flow Depth:	0.2	ft
Max. Channel Depth:	0.3	ft

**Bar Rack Geometry**

Bar Size:	0.250	in
Clear Space Between Bars:	0.750	in
Incline Angle:	45	degrees
No. of Bars in Rack:	35	
Clear Space:	2.2708333	sf per ft of channel depth

**Headloss thru Bar Screen**

Channel Area (Avg):	0.5	sf
Channel Area (Max):	1.0	sf
Approach Velocity (Avg):	1.238	fps (using design channel depth)
Approach Velocity (Peak):	2.476	fps (using max. channel depth)
Bar Screen Area (Avg):	0.38	sf
Bar Screen Area (Max):	0.76	sf
Velocity Through Bars (Avg):	1.64	fps (using design channel depth)
Velocity Through Bars (Max):	3.27	fps (using max. channel depth)

$$HeadLoss = \frac{V^2 - v^2}{0.7 \times 2 \times g}$$

V= Velocity of flow through openings in rack  
v= Approach velocity  
g= Acceleration of gravity, 32.2

<i>Assuming No Clogging:</i>		<i>Assuming Clogging:</i>	
Head Loss (Design):	0.0253 ft	Clogging Factor:	0.500
Head Loss (Max):	0.1013 ft	Head Loss (Design):	0.101 ft
		Head Loss (Max):	0.405 ft

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
SLUDGE MANAGEMENT PLANT  
FINAL PHASE**

**Dimensions and Capacities of Sludge Holding**

Average Anticipated Sludge Yield:	3,520 gal/day	
Minimum Sludge Retention Time:	15 days	
SRT from Treatment Basins:	11.76 days	
Minimum SRT needed in Sludge Holding:	3.244715 days	
Prop Sludge Holding Basins:	172,405 gal =	23,047 cubic feet
Proposed Sludge Holding SRT:	48.98 days	
Total Proposed Sludge Retention Time:	60.73 days	

**Solids Generated**

BOD <sub>5</sub> Removal	Influent concentration =	300 mg/l
	Effluent concentration =	10 mg/l
	Net removal =	290 mg/l

MLSS Operating Range = 3,000 mg/l

BOD <sub>5</sub> removed	967 lbs/day
Dry Sludge Produced	440 lbs/day
Wet Sludge Produced*	294 lbs/day
Wet Sludge Produced*	3,520 gal/day

\*Assuming Percent Solids in Sludge: 1.5 % Solids

Length of Sustained Peak (days)	Peaking Factor	Waste Sludge Mass Loading (lbs/day)	Total Sustained Loading (lb)
1	2.4	1,057	1,057
2	2.1	925	1,850
3	1.9	837	2,510
4	1.8	793	3,171
5	1.7	749	3,743
7	1.65	727	5,086
14	1.32	581	8,138
15	1.3	572	8,587
365	1	440	160,736

**Process:**

Activated sludge process utilizing the conventional aeration mode will be utilized. Sludge will be wasted from the clarifiers to the sludge digester basin. Sludge will be hauled by a licensed hauler to a TCEQ registered disposal site.

Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

## Attachment H: Service Agreement

## GREEN VALLEY SPECIAL UTILITY DISTRICT WASTEWATER NON-STANDARD SERVICE AGREEMENT

THIS AGREEMENT is made and entered into by and between SA State of Love and Trust, LLC, hereinafter referred to as "Developer," and Green Valley Special Utility District, hereinafter referred to as "GVSUD."

WHEREAS, Developer is engaged in developing that certain approximately two hundred and forty three (243) acres of land located southwest of FM 2538 and approximately 0.23 miles northwest of the intersection of Real Rock Road in Bexar County, Texas, more particularly known or to be known as the Clearwater Creek subdivision, said land being hereinafter referred to as "the Property" and identified by full legal description on Exhibit "A" attached hereto and incorporated herein for all purposes; and

WHEREAS, GVSUD owns and operates a sewer system which collects, treats, and disposes of waterborne waste within its state-certificated service area certificate of convenience and necessity No. 20973; and

WHEREAS, Developer is planning to develop over seven phased units; for a total of 950 residential lots at full buildout, and

WHEREAS, Developer has requested GVSUD to provide such sewer service to the Property through an extension of GVSUD's sewer system, such extension being hereinafter referred to as the "Sewer System Extension";

NOW THEREFORE: KNOW ALL MEN BY THESE PRESENTS: THAT for and in consideration for the mutual promises hereinafter expressed, and other good and valuable consideration, the sufficiency of which is hereby acknowledged by the parties, Developer and GVSUD agree as follows:

1. Application for Service

GVSUD is the holder of the CCN for both water and sewer services to the Property. To ensure the orderly development of both utility services and to prevent a landowner from connecting to sewer service without the knowledge of GVSUD, the customer (or their builder/contractor) must apply for both water and sewer utility services at the same time. Water service will not be provided to an individual tract until a sewer service application has been made. An exception to this rule shall be made only for irrigation meters or other water services to premises that will not produce waterborne waste, such as a swimming pool.

2. Engineering and Design of the Sewer System Extension.

(a) Entire Sewer System

The "Sewer System" consists of (1) the On-Site Collection System and (2) the Off-Site Treatment System, defined below, and shall be designed and constructed to provide tariffed non-standard wastewater utility service to the Property. The Sewer System shall be engineered in accordance with the applicable specifications of the GVSUD and all governmental agencies having jurisdiction. The non-standard sewer service requirements of the Property are set forth on that certain Wastewater Service Feasibility Study for the Clearwater Creek Subdivision attached hereto as "Exhibit "B" and incorporated herein for all purposes. The Sewer System must be sized to provide continuous and adequate sewer service to the property based on plans for the development of the Property provided to GVSUD by the Developer. In the absence of a necessary term or in the event of conflict with any provision in this general Agreement, the terms in Exhibit "B" shall control. Developer and GVSUD recognize that the plans for the proposed subdivision to be located on the Property have not been finalized and that the specific terms of Exhibit "B" are subject to revision to reflect the actual final service requirements for the Property. After completion of the plans and specifications by GVSUD's consulting engineers and confirmation that they are consistent with the requirements of this Agreement to serve the Property, the plans and specifications shall become part of this Agreement by reference and shall more particularly define the "Sewer System."

(b) On-Site Collection System.

The sewer collection lines, sewer service lines, and related portions of the collection system infrastructure within the boundaries of the Property (the "On-Site Collection System") shall be engineered and designed by Developer's consulting engineer, which engineer shall be responsible for overseeing the construction of the Collection system under the applicable rules of the Texas Commission on Environmental Quality ("TCEQ") and the Texas Board of Professional Engineers ("TBPE"). All engineering and designs for the Collection System must be reviewed and approved by GVSUD's consulting engineer prior to the commencement of any utility system construction on the Property. A description of Property-specific required infrastructure is listed below. Any changes made to the infrastructure or design must be approved by GVSUD.

The Developer shall construct, at its expense, all of the sewer utility collection system within the Clearwater Creek Subdivision necessary to provide public utility services as described in Exhibit "B." The Developer shall bear all costs of such design and construction and shall guarantee the infrastructure additions for one calendar year after they are placed into commercial operation by GVSUD. The Developer shall also reimburse GVSUD for all costs incurred by the District in having GVSUD's engineers review and oversee the Developer's plans and construction.

(c) Off-Site Treatment System.

The Off-Site Treatment System shall initially consist of Phase I of a wastewater treatment plant, as further specified in Exhibit B, to be located on a parcel of land of approximately five acres to be conveyed by Developer to GVSUD in fee simple or by a permanent exclusive easement. The Off-Site Treatment System shall also consist of all pump stations, site preparation and improvements reasonably required to operate the wastewater treatment plant as specified in Exhibit B. The Off-Site Treatment System shall be engineered and designed by GVSUD's consulting engineer, which GVSUD engineer shall also be responsible for overseeing the construction of the Collection System under the applicable TCEQ and TBPE rules. All engineering and designs for the On-Site Collection and Off-Site Treatment Systems must be reviewed and approved by GVSUD's consulting engineer prior to the issuance of any request for bids for the construction of the Sewer System Extension and the commencement of any utility system construction on the Property. After completion of the plans and specifications by the Developer's and GVSUD's consulting engineers and their approval by the GVSUD's consulting engineer, the plans and specifications shall become part of this Agreement by reference and shall more particularly define "the Sewer System Extension."

(d) Oversizing.

GVSUD may require the Sewer System Extension to be oversized in anticipation of the needs of other customers of the GVSUD, subject to the obligation to reimburse the Developer for any such oversizing as provided below. GVSUD will be responsible for the costs of any oversizing not required to provide service to the Property.

(e) Cost Changes.

Due to the variable market for needed materials and supplies, quotations for the cost of construction of utility plant and/or upgrades that will be necessary to meet the service demands of the service application shall be good only for the date of presentation by GVSUD's engineer and/or contractor. For purposes of this Agreement, the "date of presentation" means the date the quotations and Sewer System Extension plans were presented to and approved by GVSUD's Board of Directors. Following the date of presentation, materials and supplies for construction may include an adjustment to reflect current market prices if such changes are found reasonable and approved in writing by GVSUD's consulting engineer. All costs of change orders or other modifications of the engineered design and/or TCEQ-approved plans shall be borne by Developer unless such changes or modifications are made at GVSUD's request for the sole benefit of other GVSUD customers.

3. Required Easements or Rights-of-Way.

Developer shall be responsible for dedicating or acquiring any easements inside the Property at its cost which are necessary for the construction of the Sewer System Extension and for obtaining any Governmental approvals necessary to construct the Sewer System Extension in public right-of-way. All easements must be private, exclusive, and permanent. If Developer cannot obtain any easement identified by GVSUD as necessary, Developer may request GVSUD to exercise its statutory powers of eminent domain to obtain such easement(s). Developer shall bear all costs related to such condemnation proceedings, including all consideration and litigation costs of the condemnee. GVSUD may require Developer to escrow all such projected costs before initiating any condemnation actions for Developer's benefit. By requesting GVSUD to initiate a condemnation of private property, Developer acknowledges and consents to any delays to final provision of retail public water and sewer utility service to the Property occasioned by Developer's failure to independently provide GVSUD with necessary easement(s).

All pipeline easements assigned to GVSUD hereunder shall be (and not less than) 20-feet in width. The pipeline easement(s) shall be located on private property along a route that best facilitates the most reliable and efficient operation of the Sewer System Extension. If such optimal route adversely affects Grantee, Developer may request an alternate course of the easement except that when the pipeline(s) or plant is installed, the easement herein granted shall be limited to a strip of land 20-feet in width. GVSUD's consulting engineer shall have the final decision on where any easement must be located.

If necessary, for the optimum provision of both water and sewer services, the 20-foot easement may be used for the installation of both water and sewer lines. If this is done, the distance between the water and sewer lines as installed must be at least 1.25x the minimum spacing requirements set forth in TCEQ's rules (30 TAC §290(d)). If additional easements are necessary to accommodate this spacing requirement, the easement granted to GVSUD shall be increased accordingly to ensure the protection of the public drinking water supply.

There shall be a construction easement of equal width parallel and adjacent with said easement for the period necessary to construct and test public utility pipelines and such other utility plant with the easement. ~~After the newly constructed pipeline, utility plant or other facilities have been constructed and placed into commercial operation, this construction easement shall terminate. Thereafter the easement shall be only 20-feet in width.~~

If continuous and adequate retail public sewer utility service to the Property requires the construction of new Off-Site Treatment System facilities, as indicated in Exhibit B, Developer shall provide GVSUD with all the sites necessary to construct and operate such facilities. The site(s) shall be conveyed in fee or, with GVSUD's consent, by exclusive permanent recorded easement. Developer shall also provide GVSUD with all pipeline, utility, ingress/egress and sanitary control

easements identified by GVSUD's consulting engineer and attorney as necessary to the use of said site(s) for sewer utility purposes. All ingress/egress easements shall be sufficient to construct and maintain an all-weather road from the site(s) to the nearest public road.

Any easements acquired by the Developer shall be assigned to GVSUD upon proper completion of the construction of the Sewer System Extension. GVSUD's attorney must approve the validity of the legal instruments by which the Developer acquires any such easements and by which Developer assigns such easements to GVSUD. Developer shall be responsible for obtaining, at its expense, any consent or release required by any person or entity having a lien or other security interest in the easement or real property to be encumbered by said easement(s).

#### 4. Term of Contract and Connection Fees

Execution of this Agreement shall bind the parties for a period of five calendar years. If Developer has performed its obligations hereunder, the term of this Agreement shall continue until performance is completed. If Developer has not performed its obligations hereunder, then GVSUD may extend the Agreement after the initial five-year term at its sole option and under such terms and conditions as the District deems appropriate at that time. If the full service requested and contracted for is not into commercial operation at the end of this five-year term, as such term may be extended, those service capacities are forfeited by the Developer and may be used without reimbursement or compensation by GVSUD to serve other properties within its service area. Connection Fees shall be paid prior to construction of the sewer infrastructure.

The connection fees to be paid shall be fees included in GVSUD's Operating Policy (Tariff) on the date of payment. Fees shall not be "grandfathered."

#### 5. Construction of the Sewer System Extension.

##### (a) Off-Site Treatment System

GVSUD's consulting engineer, at Developer's expense, shall advertise for bids for the construction, if any needed, of the Off-Site Treatment System in accordance with generally accepted bidding practices and shall award the contract for the construction of the Off-Site Transportation System subject to the approval of GVSUD's Board of Directors. If Developer has a contractor he desires to construct the Off-Site Transportation System, Developer's designated contract shall have a right to bid on the construction contract; however, this right to bid shall in no way assure Developer or his designated Contractor that GVSUD's Board will select that bid. GVSUD may reject any bid, contractor or subcontractor. No construction will commence until plans and specifications for the Off-Site Treatment System have been submitted to and approved by the TCEQ and any other required regulatory agency, as may be required by law. GVSUD shall have

no liability of any kind to Developer occasioned by delays or difficulties in obtaining any required governmental approvals, permits, licenses or certificates. GVSUD's consulting engineer shall also prepare and file a Texas Pollutant Discharge Elimination System permit application with the TCEQ as further specified in Exhibit B.

(b) On-Site Collection System

(1) Developer shall select his own contractor for the construction of the On-Site Collection System, subject to GVSUD's right to reject such selection if GVSUD, its consulting engineer or its attorney has had unacceptable prior experience with said contractor and/or his work. If GVSUD rejects Developer's designated contractor, Developer shall be authorized to select another contractor or to request GVSUD to obtain a suitable contract through the same bid procedures to be used on the Off-Site Transportation System. No construction of the On-Site Collection System will commence until plans and specifications for the On-Site Collection System have been submitted to and approved by the TCEQ and any other required regulatory agency, as may be required by law. GVSUD shall have no liability of any kind to Developer occasioned by delays or difficulties in obtaining any required governmental approvals, permits, licenses, certificates or contractor acceptable to both GVSUD and Developer. GVSUD shall have no liability whatsoever for the acts and omissions of Developer, his engineer(s), his contractor(s) or his subcontractor(s). GVSUD shall have no liability or responsibility to third persons for the materials and supplies used by Developer. Developer's liability or responsibility to GVSUD for the materials and supplies used shall be limited to the one-year warranty. Developer shall be responsible and liable for the safety of the work site and the preservation of materials and equipment related to the Collection System. Developer shall hold GVSUD harmless for any claims, demands, suits or causes of action related to the Developer-constructed Collection System. Developer shall indemnify GVSUD for all expenses or damages incurred by GVSUD, including attorney and litigation costs, related to the Developer-constructed On-Site Collection System. All rights and protections of GVSUD in this Paragraph shall be extended to GVSUD's directors, officers, employees, attorney(s), engineer(s), contractor(s), and subcontractor(s).

(2) ~~The On-Site Collection System shall be constructed in accordance with the approved plans and specifications. GVSUD shall have the right to inspect all phases of the construction of the On-Site Collection System. Developer must give written notice to GVSUD of the date on which construction of the On-Site Collection System is scheduled to begin so that GVSUD may assign an inspector. GVSUD may charge reasonable inspection fees based on the actual costs of labor, travel and incidental expenses of the inspectors.~~

6. Dedication of Sewer System Extension to GVSUD.

Upon proper completion of construction of the Sewer System Extension and final inspection thereof by GVSUD, the Sewer System Extension shall be dedicated to the GVSUD by an appropriate legal instrument approved by GVSUD's Attorney. Developer shall bear any costs of remediation or rehabilitation necessary to bring the Sewer System Extension into compliance with all state, federal, and GVSUD standards before acceptance by GVSUD. GVSUD shall have the sole decision of when the Sewer System Extension is acceptable. The Sewer System Extension shall thereafter be owned and maintained by GVSUD; however, Developer shall warrant the construction and suitability of the same for a period of one (1) calendar year and shall bear all costs of repairs and improvements during this warranty period.

7. Subdivision Restrictions.

Developer shall create and enforce permanent and irrevocable subdivisions deed, plat or other restrictions and/or covenants running with the land that shall prohibit the construction of onsite sewage facilities including septic systems, private potable water systems or water wells within the subdivision.

8. Cost of the Sewer System Extension.

(a) Developer shall pay all costs associated with the Sewer System Extension as identified on Exhibit B and as modified to reflect actual costs as a contribution in aid of construction, including without limitation to the cost of the following:

- (1) engineering and design;
- (2) easement or right-of-way acquisition;
- (3) construction;
- (4) inspection;
- (5) attorneys' fees;
- (6) governmental or regulatory approvals required to lawfully provide service.

Developer shall indemnify GVSUD and hold GVSUD harmless from all the foregoing costs.

(c) Payment of Contribution in Aid of Construction:

- (1) A Non-Standard Service Investigation Fee in an amount set by the GVSUD's General Manager, in consultation with the GVSUD's consulting engineer

and counsel, shall be paid by cashier's check payable to the GVSUD at the time of initial application for service.

(2) With the exception of funds required for Phase I the Off-Site Treatment System as specified in Exhibit B, which shall be paid pursuant to Section 8(c)(3) of this Agreement, contributions in aid of construction shall be paid at the time that each subsequent phased unit of the Clearwater Creek development is platted.

(3) Developer shall pay into escrow 50 percent of the costs of Phase I of the wastewater treatment system at the time of construction contract award and shall pay into escrow the remaining 50 percent of said costs when the available escrowed funds fall below 10 percent of the total cost of the wastewater treatment plant. These funds shall be escrowed in an interest bearing, federally insured, account in a state chartered bank located in Guadalupe County, Texas within thirty (30) days of the acceptance of construction bid(s) by GVSUD. The account shall be in the name of and under the sole control of the GVSUD. Interest accrued thereon shall be retained in the account for the benefit of the Developer. All escrow and other charges associated with the creation and maintenance of this account shall be borne by Developer. If the amount of the funds to be escrowed exceeds \$100,000, the bank shall provide suitable collateral in the form of United States or State of Texas treasury bonds, bills or certificates of obligation suitable as collateral under the Texas Public Funds Investment Act said collateral to be held by an agent acceptable to GVSUD. Because the wastewater treatment system is anticipated to be built in phases as additional units of the Clearwater Creek development are constructed, the parties may establish and utilize a single escrow account. All funds remaining in the escrow account at the expiration of the Developer's one-year warranty of the Sewer System Extension (or the final warranty year if phased unit development and construction is followed) shall be refunded to Developer. The estimated amount of contributions in aid of construction for the Property on a per-EDU basis shall be recalculated based on the results of bid pricing for the first phase of the treatment plant and the amount of contribution in aid of construction for future phases of the treatment plant and future units of the Clearwater Creek development shall be determined prior to the commencement of construction for those subsequent phases. Failure to deliver the funds to the GVSUD's business offices within the applicable 30-day period shall void the application for non-standard service and the Developer shall have to reapply and repay all applicable Non-Standard Service Investigation Fees. Upon timely delivery of these funds to the selected bank, GVSUD shall authorize construction to commence.

(4) Developer shall pay to the District on a quarterly basis beginning within 30 days of execution of this Agreement the estimated wastewater treatment plant design costs of GVSUD's consulting engineer as reflected in said engineer's written estimate provided to the developer.

(d) Except for the one-year warranty provide in the Agreement, nothing herein shall be construed as obligating the Developer to maintain the Sewer System Extension subsequent to its dedication and acceptance for maintenance by GVSUD and the expiration of the warranty period.

(e) If the Developer requests GVSUD to install active service connections at service locations during the construction of the On-Site Collection System infrastructure, Developer shall pay the normal monthly service rates for each connection beginning with the date of installation. Failure to timely pay the service charges for any individual service connection shall be grounds for discontinuance and/or refusal of service for all other service connection held by Developer.

9. Service from the Sewer System Extension.

(a) After proper completion and dedication of the Sewer System Extension to GVSUD, GVSUD shall provide continuous and adequate sewer service to the Property under the requirements of GVSUD's state-issued certificate of convenience and necessity, PUC regulations and all duly adopted rules and regulations of GVSUD and payment of the following:

- (1) All standard rates, fees and charges as reflected in GVSUD's approved Operating Policy;
- (2) Any applicable connection, impact or capital recovery fee adopted by GVSUD;
- (3) Any applicable reserved service charge adopted by GVSUD.

(b) Unless the prior approval of GVSUD is obtained, the Developer shall not:

- (1) construct or install additional sewer lines or facilities to service areas outside the Property;
- (2) add any additional lands to the Property for which sewer service is to be provided pursuant to this agreement; or
- (3) connect or serve any person or entity who, in turn, sells sewer service directly or indirectly to another person or entity.

10. Effect of Force Majeure.

In the event either party is rendered unable by force majeure to carry out any of its obligations under this Agreement, in whole or in part, then the obligations of that party, to the extent affected by the force majeure shall be suspended during the continuance of the inability, provided however, that due diligence is exercised to resume performance at the earliest practical time. As soon as reasonably possibly

after the occurrence of the force majeure relied upon to suspend performance, the party whose contractual obligations are affected thereby shall give notice and full particulars of the force majeure to the other party.

The cause, as far as possible, shall be remedied with all reasonable diligence. The term "force majeure" includes acts of God, strikes, lockouts or other industrial disturbances, acts of the public enemy, orders of the government of the United States or the State of Texas or any civil or military authority, insurrections, riots, epidemics, landslides, lightning, earthquakes, fires, hurricanes, storms, floods, washouts, droughts, arrests, restraints of government and civil disturbances, explosions, breakage, or accidents to equipment, pipelines, or canals, partial or complete failure of water supply, and any other inability's of either party, whether similar to those enumerated or otherwise, that are not within the control of the party claiming the inability and that could not have been avoided by the exercise of due diligence and care. It is understood and agreed that the settlement or strikes and lockouts shall be entirely within the discretion of the party having the difficulty and that the requirement that any force majeure be remedied with all reasonable dispatch shall not require the settlement of strikes and lockouts by acceding to the demands of the opposing party if the settlement is unfavorable to it in the judgment of the party having the difficulty.

11. Notices.

Any notice to be given hereunder by either party to the other party shall be in writing and may be affected by personal delivery or by sending said notices by registered or certified mail, return receipt requested, to the address set forth below. Notice shall be deemed given when deposited with the United States Postal Service with sufficient postage affixed. Any notice mailed to the GVSUD shall be addressed:

Green Valley Special Utility District  
Attn: General Manager  
P O Box 99  
Marion, Texas 78124  
Fax (830) 420-4138

with copy to:

Shan Rutherford  
Terrill & Waldrop  
810 West 10<sup>th</sup> Street  
Austin, Texas 78701  
Fax (512) 474-9888

Any notice mailed to Developer shall be addressed:

SA State of Love and Trust, LLC Attn: Tom Yantis, Sr.

6812 West Ave Ste 100, San Antonio, Texas 78213

With copy to:

James H. Barrow  
Law Offices of James H. Barrow, PLLC  
1027 Austin Highway, Suite 120  
San Antonio, Texas 78209

Either party may change the address for notice to it by giving notice of such change in accordance with the provisions of this paragraph.

12. Severability.

The provisions of this Agreement are severable, and if any word, phrase, clause, sentence, paragraph, section, or other part of this Agreement or the application thereof to any person or circumstance shall ever be held by any court of competent jurisdiction to be invalid or unconstitutional for any reason, the remainder of this Agreement and the application of such word, phrase, clause, sentence, paragraph, section, or other part of this Agreement to other persons or circumstances shall not be affected thereby and this Agreement shall be construed as if such invalid or unconstitutional portion had never been contained therein.

13. Entire Agreement.

This Agreement, including any exhibits attached hereto and made a part hereof, constitutes the entire agreement between the parties relative to the subject matter of this Agreement. All prior agreements, covenants, representations, or warranties, whether oral or in writing, between the parties are merged herein.

14. Amendment.

No amendment of this Agreement shall be effective unless and until it is duly approved by each party and reduced to a writing signed by the authorized representatives of the GVSUD and the Developer, respectively, which amendment shall incorporate this Agreement in every particular not otherwise changed by the amendment.

15. Governing Law.

This Agreement shall be construed under and in accordance with the laws of the State of Texas and all obligations of the parties are expressly deemed performable within the state-certificated service area of GVSUD.

16. Venue.

Venue for any civil suit arising hereunder shall be in Guadalupe County, Texas. Venue for any administrative law action arising hereunder shall be vested in the PUC and the appropriate courts of Travis County, Texas.

17. Successors and Assigns.

This Agreement shall be binding on and shall inure to the benefit of the heirs, successors and assigns of the parties.

18. Assignability.

The rights and obligations of the Developer hereunder may not be assigned without the prior written consent of the GVSUD except in the event of assignment to a publicly traded builder, in which event no consent shall be required. GVSUD may assign this Agreement to any other retail public utility authorized by the PUC to serve the Property.

19. Effective Date.

This Agreement shall be effective from and after the date of due execution by all parties.

20. Conflict.

In the event there is determined to be a conflict between the terms of this Agreement and the provisions in GVSUD's Operating Policy governing the same matter, GVSUD's Operating Policy shall prevail.

IN WITNESS WHEREOF each of the parties has caused this Agreement to be executed by its duly authorized representative in multiple copies, each of equal dignity, on the date or dates indicated below.

GVSUD

DEVELOPER

SA State of Love and Trust, LLC

By: Jill Bennett

By: [Signature], MEMBER

Date: 2/26/2020

Date: 5/5/20

GREEN VALLEY SPECIAL UTILITY DISTRICT  
WASTEWATER NON-STANDARD SERVICE AGREEMENT

Exhibit "A" – Legal Description of the "Property"



**FIELDNOTE DESCRIPTION of a 242 acre tract of land situated in the E. Gortari Survey No. 2, Abstract 5 and the M.J. Rodriguez Survey No. 3, Abstract 17, Bexar County, Texas and consisting of a 28.7 acre tract of land conveyed unto L. Prentiss Cammack, et al by warranty deed recorded in Volume 12619, Page 1231, Bexar County Real Property Records, a 33.98 acre tract conveyed unto the same by warranty deed recorded in Volume 5422, Page 671, said Real Property Records, a 90.216 acre tract of land conveyed unto the same by warranty deed recorded in Volume 9621, Page 227, said Real Property Records, and an 89.3 acre tract conveyed unto Michael Amy by warranty deed recorded in Volume 10292, Page 1088, said Real Property Records; in all, said 242 acre tract being more particularly described as follows:**

**BEGINNING** at a ½" iron rod found on the southwest right-of-way line of FM 2538 (an 80' wide state highway) coincident with the common east corner of a 1.147 acre tract of land conveyed unto L. Prentiss Cammack by warranty deed recorded in Volume 17914, Page 1034, said Real Property Records and the north corner of said 28.7 acre tract for a north corner and **POINT OF BEGINNING** of the herein described tract of land;

**THENCE**, along the southwest line of said FM 2538, South 70° 29' 32" East, 1,654.77 feet to a calculated point for the common north corner of a 57.736 acre tract as shown by court order to Pamela Suzanne Luensmann Griffin recorded in Volume 16626, Page 2397, said Real Property Records and the east corner of said 28.7 acre tract for the easternmost corner of the herein described tract of land from whence a TXDOT Type I concrete monument bears South 70° 29' 32" East, 57.01 feet;

**THENCE**, along the northwest line of said 57.736 acre tract, South 60° 00' 34" West, at 1,523.03 feet pass a 1" iron pipe found at the east corner of said 89.3 acre tract, at approximately 2,176 feet pass the north corner of an 88.176 acre tract conveyed unto Alvin H. and Josephine Koepp by warranty deed recorded in Volume 6200, Page 1851, said Real Property Records, in all, a total distance of 3,845.07 feet to a ½" iron rod found at the common south corner of said 89.3 acre tract and the east corner of said 90.216 acre tract for an angle point in the southeast line of the herein described tract of land;

**THENCE**, continuing along said southeast line, South 59° 55' 18" West, 2,281.99 feet to a fence corner post found on the northeast line of a 59.76 acre tract of land conveyed unto Michael William Elliot, et al by warranty deed recorded in Volume 15176, Page 673, said Real Property Records coincident with the west corner of said 90.216 acre tract and the southernmost corner of the herein described tract of land;

**THENCE**, along the northeast line of said 59.76 feet, North 29° 54' 52" West, at 240.89 feet pass a ¼" iron rod found at the east corner of a 10 acre tract conveyed unto Paula L. Maples by affidavit of heirship recorded in Volume 13007, Page 833, said Real Property Records, in all, a total distance of 528.89 feet to a ½" iron rod found at the east corner of said 33.98 acre tract for a reentrant corner of the herein described tract of land;

**THENCE**, along the northwest line of said 10 acre tract, the southeast line of said 33.98 acre tract, South 60° 07' 12" West, 1222.43 feet to a 1" iron pipe (leaning) found at the east corner of a 37.265 acre tract conveyed unto Geraldine Zunker Scheel by warranty deed recorded in Volume 13328, Page 1296, said

Real Property Records for the south corner of said 33.98 acre tract and a south corner of the herein described tract of land;

**THENCE**, along the southwest line of said 33.98 acre tract, North 29° 57' 00" West, at 604.43 feet pass a ½" iron rod stamped RPLS 5482 found at the east corner of a 37.265 acre tract conveyed unto Jeffery A. Zunker by warranty deed recorded in Volume 13328, Page 1300, said Real Property Records, in all a total distance of 1209.42 feet to a 1" iron pipe found on the southeast line of the remaining portion of a 126.2 acre tract conveyed unto Vernon E. Winkelmann described in deed recorded in Volume 1927, Page 33, said Real Property Records for the west corner of said 33.98 acre tract and the herein described tract of land;

**THENCE**, along the south east line of said 126.2 acre tract, North 60° 11' 28" East, 1223.19 feet to an iron pipe and South 29° 54' 52" East, 20.47 feet to a calculated point on the southeast line of a private road for the west corner of said 90.216 acre tract and a reentrant corner of the herein described tract of land;

**THENCE**, along the southeast line of a private road, the northwest line of said 90.216 acre tract, North 60° 10' 02" East, 2303.28 feet to a 1" pipe found at the common north corner of said 90.216 acre tract and the west corner of said 89.3 acre tract of land for an angle point in the northwest line of the herein described tract of land;

**THENCE**, continuing along the southeast line of said private road, North 60° 22' 23" East, 2295.64 feet, to a ½" iron rod found for the west corner of a 1.50 acre tract conveyed unto Eugene H. Bielke, et al by warranty deed recorded in Volume 3154, Page 1641, said Real Property Records for a north corner of said 89.3 acre tract and the herein described tract of land;

**THENCE**, South 29° 27' 35" East, at 306.23 feet pass a ½" iron rod found at the west corner of said 1.147 acre tract, in all a total distance of 430.60 feet to a ½" iron rod found for the west corner of said 28.7 acre tract and a reentrant corner of the herein described tract of land;

**THENCE**, North 60° 23' 42" East, 455.19 feet to the **POINT OF BEGINNING**.

Containing in all, 10,566,036 square feet or 242.562 acres, more or less.

Bearings are referenced to NAD83, 2011 adjustment for Texas State Plane Coordinates, South Central Zone 4204.

This field note description is based upon field work completed by Westwood Professional Services, Inc. on December 9, 2018 by personnel under my supervision and in conjunction with that certain TSPS Category 1B, Condition IV Land Title Survey of same Project No. 21480.00 dated January 2, 2019.

GREEN VALLEY SPECIAL UTILITY DISTRICT  
WASTEWATER NON-STANDARD SERVICE AGREEMENT

Exhibit "B" – Wastewater Service Feasibility Study for the  
Clearwater Creek Subdivision



**Green Valley Special Utility District  
Clearwater Creek Subdivision  
Wastewater Service Feasibility Study**

Approved 8.22.2019

Revised 2.10.2020

Location Map:



Prepared For:



Green Valley Special Utility District  
P.O. Box 99  
Marion, TX 78124  
Phone: 830-914-2330  
Fax: 830-420-4138

Prepared By:



**UTILITY ENGINEERING GROUP** PLLC

Utility Engineering Group, PLLC  
191 N. Union Avenue  
New Braunfels, Texas 78130  
Phone: (830) 214-0521 (Office)  
TBPE Firm No. 18712

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## **1. Introduction**

Green Valley Special Utility District (GVSUD) received the subject application for non-standard wastewater service from Mosaic Land Development, LLC., on June 18, 2019. Utility Engineering Group, PLLC (UEG) was authorized to prepare a wastewater feasibility study for the proposed Clearwater Creek Subdivision to be presented at the August 22, 2019 GVSUD Board Meeting. The original report was approved by the Board and we met with the Developer in December and January to discuss options for wastewater service to the tract. This updated report is the result of those discussions.

This wastewater feasibility study reviews and analyzes the proposed development layout, required easements, and projected wastewater treatment capacities. UEG has included wastewater projections based on the application for service and the land use projections for the development. The design assumptions are consistent with the GVSUD Wastewater Design Criteria and the Texas Commission on Environmental Quality (TCEQ).

Once this feasibility study has been reviewed by GVSUD staff and presented to the GVSUD Board of Director's the applicants will receive a copy for review, and if the terms are acceptable, a wastewater service contract will be executed for both developments.

## **2. Land Use Projections**

The proposed Clearwater Creek Subdivision is located within the City of San Antonio Territorial Jurisdiction (ETJ) and Bexar County. The proposed subdivision is located east of FM 2538, and is approximately 0.23 miles northwest of the intersection of Real Rock Rd. Currently, the property is vacant and does not have any wastewater service from GVSUD or any other entity. The property is currently utilized as an agricultural operation. The applicant intends to develop 7 phases on the property: a total of 950 Equivalent Dwelling Units (EDUs). The applicant requests sewer service from GVSUD to be in the first quarter of 2021. Timing of service to this tract will be discussed in

further detail in section 4 of this report. The residential wastewater connections will adhere to Green Valley's Wastewater planning factors, their Equivalent Dwelling Units (EDU) conversion factors, the anticipated Average Daily Flows, Peak Dry Weather Flow, and Peak Wet Weather Flow projections. The evaluation of the overall connections and actual demand request for this property will be further analyzed and discussed later in this report.

### **3. Wastewater Service Approach**

River City Engineering developed a Wastewater Master Plan for GVSUD dated in late 2006, which provided an overall scope and approach to providing wastewater service to GVSUD's Certificate of Convenience and Necessity (CCN) No. 20973. This study was intended to visualize potential future development and growth projections within Green Valley's Wastewater CCN. The service approach presented in this study is consistent with the 2006 Wastewater Master Plan. The development is located within the Woman Hollering Creek Sewershed, which encompasses approximately 12,600 acres of GVSUD wastewater CCN. Utility Engineering Group (UEG) is working on the update and revision of the District's Wastewater Master Plan. For this area of the service area, we anticipate an additional Wastewater Treatment Plant and associated Texas Pollution Discharge Elimination System permit. GVSUD's proposed Woman Hollering Creek Wastewater Treatment Plant was originally located west and south of the Clearwater Creek Subdivision. However, a regional lift station was proposed near this tract. We propose replacing the regional lift station with the plant and moving the regional lift station further down in the sewershed to capture flows with St. Hedwig as development occurs in that location. This will minimize the cost of infrastructure for this sewershed and this application for service, while providing a service option for the entire sewershed. Due to the timing of the design, financing and construction to complete a permanent wastewater service plan, GVSUD is proposing a temporary package plant approach for interim service to this tract, and ultimately replace the package plant operation with the permanent centralized system in a future phase.

#### **4. Proposed GVSUD Infrastructure**

The following section identifies the demand, impact, and approach the District will proceed with to provide both interim and permanent wastewater services to this tract. This will include the proposed package plant operation, the permanent wastewater treatment plant, and the associated collection system. This analysis will also investigate the impact of the requested services within the District's wastewater system in the near future by proceeding with the District's Wastewater Treatment Facility.

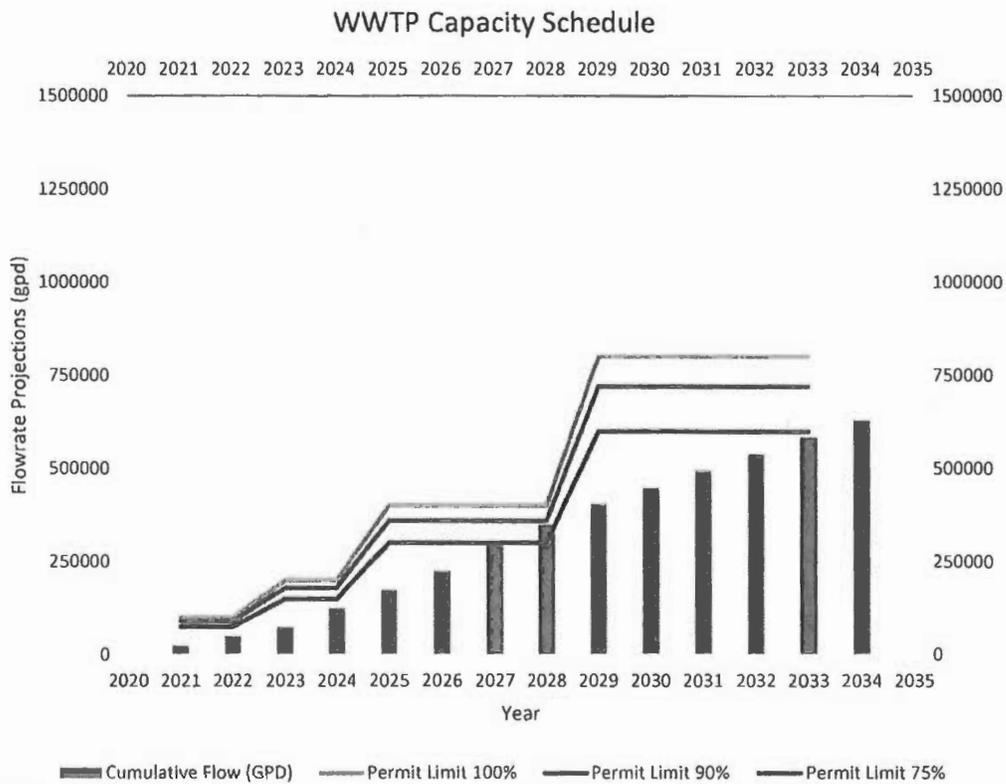
##### ***4.1 Impact to Wastewater Demand***

The District has experienced growth within its Water and Wastewater CCN boundary, and request for utility services have drastically increased. The District is currently serving approximately 150 customers with wastewater services and have commitments for over 2,000 connections within the District. Since this service request is within a sewershed that is not within the Santa Clara Creek Sewershed and available for service with the Santa Clara Creek No. 1 Wastewater Treatment Plant, the District will need to establish a new permit and plant to serve this development, along with the surrounding properties. A portion of this sewershed falls within the area near Abbott Road and FM 1518 where the District has a wholesale agreement with San Antonio River Authority (SARA). The service available under the SARA agreement is limited by treatment and collection system capacity; therefore, this flow could not enter that system.

##### ***4.2 District's Collection System and Approach***

The developer has agreed to donate 5 ± acres within the subdivision to place the proposed treatment plant. GVSUD will ultimately utilize the proposed Woman Hollering Wastewater Treatment Plant to treat its wastewater connections located within the District's CCN and the Woman Hollering Creek sewershed. We need to ensure that we secure adequate property to be able to expand the plant in the future to serve the entirety of the sewershed. GVSUD will need to acquire the required Texas Pollutant Discharge Elimination System Permit (TPDES) to serve the development along with a

reasonable growth projection outside of the subdivision. Ultimately, the District will expand the Woman Hollering facility to meet the needs of the sewershed. We propose a permit with 100,000 gallons per day (gpd) for the first phase, 200,000 gpd in the second phase, 400,000 gpd in the third phase and 800,000 gpd in the final phase. Once we begin the permitting process and evaluate growth patterns in the Sewershed we can adjust the permit capacities as needed. The following table illustrates the number of services available in each phase.



The applicant will be responsible for design and easement acquisition for any lift stations, gravity and/or forcemains required to serve the tract. We anticipate that the TPDES permit will take approximately 4 months to prepare and approximately 6-9 months for TCEQ issuance of a permit, without protests. We recommend starting design of the wastewater treatment plant once the draft permit is issued by TCEQ. Without

protest, we anticipate that the permitting, design and construction of the wastewater treatment plant will span approximately 18-24 months once authorized to proceed. The collection system for the Clearwater Creek Development will be designed and constructed by the developer. To serve adjacent tracts, GVSUD will need to evaluate the developer's collection system design to identify any lines that need to be upsized. The cost for the upsized collection system can be credited by payment or Contribution in Aid of Construction (CIAC) fee credits. The first phase of the wastewater treatment plant would need to be paid for by the developer; the subsequent phases would be financed by GVSUD with associated fees charged at the time of connection by the development. We will discuss costs in greater detail later in this report.

We have prepared cost estimates that are based on sizing the headworks, clarifier, blower structures, filter basin and piping for the 200,000 gpd plant. For the 200,000 gpd plant, we would only need to install a second aeration basin, digester and blowers to expand the capacity.

#### **4.3 Wastewater Planning and Determination**

UEG will utilize GVSUD wastewater planning factors in order to provide an accurate flow for both proposed tracts. The contributing factors are as follow:

- Wastewater Flow: 300gpd/EDU
- Infiltration/Inflow: 300gpd/Acre.
- Peaking Factor Dry Weather Flow: 4.0

Landplan Usage	EDU Conversion Factor	Total EDU's	Area (Acres)	Average Dry Weather Flow (GPM)	Peak Dry Weather Flow (GPM)	Peak Wet Weather Flow (GPM)
Scenic Ridge	3.9	950	243	197.92	791.7	842.3

The District's wastewater planning factors were approved by the Board of Directors and are consistent with the Texas Commission on Environmental Quality (TCEQ) regulations.

**4.4 Proposed Land Plan Wastewater Projections**

Based on the land plan study, the density per acre equates to 3.9 EDU/AC for the proposed subdivision. A total of 950 EDU's of service have been requested by the applicant, which will produce an effluent of approximately 842.3 gpm, or a Peak Wet Weather Flow of approximately 1,212,900 gallons per day at full buildout. The average day flow to the treatment plant would be approximately 285,000 gallons per day, which will be the basis of CIAC fee calculations and permitting.

**5. Estimated Costs**

As discussed earlier in this report, we recommend that the developer contribute the funds for the design and construction of the Woman Hollering Creek Wastewater Treatment Plant Phase I. This allows the developer to move forward with developing their property quicker than the District securing debt and environmental clearances to construct the plant. The following table summarizes the cost for GVSUD and the applicant.

