MUNICIPAL WASTEWATER TPDES PERMIT APPLICATION
RAINBOW'S END WWTP
114 BLUE JAY, LIVINGSTON
POLK COUNTY, TEXAS

SUBMITTED TO:

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
WATER QUALITY DIVISION

MARCH 2024

PREPARED BY:

Fairbanks & Associates
CIVIL - STRUCTURAL ENGINEERS
Texas Registered Engineering Firm F-11908
677 Greer Rd Livingston, TX 77351
936-329-2731

TPDES Municipal Wastewater Permit Application
Rainbow's End Wastewater Treatment Plant

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LIST OF ATTACHMENTS

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

DOMESTIC WASTEWATER PERMIT APPLICATION CHECKLIST

Complete and submit this checklist with the application.

APPLICANT: Rainbow's End Park, Inc.

PERMIT NUMBER: Click here to enter text

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

	Y	N		Y	N
Administrative Report 1.0	☒	☐	Original USGS Map	☒	☐
Administrative Report 1.1	☒	☐	Affected Landowners Map	☒	☐
SPIF	☒	☐	Landowner Disk or Labels	☒	☐
Core Data Form	☒	☐	Buffer Zone Map	☒	☐
Public Involvement Plan Form	☒	☐	Flow Diagram	☒	☐
Technical Report 1.0	☒	☐	Site Drawing	☒	☐
Technical Report 1.1	☒	☐	Original Photographs	☒	☐
Worksheet 2.0	☒	☐	Design Calculations	☒	☐
Worksheet 2.1	☐	☒	Solids Management Plan	☒	☐
Worksheet 3.0	☐	☒	Water Balance	☐	☐
Worksheet 3.1	☐	☒			
Worksheet 3.2	☐	☒			
Worksheet 3.3	☐	☒			
Worksheet 4.0	☐	☒			
Worksheet 5.0	☐	☒			
Worksheet 6.0	☐	☒			
Worksheet 7.0	☐	☒			

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 ☐	$315.00 ☐
≥0.05 but <0.10 MGD	$550.00 ☒	$515.00 ☐
≥0.10 but <0.25 MGD	$850.00 ☐	$815.00 ☐
≥0.25 but <0.50 MGD	$1,250.00 ☐	$1,215.00 ☐
≥0.50 but <1.0 MGD	$1,650.00 ☐	$1,615.00 ☐
≥1.0 MGD	$2,050.00 ☐	$2,015.00 ☐

Minor Amendment (for any flow) $150.00 ☐

Payment Information:

Mailed Check/Money Order Number: 1526

Check/Money Order Amount: $550.00

Name Printed on Check: Fairbanks & Associates

EPAY Voucher Number: Click here to enter text.

Copy of Payment Voucher enclosed? Yes ☐

Section 2. Type of Application (Instructions Page 29)

☒ New TPDES

☐ Major Amendment *with* Renewal

☐ Major Amendment *without* Renewal

☐ Renewal without changes

☐ New TLAP

☐ Minor Amendment *with* Renewal

☐ Minor Amendment *without* Renewal

☐ Minor Modification of permit

For amendments or modifications, describe the proposed changes: Click here to enter text.

For existing permits:

Permit Number: WQ00 Click here to enter text.

EPA I.D. (TPDES only): TX Click here to enter text.

Expiration Date: Click here to enter text.

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?

Rainbow's End Park, Inc.

(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: 603340373

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): Mr.

First and Last Name: Travis Carr

Credential (P.E, P.G., Ph.D., etc.): Click here to enter text

Title: co-CEO

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?

Click here to enter text

(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: Click here to enter text

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): Click here to enter text

First and Last Name: Click here to enter text

Credential (P.E, P.G., Ph.D., etc.): Click here to enter text

Title: Click here to enter text

Provide a brief description of the need for a co-permittee: Click here to enter text

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: 2

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: Len Fairbanks

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

Title: Owner

Organization Name: Fairbanks & Associates

Mailing Address: 677 Greer Rd

City, State, Zip Code: Livingston, TX 77351

Phone No.: 936-329-2731 Ext.: Click here to enter text. Fax No.: Click here to enter text.

E-mail Address: len@fairbanksandassociates.net

Check one or both: ☒ Administrative Contact ☒ Technical Contact

B. Prefix (Mr., Ms., Miss): Click here to enter text.

First and Last Name: Click here to enter text.

Credential (P.E, P.G., Ph.D., etc.): Click here to enter text.

Title: Click here to enter text.

Organization Name: Click here to enter text.

Mailing Address: Click here to enter text.

City, State, Zip Code: Click here to enter text.

Phone No.: Click here to enter text. Ext.: Click here to enter text. Fax No.: Click here to enter text.

E-mail Address: Click here to enter text.

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): Ms.

First and Last Name: Cynthia Neilsen

Credential (P.E, P.G., Ph.D., etc.): Click here to enter text.

Title: CAO

Organization Name: Rainbow's End Park Inc

Mailing Address: 100 Rainbow Dr.

City, State, Zip Code: Livingston, TX 77351

Phone No.: 888-580-8444 Ext.: Click here to enter text. Fax No.: Click here to enter text.

E-mail Address: parks@escapees.com

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

First and Last Name: Travis Carr

Credential (P.E, P.G., Ph.D., etc.): Click here to enter text.

Title: co-CEO

Organization Name: Rainbow's End Park Inc

Mailing Address: 100 Rainbow Dr.

City, State, Zip Code: Livingston, TX 77351

Phone No.: 888-580-8444 Ext.: Click here to enter text. Fax No.: Click here to enter text.

E-mail Address: traviscarr@escapees.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: Travis Carr

Credential (P.E, P.G., Ph.D., etc.): Click here to enter text.

Title: co-CEO

Organization Name: Rainbow's End Park Inc.

Mailing Address: 100 Rainbow Dr.

City, State, Zip Code: Livingston, TX 77351

Phone No.: 888-580-8444 Ext.: Click here to enter text. Fax No.: Click here to enter text.

E-mail Address: traviscarr@escapees.com

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: Travis Carr

Credential (P.E, P.G., Ph.D., etc.): Click here to enter text.

Title: co-CEO

Organization Name: Rainbow's End Park Inc.

Mailing Address: 100 Rainbow Dr.

City, State, Zip Code: Livingston, TX 77351

Phone No.: 888-580-8444 Ext.: Click here to enter text. Fax No.: Click here to enter text.

E-mail Address: traviscarr@escapees.com

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: Len Fairbanks

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

Title: Owner

Organization Name: Fairbanks & Associates

Mailing Address: 677 Greer Rd

City, State, Zip Code: Livingston, TX 77351

Phone No.: 936-329-2731 Ext.: Click here to enter text. Fax No.: Click here to enter text.

E-mail Address: len.fairbanks@fairbanksandassociates.net

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: Travis Carr

Credential (P.E, P.G., Ph.D., etc.): Click here to enter text.

Title: co-CEO

Organization Name: Rainbow's End Park, Inc

Phone No.: 888-580-8444 Ext.: Click here to enter text.

E-mail: traviscarr@escapees.com

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: Livingston Municipal Library

Location within the building: Front Desk

Physical Address of Building: 707 N Tyler Ave; Livingston, TX 77351

City: Livingston County: Polk

Contact Name: Christina

Phone No.: 936-327-4352 Ext.: Click here to enter text.

E. Bilingual Notice Requirements:

This information **is required** for **new, major amendment, minor amendment or minor modification, and renewal 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? Click here to enter text.

F. Public Involvement Plan Form

Complete the Public Involvement Plan Form (TCEQ Form 20960) for each application for a **new permit or major amendment to a permit** and include as an attachment.

Attachment: 21

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** Click here to enter text.

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):

Rainbow's End Wastewater Treatment Plant

C. Owner of treatment facility: Rainbow's End Park, Inc.

Ownership of Facility: ☐ Public ☒ Private ☐ Both ☐ Federal

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

Prefix (Mr., Ms., Miss): Click here to enter text.

First and Last Name: Rainbows End Park, Inc

Mailing Address: 100 Rainbow Drive

City, State, Zip Code: Livingston, TX 77351

Phone No.: 800-580-8444 E-mail Address: parks@escapees.com

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: Click here to enter text.

E. Owner of effluent disposal site:

Prefix (Mr., Ms., Miss): Click here to enter text.

First and Last Name: Click here to enter text.

Mailing Address: Click here to enter text.

City, State, Zip Code: Click here to enter text.

Phone No.: Click here to enter text. E-mail Address: Click here to enter text.

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: Click here to enter text.

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): Click here to enter text.

First and Last Name: Click here to enter text.

Mailing Address: Click here to enter text.

City, State, Zip Code: Click here to enter text.

Phone No.: Click here to enter text. E-mail Address: Click here to enter text.

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: Click here to enter text.

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:

The wastewater treatment facility is located 0.3 miles Southwest of the intersection of Hwy 146 and Care Center Dr.

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:

From the plant site to a roadside ditch, thence to an unnamed tributary of Copeland Creek, thence to Copeland Creek, thence for several miles to the Trinity River, Segment 0802

City nearest the outfall(s): Livingston

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

Outfall Latitude: 30.56025 Longitude: -94.90401

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?

Phone No.: Click here to enter text. E-mail Address: Click here to enter text.

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: Click here to enter text.

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): Click here to enter text.

First and Last Name: Click here to enter text.

Mailing Address: Click here to enter text.

City, State, Zip Code: Click here to enter text.

Phone No.: Click here to enter text. E-mail Address: Click here to enter text.

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: Click here to enter text.

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:

The wastewater treatment facility is located 0.3 miles Southwest of the intersection of Hwy 146 and Care Center Dr.

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:

From the plant site to a roadside ditch, thence to an unnamed tributary of Copeland Creek, thence to Copeland Creek, thence for several miles to the Trinity River, Segment 0802

City nearest the outfall(s): Livingston

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

Outfall Latitude: 30.63991 Longitude: -94.87241

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: Click here to enter text.

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.

Click here to enter text.

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:

Click here to enter text.

B. City nearest the disposal site: Click here to enter text.

C. County in which the disposal site is located: Click here to enter text.

D. Disposal Site Latitude: Click here to enter text. Longitude: Click here to enter text.

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

Click here to enter text.

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

Click here to enter text.

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.

Click here to enter text

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:

Click here to enter text

D. Do you owe any fees to the TCEQ?

☐ Yes ☒ No

If **yes**, provide the following information:

Account number: Click here to enter text Amount past due: Click here to enter text

E. Do you owe any penalties to the TCEQ?

☐ Yes ☒ No

If **yes**, please provide the following information:

Enforcement order number: Click here to enter text Amount past due: Click here to enter text

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: See Table of Contents

Section 14. Signature Page (Instructions Page 39)

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

Permit Number:

Applicant: Rainbow's End Park, Inc.

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): Travis Carr

Signatory title: President & co-CEO

Signature: _____ Date: 2-20-2024

(Use blue ink)

Subscribed and Sworn to before me by the said Travis Carr

on this 20th day of February, 20 24.

My commission expires on the 12th day of October, 20 25.

_____

Notary Public

[SEAL]

DIEGO TREJO
Notary Public, State of Texas
Comm. Expires 10-12-2025
Notary ID 133385273

Kendall

County, Texas

Section 15. Plain Language Summary (Instructions Page 40)

If you are subject to the alternative language notice requirements in 30 Texas Administrative Code §39.426, **you must provide a translated copy of the completed plain language summary in the appropriate alternative language as part of your application package**. For your convenience, a Spanish template has been provided below.

ENGLISH TEMPLATE FOR TPDES or TLAP NEW/RENEWAL/AMENDMENT APPLICATIONS

DOMESTIC WASTEWATER

The following summary is provided for this pending water quality permit application being reviewed by the Texas Commission on Environmental Quality as required by 30 Texas Administrative Code Chapter 39. The information provided in this summary may change during the technical review of the application and are not federal enforceable representations of the permit application.
Rainbow's End Park, Inc. (CN 603340373) proposes to operate Rainbow's End Wastewater Treatment Plant (RN TBD). a wastewater treatment plant. The facility will be located the intersection of E Peterson Loop and Quail, in Livingston, Polk County, Texas 77351.

The wastewater treatment plant will be for the Rainbow's End Park, Inc. for 60,000 gallons per day
<<For TLAP applications include the following sentence, otherwise delete:>>

Discharges from the facility are expected to contain TSS and BOD. Domestic wastewater will be treated by *an activated sludge wastewater treatment plant*.

PLANTILLA EN ESPAÑOL PARA SOLICITUDES NUEVAS/RENOVACIONES/ENMIENDAS TPDES o TLAP

AGUAS RESIDUALES DOMÉSTICAS

El siguiente resumen se proporciona para esta solicitud de permiso de calidad del agua pendiente que está siendo revisada por la Comisión de Calidad Ambiental de Texas según lo requerido por el Capítulo 39 del Código Administrativo de Texas 30. La información proporcionada en este resumen puede cambiar durante la revisión técnica de la solicitud y no son representaciones federales exigibles de la solicitud de permiso.

1. Introduzca el nombre del solicitante aquí. (2. Introduzca el número de cliente aquí (es decir, CN6 #########).) 3. Elija del menú desplegable. 4. Introduzca el nombre de la instalación aquí. 5. Introduzca el número de entidad regulada aquí (es decir, RN1 #########). 6. Elija del menú desplegable. 7. Introduzca la descripción de la instalación aquí. . La instalación 8. Elija del menú desplegable. ubicado 9. Introduzca la ubicación aquí. , en 10. Introduzca el nombre de la ciudad aquí. , Condado de 11. Introduzca el nombre del condado aquí. , Texas 12. Introduzca el código postal aquí. . 13. Introduzca el resumen de la solicitud de solicitud aquí. *<<Para las aplicaciones de TLAP incluya la siguiente oración, de lo contrario, elimine:>>* Este permiso no autorizará una descarga de contaminantes en el agua en el estado.

Se espera que las descargas de la instalación contengan14. Liste todos los contaminantes esperados aquí. . 15. Introduzca los tipos de aguas residuales descargadas aquí. 16. Elija del menú desplegable. tratado por 17. Introduzca una descripción del tratamiento de aguas residuales utilizado en la instalación aquí.

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:

☐ USB Drive ☒ Four sets of labels

D. Provide the source of the landowners' names and mailing addresses: Polk 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):

Click here to enter text.

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: Rainbow's End Park, Inc.

   Permit No. WQ00 Click here to enter text EPA ID No. TX Click here to enter text

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

   The wastewater treatment plant is located 0.3 miles Southwest of the intersection of Hwy 146 and Care Center Dr. in Livingston TX 77351

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): Ms

First and Last Name: Cynthia Neilsen

Credential (P.E, P.G., Ph.D., etc.): Click here to enter text.

Title: CAO

Mailing Address: 100 Rainbow Dr.

City, State, Zip Code: Livingston, TX 77351

Phone No.: 888-580-8444 Ext.: Click here to enter text. Fax No.: Click here to enter text.

E-mail Address: parks@escapees.com

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

Click here to enter text.

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.

From the site to an unnamed tributary of Copeland Creek, thence to Copeland Creek, thence to the Trinity River (Segment 0802).

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

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): Ms

First and Last Name: Cynthia Neilsen

Credential (P.E, P.G., Ph.D., etc.): Click here to enter text.

Title: CAO

Mailing Address: 100 Rainbow Dr.

City, State, Zip Code: Livingston, TX 77351

Phone No.: 888-580-8444 Ext.: Click here to enter text. Fax No.: Click here to enter text.

E-mail Address: parks@escapees.com

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

Click here to enter text.

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.

From the site to a road side ditch, thence to an unnamed tributary of Copeland Creek, thence to Copeland Creek, thence to the Trinity River (Segment 0802).

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):

Approx 0.6 ac.

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

Grading for site development.

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

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

Vacant land owned by Rainbow's End Park, Inc.

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:** Click here to enter text

1. Check or Money Order Number: 1526
2. Check or Money Order Amount: $550.00
3. Date of Check or Money Order: 02/05/24
4. Name on Check or Money Order: Fairbanks & Associates
5. APPLICATION INFORMATION

   Name of Project or Site: Rainbow's End Wastewater Treatment Plant

   Physical Address of Project or Site: 114 Blue Jay Livingston, TX 77351

   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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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): Click here to enter text.

