



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



Complete and submit this checklist with the application.

APPLICANT: City of Manvel

PERMIT NUMBER: W00013872001

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

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

For TCEQ Use Only

Segment Number _____ County _____
 Expiration Date _____ Region _____
 Permit Number _____



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

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

Section 1. Application Fees (Instructions Page 29)

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

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

Minor Amendment (for any flow) \$150.00

Payment Information:

Mailed Check/Money Order Number: 9141
 Check/Money Order Amount: \$2,050.00
 Name Printed on Check: City of Manvel

EPAY Voucher Number:

Copy of Payment Voucher enclosed? Yes

Section 2. Type of Application (Instructions Page 29)

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

For amendments or modifications, describe the proposed changes: To address the growth projected in the City's central sewer basin, the City of Manvel desires to expand the capacity of the existing WWTP by 1.0 MGD initially. Due to the site restrictions at the existing WWTP, the 1.0 MGD expansion is proposed to be built on the property owned by the City to the west of the existing WWTP site. The 1.0 MGD expansion will be built as a separate and standalone treatment train. The effluent from the new 1.0 MGD train will be combined with the effluent

from the existing 0.5 MGD WWTP and discharged to the same outfall. Ultimately, the City intends to decommission the existing 0.5 MGD package WWTP and expand the 1.0 MGD train in multiple phases to an ultimate capacity of 5.0 MGD in a future year to be determined. The name of the treatment facility is being changed from Manvel Wastewater Treatment Facility (Regulated Entity: City of Manvel WWTP 1) to Manvel Central Wastewater Treatment Plant.

For existing permits:

Permit Number: WQ0013872001

EPA I.D. (TPDES only): TX0118397

Expiration Date: December 20, 2023

Section 3. Facility Owner (Applicant) and Co-Applciant 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?

City of Manvel

(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: 600580633

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: Kyle Jung

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

Title: City Manager

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

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

N/A

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

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

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

CN:

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

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

First and Last Name: [Redacted]

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

Title: [Redacted]

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

C. Core Data Form

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

Attachment: Attachment A

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): Ms.

First and Last Name: Katie Leatherwood

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

Title: Environmental Scientist

Organization Name: Freese & Nichols, Inc.

Mailing Address: 801 Cherry St, Suite 2800

City, State, Zip Code: Fort Worth, Texas 76102

Phone No.: 817-735-7503 Ext.: [Redacted] Fax No.: [Redacted]

E-mail Address: katie.leatherwood@freese.com

Check one or both: Administrative Contact Technical Contact

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

First and Last Name: Ray Word

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

Title: Superintendent

Organization Name: City of Manvel

Mailing Address: 20025 Morris Avenue

City, State, Zip Code: Manvel, Texas 77578

Phone No.: 281-734-4401 Ext.: [Redacted] Fax No.: 281-489-0634

E-mail Address: ray.word@cityofmanvel.com

Check one or both: Administrative Contact Technical Contact

Section 5. Permit Contact Information (Instructions Page 30)

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

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

First and Last Name: Ray Word

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

Title: Superintendent

Organization Name: City of Manvel

Mailing Address: 20025 Morris Avenue

City, State, Zip Code: Manvel, Texas 77578

Phone No.: 281-734-4401 Ext.: Fax No.: 281-489-0634

E-mail Address: ray.word@cityofmanvel.com

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

First and Last Name: Gilbert Salas

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

Title: Director of Community Services

Organization Name: City of Manvel

Mailing Address: 20025 Morris Avenue

City, State, Zip Code: Manvel, Texas 77578

Phone No.: 832-336-4089 Ext.: Fax No.:

E-mail Address: gilbert.salas@cityofmanvel.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): Ms.

First and Last Name: Brenda Derouen

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

Title: Utility Billing Clerk

Organization Name: City of Manvel

Mailing Address: 20025 Morris Avenue

City, State, Zip Code: Manvel, Texas 77578

Phone No.: 832-336-4072 Ext.: [REDACTED] Fax No.: 281-489-0634

E-mail Address: bderouen@cityofmanvel.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: Ray Word

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

Title: Superintendent

Organization Name: City of Manvel

Mailing Address: 20025 Morris Avenue

City, State, Zip Code: Manvel, Texas 77578

Phone No.: 281-734-4401 Ext.: [REDACTED] Fax No.: 281-489-0634

E-mail Address: ray.word@cityofmanvel.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): Ms.