Woman Hollering Creek WWTP					
	Cost Estimate per Phase	Cumulative Cost	Permit Capacity	EDU's at 100% Capacity	Cost per EDU
Phase I	\$ 2,348,509.87	\$ 2,348,509.87	100,000	408	\$ 5,756.15
Phase II	\$ 1,356,500.00	\$ 3,705,009.87	200,000	816	\$ 4,540.45
Phase III	\$ 3,646,000.00	\$ 7,351,009.87	400,000	1633	\$ 4,501.54
Phase IV	\$ 8,659,000.00	\$ 16,010,009.87	800,000	3265	\$ 4,903.53

The summary of costs shown above assumes that the developer would receive CIAC fee credits for the first phase of the plant. Since the estimated cost of service for this development, as presented is \$4,540 per EDU, we recommend that the Developer construct the first phase of the plant for an estimated cost of \$2,348,509.87 and GVSUD would own and operate the plant. In return, the District would set the developer CIAC fee at \$4,540 per EDU, therefore the developer would pay a total of \$4,540 for each of

the 950 EDU's of service requested for a total of \$4,313,000 for the Clearwater Creek Development. The District would finance and construct the second and subsequent phases of the plant with the Clearwater Creek developer paying the difference between the \$4,313,000 total CIAC fee for their service request and the first phase plant cost of \$2,348,509.87 which totals \$1,964,490.13 as CIAC fees at the time of platting the subsequent units once the second phase of the plant is required. The effective CIAC fee will be calculated once the project is awarded to construct the first phase treatment plant. GVSUD will be in control of the design of the wastewater treatment plant and the Developer will escrow funds for design prior to design commencing. Upon award of the contract for construction, the Developer will escrow 50% of the contract price with GVSUD to begin construction. Once the construction contract reached 40% complete the developer will escrow the remainder of the funds to complete the contract.

## **6. Conclusions and Recommendations**

The following conditions are provided for GVSUD's consideration:

- A. The applicant complies with GVSUD's current policies and pays all applicable fees at the time of Development.
- B. The required easement certification is provided on the recorded plat and any required easements are dedicated to the District. Attachment 2 contains the certification required by the District.
- C. GVSUD staff and consultants approve the location, size, material type and all appurtenances prior to construction and final acceptance of the project. GVSUD standard wastewater specifications shall be followed and a GVSUD inspector shall be present during installation and testing of the infrastructure. The applicant is responsible for the design and costs associated with the internal infrastructure to serve their development, including but not limited to: gravity mains, manholes, lift stations, forcemains and associated appurtenances to deliver flow to the treatment plant head works. GVSUD may elect to oversize components of the Developer's collection system to serve adjacent tracts. We request that the developer and their design team work closely with GVSUD during design to

ensure that the collection system is acceptable to GVSUD.

- D. Electric, telephone, and any other utilities shall remain outside of the GVSUD easement unless specifically agreed to in writing by GVSUD.
- E. The District will prepare and file a TPDES permit application as discussed in this report. The developer will provide fee simple title or an easement for the ± 5-acre treatment plant site so that GVSUD can associate the permit with real property. We anticipate the cost of this application to be \$42,000. We would need the developer to provide a topographic and boundary survey for the WWTP site so that preliminary design and site plans can be prepared during the permitting phase of the project.
- F. After construction completion and GVSUD acceptance, all wastewater collection improvements shall be dedicated to and maintained by GVSUD. The contractor and/or developer shall warranty all construction and material for a period of one year. All system improvements that are not prepared by GVSUD must be submitted to GVSUD for review and approval prior to construction. All infrastructure design shall conform to the GVSUD and TCEQ design guidelines, standards and details. Any work completed without approved plans and inspection by GVSUD will be removed and/or replaced by the applicant at the sole expense of the applicant.
- G. The developer will be responsible for the cost associated with the first phase of the WWTP with an estimated cost of \$2,348,509.87. The developer will also be responsible for the additional \$1,964,490.13 in CIAC fees to compensate the District for the cost of 950 EDU's of service in the Woman Hollering Creek Sewershed. This equates to a total of \$4,313,000 in fees for this application of service. The effective CIAC fee will be calculated once the project is awarded to construct the first phase treatment plant to ensure that GVSUD has the required budget to complete the project and the Developer is assessed the correct fees.
- H. Contributions in Aid of Construction will be due at the time of platting once the CIAC credits for the first phase of the plant are exhausted.
- I. GVSUD will be in control of the design of the wastewater treatment plant and the Developer will escrow funds for design prior to design commencing. Upon award

of the contract for construction, the Developer will escrow 50% of the contract price with GVSUD to begin construction. Once the construction contract reached 40% complete the developer will escrow the remainder of the funds to complete the contract.

This wastewater feasibility study is subject to the approval and/or modification by the GVSUD Board of Directors after consideration of the information provided herein and the application of the policies of GVSUD. This study is based on the application for service submitted June 18, 2019 and revised in January 2020. If changes or additions are made to the development this study should be revisited.

**Attachment 2 – Easement Certification**

Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

## Attachment I: Correspondences

Utility Engineering Group, PLLC  
191 N. Union Avenue  
New Braunfels, Texas 78130  
Texas Firm No. 18712  
Phone: (830) 214-0521



July 8, 2020

To: Cibolo Creek Municipal Authority

Re: TCEQ Wastewater Discharge Permit No. WQ0015334001

Dear TCEQ Wastewater Discharge Permit Holder:

We are writing to you on behalf of Green Valley Special Utility District (GVSUD) regarding a proposed project to serve the proposed Clearwater Creek residential subdivision and adjacent developments, located in Bexar County as shown on the attached map. The proposed wastewater system will serve approximately 950 equivalent single-family connections in Clearwater and other future developments in various stages of development. GVSUD is in the process of applying for a TCEQ Wastewater Discharge permit for 0.4 million gallons per day (MGD). At full buildout, the sewershed can have approximately 6,441 equivalent single-family connections equating to approximately 1,578,000 gallons per average day.

We are required to contact all existing TCEQ Wastewater Discharge Permittees within a 3-mile radius of the project to inquire if an existing permit holder is willing to provide the wastewater treatment capacity needed. According to TCEQ records, you are a permittee having an existing wastewater treatment plant/TPDES permit located within three miles of the project. If we find a wastewater treatment plant permit holder within three miles that has the required capacity available or will expand their facility to make it available, we will conduct a feasibility study to determine if it is cost effective to obtain service from them.

We will appreciate receiving a response from you indicating if 0.4 MGD of initial wastewater treatment capacity in your facility is available, and if so, under what terms. We also will need to evaluate the ultimate future condition described above for the buildout of the sewershed. As you can see from the attached map, the proposed plant and service area is downstream of your plant, therefore a lift station, forcemain and gravity main solution will need to be evaluated to collect and transport the effluent if permit and plant capacity is available at your facility. The plant will serve additional developments in this sewershed and within GVSUD's Certificate of Convenience and Necessity (CCN). A handwritten reply on a copy of this letter will be adequate. You may email your response to me at [garrym@uegpros.com](mailto:garrym@uegpros.com) or fax to (830) 420-4138. Please feel free to call me at (830) 214-0521 if you have any questions. Thank you for your assistance.

Sincerely,



Garry Montgomery

cc: Pat Allen, General Manager GVSUD

---

REPLY

Date of Reply: \_\_\_\_\_

Name of Permittee: \_\_\_\_\_

Terms (if available) \_\_\_\_\_

\_\_\_\_\_

Capacity Available (Yes / No)

Signature: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_

Email: \_\_\_\_\_

Utility Engineering Group, PLLC  
191 N. Union Avenue  
New Braunfels, Texas 78130  
Texas Firm No. 18712  
Phone: (830) 214-0521



July 13, 2020

To: City of San Antonio

Re: Consent to Provide Wastewater Service

Dear City of San Antonio:

We are writing to you on behalf of Green Valley Special Utility District (GVSUD) regarding a proposed project to serve the proposed Clearwater Creek residential subdivision, located in Bexar County as shown on the attached map. The proposed wastewater system will serve approximately 950 equivalent single-family connections and other future developments. GVSUD is in the process of applying for a TCEQ Wastewater Discharge permit for 0.4 million gallons per day (MGD).

We are required to contact all cities within the service area to inquire if the city is willing to provide wastewater service. The City of San Antonio ETJ is located within the service area of the project. If the city consents to provide wastewater service, we will conduct a feasibility study to determine if it is cost effective to obtain service from them.

We will appreciate receiving a response from you indicating if the city consents to providing wastewater service, and if so, under what terms. A handwritten reply on a copy of this letter will be adequate. You may email your response to me at garrym@uegpros.com or fax to (830) 420-4138. Please feel free to call me at (830) 214-0521 if you have any questions. Thank you for your assistance.

Sincerely,

Garry Montgomery

cc: Pat Allen, General Manager GVSUD

REPLY

Date of Reply: 7-23-2020  
Name of City: CITY OF SAN ANTONIO  
Terms (if available): SAN ANTONIO WATER SYSTEM

Signature: Jeffrey J. Haas  
Printed Name: JEFFREY J. HAAS  
Title: VICE PRESIDENT PRODUCTION & TREATMENT  
Address: 2800 U.S. HIGHWAY 281 N., SA, TX 78211  
Telephone: (214) 233-3707  
Email: JEFF.HAAS@SAWS-ORL

THE SAN ANTONIO WATER SYSTEM IS NOT INTERESTED  
IN PROVIDING SERVICE. THANK YOU,  
Jeff Haas

Utility Engineering Group, PLLC  
191 N. Union Avenue  
New Braunfels, Texas 78130  
Texas Firm No. 18712  
Phone: (830) 214-0521



July 13, 2020

To: San Antonio River Authority

Re: Consent to Provide Wastewater Service

Dear San Antonio River Authority:

We are writing to you on behalf of Green Valley Special Utility District (GVSUD) regarding a proposed project to serve the proposed Clearwater Creek residential subdivision, located in Bexar County as shown on the attached map. The proposed wastewater system will serve approximately 950 equivalent single-family connections and other future developments. GVSUD is in the process of applying for a TCEQ Wastewater Discharge permit for 0.4 million gallons per day (MGD).

We are required to contact all cities and adjacent utilities within the service area to inquire if they are willing to provide wastewater service. We are providing this notice to SARA as a courtesy so that you are aware of the permit application and to give you an opportunity to discuss the project prior to the application being submitted. This permit does not affect any SARA sewer CCN.

You may email your questions or concerns to me at [garrym@uegpros.com](mailto:garrym@uegpros.com) or fax to (830) 420-4138. Please feel free to call me at (830) 214-0521 if you have any questions. Thank you for your assistance.

Sincerely,  
  
Garry Montgomery

cc: Pat Allen, General Manager, GVSUD

---

REPLY

Date of Reply: \_\_\_\_\_  
Name of City: \_\_\_\_\_  
Terms (if available) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signature: \_\_\_\_\_  
Printed Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Address: \_\_\_\_\_  
Telephone: \_\_\_\_\_  
Email: \_\_\_\_\_

Utility Engineering Group, PLLC  
191 N. Union Avenue  
New Braunfels, Texas 78130  
Texas Firm No. 18712  
Phone: (830) 214-0521



July 13, 2020

To: City of Schertz

Re: Consent to Provide Wastewater Service

Dear City of Schertz:

We are writing to you on behalf of Green Valley Special Utility District (GVSUD) regarding a proposed project to serve the proposed Clearwater Creek residential subdivision, located in Bexar County as shown on the attached map. The proposed wastewater system will serve approximately 950 equivalent single-family connections and other future developments. GVSUD is in the process of applying for a TCEQ Wastewater Discharge permit for 0.4 million gallons per day (MGD).

We are required to contact all cities within the service area to inquire if the city is willing to provide wastewater service. The City of Schertz is located upstream within the service area of the project. If the city consents to provide wastewater service, we will conduct a feasibility study to determine if it is cost effective to obtain service from them. This plant will be located in City of San Antonio ETJ.

We will appreciate receiving a response from you indicating if the city consents to providing wastewater service, and if so, under what terms. A handwritten reply on a copy of this letter will be adequate. You may email your response to me at [garrym@uegpros.com](mailto:garrym@uegpros.com) or fax to (830) 420-4138. Please feel free to call me at (830) 214-0521 if you have any questions. Thank you for your assistance.

Sincerely,

Garry Montgomery

cc: Pat Allen, General Manager GVSUD

---

REPLY

Date of Reply: \_\_\_\_\_  
Name of City: \_\_\_\_\_  
Terms (if available) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signature: \_\_\_\_\_  
Printed Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Address: \_\_\_\_\_  
Telephone: \_\_\_\_\_  
Email: \_\_\_\_\_

Utility Engineering Group, PLLC  
191 N. Union Avenue  
New Braunfels, Texas 78130  
Texas Firm No. 18712  
Phone: (830) 214-0521



July 13, 2020

To: City of St Hedwig

Re: Consent to Provide Wastewater Service

Dear City of St Hedwig:

We are writing to you on behalf of Green Valley Special Utility District (GVSUD) regarding a proposed project to serve the proposed Clearwater Creek residential subdivision, located in Bexar County as shown on the attached map. The proposed wastewater system will serve approximately 950 equivalent single-family connections and other future developments. GVSUD is in the process of applying for a TCEQ Wastewater Discharge permit for 0.4 million gallons per day (MGD).

We are required to contact all cities within the service area to inquire if the city is willing to provide wastewater service. The City of St Hedwig is located within the service area of the project. If the city consents to provide wastewater service, we will conduct a feasibility study to determine if it is cost effective to obtain service from them. The permit and plant will be located within the City of San Antonio ETJ.

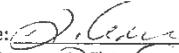
We will appreciate receiving a response from you indicating if the city consents to providing wastewater service, and if so, under what terms. A handwritten reply on a copy of this letter will be adequate. You may email your response to me at [garrym@uegpros.com](mailto:garrym@uegpros.com) or fax to (830) 420-4138. Please feel free to call me at (830) 214-0521 if you have any questions. Thank you for your assistance.

Sincerely,  
  
Garry Montgomery

cc: Pat Allen, General Manager GVSUD

REPLY

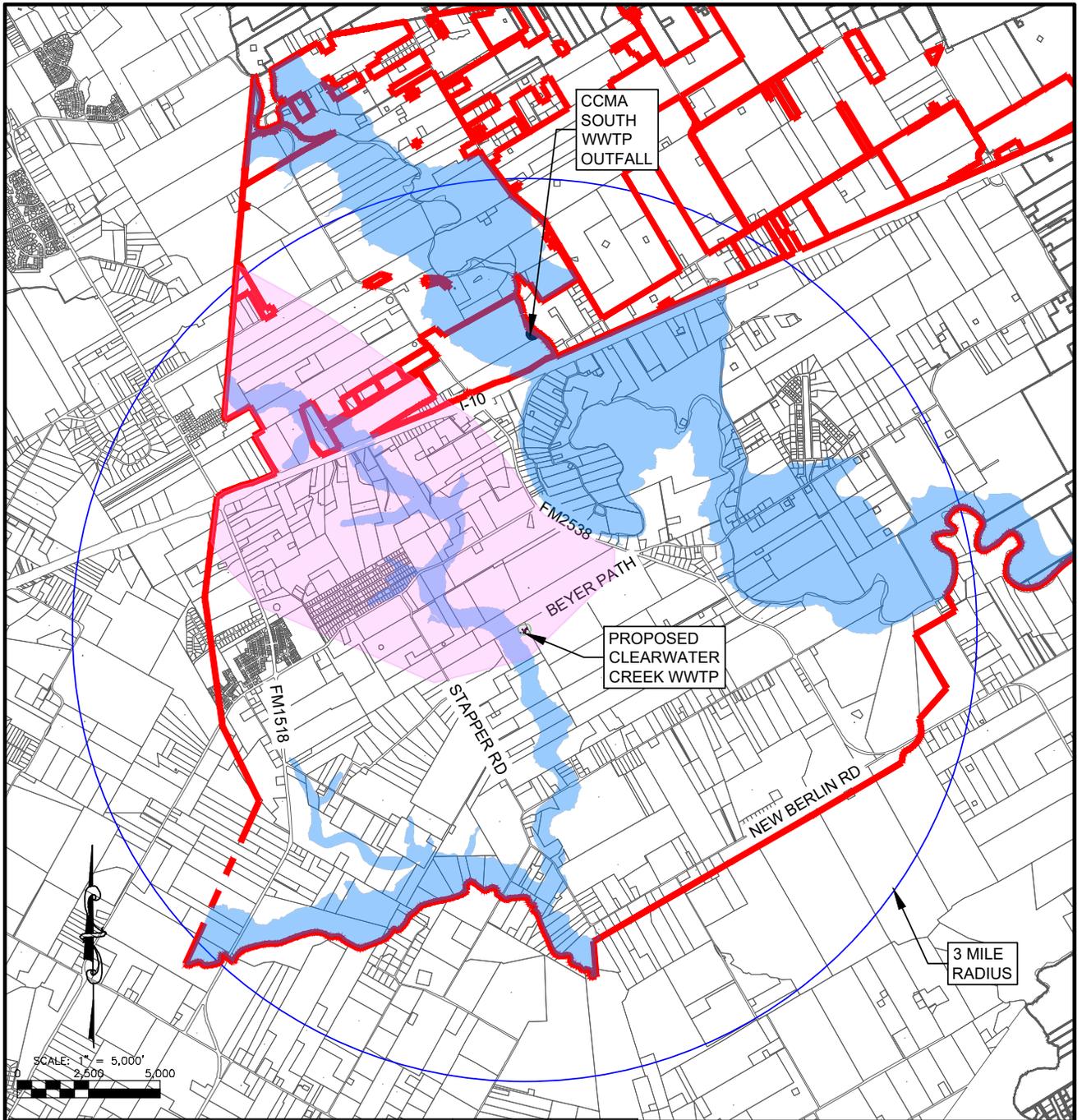
Date of Reply: 7/15/2020  
Name of City: Saint Hedwig  
Terms (if available) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signature:   
Printed Name: Dee Grimm  
Title: Mayor  
Address: P.O. Box 40, Saint Hedwig, Texas 78152  
Telephone: 210-425-2449  
Email: mayor@saint-hedwig-city.com

*The City will not provide wastewater service to the proposed residential subdivision*

**GREEN VALLEY SPECIAL UTILITY DISTRICT  
CLEARWATER WASTEWATER PERMIT APPLICATION  
NEARBY FACILITIES**

<b>PERMITEE NAME</b>	<b>PERMIT NUMBER</b>
CIBOLO CREEK MUNICIPAL AUTHORITY	WQ0015334001



	ACRES	EDU
OVERALL DEVELOPABLE SEWERSHED TO GVSUD PROPOSED TREATMENT PLANT	2,147	6,441
SEWERSHED WITHIN GVSUD SEWER CCN AREA	2,532	7,596
FEMA FLOODPLAIN WITHIN SEWERSHED	385	

**LEGEND**

- - - GVSUD WASTEWATER CCN
- CLEARWATER CREEK SEWERSHED
- FEMA FLOODPLAIN

**UTILITY ENGINEERING GROUP PLLC**

256 Comal Ave NEW BRAUNFELS, TEXAS 78130 PH: (830) 214-0521  
Texas Engineering Firm F-18712

SCALE:
DATE: 13 July, 2020
PROJECT NO:
DESIGNED BY:
DRAWN BY:
CHECKED BY:

**GREEN VALLEY SPECIAL UTILITY DISTRICT**

**CLEARWATER CREEK WWTP AREA MAP**

SHEET:    OF

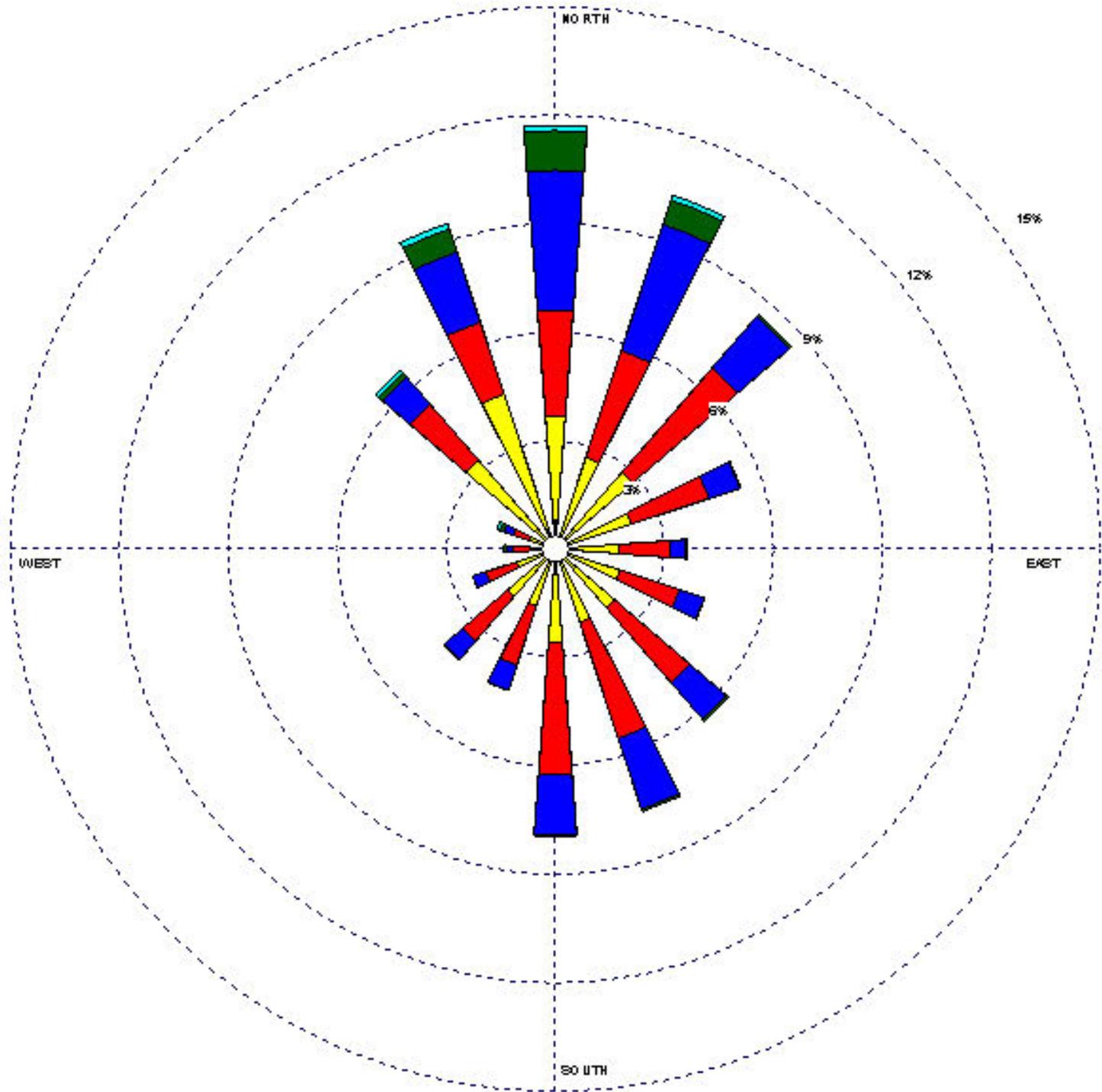
P:\Projects\00196\_GVSUD\01 - Clearwater Creek WWS & WWFSCAD\Sheet\AREA MAP.dwg, Jul 13, 2020, 9:41 am

Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

## Attachment J: Wind Rose

WIND ROSE PLOT

Station #12921 - SAN ANTONIO/WSFD, TX



<p>Wind Speed (m/s)</p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 10px; height: 10px; background-color: cyan; border: 1px solid black; margin-right: 5px;"></span> &gt; 11.06</li> <li><span style="display: inline-block; width: 10px; height: 10px; background-color: green; border: 1px solid black; margin-right: 5px;"></span> 8.49 - 11.06</li> <li><span style="display: inline-block; width: 10px; height: 10px; background-color: blue; border: 1px solid black; margin-right: 5px;"></span> 5.40 - 8.49</li> <li><span style="display: inline-block; width: 10px; height: 10px; background-color: red; border: 1px solid black; margin-right: 5px;"></span> 3.34 - 5.40</li> <li><span style="display: inline-block; width: 10px; height: 10px; background-color: yellow; border: 1px solid black; margin-right: 5px;"></span> 1.80 - 3.34</li> <li><span style="display: inline-block; width: 10px; height: 10px; background-color: black; border: 1px solid black; margin-right: 5px;"></span> 0.51 - 1.80</li> </ul>	<p>MODELER Sara West</p>	<p>DATE 8/29/2002</p>	<p>COMPANY NAME USDA-ARS</p>	
	<p>DISPLAY Wind Speed</p>	<p>UNIT m/s</p>	<p>COMMENTS</p>	
	<p>AVG. WIND SPEED 4.41 m/s</p>	<p>CALM WINDS 4.43%</p>		
	<p>ORIENTATION Direction (blowing from)</p>	<p>PLOT YEAR-DATETIME 1961 Feb 1 - Feb 29 Midnight - 11 PM</p>		

WRPLOT - Rev 3.3 by GISS Environmental Software - www.giss-environmental.com

Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

## Attachment K: Core Data Form



TCEQ Use Only

# TCEQ Core Data Form

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

## SECTION I: General Information

1. Reason for Submission (If other is checked please describe in space provided.)		
<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)	<a href="#">Follow this link to search for CN or RN numbers in Central Registry**</a>	3. Regulated Entity Reference Number (if issued)
CN 600684294		RN

## SECTION II: Customer Information

4. General Customer Information		5. Effective Date for Customer Information Updates (mm/dd/yyyy)	
<input type="checkbox"/> New Customer		<input checked="" type="checkbox"/> Update to Customer Information	
<input type="checkbox"/> Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)		<input type="checkbox"/> Change in Regulated Entity Ownership	
<i>The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).</i>			
6. Customer Legal Name (If an individual, print last name first: eg: Doe, John)		If new Customer, enter previous Customer below:	
Green Valley Special Utility District			
7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number (if applicable)
11. Type of Customer:	<input 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 checked="" 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 checked="" type="checkbox"/> 21-100 <input type="checkbox"/> 101-250 <input type="checkbox"/> 251-500 <input type="checkbox"/> 501 and higher		<input 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 checked="" type="checkbox"/> Owner & Operator	
<input type="checkbox"/> Occupational Licensee		<input type="checkbox"/> Responsible Party	
<input type="checkbox"/> Operator		<input type="checkbox"/> Voluntary Cleanup Applicant	
<input type="checkbox"/> Other:			
15. Mailing Address:	P.O. Box 99		
	City	Marion	State TX ZIP 78124 ZIP + 4 0099
16. Country Mailing Information (if outside USA)		17. E-Mail Address (if applicable)	
18. Telephone Number		19. Extension or Code	20. Fax Number (if applicable)
( 830 ) 914-2330			( 830 ) 420-4138

## 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 checked="" type="checkbox"/> New Regulated Entity <input type="checkbox"/> Update to Regulated Entity Name <input type="checkbox"/> Update to Regulated Entity Information
<i>The Regulated Entity Name submitted may be updated in order to meet TCEQ Agency Data Standards (removal of organizational endings such as Inc, LP, or LLC).</i>
22. Regulated Entity Name (Enter name of the site where the regulated action is taking place.)
Clearwater Creek Wastewater Treatment Plant

23. Street Address of the Regulated Entity: <i>(No PO Boxes)</i>	14738 Beyer Path						
	City	Marion	State	TX	ZIP	78124	ZIP + 4
24. County	Bexar						

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:	14738 Beyer Path, Marion, TX 78124							
26. Nearest City	Marion				State	TX	Nearest ZIP Code	78124
27. Latitude (N) In Decimal:	29.4751		28. Longitude (W) In Decimal:		-98.1906			
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds			
29	29	30.36	98	11	26.16			
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)			
4952			22132					
33. What is the Primary Business of this entity? <i>(Do not repeat the SIC or NAICS description.)</i>								
Collection, treatment, and disposal of municipal sewerage								
34. Mailing Address:	P.O. Box 99							
	City	Marion	State	TX	ZIP	78124	ZIP + 4	
35. E-Mail Address:								
36. Telephone Number		37. Extension or Code			38. Fax Number <i>(if applicable)</i>			
( 830 ) 914-2330					( 830 ) 420-4138			

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

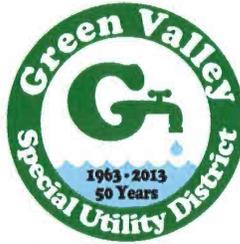
#### SECTION IV: Preparer Information

40. Name:	Garry Montgomery -Utility Engineering Group	41. Title:	Project Manager
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
( 830 ) 214-0521		( ) -	garrym@uegpros.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:	Green Valley Special Utility District	Job Title:	General Manager
Name (In Print):	Pat Allen	Phone:	( 830 ) 914- 2330
Signature:		Date:	7-23-2020



Water for a Better Life  
Since 1963

# GREEN VALLEY SPECIAL UTILITY DISTRICT

## CLEARWATER CREEK WASTEWATER TREATMENT FACILITY

### TCEQ DOMESTIC WASTEWATER DISCHARGE PERMIT REQUEST

Owner:  
Green Valley Special Utility District  
P.O. Box 99  
Marion, Texas 78124

**July 2020**



**UTILITY ENGINEERING GROUP**

**Prepared By:**  
Utility Engineering Group, PLLC  
191 N. Union Avenue  
New Braunfels, Texas 78130  
Texas Firm No. 18712  
Phone: (830) 214-0521



*G. Montgomery*



July 28, 2020

Executive Director  
Texas Commission on Environmental Quality  
Applications Review and Processing Team (MC148)  
Building F, Room 2101  
12100 Park 35 Circle  
Austin, Texas 78753

**Re: Permit Application Summary Letter  
Clearwater Creek Wastewater Treatment Plant**

Executive Director,

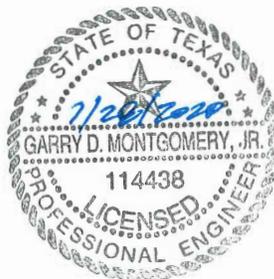
Green Valley Special Utility District (GVSUD) is seeking to obtain a Texas Pollutant Discharge Elimination System (TPDES) permit for the Clearwater Creek Wastewater Treatment Facility.

The proposed Clearwater Creek Wastewater Treatment Plant site is located at 14738 Beyer Path in Bexar County, Texas 78124. GVSUD seeks authorization to dispose of effluent at an average daily flow not to exceed 0.4 million gallons per day (MGD) to Womans Hollow Creek; thence to Martinez Creek in Segment No. 1902A of the San Antonio River Basin.

One original and three copies of the complete permit application are attached. If you have any further questions or need additional information, please do not hesitate to contact us.

Sincerely,

Garry Montgomery, P.E.  
Project Manager  
Utility Engineering Group, PLLC



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Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

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# **DOMESTIC ADMINISTRATIVE REPORT**

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**TEXAS COMMISSION ON ENVIRONMENTAL QUALITY**  
**DOMESTIC WASTEWATER PERMIT APPLICATION**  
**CHECKLIST**

Complete and submit this checklist with the application.

APPLICANT: Green Valley Special Utility District

PERMIT NUMBER:

Indicate if each of the following items is included in your application.

	<b>Y</b>	<b>N</b>		<b>Y</b>	<b>N</b>
Administrative Report 1.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Original USGS Map	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Administrative Report 1.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Affected Landowners Map	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SPIF	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Landowner Disk or Labels	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Core Data Form	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Buffer Zone Map	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Technical Report 1.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Flow Diagram	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Technical Report 1.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Site Drawing	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Worksheet 2.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Original Photographs	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Worksheet 2.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Design Calculations	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Worksheet 3.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Solids Management Plan	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Worksheet 3.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Water Balance	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Worksheet 3.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Worksheet 3.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Worksheet 4.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Worksheet 5.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Worksheet 6.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Worksheet 7.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>			

**For TCEQ Use Only**

Segment Number \_\_\_\_\_ County \_\_\_\_\_  
 Expiration Date \_\_\_\_\_ Region \_\_\_\_\_  
 Permit Number \_\_\_\_\_



**TEXAS COMMISSION ON ENVIRONMENTAL QUALITY**  
**APPLICATION FOR A DOMESTIC WASTEWATER PERMIT**  
**ADMINISTRATIVE REPORT 1.0**

If you have questions about completing this form please contact the Applications Review and Processing Team at 512-239-4671.

**Section 1. Application Fees (Instructions Page 29)**

Indicate the amount submitted for the application fee (check only one).

Flow	New/Major Amendment	Renewal
<0.05 MGD	\$350.00 <input type="checkbox"/>	\$315.00 <input type="checkbox"/>
≥0.05 but <0.10 MGD	\$550.00 <input type="checkbox"/>	\$515.00 <input type="checkbox"/>
≥0.10 but <0.25 MGD	\$850.00 <input type="checkbox"/>	\$815.00 <input type="checkbox"/>
≥0.25 but <0.50 MGD	\$1,250.00 <input checked="" type="checkbox"/>	\$1,215.00 <input type="checkbox"/>
≥0.50 but <1.0 MGD	\$1,650.00 <input type="checkbox"/>	\$1,615.00 <input type="checkbox"/>
≥1.0 MGD	\$2,050.00 <input type="checkbox"/>	\$2,015.00 <input type="checkbox"/>

Minor Amendment (for any flow) \$150.00

**Payment Information:**

Mailed      Check/Money Order Number:   
Check/Money Order Amount:   
Name Printed on Check:   
EPAY      Voucher Number: 472069, 472070  
Copy of Payment Voucher enclosed?      Yes

**Section 2. Type of Application (Instructions Page 29)**

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> New TPDES                   | <input type="checkbox"/> New TLAP                               |
| <input type="checkbox"/> Major Amendment <u>with</u> Renewal    | <input type="checkbox"/> Minor Amendment <u>with</u> Renewal    |
| <input type="checkbox"/> Major Amendment <u>without</u> Renewal | <input type="checkbox"/> Minor Amendment <u>without</u> Renewal |
| <input type="checkbox"/> Renewal without changes                | <input type="checkbox"/> Minor Modification of permit           |

For amendments or modifications, describe the proposed changes:

**For existing permits:**

Permit Number: WQ00  
EPA I.D. (TPDES only): TX

Expiration Date: [REDACTED]

### Section 3. Facility Owner (Applicant) and Co-Applicant Information (Instructions Page 29)

**A. The owner of the facility must apply for the permit.**

What is the Legal Name of the entity (applicant) applying for this permit?

Green Valley Special Utility District

*(The legal name must be spelled exactly as filed with the Texas Secretary of State, County, or in the legal documents forming the entity.)*

If the applicant is currently a customer with the TCEQ, what is the Customer Number (CN)? You may search for your CN on the TCEQ website at <http://www15.tceq.texas.gov/crpub/>

CN: CN600684294

What is the name and title of the person signing the application? The person must be an executive official meeting signatory requirements in 30 TAC § 305.44.

Prefix (Mr., Ms., Miss): Ms.

First and Last Name: Jill Zipp Bennett

Credential (P.E, P.G., Ph.D., etc.): [REDACTED]

Title: President

**B. Co-applicant information.** Complete this section only if another person or entity is required to apply as a co-permittee.

What is the Legal Name of the co-applicant applying for this permit?

N/A

*(The legal name must be spelled exactly as filed with the TX SOS, with the County, or in the legal documents forming the entity.)*

If the co-applicant is currently a customer with the TCEQ, what is the Customer Number (CN)? You may search for your CN on the TCEQ website at:

<http://www15.tceq.texas.gov/crpub/>

CN: [REDACTED]

What is the name and title of the person signing the application? The person must be an executive official meeting signatory requirements in 30 TAC § 305.44.

Prefix (Mr., Ms., Miss): [REDACTED]

First and Last Name: [REDACTED]

Credential (P.E, P.G., Ph.D., etc.): [REDACTED]

Title: [REDACTED]

Provide a brief description of the need for a co-permittee: [REDACTED]

**C. Core Data Form**

Complete the Core Data Form for each customer and include as an attachment. If the customer type selected on the Core Data Form is **Individual**, complete **Attachment 1** of Administrative Report 1.0.

**Attachment:** K

**Section 4. Application Contact Information (Instructions Page 30)**

This is the person(s) TCEQ will contact if additional information is needed about this application. Provide a contact for administrative questions and technical questions.

**A.** Prefix (Mr., Ms., Miss): Mr.

First and Last Name: Pat Allen

Credential (P.E, P.G., Ph.D., etc.): [REDACTED]

Title: General Manager

Organization Name: Green Valley Special Utility District

Mailing Address: P.O. Box 99

City, State, Zip Code: Marion, TX, 78124

Phone No.: (830) 914-2330 Ext.: [REDACTED] Fax No.: (830) 420-4138

E-mail Address: pallen@gvsud.org

Check one or both:  Administrative Contact  Technical Contact

**B.** Prefix (Mr., Ms., Miss): Mr.

First and Last Name: Garry Montgomery

Credential (P.E, P.G., Ph.D., etc.): P.E.

Title: Principal & Project Manager

Organization Name: Utility Engineering Group, PLLC

Mailing Address: 191 N Union Avenue

City, State, Zip Code: New Braunfels, TX, 78130

Phone No.: (830) 214-0521 Ext.: [REDACTED] Fax No.: [REDACTED]

E-mail Address: garrym@uegpros.com

Check one or both:  Administrative Contact  Technical Contact

**Section 5. Permit Contact Information (Instructions Page 30)**

Provide two names of individuals that can be contacted throughout the permit term.

**A.** Prefix (Mr., Ms., Miss): Mr.

First and Last Name: Pat Allen

Credential (P.E, P.G., Ph.D., etc.): [REDACTED]

Title: General Manager  
Organization Name: Green Valley Special Utility District  
Mailing Address: P.O. Box 99  
City, State, Zip Code: Marion, TX, 78124  
Phone No.: (830) 914-2330 Ext.: [REDACTED] Fax No.: (830) 420-4138  
E-mail Address: pallen@gvsud.org

**B. Prefix (Mr., Ms., Miss): Mr**

First and Last Name: Garry Montgomery  
Credential (P.E, P.G., Ph.D., etc.): P.E.  
Title: Principal & Project Manager  
Organization Name: Utility Engineering Group, PLLC  
Mailing Address: 191 N Union Avenue  
City, State, Zip Code: New Braunfels, TX, 78130  
Phone No.: (830) 214-0521 Ext.: [REDACTED] Fax No.: [REDACTED]  
E-mail Address: garrym@uegpros.com

**Section 6. Billing Information (Instructions Page 30)**

The permittee is responsible for paying the annual fee. The annual fee will be assessed to permits *in effect on September 1 of each year*. The TCEQ will send a bill to the address provided in this section. The permittee is responsible for terminating the permit when it is no longer needed (using form TCEQ-20029).

Prefix (Mr., Ms., Miss): Mr.  
First and Last Name: Pat Allen  
Credential (P.E, P.G., Ph.D., etc.): [REDACTED]  
Title: General Manager  
Organization Name: Green Valley Special Utility District  
Mailing Address: P.O. Box 99  
City, State, Zip Code: Marion, Texas, 78124  
Phone No.: (830) 914-2330 Ext.: [REDACTED] Fax No.: (830) 420-4138  
E-mail Address: pallen@gvsud.org

**Section 7. DMR/MER Contact Information (Instructions Page 31)**

Provide the name and complete mailing address of the person delegated to receive and submit Discharge Monitoring Reports (EPA 3320-1) or maintain Monthly Effluent Reports.

Prefix (Mr., Ms., Miss): Mr.  
First and Last Name: Zachary Willeford  
Credential (P.E, P.G., Ph.D., etc.): [REDACTED]

Title: Plant Operator/ Inspector

Organization Name: Green Valley Special Utility District

Mailing Address: P.O. Box 99

City, State, Zip Code: Marion, TX, 78124

Phone No.: (830) 499-3624 Ext.: [REDACTED]

Fax No.: [REDACTED]

E-mail Address: zwille@gvsud.org

DMR data is required to be submitted electronically. Create an account at:

<https://www.tceq.texas.gov/permitting/netdmr/netdmr.html>.

## Section 8. Public Notice Information (Instructions Page 31)

### A. Individual Publishing the Notices

Prefix (Mr., Ms., Miss): Mr.

First and Last Name: Pat Allen

Credential (P.E, P.G., Ph.D., etc.): [REDACTED]

Title: General Manager

Organization Name: Green Valley Special Utility District

Mailing Address: P.O. Box 99

City, State, Zip Code: Marion, TX, 78124

Phone No.: (830) 914-2330 Ext.: [REDACTED]

Fax No.: (830) 420-4138

E-mail Address: pallen@gvsud.org

### B. Method for Receiving Notice of Receipt and Intent to Obtain a Water Quality Permit Package

Indicate by a check mark the preferred method for receiving the first notice and instructions:

E-mail Address

Fax

Regular Mail

### C. Contact person to be listed in the Notices

Prefix (Mr., Ms., Miss): Mr.

First and Last Name: Pat Allen

Credential (P.E, P.G., Ph.D., etc.): [REDACTED]

Title: General Manager

Organization Name: Green Valley Special Utility District

Phone No.: (830) 914-2330 Ext.: [REDACTED]

E-mail: [pallen@gvsud.org](mailto:pallen@gvsud.org)

**D. Public Viewing Information**

*If the facility or outfall is located in more than one county, a public viewing place for each county must be provided.*

Public building name: St Hedwig City Office

Location within the building: Lobby

Physical Address of Building: 13065 FM 1346

City: St Hedwig County: Bexar

Contact Name: Pat Allen

Phone No.: (830) 914-2330 Ext.:

**E. Bilingual Notice Requirements:**

This information **is required** for **new, major amendment, and renewal applications**. It is not required for minor amendment or minor modification applications.

This section of the application is only used to determine if alternative language notices will be needed. Complete instructions on publishing the alternative language notices will be in your public notice package.

Please call the bilingual/ESL coordinator at the nearest elementary and middle schools and obtain the following information to determine whether an alternative language notices are required.

1. Is a bilingual education program required by the Texas Education Code at the elementary or middle school nearest to the facility or proposed facility?

Yes       No

If **no**, publication of an alternative language notice is not required; **skip to** Section 9 below.

2. Are the students who attend either the elementary school or the middle school enrolled in a bilingual education program at that school?

Yes       No

3. Do the students at these schools attend a bilingual education program at another location?

Yes       No

4. Would the school be required to provide a bilingual education program but the school has waived out of this requirement under 19 TAC §89.1205(g)?

Yes       No

5. If the answer is yes to question 1, 2, 3, or 4, public notices in an alternative language are required. Which language is required by the bilingual program? N/A

**Section 9. Regulated Entity and Permitted Site Information (Instructions Page 33)**

A. If the site is currently regulated by TCEQ, provide the Regulated Entity Number (RN) issued to this site. RN

Search the TCEQ's Central Registry at <http://www15.tceq.texas.gov/crpub/> to determine if the site is currently regulated by TCEQ.

B. Name of project or site (the name known by the community where located):

Clearwater Creek WWTP

C. Owner of treatment facility: Green Valley Special Utility District

Ownership of Facility:  Public  Private  Both  Federal

D. Owner of land where treatment facility is or will be:

Prefix (Mr., Ms., Miss): [REDACTED]

First and Last Name: Green Valley Special Utility District

Mailing Address: PO BOX 99

City, State, Zip Code: Marion, TX 78124

Phone No.: (830) 914-2330

E-mail Address: pallen@gvsud.org

If the landowner is not the same person as the facility owner or co-applicant, attach a lease agreement or deed recorded easement. See instructions.

**Attachment:** [REDACTED]

E. Owner of effluent disposal site:

Prefix (Mr., Ms., Miss): [REDACTED]

First and Last Name: [REDACTED]

Mailing Address: [REDACTED]

City, State, Zip Code: [REDACTED]

Phone No.: [REDACTED] E-mail Address: [REDACTED]

If the landowner is not the same person as the facility owner or co-applicant, attach a lease agreement or deed recorded easement. See instructions.

**Attachment:** [REDACTED]

F. Owner of sewage sludge disposal site (if authorization is requested for sludge disposal on property owned or controlled by the applicant):

Prefix (Mr., Ms., Miss): [REDACTED]

First and Last Name: [REDACTED]

Mailing Address: [REDACTED]

City, State, Zip Code: [REDACTED]

Phone No.: [REDACTED] E-mail Address: [REDACTED]

If the landowner is not the same person as the facility owner or co-applicant, attach a lease agreement or deed recorded easement. See instructions.