Full legal name (first, middle, last): Click here to enter text.

Driver's License or State Identification Number: Click here to enter text.

Date of Birth: Click here to enter text.

Mailing Address: Click here to enter text.

City, State, and Zip Code: Click here to enter text.

Phone Number: Click here to enter text. Fax Number: Click here to enter text.

E-mail Address: Click here to enter text.

CN: Click here to enter text.

For Commission Use Only:
Customer Number:
Regulated Entity Number:
Permit Number:

CHECKLIST OF COMMON DEFICIENCIES

Below is a list of common deficiencies found during the administrative review of domestic wastewater permit applications. To ensure the timely processing of this application, please review the items below and indicate by checking Yes that each item is complete and in accordance applicable rules at 30 TAC Chapters 21, 281, and 305. If an item is not required this application, indicate by checking N/A where appropriate. Please do not submit the application until the items below have been addressed.

Core Data Form (TCEQ Form No. 10400) ☒ Yes
(Required for all applications types. Must be completed in its entirety and signed. Note: Form may be signed by applicant representative.)

Correct and Current Industrial Wastewater Permit Application Forms ☒ Yes
(TCEQ Form Nos. 10053 and 10054. Version dated 6/25/2018 or later.)

Water Quality Permit Payment Submittal Form (Page 19) ☒ Yes
(Original payment sent to TCEQ Revenue Section. See instructions for mailing address.)

7.5 Minute USGS Quadrangle Topographic Map Attached ☒ Yes
(Full-size map if seeking "New" permit. 8 ½ x 11 acceptable for Renewals and Amendments)

Current/Non-Expired, Executed Lease Agreement or Easement Attached ☒ N/A ☐ Yes

Landowners Map ☐ N/A ☒ Yes
(See instructions for landowner requirements)

Things to Know:

- All the items shown on the map must be labeled.
- The applicant's complete property boundaries must be delineated which includes boundaries of contiguous property owned by the applicant.
- The applicant cannot be its own adjacent landowner. You must identify the landowners immediately adjacent to their property, regardless of how far they are from the actual facility.
- If the applicant's property is adjacent to a road, creek, or stream, the landowners on the opposite side must be identified. Although the properties are not adjacent to applicant's property boundary, they are considered potentially affected landowners. If the adjacent road is a divided highway as identified on the USGS topographic map, the applicant does not have to identify the landowners on the opposite side of the highway.

Landowners Cross Reference List ☐ N/A ☒ Yes
(See instructions for landowner requirements)

Landowners Labels or USB Drive attached ☐ N/A ☒ Yes
(See instructions for landowner requirements)

Original signature per 30 TAC § 305.44 – Blue Ink Preferred ☒ Yes
(If signature page is not signed by an elected official or principle executive officer, a copy of signature authority/delegation letter must be attached)

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): 0.03 MGD

2-Hr Peak Flow (MGD): 0.12 MGD

Estimated construction start date: 3/2024

Estimated waste disposal start date: 10/2024

B. Interim II Phase

Design Flow (MGD): Click here to enter text.

2-Hr Peak Flow (MGD): Click here to enter text.

Estimated construction start date: Click here to enter text.

Estimated waste disposal start date: Click here to enter text.

C. Final Phase

Design Flow (MGD): 0.03 MGD

2-Hr Peak Flow (MGD): 0.12 MGD

Estimated construction start date: 3/2028

Estimated waste disposal start date: 10/2028

D. Current operating phase: n/a

Provide the startup date of the facility: Click here to enter text.

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:

See attachments 11, 12

Port or pipe diameter at the discharge point, in inches: 6

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)
See attachment 13		

C. Process flow diagrams

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

Attachment: 14, 15

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: 4

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

Escapees RV Club / RV Park

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.

Click here to enter text

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.

Click here to enter text.

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: Click here to enter text.

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.

Click here to enter text.

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.

Nuisance odor prevention plan (attachment 10), wind rose diagram (attachment 20)

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 enter text.

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.

Click here to enter text.

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.

Click here to enter text.

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.

Click here to enter text.

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 Click here to enter text or TXRNE Click here to enter text

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

Yes ☐ No ☐

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:

Click here to enter text

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.

Click here to enter text.

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.

Click here to enter text.

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.

Click here to enter text.

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_5 concentration of the sludge, and the design BOD_5 concentration of the influent from the collection system. Also note if this information has or has not changed since the last permit action.

Click here to enter text.

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_5 concentration of the septic waste, and the design BOD_5 concentration of the influent from the collection system. Also note if this information has or has not changed since the last permit action.

Click here to enter text.

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.

Click here to enter text.

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). **W*ater 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**
$CBOD_5$, 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					
E.coli (CFU/100ml) freshwater					
Entercocci (CFU/100ml)					

Pollutant	Average Conc.	Max Conc.	No. of Samples	Sample Type	Sample Date/Time
saltwater					
Total Dissolved Solids, mg/l					
Electrical Conductivity, µmohs/cm, †					
Oil & Grease, mg/l					
Alkalinity ($CaCO_3$)*, 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 ($CaCO_3$), mg/l					

Section 8. Facility Operator (Instructions Page 60)

Facility Operator Name: TBD

Facility Operator's License Classification and Level: Click here to enter text.

Facility Operator's License Number: Click here to enter text.

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: Click here to enter text.

B. Sludge disposal site

Disposal site name: tbd

TCEQ permit or registration number: Click here to enter text.

County where disposal site is located: Click here to enter text.

C. Sludge transportation method

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

Name of the hauler: tbd

Hauler registration number: Click here to enter text.

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:

Click here to enter text.

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: Click here to enter text.

Ammonia Nitrogen mg/kg: Click here to enter text.

Arsenic: Click here to enter text.

Cadmium: Click here to enter text.

Chromium: Click here to enter text.

Copper: Click here to enter text.

Lead: Click here to enter text.

Mercury: Click here to enter text.

Molybdenum: Click here to enter text.

Nickel: Click here to enter text.

Selenium: Click here to enter text.

Zinc: Click here to enter text.

Total PCBs: Click here to enter text.

Provide the following information:

Volume and frequency of sludge to the lagoon(s): Click here to enter text.

Total dry tons stored in the lagoons(s) per 365-day period: Click here to enter text.

Total dry tons stored in the lagoons(s) over the life of the unit: Click here to enter text.

C. Liner information

Does the active/proposed sludge lagoon(s) have a liner with a maximum hydraulic conductivity of $1x10^{-7}$ cm/sec?

Yes ☐ No ☐

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

Click here to enter text.

D. Site development plan

Provide a detailed description of the methods used to deposit sludge in the

lagoon(s):

Click here to enter text.

Attach the following documents to the application.

- Plan view and cross-section of the sludge lagoon(s)

  Attachment: Click here to enter text.

- Copy of the closure plan

  Attachment: Click here to enter text.

- Copy of deed recordation for the site

  Attachment: Click here to enter text.

- Size of the sludge lagoon(s) in surface acres and capacity in cubic feet and gallons

  Attachment: Click here to enter text.

- Description of the method of controlling infiltration of groundwater and surface water from entering the site

  Attachment: Click here to enter text.

- Procedures to prevent the occurrence of nuisance conditions

  Attachment: Click here to enter text.

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: Click here to enter text.

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:

Click here to enter text.

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:

Click here to enter text.

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: Click here to enter text.

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: Click here to enter text.

Title: Click here to enter text.

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.

The current sewer system isn't performing as desired and won't handle any future expansion. The owner has elected to construct a privately owned wastewater treatment plant to process 60,000 gallons per day at completion of 2 phases, with 30,000 gallons per day in each phase. Discharge from the plant will be an unnamed tributary of Copeland Creek.

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: Click here to enter text.

If yes, attach correspondence from the city.

Attachment: Click here to enter text.

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: Click here to enter text.

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: 17

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: Click here to enter text.

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

Attachment: Click here to enter text.

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: Click here to enter text.

Section 2. Organic Loading (Instructions Page 67)

Is this facility in operation?

Yes ☐ No ☒

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

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

Yes ☐ No ☒ X

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:

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: Click here to enter text.

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

Attachment: Click here to enter text.

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: Click here to enter text.

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): Click here to enter text.

Average Influent Organic Strength or BOD_5 Concentration in mg/l: Click here to enter text.

Average Influent Loading (lbs/day = total average flow X average BOD_5 conc. X 8.34): Click here to enter text.

Provide the source of the average organic strength or BOD_5 concentration.

Click here to enter text.

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_5 Concentration (mg/l)
Municipality		
Subdivision		
Trailer park – transient	0.06 MGD	300
Mobile home park		
School with cafeteria and showers		
School with cafeteria,		

Source	Total Average Flow (MGD)	Influent BOD_5 Concentration (mg/l)
no showers		
Recreational park, overnight use		
Recreational park, day use		
Office building or factory		
Motel		
Restaurant		
Hospital		
Nursing home		
Other		
TOTAL FLOW from all sources	0.06 MGD	
AVERAGE BOD_5 from all sources		300

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: Click here to enter text.

Total Suspended Solids, mg/l: Click here to enter text.

Ammonia Nitrogen, mg/l: Click here to enter text.

Total Phosphorus, mg/l: Click here to enter text.

Dissolved Oxygen, mg/l: Click here to enter text.

Source	Total Average Flow (MGD)	Influent BOD_5 Concentration (mg/l)
no showers		
Recreational park, overnight use		
Recreational park, day use		
Office building or factory		
Motel		
Restaurant		
Hospital		
Nursing home		
Other		
TOTAL FLOW from all sources	0.06 MGD	
AVERAGE BOD_5 from all sources		300

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: Click here to enter text.

Ammonia Nitrogen, mg/l: Click here to enter text. 3.0

Total Phosphorus, mg/l: Click here to enter text.

Dissolved Oxygen, mg/l: Click here to enter text. 4.0

Other: Click here to enter text.

B. Interim II Phase Design Effluent Quality

Biochemical Oxygen Demand (5-day), mg/l: Click here to enter text.

Total Suspended Solids, mg/l: Click here to enter text.

Ammonia Nitrogen, mg/l: Click here to enter text.

Total Phosphorus, mg/l: Click here to enter text.

Dissolved Oxygen, mg/l: Click here to enter text.

Other: Click here to enter text.

C. Final Phase Design Effluent Quality

Biochemical Oxygen Demand (5-day), mg/l: Click here to enter text.

Total Suspended Solids, mg/l: Click here to enter text.

Ammonia Nitrogen, mg/l: Click here to enter text.

Total Phosphorus, mg/l: Click here to enter text.

Dissolved Oxygen, mg/l: Click here to enter text.

Other: Click here to enter text.

D. Disinfection Method

Identify the proposed method of disinfection.

☒ Chlorine: 1 mg/l after 2.0 minutes detention time at peak flow

Dechlorination process: n/a

☐ Ultraviolet Light: Click here to enter text. seconds contact time at peak flow

☐ Other: Click here to enter text.

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: 18, 19

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.

Click here to enter text.

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

FEMA FIRM map 48373C0500C

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: Click here to enter text.

If no, provide the approximate date you anticipate submitting your application to the Corps: Click here to enter text.

B. Wind rose

Attach a wind rose. **Attachment**: 20

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: Click here to enter text.

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: Click here to enter text.

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

Attach a solids management plan to the application.

Attachment: 21

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: Click here to enter text.

Distance and direction to the intake: Click here to enter text.

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

Attachment: Click here to enter text.

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: Click here to enter text.

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).

Click here to enter text.

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).

Click here to enter text.

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: un-named intermittent stream

A. Receiving water type

Identify the appropriate description of the receiving waters.

☒ Stream

☐ Freshwater Swamp or Marsh

☐ Lake or Pond

Surface area, in acres: Click here to enter text.

Average depth of the entire water body, in feet: Click here to enter text.

Average depth of water body within a 500-foot radius of discharge point, in feet: Click here to enter text.

☐ Man-made Channel or Ditch

☐ Open Bay

☐ Tidal Stream, Bayou, or Marsh

☐ Other, specify: Click here to enter text.

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.

Copeland Creek

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.

flowing

Date and time of observation: 02/05/24

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 Click here to enter text.

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 Click here to enter text.

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

ATTACHMENT 1

PERMIT JUSTIFICATION

The current sewer system isn't performing as desired and won't handle any future expansion. The owner has elected to construct a privately owned wastewater treatment plant to process 60,000 gallons per day at completion of 2 phases, with 30,000 gallons per day in each phase. Discharge from the plant will be an unnamed intermittent stream.

ATTACHMENT 2

CORE DATA FORM

TCEQ Use Only

TCEQ Core Data Form

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

SECTION I: General Information

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

☒ New Permit, Registration or Authorization (*Core Data Form should be submitted with the program application.*)

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

2. 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 603340373		RN

SECTION II: Customer Information

4. General Customer Information | **5. Effective Date for Customer Information Updates** (mm/dd/yyyy)

☐ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name *(If an individual, print last name first: eg: Doe, John)* — *If new Customer, enter previous Customer below:*

Rainbow's End Park, Inc.

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*
0803070267	32067825748	83-1382621	

11. Type of Customer: ☒ Corporation ☐ Individual Partnership: ☐ General ☐ Limited
Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

12. Number of Employees
☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated?
☒ **Yes** ☐ **No**

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

☒ Owner ☐ Operator ☐ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ VCP/BSA Applicant ☐ Other:

15. Mailing Address:								
	100 Rainbow Dr.							
	City	Livingston	State	TX	ZIP	77351	ZIP + 4	

16. Country Mailing Information *(if outside USA)*	17. E-Mail Address *(if applicable)*
	parks@escapees.com

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*

(800) 580-8444		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected, a new permit application is also required.)*

☒ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).

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

Rainbow's End Wastewater Treatment Plant

23. Street Address of the Regulated Entity: ***(No PO Boxes)***	114 Blue Jay							
	City	Livingston	**State**	TX	**ZIP**	77351	**ZIP + 4**	
24. County								

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

25. Description to Physical Location:					
26. Nearest City			**State**	**Nearest ZIP Code**	
Livingston			TX	77351	
Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).					
27. Latitude (N) In Decimal:	30.63917		**28. Longitude (W) In Decimal:**	-94.87206	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

29. Primary SIC Code (4 digits)	**30. Secondary SIC Code** (4 digits)	**31. Primary NAICS Code** (5 or 6 digits)	**32. Secondary NAICS Code** (5 or 6 digits)
7033		721211	

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

RV campsite

34. Mailing Address:	**100 Rainbow Dr.**							
	City	**Livingston**	**State**	**TX**	**ZIP**	**77351**	**ZIP + 4**	
35. E-Mail Address:	**parks@escapees.com**							

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(888) 580-8444		( ) -

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.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☒ Wastewater	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:
	TPDES Permit			

SECTION IV: Preparer Information

40. Name:	Len Fairbanks	**41. Title:**	Owner, Fairbanks & Associates

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(936 **) 329-2731**		**( ) -**	Len@FairbanksAndAssociates.net

SECTION V: Authorized Signature

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

Company:	Fairbanks & Associates	**Job Title:**	Owner
Name *(In Print):*	Len Fairbanks	**Phone:**	**(** 936 **)** 329- **2731**
Signature:	Len Fairbanks	**Date:**	05FEB24