First and Last Name: Tammy Bell

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

Title: City Secretary

Organization Name: City of Manvel

Mailing Address: 20025 Morris Avenue

City, State, Zip Code: Manvel, Texas 77578

Phone No.: 832-336-4064 Ext.: [REDACTED] Fax No.: 281-489-0634

E-mail Address: tbell@cityofmanvel.com

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: Ray Word

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

Title: Superintendent

Organization Name: City of Manvel

Phone No.: 281-734-4401 Ext.:

E-mail: ray.word@cityofmanvel.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: Manvel Public Library

Location within the building: Front Desk of Library

Physical Address of Building: 20514 Hwy 6. Ste. B

City: Manvel County: Brazoria

Contact Name: Carolynn Waites

Phone No.: 281-498-7593 Ext.:

E. Bilingual Notice Requirements:

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

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

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

1. Is a bilingual education program required by the Texas Education Code at the elementary or middle school nearest to the facility or proposed facility?
 Yes No

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

2. Are the students who attend either the elementary school or the middle school enrolled in a bilingual education program at that school?
- Yes No
3. Do the students at these schools attend a bilingual education program at another location?
- Yes No
4. Would the school be required to provide a bilingual education program but the school has waived out of this requirement under 19 TAC §89.1205(g)?
- Yes No
5. If the answer is yes to question 1, 2, 3, or 4, public notices in an alternative language are required. Which language is required by the bilingual program? Spanish

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. RN101612232

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):

Manvel Central Water Reclamation Facility

- C. Owner of treatment facility: City of Manvel

Ownership of Facility: Public Private Both Federal

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

Prefix (Mr., Ms., Miss):

First and Last Name: City of Manvel

Mailing Address: 20025 Morris Ave.

City, State, Zip Code: Manvel, Texas 77578

Phone No.: 281-489-0630

E-mail Address: N/A

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:

- E. Owner of effluent disposal site:

Prefix (Mr., Ms., Miss): N/A

First and Last Name: N/A

Mailing Address: N/A

City, State, Zip Code: N/A

Phone No.: N/A

E-mail Address: N/A

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: N/A

- 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): N/A

First and Last Name: N/A

Mailing Address: N/A

City, State, Zip Code: N/A

Phone No.: N/A

E-mail Address: N/A

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: N/A

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's location will remain at 7315 Corporate Drive, Manvel TX 77578 and the expansion will occur at 7240 Corporate Drive, Manvel TX 77578 (BCAD Parcel Address).

- 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:

to Brazoria County Flood Control Ditch No. 12; thence to Chocolate Bayou Above Tidal Segment No. 1108 of San Jacinto River Basin

City nearest the outfall(s): Manvel

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

Outfall Latitude: 29.473580

Longitude: -95.367526

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

Yes No

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

Authorization granted Authorization pending

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

Attachment: [REDACTED]

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

Brazoria County

Section 11. TLAP Disposal Information (Instructions Page 36)

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

Yes No

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

N/A

B. City nearest the disposal site: [REDACTED]

C. County in which the disposal site is located: [REDACTED]

D. Disposal Site Latitude: [REDACTED] Longitude: [REDACTED]

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

N/A

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

N/A

Section 12. Miscellaneous Information (Instructions Page 37)

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

Yes No

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

Yes No Not Applicable

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

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

Yes No

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

D. Do you owe any fees to the TCEQ?

Yes No

If yes, provide the following information:

Account number:

Amount past due:

E. Do you owe any penalties to the TCEQ?

Yes No

If yes, please provide the following information:

Enforcement order number:

Amount past due:

Section 13. Attachments (Instructions Page 38)

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

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

Section 14. Signature Page (Instructions Page 39)

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

Permit Number: WQ0013872001

Applicant: City of Manvel

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.

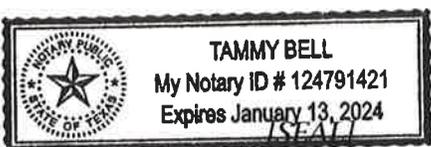
Signatory name (typed or printed): Kyle Jung

Signatory title: City Manager

Signature: *Kyle Jung* Date: 9/29/2021
(Use blue ink)

Subscribed and Sworn to before me by the said Kyle J. Jung
on this 29 day of September, 2021.
My commission expires on the 13 day of January, 2021.

Tammy Bell
Notary Public



Brazoria
County, Texas

DOMESTIC ADMINISTRATIVE REPORT 1.1

The following information is required for new and amendment applications.