Attachment: [REDACTED]

**Section 10. TPDES Discharge Information (Instructions Page 34)**

A. Is the wastewater treatment facility location in the existing permit accurate?

- Yes       No

If **no**, or a **new permit application**, please give an accurate description:

Located at 4060 Stapper Rd, Saint Hedwig, TX 78152

B. Are the point(s) of discharge and the discharge route(s) in the existing permit correct?

- Yes       No

If **no**, or a **new or amendment permit application**, provide an accurate description of the point of discharge and the discharge route to the nearest classified segment as defined in 30 TAC Chapter 307:

Discharges to Womans Hollow Creek; thence to Martinez Creek in Segment No. 1902A of the San Antonio River Basin.

City nearest the outfall(s): St. Hedwig

County in which the outfalls(s) is/are located: Bexar

Outfall Latitude: 29.4705

Longitude: -98.1904

C. Is or will the treated wastewater discharge to a city, county, or state highway right-of-way, or a flood control district drainage ditch?

- Yes       No

If **yes**, indicate by a check mark if:

- Authorization granted       Authorization pending

For **new and amendment** applications, provide copies of letters that show proof of contact and the approval letter upon receipt.

Attachment: [REDACTED]

D. For all applications involving an average daily discharge of 5 MGD or more, provide the names of all counties located within 100 statute miles downstream of the point(s) of discharge.

N/A

**Section 11. TLAP Disposal Information (Instructions Page 36)**

A. For TLAPs, is the location of the effluent disposal site in the existing permit accurate?

- Yes     No

If **no**, or a **new or amendment permit application**, provide an accurate description of the disposal site location:

N/A

B. City nearest the disposal site: N/A

C. County in which the disposal site is located: N/A

D. Disposal Site Latitude: N/A                      Longitude: N/A

E. For TLAPs, describe the routing of effluent from the treatment facility to the disposal site:

N/A

F. For TLAPs, please identify the nearest watercourse to the disposal site to which rainfall runoff might flow if not contained:

N/A

**Section 12. Miscellaneous Information (Instructions Page 37)**

A. Is the facility located on or does the treated effluent cross American Indian Land?

- Yes     No

B. If the existing permit contains an onsite sludge disposal authorization, is the location of the sewage sludge disposal site in the existing permit accurate?

- Yes     No     Not Applicable

If No, or if a new onsite sludge disposal authorization is being requested in this permit application, provide an accurate location description of the sewage sludge disposal site.

C. Did any person formerly employed by the TCEQ represent your company and get paid for service regarding this application?

Yes  No

If yes, list each person formerly employed by the TCEQ who represented your company and was paid for service regarding the application:

D. Do you owe any fees to the TCEQ?

Yes  No

If yes, provide the following information:

Account number: [REDACTED] Amount past due: [REDACTED]

E. Do you owe any penalties to the TCEQ?

Yes  No

If yes, please provide the following information:

Enforcement order number: [REDACTED] Amount past due: [REDACTED]

**Section 13. Attachments (Instructions Page 38)**

Indicate which attachments are included with the Administrative Report. Check all that apply:

- Lease agreement or deed recorded easement, if the land where the treatment facility is located or the effluent disposal site are not owned by the applicant or co-applicant.
- Original full-size USGS Topographic Map with the following information:
  - Applicant's property boundary
  - Treatment facility boundary
  - Labeled point of discharge for each discharge point (TPDES only)
  - Highlighted discharge route for each discharge point (TPDES only)
  - Onsite sewage sludge disposal site (if applicable)
  - Effluent disposal site boundaries (TLAP only)
  - New and future construction (if applicable)
  - 1 mile radius information
  - 3 miles downstream information (TPDES only)
  - All ponds.
- Attachment 1 for Individuals as co-applicants
- Other Attachments. Please specify: [REDACTED]

**Section 14. Signature Page (Instructions Page 39)**

*If co-applicants are necessary, each entity must submit an original, separate signature page.*

Permit Number:

Applicant: Green Valley Special Utility District

Certification:

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

I further certify that I am authorized under 30 Texas Administrative Code § 305.44 to sign and submit this document, and can provide documentation in proof of such authorization upon request.

Signatory name (typed or printed): Jill Zipp Bennett

Signatory title: President

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

(Use blue ink)

Subscribed and Sworn to before me by the said \_\_\_\_\_

on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

My commission expires on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Notary Public

[SEAL]

\_\_\_\_\_  
County, Texas

## DOMESTIC ADMINISTRATIVE REPORT 1.1

The following information is required for new and amendment applications.

### Section 1. Affected Landowner Information (Instructions Page 41)

- A. Indicate by a check mark that the landowners map or drawing, with scale, includes the following information, as applicable:
- The applicant's property boundaries
  - The facility site boundaries within the applicant's property boundaries
  - The distance the buffer zone falls into adjacent properties and the property boundaries of the landowners located within the buffer zone
  - The property boundaries of all landowners surrounding the applicant's property (Note: if the application is a major amendment for a lignite mine, the map must include the property boundaries of all landowners adjacent to the new facility (ponds).)
  - The point(s) of discharge and highlighted discharge route(s) clearly shown for one mile downstream
  - The property boundaries of the landowners located on both sides of the discharge route for one full stream mile downstream of the point of discharge
  - The property boundaries of the landowners along the watercourse for a one-half mile radius from the point of discharge if the point of discharge is into a lake, bay, estuary, or affected by tides
  - The boundaries of the effluent disposal site (for example, irrigation area or subsurface drainfield site) and all evaporation/holding ponds within the applicant's property
  - The property boundaries of all landowners surrounding the effluent disposal site
  - The boundaries of the sludge land application site (for land application of sewage sludge for beneficial use) and the property boundaries of landowners surrounding the applicant's property boundaries where the sewage sludge land application site is located
  - The property boundaries of landowners within one-half mile in all directions from the applicant's property boundaries where the sewage sludge disposal site (for example, sludge surface disposal site or sludge monofill) is located
- B.  Indicate by a check mark that a separate list with the landowners' names and mailing addresses cross-referenced to the landowner's map has been provided.
- C. Indicate by a check mark in which format the landowners list is submitted:
- Readable/Writeable CD
  - Four sets of labels
- D. Provide the source of the landowners' names and mailing addresses: Bexar County Appraisal District
- E. As required by *Texas Water Code § 5.115*, is any permanent school fund land affected by this application?
- Yes
  - No

If **yes**, provide the location and foreseeable impacts and effects this application has on the

land(s):

## Section 2. Original Photographs (Instructions Page 44)

Provide original ground level photographs. Indicate with checkmarks that the following information is provided.

- At least one original photograph of the new or expanded treatment unit location
- At least two photographs of the existing/proposed point of discharge and as much area downstream (photo 1) and upstream (photo 2) as can be captured. If the discharge is to an open water body (e.g., lake, bay), the point of discharge should be in the right or left edge of each photograph showing the open water and with as much area on each respective side of the discharge as can be captured.
- At least one photograph of the existing/proposed effluent disposal site
- A plot plan or map showing the location and direction of each photograph

## Section 3. Buffer Zone Map (Instructions Page 44)

A. Buffer zone map. Provide a buffer zone map on 8.5 x 11-inch paper with all of the following information. The applicant's property line and the buffer zone line may be distinguished by using dashes or symbols and appropriate labels.

- The applicant's property boundary;
- The required buffer zone; and
- Each treatment unit; and
- The distance from each treatment unit to the property boundaries.

B. Buffer zone compliance method. Indicate how the buffer zone requirements will be met. Check all that apply.

- Ownership
- Restrictive easement
- Nuisance odor control
- Variance

C. Unsuitable site characteristics. Does the facility comply with the requirements regarding unsuitable site characteristic found in 30 TAC § 309.13(a) through (d)?

- Yes       No

**TEXAS COMMISSION ON ENVIRONMENTAL QUALITY  
SUPPLEMENTAL PERMIT INFORMATION FORM (SPIF)**

**FOR AGENCIES REVIEWING DOMESTIC  
TPDES WASTEWATER PERMIT APPLICATIONS**

<b>TCEQ USE ONLY:</b>	
Application type: ___Renewal ___Major Amendment ___Minor Amendment ___New	
County: _____	Segment Number: _____
Admin Complete Date: _____	
Agency Receiving SPIF:	
___ Texas Historical Commission	___ U.S. Fish and Wildlife
___ Texas Parks and Wildlife Department	___ U.S. Army Corps of Engineers

**This form applies to TPDES permit applications only.** (Instructions, Page 53)

The SPIF must be completed as a separate document. The TCEQ will mail a copy of the SPIF to each agency as required by the TCEQ agreement with EPA. If any of the items are not completely addressed or further information is needed, you will be contacted to provide the information before the permit is issued. Each item must be completely addressed.

**Do not refer to a response of any item in the permit application form.** Each attachment must be provided with this form separately from the administrative report of the application. The application will not be declared administratively complete without this form being completed in its entirety including all attachments.

The following applies to all applications:

1. Permittee: Green Valley Special Utility District

Permit No. WQ00 [REDACTED]

EPA ID No. TX [REDACTED]

Address of the project (or a location description that includes street/highway, city/vicinity, and county):

Located at 4060 Stapper Rd, Saint Hedwig, TX 78152
--

Provide the name, address, phone and fax number of an individual that can be contacted to answer specific questions about the property.

Prefix (Mr., Ms., Miss): Mr.

First and Last Name: Pat Allen

Credential (P.E, P.G., Ph.D., etc.): [REDACTED]

Title: General Manager

Mailing Address: P.O. Box 99

City, State, Zip Code: Marion, TX

Phone No.: (830)914-2330 Ext.: [REDACTED] Fax No.: [REDACTED]

E-mail Address: pallen@gvsud.org

2. List the county in which the facility is located: Bexar
3. If the property is publicly owned and the owner is different than the permittee/applicant, please list the owner of the property.

N/A

4. Provide a description of the effluent discharge route. The discharge route must follow the flow of effluent from the point of discharge to the nearest major watercourse (from the point of discharge to a classified segment as defined in 30 TAC Chapter 307). If known, please identify the classified segment number.

Discharges to Womans Hollow Creek; thence to Martinez Creek in Segment No. 1902A of the San Antonio River Basin.

5. Please provide a separate 7.5-minute USGS quadrangle map with the project boundaries plotted and a general location map showing the project area. Please highlight the discharge route from the point of discharge for a distance of one mile downstream. (This map is required in addition to the map in the administrative report).

Provide original photographs of any structures 50 years or older on the property.

Does your project involve any of the following? Check all that apply.

- Proposed access roads, utility lines, construction easements
- Visual effects that could damage or detract from a historic property's integrity
- Vibration effects during construction or as a result of project design
- Additional phases of development that are planned for the future
- Sealing caves, fractures, sinkholes, other karst features

- Disturbance of vegetation or wetlands
6. List proposed construction impact (surface acres to be impacted, depth of excavation, sealing of caves, or other karst features):

The construction of the first phase will disturb approximately 3.5 acres of native vegetation and brush on the property. The maximum depth of excavation is 30 feet at the lift station, 15 feet for gravity mains and 4-8 feet for foundations and other infrastructure. No karst features are located within the project area.

7. Describe existing disturbances, vegetation, and land use:

The immediate project area will be disturbed however the majority of the plant site's 6 acres will remain in the current condition. The site was previously used for agricultural purposes.

THE FOLLOWING ITEMS APPLY ONLY TO APPLICATIONS FOR NEW TPDES PERMITS AND MAJOR AMENDMENTS TO TPDES PERMITS

8. List construction dates of all buildings and structures on the property:

N/A- no construction activities to date.

9. Provide a brief history of the property, and name of the architect/builder, if known.

N/A- no construction activities to date, the site was previously used for agricultural purposes.

**WATER QUALITY PERMIT  
PAYMENT SUBMITTAL FORM**

Use this form to submit the Application Fee, if the mailing the payment.

- Complete items 1 through 5 below.
- Staple the check or money order in the space provided at the bottom of this document.
- **Do not mail this form with the application form.**
- Do not mail this form to the same address as the application.
- Do not submit a copy of the application with this form as it could cause duplicate permit entries.

**Mail this form and the check or money order to:**

*BY REGULAR U.S. MAIL*

Texas Commission on Environmental Quality  
Financial Administration Division  
Cashier's Office, MC-214  
P.O. Box 13088  
Austin, Texas 78711-3088

*BY OVERNIGHT/EXPRESS MAIL*

Texas Commission on Environmental Quality  
Financial Administration Division  
Cashier's Office, MC-214  
12100 Park 35 Circle  
Austin, Texas 78753

**Fee Code: WQP      Waste Permit No:**

1. Check or Money Order Number: [REDACTED]
2. Check or Money Order Amount:
3. Date of Check or Money Order: [REDACTED]
4. Name on Check or Money Order: [REDACTED]

**5. APPLICATION INFORMATION**

Name of Project or Site: [REDACTED]

Physical Address of Project or Site: [REDACTED]

If the check is for more than one application, attach a list which includes the name of each Project or Site (RE) and Physical Address, exactly as provided on the application.

**Staple Check or Money Order in This Space**

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ATTACHMENT 1

INDIVIDUAL INFORMATION

**Section 1. Individual Information (Instructions Page 50)**

Complete this attachment if the facility applicant or co-applicant is an individual. Make additional copies of this attachment if both are individuals.

Prefix (Mr., Ms., Miss):

Full legal name (first, middle, last):

Driver's License or State Identification Number:

Date of Birth:

Mailing Address:

City, State, and Zip Code:

Phone Number:  Fax Number:

E-mail Address:

CN:

**For Commission Use Only:**

Customer Number:

Regulated Entity Number:

Permit Number:

### TCEQ ePay Receipt

#### Transaction Information

**Trace Number:** 582EA000395333  
**Date:** 07/28/2020 01:45 PM  
**Payment Method:** ACH - Authorization 0000000000  
**Amount:** \$1,250.00  
**ePay Actor:** Adan Rangel

#### Payment Contact Information

**Name:** Garry Montgomery  
**Company:** Utility Engineering Group Pllc  
**Address:** 191 N Union Ave, New Braunfels, TX 78130  
**Phone:** 830-214-0521

#### Cart Items

Voucher	Fee Description	AR Number	Amount
472069	WW PERMIT - FACILITY WITH FLOW >= .25 & < .50 MGD - NEW AND MAJOR AMENDMENTS		\$1,200.00
472070	30 TAC 305.53B WQ NOTIFICATION FEE		\$50.00

### TCEQ ePay Voucher Receipt

#### Transaction Information

**Voucher Number:** 472069  
**Trace Number:** 582EA000395333  
**Date:** 07/28/2020 01:45 PM  
**Payment Method:** ACH - Authorization 0000000000  
**Amount:** \$1,200.00  
**Fee Type:** WW PERMIT - FACILITY WITH FLOW >= .25 & < .50 MGD - NEW AND MAJOR AMENDMENTS  
**ePay Actor:** Adan Rangel

#### Payment Contact Information

**Name:** Garry Montgomery  
**Company:** Utility Engineering Group Pllc  
**Address:** 191 N Union Ave, New Braunfels, TX 78130  
**Phone:** 830-214-0521

#### Site Information

**Site Name:** CLEARWATER CREEK WWTP  
**Site Location:** 14738 BEYER PATH MARION TX 78124

#### Customer Information

**Customer Name:** GREEN VALLEY SPECIAL UTILITY DISTRICT  
**Customer Address:** P O BOX 99, MARION, TX 78124 0099

### TCEQ ePay Voucher Receipt

#### Transaction Information

<b>Voucher Number:</b>	472070
<b>Trace Number:</b>	582EA000395333
<b>Date:</b>	07/28/2020 01:45 PM
<b>Payment Method:</b>	ACH - Authorization 0000000000
<b>Amount:</b>	\$50.00
<b>Fee Type:</b>	30 TAC 305.53B WQ NOTIFICATION FEE
<b>ePay Actor:</b>	Adan Rangel

#### Payment Contact Information

<b>Name:</b>	Garry Montgomery
<b>Company:</b>	Utility Engineering Group Pllc
<b>Address:</b>	191 N Union Ave, New Braunfels, TX 78130
<b>Phone:</b>	830-214-0521

Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

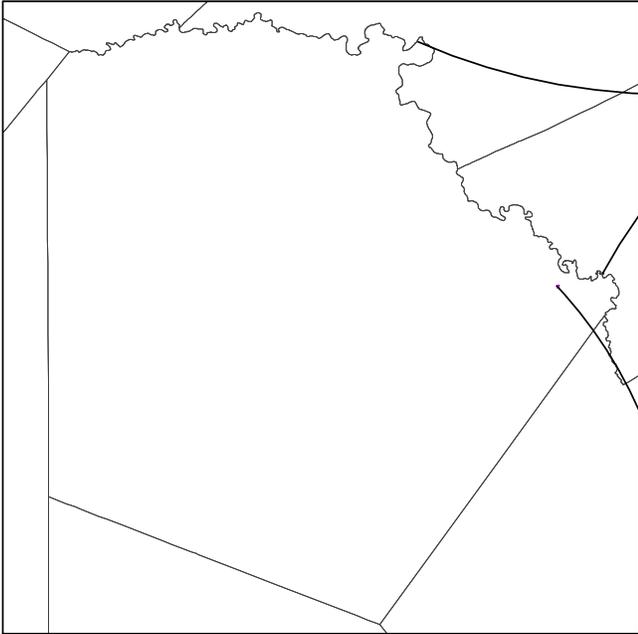
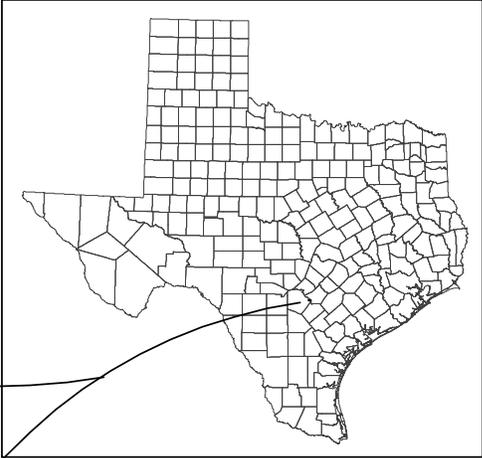
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**SUPPLEMENTAL PERMIT INFORMATION FORM  
(SPIF) MAPS**

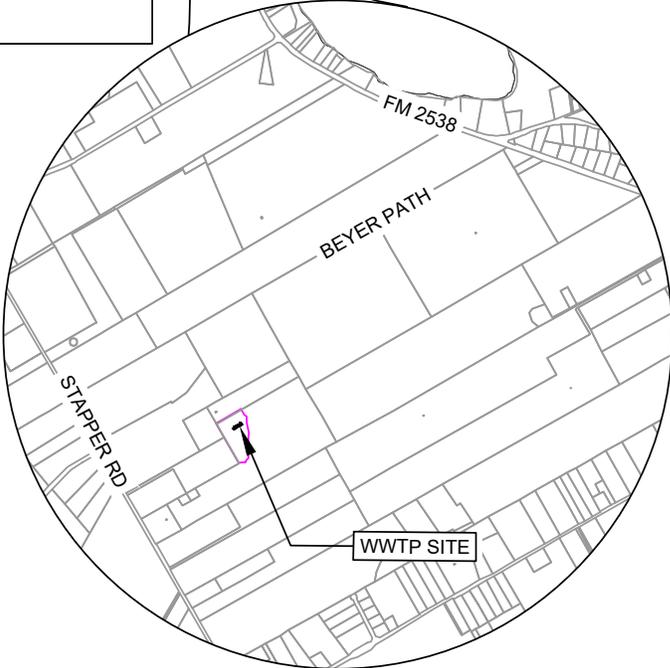
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Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

## SPIF – 1 General Location Map



BEXAR COUNTY



P:\Projects\098\_GVSUDS1 - Clearwater Creek WFS & WWFSCAD\Sheets\PERMIT DRAWINGS\Updated Location\GENERAL LOCATION MAP.dwg, Mar 02, 2021, 1:03pm



**UTILITY  
ENGINEERING  
GROUP PLLC**

191 N Union Ave NEW BRAUNFELS, TEXAS 78130 PH: (830) 214-0521  
Texas Engineering Firm F-18712

SCALE: N.T.S.  
DATE: 02 March, 2021  
PROJECT NO:  
DESIGNED BY:  
DRAWN BY:  
CHECKED BY:

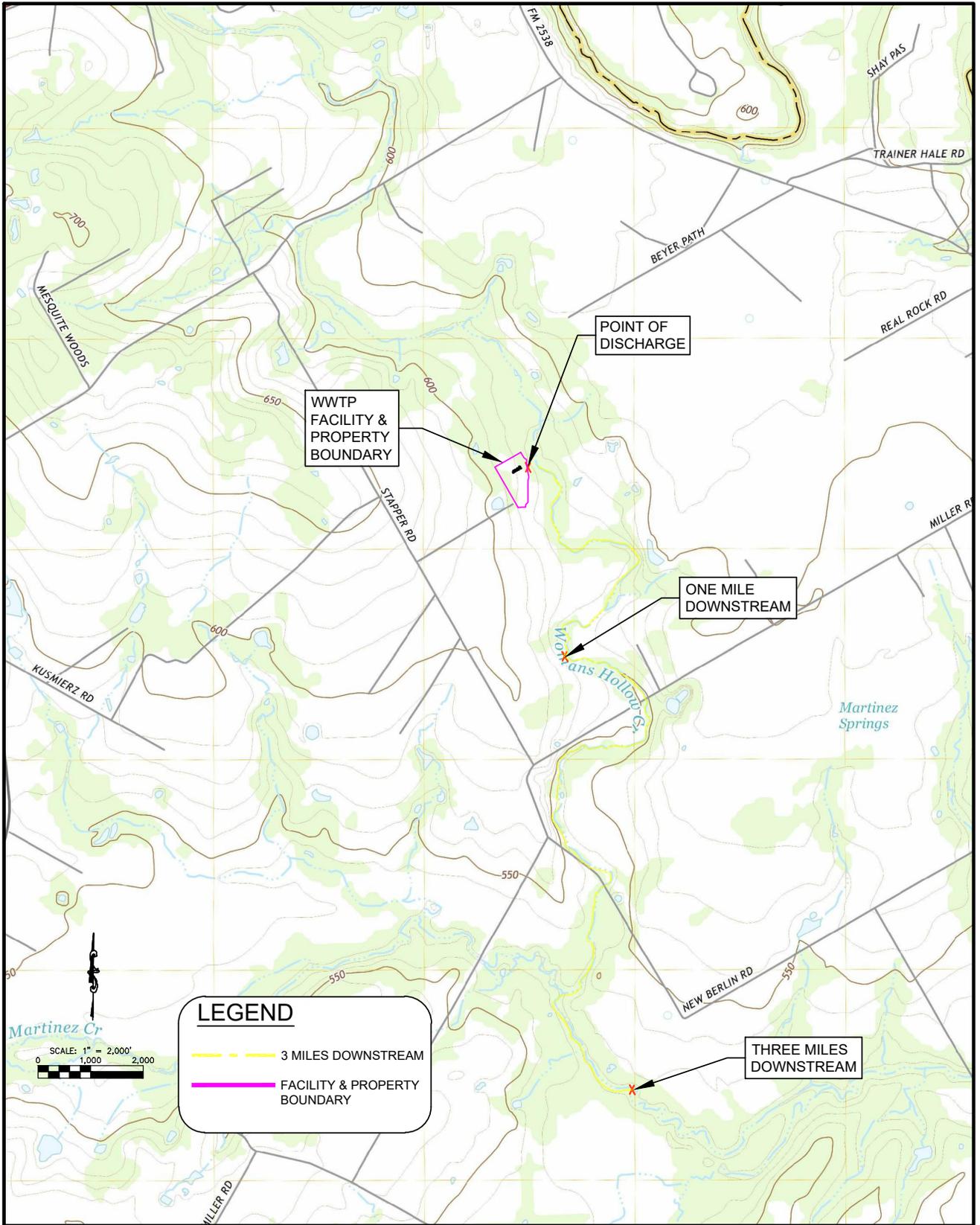
GREEN VALLEY SPECIAL UTILITY DISTRICT

SPF-1  
CLEARWATER CREEK WWTP  
GENERAL LOCATION MAP

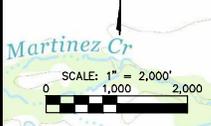
SHEET: OF

Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

SPIF – 2 USGS Map



P:\Projects\006 GVSUD\01 - Clearwater Creek WFS & WWFSCAD\Sheet\PERMIT DRAWINGS\Updated Location and Discharge Point\USGS MAP.dwg, Mar 02, 2021, 5:28pm



**LEGEND**

- 3 MILES DOWNSTREAM
- FACILITY & PROPERTY BOUNDARY



**UTILITY  
ENGINEERING  
GROUP PLLC**

191 N Union Ave NEW BRAUNFELS, TEXAS 78130 PH: (830) 214-0521  
Texas Engineering Firm F-18712

SCALE:	DATE: 02 March, 2021
PROJECT NO:	DESIGNED BY:
DRAWN BY:	CHECKED BY:

<b>GREEN VALLEY SPECIAL UTILITY DISTRICT USGS MAP</b>
<b>CLEARWATER CREEK WWTP SPIF-2</b>
SHEET:    OF

Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

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# DOMESTIC TECHNICAL REPORT

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TEXAS COMMISSION ON ENVIRONMENTAL QUALITY  
DOMESTIC WASTEWATER PERMIT APPLICATION

**DOMESTIC TECHNICAL REPORT 1.0**

**The Following Is Required For All Applications  
Renewal, New, And Amendment**

**Section 1. Permitted or Proposed Flows (Instructions Page 51)**

**A. Existing/Interim I Phase**

Design Flow (MGD): 0.1

2-Hr Peak Flow (MGD): 0.4

Estimated construction start date: 5/17/2021

Estimated waste disposal start date: 1/3/2022

**B. Interim II Phase**

Design Flow (MGD): 0.2

2-Hr Peak Flow (MGD): 0.8

Estimated construction start date: 5/4/2026

Estimated waste disposal start date: 12/18/2026

**C. Final Phase**

Design Flow (MGD): 0.4

2-Hr Peak Flow (MGD): 1.6

Estimated construction start date: 12/3/2029

Estimated waste disposal start date: 4/7/2031

**D. Current operating phase: Interim I Phase**

Provide the startup date of the facility: 12/06/2021 (Anticipated)

**Section 2. Treatment Process (Instructions Page 51)**

**A. Treatment process description**

Provide a detailed description of the treatment process. **Include the type of treatment plant, mode of operation, and all treatment units.** Start with the

plant's head works and finish with the point of discharge. Include all sludge processing and drying units. **If more than one phase exists or is proposed in the permit, a description of each phase must be provided.** Process description:

Interim I (0.1 MGD phase): Extended Aeration Process: Treatment process includes a Bar Screen, one (1) Aeration Basin, one (1) Clarifier, one (1) Chlorine Contact Chamber, and one (1) sludge digester.  
Interim II (0.2 MGD phase): Extended Aeration Process: Treatment process includes a Bar Screen, two (2) Aeration Basins, one (1) Clarifier, one (1) Chlorine Contact Chamber, and two (2) sludge digesters.  
Final Phase (0.4 MGD phase): Extended Aeration Process: Treatment process includes a Bar Screen, four (4) Aeration Basins, two (2) Clarifiers, two (2) Chlorine Contact Chambers, and three (3) sludge digesters.  
Discharges to Womans Hollow Creek; thence to Martinez Creek in Segment No. 1902A of the San Antonio River Basin.

Port or pipe diameter at the discharge point, in inches: Initial 12", Final 24"

**B. Treatment Units**

In Table 1.0(1), provide the treatment unit type, the number of units, and dimensions (length, width, depth) of each treatment unit, accounting for all phases of operation.

**Table 1.0(1) - Treatment Units**

Treatment Unit Type	Number of Units	Dimensions (L x W x D)
Interim I (0.1 MGD)		
Manual Bar Screen	1	
Aeration Basin	1	60'x12'x10.32'
Clarifier	1	33' DIA. X 11.85'
Chlorine Contact Chamber	1	11'x32'x5.83'
Sludge Digester	1	60'x12'x10.67'
Interim II (0.2 MGD)		
Manual Bar Screen	1	
Aeration Basin	2	60'x12'x10.32'
Clarifier	1	33' DIA. X 11.85'
Chlorine Contact Chamber	1	11'x32'x5.83'
Sludge Digester	2	60'x12'x10.67'
Final (0.4 MGD)		

Treatment Unit Type	Number of Units	Dimensions (L x W x D)
Manual Bar Screen	1	
Aeration Basin	4	60'x12'x10.32'
Clarifier	2	33' DIA. X 11.85'
Chlorine Contact Chamber	2	11'x32'x5.83'
Sludge Digester	3	60'x12'x10.67'

**C. Process flow diagrams**

Provide flow diagrams for the existing facilities and **each** proposed phase of construction.

Attachment: B

**Section 3. Site Drawing (Instructions Page 52)**

Provide a site drawing for the facility that shows the following:

- The boundaries of the treatment facility;
- The boundaries of the area served by the treatment facility;
- If land disposal of effluent, the boundaries of the disposal site and all storage/holding ponds; and
- If sludge disposal is authorized in the permit, the boundaries of the land application or disposal site.

Attachment: C

Provide the name and a description of the area served by the treatment facility.

This project will serve new residential, and commercial growth in the Womans Holler Creek Watershed along the IH 10, FM 2538 corridor between San Antonio and Seguin. This project will serve connections within the San Antonio ETJ and outlying areas of Bexar County.

**Section 4. Unbuilt Phases (Instructions Page 52)**

Is the application for a renewal of a permit that contains an unbuilt phase or phases?

Yes  No

**If yes**, does the existing permit contain a phase that has not been constructed

within five years of being authorized by the TCEQ?

Yes  No

If yes, provide a detailed discussion regarding the continued need for the unbuilt phase. Failure to provide sufficient justification may result in the Executive Director recommending denial of the unbuilt phase or phases.

N/A

**Section 5. Closure Plans (Instructions Page 53)**

Have any treatment units been taken out of service permanently, or will any units be taken out of service in the next five years?

Yes  No

If yes, was a closure plan submitted to the TCEQ?

Yes  No

If yes, provide a brief description of the closure and the date of plan approval.

[Redacted]

**Section 6. Permit Specific Requirements (Instructions Page 53)**

For applicants with an existing permit, check the *Other Requirements* or *Special Provisions* of the permit.

**A. Summary transmittal**

Have plans and specifications been approved for the existing facilities and each proposed phase?

Yes  No

If yes, provide the date(s) of approval for each phase: [link here to enter](#)

[Redacted]

Provide information, including dates, on any actions taken to meet a requirement or provision pertaining to the submission of a summary transmittal letter. Provide a copy of an approval letter from the TCEQ, if applicable.

GVSUD is actively designing the WWTP and will finalize the plant once the draft permit is issued and permit limits are confirmed.

### B. Buffer zones

Have the buffer zone requirements been met?

Yes  No

Provide information below, including dates, on any actions taken to meet the conditions of the buffer zone. If available, provide any new documentation relevant to maintaining the buffer zones.

None

### C. Other actions required by the current permit

Does the *Other Requirements* or *Special Provisions* section in the existing permit require submission of any other information or other required actions? Examples include Notification of Completion, progress reports, soil monitoring data, etc.

Yes  No

If **yes**, provide information below on the status of any actions taken to meet the conditions of an *Other Requirement* or *Special Provision*.

[Click here to insert a link.](#)

### D. Grit and grease treatment

#### 1. Acceptance of grit and grease waste

Does the facility have a grit and/or grease processing facility onsite that treats and decants or accepts transported loads of grit and grease waste that

are discharged directly to the wastewater treatment plant prior to any treatment?

Yes  No

**If No**, stop here and continue with Subsection E. Stormwater Management.

## ***2. Grit and grease processing***

Describe below how the grit and grease waste is treated at the facility. In your description, include how and where the grit and grease is introduced to the treatment works and how it is separated or processed. Provide a flow diagram showing how grit and grease is processed at the facility.

N/A

## ***3. Grit disposal***

Does the facility have a Municipal Solid Waste (MSW) registration or permit for grit disposal?

Yes  No

**If No**, contact the TCEQ Municipal Solid Waste team at 512-239-0000. Note: A registration or permit is required for grit disposal. Grit shall not be combined with treatment plant sludge. See the instruction booklet for additional information on grit disposal requirements and restrictions.

Describe the method of grit disposal.

N/A

## ***4. Grease and decanted liquid disposal***

Note: A registration or permit is required for grease disposal. Grease shall not be combined with treatment plant sludge. For more information, contact the TCEQ Municipal Solid Waste team at 512-239-0000.

Describe how the decant and grease are treated and disposed of after grit separation.

N/A

**E. Stormwater management**

**1. Applicability**

Does the facility have a design flow of 1.0 MGD or greater in any phase?

Yes  No

Does the facility have an approved pretreatment program, under 40 CFR Part 403?

Yes  No

**If no to both of the above, then skip to Subsection F, Other Wastes Received.**

**2. MSGP coverage**

Is the stormwater runoff from the WWTP and dedicated lands for sewage disposal currently permitted under the TPDES Multi-Sector General Permit (MSGP), TXR050000?

Yes  No

**If yes, please provide MSGP Authorization Number and skip to Subsection F, Other Wastes Received:**

TXR05 [REDACTED] or TXRNE [REDACTED]

**If no, do you intend to seek coverage under TXR050000?**

Yes  No  will submit once design is finalized

**3. Conditional exclusion**

Alternatively, do you intend to apply for a conditional exclusion from permitting based TXR050000 (Multi Sector General Permit) Part II B.2 or TXR050000 (Multi Sector General Permit) Part V, Sector T 3(b)?

Yes  No

**If yes, please explain below then proceed to Subsection F, Other Wastes Received:**

[Redacted]

**4. Existing coverage in individual permit**

Is your stormwater discharge currently permitted through this individual TPDES or TLAP permit?

Yes  No

If yes, provide a description of stormwater runoff management practices at the site that are authorized in the wastewater permit then skip to Subsection F, Other Wastes Received.

[Redacted]

**5. Zero stormwater discharge**

Do you intend to have no discharge of stormwater via use of evaporation or other means?

Yes  No

If yes, explain below then skip to Subsection F. Other Wastes Received.

[Redacted]

Note: If there is a potential to discharge any stormwater to surface water in the state as the result of any storm event, then permit coverage is required under the MSGP or an individual discharge permit. This requirement applies to all areas of facilities with treatment plants or systems that treat, store, recycle, or reclaim domestic sewage, wastewater or sewage sludge (including dedicated lands for sewage sludge disposal located within the onsite property boundaries) that meet the applicability criteria of above. You have the option of obtaining coverage under the MSGP for direct discharges, (recommended), or obtaining coverage under this individual permit.

**6. Request for coverage in individual permit**

Are you requesting coverage of stormwater discharges associated with your treatment plant under this individual permit?

Yes  No

**If yes**, provide a description of stormwater runoff management practices at the site for which you are requesting authorization in this individual wastewater permit and describe whether you intend to comingle this discharge with your treated effluent or discharge it via a separate dedicated stormwater outfall. Please also indicate if you intend to divert stormwater to the treatment plant headworks and indirectly discharge it to water in the state.

Note: Direct stormwater discharges to waters in the state authorized through this individual permit will require the development and implementation of a stormwater pollution prevention plan (SWPPP) and will be subject to additional monitoring and reporting requirements. Indirect discharges of stormwater via headworks recycling will require compliance with all individual permit requirements including 2-hour peak flow limitations. All stormwater discharge authorization requests will require additional information during the technical review of your application.

#### **F. Discharges to the Lake Houston Watershed**

Does the facility discharge in the Lake Houston watershed?

Yes  No

If yes, a Sewage Sludge Solids Management Plan is required. See Example 5 in the instructions.

#### **G. Other wastes received including sludge from other WWTPs and septic waste**

##### ***1. Acceptance of sludge from other WWTPs***

Does the facility accept or will it accept sludge from other treatment plants at the facility site?

Yes  No

**If yes, attach sewage sludge solids management plan. See Example 5 of the instructions.**

In addition, provide the date that the plant started accepting sludge or is anticipated to start accepting sludge, an estimate of monthly sludge acceptance (gallons or millions of gallons), an estimate of the BOD<sub>5</sub> concentration of the sludge, and the design BOD<sub>5</sub> concentration of the

influent from the collection system. Also note if this information has or has not changed since the last permit action.

Note: Permits that accept sludge from other wastewater treatment plants may be required to have influent flow and organic loading monitoring.

## **2. Acceptance of septic waste**

Is the facility accepting or will it accept septic waste?

Yes  No

**If yes**, does the facility have a Type V processing unit?

Yes  No

**If yes**, does the unit have a Municipal Solid Waste permit?

Yes  No

**If yes to any of the above**, provide a the date that the plant started accepting septic waste, or is anticipated to start accepting septic waste, an estimate of monthly septic waste acceptance (gallons or millions of gallons), an estimate of the BOD<sub>5</sub> concentration of the septic waste, and the design BOD<sub>5</sub> concentration of the influent from the collection system. Also note if this information has or has not changed since the last permit action.

Note: Permits that accept sludge from other wastewater treatment plants may be required to have influent flow and organic loading monitoring.

## **3. Acceptance of other wastes (not including septic, grease, grit, or RCRA, CERCLA or as discharged by IUs listed in Worksheet 6)**

Is the facility accepting or will it accept wastes that are not domestic in nature excluding the categories listed above?

Yes  No

**If yes**, provide the date that the plant started accepting the waste, an estimate how much waste is accepted on a monthly basis (gallons or millions of gallons), a description of the entities generating the waste, and any

distinguishing chemical or other physical characteristic of the waste. Also note if this information has or has not changed since the last permit action.

**Section 7. Pollutant Analysis of Treated Effluent (Instructions Page 58)**

Is the facility in operation?

Yes  No

If **no**, this section is not applicable. Proceed to Section 8.

If **yes**, provide effluent analysis data for the listed pollutants. **Wastewater treatment facilities** complete Table 1.0(2). **Water treatment facilities** discharging filter backwash water, complete Table 1.0(3).

Note: The sample date must be within 1 year of application submission.

**Table 1.0(2) - Pollutant Analysis for Wastewater Treatment Facilities**

Pollutant	Average Conc.	Max Conc.	No. of Samples	Sample Type	Sample Date/Time
CBOD <sub>5</sub> , mg/l					
Total Suspended Solids, mg/l					
Ammonia Nitrogen, mg/l					
Nitrate Nitrogen, mg/l					
Total Kjeldahl Nitrogen, mg/l					
Sulfate, mg/l					
Chloride, mg/l					
Total Phosphorus, mg/l					
pH, standard units					
Dissolved Oxygen*, mg/l					
Chlorine Residual, mg/l					
<i>E.coli</i> (CFU/100ml) freshwater					
Enterococci (CFU/100ml)					

Pollutant	Average Conc.	Max Conc.	No. of Samples	Sample Type	Sample Date/Time
saltwater					
Total Dissolved Solids, mg/l					
Electrical Conductivity, $\mu$ mohs/cm, †					
Oil & Grease, mg/l					
Alkalinity (CaCO <sub>3</sub> )*, mg/l					

\*TPDES permits only

†TLAP permits only

**Table 1.0(3) - Pollutant Analysis for Water Treatment Facilities**

Pollutant	Average Conc.	Max Conc.	No. of Samples	Sample Type	Sample Date/Time
Total Suspended Solids, mg/l					
Total Dissolved Solids, mg/l					
pH, standard units					
Fluoride, mg/l					
Aluminum, mg/l					
Alkalinity (CaCO <sub>3</sub> ), mg/l					

### **Section 8. Facility Operator (Instructions Page 60)**

Facility Operator Name: Zachary W. Willeford

Facility Operator's License Classification and Level: Wastewater Treatment Operator Class B

Facility Operator's License Number: WW0061138

### **Section 9. Sewage Sludge Management and Disposal (Instructions Page 60)**

#### **A. Sludge disposal method**

Identify the current or anticipated sludge disposal method or methods from the

following list. Check all that apply.

- Permitted landfill
- Permitted or Registered land application site for beneficial use
- Land application for beneficial use authorized in the wastewater permit
- Permitted sludge processing facility
- Marketing and distribution as authorized in the wastewater permit
- Composting as authorized in the wastewater permit
- Permitted surface disposal site (sludge monofill)
- Surface disposal site (sludge monofill) authorized in the wastewater permit
- Transported to another permitted wastewater treatment plant or permitted sludge processing facility. If you selected this method, a written statement or contractual agreement from the wastewater treatment plant or permitted sludge processing facility accepting the sludge must be included with this application.
- Other:

**B. Sludge disposal site**

Disposal site name: To be determined, will be an authorized, permitted, disposal site.

TCEQ permit or registration number:

County where disposal site is located:

**C. Sludge transportation method**

Method of transportation (truck, train, pipe, other): Truck

Name of the hauler: To be determined, will be an authorized, permitted, hauler.

Hauler registration number:

Sludge is transported as a:

- Liquid       semi-liquid       semi-solid       solid

## Section 10. Permit Authorization for Sewage Sludge Disposal (Instructions Page 60)

### A. Beneficial use authorization

Does the existing permit include authorization for land application of sewage sludge for beneficial use?

Yes  No

If yes, are you requesting to continue this authorization to land apply sewage sludge for beneficial use?

Yes  No

If yes, is the completed **Application for Permit for Beneficial Land Use of Sewage Sludge (TCEQ Form No. 10451)** attached to this permit application (see the instructions for details)?

Yes  No

### B. Sludge processing authorization

Does the existing permit include authorization for any of the following sludge processing, storage or disposal options?

Sludge Composting Yes  No

Marketing and Distribution of sludge Yes  No

Sludge Surface Disposal or Sludge Monofill Yes  No

Temporary storage in sludge lagoons Yes  No

If yes to any of the above sludge options and the applicant is requesting to continue this authorization, is the completed **Domestic Wastewater Permit Application: Sewage Sludge Technical Report (TCEQ Form No. 10056)** attached to this permit application?

Yes  No

## Section 11. Sewage Sludge Lagoons (Instructions Page 61)

Does this facility include sewage sludge lagoons?

Yes  No

If yes, complete the remainder of this section. If no, proceed to Section 12.

### A. Location information

The following maps are required to be submitted as part of the application. For each map, provide the Attachment Number.

- Original General Highway (County) Map:

**Attachment:** [click here to enter text](#)

- USDA Natural Resources Conservation Service Soil Map:

**Attachment:** [click here to enter text](#)

- Federal Emergency Management Map:

**Attachment:** [click here to enter text](#)

- Site map:

**Attachment:** [click here to enter text](#)

Discuss in a description if any of the following exist within the lagoon area.  
Check all that apply.

- Overlap a designated 100-year frequency flood plain
- Soils with flooding classification
- Overlap an unstable area
- Wetlands
- Located less than 60 meters from a fault
- None of the above

**Attachment:** [click here to enter text](#)

If a portion of the lagoon(s) is located within the 100-year frequency flood plain, provide the protective measures to be utilized including type and size of protective structures:

### **B. Temporary storage information**

Provide the results for the pollutant screening of sludge lagoons. These results are in addition to pollutant results in Section 7 of Technical Report 1.0.

Nitrate Nitrogen, mg/kg: [click here to enter text](#)

Total Kjeldahl Nitrogen, mg/kg: [click here to enter text](#)

Total Nitrogen (=nitrate nitrogen + TKN), mg/kg: [click here to enter text](#)

Phosphorus, mg/kg: [click here to enter text](#)

Potassium, mg/kg: [click here to enter text](#)

pH, standard units:

Ammonia Nitrogen mg/kg:

Arsenic:

Cadmium:

Chromium:

Copper:

Lead:

Mercury:

Molybdenum:

Nickel:

Selenium:

Zinc:

Total PCBs:

Provide the following information:

Volume and frequency of sludge to the lagoon(s):

Total dry tons stored in the lagoons(s) per 365-day period:

Total dry tons stored in the lagoons(s) over the life of the unit:

### C. Liner information

Does the active/proposed sludge lagoon(s) have a liner with a maximum hydraulic conductivity of  $1 \times 10^{-7}$  cm/sec?

Yes  No

If yes, describe the liner below. Please note that a liner is required.

### D. Site development plan

Provide a detailed description of the methods used to deposit sludge in the lagoon(s):

Attach the following documents to the application.