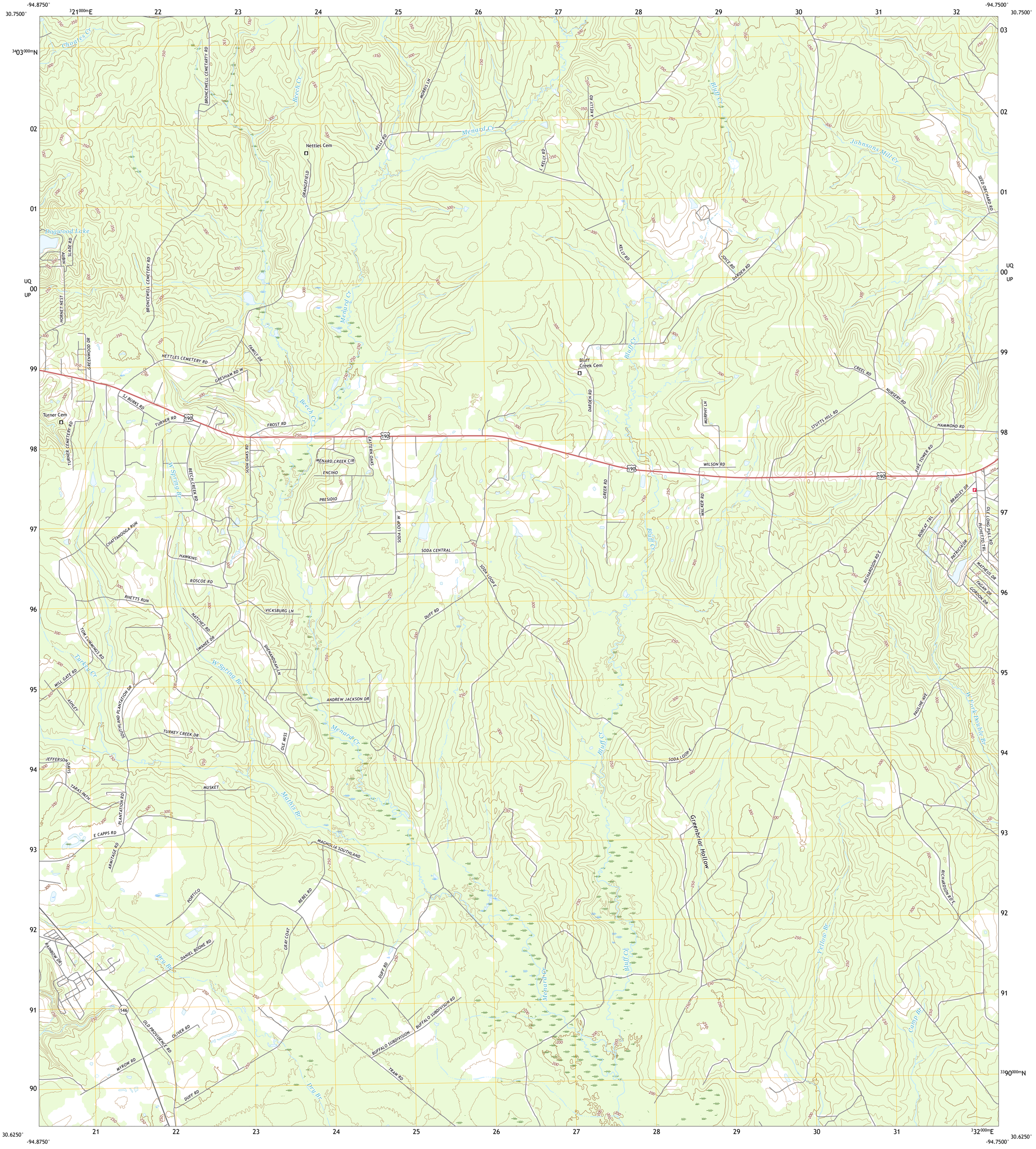
ATTACHMENT 3

ORIGINAL USGS MAPS

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map US Topo

SODA QUADRANGLE
TEXAS - POLK COUNTY
7.5-MINUTE SERIES

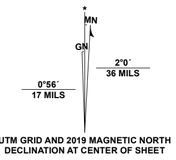


Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid:Universal Transverse Mercator, Zone 15R

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.....GNIS, 2000 - 2015
Hydrography.....National Hydrography Dataset, 2003 - 2018
Contours.....National Elevation Dataset, 2018 - 2018
Boundaries.....Multiple sources; see metadata file 2019 - 2021

Wetlands.....FWS National Wetlands Inventory Not Available



UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
UQ
00
UP
Grid Zone Designation
15R

SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 1 MILES
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard.

QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 New Willard
2 Leggett
3 Hortense
4 Livingston
5 Dallardsville
6 Goodrich
7 Schwab City
8 Segno

ADJOINING QUADRANGLES

ROAD CLASSIFICATION

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

SODA, TX
2022

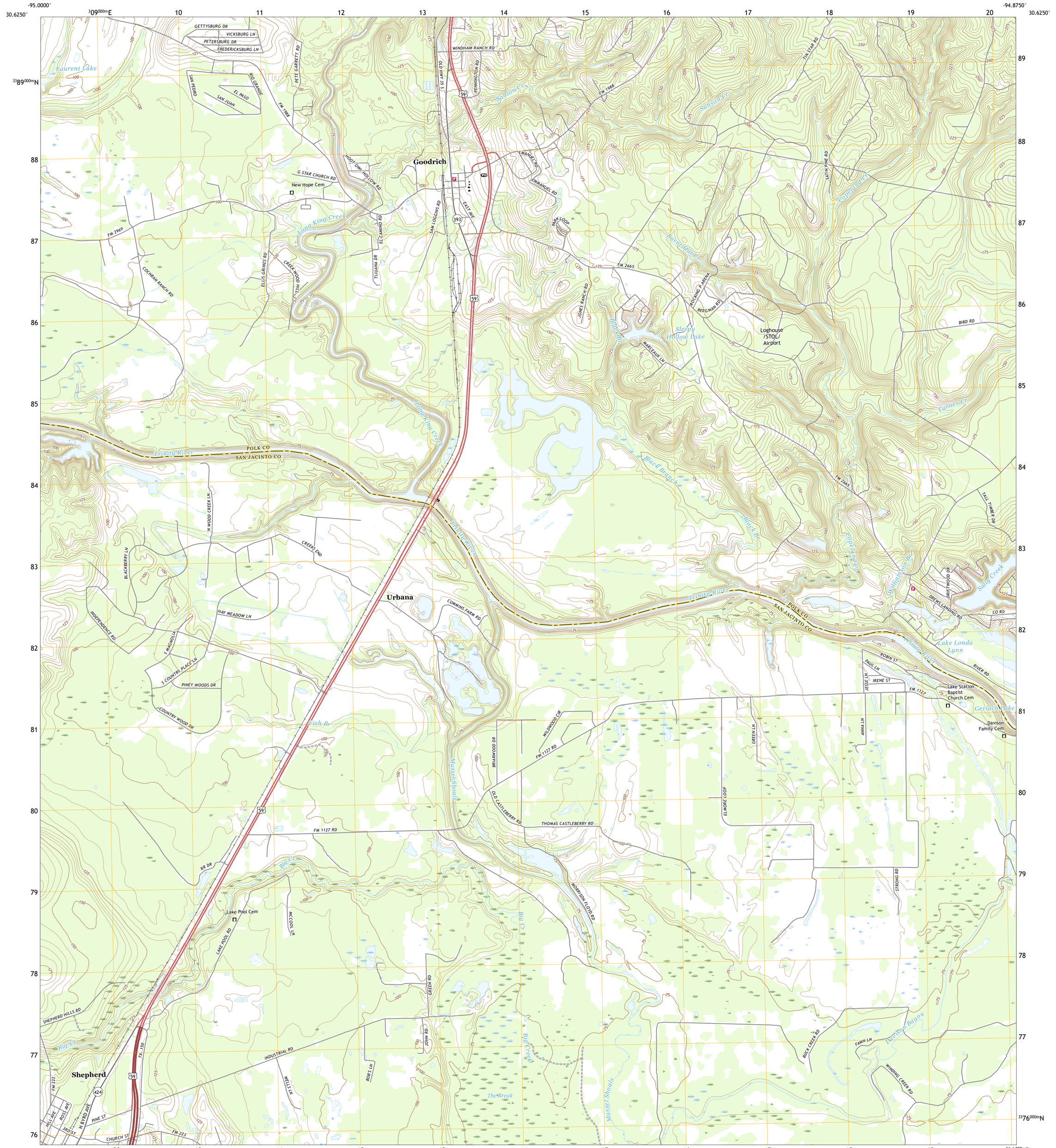
067 07/13/2025

NSN 7643016398344
NGA REF NO. USGSX24K41970

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map
US Topo

GOODRICH QUADRANGLE
TEXAS
7.5-MINUTE SERIES



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 15R

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.....GNIS, 1979 - 2022
Hydrography.....National Hydrography Dataset, 2003 - 2018
Contours.....National Elevation Dataset, 2018
Boundaries.....Multiple sources; see metadata file 2019 - 2021

Wetlands.....FWS National Wetlands Inventory Not Available

MN
GN
2°5′ 37 MILS
0°59′ 17 MILS
UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
UP
Grid Zone Designation 15R

SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 1
MILES
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000
FEET

CONTOUR INTERVAL 5 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard.

TEXAS
QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 Blanchard
2 Livingston
3 Soda
4 Camilla
5 Schwab City
6 Westcott
7 Rayburn
8 Romayor
ADJOINING QUADRANGLES

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

GOODRICH, TX
2022

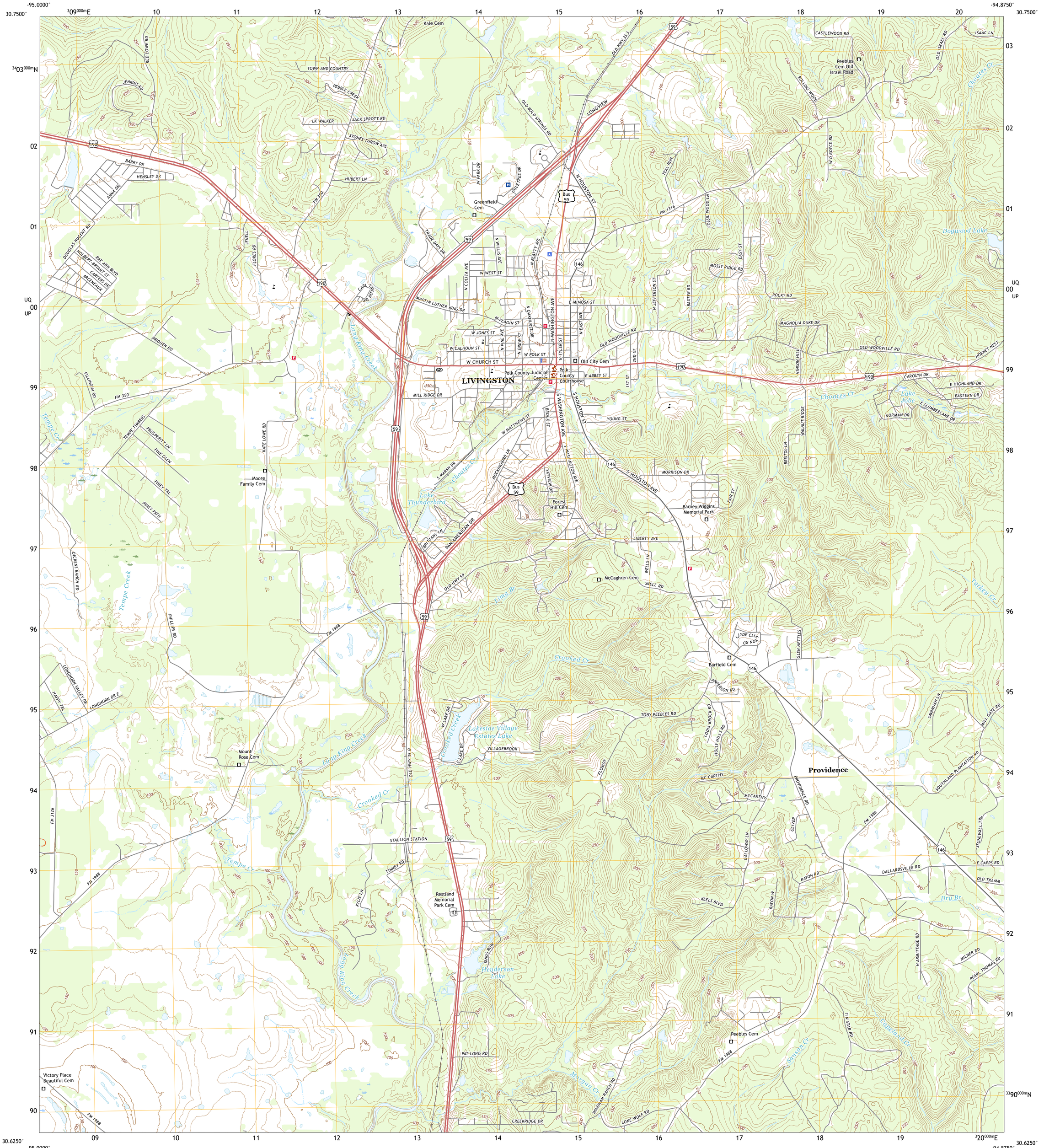
NSN 7643016396338
NGA REF NO. USGSX24K17725

068 07/13/2025

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map US Topo

LIVINGSTON QUADRANGLE
TEXAS - POLK COUNTY
7.5-MINUTE SERIES



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 15R

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.....GNIS, 1979 - 2022
Hydrography.....National Hydrography Dataset, 2003 - 2018
Contours.....National Elevation Dataset, 2018
Boundaries.....Multiple sources; see metadata file 2019 - 2021

Wetlands.....FWS National Wetlands Inventory Not Available

MN
GN
0°59′ 17 MILS
2°5′ 37 MILS
UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
UQ 00 UP
Grid Zone Designation 15R

SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 MILES 1
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard.

TEXAS
QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

ADJOINING QUADRANGLES
1 Onalaska
2 New Willard
3 Leggett
4 Blanchard
5 Soda
6 Camilla
7 Goodrich
8 Schwab City

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

LIVINGSTON, TX
2022

NSN, 7643016397046
NGA REF NO. USGSX24K26123

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ATTACHMENT 4

SITE PLAN

ATTACHMENT 4

PROPERTY BOUNDARY

DISCHARGE POINT

PROPOSED WASTEWATER TREATMENT PLANT

150' BUFFER

1MI RADIUS

STREAM CL = DISCHARGE ROUTE

3MI DOWNSTREAM

NORTH

0 500' 1000' 2000'

SCALE: 1" = 1000'

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 15R

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Imagery.....NAIP, September 2016 - November 2016
Roads.....U.S. Census Bureau, 2015
Names.....GNIS, 2000 - 2015
Hydrography.....National Hydrography Dataset, 2003 - 2018
Contours.....National Elevation Dataset, 2018 - 2018
Boundaries.....Multiple sources; see metadata file 2019 - 2021
Wetlands.....FWS National Wetlands Inventory Not Available

UTM GRID AND 2019 M
DECLINATION AT CE

U.S. Natior
100,000 - m

UQ

UP

Grid Zone De
15R

SITE PLAN - ATTACHMENT 4

1" = 1000' (WHEN PLOTTED ON 24"x36" SHEET)

RAINBOW'S END WASTEWATER TREATMENT PLANT

114 BLUE JAY LIVINGSTON, TEXAS 77351

Texas Registered Engineering Firm F-11908
677 Greer Road
Livingston, TX 77351
936-329-2731

Fairbanks & Associates
CIVIL - STRUCTURAL ENGINEERS

STATE OF TEXAS
LEN FAIRBANKS
64662
REGISTERED PROFESSIONAL ENGINEER
20MAR24
F-11908

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No.	Date	Descr
x	xxxxxx	xxxxxxxxx