Section 1. Affected Landowner Information (Instructions Page 41)

- A. Indicate by a check mark that the landowners map or drawing, with scale, includes the following information, as applicable:
- The applicant's property boundaries
 - The facility site boundaries within the applicant's property boundaries
 - The distance the buffer zone falls into adjacent properties and the property boundaries of the landowners located within the buffer zone
 - The property boundaries of all landowners surrounding the applicant's property (Note: if the application is a major amendment for a lignite mine, the map must include the property boundaries of all landowners adjacent to the new facility (ponds).)
 - The point(s) of discharge and highlighted discharge route(s) clearly shown for one mile downstream
 - The property boundaries of the landowners located on both sides of the discharge route for one full stream mile downstream of the point of discharge
 - The property boundaries of the landowners along the watercourse for a one-half mile radius from the point of discharge if the point of discharge is into a lake, bay, estuary, or affected by tides
 - The boundaries of the effluent disposal site (for example, irrigation area or subsurface drainfield site) and all evaporation/holding ponds within the applicant's property
 - The property boundaries of all landowners surrounding the effluent disposal site
 - The boundaries of the sludge land application site (for land application of sewage sludge for beneficial use) and the property boundaries of landowners surrounding the applicant's property boundaries where the sewage sludge land application site is located
 - The property boundaries of landowners within one-half mile in all directions from the applicant's property boundaries where the sewage sludge disposal site (for example, sludge surface disposal site or sludge monofill) is located
- B. Indicate by a check mark that a separate list with the landowners' names and mailing addresses cross-referenced to the landowner's map has been provided.
- C. Indicate by a check mark in which format the landowners list is submitted:
- Readable/Writeable CD
 - Four sets of labels
- D. Provide the source of the landowners' names and mailing addresses: Brazoria County Appraisal District, 500 N Chenango St #101, Angleton, Texas 77515
- E. As required by *Texas Water Code § 5.115*, is any permanent school fund land affected by this application?
- Yes
 - No

If **yes**, provide the location and foreseeable impacts and effects this application has on the land(s):

Section 2. Original Photographs (Instructions Page 44)

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

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

Section 3. Buffer Zone Map (Instructions Page 44)

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

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

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

- Ownership
- Restrictive easement
- Nuisance odor control
- Variance

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

- Yes No

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

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

TCEQ USE ONLY:

Application type: Renewal Major Amendment Minor Amendment New

County: _____ Segment Number: _____

Admin Complete Date: _____

Agency Receiving SPIF:

Texas Historical Commission

U.S. Fish and Wildlife

Texas Parks and Wildlife Department

U.S. Army Corps of Engineers

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

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

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

The following applies to all applications:

1. Permittee: City of Manvel

Permit No. WQ00 13872001

EPA ID No. TX 0118397

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

7315 Corporate Drive, Manvel, in Brazoria County, Texas 77578 and 7240 Corporate Drive, Manvel, in Brazoria County, Texas 77578 (BCAD Parcel Address).

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

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

First and Last Name: Ray Word

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

Title: Superintendent

Mailing Address: 20025 Morris Avenue

City, State, Zip Code: Manvel, Texas 77578

Phone No.: 281-734-4401 Ext.: Fax No.: 281-489-0634

E-mail Address: ray.word@cityofmanvel.com

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

N/A

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

to Brazoria County Flood Control Ditch No. 12; thence to Chocolate Bayou Above Tidal Segment No. 1108 of San Jacinto River Basin

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

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

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

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

- Disturbance of vegetation or wetlands

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

The proposed construction will occur on a site of about four acres. The construction impact will include the building of treatment units such as screening and grit removal, aeration basins, membrane bioreactors, ultraviolet disinfection, aerobic digesters, and buildings for maintenance and facility operations. Construction will also include the building of access roads.

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

The land usage consists of activities related to wastewater treatment such as the use of aeration basins, clarifiers, chlorine contact basins, and aerobic digesters. The vegetation around the wastewater treatment facility is mowed but, soil is not exposed.

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:

The original facility was built between 1995 and 1999, which included aeration basin and a clarifier. An additional aeration basin unit was constructed between 2002 and 2004. A second clarifier was constructed in 2008. Lastly, an additional aeration basin and clarifier was added in 2017.

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

The property prior to construction of the Manvel WWTP between 1995 and 1999 was undeveloped. The facility was originally permitted on October 15, 1999. The facility had three aeration basins and three clarifiers built over its lifetime.