- Plan view and cross-section of the sludge lagoon(s)  
**Attachment:** [REDACTED]
- Copy of the closure plan  
**Attachment:** [REDACTED]
- Copy of deed recordation for the site  
**Attachment:** [REDACTED]
- Size of the sludge lagoon(s) in surface acres and capacity in cubic feet and gallons  
**Attachment:** [REDACTED]
- Description of the method of controlling infiltration of groundwater and surface water from entering the site  
**Attachment:** [REDACTED]
- Procedures to prevent the occurrence of nuisance conditions  
**Attachment:** [REDACTED]

**E. Groundwater monitoring**

Is groundwater monitoring currently conducted at this site, or are any wells available for groundwater monitoring, or are groundwater monitoring data otherwise available for the sludge lagoon(s)?

Yes  No

If groundwater monitoring data are available, provide a copy. Provide a profile of soil types encountered down to the groundwater table and the depth to the shallowest groundwater as a separate attachment.

Attachment: [REDACTED]

**Section 12. Authorizations/Compliance/Enforcement  
(Instructions Page 63)**

**A. Additional authorizations**

Does the permittee have additional authorizations for this facility, such as reuse authorization, sludge permit, etc?

Yes  No

If yes, provide the TCEQ authorization number and description of the authorization:

**B. Permittee enforcement status**

Is the permittee currently under enforcement for this facility?

Yes  No

Is the permittee required to meet an implementation schedule for compliance or enforcement?

Yes  No

If yes to either question, provide a brief summary of the enforcement, the implementation schedule, and the current status:

**Section 13. RCRA/CERCLA Wastes (Instructions Page 63)**

**A. RCRA hazardous wastes**

Has the facility received in the past three years, does it currently receive, or will it receive RCRA hazardous waste?

Yes  No

**B. Remediation activity wastewater**

Has the facility received in the past three years, does it currently receive, or will it receive CERCLA wastewater, RCRA remediation/corrective action wastewater or other remediation activity wastewater?

Yes  No

**C. Details about wastes received**

If yes to either Subsection A or B above, provide detailed information concerning these wastes with the application.

Attachment:



**Section 14. Laboratory Accreditation (Instructions Page 64)**

All laboratory tests performed must meet the requirements of *30 TAC Chapter 25, Environmental Testing Laboratory Accreditation and Certification*, which includes the following general exemptions from National Environmental Laboratory Accreditation Program (NELAP) certification requirements:

- The laboratory is an in-house laboratory and is:
  - periodically inspected by the TCEQ; or
  - located in another state and is accredited or inspected by that state; or
  - performing work for another company with a unit located in the same site; or
  - performing pro bono work for a governmental agency or charitable organization.
- The laboratory is accredited under federal law.
- The data are needed for emergency-response activities, and a laboratory accredited under the Texas Laboratory Accreditation Program is not available.
- The laboratory supplies data for which the TCEQ does not offer accreditation.

The applicant should review *30 TAC Chapter 25* for specific requirements.

The following certification statement shall be signed and submitted with every application. See the *Signature Page* section in the Instructions, for a list of designated representatives who may sign the certification.

**CERTIFICATION:**

I certify that all laboratory tests submitted with this application meet the requirements of *30 TAC Chapter 25, Environmental Testing Laboratory Accreditation and Certification*.

Printed Name: N/A WWTP facility not operational at this time.

Title:

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

# DOMESTIC TECHNICAL REPORT 1.1

The following is required for new and amendment applications

## Section 1. Justification for Permit (Instructions Page 66)

### A. Justification of permit need

Provide a detailed discussion regarding the need for any phase(s) not currently permitted. Failure to provide sufficient justification may result in the Executive Director recommending denial of the proposed phase(s) or permit.

This requested permit is proposed to support planned residential and commercial growth in GVSUD's sewer CCN area. GVSUD holds sewer CCN for proposed service area. The current contract for service equates to 950 EDUs of service or 232,750 gpm.

### B. Regionalization of facilities

Provide the following information concerning the potential for regionalization of domestic wastewater treatment facilities:

#### 1. Municipally incorporated areas

If the applicant is a city, then Item 1 is not applicable. Proceed to Item 2 Utility CCN areas.

Is any portion of the proposed service area located in an incorporated city?

Yes  No  Not Applicable

If yes, within the city limits of: San Antonio, Schertz, St Hedwig

If yes, attach correspondence from the city.

Attachment: T. Letters were sent. Responses are pending.

If consent to provide service is available from the city, attach a justification for the proposed facility and a cost analysis of expenditures that includes the cost of connecting to the city versus the cost of the proposed facility or expansion attached.

Attachment: City responses are pending.

#### 2. Utility CCN areas

Is any portion of the proposed service area located inside another utility's CCN area?

Yes  No

**If yes**, attach a justification for the proposed facility and a cost analysis of expenditures that includes the cost of connecting to the CCN facilities versus the cost of the proposed facility or expansion.

Attachment: [REDACTED]

### 3. *Nearby WWTPs or collection systems*

Are there any domestic permitted wastewater treatment facilities or collection systems located within a three-mile radius of the proposed facility?

Yes  No

**If yes**, attach a list of these facilities that includes the permittee's name and permit number, and an area map showing the location of these facilities.

Attachment: I

**If yes**, attach copies of your certified letters to these facilities **and** their response letters concerning connection with their system.

Attachment: 'I'. Letters were sent. Responses are pending.

Does a permitted domestic wastewater treatment facility or a collection system located within three (3) miles of the proposed facility currently have the capacity to accept or is willing to expand to accept the volume of wastewater proposed in this application?

Yes  No

**If yes**, attach an analysis of expenditures required to connect to a permitted wastewater treatment facility or collection system located within 3 miles versus the cost of the proposed facility or expansion.

Attachment: [REDACTED]

## Section 2. Organic Loading (Instructions Page 67)

Is this facility in operation?

Yes  No

**If no**, proceed to Item B, Proposed Organic Loading.

**If yes**, provide organic loading information in Item A, Current Organic

Loading

**A. Current organic loading**

Facility Design Flow (flow being requested in application): [REDACTED]  
[REDACTED]

Average Influent Organic Strength or BOD<sub>5</sub> Concentration in mg/l: [REDACTED]  
[REDACTED]

Average Influent Loading (lbs/day = total average flow X average BOD<sub>5</sub> conc. X 8.34): [REDACTED]

Provide the source of the average organic strength or BOD<sub>5</sub> concentration.

[REDACTED]

**B. Proposed organic loading**

This table must be completed if this application is for a facility that is not in operation or if this application is to request an increased flow that will impact organic loading.

**Table 1.1(1) - Design Organic Loading**

Source	Total Average Flow (MGD)	Influent BOD <sub>5</sub> Concentration (mg/l)
Municipality		
Subdivision	0.4	350
Trailer park - transient		
Mobile home park		
School with cafeteria and showers		
School with cafeteria, no showers		
Recreational park,		

Source	Total Average Flow (MGD)	Influent BOD <sub>5</sub> Concentration (mg/l)
overnight use		
Recreational park, day use		
Office building or factory		
Motel		
Restaurant		
Hospital		
Nursing home		
Other		
TOTAL FLOW from all sources	0.4	
AVERAGE BOD <sub>5</sub> from all sources		350

**Section 3. Proposed Effluent Quality and Disinfection (Instructions Page 68)**

**A. Existing/Interim I Phase Design Effluent Quality**

Biochemical Oxygen Demand (5-day), mg/l: 10

Total Suspended Solids, mg/l: 15

Ammonia Nitrogen, mg/l: 3

Total Phosphorus, mg/l: 1

Dissolved Oxygen, mg/l: 6

Other:  

**B. Interim II Phase Design Effluent Quality**

Biochemical Oxygen Demand (5-day), mg/l: 10

Total Suspended Solids, mg/l: 15

Ammonia Nitrogen, mg/l: 3

Total Phosphorus, mg/l: 1

Dissolved Oxygen, mg/l: 6

Other:

### C. Final Phase Design Effluent Quality

Biochemical Oxygen Demand (5-day), mg/l: 10

Total Suspended Solids, mg/l: 15

Ammonia Nitrogen, mg/l: 3

Total Phosphorus, mg/l: 1

Dissolved Oxygen, mg/l: 6

Other:

### D. Disinfection Method

Identify the proposed method of disinfection.

Chlorine: 1 mg/l after 20 minutes detention time at peak flow

Dechlorination process:

Ultraviolet Light: 20 seconds contact time at peak flow

Other:

## Section 4. Design Calculations (Instructions Page 68)

Attach design calculations and plant features for each proposed phase. Example 4 of the instructions includes sample design calculations and plant features.

Attachment: E

## Section 5. Facility Site (Instructions Page 68)

### A. 100-year floodplain

Will the proposed facilities be located above the 100-year frequency flood level?

Yes  No

**If no**, describe measures used to protect the facility during a flood event. Include a site map showing the location of the treatment plant within the 100-year frequency flood level. If applicable, provide the size and types of protective structures.

Provide the source(s) used to determine 100-year frequency flood plain.

Flood Insurance Rate Map for Guadalupe County, Panel 455, Community Map No. 48029C0455G. Eff. 9/29/2010.

For a new or expansion of a facility, will a wetland or part of a wetland be filled?

Yes  No

**If yes**, has the applicant applied for a US Corps of Engineers 404 Dredge and Fill Permit?

Yes  No

**If yes**, provide the permit number:

**If no**, provide the approximate date you anticipate submitting your application to the Corps:

**B. Wind rose**

Attach a wind rose. **Attachment:** F

**Section 6. Permit Authorization for Sewage Sludge Disposal (Instructions Page 69)**

**A. Beneficial use authorization**

Are you requesting to include authorization to land apply sewage sludge for beneficial use on property located adjacent to the wastewater treatment facility under the wastewater permit?

Yes  No

**If yes**, attach the completed Application for Permit for Beneficial Land Use of Sewage Sludge (TCEQ Form No. 10451)

**Attachment:**

**B. Sludge processing authorization**

Identify the sludge processing, storage or disposal options that will be

conducted at the wastewater treatment facility:

- Sludge Composting
- Marketing and Distribution of sludge
- Sludge Surface Disposal or Sludge Monofill

**If any of the above** sludge options are selected, attach a completed DOMESTIC WASTEWATER PERMIT APPLICATION: SEWAGE SLUDGE TECHNICAL REPORT (TCEQ Form No. 10056).

**Attachment:** [REDACTED]

## Section 7. Sewage Sludge Solids Management Plan (Instructions Page 69)

Attach a solids management plan to the application.

Attachment: G

The sewage sludge solids management plan must contain the following information:

- Treatment units and processes dimensions and capacities
- Solids generated at 100, 75, 50, and 25 percent of design flow
- Mixed liquor suspended solids operating range at design and projected actual flow
- Quantity of solids to be removed and a schedule for solids removal
- Identification and ownership of the ultimate sludge disposal site
- For facultative lagoons, design life calculations, monitoring well locations and depths, and the ultimate disposal method for the sludge from the facultative lagoon

An example of a sewage sludge solids management plan has been included as Example 5 of the instructions.

# DOMESTIC TECHNICAL REPORT WORKSHEET 2.0

## RECEIVING WATERS

The following is required for all TPDES permit applications

### Section 1. Domestic Drinking Water Supply (Instructions Page 73)

Is there a surface water intake for domestic drinking water supply located within 5 miles downstream from the point or proposed point of discharge?

Yes  No

If yes, provide the following:

Owner of the drinking water supply: \_\_\_\_\_

Distance and direction to the intake: \_\_\_\_\_

Attach a USGS map that identifies the location of the intake.

Attachment: \_\_\_\_\_

### Section 2. Discharge into Tidally Affected Waters (Instructions Page 73)

Does the facility discharge into tidally affected waters?

Yes  No

If yes, complete the remainder of this section. If no, proceed to Section 3.

#### A. Receiving water outfall

Width of the receiving water at the outfall, in feet: \_\_\_\_\_

#### B. Oyster waters

Are there oyster waters in the vicinity of the discharge?

Yes  No

If yes, provide the distance and direction from outfall(s).

#### C. Sea grasses

Are there any sea grasses within the vicinity of the point of discharge?

Yes  No

If yes, provide the distance and direction from the outfall(s).

### Section 3. Classified Segments (Instructions Page 73)

Is the discharge directly into (or within 300 feet of) a classified segment?

Yes  No

If yes, this Worksheet is complete.

If no, complete Sections 4 and 5 of this Worksheet.

### Section 4. Description of Immediate Receiving Waters (Instructions Page 75)

Name of the immediate receiving waters: Womans Hollow Creek

#### A. Receiving water type

Identify the appropriate description of the receiving waters.

- Stream
- Freshwater Swamp or Marsh
- Lake or Pond

Surface area, in acres:

Average depth of the entire water body, in feet:

Average depth of water body within a 500-foot radius of discharge point, in feet:

- Man-made Channel or Ditch
- Open Bay
- Tidal Stream, Bayou, or Marsh

- Other, specify: Wet Weather Creek

**B. Flow characteristics**

If a stream, man-made channel or ditch was checked above, provide the following. For existing discharges, check one of the following that best characterizes the area *upstream* of the discharge. For new discharges, characterize the area *downstream* of the discharge (check one).

- Intermittent - dry for at least one week during most years
- Intermittent with Perennial Pools - enduring pools with sufficient habitat to maintain significant aquatic life uses
- Perennial - normally flowing

Check the method used to characterize the area upstream (or downstream for new dischargers).

- USGS flow records
- Historical observation by adjacent landowners
- Personal observation
- Other, specify: click here to enter text

**C. Downstream perennial confluences**

List the names of all perennial streams that join the receiving water within three miles downstream of the discharge point.

<u>None</u>
-------------

**D. Downstream characteristics**

Do the receiving water characteristics change within three miles downstream of the discharge (e.g., natural or man-made dams, ponds, reservoirs, etc.)?

- Yes  No

If yes, discuss how.

Click here to enter text

**E. Normal dry weather characteristics**

Provide general observations of the water body during normal dry weather conditions.

Slow shallow running creek with perennial pools.

Date and time of observation: May 7, 2020

Was the water body influenced by stormwater runoff during observations?

Yes  No

**Section 5. General Characteristics of the Waterbody (Instructions Page 74)**

**A. Upstream influences**

Is the immediate receiving water upstream of the discharge or proposed discharge site influenced by any of the following? Check all that apply.

- Oil field activities
- Urban runoff
- Upstream discharges
- Agricultural runoff
- Septic tanks
- Other(s), specify

**B. Waterbody uses**

Observed or evidences of the following uses. Check all that apply.

- Livestock watering
- Contact recreation
- Irrigation withdrawal
- Non-contact recreation
- Fishing
- Navigation

- Domestic water supply
- Industrial water supply
- Park activities
- Other(s), specify

**C. Waterbody aesthetics**

Check one of the following that best describes the aesthetics of the receiving water and the surrounding area.

- Wilderness: outstanding natural beauty; usually wooded or unpastured area; water clarity exceptional
- Natural Area: trees and/or native vegetation; some development evident (from fields, pastures, dwellings); water clarity discolored
- Common Setting: not offensive; developed but uncluttered; water may be colored or turbid
- Offensive: stream does not enhance aesthetics; cluttered; highly developed; dumping areas; water discolored

# DOMESTIC WORKSHEET 2.1

## STREAM PHYSICAL CHARACTERISTICS

**Required for new applications, major facilities, and applications adding an outfall**

Worksheet 2.1 is not required for discharges to intermittent streams or discharges directly to (or within 300 feet of) a classified segment.

### Section 1. General Information (Instructions Page 75)

Date of study:  Time of study:

Stream name:

Location:

Type of stream upstream of existing discharge or downstream of proposed discharge (check one).

- Perennial  Intermittent with perennial pools

### Section 2. Data Collection (Instructions Page 75)

Number of stream bends that are well defined:

Number of stream bends that are moderately defined:

Number of stream bends that are poorly defined:

Number of riffles:

Evidence of flow fluctuations (check one):

- Minor  moderate  severe

Indicate the observed stream uses and if there is evidence of flow fluctuations or channel obstruction/modification.

### Stream transects

In the table below, provide the following information for each transect downstream of the existing or proposed discharges. Use a separate row for each transect.

**Table 2.1(1) - Stream Transect Records**

<b>Stream type at transect</b> Select riffle, run, glide, or pool. See Instructions, Definitions section.	<b>Transect location</b>	<b>Water surface width (ft)</b>	<b>Stream depths (ft)</b> at 4 to 10 points along each transect from the channel bed to the water surface. Separate the measurements with commas.
Choose an item.			

**Section 3. Summarize Measurements (Instructions Page 76)**

Streambed slope of entire reach, from USGS map in feet/feet:

Approximate drainage area above the most downstream transect (from USGS

map or county highway map, in square miles):

Length of stream evaluated, in feet:

Number of lateral transects made:

Average stream width, in feet:

Average stream depth, in feet:

Average stream velocity, in feet/second:

Instantaneous stream flow, in cubic feet/second:

Indicate flow measurement method (type of meter, floating chip timed over a fixed distance, etc.):

Size of pools (large, small, moderate, none):

Maximum pool depth, in feet:

## DOMESTIC WORKSHEET 3.0

### LAND DISPOSAL OF EFFLUENT

**The following is required for all permit applications  
Renewal, New, and Amendments**

#### Section 1. Type of Disposal System (Instructions Page 77)

Identify the method of land disposal:

- |  |  |
|--|--|
| <input type="checkbox"/> Surface application         | <input type="checkbox"/> Subsurface application                |
| <input type="checkbox"/> Irrigation                  | <input type="checkbox"/> Subsurface soils absorption           |
| <input type="checkbox"/> Drip irrigation system      | <input type="checkbox"/> Subsurface area drip dispersal system |
| <input type="checkbox"/> Evaporation                 |  |
| <input type="checkbox"/> Evapotranspiration beds     |  |
| <input type="checkbox"/> Other (describe in detail): |  |

**NOTE: All applicants without authorization or proposing new/amended subsurface disposal MUST complete and submit Worksheet 7.0.**

For existing authorizations, provide Registration Number:

#### Section 2. Land Application Site(s) (Instructions Page 77)

In table 3.0(1), provide the requested information for the land application sites. Include the agricultural or cover crop type (wheat, cotton, alfalfa, bermuda grass, native grasses, etc.), land use (golf course, hayland, pastureland, park, row crop, etc.), irrigation area, amount of effluent applied, and whether or not the public has access to the area. Specify the amount of land area and the amount of effluent that will be allotted to each agricultural or cover crop, if more than one crop will be used.

*Table 3.0(1) - Land Application Site Crops*

Crop Type & Land Use	Irrigation Area (acres)	Effluent Application (GPD)	Public Access? Y/N

Crop Type & Land Use	Irrigation Area (acres)	Effluent Application (GPD)	Public Access? Y/N

**Section 3. Storage and Evaporation Lagoons/Ponds (Instructions Page 77)**

*Table 3.0(2) - Storage and Evaporation Ponds*

Pond Number	Surface Area (acres)	Storage Volume (acre-feet)	Dimensions	Liner Type

Attach a copy of a liner certification that was prepared, signed, and sealed by a Texas licensed professional engineer for each pond.

Attachment:

**Section 4. Flood and Runoff Protection (Instructions Page 77)**

Is the land application site within the 100-year frequency flood level?

Yes  No

If yes, describe how the site will be protected from inundation.

Provide the source used to determine the 100-year frequency flood level:

[Redacted]

Provide a description of tailwater controls and rainfall run-on controls used for the land application site.

[Redacted]

### **Section 5. Annual Cropping Plan (Instructions Page 77)**

Attach an Annual Cropping Plan which includes a discussion of each of the following items. If not applicable, provide a detailed explanation indicating why.

**Attachment:** [Redacted]

- Soils map with crops
- Cool and warm season plant species
- Crop yield goals
- Crop growing season
- Crop nutrient requirements
- Additional fertilizer requirements
- Minimum/maximum harvest height (for grass crops)
- Supplemental watering requirements
- Crop salt tolerances
- Harvesting method/number of harvests
- Justification for not removing existing vegetation to be irrigated

### **Section 6. Well and Map Information (Instructions Page 78)**

Attach a USGS map with the following information shown and labeled. If not applicable, provide a detailed explanation (on a separate page) indicating why.

**Attachment:** [Redacted]

- The boundaries of the land application site(s)
- Waste disposal or treatment facility site(s)
- On-site buildings

- Buffer zones
- Effluent storage and tailwater control facilities
- All water wells within 1 mile of the disposal site or property boundaries
- All springs and seeps onsite and within 500 feet of the property boundaries
- All surface waters in the state onsite and within 500 feet of the property boundaries
- All faults and sinkholes onsite and within 500 feet of the property

List and cross reference all water wells shown on the USGS map in the following table. Attach additional pages as necessary to include all of the wells.

**Table 3.0(3) - Water Well Data**

Well ID	Well Use	Producing? Y/N	Open, cased, capped, or plugged?	Proposed Best Management Practice
			Choose an item.	
			Choose an item.	
			Choose an item.	
			Choose an item.	
			Choose an item.	

If water quality data or well log information is available please include the information in an attachment listed by Well ID.

**Attachment:** [REDACTED]

**Section 7. Groundwater Quality (Instructions Page 79)**

Attach a Groundwater Quality Technical Report which assesses the impact of the wastewater disposal system on groundwater. This report shall include an evaluation of the water wells (including the information in the well table provided in Item 6. above), the wastewater application rate, and pond liners. Indicate by a check mark that this report is provided.

**Attachment:** [REDACTED]

Are groundwater monitoring wells available onsite? Yes  No

Do you plan to install ground water monitoring wells or lysimeters around the land application site? Yes  No

If yes, then provide the proposed location of the monitoring wells or lysimeters on a site map.

Attachment:

**Section 8. Soil Map and Soil Analyses (Instructions Page 79)**

**A. Soil map**

Attach a USDA Soil Survey map that shows the area to be used for effluent disposal.

Attachment:

**B. Soil analyses**

Attach the laboratory results sheets from the soil analyses. **Note:** for renewal applications, the current annual soil analyses required by the permit are acceptable as long as the test date is less than one year prior to the submission of the application.

Attachment:

List all USDA designated soil series on the proposed land application site. Attach additional pages as necessary.

*Table 3.0(4) - Soil Data*

Soil Series	Depth from Surface	Permeability	Available Water Capacity	Curve Number



Date	30 Day Avg Flow MGD	BOD <sub>5</sub> mg/l	TSS mg/l	pH	Chlorine Residual mg/l	Acres irrigated

Provide a discussion of all persistent excursions above the permitted limits and any corrective actions taken.

## DOMESTIC WORKSHEET 3.1

### SURFACE LAND DISPOSAL OF EFFLUENT

The following is required for new and major amendment applications.  
Renewal and minor amendments applicants may be asked for the worksheet on a case by case basis.

#### Section 1. Surface Disposal (Instructions Page 81)

Complete the item that applies for the method of disposal being used.

##### A. Irrigation

Area under irrigation, in acres:

Design application frequency:

hours/day  And days/week

Land grade (slope):

average percent (%):

maximum percent (%):

Design application rate in acre-feet/acre/year:

Design total nitrogen loading rate, in lbs N/acre/year:

Soil conductivity (mmhos/cm):

Method of application:

Attach a separate engineering report with the water balance and storage volume calculations, method of application, irrigation efficiency, and nitrogen balance.

Attachment:

##### B. Evaporation ponds

Daily average effluent flow into ponds, in gallons per day:

Attach a separate engineering report with the water balance and storage volume calculations.

Attachment:

### C. Evapotranspiration beds

Number of beds:

Area of bed(s), in acres:

Depth of bed(s), in feet:

Void ratio of soil in the beds:

Storage volume within the beds, in acre-feet:

Attach a separate engineering report with the water balance and storage volume calculations, and a description of the lining.

Attachment:

### D. Overland flow

Area used for application, in acres:

Slopes for application area, percent (%):

Design application rate, in gpm/foot of slope width:

Slope length, in feet:

Design BOD<sub>5</sub> loading rate, in lbs BOD<sub>5</sub>/acre/day:

Design application frequency:

hours/day:  **And** days/week:

Attach a separate engineering report with the method of application and design requirements according to *30 TAC Chapter 217*.

Attachment:

## Section 2. Edwards Aquifer (Instructions Page 82)

Is the facility subject to *30 TAC Chapter 213*, Edwards Aquifer Rules?

Yes  No

**If yes**, attach a report concerning the recharge zone.

Attachment:

## DOMESTIC WORKSHEET 3.2

### SUBSURFACE LAND DISPOSAL OF EFFLUENT

The following is required for new and major amendment applications. Renewal and minor amendments may require the worksheet on a case by case basis.

**NOTE: All applicants proposing new/amended subsurface disposal MUST complete and submit Worksheet 7.0. This worksheet applies to any subsurface disposal system that does not meet the definition of a subsurface area drip dispersal system as defined in 30 TAC Chapter 222, *Subsurface Area Drip Dispersal System*.**

#### Section 1. Subsurface Application (Instructions Page 83)

Identify the type of system:

- Conventional Gravity Drainfield, Beds, or Trenches (new systems must be less than 5,000 GPD)
- Low Pressure Dosing
- Other, specify:

Application area, in acres:

Area of drainfield, in square feet:

Application rate, in gal/square foot/day:

Depth to groundwater, in feet:

Area of trench, in square feet:

Dosing duration per area, in hours:

Number of beds:

Dosing amount per area, in inches/day:

Infiltration rate, in inches/hour:

Storage volume, in gallons:

Area of bed(s), in square feet:

Soil Classification:

Attach a separate engineering report with the information required in 30 TAC § 309.20, excluding the requirements of § 309.20 b(3)(A) and (B) design analysis which may be asked for on a case by case basis. Include a description of the schedule of dosing basin rotation.

Attachment: [click here to download](#)

**Section 2. Edwards Aquifer (Instructions Page 83)**

Is the subsurface system located on the Edwards Aquifer Recharge Zone as mapped by the TCEQ?

Yes  No

Is the subsurface system located on the Edwards Aquifer Transition Zone as mapped by the TCEQ?

Yes  No

**If yes to either question**, the subsurface system may be prohibited by 30 TAC §213.8. Please call the Municipal Permits Team, at 512-239-4671, to schedule a pre-application meeting.

### DOMESTIC WORKSHEET 3.3 N/A

#### SUBSURFACE AREA DRIP DISPERSAL SYSTEM (SADDS) LAND DISPOSAL OF EFFLUENT

The following is required for new and major amendment subsurface area drip dispersal system applications. Renewal and minor amendments may require the worksheet on a case by case basis.

**NOTE: All applicants proposing new or amended subsurface disposal MUST complete and submit Worksheet 7.0. This worksheet applies to any subsurface disposal system that meets the definition of a subsurface area drip dispersal system as defined in 30 TAC Chapter 222, *Subsurface Area Drip Dispersal System*.**

#### Section 1. Administrative Information (Instructions Page 84)

- A. Provide the legal name of all corporations or other business entities managed, owned, or otherwise closely related to the owner of the treatment facility.

[REDACTED]

- B. Is the owner of the land where the treatment facility is located the same as the owner of the treatment facility?

Yes  No

If **no**, provide the legal name of all corporations or other business entities managed, owned, or otherwise closely related to the owner of the land where the treatment facility is located.

[REDACTED]

- C. Owner of the subsurface area drip dispersal system:

[REDACTED]

- D. Is the owner of the subsurface area drip dispersal system the same as the owner of the wastewater treatment facility or the site where the wastewater treatment facility is located?

Yes  No

If **no**, identify the names of all corporations or other business entities managed, owned, or otherwise closely related to the entity identified in Item 1.C.

[REDACTED]

E. Owner of the land where the subsurface area drip dispersal system is located:

[Redacted]

F. Is the owner of the land where the subsurface area drip dispersal system is located the same as owner of the wastewater treatment facility, the site where the wastewater treatment facility is located, or the owner of the subsurface area drip dispersal system?

Yes  No

If **no**, identify the name of all corporations or other business entities managed, owned, or otherwise closely related to the entity identified in item 1.E.

[Redacted]

**Section 2. Subsurface Area Drip Dispersal System (Instructions Page 84)**

**A. Type of system**

- Subsurface Drip Irrigation
- Surface Drip Irrigation
- Other, specify: [Redacted]

**B. Irrigation operations**

Application area, in acres: [Redacted]  
Infiltration Rate, in inches/hour: [Redacted]  
Average slope of the application area, percent (%): [Redacted]  
Maximum slope of the application area, percent (%): [Redacted]  
Storage volume, in gallons: [Redacted]  
Major soil series: [Redacted]  
Depth to groundwater, in feet: [Redacted]

**C. Application rate**

Is the facility located **west** of the boundary shown in 30 TAC § 222.83 and also using a vegetative cover of non-native grasses over seeded with cool season grasses during the winter months (October-March)?

Yes  No

If **yes**, then the facility may propose a hydraulic application rate not to exceed 0.1 gal/square foot/day.

Is the facility located **east** of the boundary shown in *30 TAC § 222.83* or in any part of the state when the vegetative cover is any crop other than non-native grasses?

Yes  No

If **yes**, the facility must use the formula in *30 TAC §222.83* to calculate the maximum hydraulic application rate.

Do you plan to submit an alternative method to calculate the hydraulic application rate for approval by the executive director?

Yes  No

Hydraulic application rate, in gal/square foot/day:

Nitrogen application rate, in lbs/gal/day:

#### **D. Dosing information**

Number of doses per day:

Dosing duration per area, in hours:

Rest period between doses, in hours:

Dosing amount per area, in inches/day:

Number of zones:

Does the proposed subsurface drip irrigation system use tree vegetative cover as a crop?

Yes  No

If **yes**, provide a vegetation survey by a certified arborist. Please call the Water Quality Assessment Team at (512) 239-4671 to schedule a pre-application meeting.

Attachment:

### **Section 3. Required Plans (Instructions Page 84)**

#### **A. Recharge feature plan**

Attach a Recharge Feature Plan with all information required in *30 TAC §222.79*.

Attachment:

**B. Soil evaluation**

Attach a Soil Evaluation with all information required in *30 TAC §222.73*.

Attachment:

**C. Site preparation plan**

Attach a Site Preparation Plan with all information required in *30 TAC §222.75*.

Attachment:

**D. Soil sampling/testing**

Attach soil sampling and testing that includes all information required in *30 TAC §222.157*.

Attachment:

**Section 4. Floodway Designation (Instructions Page 85)**

**A. Site location**

Is the existing/proposed land application site within a designated floodway?

Yes       No

**B. Flood map**

Attach either the FEMA flood map or alternate information used to determine the floodway.

Attachment:

**Section 5. Surface Waters in the State (Instructions Page 85)**

**A. Buffer Map**

Attach a map showing appropriate buffers on surface waters in the state, water wells, and springs/seeps.

Attachment:

**B. Buffer variance request**

Do you plan to request a buffer variance from water wells or waters in the state?

Yes       No

If yes, then attach the additional information required in 30 TAC § 222.81(c).

Attachment: [click here to enter text](#)

### Section 6. Edwards Aquifer (Instructions Page 85)

A. Is the SADDs located on the Edwards Aquifer Recharge Zone as mapped by the TCEQ?

Yes  No

B. Is the SADDs located on the Edwards Aquifer Transition Zone as mapped by the TCEQ?

Yes  No

If yes to either question, then the SADDs may be prohibited by 30 TAC §213.8. Please call the Municipal Permits Team at 512-239-4671 to schedule a pre-application meeting.

## DOMESTIC WORKSHEET 4.0

### POLLUTANT ANALYSES REQUIREMENTS\*

The following is required for facilities with a permitted or proposed flow of 1.0 MGD or greater, facilities with an approved pretreatment program, or facilities classified as a major facility. See instructions for further details.

This worksheet is not required for minor amendments without renewal

### Section 1. Toxic Pollutants (Instructions Page 87)

For pollutants identified in Table 4.0(1), indicate the type of sample.

Grab  Composite

Date and time sample(s) collected: N/A

*Table 4.0(1) - Toxics Analysis*

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Acrylonitrile				50
Aldrin				0.01
Aluminum				2.5
Anthracene				10
Antimony				5
Arsenic				0.5
Barium				3
Benzene				10
Benzidine				50
Benzo(a)anthracene				5

<b>Pollutant</b>	<b>AVG Effluent Conc. (µg/l)</b>	<b>MAX Effluent Conc. (µg/l)</b>	<b>Number of Samples</b>	<b>MAL (µg/l)</b>
Benzo(a)pyrene				5
Bis(2-chloroethyl)ether				10
Bis(2-ethylhexyl)phthalate				10
Bromodichloromethane				10
Bromoform				10
Cadmium				1
Carbon Tetrachloride				2
Carbaryl				5
Chlordane*				0.2
Chlorobenzene				10
Chlorodibromomethane				10
Chloroform				10
Chlorpyrifos				0.05
Chromium (Total)				3
Chromium (Tri) (*1)				N/A
Chromium (Hex)				3
Copper				2
Chrysene				5
p-Chloro-m-Cresol				10
4,6-Dinitro-o-Cresol				50
p-Cresol				10
Cyanide (*2)				10

<b>Pollutant</b>	<b>AVG Effluent Conc. (µg/l)</b>	<b>MAX Effluent Conc. (µg/l)</b>	<b>Number of Samples</b>	<b>MAL (µg/l)</b>
4,4'- DDD				0.1
4,4'- DDE				0.1
4,4'- DDT				0.02
2,4-D				0.7
Demeton (O and S)				0.20
Diazinon				0.5/0.1
1,2-Dibromoethane				10
m-Dichlorobenzene				10
o-Dichlorobenzene				10
p-Dichlorobenzene				10
3,3'-Dichlorobenzidine				5
1,2-Dichloroethane				10
1,1-Dichloroethylene				10
Dichloromethane				20
1,2-Dichloropropane				10
1,3-Dichloropropene				10
Dicofol				1
Dieldrin				0.02
2,4-Dimethylphenol				10
Di-n-Butyl Phthalate				10
Diuron				0.09
Endosulfan I (alpha)				0.01

<b>Pollutant</b>	<b>AVG Effluent Conc. (µg/l)</b>	<b>MAX Effluent Conc. (µg/l)</b>	<b>Number of Samples</b>	<b>MAL (µg/l)</b>
Endosulfan II (beta)				0.02
Endosulfan Sulfate				0.1
Endrin				0.02
Ethylbenzene				10
Fluoride				500
Guthion				0.1
Heptachlor				0.01
Heptachlor Epoxide				0.01
Hexachlorobenzene				5
Hexachlorobutadiene				10
Hexachlorocyclohexane (alpha)				0.05
Hexachlorocyclohexane (beta)				0.05
gamma-Hexachlorocyclohexane (Lindane)				0.05
Hexachlorocyclopentadiene				10
Hexachloroethane				20
Hexachlorophene				10
Lead				0.5
Malathion				0.1
Mercury				0.005
Methoxychlor				2
Methyl Ethyl Ketone				50

<b>Pollutant</b>	<b>AVG Effluent Conc. (µg/l)</b>	<b>MAX Effluent Conc. (µg/l)</b>	<b>Number of Samples</b>	<b>MAL (µg/l)</b>
Mirex				0.02
Nickel				2
Nitrate-Nitrogen				100
Nitrobenzene				10
N-Nitrosodiethylamine				20
N-Nitroso-di-n-Butylamine				20
Nonylphenol				333
Parathion (ethyl)				0.1
Pentachlorobenzene				20
Pentachlorophenol				5
Phenanthrene				10
Polychlorinated Biphenyls (PCB's) (*3)				0.2
Pyridine				20
Selenium				5
Silver				0.5
1,2,4,5-Tetrachlorobenzene				20
1,1,2,2-Tetrachloroethane				10
Tetrachloroethylene				10
Thallium				0.5
Toluene				10
Toxaphene				0.3

<b>Pollutant</b>	<b>AVG Effluent Conc. (µg/l)</b>	<b>MAX Effluent Conc. (µg/l)</b>	<b>Number of Samples</b>	<b>MAL (µg/l)</b>
2,4,5-TP (Silvex)				0.3
Tributyltin (see instructions for explanation)				0.01
1,1,1-Trichloroethane				10
1,1,2-Trichloroethane				10
Trichloroethylene				10
2,4,5-Trichlorophenol				50
TTHM (Total Trihalomethanes)				10
Vinyl Chloride				10
Zinc				5

(\*1) Determined by subtracting hexavalent Cr from total Cr.

(\*2) Cyanide, amenable to chlorination or weak-acid dissociable.

(\*3) The sum of seven PCB congeners 1242, 1254, 1221, 1232, 1248, 1260, and 1016.

## Section 2. Priority Pollutants

For pollutants identified in Tables 4.0(2)A-E, indicate type of sample.

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Date and time sample(s) collected:

**Table 4.0(2)A - Metals, Cyanide, Phenols**

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Antimony				5
Arsenic				0.5
Beryllium				0.5
Cadmium				1
Chromium (Total)				3
Chromium (Hex)				3
Chromium (Tri) (*1)				N/A
Copper				2
Lead				0.5
Mercury				0.005
Nickel				2
Selenium				5
Silver				0.5
Thallium				0.5
Zinc				5
Cyanide (*2)				10
Phenols, Total				10

(\*1) Determined by subtracting hexavalent Cr from total Cr.

(\*2) Cyanide, amenable to chlorination or weak-acid dissociable

**Table 4.0(2)B - Volatile Compounds**

<b>Pollutant</b>	<b>AVG Effluent Conc. (µg/l)</b>	<b>MAX Effluent Conc. (µg/l)</b>	<b>Number of Samples</b>	<b>MAL (µg/l)</b>
Acrolein				50
Acrylonitrile				50
Benzene				10
Bromoform				10
Carbon Tetrachloride				2
Chlorobenzene				10
Chlorodibromomethane				10
Chloroethane				50
2-Chloroethylvinyl Ether				10
Chloroform				10
Dichlorobromomethane [Bromodichloromethane]				10
1,1-Dichloroethane				10
1,2-Dichloroethane				10
1,1-Dichloroethylene				10
1,2-Dichloropropane				10
1,3-Dichloropropylene [1,3-Dichloropropene]				10
1,2-Trans-Dichloroethylene				10
Ethylbenzene				10
Methyl Bromide				50
Methyl Chloride				50
Methylene Chloride				20
1,1,2,2-Tetrachloroethane				10
Tetrachloroethylene				10
Toluene				10

<b>Pollutant</b>	<b>AVG Effluent Conc. (µg/l)</b>	<b>MAX Effluent Conc. (µg/l)</b>	<b>Number of Samples</b>	<b>MAL (µg/l)</b>
1,1,1-Trichloroethane				10
1,1,2-Trichloroethane				10
Trichloroethylene				10
Vinyl Chloride				10

**Table 4.0(2)C - Acid Compounds**

<b>Pollutant</b>	<b>AVG Effluent Conc. (µg/l)</b>	<b>MAX Effluent Conc. (µg/l)</b>	<b>Number of Samples</b>	<b>MAL (µg/l)</b>
2-Chlorophenol				10
2,4-Dichlorophenol				10
2,4-Dimethylphenol				10
4,6-Dinitro-o-Cresol				50
2,4-Dinitrophenol				50
2-Nitrophenol				20
4-Nitrophenol				50
P-Chloro-m-Cresol				10
Pentalchlorophenol				5
Phenol				10
2,4,6-Trichlorophenol				10

**Table 4.0(2)D - Base/Neutral Compounds**

<b>Pollutant</b>	<b>AVG Effluent Conc. (µg/l)</b>	<b>MAX Effluent Conc. (µg/l)</b>	<b>Number of Samples</b>	<b>MAL (µg/l)</b>
Acenaphthene				10
Acenaphthylene				10
Anthracene				10
Benzidine				50
Benzo(a)Anthracene				5
Benzo(a)Pyrene				5
3,4-Benzofluoranthene				10
Benzo(ghi)Perylene				20
Benzo(k)Fluoranthene				5
Bis(2-Chloroethoxy)Methane				10
Bis(2-Chloroethyl)Ether				10
Bis(2-Chloroisopropyl)Ether				10
Bis(2-Ethylhexyl)Phthalate				10
4-Bromophenyl Phenyl Ether				10
Butyl benzyl Phthalate				10
2-Chloronaphthalene				10
4-Chlorophenyl phenyl ether				10
Chrysene				5
Dibenzo(a,h)Anthracene				5
1,2-(o)Dichlorobenzene				10
1,3-(m)Dichlorobenzene				10
1,4-(p)Dichlorobenzene				10
3,3-Dichlorobenzidine				5
Diethyl Phthalate				10
Dimethyl Phthalate				10
Di-n-Butyl Phthalate				10

<b>Pollutant</b>	<b>AVG Effluent Conc. (µg/l)</b>	<b>MAX Effluent Conc. (µg/l)</b>	<b>Number of Samples</b>	<b>MAL (µg/l)</b>
2,4-Dinitrotoluene				10
2,6-Dinitrotoluene				10
Di-n-Octyl Phthalate				10
1,2-Diphenylhydrazine (as Azo- benzene)				20
Fluoranthene				10
Fluorene				10
Hexachlorobenzene				5
Hexachlorobutadiene				10
Hexachlorocyclo-pentadiene				10
Hexachloroethane				20
Indeno(1,2,3-cd)pyrene				5
Isophorone				10
Naphthalene				10
Nitrobenzene				10
N-Nitrosodimethylamine				50
N-Nitrosodi-n-Propylamine				20
N-Nitrosodiphenylamine				20
Phenanthrene				10
Pyrene				10
1,2,4-Trichlorobenzene				10

**Table 4.0(2)E - Pesticides**

<b>Pollutant</b>	<b>AVG Effluent Conc. (µg/l)</b>	<b>MAX Effluent Conc. (µg/l)</b>	<b>Number of Samples</b>	<b>MAL (µg/l)</b>
Aldrin				0.01
alpha-BHC (Hexachlorocyclohexane)				0.05
beta-BHC (Hexachlorocyclohexane)				0.05
gamma-BHC (Hexachlorocyclohexane)				0.05
delta-BHC (Hexachlorocyclohexane)				0.05
Chlordane				0.2
4,4-DDT				0.02
4,4-DDE				0.1
4,4,-DDD				0.1
Dieldrin				0.02
Endosulfan I (alpha)				0.01
Endosulfan II (beta)				0.02
Endosulfan Sulfate				0.1
Endrin				0.02
Endrin Aldehyde				0.1
Heptachlor				0.01
Heptachlor Epoxide				0.01
PCB-1242				0.2
PCB-1254				0.2
PCB-1221				0.2
PCB-1232				0.2
PCB-1248				0.2

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
PCB-1260				0.2
PCB-1016				0.2
Toxaphene				0.3

\* For PCBS, if all are non-detects, enter the highest non-detect preceded by a "<".

**Section 3. Dioxin/Furan Compounds**

A. Indicate which of the following compounds from may be present in the influent from a contributing industrial user or significant industrial user. Check all that apply.

- 2,4,5-trichlorophenoxy acetic acid  
Common Name 2,4,5-T, CASRN 93-76-5
- 2-(2,4,5-trichlorophenoxy) propanoic acid  
Common Name Silvex or 2,4,5-TP, CASRN 93-72-1
- 2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloropropionate  
Common Name Erbon, CASRN 136-25-4
- 0,0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothioate  
Common Name Ronnel, CASRN 299-84-3
- 2,4,5-trichlorophenol  
Common Name TCP, CASRN 95-95-4
- hexachlorophene  
Common Name HCP, CASRN 70-30-4

For each compound identified, provide a brief description of the conditions of its/their presence at the facility.

B. Do you know or have any reason to believe that 2,3,7,8 Tetrachlorodibenzo-P-Dioxin (TCDD) or any congeners of TCDD may be present in your effluent?

- Yes  No

If yes, provide a brief description of the conditions for its presence.

If any of the compounds in Subsection A or B are present, complete Table 4.0(2)F.

For pollutants identified in Table 4.0(2)F, indicate the type of sample.