SITE PLAN

Sheet No.
SP-1.0

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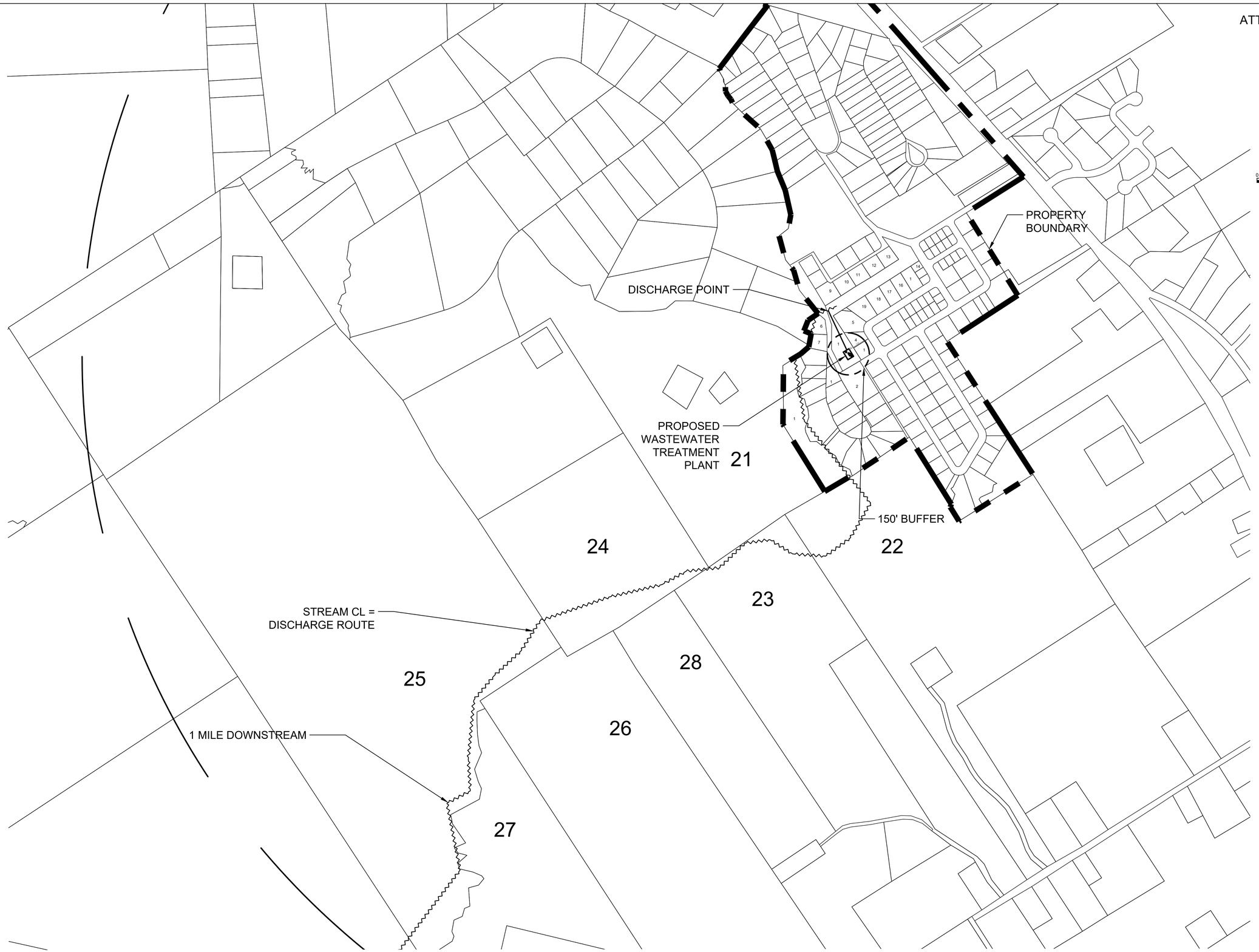
07/15/2025

ATTACHMENT 5A

ADJACENT LANDOWNERS

ATTACHMENT 5A



SITE PLAN - AFFECTED LANDOWNERS MAP W/ NUMBERS - ATTACHMENT 5A

1" = 300' (WHEN PLOTTED ON 24"x36" SHEET)

RAINBOW'S END WASTEWATER TREATMENT PLANT

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SITE PLAN

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AL-2.0

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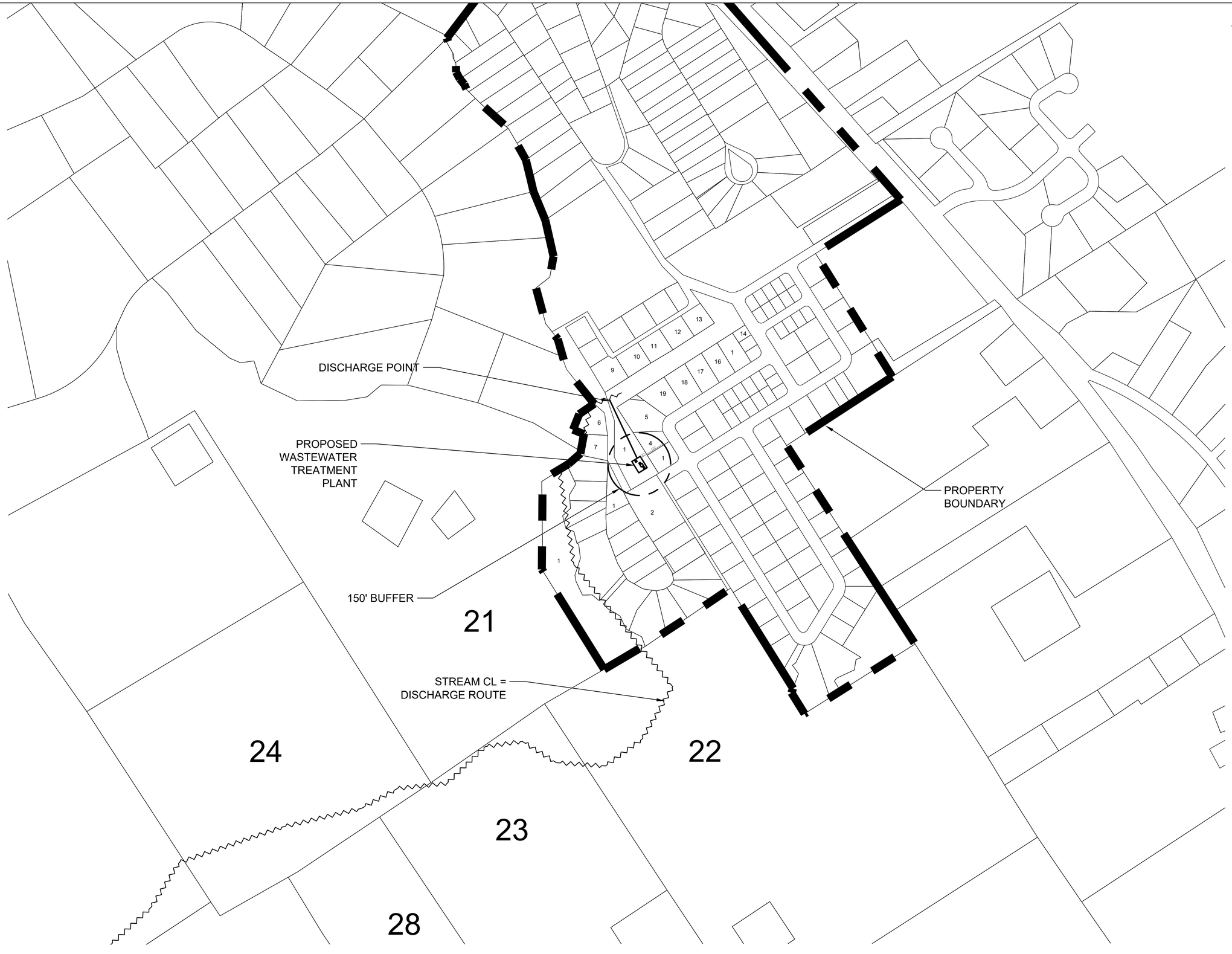
ATTACHMENT 5B

ADJACENT LANDOWNERS - ZOOMED

ATTACHMENT 5B



SITE PLAN - AFFECTED LANDOWNERS MAP W/ NUMBERS - ATTACHMENT 5B

1" = 200' (WHEN PLOTTED ON 24"x36" SHEET)

RAINBOW'S END WASTEWATER TREATMENT PLANT

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X	XXXXXX	XXXXXXXXX

SITE PLAN

Sheet No.
AL-2.1

Sheet 1 of 1

ATTACHMENT 6

ADJACENT LANDOWNERS LIST AND LABELS

Rainbow's End Park Inc
100 Rainbow Dr
Livingston, TX 77351

Escapees Inc
100 Rainbow Dr
Livingston, TX 77351

Joy E. Sharbutt
PO BOX 541
San Antonio, FL 33576

George Sanzenbacher
3012 East Perkins Ave.
Sandusky, OH 44870

Bruce & Anne Carlson
255 Rainbow Dr #15592
Livingston, TX 77399

Robert L Hobbs
209 Rainbow DR PMB 10960
Livingston, TX 77399

Jennifer Guerra Prats
PO Box 723
Goodrich, TX 77335

Harry & Lois Bussie
107 Rainbow DR PMB 771
Livingston, TX 77339

Rosemarie Newbould
205 Rainbow Dr #10545
Livingston, TX 77351

Mortgage Assets Management LLC
1 Mortgage Way
Mount Laurel, NJ 08054

Phillip J & Mary Summy co trustee revo trust
125 Culbertson Lp
Livingston, TX 77351

Paul A Schmid
144 Rainbow DR PMB #4433
Livingston, TX 77351

Clennis & Cathryn Life Estate
134 Woodpecker
Livingston, TX 77351

Dan & Carolee Day
255 Rainbow Dr #12511
Livingston, TX 77351

Frederick & Barbara Myers
202 Rainbow Dr #10219
Livingston, TX 77351

David R Bradshaw
193 Rainbow Dr #9364
Livingston, TX 77399

Nelva Jo Davis Trust
595 Pearl Thomas Rd
Livingston, TX 77351

Larry B & Tracy Redden
546 Myrow Rd
Livingston, TX 77351

Cheryl Teel Life Estate
618 Myrow Rd
Livingston, TX 77351

Josh & Katherine Smith
790 Pearl Thomas Rd
Livingston, TX 77351

Tamarack Timberco TX LP
31 Inverness Center Pkwy STE 200
Birmingham, AL 35242

Reuter Timberlands LLC
126 Whippoorwill Dr
Livingston, TX 77351

Michael & Jessica Ainsworth
4171 US Hwy 190 West
Livingston, TX 77351

Steve Denham
614 Myrow Rd
Livingston, TX 77351

ATTACHMENT 7

PHOTOGRAPHS

PHOTO 1 - Discharge Point Looking Upstream

PHOTO 2 - Discharge Point Looking Downstream

PHOTO 3 – WWTP Site Looking North

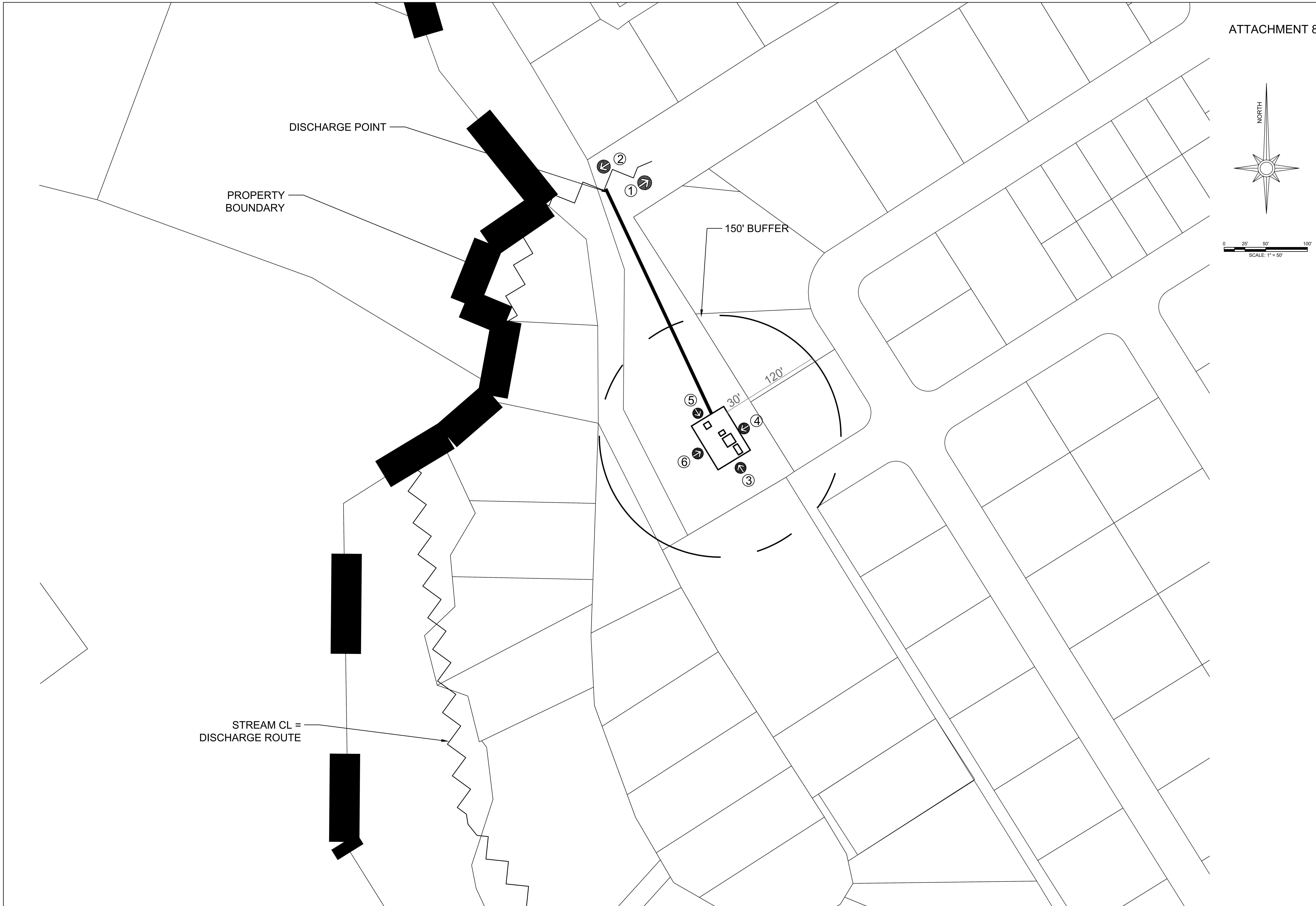
PHOTO 4 – WWTP Site Looking West

PHOTO 5 – WWTP Site Looking South

PHOTO 6 – WWTP Site Looking East

ATTACHMENT 8

PHOTOGRAPH LOCATION MAP



ORIGINAL PHOTOGRAPHS LOCATION MAP - ATTACHMENT 8

1" = 50' (WHEN PLOTTED ON 24"x36" SHEET)

RAINBOW'S END WASTEWATER TREATMENT PLANT

114 BLUE JAY LIVINGSTON, TEXAS 77351

Fairbanks & Associates
CIVIL - STRUCTURAL ENGINEERS
Texas Registered Engineering Firm F-11908
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Livingston, TX 77351
936-329-2731

STATE OF TEXAS
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X	XXXXXX	XXXXXXXXX

SITE PLAN PHOTOS

Sheet No.
PL-4.0

ATTACHMENT 9

BUFFER ZONE MAP

ATTACHMENT 9

PROPERTY BOUNDARY

DISCHARGE POINT

9

16

17

18

19

5

6

7

4

1

120'

30'

1

150' BUFFER

NORTH

0 20' 40' 80'

SCALE: 1" = 40'

PROPOSED WASTEWATER TREATMENT PLANT

1

2

STREAM CL = DISCHARGE ROUTE

BUFFER ZONE MAP - ATTACHMENT 9

1" = 40' (WHEN PLOTTED ON 24"x36" SHEET)

RAINBOW'S END WASTEWATER TREATMENT PLANT

114 BLUE JAY LIVINGSTON, TEXAS 77351

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936-329-2731

Fairbanks & Associates
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20MAR24
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x	XXXXXX	XXXXXXXXX

BUFFER ZONE MAP

Sheet No.
BZ-5.0

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ATTACHMENT 10

NUISANCE ODOR PREVENTION REQUEST

Nuisance odor prevention will be provided by a carbtrol unit, model G-1B90, placed between the influent bar screen and lift station which will filter out any H2S or VOC gases. Prevailing winds are out of the south, as seen in the Wind Rose (attachment 19), which will further alleviate any potential odor from reaching the eastern landowner that lies within the 150’ buffer.

Len Fairbanks, P.E.

ATTACHMENT 11

TREATMENT PROCESS DESCRIPTION – PHASE I

Treatment Process description – Phase 1

The treatment unit is a submerged fixed bed biofilm reactor (SFBBR) operated as an attached biological system configured as a packaged plant. The treatment unit is self-contained and consists of the following process units: influent pumps, influent fine screen, one aerated fixed-bed biofilm tank (BRT-oxidation) equipped with diffusers and blowers, one Tube settler Final settling tank (TS-FST) with sludge and scum removal, one chlorine contact tank (CCT) and one Sludge tank (SHT). The treatment system also includes sludge transfer piping, control panel, and disinfection apparatus. The effluent discharge pipe from the treatment unit is 6".