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: WQ0013872001**

1. Check or Money Order Number: 9141
2. Check or Money Order Amount: \$2,050.00
3. Date of Check or Money Order: 9/29/2021
4. Name on Check or Money Order: City of Manvel
5. APPLICATION INFORMATION

Name of Project or Site: Manvel Central Water Reclamation Facility

Physical Address of Project or Site: 7315 and 7240 Corporate Drive, Manvel, TX 77578 (BCAD Parcel Address)

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

THIS PAGE INTENTIONALLY LEFT BLANK

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) <i>(Required for all applications types. Must be completed in its entirety and signed. Note: Form may be signed by applicant representative.)</i>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	Yes
Correct and Current Industrial Wastewater Permit Application Forms <i>(TCEQ Form Nos. 10053 and 10054. Version dated 6/25/2018 or later.)</i>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	Yes
Water Quality Permit Payment Submittal Form (Page 19) <i>(Original payment sent to TCEQ Revenue Section. See instructions for mailing address.)</i>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	Yes
7.5 Minute USGS Quadrangle Topographic Map Attached <i>(Full-size map if seeking "New" permit. 8 ½ x 11 acceptable for Renewals and Amendments)</i>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	Yes
Current/Non-Expired, Executed Lease Agreement or Easement Attached	<input checked="" type="checkbox"/>	N/A	<input type="checkbox"/>	Yes
Landowners Map <i>(See instructions for landowner requirements)</i>	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>	Yes
<p>Things to Know:</p> <ul style="list-style-type: none"> • 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 <i>(See instructions for landowner requirements)</i>	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>	Yes
Landowners Labels or CD-RW attached <i>(See instructions for landowner requirements)</i>	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>	Yes
Original signature per 30 TAC § 305.44 - Blue Ink Preferred <i>(If signature page is not signed by an elected official or principle executive officer, a copy of signature authority/delegation letter must be attached)</i>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	Yes



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): Ext. 0.5 MGD / Int.1 1.5 MGD

2-Hr Peak Flow (MGD): Ext. 2 MGD / Int.1 6 MGD

Estimated construction start date: Interim 1: 2022

Estimated waste disposal start date: Interim 1: 2024

B. Interim II Phase

Design Flow (MGD): 2

2-Hr Peak Flow (MGD): 8

Estimated construction start date: 2027

Estimated waste disposal start date: 2029

C. Interim III Phase

Design Flow (MGD): 4

2-Hr Peak Flow (MGD): 16

Estimated construction start date: 2032

Estimated waste disposal start date: 2034

D. Final Phase

Design Flow (MGD): 5

2-Hr Peak Flow (MGD): 20

Estimated construction start date: 2042

Estimated waste disposal start date: 2044

E. Current operating phase: Existing

Provide the startup date of the facility: October 1999

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:

<u>Attachment G</u>

Port or pipe diameter at the discharge point, in inches: Existing 12-inch pipe will be replaced with a 36-inch pipe

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)
<u>Attachment H</u>		

C. Process flow diagrams

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

Attachment: Attachment I

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: Attachment J

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

City of Manvel north of Atchison, Topeka, and Santa Fe Railroad and east of Highway 288.

Section 4. Unbuilt Phases (Instructions Page 52)

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

Yes No

If yes, does the existing permit contain a phase that has not been constructed within five years of being authorized by the TCEQ?

Yes No

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

N/A

Section 5. Closure Plans (Instructions Page 53)

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

Yes No

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

Yes No

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

In Interim Phase II, the existing package plant will be decommissioned.

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:

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.

Summary transmittal letter to be submitted upon completion of final design.

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.

The buffer zone requirement is met by ownership, a restrictive easement, and a nuisance odor prevention plan.

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*.

TCEQ Wastewater Permitting Section (MC 148) requires a summary transmittal letter be submitted in accordance with the requirements in 30 TAC 217.6(d). The permittee shall notify the TCEQ Regional Office (MC Region 12) and the Applications Review and Processing Team (MC148) of the Water Quality Division forty-five days prior to completion of new facilities. These items will be submitted upon completion of final design and at start of construction, respectively.

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.

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.

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.

E. Stormwater management

1. Applicability

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

Yes No

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

Yes No

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

2. MSGP coverage

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

Yes No

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

TXR05 [REDACTED] or TXRNE [REDACTED]

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

Yes No

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:

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.

N/A

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.

N/A

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.

N/A

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 BOD₅ concentration of the sludge, and the design BOD₅ concentration of the influent from the collection system. Also note if this information has or has not changed since the last permit action.

N/A

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 BOD₅ concentration of the septic waste, and the design BOD₅ concentration of the influent from the collection system. Also note if this information has or has not changed since the last permit action.

N/A

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.

N/A

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

Is the facility in operation?