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Date and time sample(s) collected:

**TABLE 4.0(2)F - DIOXIN/FURAN COMPOUNDS**

Compound	Toxic Equivalency Factors	Wastewater Concentration (ppq)	Wastewater Equivalents (ppq)	Sludge Concentration (ppt)	Sludge Equivalents (ppt)	MAL (ppq)
2,3,7,8 TCDD	1					10
1,2,3,7,8	0.5					50
2,3,7,8 HxCDDs	0.1					50
1,2,3,4,6,7,8 HpCDD	0.01					50
2,3,7,8 TCDF	0.1					10
1,2,3,7,8 PeCDF	0.05					50
2,3,4,7,8 PeCDF	0.5					50
2,3,7,8 HxCDFs	0.1					50
2,3,4,7,8	0.01					50
OCDD	0.0003					100
OCDF	0.0003					100
PCB 77	0.0001					0.5
PCB 81	0.0003					0.5
PCB 126	0.1					0.5
PCB 169	0.03					0.5
Total						

## DOMESTIC WORKSHEET 5.0

### TOXICITY TESTING REQUIREMENTS

**The following is required for facilities with a currently-operating design flow greater than or equal to 1.0 MGD, with an EPA-approved pretreatment program (or those that are required to have one under 40 CFR Part 403), or are required by the TCEQ to perform Whole Effluent Toxicity testing. This worksheet is not required for minor amendments without renewal.**

#### Section 1. Required Tests (Instructions Page 97)

Indicate the number of 7-day chronic or 48-hour acute Whole Effluent Toxicity (WET) tests performed in the four and one-half years prior to submission of the application.

7-day Chronic:

48-hour Acute:

#### Section 2. Toxicity Reduction Evaluations (TREs)

Has this facility completed a TRE in the past four and a half years? Or is the facility currently performing a TRE?

Yes  No

**If yes**, describe the progress to date, if applicable, in identifying and confirming the toxicant.



## DOMESTIC WORKSHEET 6.0

### INDUSTRIAL WASTE CONTRIBUTION

The following is required for all publicly owned treatment works (POTWs)

#### Section 1. All POTWs (Instructions Page 99)

##### A. Industrial users

Provide the number of each of the following types of industrial users (IUs) that discharge to your POTW and the daily flows from each user. See the Instructions for definitions of Categorical IUs, Significant IUs - non-categorical, and Other IUs.

**If there are no users, enter 0 (zero).**

Categorical IUs:

Number of IUs: 0

Average Daily Flows, in MGD: 0

Significant IUs - non-categorical:

Number of IUs: 0

Average Daily Flows, in MGD: 0

Other IUs:

Number of IUs: 0

Average Daily Flows, in MGD: 0

##### B. Treatment plant interference

In the past three years, has your POTW experienced treatment plant interference (see instructions)?

Yes

No

**If yes**, identify the dates, duration, description of interference, and probable cause(s) and possible source(s) of each interference event. Include the names of the IUs that may have caused the interference.

--

**C. Treatment plant pass through**

In the past three years, has your POTW experienced pass through (see instructions)?

Yes  No

If yes, identify the dates, duration, a description of the pollutants passing through the treatment plant, and probable cause(s) and possible source(s) of each pass through event. Include the names of the IUs that may have caused pass through.

**D. Pretreatment program**

Does your POTW have an approved pretreatment program?

Yes  No

If yes, complete Section 2 only of this Worksheet.

Is your POTW required to develop an approved pretreatment program?

Yes  No

If yes, complete Section 2.c. and 2.d. only, and skip Section 3.

If no to either question above, skip Section 2 and complete Section 3 for each significant industrial user and categorical industrial user.

**Section 2. POTWs with Approved Programs or Those Required to Develop a Program (Instructions Page 100)**

**A. Substantial modifications**

Have there been any **substantial modifications** to the approved pretreatment program that have not been submitted to the TCEQ for approval according to 40 CFR §403.18?

Yes  No

If yes, identify the modifications that have not been submitted to TCEQ, including the purpose of the modification.

Click here to enter text

**B. Non-substantial modifications**

Have there been any **non-substantial modifications** to the approved pretreatment program that have not been submitted to TCEQ for review and acceptance?

Yes  No

If yes, identify all non-substantial modifications that have not been submitted to TCEQ, including the purpose of the modification.

Click here to enter text

**C. Effluent parameters above the MAL**

In Table 6.0(1), list all parameters measured above the MAL in the POTW's effluent monitoring during the last three years. Submit an attachment if necessary.

**Table 6.0(1) - Parameters Above the MAL**

Pollutant	Concentration	MAL	Units	Date

**D. Industrial user interruptions**

Has any SIU, CIU, or other IU caused or contributed to any problems (excluding interferences or pass throughs) at your POTW in the past three years?

Yes  No

If yes, identify the industry, describe each episode, including dates, duration, description of the problems, and probable pollutants.

**Section 3. Significant Industrial User (SIU) Information and Categorical Industrial User (CIU) (Instructions Page 100)**

**A. General information**

Company Name: None

SIC Code:

Telephone number:  Fax number:

Contact name:

Address:

City, State, and Zip Code:

**B. Process information**

Describe the industrial processes or other activities that affect or contribute to the SIU(s) or CIU(s) discharge (i.e., process and non-process wastewater).

**C. Product and service information**

Provide a description of the principal product(s) or services performed.

click here to enter text

**D. Flow rate information**

See the Instructions for definitions of “process” and “non-process wastewater.”

Process Wastewater:

Discharge, in gallons/day:

Discharge Type:  Continuous  Batch  Intermittent

Non-Process Wastewater:

Discharge, in gallons/day:

Discharge Type:  Continuous  Batch  Intermittent

**E. Pretreatment standards**

Is the SIU or CIU subject to technically based local limits as defined in the instructions?

Yes  No

Is the SIU or CIU subject to categorical pretreatment standards found in *40 CFR Parts 405-471*?

Yes  No

**If subject to categorical pretreatment standards**, indicate the applicable category and subcategory for each categorical process.

Category:   
Subcategories:

Category:   
Subcategories:

Category:   
Subcategories:

Category:   
Subcategories:

Category:   
Subcategories:

**F. Industrial user interruptions**

Has the SIU or CIU caused or contributed to any problems (e.g., interferences, pass through, odors, corrosion, blockages) at your POTW in the past three years?

Yes       No

**If yes,** identify the SIU, describe each episode, including dates, duration, description of problems, and probable pollutants.

<p><a href="#">Click here to enter text.</a></p>
--

**WORKSHEET 7.0**      N/A

**TEXAS COMMISSION ON ENVIRONMENTAL QUALITY  
CLASS V INJECTION WELL INVENTORY/AUTHORIZATION FORM**

Submit to:  
TCEQ  
IUC Permits Team  
Radioactive Materials Division  
MC-233  
PO Box 13087  
Austin, Texas 78711-3087  
512-239-6466

For TCEQ Use Only
Reg. No. _____
Date Received _____
Date Authorized _____

**Section 1. General Information (Instructions Page 102)**

**1. TCEQ Program Area**

Program Area (PST, VCP, IHW, etc.):

Program ID:

Contact Name:

Phone Number:

**2. Agent/Consultant Contact Information**

Contact Name:

Address:

City, State, and Zip Code:

Phone Number:

**3. Owner/Operator Contact Information**

Owner       Operator

Owner/Operator Name:

Contact Name:

Address:

City, State, and Zip Code:

Phone Number:

**4. Facility Contact Information**

Facility Name:

Address:

City, State, and Zip Code:

Location description (if no address is available):

Facility Contact Person:

Phone Number:

**5. Latitude and Longitude, in degrees-minutes-seconds**

Latitude:  Longitude:

Method of determination (GPS, TOPO, etc.):

Attach topographic quadrangle map as attachment A.

**6. Well Information**

Type of Well Construction, select one:

- Vertical Injection
- Subsurface Fluid Distribution System
- Infiltration Gallery
- Temporary Injection Points
- Other, Specify:

Number of Injection Wells:

**7. Purpose**

Detailed Description regarding purpose of Injection System:

Attach a Site Map as Attachment B (Attach the Approved Remediation Plan, if appropriate.)

**8. Water Well Driller/Installer**

Water Well Driller/Installer Name:

City, State, and Zip Code:

Phone Number:

License Number:

## Section 2. Proposed Down Hole Design

Attach a diagram signed and sealed by a licensed engineer as Attachment C.

*Table 7.0(1) -Down Hole Design Table*

Name of String	Size	Setting Depth	Sacks Cement/Grout - Slurry Volume - Top of Cement	Hole Size	Weight (lbs/ft) PVC/Steel
Casing					
Tubing					
Screen					

## Section 3. Proposed Trench System, Subsurface Fluid Distribution System, or Infiltration Gallery

Attach a diagram signed and sealed by a licensed engineer as Attachment D.

System(s) Dimensions:

System(s) Construction:

## Section 4. Site Hydrogeological and Injection Zone Data

- Name of Contaminated Aquifer:
- Receiving Formation Name of Injection Zone:
- Well/Trench Total Depth:
- Surface Elevation:
- Depth to Ground Water:
- Injection Zone Depth:
- Injection Zone vertically isolated geologically? Yes  No

Impervious Strata between Injection Zone and nearest Underground Source of Drinking Water:

Name:

Thickness:

- Provide a list of contaminants and the levels (ppm) in contaminated aquifer

Attach as Attachment E.

9. Horizontal and Vertical extent of contamination and injection plume  
Attach as Attachment F.
10. Formation (Injection Zone) Water Chemistry (Background levels) TDS, etc.  
Attach as Attachment G.
11. Injection Fluid Chemistry in PPM at point of injection  
Attach as Attachment H.
12. Lowest Known Depth of Ground Water with < 10,000 PPM TDS: [REDACTED]  
[REDACTED]
13. Maximum injection Rate/Volume/Pressure: [REDACTED]
14. Water wells within 1/4 mile radius (attach map as Attachment I): [REDACTED]  
[REDACTED]
15. Injection wells within 1/4 mile radius (attach map as Attachment J): [REDACTED]  
[REDACTED]
16. Monitor wells within 1/4 mile radius (attach drillers logs and map as Attachment K): [REDACTED]
17. Sampling frequency: [REDACTED]
18. Known hazardous components in injection fluid: [REDACTED]

## Section 5. Site History

1. Type of Facility: [REDACTED]
2. Contamination Dates: [REDACTED]
3. Original Contamination (VOCs, TPH, BTEX, etc.) and Concentrations  
(attach as Attachment L): [REDACTED]
4. Previous Remediation: [REDACTED]

Attach results of any previous remediation as attachment M

**NOTE: Authorization Form should be completed in detail and authorization given by the TCEQ before construction, operation, and/or conversion can begin. Attach additional pages as necessary.**

### *Class V Injection Well Designations*

- |      |   |
|------|---|
| 5A07 | Heat Pump/AC return (IW used for groundwater to heat and/or cool buildings) |
| 5A19 | Industrial Cooling Water Return Flow (IW used to cool industrial process)   |

- equipment)
- 5B22 Salt Water Intrusion Barrier (IW used to inject fluids to prevent the intrusion of salt water into an aquifer)
  - 5D02 Storm Water Drainage (IW designed for the disposal of rain water)
  - 5D04 Industrial Stormwater Drainage Wells (IW designed for the disposal of rain water associated with industrial facilities)
  - 5F01 Agricultural Drainage (IW that receive agricultural runoff)
  - 5R21 Aquifer Recharge (IW used to inject fluids to recharge an aquifer)
  - 5S23 Subsidence Control Wells (IW used to control land subsidence caused by ground water withdrawal)
  - 5W09 Untreated Sewage
  - 5W10 Large Capacity Cesspools (Cesspools that are designed for 5,000 gpd or greater)
  - 5W11 Large Capacity Septic systems (Septic systems designed for 5,000 gpd or greater)
  - 5W12 WTPP disposal
  - 5W20 Industrial Process Waste Disposal Wells
  - 5W31 Septic System (Well Disposal method)
  - 5W32 Septic System Drainfield Disposal
  - 5X13 Mine Backfill (IW used to control subsidence, dispose of mining byproducts, and/or fill sections of a mine)
  - 5X25 Experimental Wells (Pilot Test) (IW used to test new technologies or tracer dye studies)
  - 5X26 Aquifer Remediation (IW used to clean up, treat, or prevent contamination of a USDW)
  - 5X27 Other Wells
  - 5X28 Motor Vehicle Waste Disposal Wells (IW used to dispose of waste from a motor vehicle site - These are currently banned)
  - 5X29 Abandoned Drinking Water Wells (waste disposal)

Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

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## **ATTACHMENTS**

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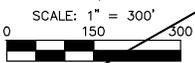
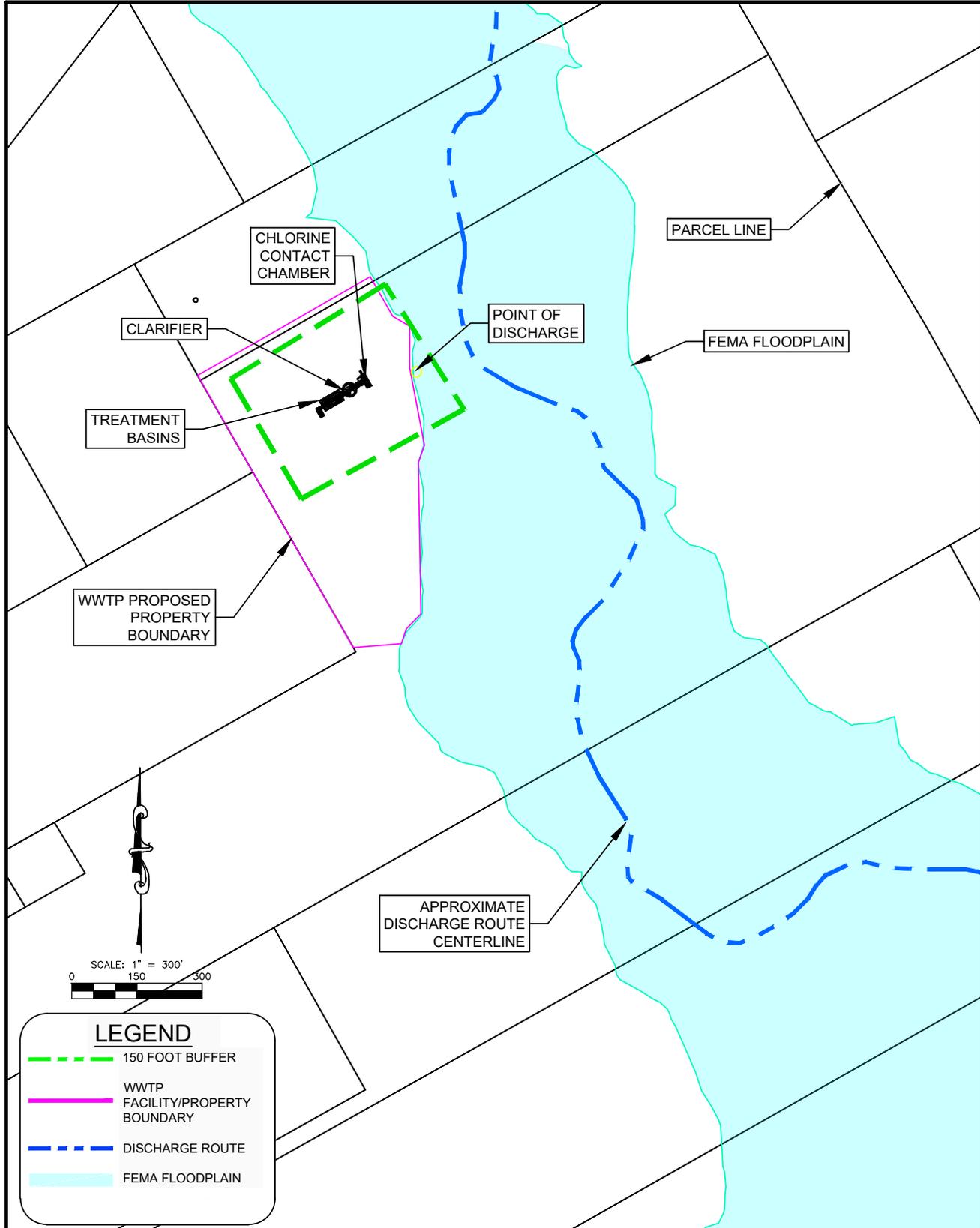
Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

Attachment A: USGS Map Exhibit



Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

## Attachment B: Site Drawing



**LEGEND**

- - - 150 FOOT BUFFER
- WWTP FACILITY/PROPERTY BOUNDARY
- - - DISCHARGE ROUTE
- FEMA FLOODPLAIN

P:\Projects\006 GVSUD\061 - Clearwater Creek WFS & WWFS\CAD\Sheets\PERMIT DRAWINGS\Updated Location and Discharge Point\SITE MAP.dwg, Mar 02, 2021, 5:42pm



**UTILITY  
ENGINEERING  
GROUP PLLC**

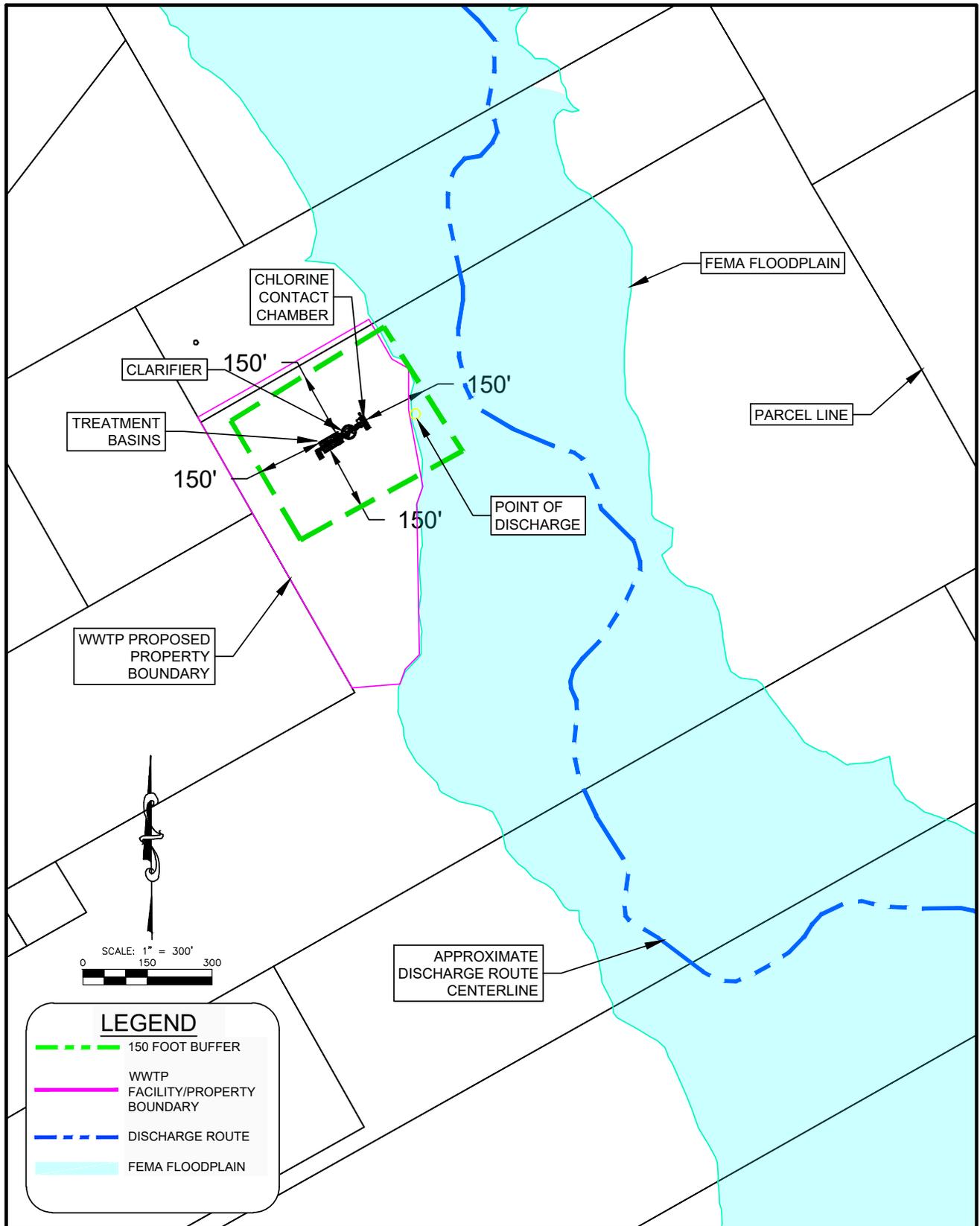
191 N Union Ave NEW BRAUNFELS, TEXAS 78130 PH: (830) 214-0521  
Texas Engineering Firm F-18712

SCALE:	
DATE:	02 March, 2021
PROJECT NO:	
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	

GREEN VALLEY SPECIAL UTILITY DISTRICT	
CLEARWATER CREEK WWTP	
SITE MAP	
INITIAL 0.1 MGD PHASE	SHEET: OF

Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

## Attachment C: Buffer Zone Map



P:\Projects\006 GVSUD061 - Clearwater Creek WFS & WWFSCAD\Sheets\PERMIT DRAWINGS\Updated Location and Discharge Point\BUFFER MAP.dwg, Mar 02, 2021, 5:40pm

**LEGEND**

- - - 150 FOOT BUFFER
- - - WWTP FACILITY/PROPERTY BOUNDARY
- - - DISCHARGE ROUTE
- FEMA FLOODPLAIN



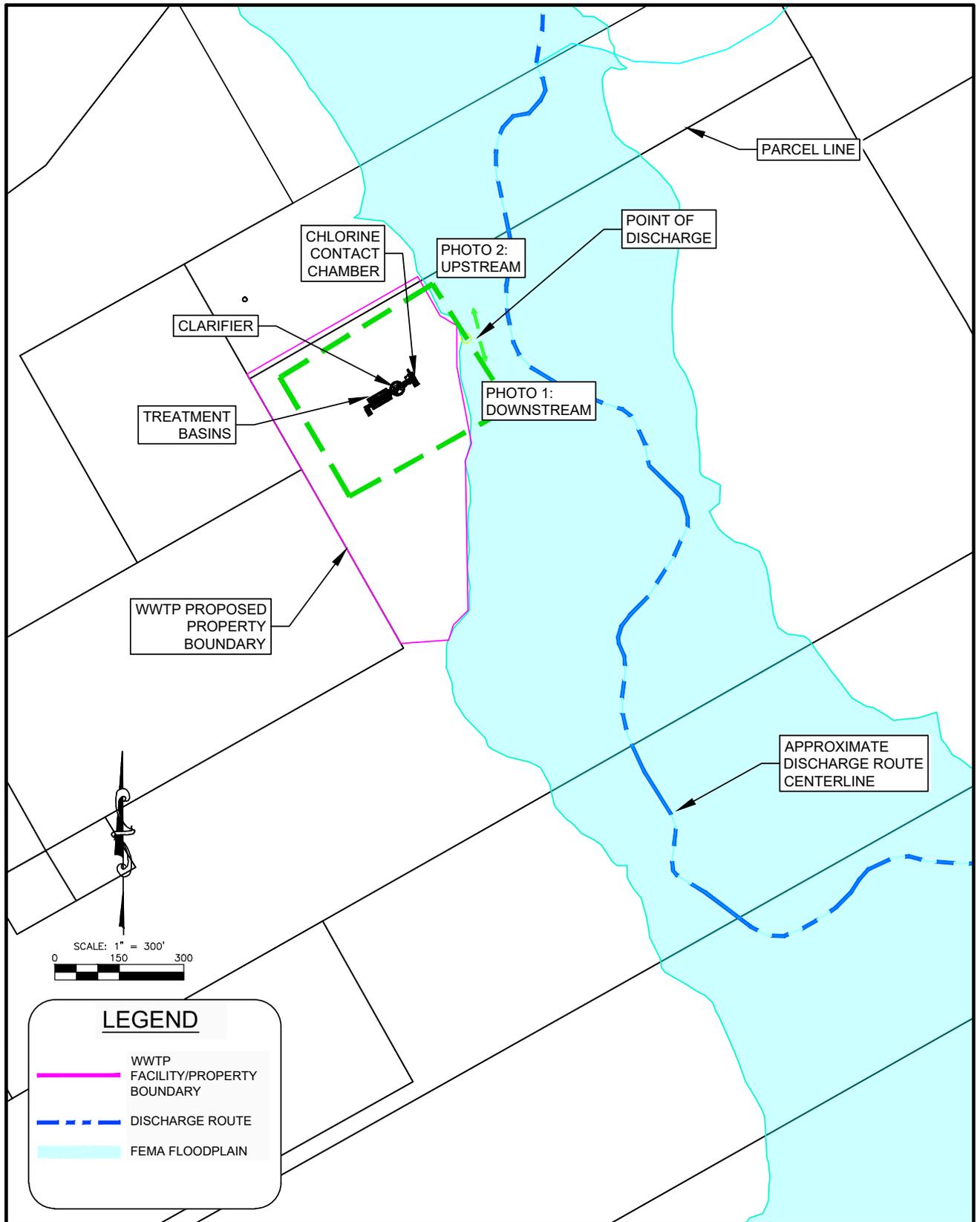
**UTILITY ENGINEERING GROUP PLLC**  
 191 N Union Ave NEW BRAUNFELS, TEXAS 78130 PH: (830) 214-0521  
 Texas Engineering Firm F-18712

SCALE:
DATE: 02 March, 2021
PROJECT NO:
DESIGNED BY:
DRAWN BY:
CHECKED BY:

GREEN VALLEY SPECIAL UTILITY DISTRICT
CLEARWATER CREEK WWTP BUFFER MAP
SHEET:    OF

Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

## Attachment D: Original Photographs



P:\Projects\006 GVSUD061 - Clearwater Creek WFS & WWFSCAD\Sheet\PERMIT DRAWINGS\Updated Location and Discharge Point\PILOT PLAN.dwg, Mar 02, 2021, 5:31pm

**LEGEND**

- WWTP FACILITY/PROPERTY BOUNDARY
- DISCHARGE ROUTE
- FEMA FLOODPLAIN



**UTILITY ENGINEERING GROUP PLLC**

191 N Union Ave NEW BRAUNFELS, TEXAS 78130 PH: (830) 214-0521  
Texas Engineering Firm F-18712

SCALE:	
DATE:	02 March, 2021
PROJECT NO:	
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	

GREEN VALLEY SPECIAL UTILITY DISTRICT
CLEARWATER CREEK WWTP PLOT PLAN
SHEET:      OF



PHOTO 1: DOWNSTREAM (Top)

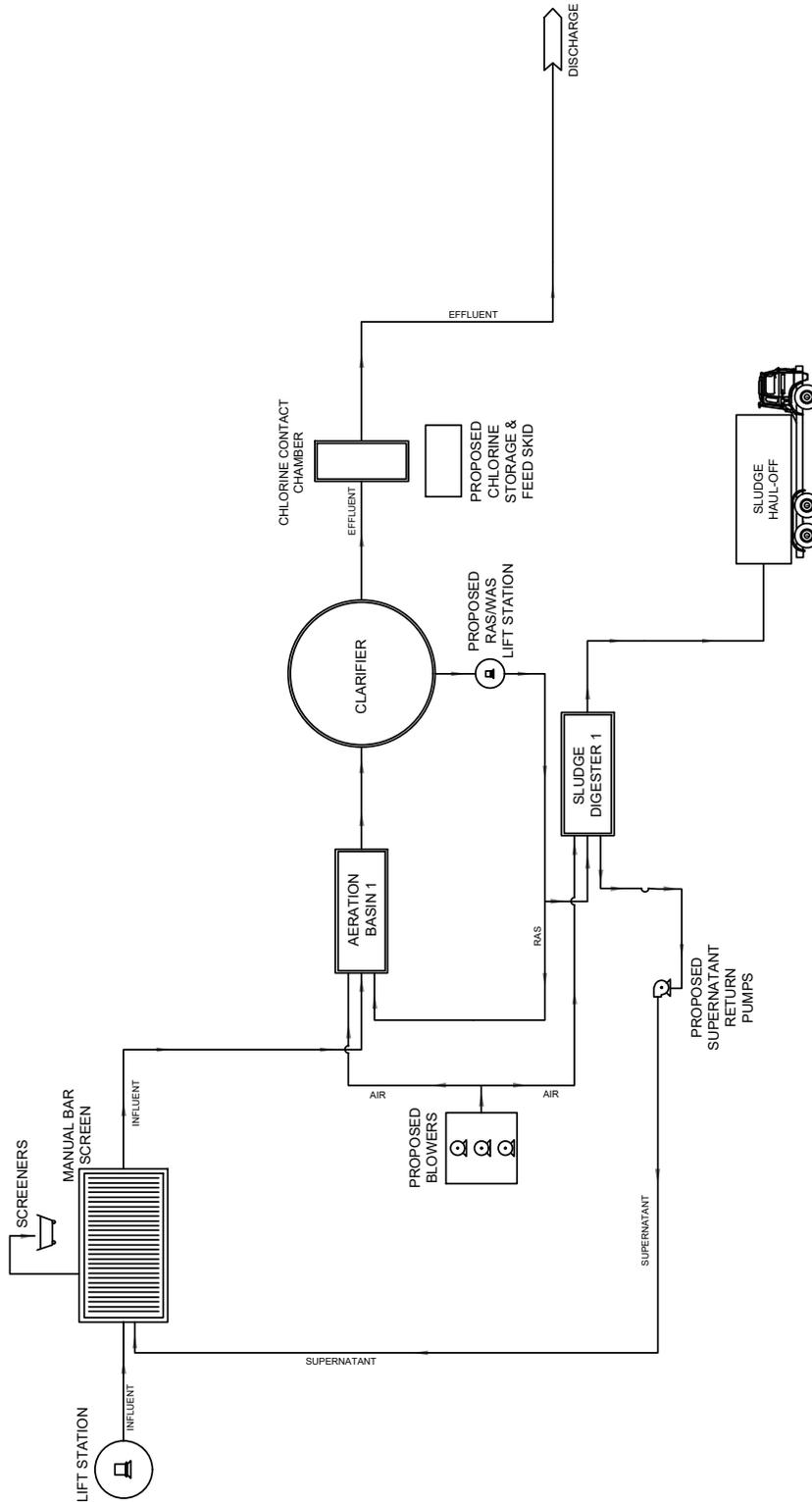


PHOTO 2: UPSTREAM (Bottom)

Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

## Attachment E: Flow Diagrams

P:\Projects\0606 GVSUD\061 - Clearwater Creek WFS & WWFSCAD\Sheet\FLOW DIAGRAM.dwg, Jul 07, 2020 - 5:05pm



**UTILITY  
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GROUP PLLC**

256 Comal Ave NEW BRAUNFELS, TEXAS 78130 PH: (830) 214-0521  
Texas Engineering Firm F-18712

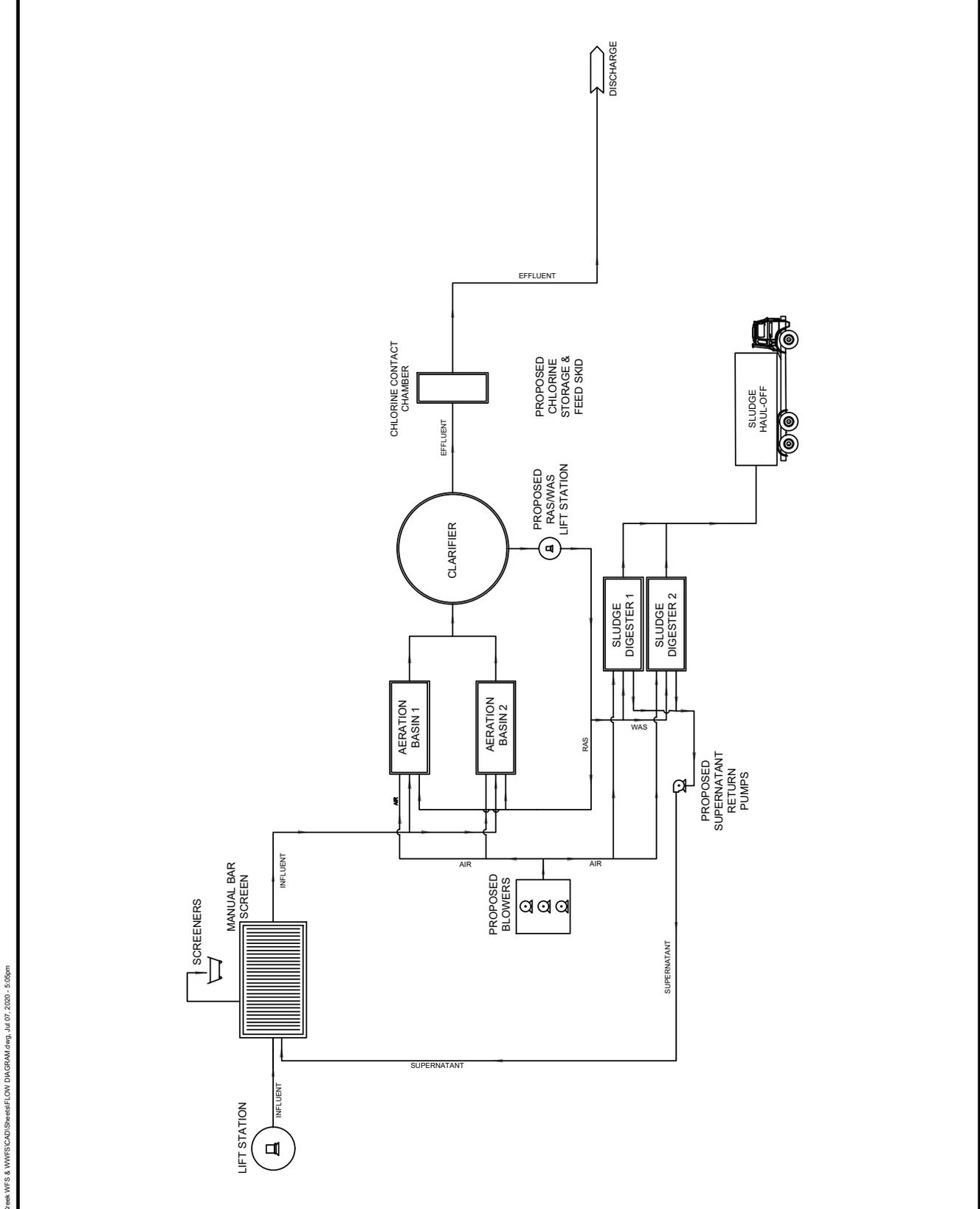
SCALE:	
DATE:	07 July, 2020
PROJECT NO:	
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	

GREEN VALLEY SPECIAL UTILITY DISTRICT

CLEARWATER CREEK WWTP  
FLOW DIAGRAM INITIAL PHASE

0.1 MGD

SHEET: 1 OF 1



P:\Projects\0606 GVSUD\061 - Clearwater Creek WFS & WWFS\CAD\Sheet\FLOW DIAGRAM.dwg, Jul 07, 2020 - 5:05pm



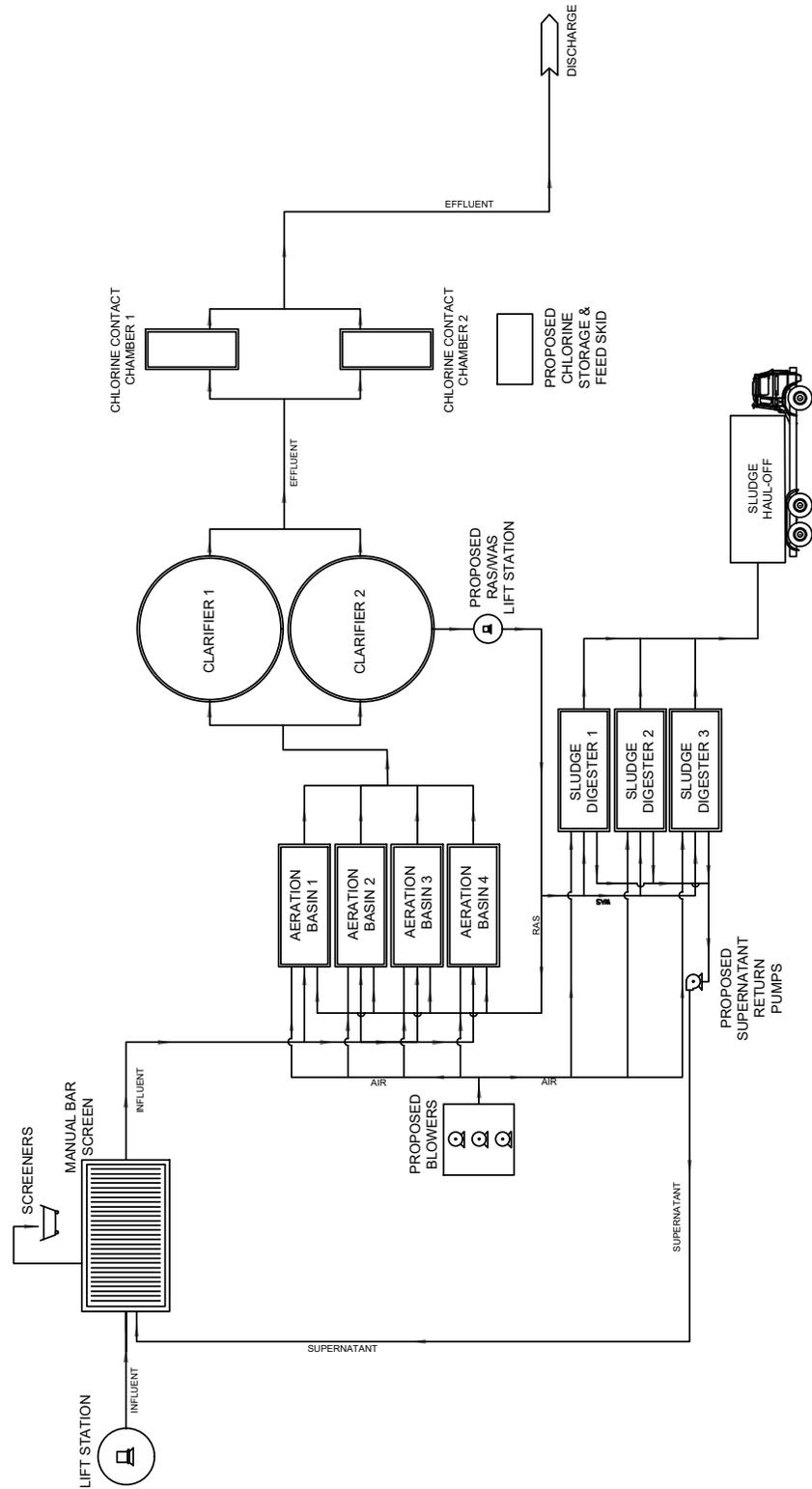
**UTILITY  
ENGINEERING  
GROUP PLLC**

256 Comal Ave NEW BRAUNFELS, TEXAS 78130 PH: (830) 214-0521  
Texas Engineering Firm F-18712

SCALE:
DATE: 07 July, 2020
PROJECT NO:
DESIGNED BY:
DRAWN BY:
CHECKED BY:

GREEN VALLEY SPECIAL UTILITY DISTRICT
CLEARWATER CREEK WWTP FLOW DIAGRAM INTERIM PHASE
0.2 MGD
SHEET: 1 OF 1

P:\Projects\0606 GVSUD\061 - Clearwater Creek WFS & WWFSCAD\Sheet\FLOW DIAGRAM.dwg, Jul 07, 2020 - 5:05pm



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ENGINEERING  
GROUP PLLC**

256 Comal Ave NEW BRAUNFELS, TEXAS 78130 PH: (830) 214-0521  
Texas Engineering Firm F-18712

SCALE:

DATE: 07 July, 2020

PROJECT NO:

DESIGNED BY:

DRAWN BY:

CHECKED BY:

GREEN VALLEY SPECIAL UTILITY DISTRICT

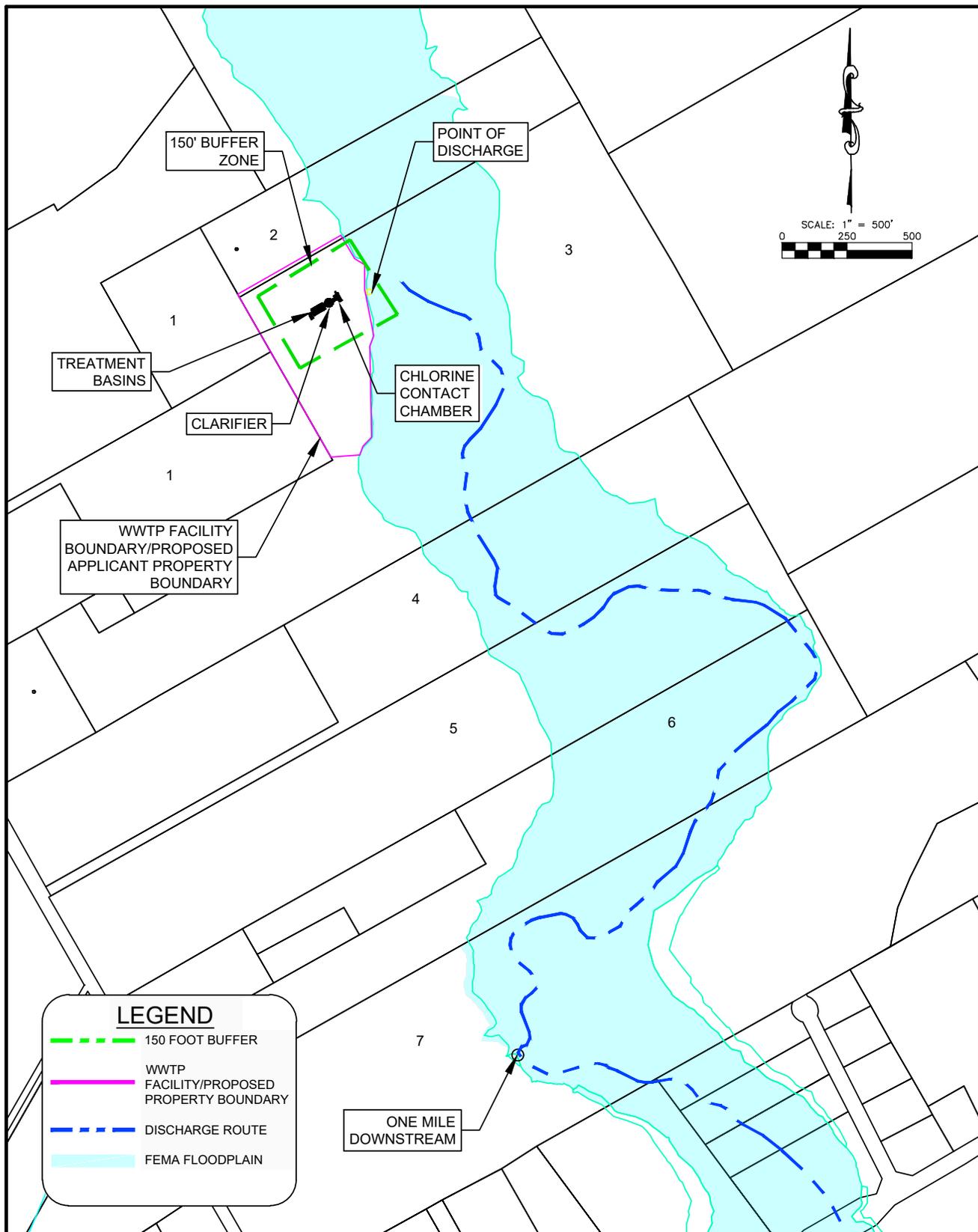
CLEARWATER CREEK WWTP  
FLOW DIAGRAM FINAL PHASE

0.4 MGD

SHEET: 1 OF 1

Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

## Attachment F: Affected Landowner Information



**LEGEND**

- - - 150 FOOT BUFFER
- WWTP FACILITY/PROPOSED PROPERTY BOUNDARY
- - - DISCHARGE ROUTE
- FEMA FLOODPLAIN

P:\Projects\006 GVSUD\061 - Clearwater Creek WFS & WWFSCAD\Shared\PERMIT DRAWINGS\Updated Location and Discharge Point\LANDOWNER MAP.dwg, Mar 02, 2021 - 5:38pm



**UTILITY  
ENGINEERING  
GROUP PLLC**

191 N Union Ave NEW BRAUNFELS, TEXAS 78130 PH: (830) 214-0521  
Texas Engineering Firm F-18712

SCALE:	
DATE:	02 March, 2021
PROJECT NO:	
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	

GREEN VALLEY SPECIAL UTILITY DISTRICT

CLEARWATER CREEK WWTP  
LANDOWNER MAP

SHEET:    OF

**GREEN VALLEY SPECIAL UTILITY DISTRICT  
 CLEARWATER WASTEWATER PERMIT APPLICATION  
 AFFECTED LANDOWNER INFORMATION**

<b>Map ID</b>	<b>Landowner Name and Address</b>
1	FIRST SERVICE VENDING INC 139 BRANIFF DR SAN ANTONIO 78216-3302
2	MAPLES PAULA L 4280 STAPPER RD UNIT 3 SAINT HEDWIG 78152-8288
3	ELLIOTT MICHAEL W & SUTTON CAROLYN & DUNCAN HAZEL J 4060 STAPPER RD SAINT HEDWIG 78152-9732
4	WILKS PATRICK WARREN & ALICIA JOY 3418 RIDGE ASH SAN ANTONIO 78247-4505
5	KOSUB PAUL JOSEPH & MARTHA WIEGAND KOSUB 3740 STAPPER RD SAINT HEDWIG 78152-9730
6	KOSUB MARTHA 3740 STAPPER RD SAINT HEDWIG 78152-9730
7	STREY HENRY JR 16308 MILLER RD MARION 78124-6643

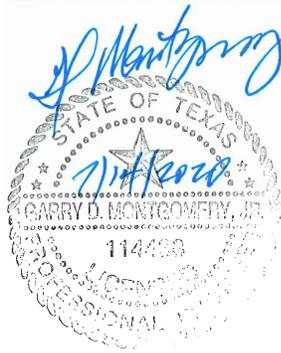
Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

Attachment G: Design Calculations/ Sewage Sludge  
Solids Management Plan

**CLEARWATER CREEK  
WASTEWATER TREATMENT FACILITY  
PRELIMINARY DESIGN CALCULATIONS**

**Prepared For:  
Green Valley Special Utility District**

Prepared by:  
Utility Engineering Group, PLLC  
Texas Registered Engineering Firm: 18712  
191 N Union Ave.  
New Braunfels, TX, 78130  
830-214-0521



**GREEN VALLEY SUD  
DESIGN CALCULATIONS  
SUMMARY**

**PARAMETERS**

**Description:** Interim I thru Final: Activated sludge process utilizing the conventional aeration to treat municipal wastewater. System to include aeration, clarifier, chlorine contact, and sludge holding basins.