ATTACHMENT 12

TREATMENT PROCESS DESCRIPTION – PHASE II

Treatment Process description – Phase 2

The treatment unit is a submerged fixed bed biofilm reactor (SFBBR) operated as an attached biological system configured as a packaged plant. The treatment unit is self-contained and consists of the following process units: influent pumps, influent fine screen, one aerated fixed-bed biofilm tank (BRT-oxidation) equipped with diffusers and blowers, one Tube settler Final settling tank (TS-FST) with sludge and scum removal, one chlorine contact tank (CCT) and one Sludge tank (SHT). The treatment system also includes sludge transfer piping, control panel, and disinfection apparatus. The effluent discharge pipe from the treatment unit is 6".

ATTACHMENT 13

TREATMENT UNIT SIZING

Rainbow's End Wastewater Treatment Plant

Unit Descriptions and Dimensions

Phase 1 – 30,000 gpd

WWTP Dimensions - Phase 1		
Units	**Number of Units**	**Dimensions (LxWxH)**
1. Aeration Tank (BRT)	**1**	**6'x 12' x 12'**
2. Tube Settler Final Settling Tank (TS-FST)	**1**	**11'x 12' x 12'**
3. Chlorine contact tank (CCT)	**1**	**7' x 5'x 12'**
4. Sludge Holding tank (SHT)	**1**	**7' x 7'x 12'**

Phase 2 – 30,000 gpd

WWTP Dimensions - Phase 1		
Units	**Number of Units**	**Dimensions (LxWxH)**
1. Aeration Tank (BRT)	**1**	**6'x 12' x 12'**
2. Tube Settler Final Settling Tank (TS-FST)	**1**	**11'x 12' x 12'**
3. Chlorine contact tank (CCT)	**1**	**7' x 5'x 12'**
4. Sludge Holding tank (SHT)	**1**	**7' x 7'x 12'**

Rainbow's End Wastewater Treatment Plant

Unit Descriptions and Dimensions

Phase 1 – 30,000 gpd

WWTP Dimensions - Phase 1		
Units	**Number of Units**	**Dimensions (LxWxH)**
1. Aeration Tank (BRT)	**1**	**6'x 12' x 12'**
2. Tube Settler Final Settling Tank (TS-FST)	**1**	**11'x 12' x 12'**
3. Chlorine contact tank (CCT)	**1**	**7' x 5'x 12'**
4. Sludge Holding tank (SHT)	**1**	**7' x 7'x 12'**

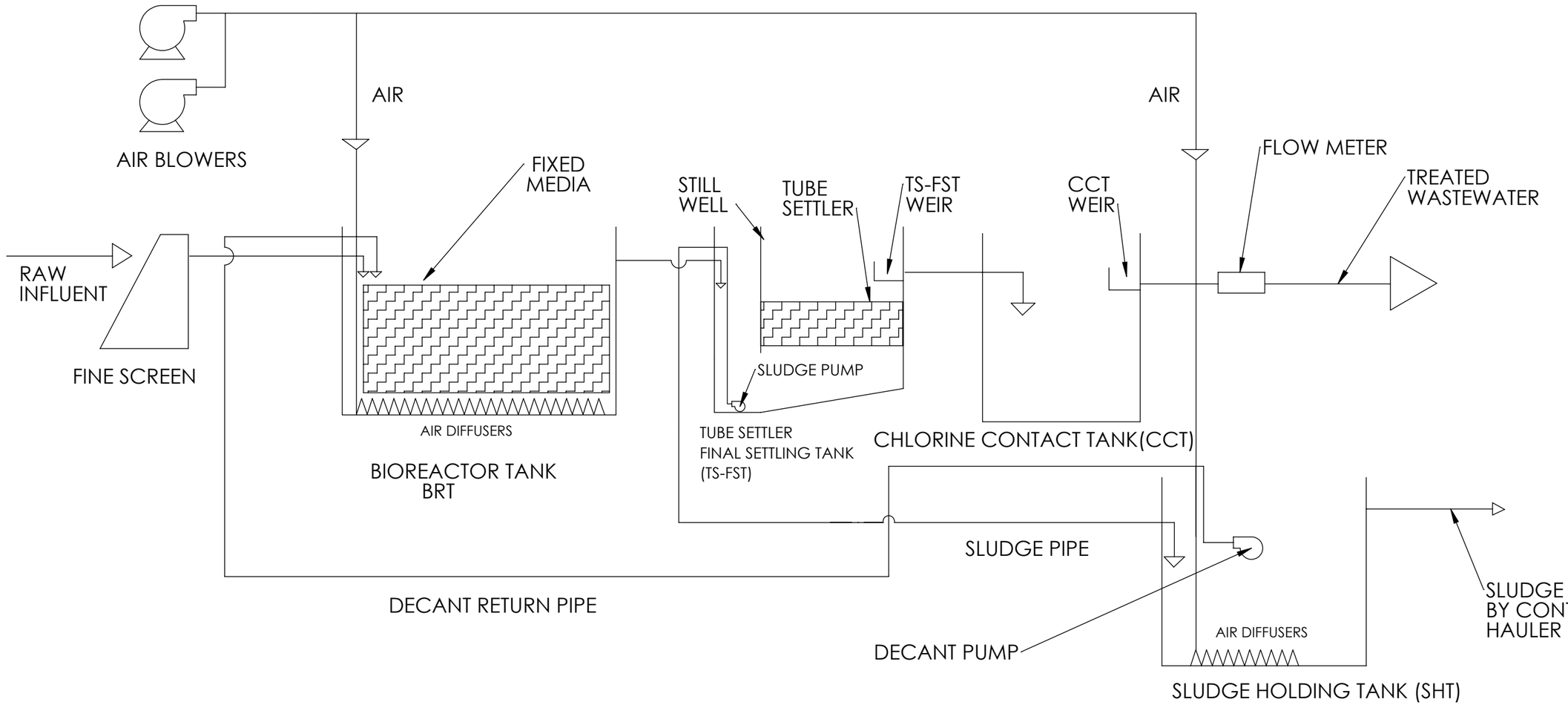
Final Phase – 60,000 gpd

WWTP Dimensions – Final Phase		
Units	**Number of Units**	**Dimensions (LxWxH)**
1. Aeration Tank (BRT)	**2**	**6'x 12' x 12'**
2. Tube Settler Final Settling Tank (TS-FST)	**2**	**11'x 12' x 12'**
3. Chlorine contact tank (CCT)	**2**	**7' x 5'x 12'**
4. Sludge Holding tank (SHT)	**2**	**7' x 7'x 12'**

ATTACHMENT 14

TREATMENT PROCESS FLOW DIAGRAM – PHASE I

Phase 1



	NAME	DATE
DRAWN	YH	05/13/21
CHECKED	YH	05/13/21
ENG APPR.	YH	05/13/21
MFG APPR.		
Q.A.		
COMMENTS:		

UNLESS OTHERWISE SPECIFIED

DIMENSIONS ARE IN INCHES

TITLE:
RAINBOW'S END
30KGPD WWTP
PROCESS FLOW DIAGRAM

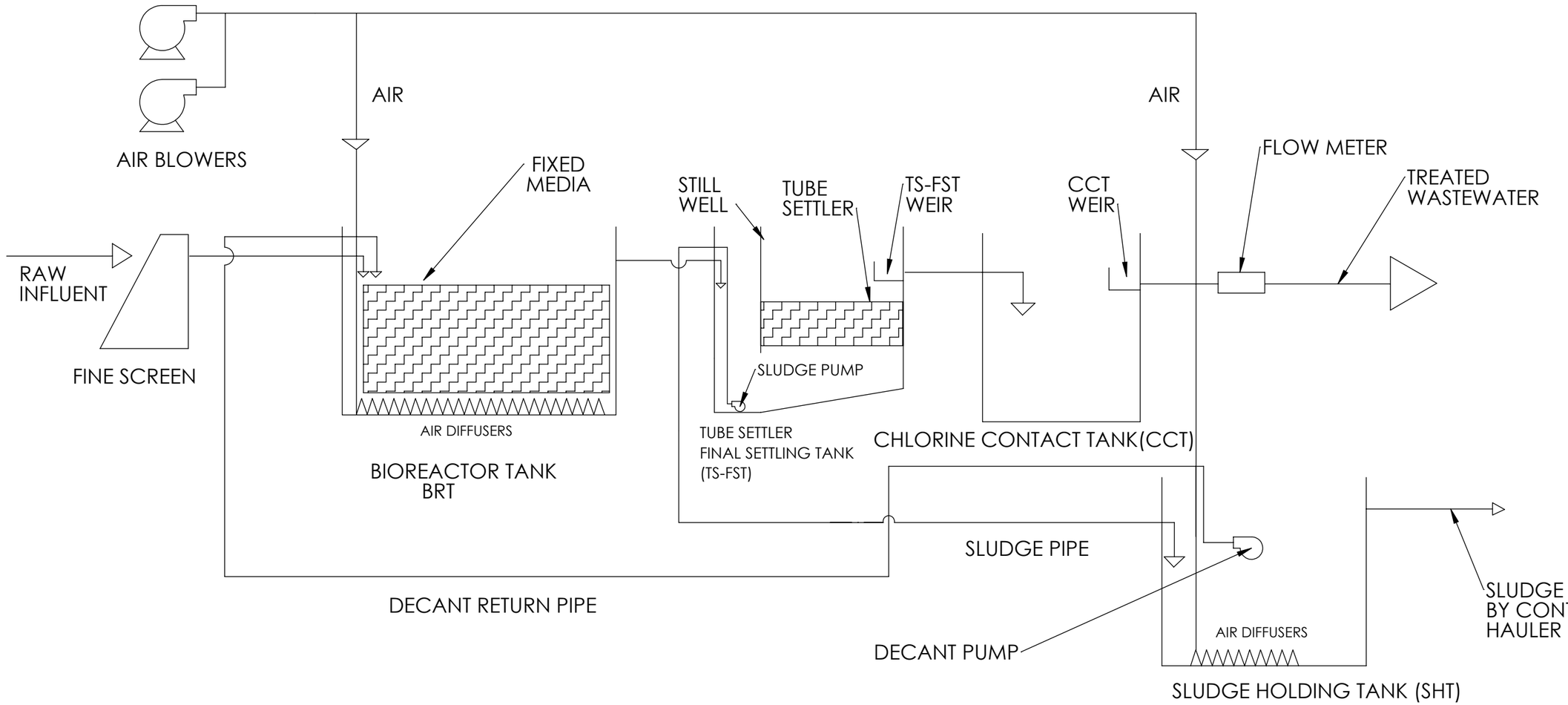
SIZE		REV
B		
SCALE: NTS		SHEET 1 OF 1

098 07/13/2025

ATTACHMENT 15

TREATMENT PROCESS FLOW DIAGRAM – PHASE II

Phase 2



	NAME	DATE
DRAWN	YH	05/13/21
CHECKED	YH	05/13/21
ENG APPR.	YH	05/13/21
MFG APPR.		
Q.A.		
COMMENTS:		

UNLESS OTHERWISE SPECIFIED

DIMENSIONS ARE IN INCHES

TITLE:
RAINBOW'S END
30KGPD WWTP
PROCESS FLOW DIAGRAM

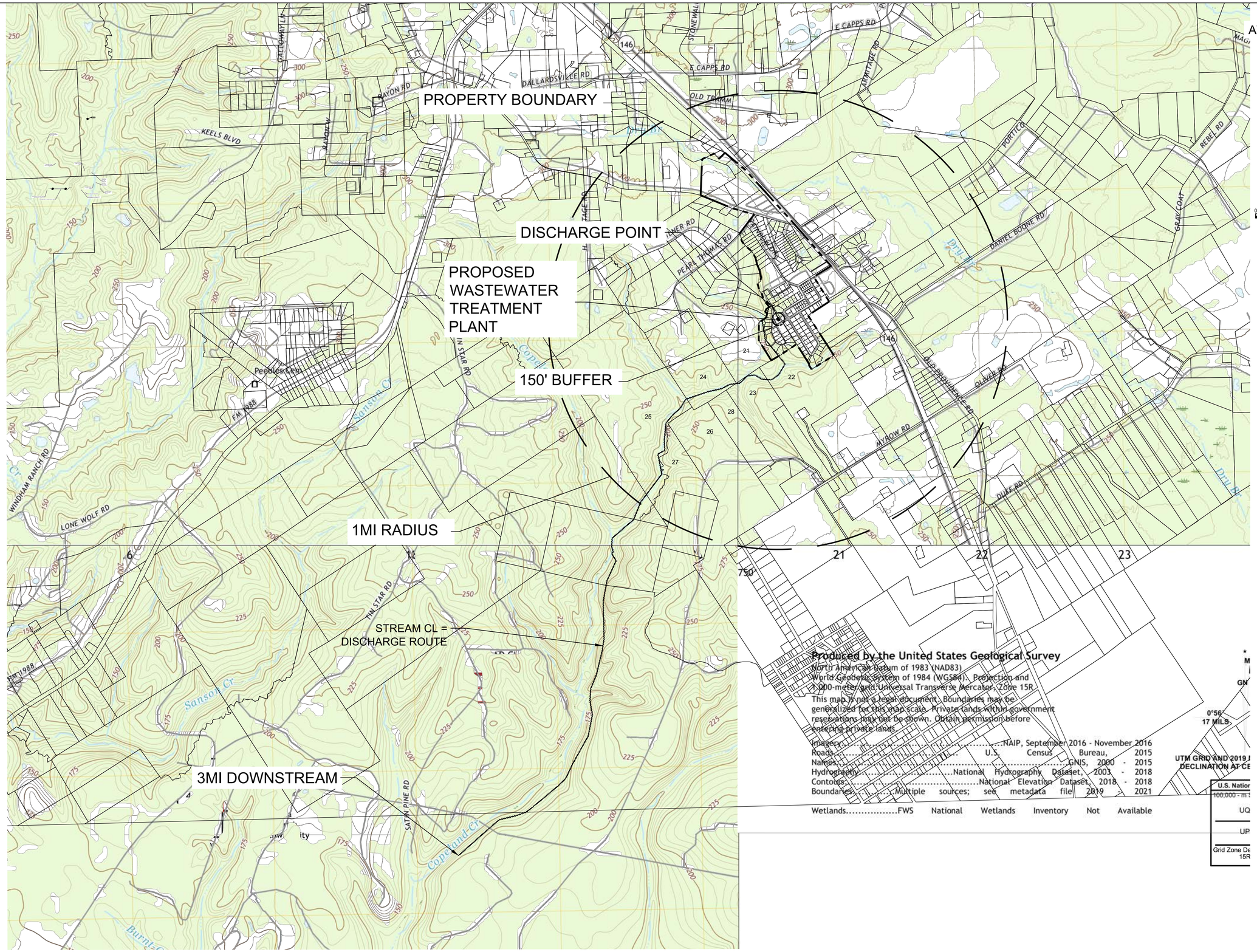
SIZE		REV
B		
SCALE: NTS		SHEET 1 OF 1

100 07/13/2025

ATTACHMENT 4

SITE DRAWING

ATTACHMENT 4



SITE PLAN - ATTACHMENT 4

1" = 1000' (WHEN PLOTTED ON 24"x36" SHEET)

RAINBOW'S END WASTEWATER TREATMENT PLANT

114 BLUE JAY LIVINGSTON, TEXAS 77351

Texas Registered Engineering Firm F-11908
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Livingston, TX 77351
936-329-2731
Fairbanks & Associates
CIVIL - STRUCTURAL ENGINEERS

STATE OF TEXAS
LEN FAIRBANKS
64662
REGISTERED PROFESSIONAL ENGINEER
20MAR24
F-11908

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x	xxxxxx	xxxxxxxxx

SITE PLAN

Sheet No.
SP-1.0

Sheet 1 of 1
07/15/2025

ATTACHMENT 17

JUSTIFICATION FOR PROPOSED FACILITY

The current sewer system isn't performing as desired and won't handle any future expansion. The owner has elected to construct a privately owned wastewater treatment plant to process 60,000 gallons per day at completion of 2 phases, with 30,000 gallons per day in each phase. Discharge from the plant will be an unnamed intermittent stream.