Yes No

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

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

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

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

Pollutant	Average Conc.	Max Conc.	No. of Samples	Sample Type	Sample Date/Time
CBOD ₅ , mg/l		12.5	1	Grab	5/25/21 5:00
Total Suspended Solids, mg/l		8.25	1	Grab	5/25/2021 5:00
Ammonia Nitrogen, mg/l		0.104	1	Grab	5/25/2021 5:00
Nitrate Nitrogen, mg/l		3.15	1	Grab	5/25/2021 5:00
Total Kjeldahl Nitrogen, mg/l		1.68	1	Grab	5/25/2021 5:00
Sulfate, mg/l		17.0	1	Grab	5/25/2021 5:00
Chloride, mg/l		65.1	1	Grab	5/25/2021 5:00
Total Phosphorus, mg/l		1.77	1	Grab	5/25/2021

Pollutant	Average Conc.	Max Conc.	No. of Samples	Sample Type	Sample Date/Time
					5:00
pH, standard units		7.30	1	Grab	5/25/2021 8:25
Dissolved Oxygen*, mg/l		7.00	1	Grab	5/25/2021 8:25
Chlorine Residual, mg/l		<0.25	1	Grab	5/25/2021 8:25
<i>E.coli</i> (CFU/100ml) freshwater		1	1	Grab	5/27/2021 13:50
Enterococci (CFU/100ml) saltwater		NA			
Total Dissolved Solids, mg/l		340	1	Grab	5/25/2021 5:00
Electrical Conductivity, μ mohs/cm, †		592	1	Grab	5/25/2021 5:00
Oil & Grease, mg/l		<5.00	1	Grab	5/25/2021 8:25
Alkalinity (CaCO ₃)*, mg/l		154	1	Grab	5/25/2021

*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					

Pollutant	Average Conc.	Max Conc.	No. of Samples	Sample Type	Sample Date/Time
Aluminum, mg/l					
Alkalinity (CaCO ₃), mg/l					

Section 8. Facility Operator (Instructions Page 60)

Facility Operator Name: Ray A. Word

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

Facility Operator's License Number: WW0060674

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

- | | | |
|--|------------------------------|--|
| Marketing and Distribution of sludge | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| Sludge Surface Disposal or Sludge Monofill | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| Temporary storage in sludge lagoons | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |

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:
- USDA Natural Resources Conservation Service Soil Map:
Attachment:
- Federal Emergency Management Map:
Attachment:
- Site map:
Attachment:

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: [redacted]

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

B. Temporary storage information

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

Nitrate Nitrogen, mg/kg: [redacted]

Total Kjeldahl Nitrogen, mg/kg: [redacted]

Total Nitrogen (=nitrate nitrogen + TKN), mg/kg: [redacted]

Phosphorus, mg/kg: [redacted]

Potassium, mg/kg: [redacted]

pH, standard units: [redacted]

Ammonia Nitrogen mg/kg: [redacted]

Arsenic: [redacted]

Cadmium: [redacted]

Chromium: [redacted]

Copper: [redacted]

Lead: [redacted]

Mercury: [redacted]

Molybdenum: [redacted]

Nickel: [redacted]

Selenium: [redacted]

Zinc: [redacted]

Total PCBs: [redacted]

Provide the following information:

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

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

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

C. Liner information

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

Yes No

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

D. Site development plan

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

Attach the following documents to the application.

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

Attachment: [REDACTED]

- Procedures to prevent the occurrence of nuisance conditions

Attachment: [REDACTED]

E. Groundwater monitoring

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

Yes No

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

Attachment: [REDACTED]

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

A. Additional authorizations

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

Yes No

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

B. Permittee enforcement status

Is the permittee currently under enforcement for this facility?

Yes No

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

Yes No

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

N/A

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

A. RCRA hazardous wastes

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

Yes No

B. Remediation activity wastewater

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

Yes No

C. Details about wastes received

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

Attachment:

Section 14. Laboratory Accreditation (Instructions Page 64)

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

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

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

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

CERTIFICATION:

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

Printed Name: Kyle Jung

Title: City Manager

Signature: _____

Date: 9/29/2021

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.

To address the growth projected in the City's central sewer basin, the City of Manvel desires to expand the capacity of the existing WWTP by 1.0 MGD initially. Due to the site restrictions at the existing WWTP, the 1.0 MGD expansion is proposed to be built on the property owned by the City to the west of the existing WWTP site. The 1.0 MGD expansion will be built as a separate and standalone treatment train. The effluent from the new 1.0 MGD train will be combined with the effluent from the existing 0.5 MGD WWTP and discharged to the same outfall. Ultimately, the City intends to decommission the existing 0.5 MGD package WWTP and expand the 1.0 MGD train in phases to an ultimate capacity of 5.0 MGD in a future year to be determined.