**Influent Flows:**

	<b>Interim I</b>	<b>Interim II</b>	<b>Final</b>
Average Daily (gpd):	100,000	200,000	400,000
Peak Daily (2-Hr Peak) (gpd):	400,000	800,000	1,600,000

**Influent Flow Characteristics:**

BOD <sub>5</sub> (mg/l)=	300	300	300
TSS (mg/l)=	300	300	300
NH <sub>3</sub> N (mg/l)=	45	45	45
Total Nitrogen (mg/l)=	70	70	70

**Effluent Water Quality Parameters:**

BOD <sub>5</sub> (mg/l)=	10	10	10
TSS (mg/l)=	15	15	15
NH <sub>3</sub> N (mg/l)=	3	3	3
Chlorine Residual (after 20 minutes) (mg/l)=	1	1	1
Dissolved Oxygen (mg/l)	6	6	6
Total Phosphorus (mg/l)	1	1	1
E. coli (cfu)	126	126	126

**PROPOSED FACILITIES**

	<b>Interim I</b>	<b>Interim II</b>	<b>Final</b>
<b>Process:</b>			
Total Plant BOD <sub>5</sub> Loading (lbs/day):	241.9	483.7	967.4
TSS Loading (lbs/day):	237.7	475.4	950.8
MLSS (mg/l):	3,000	3,000	3,000
Hydraulic Retention Time (days):	0.56	0.56	0.56
Sludge Residence Time (days):	11.76	11.76	11.76
Food to Mass Ratio:	0.180	0.180	0.180
Sludge Yield (lbs/day):	110	220	440
Sludge Yield (gpd) @ 1.5%:	880	1,760	3,520
<b>Aeration Basin:</b>			
Max Organic Loading (lbs/day/1,000 cf):	35	35	35
Proposed Organic Loading (lbs/day/1,000 cf):	32.55	32.55	32.55
Minimum Required Volume (cf):	6,910	13,821	27,641
Proposed Volume (cf):	7,430	14,861	29,722

**GREEN VALLEY SUD  
DESIGN CALCULATIONS  
SUMMARY**

	Interim I	Interim II	Final
<b>Clarifier:</b>			
Max Surface Loading at PDF (gpd/sf):	1,200	1,200	1,200
Proposed Surface Loading at PDF (gpd/sf):	475	949	949
Max Surface Loading at ADF (gpd/sf):	600	600	600
Proposed Surface Loading at ADF (gpd/sf):	119	237	237
Min Detention Time at PDF (hrs):	1.8	1.8	1.8
Proposed Detention Time at PDF (hrs):	4.48	2.24	2.24
Min Detention Time at ADF (hrs):	3.6	3.6	3.6
Proposed Detention Time at ADF (hrs):	17.93	8.96	8.96
Minimum Required Surface Area (sf):	333	667	1,333
Proposed Surface Area (sf):	843	843	1,685
Minimum Required Volume (cf):	4,010	8,021	16,042
Proposed Volume (cf):	9,986	9,986	19,973
Stilling Well Diameter (ft)	4.00	4.00	4.00
Stilling Well Velocity at PDF (ft/s)	0.049	0.098	0.197
Minimum Required Weir Length (ft)	20.000	40.000	80.000
Proposed Weir Length (ft)	97.389	97.389	97.389
<b>Chlorine Contact Basin:</b>			
Min Detention Time at PDF (min):	20	20	20
Detention Time Provided at PDF (min):	55.26	27.63	27.63
Minimum Required Volume (cf):	742.7	1,485.3	2,970.7
Proposed Volume (cf):	2,052.2	2,052.2	4,104.3
<b>Sludge Holding Basin:</b>			
Minimum Required Volume (cf):	4,837	9,674	19,349
Proposed Volume (cf):	7,682	15,365	23,047
Proposed Detention Time (days):	65.30	65.30	48.98
<b>Air Supply:</b>			
Min Air Supply - Aeration (scfm):	838	3,354	3,354
Min Air Supply - Digester (scfm):	230	461	691
Min Air Supply - Air Lift Pumps (scfm):	70	140	245
Min Total Air Supply (scfm):	1,139	3,955	4,290

**GREEN VALLEY SUD  
DESIGN CALCULATIONS  
SIZING CALCULATIONS**

**AERATION BASIN**

	<b>Interim I</b>	<b>Interim II</b>	<b>Final</b>
Minimum Volume Required:	6,910 cf	13,821 cf	27,641 cf
No. of Basins:	1	2	4
Proposed SWD:	10.32 ft	10.32 ft	10.32 ft
Length (Ea. Basin):	60 ft	60 ft	60 ft
Width (Ea. Basin):	12 ft	12 ft	12 ft
<b>Proposed Volume:</b>	<b>7,430 cf</b>	<b>14,861 cf</b>	<b>29,722 cf</b>

**SLUDGE DIGESTER**

	<b>Interim I</b>	<b>Interim II</b>	<b>Final</b>
Minimum Volume Required:	4,837 cf	9,674 cf	19,349 cf
No. of Basins:	1	2	3
Proposed SWD:	10.67 ft	10.67 ft	10.67 ft
Length (Ea. Basin):	60 ft	60 ft	60 ft
Width (Ea. Basin):	12 ft	12 ft	12 ft
<b>Proposed Volume:</b>	<b>7,682 cf</b>	<b>15,365 cf</b>	<b>23,047 cf</b>

**CLARIFIER**

	<b>Interim I</b>	<b>Interim II</b>	<b>Final</b>
Minimum Surface Area Required:	333 sf	667 sf	1,333 sf
Minimum Volume Required:	4,010 cf	8,021 cf	16,042 cf
No. of Clarifiers:	1	1	2
Proposed SWD:	11.85 ft	11.85 ft	11.85 ft
Proposed Diameter:	33 ft	33 ft	33 ft
Proposed Stilling Well Diameter:	4 ft	4 ft	4 ft
Proposed Weir Diameter:	31 ft	31 ft	31 ft
Proposed Weir Length:	97.39 ft	97.39 ft	97.39 ft
<b>Proposed Area:</b>	<b>843 sf</b>	<b>843 sf</b>	<b>1,685 sf</b>
<b>Proposed Volume:</b>	<b>9,986 cf</b>	<b>9,986 cf</b>	<b>19,973 cf</b>

**CHLORINE CONTACT**

	<b>Interim I</b>	<b>Interim II</b>	<b>Final</b>
Minimum Volume Required:	742.7 cf	1,485.3 cf	2,970.7 cf
No. of Basins:	1	1	2
Proposed SWD:	5.83 ft	5.83 ft	5.83 ft
Width (Ea. Basin):	32 ft	32 ft	32 ft
Length (Ea. Basin):	11 ft	11 ft	11 ft
Total Volume:	2,052.16 cf	2,052.16 cf	4,104.32 cf
<b>Proposed Volume:</b>	<b>2,052.16 cf</b>	<b>2,052.16 cf</b>	<b>4,104.32 cf</b>

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
INTERIM PHASE I**

**PARAMETERS**

<i>Influent:</i>		<i>Effluent:</i>	
Q =	100,000 GPD	S =	10 mg/l, BOD <sub>5eff</sub>
Q <sub>p1</sub> =	400,000 GPD to Headworks	TSS <sub>eff</sub> =	15 mg/l
Q <sub>p2</sub> =	400,000 GPD downstream of Infl EQ (N/A)	NH <sub>3</sub> N =	2 mg/l
S <sub>o</sub> =	300 mg/l, BOD <sub>5infl</sub>	Chlorine Residual =	1 mg/l @ 20 min det
TSS <sub>infl</sub> =	300 mg/l	Total Phosphorus =	1 mg/l
Chemical Oxygen Demand (COD) =	545 mg/l		
TKN =	70 mg/l		.3-.8 (BOD/COD), used 0.55
NH <sub>3</sub> N =	45 mg/l		
Organic N <sub>14°C</sub> =	25 mg/l		
Winter Temp. Min. =	14 °C		
Summer Temp. Max. =	29 °C		
MLSS =	3,000 mg/l, conc. Of suspended solids in aeration tank		
MLVSS =	70 % of MLSS		
MLVSS (X) =	2100 mg/l, conc. Of volatile suspended solids in aeration tank		

**COEFFICIENTS**

θ <sub>c</sub> =	30	days, mean cell residence time
Y =	0.4	maximum yield coefficient, range: 0.3 - 0.5 (Metcalf & Eddy Table 8-10)
Y <sub>n</sub> =	0.12	g VSS / g NH <sub>4</sub> -N, range: 0.1 - 0.15 (Metcalf & Eddy Table 8-11)
K <sub>o</sub> =	0.5	g / m <sup>3</sup> , range: 0.40 - 0.60 (Metcalf & Eddy Table 8-11)
k <sub>d</sub> =	0.12	day <sup>-1</sup> , endogenous decay coefficient, range: 0.06 - 0.2 (Metcalf & Eddy Table 8-10)
K <sub>d</sub> =	1.04	unitless, range: 1.03 - 1.08 (Metcalf & Eddy Table 8-10)
K <sub>d, 14°C</sub> =	0.095	g/g*d
K <sub>dn</sub> =	0.080	g VSS / g VSS*d, range: 0.05 - 0.15 (Metcalf & Eddy Table 8-10)
K <sub>dn</sub> =	1.04	unitless, range: 1.03 - 1.08 (Metcalf & Eddy Table 8-11)
K <sub>dn, 14°C</sub> =	0.063	g/g*d
K <sub>n</sub> =	0.740	g NH <sub>4</sub> -N / m <sup>3</sup> , range: 0.5 - 1.0 (Metcalf & Eddy Table 8-11)
K <sub>n</sub> =	1.053	unitless, range: 1.03 - 1.123 (Metcalf & Eddy Table 8-11)
K <sub>n, 14°C</sub> =	0.543	g / m <sup>3</sup>
μ <sub>mn</sub> =	0.750	g VSS / g VSS*d, range: 0.20 - 0.90 (Metcalf & Eddy Table 8-11)
μ <sub>n</sub> =	1.070	unitless, range: 1.06 - 1.123 (Metcalf & Eddy Table 8-11)
μ <sub>m, 14°C</sub> =	0.500	g / g*d
f <sub>d</sub> =	0.150	unitless, range: 0.08 - 0.2 (Metcalf & Eddy Table 8-10)

**DESIGN CALCULATIONS**

**A. BOD<sub>5</sub> Loading**

$$F = \frac{8.34 \times Q \times (S_o - S)}{10^6}$$

F = 241.9 lb BOD<sub>5</sub> /day

**B. TSS Loading**

$$TSS = \frac{8.34 \times Q \times (TSS_{inf} - TSS_{eff})}{10^6}$$

TSS = 237.7 lb TSS /day

**C. Micro-organism Mass in Aeration Basin**

$$M_v = F \times \frac{\theta_c \times Y}{1 + (k_d \times \theta_c)}$$

M<sub>v</sub> = 631 lb

**D. Aeration Volume**

$$V = \frac{Q \times \theta_c}{X} \times \frac{Y \times (S_o - S)}{1 + (k_d \times \theta_c)}$$

V = 36,024.84 gal  
4,816 cf

Max. Organic Loading: 35 lbs BOD<sub>5</sub>/day/1000 cf  
(TCEQ Chap. 217.154, Conventional)

V = 6,910 cf

**Minimum V = 6,910 cf**

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
INTERIM PHASE I**

**E. Wastewater Characteristics**

$$\begin{aligned} \text{bCOD} &= 1.6(\text{BOD}) = 480 \text{ mg/l (Biodegradable COD)} \\ \text{nbCOD} &= \text{COD} - \text{bCOD} = 65 \text{ mg/l (non-biodegradable COD)} \end{aligned}$$

$$\begin{aligned} \text{iTSS} &= \text{TSS} - \text{VSS} \\ \text{TSS} &= 300 \text{ mg/l} \\ \text{VSS} &= 210 \text{ mg/l} \\ \text{iTSS} &= 90 \text{ mg/l} \end{aligned}$$

$$\frac{\text{bpCOD}}{\text{pCOD}} = \frac{(\text{bCOD} \div \text{BOD}) \times (\text{BOD} - \text{sBOD})}{\text{COD} - \text{sCOD}}$$

sBOD: soluble BOD  
sCOD: soluble COD  
bpCOD: Biodegradable particulate COD  
pCOD: Particulate COD

$$\begin{aligned} \text{Assume: sCOD} &= 33\% \text{ of COD} = 180 \text{ mg/l} \\ \text{Assume: sBOD} &= 33\% \text{ of BOD} = 99 \text{ mg/l} \end{aligned}$$

$$\text{bpCOD/pCOD} = 0.88$$

$$\text{nbVSS} = \left[ 1 - \left( \frac{\text{bpCOD}}{\text{pCOD}} \right) \right] \times \text{BOD}$$

$$\text{nbVSS} = 36.0 \text{ mg/l (non-biodegradable VSS)}$$

**F. Sludge Retention Time**

$$(P_{X,TSS})SRT = \frac{QY(S_o - S)SRT}{[1 + (k_d)SRT](0.85)} + Q(\text{nbVSS})SRT + \frac{QY_n(NO_x)SRT}{[1 + (k_{dn})SRT](0.85)} + \frac{(f_d)(k_d)Q(Y)(S_o - S)SRT^2}{[1 + (k_d)SRT](0.85)} + Q(\text{TSS}_o - \text{VSS}_o)SRT$$

$$(P_{X,TSS}) \times SRT = (V) \times (X_{MLSS})$$

$$\begin{aligned} X_{MLSS} &= 3,000 \text{ g/m}^3 \\ V &= 7,430 \text{ cf} = 210.41 \text{ m}^3 \end{aligned}$$

$$(P_{X,TSS})SRT = 631,216 \text{ g}$$

$$\begin{aligned} \text{Assume } S_o &= S_o - S \\ S_o = \text{bCOD} &= 480 \text{ g/m}^3 \end{aligned}$$

$$\text{Assume } \text{Nox} \approx 80\% \text{ of TKN} = 56.0 \text{ g/m}^3$$

$$\text{SRT} = 11.755285 \text{ days}$$

**H. Sludge Yield**

$$P_{X,TSS} = \frac{(V)(MLSS)}{SRT}$$

$$P_{X,TSS} = 110 \text{ lbs/day}$$

$$Q_{\text{Sludge}} = \frac{P_{X,TSS}}{8.34 \times \text{Percent Solids}}$$

$$\text{Assume Percent Solids} = 1.5 \%$$

$$Q_{\text{sludge}} = 880 \text{ gal/day}$$

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
INTERIM PHASE I**

**I. Nitrification**

$$K_n \ln \frac{N_o}{N_t} + (N_o - N_t) = X_n \left( \frac{\mu_{mn}}{Y_n} \right) \left( \frac{DO}{k_o + DO} \right) t$$

$N_o$  = Initial NH4-N concentration (mg/L)  
 $N_t$  = NH4-N concentration at time t (mg/L)  
 $X_n$  = Nitrifying bacteria concentration (mg/L)  
 $DO$  = Dissolved Oxygen concentration = 4.0 mg/L

$$NO_x = TKN_o - N_e - 0.12 P_{x,bio} / Q$$

$NO_x$  = Nitrogen oxidized (mg/L)  
 $TKN_o$  = Influent TKN (mg/L)  
 $N_e$  = Effluent NH4-N (mg/L)  
 $P_{x,bio}$  = Nitrogen in cell tissue

$$P_{x,bio} = \frac{QY(S_o - S)}{1 + (k_d)SRT} + \frac{QY_n(NO_x)}{1 + (k_{dn})SRT} + \frac{(f_d)(k_d)QY(S_o - S)SRT}{1 + (k_d)SRT}$$

$Q$  = 100,000 gpd = 378.5 m<sup>3</sup>/day  
 $S_o - S$  = 480 g/m<sup>3</sup> (from SRT calculation)  
 $NO_x$  = 56.0 g/m<sup>3</sup> (from SRT calculation)  
 $SRT$  = 11.755285 days  
 $P_{x,bio}$  = 41,573 g/day = 41.6 kg/day  
 $NO_x$  = 54.8 g/m<sup>3</sup>

$$P_{x,TSS} = \left( \frac{P_{x,BIO}}{0.85} \right) + Q \times (nbVSS) + Q \times (T_{SSo} - V_{SSo})$$

$TSS_o$  = 300 mg/l  
 $VSS_o = TSS_o \times MLVSS(\%) = 210$  mg/l  
 $P_{x,TSS} = 96.61$  kg/day

$$V = \frac{(P_{x,TSS} \times SRT)}{MLSS}$$

Minimum Volume Required = 378.5 m<sup>3</sup> = **13,366.3** cf

**E. Nitrification**

pH: 7.2  
 DO (mg/L): 4.0 Dissolved Oxygen  
 $K_o$ : 0.5 Half-Saturation coefficient for DO (Metcalf & Eddy Table 8-11)  
 Temp (°C): 14.0  
 Effluent NH3 (mg/L): 2.0

Temperature Term,  $T_t$ : 0.91  
 $DO$  Term,  $DOT$ : 0.89  
 $pH$  Term,  $pH_t$ : 1.00  
 $Kn$ : 0.36 Half-Saturation coefficient for oxidation of ammonia  
 $NH_3$  Term,  $NH_3t$ : 0.85  
 Nitrifier Growth Rate (days<sup>-1</sup>): 0.34  
 Aerobic SRT Required (days): 2.93  
 $T_t = e^{(0.098 \times (T - 15))}$   
 $DOT = DO / (K_o + DO)$   
 $pH_t = 1 - 0.833 \times (7.2 - pH)$   
 $Kn = 10 \times (0.051 \times T - 1.158)$   
 $NH_3t = NH_3 / (Kn + NH_3)$   
 Growth Rate =  $0.5 \times T_t \times pH_t \times DOT \times NH_3t$   
 $SRT = 1 / \text{Nitrifier Growth Rate}$

Safety Factor: 2.0 Typical Range: 1.5 - 2.5  
**Min Required Aerobic SRT (days): 5.9**  
**Minimum Aerobic Volume (cf): 3,442.46 For Nitrification**

**J. Clarifier**

Max Surface Loading: 1,200 gpd/sf at Peak Flow (TCEQ Chap. 217.154, Conventional, secondary enhanced)  
 Max Surface Loading: 600 gpd/sf at Design Flow  
 Min Detention Time: 1.8 hrs at Peak Flow  
 Min Detention Time: 3.6 hrs at Design Flow  
 Max Weir Loading: 20,000 gpd/lf at Peak Flow

**Minimum Surface Area: 333 sf**  
**Minimum Volume: 30,000 gallons = 4010.4 cf**  
**Minimum Weir Length: 20 lf**

**K. Return Activated Sludge**

Minimum Rate: 50% of Design Flow = 34.7 gpm  
 Maximum Rate: 100% of Design Flow = 69.4 gpm

Provide: 2 6" Air Lift Pumps or 1 8" Air Lift Pumps

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
INTERIM PHASE I**

**L. Sludge Holding Basin**

Minimum SRT:	15 days
- SRT w/Treatment:	11.755285 days
Minimum Sludge Holding SRT:	3.2447146 days

Minimum Sludge Holding Detention Time: 7 days (for operations)

Minimum Sludge Holding Volume using SRT	6,160 gallons =	823.5 cf
Minimum Sludge Holding Volume using 20-cf/lbs BOD/Day	36,185 gallons =	4,837.2 cf

**Minimum Sludge Holding Volume: 36,185 gallons = 4,837.2 cf**

**M. Chlorine Contact Basin**

Minimum Detention Time: 20 minutes at Peak Flow

**Minimum Volume: 5,555.56 gallons = 742.7 cf**

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
INTERIM PHASE I**

**N. Aeration**

1. Aeration Basins

Minimum oxygen requirement = 3,200 scf per lb BOD<sub>5</sub> per day @ 10' submergence and 20 deg C

Diffuser Submergence Depth (ft)	Airflow Correction Factor
8	1.82
10	1.56
12	1.00
15	0.91
18	0.73
20	0.64

Diffuser Submergence Depth = 10 ft  
Correction Factor = 1.56

**Minimum oxygen requirement = 838 scfm @ 20 deg C**

2. Digester

Oxygen Requirement = 30 scfm per 1,000 ft<sup>3</sup>

**Minimum oxygen requirement = 230 scfm**

3. Air Lift Pumps

**Minimum air requirement = 70 scfm**

4. Other

Initial Mixing = 25 scfm

Post Aeration = 41.04 scfm (20 scfm per 1,000-cf)

**Minimum air requirement = 66.0432 scfm**

4. Total

**Total Air Flow Requirement = 1,205 scfm**  
Proposed Blower = 3,000 SCFM

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
INTERIM PHASE I**

**O. Fine Screen**

Bar Spacing:	0.25	in				
Average Flow Rate:	0.1	MGD				
Approximate Volume of Screenings:	13	cf/MG				
Anticipated Volume of Screenings:	1.3	cf per day			0.34	CY Per Week

**COARSE SCREEN (BYPASS/OVERFLOW BAR SCREEN)**

<b>Influent Flow Rate</b>								
Average Influent Flow Rate:	0.10	MGD	=	69	gpm	=	0.155	cfs
Peak Influent Flow Rate:	0.40	MGD	=	278	gpm	=	0.619	cfs

<b>Channel Geometry</b>			
Channel Width:	3.00	ft	
Design Channel Flow Depth:	0.2	ft	
Max. Channel Depth:	0.3	ft	

<b>Bar Rack Geometry</b>			
Bar Size:	0.250	in	
Clear Space Between Bars:	0.750	in	
Incline Angle:	45	degrees	
No. of Bars in Rack:	35		
Clear Space:	2.2708333	sf per ft of channel depth	

<b>Headloss thru Bar Screen</b>			
Channel Area (Avg):	0.5	sf	
Channel Area (Max):	1.0	sf	
Approach Velocity (Avg):	0.309	fps (using design channel depth)	
Approach Velocity (Peak):	0.619	fps (using max. channel depth)	
Bar Screen Area (Avg):	0.38	sf	
Bar Screen Area (Max):	0.76	sf	
Velocity Through Bars (Avg):	0.41	fps (using design channel depth)	
Velocity Through Bars (Max):	0.82	fps (using max. channel depth)	

$$HeadLoss = \frac{V^2 - v^2}{0.7 \times 2 \times g}$$

V= Velocity of flow through openings in rack  
v= Approach velocity  
g= Acceleration of gravity, 32.2

<i>Assuming No Clogging:</i>		<i>Assuming Clogging:</i>			
Head Loss (Design):	0.0016	ft	Clogging Factor:	0.500	
Head Loss (Max):	0.0063	ft	Head Loss (Design):	0.006	ft
			Head Loss (Max):	0.025	ft

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
SLUDGE MANAGEMENT PLANT  
INTERIM I PHASE**

**Dimensions and Capacities of Sludge Holding**

Average Anticipated Sludge Yield:	880 gal/day		
Minimum Sludge Retention Time:	15	days	
SRT from Treatment Basins:	11.75529	days	
Minimum SRT needed in Sludge Holding:	3.244715	days	
Prop Sludge Holding Basins:	57,468	gal =	7,682 cubic feet
Proposed Sludge Holding SRT:	65.30	days	
Total Proposed Sludge Retention Time:	77.06	days	

**Solids Generated**

BOD <sub>5</sub> Removal	Influent concentration =	300	mg/l
	Effluent concentration =	10	mg/l
	Net removal =	290	mg/l

MLSS Operating Range = 3,000 mg/l

BOD <sub>5</sub> removed	242	lbs/day
Dry Sludge Produced	110	lbs/day
Wet Sludge Produced*	73	lbs/day
Wet Sludge Produced*	880	gal/day

\*Assuming Percent Solids in Sludge: 1.5 % Solids

Length of Sustained Peak (days)	Peaking Factor	Waste Sludge Mass Loading (lbs/day)	Total Sustained Loading (lb)
1	2.4	264	264
2	2.1	231	462
3	1.9	209	628
4	1.8	198	793
5	1.7	187	936
7	1.65	182	1,272
14	1.32	145	2,035
15	1.3	143	2,147
365	1	110	40,184

**Process:**

Activated sludge process utilizing the conventional aeration mode will be utilized. Sludge will be wasted from the clarifiers to the sludge digester basin. Sludge will be hauled by a licensed hauler to a TCEQ registered disposal site.

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
INTERIM PHASE II**

**PARAMETERS**

<i>Influent:</i>		<i>Effluent:</i>	
Q =	200,000 GPD	S =	10 mg/l, BOD <sub>5eff</sub>
Q <sub>p1</sub> =	800,000 GPD to Headworks	TSS <sub>eff</sub> =	15 mg/l
Q <sub>p2</sub> =	800,000 GPD downstream of Infl EQ (N/A)	NH <sub>3</sub> N =	2 mg/l
S <sub>o</sub> =	300 mg/l, BOD <sub>5infl</sub>	Chlorine Residual =	1 mg/l @ 20 min det
TSS <sub>infl</sub> =	300 mg/l	Total Phosphorus =	1 mg/l
Chemical Oxygen Demand (COD) =	545 mg/l		
TKN =	70 mg/l		
NH <sub>3</sub> N =	45 mg/l		
Organic N <sub>14°C</sub> =	25 mg/l		
Winter Temp. Min. =	14 °C		
Summer Temp. Max. =	29 °C		
MLSS =	3,000 mg/l, conc. Of suspended solids in aeration tank		
MLVSS =	70 % of MLSS		
MLVSS (X) =	2100 mg/l, conc. Of volatile suspended solids in aeration tank		

**COEFFICIENTS**

θ <sub>c</sub> =	30	days, mean cell residence time
Y =	0.4	maximum yield coefficient, range: 0.3 - 0.5 (Metcalf & Eddy Table 8-10)
Y <sub>n</sub> =	0.12	g VSS / g NH <sub>4</sub> -N, range: 0.1 - 0.15 (Metcalf & Eddy Table 8-11)
K <sub>o</sub> =	0.5	g / m <sup>3</sup> , range: 0.40 - 0.60 (Metcalf & Eddy Table 8-11)
k <sub>d</sub> =	0.12	day <sup>-1</sup> , endogenous decay coefficient, range: 0.06 - 0.2 (Metcalf & Eddy Table 8-10)
k <sub>d</sub> =	1.04	unitless, range: 1.03 - 1.08 (Metcalf & Eddy Table 8-10)
K <sub>d, 14°C</sub> =	0.095	g/g*d
K <sub>dn</sub> =	0.080	g VSS / g VSS*d, range: 0.05 - 0.15 (Metcalf & Eddy Table 8-10)
K <sub>dn</sub> =	1.04	unitless, range: 1.03 - 1.08 (Metcalf & Eddy Table 8-11)
K <sub>dn, 14°C</sub> =	0.063	g/g*d
K <sub>n</sub> =	0.740	g NH <sub>4</sub> -N / m <sup>3</sup> , range: 0.5 - 1.0 (Metcalf & Eddy Table 8-11)
K <sub>n</sub> =	1.053	unitless, range: 1.03 - 1.123 (Metcalf & Eddy Table 8-11)
K <sub>n, 14°C</sub> =	0.543	g / m <sup>3</sup>
μ <sub>mn</sub> =	0.750	g VSS / g VSS*d, range: 0.20 - 0.90 (Metcalf & Eddy Table 8-11)
μ <sub>n</sub> =	1.070	unitless, range: 1.06 - 1.123 (Metcalf & Eddy Table 8-11)
μ <sub>m, 14°C</sub> =	0.500	g / g*d
f <sub>d</sub> =	0.150	unitless, range: 0.08 - 0.2 (Metcalf & Eddy Table 8-10)

**DESIGN CALCULATIONS**

**A. BOD<sub>5</sub> Loading**

$$F = \frac{8.34 \times Q \times (S_o - S)}{10^6}$$

F = **483.7** lb BOD<sub>5</sub> / day

**B. TSS Loading**

$$TSS = \frac{8.34 \times Q \times (TSS_{inf} - TSS_{eff})}{10^6}$$

TSS = **475.4** lb TSS / day

**C. Micro-organism Mass in Aeration Basin**

$$M_v = F \times \frac{\theta_c \times Y}{1 + (k_d \times \theta_c)}$$

M<sub>v</sub> = **1262** lb

**D. Aeration Volume**

$$V = \frac{Q \times \theta_c}{X} \times \frac{Y \times (S_o - S)}{1 + (k_d \times \theta_c)}$$

V = 72,049.69 gal  
9,632 cf

Max. Organic Loading: 35 lbs BOD<sub>5</sub>/day/1000 cf  
(TCEQ Chap. 217.154, Conventional)

V = 13,821 cf

**Minimum V = 13,821 cf**

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
INTERIM PHASE II**

**E. Wastewater Characteristics**

$$\begin{aligned} \text{bCOD} &= 1.6(\text{BOD}) = 480 \text{ mg/l (Biodegradable COD)} \\ \text{nbCOD} &= \text{COD} - \text{bCOD} = 65 \text{ mg/l (non-biodegradable COD)} \end{aligned}$$

$$\begin{aligned} \text{iTSS} &= \text{TSS} - \text{VSS} \\ \text{TSS} &= 300 \text{ mg/l} \\ \text{VSS} &= 210 \text{ mg/l} \\ \text{iTSS} &= 90 \text{ mg/l} \end{aligned}$$

$$\frac{\text{bpCOD}}{\text{pCOD}} = \frac{(\text{bCOD} \div \text{BOD}) \times (\text{BOD} - \text{sBOD})}{\text{COD} - \text{sCOD}}$$

sBOD: soluble BOD  
sCOD: soluble COD  
bpCOD: Biodegradable particulate COD  
pCOD: Particulate COD

$$\begin{aligned} \text{Assume: sCOD} &= 33\% \text{ of COD} = 180 \text{ mg/l} \\ \text{Assume: sBOD} &= 33\% \text{ of BOD} = 99 \text{ mg/l} \end{aligned}$$

$$\text{bpCOD/pCOD} = 0.88$$

$$\text{nbVSS} = \left[ 1 - \left( \frac{\text{bpCOD}}{\text{pCOD}} \right) \right] \times \text{BOD}$$

$$\text{nbVSS} = 36.0 \text{ mg/l (non-biodegradable VSS)}$$

**F. Sludge Retention Time**

$$(P_{X,TSS})SRT = \frac{QY(S_o - S)SRT}{[1 + (k_d)SRT](0.85)} + Q(\text{nbVSS})SRT + \frac{QY_n(\text{NO}_x)SRT}{[1 + (k_{dn})SRT](0.85)} + \frac{(f_d)(k_d)Q(Y)(S_o - S)SRT^2}{[1 + (k_d)SRT](0.85)} + Q(\text{TSS}_o - \text{VSS}_o)SRT$$

$$(P_{X,TSS}) \times SRT = (V) \times (X_{MLSS})$$

$$\begin{aligned} \text{XMLSS} &= 3,000 \text{ g/m}^3 \\ V &= 14,861 \text{ cf} = 420.81 \text{ m}^3 \end{aligned}$$

$$(P_{X,TSS})SRT = 1,262,432 \text{ g}$$

$$\begin{aligned} \text{Assume } S_o &= S_o - S \\ S_o = \text{bCOD} &= 480 \text{ g/m}^3 \end{aligned}$$

$$\text{Assume } \text{Nox} \approx 80\% \text{ of TKN} = 56.0 \text{ g/m}^3$$

$$\text{SRT} = 11.755285 \text{ days}$$

**H. Sludge Yield**

$$P_{X,TSS} = \frac{(V)(MLSS)}{SRT}$$

$$P_{X,TSS} = 220 \text{ lbs/day}$$

$$Q_{\text{Sludge}} = \frac{P_{X,TSS}}{8.34 \times \text{Percent Solids}}$$

Assume Percent Solids = 1.5 %

$$Q_{\text{sludge}} = 1,760 \text{ gal/day}$$

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
INTERIM PHASE II**

**I. Nitrification**

$$K_n \ln \frac{N_o}{N_t} + (N_o - N_t) = X_n \left( \frac{\mu_{mn}}{Y_n} \right) \left( \frac{DO}{k_o + DO} \right) t$$

No = Initial NH4-N concentration (mg/L)  
 Nt = NH4-N concentration at time t (mg/L)  
 Xn = Nitrifying bacteria concentration (mg/L)  
 DO = Dissolved Oxygen concentration = 4.0 mg/L

$$NO_x = TKN_o - N_e - 0.12 P_{x,bio} / Q$$

NOx = Nitrogen oxidized (mg/L)  
 TKN<sub>o</sub> = Influent TKN (mg/L)  
 Ne = Effluent NH4-N (mg/L)  
 P<sub>x,bio</sub> = Nitrogen in cell tissue

$$P_{x,bio} = \frac{QY(S_o - S)}{1 + (k_d)SRT} + \frac{QY_n(NO_x)}{1 + (k_{dn})SRT} + \frac{(f_d)(k_d)QY(S_o - S)SRT}{1 + (k_d)SRT}$$

Q = 200,000 gpd = 757.1 m<sup>3</sup>/day  
 S<sub>o</sub> - S = 480 g/m<sup>3</sup> (from SRT calculation)  
 Nox = 56.0 g/m<sup>3</sup> (from SRT calculation)  
 SRT = 11.755285 days  
 P<sub>x,bio</sub> = 83,146 g/day = 83.1 kg/day  
 NOx = 54.8 g/m<sup>3</sup>

$$P_{x,TSS} = \left( \frac{P_{x,BIO}}{0.85} \right) + Q \times (nbVSS) + Q \times (T_{SSo} - V_{SSo})$$

TSS<sub>o</sub> = 300 mg/l  
 VSS<sub>o</sub> = TSS<sub>o</sub> x MLVSS(%) = 210 mg/l  
 P<sub>x,TSS</sub> = 193.21 kg/day

$$V = \frac{(P_{x,TSS} \times SRT)}{MLSS}$$

Minimum Volume Required = 757.1 m<sup>3</sup> = 26,732.6 cf

**E. Nitrification**

pH: 7.2  
 DO (mg/L): 4.0 Dissolved Oxygen  
 K<sub>o</sub>: 0.5 Half-Saturation coefficient for DO (Metcalf & Eddy Table 8-11)  
 Temp (°C): 14.0  
 Effluent NH<sub>3</sub> (mg/L): 2.0

Temperature Term, Tt: 0.91  
 DO Term, DOT: 0.89  
 pH Term, pH: 1.00  
 K<sub>n</sub>: 0.36 Half-Saturation coefficient for oxidation of ammonia  
 NH<sub>3</sub> Term, NH<sub>3</sub>t: 0.85  
 Nitrifier Growth Rate (days<sup>-1</sup>): 0.34  
 Aerobic SRT Required (days): 2.93

Tt=e<sup>(0.098\*(T-15))</sup>  
 DOT=DO/(K<sub>o</sub>+DO)  
 pHt=1-0.833<sup>(7.2-pH)</sup>  
 Kn=10<sup>(0.051\*T-1.158)</sup>  
 NH3t=NH3/(Kn+NH3)  
 Growth Rate=0.5\*T\*pH\*DOT\*NH3t  
 SRT=1/Nitrifier Growth Rate

Safety Factor: 2.0 Typical Range: 1.5 - 2.5  
**Min Required Aerobic SRT (days): 5.9**  
**Minimum Aerobic Volume (cf): 6,884.91 For Nitrification**

**J. Clarifier**

Max Surface Loading: 1,200 gpd/sf at Peak Flow (TCEQ Chap. 217.154, Conventional, secondary enhanced)  
 Max Surface Loading: 600 gpd/sf at Design Flow  
 Min Detention Time: 1.8 hrs at Peak Flow  
 Min Detention Time: 3.6 hrs at Design Flow  
 Max Weir Loading: 20,000 gpd/lf at Peak Flow

**Minimum Surface Area: 667 sf**  
**Minimum Volume: 60,000 gallons = 8020.9 cf**  
**Minimum Weir Length: 40 lf**

**K. Return Activated Sludge**

**Minimum Rate: 50% of Design Flow = 69.4 gpm**  
**Maximum Rate: 100% of Design Flow = 138.9 gpm**

**Provide: 4 6" Air Lift Pumps or 2 8" Air Lift Pumps**

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
INTERIM PHASE II**

**L. Sludge Holding Basin**

Minimum SRT:	15 days
- SRT w/Treatment:	11.755285 days
Minimum Sludge Holding SRT:	3.2447146 days

Minimum Sludge Holding Detention Time: 7 days (for operations)

Minimum Sludge Holding Volume using SRT	12,321 gallons =	1,647.0 cf
Minimum Sludge Holding Volume using 20-cf/lbs BOD/Day	72,369 gallons =	9,674.4 cf

**Minimum Sludge Holding Volume: 72,369 gallons = 9,674.4 cf**

**M. Chlorine Contact Basin**

Minimum Detention Time: 20 minutes at Peak Flow

**Minimum Volume: 11,111.11 gallons = 1,485.3 cf**

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
INTERIM PHASE II**

**N. Aeration**

1. Aeration Basins

Minimum oxygen requirement = 3,200 scf per lb BOD<sub>5</sub> per day @ 10' submergence and 20 deg C

Diffuser Submergence Depth (ft)	Airflow Correction Factor
8	1.82
10	1.56
12	1.00
15	0.91
18	0.73
20	0.64

Diffuser Submergence Depth = 10 ft  
Correction Factor = 1.56

**Minimum oxygen requirement = 1,677 scfm @ 20 deg C**

2. Digester

Oxygen Requirement = 30 scfm per 1,000 ft<sup>3</sup>

**Minimum oxygen requirement = 461 scfm**

3. Air Lift Pumps

**Minimum air requirement = 140 scfm**

4. Other

Initial Mixing = 25 scfm

Post Aeration = 41.04 scfm (20 scfm per 1,000-cf)

**Minimum air requirement = 66.0432 scfm**

4. Total

**Total Air Flow Requirement = 2,344 scfm**  
Proposed Blower = 3,000 SCFM

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
INTERIM PHASE II**

**O. Fine Screen**

Bar Spacing:	0.25	in			
Average Flow Rate:	0.2	MGD			
Approximate Volume of Screenings:	13	cf/MG			
Anticipated Volume of Screenings:	2.6	cf per day		0.67	CY Per Week

**COARSE SCREEN (BYPASS/OVERFLOW BAR SCREEN)**

<b>Influent Flow Rate</b>								
Average Influent Flow Rate:	0.20	MGD	=	139	gpm	=	0.309	cfs
Peak Influent Flow Rate:	0.80	MGD	=	556	gpm	=	1.238	cfs

<b>Channel Geometry</b>			
Channel Width:	3.00	ft	
Design Channel Flow Depth:	0.2	ft	
Max. Channel Depth:	0.3	ft	

<b>Bar Rack Geometry</b>			
Bar Size:	0.250	in	
Clear Space Between Bars:	0.750	in	
Incline Angle:	45	degrees	
No. of Bars in Rack:	35		
Clear Space:	2.2708333	sf per ft of channel depth	

<b>Headloss thru Bar Screen</b>			
Channel Area (Avg):	0.5	sf	
Channel Area (Max):	1.0	sf	
Approach Velocity (Avg):	0.619	fps (using design channel depth)	
Approach Velocity (Peak):	1.238	fps (using max. channel depth)	
Bar Screen Area (Avg):	0.38	sf	
Bar Screen Area (Max):	0.76	sf	
Velocity Through Bars (Avg):	0.82	fps (using design channel depth)	
Velocity Through Bars (Max):	1.64	fps (using max. channel depth)	

$$HeadLoss = \frac{V^2 - v^2}{0.7 \times 2 \times g}$$

V= Velocity of flow through openings in rack  
v= Approach velocity  
g= Acceleration of gravity, 32.2

<i>Assuming No Clogging:</i>		<i>Assuming Clogging:</i>	
Head Loss (Design):	0.0063 ft	Clogging Factor:	0.500
Head Loss (Max):	0.0253 ft	Head Loss (Design):	0.025 ft
		Head Loss (Max):	0.101 ft

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
SLUDGE MANAGEMENT PLANT  
INTERIM II PHASE**

**Dimensions and Capacities of Sludge Holding**

Average Anticipated Sludge Yield:	1,760 gal/day	
Minimum Sludge Retention Time:	15 days	
SRT from Treatment Basins:	11.76 days	
Minimum SRT needed in Sludge Holding:	3.244715 days	
Prop Sludge Holding Basins:	114,936 gal =	15,365 cubic feet
Proposed Sludge Holding SRT:	65.30 days	
Total Proposed Sludge Retention Time:	77.06 days	

**Solids Generated**

BOD5 Removal	Influent concentration =	300 mg/l
	Effluent concentration =	10 mg/l
	Net removal =	290 mg/l

MLSS Operating Range = 3,000 mg/l

BOD5 removed	484 lbs/day
Dry Sludge Produced	220 lbs/day
Wet Sludge Produced*	147 lbs/day
Wet Sludge Produced*	1,760 gal/day

\*Assuming Percent Solids in Sludge: 1.5 % Solids

Length of Sustained Peak (days)	Peaking Factor	Waste Sludge Mass Loading (lbs/day)	Total Sustained Loading (lb)
1	2.4	528	528
2	2.1	462	925
3	1.9	418	1,255
4	1.8	396	1,585
5	1.7	374	1,872
7	1.65	363	2,543
14	1.32	291	4,069
15	1.3	286	4,294
365	1	220	80,368

**Process:**

Activated sludge process utilizing the conventional aeration mode will be utilized. Sludge will be wasted from the clarifiers to the sludge digester basin. Sludge will be hauled by a licensed hauler to a TCEQ registered disposal site.