ATTACHMENT 18

DESIGN CALCULATIONS – PHASE I

AWS SFBBR UNIT DESIGN DOCUMENT 30000 gpd 12 by 12 Unit

(with Standard Inffluent and Effluent levels ; 300/300/ 20/20)

Unit Sizing for Submerged Fixed Biofilm Reactor

Unit Daily Rate	kgpd	gpm	cfs	Notes
Average Output (Q_{av})	30.00	20.83	0.046	
Peak Output (Q_{pk})	120.00	83.33	0.185	

	BOD5	TSS	NH3-N	Notes
Effluent Concentration (mg/l)	20	20	0.0	
Influent Concentration (mg/l)	300	300	0	
Influent Concentration (lb/d))	75.13	75.13	0.00	
Influent Concentration (gr/d))	34110.0	34110.0	0.0	

DESIGN CRITERION:

BRT1-CBOD Oxidation	**gr/m2/d**	**lb/sf/d**	**Value**	**Notes**
CBOD loading rate	8	0.001616619	1.23*10^-3	from Schlegel
for effluent at 10 mg/l	5.62	0.00115	1.15*10^-3	from MT Garrett
for effluent at 20 mg/l		0.00229	2.29*10^-3	from MT Garrett
for effluent at 25 mg/l		0.00286	2.86*10^-3	from MT Garrett
for Effluent at 30 mg/l		0.0035	3.50*10^-3	from MT Garrett
for Effluent at 5 mg/l		0.0009	0.90*10^-3	from MT Garrett
for Effluent at 50 mg/l		0.006	6.00*10^-3	from MT Garrett

Media	**m2/m3**	**sf/cf**	**Notes**
Brentwood (VF - 19 plus)	154	47	
Rashig VF 190 +	154	47	

BRT2 - Nitrification	**g/m2/d**	**lb/sf/d**	**Value**	**Notes**
NH3-N loading rate	2	0.000410	0.41*10^-3	

Media	**m2/m3**	**sf/cf**	**Notes**
Brentwood (CF-1900)	157	48	
Rashig XF 48	157	48	
PVA			

FST	**gpd/sf**	**Notes**
Loading Rate @ Qav	400	

12 by 12 Design

Fixed Tank Dimensions

Note: These are selected values

	Dimension(internal)	***Units***	***Notes***
width	11.5	ft	
height	11.5	ft	
max water height (mwd)	10	ft	
Peak Flow Factor	4		MWD must be 1.5 ft less than tank height (or more)

Calculated Tank Lengths and Media Volumes Provided

Note: These are calculated values based on fixed dimensions and effluent criteria

	Length	***Units***	***Notes***	***Media Vol,cf***	***Media Type***
BRT1	6	ft		420	BW (VF-19 plus)
BRT2	0	ft		0	BW (VF-19 plus)
FST	11	ft	Tube Settler	170	FS -41- 50-2
Chlorine Contact	7	ft	width is 5 ft		
Sludge Holding	7	ft	width is 7 ft		
		ft			
TOTAL LENGTH	24	ft			

Note: THIS DESIGN REQUIRES

Quantity	Description		
1	1 at 24FT	FRP Tank	
2	Blowers at 7Psi		70 ACFM

The CBOD loading rate is a function of the effluent concentration See Garrett paper
for 10 mg/l =1.15 lb BOD/1000 sf/d
for 20 mg/l =2.29 lb BOD/1000 sf/d
for 25 mg/l = 2.86 lb BOD/1000 sf/d
for 30 mg/l = 3.50 lb BOD/ 1000 sf/d
for 5 mg/l = 0.90 lb BOD/1000 sf/d

See PVA brochure for media info

The loading rate is a function of the effluent concentration level see Garrett paper, pg 6

TSS Eff	mg/l	15	20	30	10	5	50
loading rate	gpd/sq. ft	300	400	600	200	175	1000

PROCESS:

BRT1 & BRT2

Total Media surface area	**16404**	sf	
			NOTE: COD loading rate (same as BOD)

BRT2 - Nitrification Tank Media Surface Area Required

NOTE: Use design Influent NH3-N concentration divided by Nitrification loading rate

Nitrification Media Surface Area Required =	**0**	sf	
Media Volume with Brentwood Media at 48 sf/cf	0	cf	
Media Width	0	ft	equal to unit fixed width minus 0.6 ft
Media Height	0	ft	equal to unit fixed height minus 1.5 ft for freeboard allowance, 0.8 ft beneath media and 0.5 ft over media
Media Length Required	0.0	ft	
Use Media Length	0	ft	This is a Selected Value
Media Surface Area Provided	**0**	sf	
Media Volume Provided	0	cf	
BRT 2 Tank Length	0	ft	
BRT 2 Tank Fluid Volume	0	cf	use MWD for height

BRT1 - CBOD OxidationTank Media Surface Area Required

Total Media Surface Area - Nitrification Surface Area	**16404**	sf	
Media Volume with Brentwood Media at 47 sf/cf	349	cf	
Media Width	10.5	ft	
Media Height	8	ft	
Media Length Required	4.2	ft	
Use Media Length	5	ft	This length is selected not calculated
Media Surface Area Provided	**19740**	sf	
Media Volume Provided	420	cf	
BRT 1 Tank Length	6	ft	
BRT 1 Tank Fluid Volume	690	cf	use MWD for height

Safety factor provided due to variability of Influent concentration, temperature changes etc.

Total Media Surface Area provided	**19740**	sf	
Safety Factor=	20%	%	

BRT1 & BRT2

Total Tank Lengths (sum of both)	6	ft	
Media volume BRT 1	420	cf	Note: Liquid Volume of Each BRT is based on Gross Unit Dimensions (L x W) X Max Water Height,(MWD)
Media Volume BRT 2	0	cf	
Total Media Volume	420	cf	Note: Total Media volume provided for both BRTs
Total Fluid Volume for Both BRTs	690	cf	

FINAL SETTLING TANK

Surface Area Reqd @ Qav	75	sf	
Surface Area Reqd @ 1.5 x Qav	113	sf	
Width	11.5	ft	
Required Length	9.8	ft	
Tube settler	10.6		This value selected not calculated
Use	11.0	ft	
Surface area Provided	126.5	sf	
Tank Volume (cf)	1012	cf	
Tank Volume (gal)	**7590**	gal	
Use SWD	**8**	ft	

Detention Time	**Rate (gpd)**	**Time (hrs)**	
@ Qav	30000	6.1	
@ Qav x 4 (Peak)	120000	1.5	
	949	1200.0	gpd/sf

CHLORINE CONTACT TANK

This value is selected as trial

Use L	7	ft	This value is Tank width (H11) divided by 2
W	5	ft	
MWD	9.5	ft	
Volume	333	cf	
	2494	gallons	
Flow PF	4		See Unit Daily Rate for source of flow information
	83	gpm	
Qpk	120000		OK > than TCEQ minimum value of 20 minutes
Detention Time	30	minutes	

SLUDGE HOLDING TANK

This is a selected value as trial — Note: Value of L for SHT does not need to equal L for CCT but may effect final design configuration

Use L	7	ft	CCT & SHT are 1/2 full tank width
W	7	ft	
MWD	9.5	ft	
Volume	466	cf	
	3491	gallons	

Solids Production			
Schlegel;	0.5 sludge/lb BOD		
AWS Tests;	0.45 sludge/lb BOD		
use	0.45	sludge/lb BOD	
Dry Solids =	3%	% of lb/day	
Solids Production	33.8	lb/day	
sludge weight / day	1127	lb/day	
sludge unit weight	63.2	lb/cf	
sludge volume / day	17.8	cf/d	
Holding time	26	days	

AERATION SYSTEM

Note: BRT1 and BRT2 each have different surface area

This width is width of media, not tank

Media Width (both)	10.5	ft
BRT1 Media Length	5	ft
BRT2 Media Length	0	sf
BRT1 Media Plan Area	52.5	sf
BRT2 Media Plan Area	0	sf
Total Media Plan Area	52.5	sf of both BRT Media Stacks

Blower size

Schlegel; flushing air flow (Metric)	20	m3/m2/hr	$1m^3$=35.3ft3
Schlegel; flushing air flow (Standard)	65.6	ft3/ft2/hr	$1m^2$ = 10.9 ft2
for 10 minutes/day at base of media	1.09	cfm/ft2	

ACFM Model 47U (HP=7.4)	cfm/sf	cfm @ 7 psi	See ACFM blower pressure/ air flow chart for scfm at 1750 rpm =	70	ACFM
Maximum (1800 rpm)	1.33	70	Note: Airflow to maintain DO (>4 mg/l) for both tanks < flushing airflow for 1 tank		
Midrange (1750 rpm) (Schlegel value)	1.09	57	Use minimum required airflow value for pipe design.		
			Select range of airflow as function of rpm from blower pressure curve and divide by area of both BRTs		

Minimum Required Airflow for BRT1 =	53	cfm
Minimum Required Airflow for BRT2 =	0	cfm
Maximum Flushing Airflow for Both BRTs =	70	cfm
Minimum Required Air Flow for Both BRTs=	52.5	cfm
Minimum Required Air Flow for Both BRTs x 150%=	79	cfm

Diffusers

Note: For Design of Diffusers & Piping Use: 150% Required Air

EDI MaxAir 24 inch Tube (SS) Coarse Bubble Diffusers

Operating Range:	0 - 40	scfm for 24 inch SS diffuser
Minimum	0	scfm
Design	6	scfm
Diffuser Spacing	24	inches

EDI PermaFlex Disc Coarse Bubble Diffusers (5 inch diameter)

Operating Range:	0 to 20	scfm for 5 inch diameter disc diffuser
Minimum	0	scfm
Design	4	scfm
Diffuser Spacing	12	inches

Minimum Required Air in largest BRT @1800 RPM =	53	cfm	
Min Required Air in largest BRT @ 150% =	79	cfm	
			See calculation of actual number below
Minimum Required # of Diffusers in largest BRT =	13	#	
Minimum Required # of Diffusers in smallest BRT =	13	#	
Minimum Required # of Diffusers in SHT =	10	#	

Diffuser Layout: (for EDI MaxAir 24 inch SS Coarse bubble diffuser model) **ACFM Model 47U (HP=7.4)** or equivalent will work

Note: Air Scouring and Mixing governs the diffuser layout under media

BRT 2					
Air Drop Length for BRT2	10.5	ft	Note: Air Drop length is tank width minus 1 ft		
Media Width	10.5	ft			
Media Length	0	ft			
Air Drops (per BRT2)	0	#	use	0	
Diffuser Spacing	2	ft			Lay out is 2 ft on each side plus 1 ft spacing in between =5 ft
# Sets/ Drop	5.3	#	use	0	
# Diffusers/Set	2	#			
# Diffusers provided for BRT 2	0	#			

BRT 1			Note: Air drop length is tank width minus 1 ft		
Air drop length for BRT 1	10.5	ft			
Media Width	10.5	ft			
Media Length	5	ft			
Air Drops (per BRT1)	1	#	Use	2	
Diffuser Spacing	2	ft			
# Clusters/ Drop	5.3	#	use	6	
# Diffusers/ Cluster	2	#			
Diffusers provided for BRT 1	24	#	Note: Total for both BRTs		
Total Diffusers For both tanks	24	#			

Sludge Holding Tank and CCT		
Air Drop length for SHT	6.0	ft
Width	7.0	ft
Air drops (per SHT)	2	#
Diffuser Spacing	1	ft
# Sets / Drop	1	#
# Diffusers/ Set	5	#
Diffusers provided for SHT	10	#

Air Pipe Sizing :

Use Diebold/Lamson Nomograph (attached)

Velocity from 1300 to 2000 ft/min (fpm)

For Header Pipe us minimum required air flow values for both BRT tanks times 150%

Determine Header Pipe Diameter Use		2000 fpm to start		value selected as trial from nomograph based on pipe diameter
Air Flow (cfm)	79	79	79	
Velocity (fpm)	1604	401	226	
Area(sf)	0.05	0.20	0.35	
Diameter (in)	3	6	8	Diameters are trial values

St Header Pipe Dia (in)	3				
St Header Pipe Area (sf)	0.05	sf			
Tubing 3 x 3 area	0.06	sf	velocity =	1260	4 X 3 Tubing OK for Header

Air Drop/Cluster Pipe

For Air Drop Pipe use minimum required air flow value for single BRT times 150% , see C196

Flow/Cluster	39	cfm			Select pipe dia such that air velocity is not greater or less than acceptable air flow velocity
Pipe Dia	2	in	area =	0.022	sf
Velocity	1805	fpm		OK	

Blower Pressure

Maximum Water Height	10	ft	
BRTs SWD	4.33	psi	
Diffuser Head Loss	0.75	psi	(range 0.50 - 0.75psi)
Piping Head Loss	0.5	psi	
Total, Required	5.58	psi	

HYDRAULICS

	kgpd	**gpm**	**cfs**
Q av	30.0	20.8	0.0463
Q pk (PF = 4)	120.0	83.3	0.1852
Qav x 1.5	45.0	31.3	0.0694
Qpk (PF = 4)	180.0	125.0	0.2778

Pipe Size

Qav = 30,000 gpd

Pipe Diameter (inches)	**Area (sf)**	**V @ Qav (fps)**	**V @ Qpk (fps)**	**V2/2g (ft)**
3	0.049	0.94	3.77	0.22094
6	0.196	0.24	0.94	0.0138
8	0.349	0.13	0.53	0.00437

Qav x 1.5 = 45,000 gpd

Pipe Diameter (inches)	**Area (sf)**	**V @ Qav (fps)**	**V @ Qpk (fps)**	**V2/2g (ft)**
4	0.196	0.35	1.41	0.0311
5.5	0.349	0.20	0.80	0.0098

Use Pipe = 6 inch

Keep velocity less than 2 fps

BRT s Circular Weir (if installed) Francis Formula Q=3.33(L-0.2H)H^1.5

Q= flow rate in cfs

Note: L= circumference of weir in ft

H= Head on weir in ft

Use 6 inch Pipe

L=	1.571	ft	
Qav =	30000	0.0463	cfs
Qpk =	120,000	0.1852	cfs

solve for H by trial and error; select a trial value for H and solve for Q, then compare Q to known Qav or Qpk

Nape Over Weir

					actual flow	formula	trial H,ft
at Qav H =	0.013	ft	0.16	in	0.0463	0.007741339	0.013
at Qpk H =	0.033	ft	0.39	in	0.1852	0.030805646	0.033

Qav x 1.5 =	45,000	gpd	0.069	cfs
Qpk =	180,000	gpd	0.278	cfs

Nape Over Weir

					actual flow	formula	trial H,ft
at Qav H =	0.018	ft	0.22	in	0.069	0.012604709	0.018
at Qpk H =	0.043	ft	0.52	in	0.278	0.046391578	0.043

FST Weir formula Q = 0.497xH^2.5 where "Q" is in cfs and "H" is in ft

TCEQ Weir Loading 20,000 gpd/Lft

			Qav =	30000	0.0463	cfs					
			Qpk =	120000	0.1852	cfs					
Weir Length at Qpk =		6.00	ft	Use	9	ft		108		actual flow	calc. flow	trial H,ft
				6	inch	No. of Weirs		18	#	Note: actual flow per weir is total flow devided by # of weirs		
22.5 degree"V" notch weir		Spacing O/C		0.12	ft	1.44	in			0.0026	0.002479188	0.12
	Nape	at Qav=		0.209	ft	2.51	in			0.0103	0.009924808	0.209
	Nape	at Qpk=										
		Qav x 1.5 =		45000	0.069	cfs						
		Qpk =		135000	0.278	cfs						
Weir Length at Qpk =		9	ft	Use	9	ft						
				6	in	No. of Weirs		18	#	actual flow	calc. flow	trial H,ft
22.5 degree "V" notch weir		Spacing O/C				1.692	in			0.0039	0.003710259	0.141
	Nape	at Qav =		0.141	ft	2.95	in			0.0154	0.014917435	0.246
	Nape	at Qpk =		0.246	ft							

STILLING WELL

TCEQ Velocity 0.15 fps TCEQ limit value gpd 0.046 cfs

Qav =	30,000	Area Required =	0.309	sf		
		Pipe Diam, inch =	12.00	in	trial	
		Use	8	in		
		Area Provided =	0.349	sf	OK	
		Actual Velocity =	0.13	fps	OK	