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:

If yes, attach correspondence from the city.

Attachment:

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: [REDACTED]

2. Utility CCN areas

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

Yes No

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

Attachment: [REDACTED]

3. Nearby WWTPs or collection systems

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

Yes No

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

Attachment: [REDACTED]

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

Attachment: [REDACTED]

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

Yes No

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

Attachment: [REDACTED]

Section 2. Organic Loading (Instructions Page 67)

Is this facility in operation?

Yes No

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

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

A. Current organic loading

Facility Design Flow (flow being requested in application): 1.5 MGD (Phase I), 2.0 MGD (Phase II), 4.0 MGD (Phase III), 5.0 MGD (Phase IV)

Average Influent Organic Strength or BOD₅ Concentration in mg/l: 365mg/L

Average Influent Loading (lbs/day = total average flow X average BOD₅ conc. X 8.34): Attachment K

Provide the source of the average organic strength or BOD₅ concentration.

Influent concentration from Manvel WWTP Discharge Monitoring Reports (DMRs); Average plus one standard deviation of BOD concentrations from March 2019 to April 2021.

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	<u>Phase I: 1.5 MGD</u> <u>Phase II: 2.0 MGD</u> <u>Phase III: 4.0 MGD</u> <u>Phase IV: 5.0 MGD</u>	365
Subdivision		
Trailer park - transient		

Source	Total Average Flow (MGD)	Influent BOD₅ Concentration (mg/l)
Mobile home park		
School with cafeteria and showers		
School with cafeteria, 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	Phase I: 1.5 MGD Phase II: 2.0 MGD Phase III: 4.0 MGD Phase IV: 5.0 MGD	
AVERAGE BOD ₅ from all sources		365

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: 5 mg/L

Total Suspended Solids, mg/l: 5 mg/L

Ammonia Nitrogen, mg/l: 2 mg/L

Total Phosphorus, mg/l: N/A

Dissolved Oxygen, mg/l: 6 mg/L

Other: E. Coli, CFU or MPN/100 ml: 126

B. Interim II Phase Design Effluent Quality

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

Total Suspended Solids, mg/l: 5 mg/L

Ammonia Nitrogen, mg/l: 2 mg/L

Total Phosphorus, mg/l: N/A

Dissolved Oxygen, mg/l: 6 mg/L

Other: E. Coli, CFU or MPN/100 ml:126

C. Final Phase Design Effluent Quality

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

Total Suspended Solids, mg/l: 5 mg/L

Ammonia Nitrogen, mg/l: 2 mg/L

Total Phosphorus, mg/l: N/A

Dissolved Oxygen, mg/l: 6 mg/L

Other: E. Coli, CFU or MPN/100 ml:126

D. Disinfection Method

Identify the proposed method of disinfection.

- Chlorine: <4.0 mg/l after 20 minutes detention time at peak flow
Dechlorination process: Chlorine Contact Chamber
- Ultraviolet Light: 20 seconds contact time at peak flow

Other: [REDACTED]

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: Attachment L

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.

[REDACTED]

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

FEMA Website for FIRMette Maps 48039C0130K

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: [REDACTED]

If no, provide the approximate date you anticipate submitting your application to the Corps: N/A

B. Wind rose

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

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

A. Beneficial use authorization

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

Yes No

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

Attachment:

B. Sludge processing authorization

Identify the sludge processing, storage or disposal options that will be conducted at the wastewater treatment facility:

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

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

Attachment: N/A

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

Attach a solids management plan to the application.

Attachment: N

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

- Treatment units and processes dimensions and capacities
- Solids generated at 100, 75, 50, and 25 percent of design flow
- Mixed liquor suspended solids operating range at design and projected actual flow
- Quantity of solids to be removed and a schedule for solids removal
- Identification and ownership of the ultimate sludge disposal site

- For facultative lagoons, design life calculations, monitoring well locations and depths, and the ultimate disposal method for the sludge from the facultative lagoon

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

DOMESTIC TECHNICAL REPORT WORKSHEET 2.0

RECEIVING WATERS

The following is required for all TPDES permit applications

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

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

Yes No

If yes, provide the following:

Owner of the drinking water supply:

Distance and direction to the intake:

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

Attachment:

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

Does the facility discharge into tidally affected waters?

Yes No

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

A. Receiving water outfall

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

B. Oyster waters

Are there oyster waters in the vicinity of the discharge?

Yes No

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

C. Sea grasses

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

Yes No

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

Section 3. Classified Segments (Instructions Page 73)

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

Yes No

If yes, this Worksheet is complete.