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
FINAL PHASE**

**PARAMETERS**

<i>Influent:</i>			<i>Effluent:</i>		
Q =	400,000	GPD	S =	10	mg/l, BOD <sub>5eff</sub>
Q <sub>p1</sub> =	1,600,000	GPD to Headworks	TS <sub>Seff</sub> =	15	mg/l
Q <sub>p2</sub> =	1,600,000	GPD downstream of Infl EQ (N/A)	NH <sub>3</sub> N =	2	mg/l
S <sub>o</sub> =	300	mg/l, BOD <sub>5</sub> infl	Chlorine Residual =	1	mg/l @ 20 min det
TSS <sub>infl</sub> =	300	mg/l	Total Phosphorus =	1	mg/l
Chemical Oxygen Demand (COD) =	545	mg/l	.3-.8 (BOD/COD), used 0.55		
TKN =	70	mg/l			
NH <sub>3</sub> N =	45	mg/l			
Organic N <sub>14°C</sub> =	25	mg/l			
Winter Temp. Min. =	14	°C			
Summer Temp. Max. =	29	°C			
MLSS =	3,000	mg/l, conc. Of suspended solids in aeration tank			
MLVSS =	70	% of MLSS			
MLVSS (X) =	2100	mg/l, conc. Of volatile suspended solids in aeration tank			

**COEFFICIENTS**

θ <sub>c</sub> =	30	days, mean cell residence time
Y =	0.4	maximum yield coefficient, range: 0.3 - 0.5 (Metcalf & Eddy Table 8-10)
Y <sub>n</sub> =	0.12	g VSS / g NH <sub>4</sub> -N, range: 0.1 - 0.15 (Metcalf & Eddy Table 8-11)
K <sub>o</sub> =	0.5	g / m <sup>3</sup> , range: 0.40 - 0.60 (Metcalf & Eddy Table 8-11)
K <sub>d</sub> =	0.12	day <sup>-1</sup> , endogenous decay coefficient, range: 0.06 - 0.2 (Metcalf & Eddy Table 8-10)
K <sub>d</sub> =	1.04	unitless, range: 1.03 - 1.08 (Metcalf & Eddy Table 8-10)
K <sub>d, 14°C</sub> =	0.095	g/g*d
K <sub>dn</sub> =	0.080	g VSS / g VSS*d, range: 0.05 - 0.15 (Metcalf & Eddy Table 8-10)
K <sub>dn</sub> =	1.04	unitless, range: 1.03 - 1.08 (Metcalf & Eddy Table 8-11)
K <sub>dn, 14°C</sub> =	0.063	g/g*d
K <sub>n</sub> =	0.740	g NH <sub>4</sub> -N / m <sup>3</sup> , range: 0.5 - 1.0 (Metcalf & Eddy Table 8-11)
K <sub>n</sub> =	1.053	unitless, range: 1.03 - 1.123 (Metcalf & Eddy Table 8-11)
K <sub>n, 14°C</sub> =	0.543	g / m <sup>3</sup>
μ <sub>mn</sub> =	0.750	g VSS / g VSS*d, range: 0.20 - 0.90 (Metcalf & Eddy Table 8-11)
μ <sub>n</sub> =	1.070	unitless, range: 1.06 - 1.123 (Metcalf & Eddy Table 8-11)
μ <sub>m, 14°C</sub> =	0.500	g / g*d
f <sub>d</sub> =	0.150	unitless, range: 0.08 - 0.2 (Metcalf & Eddy Table 8-10)

**DESIGN CALCULATIONS**

**A. BOD<sub>5</sub> Loading**

$$F = \frac{8.34 \times Q \times (S_o - S)}{10^6}$$

F = **967.4** lb BOD<sub>5</sub> / day

**B. TSS Loading**

$$TSS = \frac{8.34 \times Q \times (TSS_{inf} - TSS_{eff})}{10^6}$$

TSS = **950.8** lb TSS / day

**C. Micro-organism Mass in Aeration Basin**

$$M_v = F \times \frac{\theta_c \times Y}{1 + (k_d \times \theta_c)}$$

M<sub>v</sub> = **2524** lb

**D. Aeration Volume**

$$V = \frac{Q \times \theta_c}{X} \times \frac{Y \times (S_o - S)}{1 + (k_d \times \theta_c)}$$

V = 144,099.38 gal  
19,263 cf

Max. Organic Loading: 35 lbs BOD<sub>5</sub>/day/1000 cf  
(TCEQ Chap. 217.154, Conventional)

V = 27,641 cf

**Minimum V = 27,641 cf**

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
FINAL PHASE**

**E. Wastewater Characteristics**

$$\begin{aligned} \text{bCOD} &= 1.6(\text{BOD}) = 480 \text{ mg/l (Biodegradable COD)} \\ \text{nbCOD} &= \text{COD} - \text{bCOD} = 65 \text{ mg/l (non-biodegradable COD)} \end{aligned}$$

$$\begin{aligned} \text{iTSS} &= \text{TSS} - \text{VSS} \\ \text{TSS} &= 300 \text{ mg/l} \\ \text{VSS} &= 210 \text{ mg/l} \\ \text{iTSS} &= 90 \text{ mg/l} \end{aligned}$$

$$\frac{\text{bpCOD}}{\text{pCOD}} = \frac{(\text{bCOD} \div \text{BOD}) \times (\text{BOD} - \text{sBOD})}{\text{COD} - \text{sCOD}}$$

sBOD: soluble BOD  
sCOD: soluble COD  
bpCOD: Biodegradable particulate COD  
pCOD: Particulate COD

$$\begin{aligned} \text{Assume: sCOD} &= 33\% \text{ of COD} = 180 \text{ mg/l} \\ \text{Assume: sBOD} &= 33\% \text{ of BOD} = 99 \text{ mg/l} \end{aligned}$$

$$\text{bpCOD/pCOD} = 0.88$$

$$\text{nbVSS} = \left[ 1 - \left( \frac{\text{bpCOD}}{\text{pCOD}} \right) \right] \times \text{BOD}$$

$$\text{nbVSS} = 36.0 \text{ mg/l (non-biodegradable VSS)}$$

**F. Sludge Retention Time**

$$(P_{X,TSS})SRT = \frac{QY(S_0 - S)SRT}{[1 + (k_d)SRT](0.85)} + Q(\text{nbVSS})SRT + \frac{QY_n(\text{NO}_x)SRT}{[1 + (k_{dn})SRT](0.85)} + \frac{(f_d)(k_d)Q(Y)(S_0 - S)SRT^2}{[1 + (k_d)SRT](0.85)} + Q(\text{TSS}_0 - \text{VSS}_0)SRT$$

$$(P_{X,TSS}) \times SRT = (V) \times (X_{MIS})$$

$$\begin{aligned} \text{XMLSS} &= 3,000 \text{ g/m}^3 \\ V &= 7,430 \text{ cf} = 210.41 \text{ m}^3 \end{aligned}$$

$$(P_{X,TSS})SRT = 631,216 \text{ g}$$

$$\begin{aligned} \text{Assume } S_0 &\approx S_0 - S \\ S_0 &= \text{bCOD} = 480 \text{ g/m}^3 \end{aligned}$$

$$\text{Assume } \text{No}_x \approx 80\% \text{ of TKN} = 56.0 \text{ g/m}^3$$

$$\text{SRT} = 11.755285 \text{ days}$$

**H. Sludge Yield**

$$P_{X,TSS} = \frac{(V)(MLSS)}{SRT}$$

$$P_{X,TSS} = 440 \text{ lbs/day}$$

$$Q_{\text{Sludge}} = \frac{P_{X,TSS}}{8.34 \times \text{Percent Solids}}$$

$$\text{Assume Percent Solids} = 1.5 \%$$

$$Q_{\text{sludge}} = 3,520 \text{ gal/day}$$

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
FINAL PHASE**

**I. Nitrification**

$$K_n \ln \frac{N_o}{N_t} + (N_o - N_t) = X_n \left( \frac{\mu_{mn}}{Y_n} \right) \left( \frac{DO}{k_o + DO} \right) t$$

No = Initial NH4-N concentration (mg/L)  
 Nt = NH4-N concentration at time t (mg/L)  
 Xn = Nitrifying bacteria concentration (mg/L)  
 DO = Dissolved Oxygen concentration = 4.0 mg/L

$$NO_x = TKN_o - N_e - 0.12 P_{x,bio} / Q$$

NOx = Nitrogen oxidized (mg/L)  
 TKNo = Influent TKN (mg/L)  
 Ne = Effluent NH4-N (mg/L)  
 Px,bio = Nitrogen in cell tissue

$$P_{x,bio} = \frac{QY(S_o - S)}{1 + (k_d)SRT} + \frac{QY_n(NO_x)}{1 + (k_{dn})SRT} + \frac{(f_d)(k_d)QY(S_o - S)SRT}{1 + (k_d)SRT}$$

Q = 400,000 gpd = 1,514.2 m<sup>3</sup>/day  
 So - S = 480 g/m<sup>3</sup> (from SRT calculation)  
 Nox = 56.0 g/m<sup>3</sup> (from SRT calculation)  
 SRT = 11.7552854 days  
 Px,bio = 166,291 g/day = 166.3 kg/day  
 NOx = 54.8 g/m<sup>3</sup>

$$P_{x,TSS} = \left( \frac{P_{x,BIO}}{0.85} \right) + Q \times (nbVSS) + Q \times (T_{SSo} - V_{SSo})$$

TSSo = 300 mg/l  
 VSSo = TSSo x MLVSS(%) = 210 mg/l  
 Px,TSS = 386.42 kg/day

$$V = \frac{(P_{x,TSS} \times SRT)}{MLSS}$$

Minimum Volume Required = 1,514.2 m<sup>3</sup> = 53,465.1 cf

**E. Nitrification**

pH: 7.2  
 DO (mg/L): 4.0 Dissolved Oxygen  
 Ko: 0.5 Half-Saturation coefficient for DO (Metcalf & Eddy Table 8-11)  
 Temp (°C): 14.0  
 Effluent NH3 (mg/L): 2.0

Temperature Term, Tt: 0.91 Tt=e<sup>(0.098\*(T-15))</sup>  
 DO Term, DOt: 0.89 DOt=DO/(Ko+DO)  
 pH Term, pHt: 1.00 pHt=1-0.833<sup>(7.2-pH)</sup>  
 Kn: 0.36 Half-Saturation coefficient for oxidation of ammonia Kn=10<sup>(0.051\*T-1.158)</sup>  
 NH3 Term, NH3t: 0.85 NH3t=NH3/(Kn+NH3)  
 Nitrifier Growth Rate (days<sup>-1</sup>): 0.34 Growth Rate=0.5\*Tt\*pHt\*DOt\*NH3t  
 Aerobic SRT Required (days): 2.93 SRT=1/Nitrifier Growth Rate

Safety Factor: 2.0 Typical Range: 1.5 - 2.5  
**Min Required Aerobic SRT (days): 5.9**  
**Minimum Aerobic Volume (cf): 13,769.82 For Nitrification**

**J. Clarifier**

Max Surface Loading: 1,200 gpd/sf at Peak Flow (TCEQ Chap. 217.154, Conventional, secondary enhanced)  
 Max Surface Loading: 600 gpd/sf at Design Flow  
 Min Detention Time: 1.8 hrs at Peak Flow  
 Min Detention Time: 3.6 hrs at Design Flow  
 Max Weir Loading: 20,000 gpd/lf at Peak Flow

**Minimum Surface Area: 1,333 sf**  
**Minimum Volume: 120,000 gallons = 16041.7 cf**

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
FINAL PHASE**

Minimum Weir Length: 80 lf

**K. Return Activated Sludge**

<b>Minimum Rate:</b>	50% of Design Flow =	138.9	gpm	
<b>Maximum Rate:</b>	100% of Design Flow =	277.8	gpm	
<b>Provide:</b>	7	6" Air Lift Pumps or	4	8" Air Lift Pumps

**L. Sludge Holding Basin**

Minimum SRT:	15 days
- SRT w/Treatment:	11.755285 days
Minimum Sludge Holding SRT:	3.2447146 days

Minimum Sludge Holding Detention Time: 7 days (for operations)

Minimum Sludge Holding Volume using SRT	24,641 gallons =	3,294.0 cf
Minimum Sludge Holding Volume using 20-cf/lbs BOD/Day	144,739 gallons =	19,348.8 cf

**Minimum Sludge Holding Volume: 144,739 gallons = 19,348.8 cf**

**M. Chlorine Contact Basin**

Minimum Detention Time: 20 minutes at Peak Flow

**Minimum Volume: 22,222.22 gallons = 2,970.7 cf**

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
FINAL PHASE**

**N. Aeration**

1. Aeration Basins

Minimum oxygen requirement = 3,200 scf per lb BOD<sub>5</sub> per day @ 10' submergence and 20 deg C

Diffuser Submergence Depth (ft)	Airflow Correction Factor
8	1.82
10	1.56
12	1.00
15	0.91
18	0.73
20	0.64

Diffuser Submergence Depth = 10 ft  
Correction Factor = 1.56

**Minimum oxygen requirement = 3,354 scfm @ 20 deg C**

2. Digester

Oxygen Requirement = 30 scfm per 1,000 ft<sup>3</sup>

**Minimum oxygen requirement = 691 scfm**

3. Air Lift Pumps

**Minimum air requirement = 245 scfm**

4. Other

Initial Mixing = 25 scfm  
Post Aeration = 82.09 scfm (20 scfm per 1,000-cf)

**Minimum air requirement = 107.0864 scfm**

4. Total

**Total Air Flow Requirement = 4,397 scfm**  
Proposed Blower = 3,000 SCFM

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
FINAL PHASE**

**O. Fine Screen**

Bar Spacing:	0.25	in		
Average Flow Rate:	0.4	MGD		
Approximate Volume of Screenings:	13	cf/MG		
Anticipated Volume of Screenings:	5.2	cf per day	1.35	CY Per Week

**COARSE SCREEN (BYPASS/OVERFLOW BAR SCREEN)**

Influent Flow Rate

Average Influent Flow Rate:	0.40	MGD	=	278	gpm	=	0.619	cfs
Peak Influent Flow Rate:	1.60	MGD	=	1111	gpm	=	2.476	cfs

Channel Geometry

Channel Width:	3.00	ft
Design Channel Flow Depth:	0.2	ft
Max. Channel Depth:	0.3	ft

Bar Rack Geometry

Bar Size:	0.250	in
Clear Space Between Bars:	0.750	in
Incline Angle:	45	degrees
No. of Bars in Rack:	35	
Clear Space:	2.2708333	sf per ft of channel depth

Headloss thru Bar Screen

Channel Area (Avg):	0.5	sf
Channel Area (Max):	1.0	sf
Approach Velocity (Avg):	1.238	fps (using design channel depth)
Approach Velocity (Peak):	2.476	fps (using max. channel depth)
Bar Screen Area (Avg):	0.38	sf
Bar Screen Area (Max):	0.76	sf
Velocity Through Bars (Avg):	1.64	fps (using design channel depth)
Velocity Through Bars (Max):	3.27	fps (using max. channel depth)

$$HeadLoss = \frac{V^2 - v^2}{0.7 \times 2 \times g}$$

V= Velocity of flow through openings in rack  
v= Approach velocity  
g= Acceleration of gravity, 32.2

<i>Assuming No Clogging:</i>		<i>Assuming Clogging:</i>	
Head Loss (Design):	0.0253 ft	Clogging Factor:	0.500
Head Loss (Max):	0.1013 ft	Head Loss (Design):	0.101 ft
		Head Loss (Max):	0.405 ft

**GREEN VALLEY SUD  
PRELIMINARY DESIGN CALCULATIONS  
SLUDGE MANAGEMENT PLANT  
FINAL PHASE**

**Dimensions and Capacities of Sludge Holding**

Average Anticipated Sludge Yield:	3,520 gal/day	
Minimum Sludge Retention Time:	15 days	
SRT from Treatment Basins:	11.76 days	
Minimum SRT needed in Sludge Holding:	3.244715 days	
Prop Sludge Holding Basins:	172,405 gal =	23,047 cubic feet
Proposed Sludge Holding SRT:	48.98 days	
Total Proposed Sludge Retention Time:	60.73 days	

**Solids Generated**

BOD5 Removal	Influent concentration =	300 mg/l
	Effluent concentration =	10 mg/l
	Net removal =	290 mg/l

MLSS Operating Range = 3,000 mg/l

BOD5 removed	967 lbs/day
Dry Sludge Produced	440 lbs/day
Wet Sludge Produced*	294 lbs/day
Wet Sludge Produced*	3,520 gal/day

\*Assuming Percent Solids in Sludge: 1.5 % Solids

Length of Sustained Peak (days)	Peaking Factor	Waste Sludge Mass Loading (lbs/day)	Total Sustained Loading (lb)
1	2.4	1,057	1,057
2	2.1	925	1,850
3	1.9	837	2,510
4	1.8	793	3,171
5	1.7	749	3,743
7	1.65	727	5,086
14	1.32	581	8,138
15	1.3	572	8,587
365	1	440	160,736

**Process:**

Activated sludge process utilizing the conventional aeration mode will be utilized. Sludge will be wasted from the clarifiers to the sludge digester basin. Sludge will be hauled by a licensed hauler to a TCEQ registered disposal site.

Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

## Attachment H: Service Agreement

## GREEN VALLEY SPECIAL UTILITY DISTRICT WASTEWATER NON-STANDARD SERVICE AGREEMENT

THIS AGREEMENT is made and entered into by and between SA State of Love and Trust, LLC, hereinafter referred to as "Developer," and Green Valley Special Utility District, hereinafter referred to as "GVSUD."

WHEREAS, Developer is engaged in developing that certain approximately two hundred and forty three (243) acres of land located southwest of FM 2538 and approximately 0.23 miles northwest of the intersection of Real Rock Road in Bexar County, Texas, more particularly known or to be known as the Clearwater Creek subdivision, said land being hereinafter referred to as "the Property" and identified by full legal description on Exhibit "A" attached hereto and incorporated herein for all purposes; and

WHEREAS, GVSUD owns and operates a sewer system which collects, treats, and disposes of waterborne waste within its state-certificated service area certificate of convenience and necessity No. 20973; and

WHEREAS, Developer is planning to develop over seven phased units; for a total of 950 residential lots at full buildout, and

WHEREAS, Developer has requested GVSUD to provide such sewer service to the Property through an extension of GVSUD's sewer system, such extension being hereinafter referred to as the "Sewer System Extension";

NOW THEREFORE: KNOW ALL MEN BY THESE PRESENTS: THAT for and in consideration for the mutual promises hereinafter expressed, and other good and valuable consideration, the sufficiency of which is hereby acknowledged by the parties, Developer and GVSUD agree as follows:

1. Application for Service

GVSUD is the holder of the CCN for both water and sewer services to the Property. To ensure the orderly development of both utility services and to prevent a landowner from connecting to sewer service without the knowledge of GVSUD, the customer (or their builder/contractor) must apply for both water and sewer utility services at the same time. Water service will not be provided to an individual tract until a sewer service application has been made. An exception to this rule shall be made only for irrigation meters or other water services to premises that will not produce waterborne waste, such as a swimming pool.

2. Engineering and Design of the Sewer System Extension.

(a) Entire Sewer System

The "Sewer System" consists of (1) the On-Site Collection System and (2) the Off-Site Treatment System, defined below, and shall be designed and constructed to provide tariffed non-standard wastewater utility service to the Property. The Sewer System shall be engineered in accordance with the applicable specifications of the GVSUD and all governmental agencies having jurisdiction. The non-standard sewer service requirements of the Property are set forth on that certain Wastewater Service Feasibility Study for the Clearwater Creek Subdivision attached hereto as "Exhibit "B" and incorporated herein for all purposes. The Sewer System must be sized to provide continuous and adequate sewer service to the property based on plans for the development of the Property provided to GVSUD by the Developer. In the absence of a necessary term or in the event of conflict with any provision in this general Agreement, the terms in Exhibit "B" shall control. Developer and GVSUD recognize that the plans for the proposed subdivision to be located on the Property have not been finalized and that the specific terms of Exhibit "B" are subject to revision to reflect the actual final service requirements for the Property. After completion of the plans and specifications by GVSUD's consulting engineers and confirmation that they are consistent with the requirements of this Agreement to serve the Property, the plans and specifications shall become part of this Agreement by reference and shall more particularly define the "Sewer System."

(b) On-Site Collection System.

The sewer collection lines, sewer service lines, and related portions of the collection system infrastructure within the boundaries of the Property (the "On-Site Collection System") shall be engineered and designed by Developer's consulting engineer, which engineer shall be responsible for overseeing the construction of the Collection system under the applicable rules of the Texas Commission on Environmental Quality ("TCEQ") and the Texas Board of Professional Engineers ("TBPE"). All engineering and designs for the Collection System must be reviewed and approved by GVSUD's consulting engineer prior to the commencement of any utility system construction on the Property. A description of Property-specific required infrastructure is listed below. Any changes made to the infrastructure or design must be approved by GVSUD.

The Developer shall construct, at its expense, all of the sewer utility collection system within the Clearwater Creek Subdivision necessary to provide public utility services as described in Exhibit "B." The Developer shall bear all costs of such design and construction and shall guarantee the infrastructure additions for one calendar year after they are placed into commercial operation by GVSUD. The Developer shall also reimburse GVSUD for all costs incurred by the District in having GVSUD's engineers review and oversee the Developer's plans and construction.

(c) Off-Site Treatment System.

The Off-Site Treatment System shall initially consist of Phase I of a wastewater treatment plant, as further specified in Exhibit B, to be located on a parcel of land of approximately five acres to be conveyed by Developer to GVSUD in fee simple or by a permanent exclusive easement. The Off-Site Treatment System shall also consist of all pump stations, site preparation and improvements reasonably required to operate the wastewater treatment plant as specified in Exhibit B. The Off-Site Treatment System shall be engineered and designed by GVSUD's consulting engineer, which GVSUD engineer shall also be responsible for overseeing the construction of the Collection System under the applicable TCEQ and TBPE rules. All engineering and designs for the On-Site Collection and Off-Site Treatment Systems must be reviewed and approved by GVSUD's consulting engineer prior to the issuance of any request for bids for the construction of the Sewer System Extension and the commencement of any utility system construction on the Property. After completion of the plans and specifications by the Developer's and GVSUD's consulting engineers and their approval by the GVSUD's consulting engineer, the plans and specifications shall become part of this Agreement by reference and shall more particularly define "the Sewer System Extension."

(d) Oversizing.

GVSUD may require the Sewer System Extension to be oversized in anticipation of the needs of other customers of the GVSUD, subject to the obligation to reimburse the Developer for any such oversizing as provided below. GVSUD will be responsible for the costs of any oversizing not required to provide service to the Property.

(e) Cost Changes.

Due to the variable market for needed materials and supplies, quotations for the cost of construction of utility plant and/or upgrades that will be necessary to meet the service demands of the service application shall be good only for the date of presentation by GVSUD's engineer and/or contractor. For purposes of this Agreement, the "date of presentation" means the date the quotations and Sewer System Extension plans were presented to and approved by GVSUD's Board of Directors. Following the date of presentation, materials and supplies for construction may include an adjustment to reflect current market prices if such changes are found reasonable and approved in writing by GVSUD's consulting engineer. All costs of change orders or other modifications of the engineered design and/or TCEQ-approved plans shall be borne by Developer unless such changes or modifications are made at GVSUD's request for the sole benefit of other GVSUD customers.

3. Required Easements or Rights-of-Way.

Developer shall be responsible for dedicating or acquiring any easements inside the Property at its cost which are necessary for the construction of the Sewer System Extension and for obtaining any Governmental approvals necessary to construct the Sewer System Extension in public right-of-way. All easements must be private, exclusive, and permanent. If Developer cannot obtain any easement identified by GVSUD as necessary, Developer may request GVSUD to exercise its statutory powers of eminent domain to obtain such easement(s). Developer shall bear all costs related to such condemnation proceedings, including all consideration and litigation costs of the condemnee. GVSUD may require Developer to escrow all such projected costs before initiating any condemnation actions for Developer's benefit. By requesting GVSUD to initiate a condemnation of private property, Developer acknowledges and consents to any delays to final provision of retail public water and sewer utility service to the Property occasioned by Developer's failure to independently provide GVSUD with necessary easement(s).

All pipeline easements assigned to GVSUD hereunder shall be (and not less than) 20-feet in width. The pipeline easement(s) shall be located on private property along a route that best facilitates the most reliable and efficient operation of the Sewer System Extension. If such optimal route adversely affects Grantee, Developer may request an alternate course of the easement except that when the pipeline(s) or plant is installed, the easement herein granted shall be limited to a strip of land 20-feet in width. GVSUD's consulting engineer shall have the final decision on where any easement must be located.

If necessary, for the optimum provision of both water and sewer services, the 20-foot easement may be used for the installation of both water and sewer lines. If this is done, the distance between the water and sewer lines as installed must be at least 1.25x the minimum spacing requirements set forth in TCEQ's rules (30 TAC §290(d)). If additional easements are necessary to accommodate this spacing requirement, the easement granted to GVSUD shall be increased accordingly to ensure the protection of the public drinking water supply.

There shall be a construction easement of equal width parallel and adjacent with said easement for the period necessary to construct and test public utility pipelines and such other utility plant with the easement. ~~After the newly constructed pipeline, utility plant or other facilities have been constructed and placed into commercial operation, this construction easement shall terminate. Thereafter the easement shall be only 20-feet in width.~~

If continuous and adequate retail public sewer utility service to the Property requires the construction of new Off-Site Treatment System facilities, as indicated in Exhibit B, Developer shall provide GVSUD with all the sites necessary to construct and operate such facilities. The site(s) shall be conveyed in fee or, with GVSUD's consent, by exclusive permanent recorded easement. Developer shall also provide GVSUD with all pipeline, utility, ingress/egress and sanitary control

easements identified by GVSUD's consulting engineer and attorney as necessary to the use of said site(s) for sewer utility purposes. All ingress/egress easements shall be sufficient to construct and maintain an all-weather road from the site(s) to the nearest public road.

Any easements acquired by the Developer shall be assigned to GVSUD upon proper completion of the construction of the Sewer System Extension. GVSUD's attorney must approve the validity of the legal instruments by which the Developer acquires any such easements and by which Developer assigns such easements to GVSUD. Developer shall be responsible for obtaining, at its expense, any consent or release required by any person or entity having a lien or other security interest in the easement or real property to be encumbered by said easement(s).

#### 4. Term of Contract and Connection Fees

Execution of this Agreement shall bind the parties for a period of five calendar years. If Developer has performed its obligations hereunder, the term of this Agreement shall continue until performance is completed. If Developer has not performed its obligations hereunder, then GVSUD may extend the Agreement after the initial five-year term at its sole option and under such terms and conditions as the District deems appropriate at that time. If the full service requested and contracted for is not into commercial operation at the end of this five-year term, as such term may be extended, those service capacities are forfeited by the Developer and may be used without reimbursement or compensation by GVSUD to serve other properties within its service area. Connection Fees shall be paid prior to construction of the sewer infrastructure.

The connection fees to be paid shall be fees included in GVSUD's Operating Policy (Tariff) on the date of payment. Fees shall not be "grandfathered."

#### 5. Construction of the Sewer System Extension.

##### (a) Off-Site Treatment System

GVSUD's consulting engineer, at Developer's expense, shall advertise for bids for the construction, if any needed, of the Off-Site Treatment System in accordance with generally accepted bidding practices and shall award the contract for the construction of the Off-Site Transportation System subject to the approval of GVSUD's Board of Directors. If Developer has a contractor he desires to construct the Off-Site Transportation System, Developer's designated contract shall have a right to bid on the construction contract; however, this right to bid shall in no way assure Developer or his designated Contractor that GVSUD's Board will select that bid. GVSUD may reject any bid, contractor or subcontractor. No construction will commence until plans and specifications for the Off-Site Treatment System have been submitted to and approved by the TCEQ and any other required regulatory agency, as may be required by law. GVSUD shall have

no liability of any kind to Developer occasioned by delays or difficulties in obtaining any required governmental approvals, permits, licenses or certificates. GVSUD's consulting engineer shall also prepare and file a Texas Pollutant Discharge Elimination System permit application with the TCEQ as further specified in Exhibit B.

(b) On-Site Collection System

(1) Developer shall select his own contractor for the construction of the On-Site Collection System, subject to GVSUD's right to reject such selection if GVSUD, its consulting engineer or its attorney has had unacceptable prior experience with said contractor and/or his work. If GVSUD rejects Developer's designated contractor, Developer shall be authorized to select another contractor or to request GVSUD to obtain a suitable contract through the same bid procedures to be used on the Off-Site Transportation System. No construction of the On-Site Collection System will commence until plans and specifications for the On-Site Collection System have been submitted to and approved by the TCEQ and any other required regulatory agency, as may be required by law. GVSUD shall have no liability of any kind to Developer occasioned by delays or difficulties in obtaining any required governmental approvals, permits, licenses, certificates or contractor acceptable to both GVSUD and Developer. GVSUD shall have no liability whatsoever for the acts and omissions of Developer, his engineer(s), his contractor(s) or his subcontractor(s). GVSUD shall have no liability or responsibility to third persons for the materials and supplies used by Developer. Developer's liability or responsibility to GVSUD for the materials and supplies used shall be limited to the one-year warranty. Developer shall be responsible and liable for the safety of the work site and the preservation of materials and equipment related to the Collection System. Developer shall hold GVSUD harmless for any claims, demands, suits or causes of action related to the Developer-constructed Collection System. Developer shall indemnify GVSUD for all expenses or damages incurred by GVSUD, including attorney and litigation costs, related to the Developer-constructed On-Site Collection System. All rights and protections of GVSUD in this Paragraph shall be extended to GVSUD's directors, officers, employees, attorney(s), engineer(s), contractor(s), and subcontractor(s).

(2) ~~The On-Site Collection System shall be constructed in accordance with the approved plans and specifications. GVSUD shall have the right to inspect all phases of the construction of the On-Site Collection System. Developer must give written notice to GVSUD of the date on which construction of the On-Site Collection System is scheduled to begin so that GVSUD may assign an inspector. GVSUD may charge reasonable inspection fees based on the actual costs of labor, travel and incidental expenses of the inspectors.~~

6. Dedication of Sewer System Extension to GVSUD.

Upon proper completion of construction of the Sewer System Extension and final inspection thereof by GVSUD, the Sewer System Extension shall be dedicated to the GVSUD by an appropriate legal instrument approved by GVSUD's Attorney. Developer shall bear any costs of remediation or rehabilitation necessary to bring the Sewer System Extension into compliance with all state, federal, and GVSUD standards before acceptance by GVSUD. GVSUD shall have the sole decision of when the Sewer System Extension is acceptable. The Sewer System Extension shall thereafter be owned and maintained by GVSUD; however, Developer shall warrant the construction and suitability of the same for a period of one (1) calendar year and shall bear all costs of repairs and improvements during this warranty period.

7. Subdivision Restrictions.

Developer shall create and enforce permanent and irrevocable subdivisions deed, plat or other restrictions and/or covenants running with the land that shall prohibit the construction of onsite sewage facilities including septic systems, private potable water systems or water wells within the subdivision.

8. Cost of the Sewer System Extension.

(a) Developer shall pay all costs associated with the Sewer System Extension as identified on Exhibit B and as modified to reflect actual costs as a contribution in aid of construction, including without limitation to the cost of the following:

- (1) engineering and design;
- (2) easement or right-of-way acquisition;
- (3) construction;
- (4) inspection;
- (5) attorneys' fees;
- (6) governmental or regulatory approvals required to lawfully provide service.

Developer shall indemnify GVSUD and hold GVSUD harmless from all the foregoing costs.

(c) Payment of Contribution in Aid of Construction:

- (1) A Non-Standard Service Investigation Fee in an amount set by the GVSUD's General Manager, in consultation with the GVSUD's consulting engineer

and counsel, shall be paid by cashier's check payable to the GVSUD at the time of initial application for service.

(2) With the exception of funds required for Phase I the Off-Site Treatment System as specified in Exhibit B, which shall be paid pursuant to Section 8(c)(3) of this Agreement, contributions in aid of construction shall be paid at the time that each subsequent phased unit of the Clearwater Creek development is platted.

(3) Developer shall pay into escrow 50 percent of the costs of Phase I of the wastewater treatment system at the time of construction contract award and shall pay into escrow the remaining 50 percent of said costs when the available escrowed funds fall below 10 percent of the total cost of the wastewater treatment plant. These funds shall be escrowed in an interest bearing, federally insured, account in a state chartered bank located in Guadalupe County, Texas within thirty (30) days of the acceptance of construction bid(s) by GVSUD. The account shall be in the name of and under the sole control of the GVSUD. Interest accrued thereon shall be retained in the account for the benefit of the Developer. All escrow and other charges associated with the creation and maintenance of this account shall be borne by Developer. If the amount of the funds to be escrowed exceeds \$100,000, the bank shall provide suitable collateral in the form of United States or State of Texas treasury bonds, bills or certificates of obligation suitable as collateral under the Texas Public Funds Investment Act said collateral to be held by an agent acceptable to GVSUD. Because the wastewater treatment system is anticipated to be built in phases as additional units of the Clearwater Creek development are constructed, the parties may establish and utilize a single escrow account. All funds remaining in the escrow account at the expiration of the Developer's one-year warranty of the Sewer System Extension (or the final warranty year if phased unit development and construction is followed) shall be refunded to Developer. The estimated amount of contributions in aid of construction for the Property on a per-EDU basis shall be recalculated based on the results of bid pricing for the first phase of the treatment plant and the amount of contribution in aid of construction for future phases of the treatment plant and future units of the Clearwater Creek development shall be determined prior to the commencement of construction for those subsequent phases. Failure to deliver the funds to the GVSUD's business offices within the applicable 30-day period shall void the application for non-standard service and the Developer shall have to reapply and repay all applicable Non-Standard Service Investigation Fees. Upon timely delivery of these funds to the selected bank, GVSUD shall authorize construction to commence.

(4) Developer shall pay to the District on a quarterly basis beginning within 30 days of execution of this Agreement the estimated wastewater treatment plant design costs of GVSUD's consulting engineer as reflected in said engineer's written estimate provided to the developer.

(d) Except for the one-year warranty provide in the Agreement, nothing herein shall be construed as obligating the Developer to maintain the Sewer System Extension subsequent to its dedication and acceptance for maintenance by GVSUD and the expiration of the warranty period.

(e) If the Developer requests GVSUD to install active service connections at service locations during the construction of the On-Site Collection System infrastructure, Developer shall pay the normal monthly service rates for each connection beginning with the date of installation. Failure to timely pay the service charges for any individual service connection shall be grounds for discontinuance and/or refusal of service for all other service connection held by Developer.

9. Service from the Sewer System Extension.

(a) After proper completion and dedication of the Sewer System Extension to GVSUD, GVSUD shall provide continuous and adequate sewer service to the Property under the requirements of GVSUD's state-issued certificate of convenience and necessity, PUC regulations and all duly adopted rules and regulations of GVSUD and payment of the following:

(1) All standard rates, fees and charges as reflected in GVSUD's approved Operating Policy;

(2) Any applicable connection, impact or capital recovery fee adopted by GVSUD;

(3) Any applicable reserved service charge adopted by GVSUD.

(b) Unless the prior approval of GVSUD is obtained, the Developer shall not:

(1) construct or install additional sewer lines or facilities to service areas outside the Property;

(2) add any additional lands to the Property for which sewer service is to be provided pursuant to this agreement; or

(3) connect or serve any person or entity who, in turn, sells sewer service directly or indirectly to another person or entity.

10. Effect of Force Majeure.

In the event either party is rendered unable by force majeure to carry out any of its obligations under this Agreement, in whole or in part, then the obligations of that party, to the extent affected by the force majeure shall be suspended during the continuance of the inability, provided however, that due diligence is exercised to resume performance at the earliest practical time. As soon as reasonably possibly

after the occurrence of the force majeure relied upon to suspend performance, the party whose contractual obligations are affected thereby shall give notice and full particulars of the force majeure to the other party.

The cause, as far as possible, shall be remedied with all reasonable diligence. The term "force majeure" includes acts of God, strikes, lockouts or other industrial disturbances, acts of the public enemy, orders of the government of the United States or the State of Texas or any civil or military authority, insurrections, riots, epidemics, landslides, lightning, earthquakes, fires, hurricanes, storms, floods, washouts, droughts, arrests, restraints of government and civil disturbances, explosions, breakage, or accidents to equipment, pipelines, or canals, partial or complete failure of water supply, and any other inability's of either party, whether similar to those enumerated or otherwise, that are not within the control of the party claiming the inability and that could not have been avoided by the exercise of due diligence and care. It is understood and agreed that the settlement or strikes and lockouts shall be entirely within the discretion of the party having the difficulty and that the requirement that any force majeure be remedied with all reasonable dispatch shall not require the settlement of strikes and lockouts by acceding to the demands of the opposing party if the settlement is unfavorable to it in the judgment of the party having the difficulty.

11. Notices.

Any notice to be given hereunder by either party to the other party shall be in writing and may be affected by personal delivery or by sending said notices by registered or certified mail, return receipt requested, to the address set forth below. Notice shall be deemed given when deposited with the United States Postal Service with sufficient postage affixed. Any notice mailed to the GVSUD shall be addressed:

Green Valley Special Utility District  
Attn: General Manager  
P O Box 99  
Marion, Texas 78124  
Fax (830) 420-4138

with copy to:

Shan Rutherford  
Terrill & Waldrop  
810 West 10<sup>th</sup> Street  
Austin, Texas 78701  
Fax (512) 474-9888

Any notice mailed to Developer shall be addressed:

SA State of Love and Trust, LLC Attn: Tom Yantis, Sr.

6812 West Ave Ste 100, San Antonio, Texas 78213

With copy to:

James H. Barrow  
Law Offices of James H. Barrow, PLLC  
1027 Austin Highway, Suite 120  
San Antonio, Texas 78209

Either party may change the address for notice to it by giving notice of such change in accordance with the provisions of this paragraph.

12. Severability.

The provisions of this Agreement are severable, and if any word, phrase, clause, sentence, paragraph, section, or other part of this Agreement or the application thereof to any person or circumstance shall ever be held by any court of competent jurisdiction to be invalid or unconstitutional for any reason, the remainder of this Agreement and the application of such word, phrase, clause, sentence, paragraph, section, or other part of this Agreement to other persons or circumstances shall not be affected thereby and this Agreement shall be construed as if such invalid or unconstitutional portion had never been contained therein.

13. Entire Agreement.

This Agreement, including any exhibits attached hereto and made a part hereof, constitutes the entire agreement between the parties relative to the subject matter of this Agreement. All prior agreements, covenants, representations, or warranties, whether oral or in writing, between the parties are merged herein.

14. Amendment.

No amendment of this Agreement shall be effective unless and until it is duly approved by each party and reduced to a writing signed by the authorized representatives of the GVSUD and the Developer, respectively, which amendment shall incorporate this Agreement in every particular not otherwise changed by the amendment.

15. Governing Law.

This Agreement shall be construed under and in accordance with the laws of the State of Texas and all obligations of the parties are expressly deemed performable within the state-certificated service area of GVSUD.

16. Venue.

Venue for any civil suit arising hereunder shall be in Guadalupe County, Texas. Venue for any administrative law action arising hereunder shall be vested in the PUC and the appropriate courts of Travis County, Texas.

17. Successors and Assigns.

This Agreement shall be binding on and shall inure to the benefit of the heirs, successors and assigns of the parties.

18. Assignability.

The rights and obligations of the Developer hereunder may not be assigned without the prior written consent of the GVSUD except in the event of assignment to a publicly traded builder, in which event no consent shall be required. GVSUD may assign this Agreement to any other retail public utility authorized by the PUC to serve the Property.

19. Effective Date.

This Agreement shall be effective from and after the date of due execution by all parties.

20. Conflict.

In the event there is determined to be a conflict between the terms of this Agreement and the provisions in GVSUD's Operating Policy governing the same matter, GVSUD's Operating Policy shall prevail.

IN WITNESS WHEREOF each of the parties has caused this Agreement to be executed by its duly authorized representative in multiple copies, each of equal dignity, on the date or dates indicated below.

GVSUD

DEVELOPER

SA State of Love and Trust, LLC

By: Jill Bennett  
Date: 2/26/2020

By: [Signature], MEMBER  
Date: 5/5/20

GREEN VALLEY SPECIAL UTILITY DISTRICT  
WASTEWATER NON-STANDARD SERVICE AGREEMENT

Exhibit "A" – Legal Description of the "Property"



**FIELDNOTE DESCRIPTION of a 242 acre tract of land situated in the E. Gortari Survey No. 2, Abstract 5 and the M.J. Rodriguez Survey No. 3, Abstract 17, Bexar County, Texas and consisting of a 28.7 acre tract of land conveyed unto L. Prentiss Cammack, et al by warranty deed recorded in Volume 12619, Page 1231, Bexar County Real Property Records, a 33.98 acre tract conveyed unto the same by warranty deed recorded in Volume 5422, Page 671, said Real Property Records, a 90.216 acre tract of land conveyed unto the same by warranty deed recorded in Volume 9621, Page 227, said Real Property Records, and an 89.3 acre tract conveyed unto Michael Amy by warranty deed recorded in Volume 10292, Page 1088, said Real Property Records; in all, said 242 acre tract being more particularly described as follows:**

**BEGINNING** at a ½" iron rod found on the southwest right-of-way line of FM 2538 (an 80' wide state highway) coincident with the common east corner of a 1.147 acre tract of land conveyed unto L. Prentiss Cammack by warranty deed recorded in Volume 17914, Page 1034, said Real Property Records and the north corner of said 28.7 acre tract for a north corner and **POINT OF BEGINNING** of the herein described tract of land;

**THENCE**, along the southwest line of said FM 2538, South 70° 29' 32" East, 1,654.77 feet to a calculated point for the common north corner of a 57.736 acre tract as shown by court order to Pamela Suzanne Luensmann Griffin recorded in Volume 16626, Page 2397, said Real Property Records and the east corner of said 28.7 acre tract for the easternmost corner of the herein described tract of land from whence a TXDOT Type I concrete monument bears South 70° 29' 32" East, 57.01 feet;

**THENCE**, along the northwest line of said 57.736 acre tract, South 60° 00' 34" West, at 1,523.03 feet pass a 1" iron pipe found at the east corner of said 89.3 acre tract, at approximately 2,176 feet pass the north corner of an 88.176 acre tract conveyed unto Alvin H. and Josephine Koepp by warranty deed recorded in Volume 6200, Page 1851, said Real Property Records, in all, a total distance of 3,845.07 feet to a ½" iron rod found at the common south corner of said 89.3 acre tract and the east corner of said 90.216 acre tract for an angle point in the southeast line of the herein described tract of land;

**THENCE**, continuing along said southeast line, South 59° 55' 18" West, 2,281.99 feet to a fence corner post found on the northeast line of a 59.76 acre tract of land conveyed unto Michael William Elliot, et al by warranty deed recorded in Volume 15176, Page 673, said Real Property Records coincident with the west corner of said 90.216 acre tract and the southernmost corner of the herein described tract of land;

**THENCE**, along the northeast line of said 59.76 feet, North 29° 54' 52" West, at 240.89 feet pass a ¼" iron rod found at the east corner of a 10 acre tract conveyed unto Paula L. Maples by affidavit of heirship recorded in Volume 13007, Page 833, said Real Property Records, in all, a total distance of 528.89 feet to a ½" iron rod found at the east corner of said 33.98 acre tract for a reentrant corner of the herein described tract of land;

**THENCE**, along the northwest line of said 10 acre tract, the southeast line of said 33.98 acre tract, South 60° 07' 12" West, 1222.43 feet to a 1" iron pipe (leaning) found at the east corner of a 37.265 acre tract conveyed unto Geraldine Zunker Scheel by warranty deed recorded in Volume 13328, Page 1296, said

Real Property Records for the south corner of said 33.98 acre tract and a south corner of the herein described tract of land;

**THENCE**, along the southwest line of said 33.98 acre tract, North 29° 57' 00" West, at 604.43 feet pass a ½" iron rod stamped RPLS 5482 found at the east corner of a 37.265 acre tract conveyed unto Jeffery A. Zunker by warranty deed recorded in Volume 13328, Page 1300, said Real Property Records, in all a total distance of 1209.42 feet to a 1" iron pipe found on the southeast line of the remaining portion of a 126.2 acre tract conveyed unto Vernon E. Winkelmann described in deed recorded in Volume 1927, Page 33, said Real Property Records for the west corner of said 33.98 acre tract and the herein described tract of land;

**THENCE**, along the south east line of said 126.2 acre tract, North 60° 11' 28" East, 1223.19 feet to an iron pipe and South 29° 54' 52" East, 20.47 feet to a calculated point on the southeast line of a private road for the west corner of said 90.216 acre tract and a reentrant corner of the herein described tract of land;

**THENCE**, along the southeast line of a private road, the northwest line of said 90.216 acre tract, North 60° 10' 02" East, 2303.28 feet to a 1" pipe found at the common north corner of said 90.216 acre tract and the west corner of said 89.3 acre tract of land for an angle point in the northwest line of the herein described tract of land;

**THENCE**, continuing along the southeast line of said private road, North 60° 22' 23" East, 2295.64 feet, to a ½" iron rod found for the west corner of a 1.50 acre tract conveyed unto Eugene H. Bielke, et al by warranty deed recorded in Volume 3154, Page 1641, said Real Property Records for a north corner of said 89.3 acre tract and the herein described tract of land;

**THENCE**, South 29° 27' 35" East, at 306.23 feet pass a ½" iron rod found at the west corner of said 1.147 acre tract, in all a total distance of 430.60 feet to a ½" iron rod found for the west corner of said 28.7 acre tract and a reentrant corner of the herein described tract of land;

**THENCE**, North 60° 23' 42" East, 455.19 feet to the **POINT OF BEGINNING**.

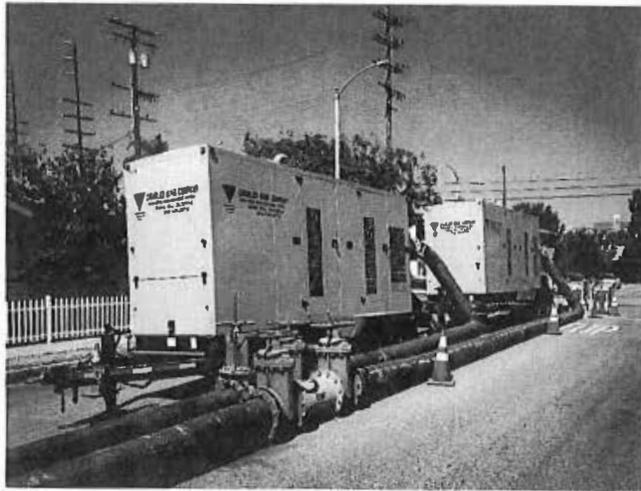
Containing in all, 10,566,036 square feet or 242.562 acres, more or less.