CCT Effluent Box 90 Deg "V" Weir Formula Q = 2.5 H^2.5 where Q is in cfs and H in ft

			0.046	cfs	0.046	0.04472136	0.2	
Qav =	30.0	gpd	0.185	cfs	0.185	0.181179943	0.35	
Qpk =	120.0	gpd	0.2	ft				
Nape, H at Qav =	2.4	in	0.35	ft				
Nape, H at Qpk =	4.2	in						
					0.069	0.052558131	0.303	
Qav x 1.5=	45.0	gpd	0.069	cfs	0.278	0.208192529	0.5255	
Qpk =	180.0	gpd	0.278	cfs				
Nape, H at Qav =	3.636	in	0.303	ft				
Nape, H at Qpk =	6.31	in	0.5255	ft				

DESIGN CALCULATIONS FOR TUBE SETTLER INSTALLATION

Unit sizing for Settlement Tank With Tube Settlers

Project is **30000 GPD**

Unit Daily flow	kgpd	gpm	cfs	cf/h
Average Daily Flow (Q av)	30	20.83	0.046	167.1
Peak Daily Flow (Q pk)	120	83.3	0.185	668.4

		TSS
Effluent Concentration (mg/L)		20
Inffluent Concentration (mg/L)		400
Inffluent Concentration (lb/d)		100.2
Inffluent Concentration (gr/d)		45480

Tube Settler Media	m2/m3	sf/cf
Enexio (FS 41-50-2)	11.2	3.3

Settlement Tank	gpd/sf
Loading Rate at Qav	400

Surface Area Required @ Qav	75.0	sf
Surface Area Required @ Qav x 1.5	112.5	sf
Settlement Tank Width	11.5	ft
Tube Module Height	2	ft
Required Module Volume	34.1	cf
Module Volume/ ft of length	23	cf/ft
Required Length (Le)	1.5	ft
Effective Length provided	7.4	ft
Module Volume provided	170.5	cf
Effective Surface Area Provided (P)	562.5	sf
Base Length (Lb)	8.6	ft
Total Base Area	98.5	sf
Effective Base Area (Le*W)	85.2	sf
Hazen Velocity (Q/P)	0.30	ft/hr
Base (mirror) Velocity (Q/Aeff)	1.96	ft/hr

Note: this is base length of Tube Settler Module. Need to provide sufficient length for Weir (see design spreadsheet plus stilling well dimensions)

Settlement Tank Dimensions

Fixed Dimensions	Dimension	Units	
Width	11.5	ft	
Tank Height	11.5	ft	
Module Height	2	ft	
Max Water Depth	10	ft	
Weir Length	9	ft	From design spreadsheet
Peak Flow Factor	4		
Calculated Dimensions	**Length**	**Units**	
Effective Length (Le)	7.4	ft	
Base Length (Lb)	8.6	ft	
Total tank length (A)	11	ft	equal to weir length plus 2 ft
Total tank length (B)	10.6	ft	equal to Base length plus 2ft

ATTACHMENT 19

DESIGN CALCULATIONS – PHASE II

AWS SFBBR UNIT DESIGN DOCUMENT 30000 gpd 12 by 12 Unit

(with Standard Inffluent and Effluent levels ; 300/300/ 20/20)

Unit Sizing for Submerged Fixed Biofilm Reactor

Unit Daily Rate	kgpd	gpm	cfs	Notes
Average Output (Q_{av})	30.00	20.83	0.046	
Peak Output (Q_{pk})	120.00	83.33	0.185	

	BOD5	TSS	NH3-N	Notes
Effluent Concentration (mg/l)	20	20	0.0	
Influent Concentration (mg/l)	300	300	0	
Influent Concentration (lb/d))	75.13	75.13	0.00	
Influent Concentration (gr/d))	34110.0	34110.0	0.0	

DESIGN CRITERION:

BRT1-CBOD Oxidation	**gr/m2/d**	**lb/sf/d**	**Value**	**Notes**
CBOD loading rate	8	0.001616619	1.23*10^-3	from Schlegel
for effluent at 10 mg/l	5.62	0.00115	1.15*10^-3	from MT Garrett
for effluent at 20 mg/l		0.00229	2.29*10^-3	from MT Garrett
for effluent at 25 mg/l		0.00286	2.86*10^-3	from MT Garrett
for Effluent at 30 mg/l		0.0035	3.50*10^-3	from MT Garrett
for Effluent at 5 mg/l		0.0009	0.90*10^-3	from MT Garrett
for Effluent at 50 mg/l		0.006	6.00*10^-3	from MT Garrett

Media	**m2/m3**	**sf/cf**	**Notes**
Brentwood (VF - 19 plus)	154	47	
Rashig VF 190 +	154	47	

BRT2 - Nitrification	**g/m2/d**	**lb/sf/d**	**Value**	**Notes**
NH3-N loading rate	2	0.000410	0.41*10^-3	

Media	**m2/m3**	**sf/cf**	**Notes**
Brentwood (CF-1900)	157	48	
Rashig XF 48	157	48	
PVA			

FST	**gpd/sf**	**Notes**
Loading Rate @ Qav	400	

12 by 12 Design

Fixed Tank Dimensions

Note: These are selected values

	Dimension(internal)	*Units*	*Notes*
width	11.5	ft	
height	11.5	ft	
max water height (mwd)	10	ft	
Peak Flow Factor	4		MWD must be 1.5 ft less than tank height (or more)

Calculated Tank Lengths and Media Volumes Provided

Note: These are calculated values based on fixed dimensions and effluent criteria

	Length	*Units*	*Notes*	*Media Vol,cf*	*Media Type*
BRT1	6	ft		420	BW (VF-19 plus)
BRT2	0	ft		0	BW (VF-19 plus)
FST	11	ft	Tube Settler	170	FS -41- 50-2
Chlorine Contact	7	ft	width is 5 ft		
Sludge Holding	7	ft	width is 7 ft		
		ft			
TOTAL LENGTH	24	ft			

Note: THIS DESIGN REQUIRES

Quantity	Description	
1	1 at 24FT	FRP Tank
2	Blowers at 7Psi	70 ACFM

The CBOD loading rate is a function of the effluent concentration See Garrett paper
for 10 mg/l =1.15 lb BOD/1000 sf/d
for 20 mg/l =2.29 lb BOD/1000 sf/d
for 25 mg/l = 2.86 lb BOD/1000 sf/d
for 30 mg/l = 3.50 lb BOD/ 1000 sf/d
for 5 mg/l = 0.90 lb BOD/1000 sf/d

See PVA brochure for media info

The loading rate is a function of the effluent concentration level see Garrett paper, pg 6

TSS Eff	mg/l	15	20	30	10	5	50
loading rate	gpd/sq. ft	300	400	600	200	175	1000

PROCESS:

BRT1 & BRT2

Total Media surface area	**16404**	sf	
			NOTE: COD loading rate (same as BOD)

BRT2 - Nitrification Tank Media Surface Area Required

NOTE: Use design Influent NH3-N concentration divided by Nitrification loading rate

Nitrification Media Surface Area Required =	**0**	sf	
Media Volume with Brentwood Media at 48 sf/cf	0	cf	
Media Width	0	ft	equal to unit fixed width minus 0.6 ft
Media Height	0	ft	equal to unit fixed height minus 1.5 ft for freeboard allowance, 0.8 ft beneath media and 0.5 ft over media
Media Length Required	0.0	ft	
Use Media Length	0	ft	This is a Selected Value
Media Surface Area Provided	**0**	sf	
Media Volume Provided	0	cf	
BRT 2 Tank Length	0	ft	
BRT 2 Tank Fluid Volume	0	cf	use MWD for height

BRT1 - CBOD OxidationTank Media Surface Area Required

Total Media Surface Area - Nitrification Surface Area	**16404**	sf	
Media Volume with Brentwood Media at 47 sf/cf	349	cf	
Media Width	10.5	ft	
Media Height	8	ft	
Media Length Required	4.2	ft	
Use Media Length	5	ft	This length is selected not calculated
Media Surface Area Provided	**19740**	sf	
Media Volume Provided	420	cf	
BRT 1 Tank Length	6	ft	
BRT 1 Tank Fluid Volume	690	cf	use MWD for height

Safety factor provided due to variability of Influent concentration, temperature changes etc.

Total Media Surface Area provided	**19740**	sf	
Safety Factor=	20%	%	

BRT1 & BRT2

Total Tank Lengths (sum of both)	6	ft	
Media volume BRT 1	420	cf	Note: Liquid Volume of Each BRT is based on Gross Unit Dimensions (L x W) X Max Water Height,(MWD)
Media Volume BRT 2	0	cf	
Total Media Volume	420	cf	Note: Total Media volume provided for both BRTs
Total Fluid Volume for Both BRTs	690	cf	

FINAL SETTLING TANK

Surface Area Reqd @ Qav	75	sf	
Surface Area Reqd @ 1.5 x Qav	113	sf	
Width	11.5	ft	
Required Length	9.8	ft	
Tube settler	10.6		This value selected not calculated
Use	11.0	ft	
Surface area Provided	126.5	sf	
Tank Volume (cf)	1012	cf	
Tank Volume (gal)	**7590**	gal	
Use SWD	**8**	ft	

Detention Time	**Rate (gpd)**	**Time (hrs)**	
@ Qav	30000	6.1	
@ Qav x 4 (Peak)	120000	1.5	
	949	1200.0	gpd/sf

CHLORINE CONTACT TANK

This value is selected as trial

Use L	7	ft	This value is Tank width (H11) divided by 2
W	5	ft	
MWD	9.5	ft	
Volume	333	cf	
	2494	gallons	
Flow PF	4		See Unit Daily Rate for source of flow information
	83	gpm	
Qpk	120000		OK > than TCEQ minimum value of 20 minutes
Detention Time	30	minutes	

SLUDGE HOLDING TANK

This is a selected value as trial — Note: Value of L for SHT does not need to equal L for CCT but may effect final design configuration

Use L	7	ft	CCT & SHT are 1/2 full tank width
W	7	ft	
MWD	9.5	ft	
Volume	466	cf	
	3491	gallons	

Solids Production			
Schlegel;	0.5 sludge/lb BOD		
AWS Tests;	0.45 sludge/lb BOD		
use	0.45	sludge/lb BOD	
Dry Solids =	3%	% of lb/day	
Solids Production	33.8	lb/day	
sludge weight / day	1127	lb/day	
sludge unit weight	63.2	lb/cf	
sludge volume / day	17.8	cf/d	
Holding time	26	days	

AERATION SYSTEM

Note: BRT1 and BRT2 each hove different surface area

This width is width of media, not tank

Media Width (both)	10.5	ft
BRT1 Media Length	5	ft
BRT2 Media Length	0	sf
BRT1 Media Plan Area	52.5	sf
BRT2 Media Plan Area	0	sf
Total Media Plan Area	52.5	sf of both BRT Media Stacks

Blower size

Schlegel; flushing air flow (Metric)	20	m3/m2/hr	$1m^3$=35.3ft3
Schlegel; flushing air flow (Standard)	65.6	ft3/ft2/hr	$1m^2$ = 10.9 ft2
for 10 minutes/day at base of media	1.09	cfm/ft2	

ACFM Model 47U (HP=7.4)	cfm/sf	cfm @ 7 psi	See ACFM blower pressure/ air flow chart for scfm at 1750 rpm =	70	ACFM
Maximum (1800 rpm)	1.33	70	Note: Airflow to maintain DO (>4 mg/l) for both tanks < flushing airflow for 1 tank		
Midrange (1750 rpm) (Schlegel value)	1.09	57	Use minimum required airflow value for pipe design.		
			Select range of airflow as function of rpm from blower pressure curve and divide by area of both BRTs		

Minimum Required Airflow for BRT1 =	53	cfm
Minimum Required Airflow for BRT2 =	0	cfm
Maximum Flushing Airflow for Both BRTs =	70	cfm
Minimum Required Air Flow for Both BRTs=	52.5	cfm
Minimum Required Air Flow for Both BRTs x 150%=	79	cfm

Diffusers

Note: For Design of Diffusers & Piping Use: 150% Required Air

EDI MaxAir 24 inch Tube (SS) Coarse Bubble Diffusers

Operating Range:	0 - 40	scfm for 24 inch SS diffuser
Minimum	0	scfm
Design	6	scfm
Diffuser Spacing	24	inches

EDI PermaFlex Disc Coarse Bubble Diffusers (5 inch diameter)

Operating Range:	0 to 20	scfm for 5 inch diameter disc diffuser
Minimum	0	scfm
Design	4	scfm
Diffuser Spacing	12	inches

Minimum Required Air in largest BRT @1800 RPM =	53	cfm	
Min Required Air in largest BRT @ 150% =	79	cfm	
			See calculation of actual number below
Minimum Required # of Diffusers in largest BRT =	13	#	
Minimum Required # of Diffusers in smallest BRT =	13	#	
Minimum Required # of Diffusers in SHT =	10	#	

Diffuser Layout: (for EDI MaxAir 24 inch SS Coarse bubble diffuser model) **ACFM Model 47U (HP=7.4)** or equivalent will work

Note: Air Scouring and Mixing governs the diffuser layout under media

BRT 2					
Air Drop Length for BRT2	10.5	ft	Note: Air Drop length is tank width minus 1 ft		
Media Width	10.5	ft			
Media Length	0	ft			
Air Drops (per BRT2)	0	#	use	0	
Diffuser Spacing	2	ft			Lay out is 2 ft on each side plus 1 ft spacing in between =5 ft
# Sets/ Drop	5.3	#	use	0	
# Diffusers/Set	2	#			
# Diffusers provided for BRT 2	0	#			

BRT 1			Note: Air drop length is tank width minus 1 ft		
Air drop length for BRT 1	10.5	ft			
Media Width	10.5	ft			
Media Length	5	ft			
Air Drops (per BRT1)	1	#	Use	2	
Diffuser Spacing	2	ft			
# Clusters/ Drop	5.3	#	use	6	
# Diffusers/ Cluster	2	#			
Diffusers provided for BRT 1	24	#	Note: Total for both BRTs		
Total Diffusers For both tanks	24	#			

Sludge Holding Tank and CCT		
Air Drop length for SHT	6.0	ft
Width	7.0	ft
Air drops (per SHT)	2	#
Diffuser Spacing	1	ft
# Sets / Drop	1	#
# Diffusers/ Set	5	#
Diffusers provided for SHT	10	#

Air Pipe Sizing :

Use Diebold/Lamson Nomograph (attached)

Velocity from 1300 to 2000 ft/min (fpm)

For Header Pipe us minimum required air flow values for both BRT tanks times 150%

Determine Header Pipe Diameter Use		2000 fpm to start		value selected as trial from nomograph based on pipe diameter
Air Flow (cfm)	79	79	79	
Velocity (fpm)	1604	401	226	
Area(sf)	0.05	0.20	0.35	
Diameter (in)	3	6	8	Diameters are trial values

St Header Pipe Dia (in)	3				
St Header Pipe Area (sf)	0.05	sf			
Tubing 3 x 3 area	0.06	sf	velocity =	1260	4 X 3 Tubing OK for Header

Air Drop/Cluster Pipe

For Air Drop Pipe use minimum required air flow value for single BRT times 150% , see C196

Flow/Cluster	39	cfm			Select pipe dia such that air velocity is not greater or less than acceptable air flow velocity
Pipe Dia	2	in	area =	0.022	sf
Velocity	1805	fpm		OK	

Blower Pressure

Maximum Water Height	10	ft	
BRTs SWD	4.33	psi	
Diffuser Head Loss	0.75	psi	(range 0.50 - 0.75psi)
Piping Head Loss	0.5	psi	
Total, Required	5.58	psi	

HYDRAULICS

	kgpd	**gpm**	**cfs**
Q av	30.0	20.8	0.0463
Q pk (PF = 4)	120.0	83.3	0.1852
Qav x 1.5	45.0	31.3	0.0694
Qpk (PF = 4)	180.0	125.0	0.2778