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

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

Name of the immediate receiving waters: Brazoria County Flood Control Ditch No. 12

A. Receiving water type

Identify the appropriate description of the receiving waters.

- Stream
- Freshwater Swamp or Marsh
- Lake or Pond

Surface area, in acres:

Average depth of the entire water body, in feet:

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

- Man-made Channel or Ditch

- Open Bay
- Tidal Stream, Bayou, or Marsh
- Other, specify:

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:

C. Downstream perennial confluences

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

None

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.

E. Normal dry weather characteristics

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

Gently flowing, up to 3-feet wide, 6-inches to 1-foot deep.

Date and time of observation: 4/29/2021 8:00 AM

Was the water body influenced by stormwater runoff during observations?

Yes No

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

A. Upstream influences

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

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

B. Waterbody uses

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

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

- | | |
|--|--|
| <input type="checkbox"/> Domestic water supply | <input type="checkbox"/> Industrial water supply |
| <input type="checkbox"/> Park activities | <input checked="" type="checkbox"/> Other(s), specify <u>Flood</u> |

Protection/Drainage

C. Waterbody aesthetics

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

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

DOMESTIC WORKSHEET 4.0

POLLUTANT ANALYSES REQUIREMENTS*

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

This worksheet is not required for minor amendments without renewal

Section 1. Toxic Pollutants (Instructions Page 87)

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

Grab Composite

Date and time sample(s) collected: 5/25/21

Table 4.0(1) - Toxics Analysis

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Acrylonitrile		<50.0	1	50
Aldrin		<0.01	1	0.01
Aluminum		77.9	1	2.5
Anthracene		<10.0	1	10
Antimony		<5.00	1	5
Arsenic		3.03	1	0.5
Barium		71.2	1	3
Benzene		<10.0	1	10
Benzidine		<50.0	1	50
Benzo(a)anthracene		<5.00	1	5

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Benzo(a)pyrene		<5.00	1	5
Bis(2-chloroethyl)ether		<10.0	1	10
Bis(2-ethylhexyl)phthalate		<10.0	1	10
Bromodichloromethane		<10.0	1	10
Bromoform		<10.0	1	10
Cadmium		<1.00	1	1
Carbon Tetrachloride		<2.00	1	2
Carbaryl		<5.0	1	5
Chlordane*		<0.20	1	0.2
Chlorobenzene		<10.0	1	10
Chlorodibromomethane		<10.0	1	10
Chloroform		34.9	1	10
Chlorpyrifos		<0.05	1	0.05
Chromium (Total)		<3.00	1	3
Chromium (Tri) (*1)		<3.00	1	N/A
Chromium (Hex)		<3.00	1	3
Copper		17.6	1	2
Chrysene		<5.00	1	5
p-Chloro-m-Cresol		<10.0	1	10
4,6-Dinitro-o-Cresol		<50.0	1	50
p-Cresol		<10.0	1	10

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Cyanide (*2)		<10.0	1	10
4,4'- DDD		<0.10	1	0.1
4,4'- DDE		<0.10	1	0.1
4,4'- DDT		<0.02	1	0.02
2,4-D		<0.70	1	0.7
Demeton (O and S)		<0.20	1	0.20
Diazinon		<0.50	1	0.5/0.1
1,2-Dibromoethane		<10.0	1	10
m-Dichlorobenzene		<10.0	1	10
o-Dichlorobenzene		<10.0	1	10
p-Dichlorobenzene		<10.0	1	10
3,3'-Dichlorobenzidine		<5.0	1	5
1,2-Dichloroethane		<10.0	1	10
1,1-Dichloroethylene		<10.0	1	10
Dichloromethane		<20.0	1	20
1,2-Dichloropropane		<10.0	1	10
1,3-Dichloropropene		<10.0	1	10
Dicofol		<1.00	1	1
Dieldrin		<0.02	1	0.02
2,4-Dimethylphenol		<10.0	1	10
Di-n-Butyl Phthalate		<10.0	1	10

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Diuron		<0.09	1	0.09
Endosulfan I (alpha)		<0.01	1	0.01
Endosulfan II (beta)		<0.02	1	0.02
Endosulfan Sulfate		<0.10	1	0.1
Endrin		<0.20	1	0.02
Ethylbenzene		<10.0	1	10
Fluoride		498	1	500
Guthion		<0.10	1	0.1
Heptachlor		<0.01	1	0.01
Heptachlor Epoxide		<0.01	1	0.01
Hexachlorobenzene		<5.00	1	5
Hexachlorobutadiene		<10.0	1	10
Hexachlorocyclohexane (alpha)		<0.05	1	0.05
Hexachlorocyclohexane (beta)		<0.05	1	0.05
gamma-Hexachlorocyclohexane (Lindane)		<0.50	1	0.05
Hexachlorocyclopentadiene		<10.0	1	10
Hexachloroethane		<20.0	1	20
Hexachlorophene		<10.0	1	10
Lead		<0.50	1	0.5
Malathion		<0.10	1	0.1