Bearings are referenced to NAD83, 2011 adjustment for Texas State Plane Coordinates, South Central Zone 4204.

This field note description is based upon field work completed by Westwood Professional Services, Inc. on December 9, 2018 by personnel under my supervision and in conjunction with that certain TSPS Category 1B, Condition IV Land Title Survey of same Project No. 21480.00 dated January 2, 2019.

GREEN VALLEY SPECIAL UTILITY DISTRICT  
WASTEWATER NON-STANDARD SERVICE AGREEMENT

Exhibit "B" – Wastewater Service Feasibility Study for the  
Clearwater Creek Subdivision

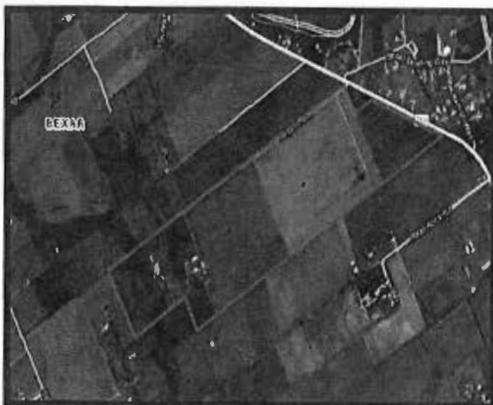


**Green Valley Special Utility District  
 Clearwater Creek Subdivision  
 Wastewater Service Feasibility Study**

Approved 8.22.2019

Revised 2.10.2020

Location Map:

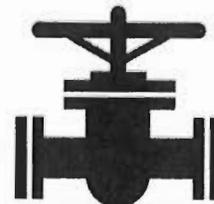


Prepared For:



Green Valley Special Utility District  
 P.O. Box 99  
 Marion, TX 78124  
 Phone: 830-914-2330  
 Fax: 830-420-4138

Prepared By:



**UTILITY ENGINEERING GROUP** PLLC

Utility Engineering Group, PLLC  
 191 N. Union Avenue  
 New Braunfels, Texas 78130  
 Phone: (830) 214-0521 (Office)  
 TBPE Firm No. 18712

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## **1. Introduction**

Green Valley Special Utility District (GVSUD) received the subject application for non-standard wastewater service from Mosaic Land Development, LLC., on June 18, 2019. Utility Engineering Group, PLLC (UEG) was authorized to prepare a wastewater feasibility study for the proposed Clearwater Creek Subdivision to be presented at the August 22, 2019 GVSUD Board Meeting. The original report was approved by the Board and we met with the Developer in December and January to discuss options for wastewater service to the tract. This updated report is the result of those discussions.

This wastewater feasibility study reviews and analyzes the proposed development layout, required easements, and projected wastewater treatment capacities. UEG has included wastewater projections based on the application for service and the land use projections for the development. The design assumptions are consistent with the GVSUD Wastewater Design Criteria and the Texas Commission on Environmental Quality (TCEQ).

Once this feasibility study has been reviewed by GVSUD staff and presented to the GVSUD Board of Director's the applicants will receive a copy for review, and if the terms are acceptable, a wastewater service contract will be executed for both developments.

## **2. Land Use Projections**

The proposed Clearwater Creek Subdivision is located within the City of San Antonio Territorial Jurisdiction (ETJ) and Bexar County. The proposed subdivision is located east of FM 2538, and is approximately 0.23 miles northwest of the intersection of Real Rock Rd. Currently, the property is vacant and does not have any wastewater service from GVSUD or any other entity. The property is currently utilized as an agricultural operation. The applicant intends to develop 7 phases on the property: a total of 950 Equivalent Dwelling Units (EDUs). The applicant requests sewer service from GVSUD to be in the first quarter of 2021. Timing of service to this tract will be discussed in

further detail in section 4 of this report. The residential wastewater connections will adhere to Green Valley's Wastewater planning factors, their Equivalent Dwelling Units (EDU) conversion factors, the anticipated Average Daily Flows, Peak Dry Weather Flow, and Peak Wet Weather Flow projections. The evaluation of the overall connections and actual demand request for this property will be further analyzed and discussed later in this report.

### **3. Wastewater Service Approach**

River City Engineering developed a Wastewater Master Plan for GVSUD dated in late 2006, which provided an overall scope and approach to providing wastewater service to GVSUD's Certificate of Convenience and Necessity (CCN) No. 20973. This study was intended to visualize potential future development and growth projections within Green Valley's Wastewater CCN. The service approach presented in this study is consistent with the 2006 Wastewater Master Plan. The development is located within the Woman Hollering Creek Sewershed, which encompasses approximately 12,600 acres of GVSUD wastewater CCN. Utility Engineering Group (UEG) is working on the update and revision of the District's Wastewater Master Plan. For this area of the service area, we anticipate an additional Wastewater Treatment Plant and associated Texas Pollution Discharge Elimination System permit. GVSUD's proposed Woman Hollering Creek Wastewater Treatment Plant was originally located west and south of the Clearwater Creek Subdivision. However, a regional lift station was proposed near this tract. We propose replacing the regional lift station with the plant and moving the regional lift station further down in the sewershed to capture flows with St. Hedwig as development occurs in that location. This will minimize the cost of infrastructure for this sewershed and this application for service, while providing a service option for the entire sewershed. Due to the timing of the design, financing and construction to complete a permanent wastewater service plan, GVSUD is proposing a temporary package plant approach for interim service to this tract, and ultimately replace the package plant operation with the permanent centralized system in a future phase.

#### **4. Proposed GVSUD Infrastructure**

The following section identifies the demand, impact, and approach the District will proceed with to provide both interim and permanent wastewater services to this tract. This will include the proposed package plant operation, the permanent wastewater treatment plant, and the associated collection system. This analysis will also investigate the impact of the requested services within the District's wastewater system in the near future by proceeding with the District's Wastewater Treatment Facility.

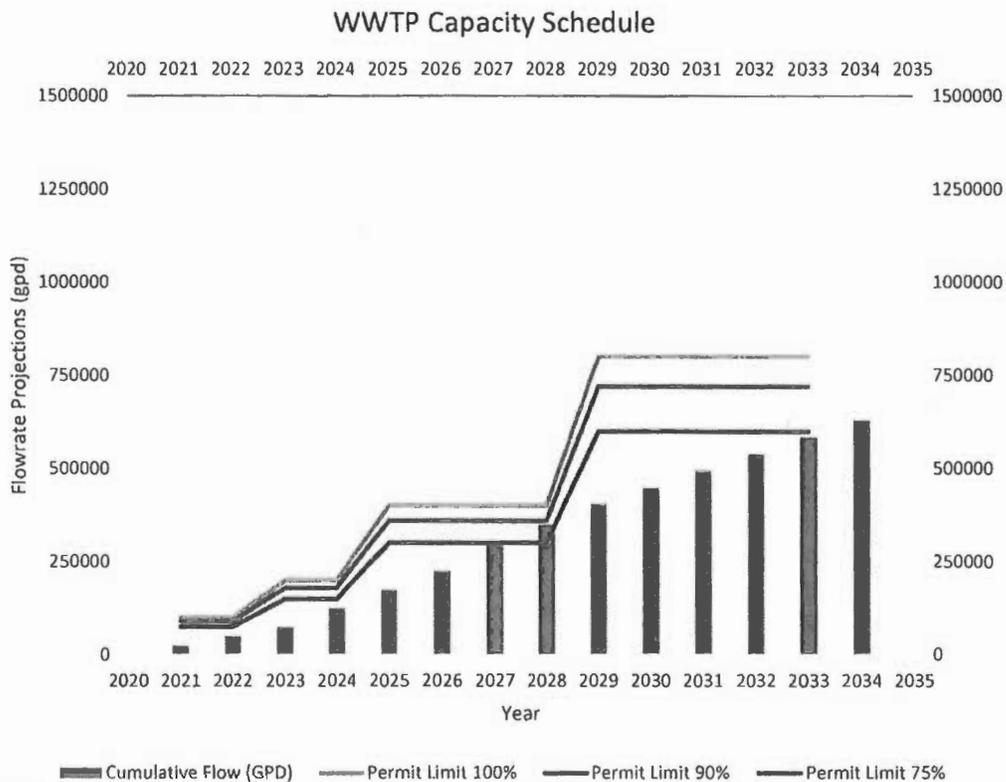
##### ***4.1 Impact to Wastewater Demand***

The District has experienced growth within its Water and Wastewater CCN boundary, and request for utility services have drastically increased. The District is currently serving approximately 150 customers with wastewater services and have commitments for over 2,000 connections within the District. Since this service request is within a sewershed that is not within the Santa Clara Creek Sewershed and available for service with the Santa Clara Creek No. 1 Wastewater Treatment Plant, the District will need to establish a new permit and plant to serve this development, along with the surrounding properties. A portion of this sewershed falls within the area near Abbott Road and FM 1518 where the District has a wholesale agreement with San Antonio River Authority (SARA). The service available under the SARA agreement is limited by treatment and collection system capacity; therefore, this flow could not enter that system.

##### ***4.2 District's Collection System and Approach***

The developer has agreed to donate 5 ± acres within the subdivision to place the proposed treatment plant. GVSUD will ultimately utilize the proposed Woman Hollering Wastewater Treatment Plant to treat its wastewater connections located within the District's CCN and the Woman Hollering Creek sewershed. We need to ensure that we secure adequate property to be able to expand the plant in the future to serve the entirety of the sewershed. GVSUD will need to acquire the required Texas Pollutant Discharge Elimination System Permit (TPDES) to serve the development along with a

reasonable growth projection outside of the subdivision. Ultimately, the District will expand the Woman Hollering facility to meet the needs of the sewershed. We propose a permit with 100,000 gallons per day (gpd) for the first phase, 200,000 gpd in the second phase, 400,000 gpd in the third phase and 800,000 gpd in the final phase. Once we begin the permitting process and evaluate growth patterns in the Sewershed we can adjust the permit capacities as needed. The following table illustrates the number of services available in each phase.



The applicant will be responsible for design and easement acquisition for any lift stations, gravity and/or forcemains required to serve the tract. We anticipate that the TPDES permit will take approximately 4 months to prepare and approximately 6-9 months for TCEQ issuance of a permit, without protests. We recommend starting design of the wastewater treatment plant once the draft permit is issued by TCEQ. Without

protest, we anticipate that the permitting, design and construction of the wastewater treatment plant will span approximately 18-24 months once authorized to proceed. The collection system for the Clearwater Creek Development will be designed and constructed by the developer. To serve adjacent tracts, GVSUD will need to evaluate the developer's collection system design to identify any lines that need to be upsized. The cost for the upsized collection system can be credited by payment or Contribution in Aid of Construction (CIAC) fee credits. The first phase of the wastewater treatment plant would need to be paid for by the developer; the subsequent phases would be financed by GVSUD with associated fees charged at the time of connection by the development. We will discuss costs in greater detail later in this report.

We have prepared cost estimates that are based on sizing the headworks, clarifier, blower structures, filter basin and piping for the 200,000 gpd plant. For the 200,000 gpd plant, we would only need to install a second aeration basin, digester and blowers to expand the capacity.

#### **4.3 Wastewater Planning and Determination**

UEG will utilize GVSUD wastewater planning factors in order to provide an accurate flow for both proposed tracts. The contributing factors are as follow:

- Wastewater Flow: 300gpd/EDU
- Infiltration/Inflow: 300gpd/Acre.
- Peaking Factor Dry Weather Flow: 4.0

Landplan Usage	EDU Conversion Factor	Total EDU's	Area (Acres)	Average Dry Weather Flow (GPM)	Peak Dry Weather Flow (GPM)	Peak Wet Weather Flow (GPM)
Scenic Ridge	3.9	950	243	197.92	791.7	842.3

The District's wastewater planning factors were approved by the Board of Directors and are consistent with the Texas Commission on Environmental Quality (TCEQ) regulations.

**4.4 Proposed Land Plan Wastewater Projections**

Based on the land plan study, the density per acre equates to 3.9 EDU/AC for the proposed subdivision. A total of 950 EDU's of service have been requested by the applicant, which will produce an effluent of approximately 842.3 gpm, or a Peak Wet Weather Flow of approximately 1,212,900 gallons per day at full buildout. The average day flow to the treatment plant would be approximately 285,000 gallons per day, which will be the basis of CIAC fee calculations and permitting.

**5. Estimated Costs**

As discussed earlier in this report, we recommend that the developer contribute the funds for the design and construction of the Woman Hollering Creek Wastewater Treatment Plant Phase I. This allows the developer to move forward with developing their property quicker than the District securing debt and environmental clearances to construct the plant. The following table summarizes the cost for GVSUD and the applicant.

Woman Hollering Creek WWTP					
	Cost Estimate per Phase	Cumulative Cost	Permit Capacity	EDU's at 100% Capacity	Cost per EDU
Phase I	\$ 2,348,509.87	\$ 2,348,509.87	100,000	408	\$ 5,756.15
Phase II	\$ 1,356,500.00	\$ 3,705,009.87	200,000	816	\$ 4,540.45
Phase III	\$ 3,646,000.00	\$ 7,351,009.87	400,000	1633	\$ 4,501.54
Phase IV	\$ 8,659,000.00	\$ 16,010,009.87	800,000	3265	\$ 4,903.53

The summary of costs shown above assumes that the developer would receive CIAC fee credits for the first phase of the plant. Since the estimated cost of service for this development, as presented is \$4,540 per EDU, we recommend that the Developer construct the first phase of the plant for an estimated cost of \$2,348,509.87 and GVSUD would own and operate the plant. In return, the District would set the developer CIAC fee at \$4,540 per EDU, therefore the developer would pay a total of \$4,540 for each of

the 950 EDU's of service requested for a total of \$4,313,000 for the Clearwater Creek Development. The District would finance and construct the second and subsequent phases of the plant with the Clearwater Creek developer paying the difference between the \$4,313,000 total CIAC fee for their service request and the first phase plant cost of \$2,348,509.87 which totals \$1,964,490.13 as CIAC fees at the time of platting the subsequent units once the second phase of the plant is required. The effective CIAC fee will be calculated once the project is awarded to construct the first phase treatment plant. GVSUD will be in control of the design of the wastewater treatment plant and the Developer will escrow funds for design prior to design commencing. Upon award of the contract for construction, the Developer will escrow 50% of the contract price with GVSUD to begin construction. Once the construction contract reached 40% complete the developer will escrow the remainder of the funds to complete the contract.

## **6. Conclusions and Recommendations**

The following conditions are provided for GVSUD's consideration:

- A. The applicant complies with GVSUD's current policies and pays all applicable fees at the time of Development.
- B. The required easement certification is provided on the recorded plat and any required easements are dedicated to the District. Attachment 2 contains the certification required by the District.
- C. GVSUD staff and consultants approve the location, size, material type and all appurtenances prior to construction and final acceptance of the project. GVSUD standard wastewater specifications shall be followed and a GVSUD inspector shall be present during installation and testing of the infrastructure. The applicant is responsible for the design and costs associated with the internal infrastructure to serve their development, including but not limited to: gravity mains, manholes, lift stations, forcemains and associated appurtenances to deliver flow to the treatment plant head works. GVSUD may elect to oversize components of the Developer's collection system to serve adjacent tracts. We request that the developer and their design team work closely with GVSUD during design to

ensure that the collection system is acceptable to GVSUD.

- D. Electric, telephone, and any other utilities shall remain outside of the GVSUD easement unless specifically agreed to in writing by GVSUD.
- E. The District will prepare and file a TPDES permit application as discussed in this report. The developer will provide fee simple title or an easement for the ± 5-acre treatment plant site so that GVSUD can associate the permit with real property. We anticipate the cost of this application to be \$42,000. We would need the developer to provide a topographic and boundary survey for the WWTP site so that preliminary design and site plans can be prepared during the permitting phase of the project.
- F. After construction completion and GVSUD acceptance, all wastewater collection improvements shall be dedicated to and maintained by GVSUD. The contractor and/or developer shall warranty all construction and material for a period of one year. All system improvements that are not prepared by GVSUD must be submitted to GVSUD for review and approval prior to construction. All infrastructure design shall conform to the GVSUD and TCEQ design guidelines, standards and details. Any work completed without approved plans and inspection by GVSUD will be removed and/or replaced by the applicant at the sole expense of the applicant.
- G. The developer will be responsible for the cost associated with the first phase of the WWTP with an estimated cost of \$2,348,509.87. The developer will also be responsible for the additional \$1,964,490.13 in CIAC fees to compensate the District for the cost of 950 EDU's of service in the Woman Hollering Creek Sewershed. This equates to a total of \$4,313,000 in fees for this application of service. The effective CIAC fee will be calculated once the project is awarded to construct the first phase treatment plant to ensure that GVSUD has the required budget to complete the project and the Developer is assessed the correct fees.
- H. Contributions in Aid of Construction will be due at the time of platting once the CIAC credits for the first phase of the plant are exhausted.
- I. GVSUD will be in control of the design of the wastewater treatment plant and the Developer will escrow funds for design prior to design commencing. Upon award

of the contract for construction, the Developer will escrow 50% of the contract price with GVSUD to begin construction. Once the construction contract reached 40% complete the developer will escrow the remainder of the funds to complete the contract.

This wastewater feasibility study is subject to the approval and/or modification by the GVSUD Board of Directors after consideration of the information provided herein and the application of the policies of GVSUD. This study is based on the application for service submitted June 18, 2019 and revised in January 2020. If changes or additions are made to the development this study should be revisited.

**Attachment 2 – Easement Certification**

Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

## Attachment I: Correspondences

Utility Engineering Group, PLLC  
191 N. Union Avenue  
New Braunfels, Texas 78130  
Texas Firm No. 18712  
Phone: (830) 214-0521



July 8, 2020

To: Cibolo Creek Municipal Authority

Re: TCEQ Wastewater Discharge Permit No. WQ0015334001

Dear TCEQ Wastewater Discharge Permit Holder:

We are writing to you on behalf of Green Valley Special Utility District (GVSUD) regarding a proposed project to serve the proposed Clearwater Creek residential subdivision and adjacent developments, located in Bexar County as shown on the attached map. The proposed wastewater system will serve approximately 950 equivalent single-family connections in Clearwater and other future developments in various stages of development. GVSUD is in the process of applying for a TCEQ Wastewater Discharge permit for 0.4 million gallons per day (MGD). At full buildout, the sewershed can have approximately 6,441 equivalent single-family connections equating to approximately 1,578,000 gallons per average day.

We are required to contact all existing TCEQ Wastewater Discharge Permittees within a 3-mile radius of the project to inquire if an existing permit holder is willing to provide the wastewater treatment capacity needed. According to TCEQ records, you are a permittee having an existing wastewater treatment plant/TPDES permit located within three miles of the project. If we find a wastewater treatment plant permit holder within three miles that has the required capacity available or will expand their facility to make it available, we will conduct a feasibility study to determine if it is cost effective to obtain service from them.

We will appreciate receiving a response from you indicating if 0.4 MGD of initial wastewater treatment capacity in your facility is available, and if so, under what terms. We also will need to evaluate the ultimate future condition described above for the buildout of the sewershed. As you can see from the attached map, the proposed plant and service area is downstream of your plant, therefore a lift station, forcemain and gravity main solution will need to be evaluated to collect and transport the effluent if permit and plant capacity is available at your facility. The plant will serve additional developments in this sewershed and within GVSUD's Certificate of Convenience and Necessity (CCN). A handwritten reply on a copy of this letter will be adequate. You may email your response to me at [garrym@uegpros.com](mailto:garrym@uegpros.com) or fax to (830) 420-4138. Please feel free to call me at (830) 214-0521 if you have any questions. Thank you for your assistance.

Sincerely,



Garry Montgomery

cc: Pat Allen, General Manager GVSUD

---

GVSUD 000388

REPLY

Date of Reply: \_\_\_\_\_

Name of Permittee: \_\_\_\_\_

Terms (if available) \_\_\_\_\_

\_\_\_\_\_

Capacity Available (Yes / No)

Signature: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_

Email: \_\_\_\_\_

Utility Engineering Group, PLLC  
191 N. Union Avenue  
New Braunfels, Texas 78130  
Texas Firm No. 18712  
Phone: (830) 214-0521



July 13, 2020

To: City of San Antonio

Re: Consent to Provide Wastewater Service

Dear City of San Antonio:

We are writing to you on behalf of Green Valley Special Utility District (GVSUD) regarding a proposed project to serve the proposed Clearwater Creek residential subdivision, located in Bexar County as shown on the attached map. The proposed wastewater system will serve approximately 950 equivalent single-family connections and other future developments. GVSUD is in the process of applying for a TCEQ Wastewater Discharge permit for 0.4 million gallons per day (MGD).

We are required to contact all cities within the service area to inquire if the city is willing to provide wastewater service. The City of San Antonio ETJ is located within the service area of the project. If the city consents to provide wastewater service, we will conduct a feasibility study to determine if it is cost effective to obtain service from them.

We will appreciate receiving a response from you indicating if the city consents to providing wastewater service, and if so, under what terms. A handwritten reply on a copy of this letter will be adequate. You may email your response to me at garrym@uegpros.com or fax to (830) 420-4138. Please feel free to call me at (830) 214-0521 if you have any questions. Thank you for your assistance.

Sincerely,

Garry Montgomery

cc: Pat Allen, General Manager GVSUD

REPLY

Date of Reply: 7-23-2020  
Name of City: CITY OF SAN ANTONIO  
Terms (if available): SAN ANTONIO WATER SYSTEM

Signature:   
Printed Name: JEFFREY J. HAAS  
Title: VICE PRESIDENT PRODUCTION & TREATMENT  
Address: 2800 U.S. HIGHWAY 281 N., SA, TX 78211  
Telephone: (210) 233-3707  
Email: JEFF.HAAS@SAWS-ORL

THE SAN ANTONIO WATER SYSTEM IS NOT INTERESTED  
IN PROVIDING SERVICE.

THANK YOU,

Utility Engineering Group, PLLC  
191 N. Union Avenue  
New Braunfels, Texas 78130  
Texas Firm No. 18712  
Phone: (830) 214-0521



July 13, 2020

To: San Antonio River Authority

Re: Consent to Provide Wastewater Service

Dear San Antonio River Authority:

We are writing to you on behalf of Green Valley Special Utility District (GVSUD) regarding a proposed project to serve the proposed Clearwater Creek residential subdivision, located in Bexar County as shown on the attached map. The proposed wastewater system will serve approximately 950 equivalent single-family connections and other future developments. GVSUD is in the process of applying for a TCEQ Wastewater Discharge permit for 0.4 million gallons per day (MGD).

We are required to contact all cities and adjacent utilities within the service area to inquire if they are willing to provide wastewater service. We are providing this notice to SARA as a courtesy so that you are aware of the permit application and to give you an opportunity to discuss the project prior to the application being submitted. This permit does not affect any SARA sewer CCN.

You may email your questions or concerns to me at [garrym@uegpros.com](mailto:garrym@uegpros.com) or fax to (830) 420-4138. Please feel free to call me at (830) 214-0521 if you have any questions. Thank you for your assistance.

Sincerely,  
  
Garry Montgomery

cc: Pat Allen, General Manager, GVSUD

---

REPLY

Date of Reply: \_\_\_\_\_  
Name of City: \_\_\_\_\_  
Terms (if available) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signature: \_\_\_\_\_  
Printed Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Address: \_\_\_\_\_  
Telephone: \_\_\_\_\_  
Email: \_\_\_\_\_

Utility Engineering Group, PLLC  
191 N. Union Avenue  
New Braunfels, Texas 78130  
Texas Firm No. 18712  
Phone: (830) 214-0521



July 13, 2020

To: City of Schertz

Re: Consent to Provide Wastewater Service

Dear City of Schertz:

We are writing to you on behalf of Green Valley Special Utility District (GVSUD) regarding a proposed project to serve the proposed Clearwater Creek residential subdivision, located in Bexar County as shown on the attached map. The proposed wastewater system will serve approximately 950 equivalent single-family connections and other future developments. GVSUD is in the process of applying for a TCEQ Wastewater Discharge permit for 0.4 million gallons per day (MGD).

We are required to contact all cities within the service area to inquire if the city is willing to provide wastewater service. The City of Schertz is located upstream within the service area of the project. If the city consents to provide wastewater service, we will conduct a feasibility study to determine if it is cost effective to obtain service from them. This plant will be located in City of San Antonio ETJ.

We will appreciate receiving a response from you indicating if the city consents to providing wastewater service, and if so, under what terms. A handwritten reply on a copy of this letter will be adequate. You may email your response to me at [garrym@uegpros.com](mailto:garrym@uegpros.com) or fax to (830) 420-4138. Please feel free to call me at (830) 214-0521 if you have any questions. Thank you for your assistance.

Sincerely,

Garry Montgomery

cc: Pat Allen, General Manager GVSUD

---

REPLY

Date of Reply: \_\_\_\_\_  
Name of City: \_\_\_\_\_  
Terms (if available) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signature: \_\_\_\_\_  
Printed Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Address: \_\_\_\_\_  
Telephone: \_\_\_\_\_  
Email: \_\_\_\_\_

Utility Engineering Group, PLLC  
191 N. Union Avenue  
New Braunfels, Texas 78130  
Texas Firm No. 18712  
Phone: (830) 214-0521



July 13, 2020

To: City of St Hedwig

Re: Consent to Provide Wastewater Service

Dear City of St Hedwig:

We are writing to you on behalf of Green Valley Special Utility District (GVSUD) regarding a proposed project to serve the proposed Clearwater Creek residential subdivision, located in Bexar County as shown on the attached map. The proposed wastewater system will serve approximately 950 equivalent single-family connections and other future developments. GVSUD is in the process of applying for a TCEQ Wastewater Discharge permit for 0.4 million gallons per day (MGD).

We are required to contact all cities within the service area to inquire if the city is willing to provide wastewater service. The City of St Hedwig is located within the service area of the project. If the city consents to provide wastewater service, we will conduct a feasibility study to determine if it is cost effective to obtain service from them. The permit and plant will be located within the City of San Antonio ETJ.

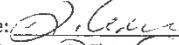
We will appreciate receiving a response from you indicating if the city consents to providing wastewater service, and if so, under what terms. A handwritten reply on a copy of this letter will be adequate. You may email your response to me at [garrym@uegpros.com](mailto:garrym@uegpros.com) or fax to (830) 420-4138. Please feel free to call me at (830) 214-0521 if you have any questions. Thank you for your assistance.

Sincerely,  
  
Garry Montgomery

cc: Pat Allen, General Manager GVSUD

REPLY

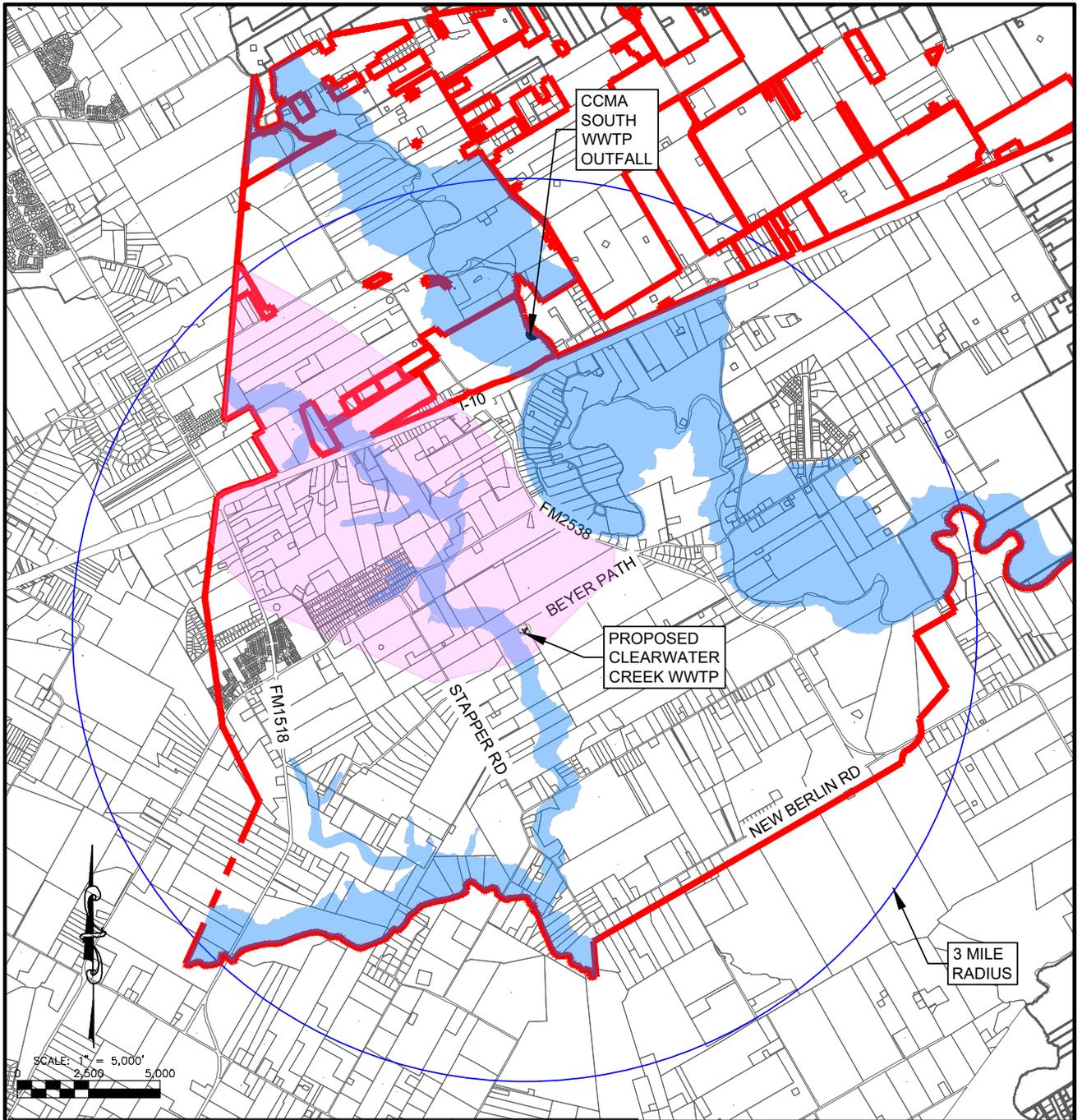
Date of Reply: 7/15/2020  
Name of City: Saint Hedwig  
Terms (if available) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signature:   
Printed Name: Dee Grimm  
Title: Mayor  
Address: P.O. Box 40, Saint Hedwig, Texas 78152  
Telephone: 210-425-2449  
Email: mayor@saint-hedwig-city.com

*The City will not provide wastewater service to the proposed residential subdivision*

**GREEN VALLEY SPECIAL UTILITY DISTRICT  
CLEARWATER WASTEWATER PERMIT APPLICATION  
NEARBY FACILITIES**

<b>PERMITEE NAME</b>	<b>PERMIT NUMBER</b>
CIBOLO CREEK MUNICIPAL AUTHORITY	WQ0015334001



	ACRES	EDU
OVERALL DEVELOPABLE SEWERSHED TO GVSUD PROPOSED TREATMENT PLANT	2,147	6,441
SEWERSHED WITHIN GVSUD SEWER CCN AREA	2,532	7,596
FEMA FLOODPLAIN WITHIN SEWERSHED	385	

**LEGEND**

- - - GVSUD WASTEWATER CCN
- CLEARWATER CREEK SEWERSHED
- FEMA FLOODPLAIN

**UTILITY ENGINEERING GROUP PLLC**

256 Comal Ave NEW BRAUNFELS, TEXAS 78130 PH: (830) 214-0521  
Texas Engineering Firm F-18712

SCALE:	
DATE:	13 July, 2020
PROJECT NO:	
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	

**GREEN VALLEY SPECIAL UTILITY DISTRICT**

**CLEARWATER CREEK WWTP AREA MAP**

SHEET:    OF

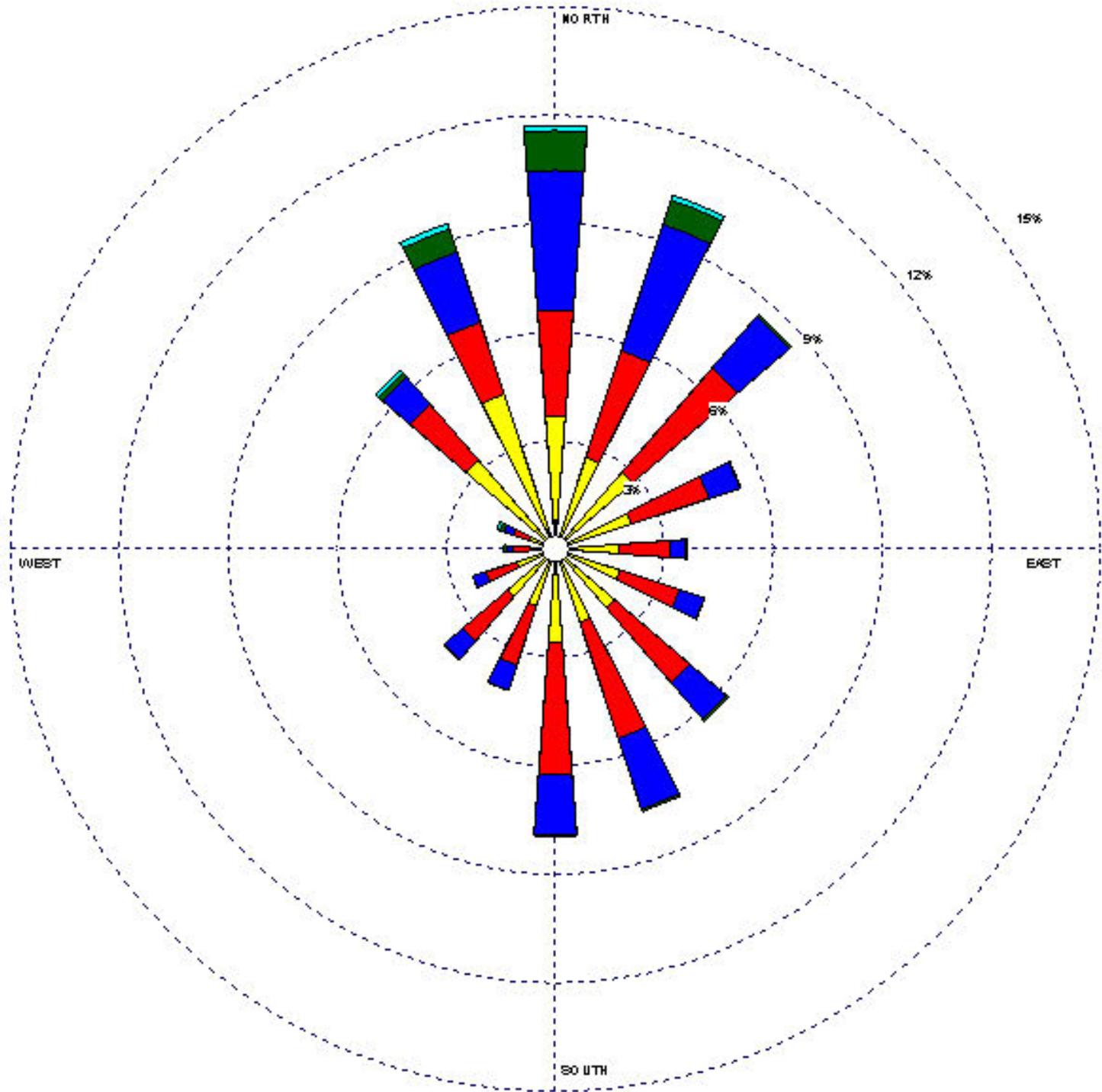
P:\Projects\0308\_GVSUD\01 - Clearwater Creek WWS & WWFSCAD\Sheet\AREA MAP.dwg, Jul 13, 2020, 9:41 am

Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

## Attachment J: Wind Rose

WIND ROSE PLOT

Station #12921 - SAN ANTONIO/WSFD, TX



<p>Wind Speed (m/s)</p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 10px; height: 10px; background-color: cyan; border: 1px solid black; margin-right: 5px;"></span> &gt; 11.06</li> <li><span style="display: inline-block; width: 10px; height: 10px; background-color: green; border: 1px solid black; margin-right: 5px;"></span> 8.49 - 11.06</li> <li><span style="display: inline-block; width: 10px; height: 10px; background-color: blue; border: 1px solid black; margin-right: 5px;"></span> 5.40 - 8.49</li> <li><span style="display: inline-block; width: 10px; height: 10px; background-color: red; border: 1px solid black; margin-right: 5px;"></span> 3.34 - 5.40</li> <li><span style="display: inline-block; width: 10px; height: 10px; background-color: yellow; border: 1px solid black; margin-right: 5px;"></span> 1.80 - 3.34</li> <li><span style="display: inline-block; width: 10px; height: 10px; background-color: black; border: 1px solid black; margin-right: 5px;"></span> 0.51 - 1.80</li> </ul>	<p>MODELER Sara West</p>	<p>DATE 8/29/2002</p>	<p>COMPANY NAME USDA-ARS</p>	
	<p>DISPLAY Wind Speed</p>	<p>UNIT m/s</p>	<p>COMMENTS</p>	
	<p>AVG. WIND SPEED 4.41 m/s</p>	<p>CALM WINDS 4.43%</p>		
	<p>ORIENTATION Direction (blowing from)</p>	<p>PLOT YEAR-DATETIME 1961 Feb 1 - Feb 29 Midnight - 11 PM</p>		

WRPLOT v1.0a by GISS Environmental Software - www.giss-environmental.com

Green Valley Special Utility District  
Clearwater Creek Wastewater Treatment Plant

## Attachment K: Core Data Form



TCEQ Use Only

# TCEQ Core Data Form

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

## SECTION I: General Information

1. Reason for Submission (If other is checked please describe in space provided.)		
<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 600684294		RN

## SECTION II: Customer Information

4. General Customer Information		5. Effective Date for Customer Information Updates (mm/dd/yyyy)	
<input type="checkbox"/> New Customer		<input checked="" type="checkbox"/> Update to Customer Information	
<input type="checkbox"/> Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)		<input type="checkbox"/> Change in Regulated Entity Ownership	
<b>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).</b>			
6. Customer Legal Name (If an individual, print last name first: eg: Doe, John)		If new Customer, enter previous Customer below:	
Green Valley Special Utility District			
7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number (if applicable)
11. Type of Customer:		Partnership: <input type="checkbox"/> General <input type="checkbox"/> Limited	
<input type="checkbox"/> Corporation		<input type="checkbox"/> Individual	
Government: <input type="checkbox"/> City <input type="checkbox"/> County <input type="checkbox"/> Federal <input type="checkbox"/> State <input checked="" 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 checked="" type="checkbox"/> 21-100 <input type="checkbox"/> 101-250 <input type="checkbox"/> 251-500 <input type="checkbox"/> 501 and higher		<input 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 checked="" type="checkbox"/> Owner & Operator	
<input type="checkbox"/> Occupational Licensee		<input type="checkbox"/> Responsible Party	
<input type="checkbox"/> Operator		<input type="checkbox"/> Voluntary Cleanup Applicant	
<input type="checkbox"/> Other:			
15. Mailing Address:	P.O. Box 99		
	City	State	ZIP
	Marion	TX	78124
		ZIP + 4	0099
16. Country Mailing Information (if outside USA)		17. E-Mail Address (if applicable)	
18. Telephone Number		19. Extension or Code	20. Fax Number (if applicable)
( 830 ) 914-2330			( 830 ) 420-4138

## 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 checked="" type="checkbox"/> New Regulated Entity <input type="checkbox"/> Update to Regulated Entity Name <input type="checkbox"/> Update to Regulated Entity Information
<b>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).</b>
22. Regulated Entity Name (Enter name of the site where the regulated action is taking place.)
Clearwater Creek Wastewater Treatment Plant

23. Street Address of the Regulated Entity: (No PO Boxes)	4060 Stapper Rd						
	City	St Hedwig	State	TX	ZIP	78152	ZIP + 4
24. County	Bexar						

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:	4060 Stapper Rd, St Hedwig, TX 78152						
26. Nearest City	St Hedwig			State	TX	Nearest ZIP Code	78124
27. Latitude (N) In Decimal:	29.4705		28. Longitude (W) In Decimal:	-98.1904			
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds		
29	28	13.8	98	11	25.44		
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)			
4952			22132				
33. What is the Primary Business of this entity? (Do not repeat the SIC or NAICS description.)							
Collection, treatment, and disposal of municipal sewerage							
34. Mailing Address:	P.O. Box 99						
	City	Marion	State	TX	ZIP	78124	ZIP + 4
35. E-Mail Address:							
36. Telephone Number		37. Extension or Code		38. Fax Number (if applicable)			
( 830 ) 914-2330				( 830 ) 420-4138			

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

#### SECTION IV: Preparer Information

40. Name:	Garry Montgomery -Utility Engineering Group	41. Title:	Project Manager
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
( 830 ) 214-0521		( ) -	garrym@uegpros.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:	Green Valley Special Utility District	Job Title:	General Manager
Name (In Print):	Pat Allen	Phone:	( 830 ) 914- 2330
Signature:		Date:	3/3/2021