Pipe Size

Qav = 30,000 gpd

Pipe Diameter (inches)	**Area (sf)**	**V @ Qav (fps)**	**V @ Qpk (fps)**	**V2/2g (ft)**
3	0.049	0.94	3.77	0.22094
6	0.196	0.24	0.94	0.0138
8	0.349	0.13	0.53	0.00437

Qav x 1.5 = 45,000 gpd

Pipe Diameter (inches)	**Area (sf)**	**V @ Qav (fps)**	**V @ Qpk (fps)**	**V2/2g (ft)**
4	0.196	0.35	1.41	0.0311
5.5	0.349	0.20	0.80	0.0098

Use Pipe = 6 inch

Keep velocity less than 2 fps

BRT s Circular Weir (if installed) Francis Formula Q=3.33(L-0.2H)H^1.5

Q= flow rate in cfs

Note: L= circumference of weir in ft

H= Head on weir in ft

Use 6 inch Pipe

L=	1.571	ft	
Qav =	30000	0.0463	cfs
Qpk =	120,000	0.1852	cfs

solve for H by trial and error; select a trial value for H and solve for Q, then compare Q to known Qav or Qpk

Nape Over Weir

					actual flow	formula	trial H,ft
at Qav H =	0.013	ft	0.16	in	0.0463	0.007741339	0.013
at Qpk H =	0.033	ft	0.39	in	0.1852	0.030805646	0.033

Qav x 1.5 =	45,000	gpd	0.069	cfs
Qpk =	180,000	gpd	0.278	cfs

Nape Over Weir

					actual flow	formula	trial H,ft
at Qav H =	0.018	ft	0.22	in	0.069	0.012604709	0.018
at Qpk H =	0.043	ft	0.52	in	0.278	0.046391578	0.043

FST Weir formula Q = 0.497xH^2.5 where "Q" is in cfs and "H" is in ft

TCEQ Weir Loading 20,000 gpd/Lft

		Qav =	30000	0.0463	cfs						
		Qpk =	120000	0.1852	cfs						
Weir Length at Qpk =	6.00	ft	Use	9	ft		108		actual flow	calc. flow	trial H,ft
			6	inch		No. of Weirs	18	#	Note: actual flow per weir is total flow devided by # of weirs		
22.5 degree"V" notch weir		Spacing O/C	0.12	ft	1.44	in			0.0026	0.002479188	0.12
		Nape at Qav=	0.209	ft	2.51	in			0.0103	0.009924808	0.209
		Nape at Qpk=									
		Qav x 1.5 =	45000	0.069	cfs						
		Qpk =	135000	0.278	cfs						
Weir Length at Qpk =	9	ft	Use	9	ft						
			6	in		No. of Weirs	18	#	actual flow	calc. flow	trial H,ft
22.5 degree "V" notch weir		Spacing O/C			1.692	in			0.0039	0.003710259	0.141
		Nape at Qav =	0.141	ft	2.95	in			0.0154	0.014917435	0.246
		Nape at Qpk =	0.246	ft							

STILLING WELL

TCEQ Velocity	0.15	fps	TCEQ limit value	gpd	0.046	cfs	
	Qav =		30,000	Area Required =	0.309	sf	
				Pipe Diam, inch =	12.00	in	trial
				Use	8	in	
				Area Provided =	0.349	sf OK	
				Actual Velocity =	0.13	fps	OK

CCT Effluent Box 90 Deg "V" Weir Formula Q = 2.5 H^2.5 where Q is in cfs and H in ft

								actual flow	calc. flow	trial H,ft
				0.046	cfs			0.046	0.04472136	0.2
Qav =	30.0	gpd		0.185	cfs			0.185	0.181179943	0.35
Qpk =	120.0	gpd		0.2	ft					
Nape, H at Qav =	2.4	in		0.35	ft					
Nape, H at Qpk =	4.2	in								
								0.069	0.052558131	0.303
Qav x 1.5=	45.0	gpd		0.069	cfs			0.278	0.208192529	0.5255
Qpk =	180.0	gpd		0.278	cfs					
Nape, H at Qav =	3.636	in		0.303	ft					
Nape, H at Qpk =	6.31	in		0.5255	ft					

DESIGN CALCULATIONS FOR TUBE SETTLER INSTALLATION

Unit sizing for Settlement Tank With Tube Settlers

Project is **30000 GPD**

Unit Daily flow	kgpd	gpm	cfs	cf/h
Average Daily Flow (Q av)	30	20.83	0.046	167.1
Peak Daily Flow (Q pk)	120	83.3	0.185	668.4

		TSS
Effluent Concentration (mg/L)		20
Inffluent Concentration (mg/L)		400
Inffluent Concentration (lb/d)		100.2
Inffluent Concentration (gr/d)		45480

Tube Settler Media	m2/m3	sf/cf
Enexio (FS 41-50-2)	11.2	3.3

Settlement Tank	gpd/sf
Loading Rate at Qav	400

Surface Area Required @ Qav	75.0	sf
Surface Area Required @ Qav x 1.5	112.5	sf
Settlement Tank Width	11.5	ft
Tube Module Height	2	ft
Required Module Volume	34.1	cf
Module Volume/ ft of length	23	cf/ft
Required Length (Le)	1.5	ft
Effective Length provided	7.4	ft
Module Volume provided	170.5	cf
Effective Surface Area Provided (P)	562.5	sf
Base Length (Lb)	8.6	ft
Total Base Area	98.5	sf
Effective Base Area (Le*W)	85.2	sf
Hazen Velocity (Q/P)	0.30	ft/hr
Base (mirror) Velocity (Q/Aeff)	1.96	ft/hr

Note: this is base length of Tube Settler Module. Need to provide sufficient length for Weir (see design spreadsheet plus stilling well dimensions)

Settlement Tank Dimensions

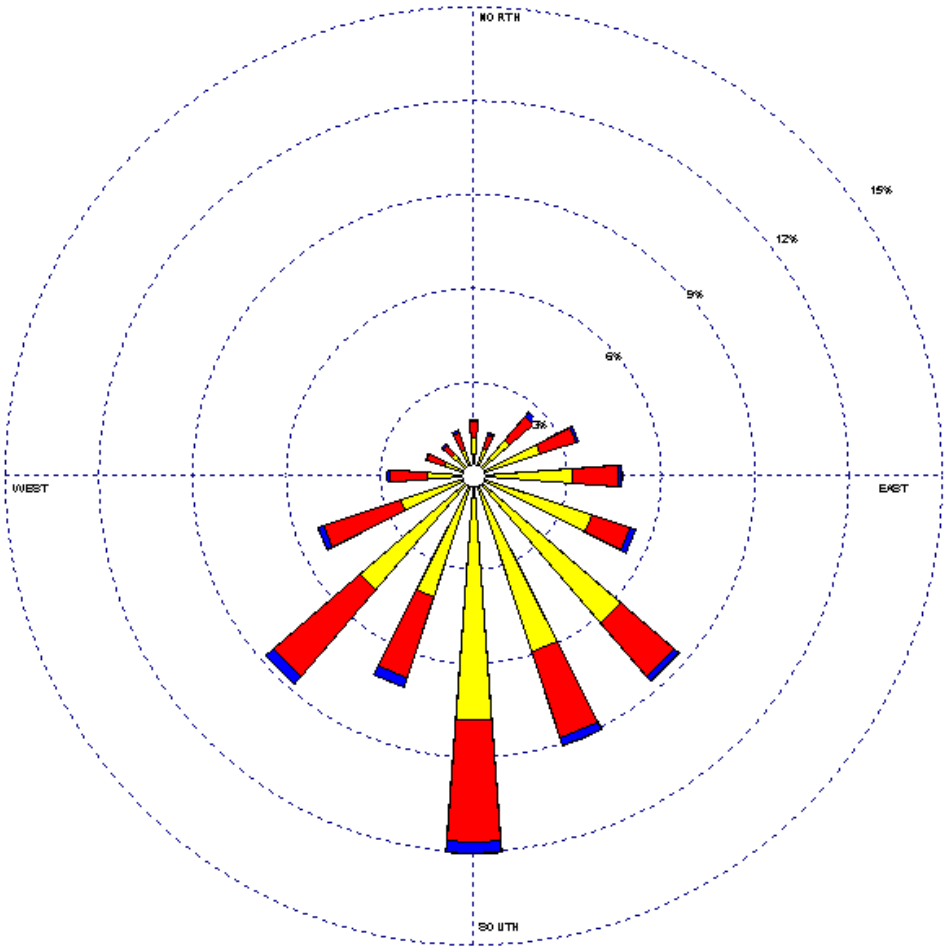
Fixed Dimensions	Dimension	Units	
Width	11.5	ft	
Tank Height	11.5	ft	
Module Height	2	ft	
Max Water Depth	10	ft	
Weir Length	9	ft	From design spreadsheet
Peak Flow Factor	4		
Calculated Dimensions	**Length**	**Units**	
Effective Length (Le)	7.4	ft	
Base Length (Lb)	8.6	ft	
Total tank length (A)	11	ft	equal to weir length plus 2 ft
Total tank length (B)	10.6	ft	equal to Base length plus 2ft

ATTACHMENT 20

WIND ROSE DIAGRAM

WIND ROSE PLOT

Station #93987 - LUFKIN/FAA AIRPORT, TX



Wind Speed (m/s) > 11.06 8.49 - 11.06 5.40 - 8.49 3.34 - 5.40 1.80 - 3.34 0.51 - 1.80	MODELER Sara West	DATE 8/29/2002	COMPANY NAME USDA-ARS
	DISPLAY Wind Speed	UNIT m/s	COMMENTS
	AVG. WIND SPEED 3.23 m/s	CALM WINDS 22.00%	
	ORIENTATION Direction (blowing from)	PLOT YEAR-DATE-TIME 1961 Jul 1 - Jul 31 Midnight - 11 PM	

WRPLOT View 7.0 by Lakes Environmental Software - www.lakes-environmental.com

ATTACHMENT 21

SEWAGE SLUDGE SOLIDS MANAGEMENT PLAN

SLUDGE MANAGEMENT PLAN

Influent Design Flow = 0.03MGD
2 – Hr. Peak Flow = 0.12 MGD
Influent BOD Concentration = 300 mg/l
Bio Reactor Tank Volumes (BOD Oxidation) = 5,161 gallons
Sludge Holding Tank Volume = 3,486 gallons

Solids Generated	100%	75%	50%	25%
Pounds of Influent BOD5	75	56	38	19
Pounds of digested dry sludge produced*	34	25	17	8
Pounds of wet sludge produced**	1127	845	563	282
Gallons of wet sludge produced***	135	101	68	64

*based on 0.45sludge/pound of BOD_5
**Based on dry solids at 3%
***based on the weight of 8.34 ppg

Effluent discharges from Bio-Reactor (BRT) to a final settling tank (FST) to allow sludge to settle. Sludge is conveyed from FST to sludge holding tank (SHT) by gravity where supernatant is periodically decanted and returned to BRT.

Removal Schedule (days)	100%	75%	50%	25%
Days between sludge removal	26	34.4	52	103

Accumulated sludge will be removed from the SHT for disposal regularly as required based on the accumulation rate in the SHT. The estimated sludge production based on an average daily flow rate of 0.03 MGD is 18 cf/d. A registered hauler will transport the wet sludge to a TCEQ authorized disposal location.

ATTACHMENT 22

PIP FORM

Texas Commission on Environmental Quality

Public Involvement Plan Form for Permit and Registration Applications

The Public Involvement Plan is intended to provide applicants and the agency with information about how public outreach will be accomplished for certain types of applications in certain geographical areas of the state. It is intended to apply to new activities; major changes at existing plants, facilities, and processes; and to activities which are likely to have significant interest from the public. This preliminary screening is designed to identify applications that will benefit from an initial assessment of the need for enhanced public outreach.

All applicable sections of this form should be completed and submitted with the permit or registration application. For instructions on how to complete this form, see TCEQ-20960-inst.

Section 1. Preliminary Screening

☒ New Permit or Registration Application

☐ New Activity – modification, registration, amendment, facility, etc. (see instructions)

If neither of the above boxes are checked, completion of the form is not required and does not need to be submitted.

Section 2. Secondary Screening

☒ Requires public notice,

☐ Considered to have significant public interest, **and**

☐ Located within any of the following geographical locations:

- Austin
- Dallas
- Fort Worth
- Houston
- San Antonio
- West Texas
- Texas Panhandle
- Along the Texas/Mexico Border
- Other geographical locations should be decided on a case-by-case basis

If all the above boxes are not checked, a Public Involvement Plan is not necessary. Stop after Section 2 and submit the form.

☐ Public Involvement Plan not applicable to this application. Provide **brief** explanation.

Section 3. Application Information

Type of Application (check all that apply):

Air ☐ Initial ☐ Federal ☐ Amendment ☐ Standard Permit ☐ Title V

Waste ☐ Municipal Solid Waste ☐ Industrial and Hazardous Waste ☐ Scrap Tire
☐ Radioactive Material Licensing ☐ Underground Injection Control

Water Quality

☒ Texas Pollutant Discharge Elimination System (TPDES)

- ☐ Texas Land Application Permit (TLAP)
- ☐ State Only Concentrated Animal Feeding Operation (CAFO)
- ☐ Water Treatment Plant Residuals Disposal Permit

☐ Class B Biosolids Land Application Permit

☐ Domestic Septage Land Application Registration

Water Rights New Permit

☐ New Appropriation of Water

☐ New or existing reservoir

Amendment to an Existing Water Right

☐ Add a New Appropriation of Water

☐ Add a New or Existing Reservoir

☐ Major Amendment that could affect other water rights or the environment

Section 4. Plain Language Summary

Provide a brief description of planned activities.

Rainbow's End Park, Inc. proposes to operate Rainbow's End wastewater treatment plant. The facility will be located the intersection of E Peterson Loop and Quail, in Livingston, Polk County, Texas 77351.
The wastewater treatment plant will be for the Rainbow's End Park, Inc. for 60,000 gallons per day.

Section 5. Community and Demographic Information

Community information can be found using EPA's EJ Screen, U.S. Census Bureau information, or generally available demographic tools.

Information gathered in this section can assist with the determination of whether alternative language notice is necessary. Please provide the following information.

Livingston

(City)

Polk

(County)

(Census Tract)

Please indicate which of these three is the level used for gathering the following information.

☐ City ☐ County ☐ Census Tract

(a) Percent of people over 25 years of age who at least graduated from high school

(b) Per capita income for population near the specified location

(c) Percent of minority population and percent of population by race within the specified location

(d) Percent of Linguistically Isolated Households by language within the specified location

(e) Languages commonly spoken in area by percentage

(f) Community and/or Stakeholder Groups

(g) Historic public interest or involvement

Section 6. Planned Public Outreach Activities

(a) Is this application subject to the public participation requirements of Title 30 Texas Administrative Code (30 TAC) Chapter 39?

☒ Yes ☐ No

(b) If yes, do you intend at this time to provide public outreach other than what is required by rule?

☐ Yes ☒ No

If Yes, please describe.

If you answered "yes" that this application is subject to 30 TAC Chapter 39, answering the remaining questions in Section 6 is not required.

(c) Will you provide notice of this application in alternative languages?

☐ Yes ☒ No

Please refer to Section 5. If more than 5% of the population potentially affected by your application is Limited English Proficient, then you are required to provide notice in the alternative language.

If yes, how will you provide notice in alternative languages?

☐ Publish in alternative language newspaper

☐ Posted on Commissioner's Integrated Database Website

☐ Mailed by TCEQ's Office of the Chief Clerk

☐ Other (specify)

(d) Is there an opportunity for some type of public meeting, including after notice?

☐ Yes ☐ No

(e) If a public meeting is held, will a translator be provided if requested?

☐ Yes ☐ No

(f) Hard copies of the application will be available at the following (check all that apply):

☐ TCEQ Regional Office ☐ TCEQ Central Office

☐ Public Place (specify)

Section 7. Voluntary Submittal

For applicants voluntarily providing this Public Involvement Plan, who are not subject to formal public participation requirements.

Will you provide notice of this application, including notice in alternative languages?

☐ Yes ☒ No

What types of notice will be provided?

☐ Publish in alternative language newspaper

☐ Posted on Commissioner's Integrated Database Website

☐ Mailed by TCEQ's Office of the Chief Clerk

☐ Other (specify)