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Mercury		<0.005	1	0.005
Methoxychlor		<2.00	1	2
Methyl Ethyl Ketone		<50.0	1	50
Mirex		<0.02	1	0.02
Nickel		2.26	1	2
Nitrate-Nitrogen		3150	1	100
Nitrobenzene		<10.0	1	10
N-Nitrosodiethylamine		<20.0	1	20
N-Nitroso-di-n-Butylamine		<20.0	1	20
Nonylphenol		<333	1	333
Parathion (ethyl)		<0.10	1	0.1
Pentachlorobenzene		<20.0	1	20
Pentachlorophenol		<5.00	1	5
Phenanthrene		<10.0	1	10
Polychlorinated Biphenyls (PCB's) (*3)		<0.20	1	0.2
Pyridine		<20	1	20
Selenium		<5.00	1	5
Silver		<0.50	1	0.5
1,2,4,5-Tetrachlorobenzene		<20	1	20
1,1,2,2-Tetrachloroethane		<10.0	1	10

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Tetrachloroethylene		<10.0	1	10
Thallium		<0.50	1	0.5
Toluene		<10.0	1	10
Toxaphene		<0.30	1	0.3
2,4,5-TP (Silvex)		<0.30	1	0.3
Tributyltin (see instructions for explanation)	N/A	N/A	N/A	0.01
1,1,1-Trichloroethane		<10.0	1	10
1,1,2-Trichloroethane		<10.0	1	10
Trichloroethylene		<10.0	1	10
2,4,5-Trichlorophenol		<50.0	1	50
TTHM (Total Trihalomethanes)		45.0	1	10
Vinyl Chloride		<10.0	1	10
Zinc		53.4	1	5

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

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

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

Section 2. Priority Pollutants

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

Grab Composite

Date and time sample(s) collected: 5/25/21

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

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Antimony		<5.00	1	5
Arsenic		3.03	1	0.5
Beryllium		<0.50	1	0.5
Cadmium		<1.00	1	1
Chromium (Total)		<3.00	1	3
Chromium (Hex)		<3.00	1	3
Chromium (Tri) (*1)		<3.00	1	N/A
Copper		17.6	1	2
Lead		<0.50	1	0.5
Mercury		<0.005	1	0.005
Nickel		2.26	1	2
Selenium		<5.00	1	5
Silver		<0.50	1	0.5
Thallium		<0.50	1	0.5
Zinc		53.4	1	5
Cyanide (*2)		<10.0	1	10
Phenols, Total		<10.0	1	10

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

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

Table 4.0(2)B - Volatile Compounds

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Acrolein		<50.0	1	50
Acrylonitrile		<50.0	1	50
Benzene		<10.0	1	10
Bromoform		<10.0	1	10
Carbon Tetrachloride		<2.00	1	2
Chlorobenzene		<10.0	1	10
Chlorodibromomethane		<10.0	1	10
Chloroethane		<50.0	1	50
2-Chloroethylvinyl Ether		<10.0	1	10
Chloroform		34.9	1	10
Dichlorobromomethane [Bromodichloromethane]		<10.0	1	10
1,1-Dichloroethane		<10.0	1	10
1,2-Dichloroethane		<10.0	1	10
1,1-Dichloroethylene		<10.0	1	10
1,2-Dichloropropane		<10.0	1	10
1,3-Dichloropropylene [1,3-Dichloropropene]		<10.0	1	10
1,2-Trans-Dichloroethylene		<10.0	1	10
Ethylbenzene		<10.0	1	10
Methyl Bromide		<50.0	1	50
Methyl Chloride		<50.0	1	50
Methylene Chloride		<20.0	1	20
1,1,2,2-Tetrachloroethane		<10.0	1	10
Tetrachloroethylene		<10.0	1	10

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Toluene		<10.0	1	10
1,1,1-Trichloroethane		<10.0	1	10
1,1,2-Trichloroethane		<10.0	1	10
Trichloroethylene		<10.0	1	10
Vinyl Chloride		<10.0	1	10

Table 4.0(2)C - Acid Compounds

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
2-Chlorophenol		<10.0	1	10
2,4-Dichlorophenol		<10.0	1	10
2,4-Dimethylphenol		<10.0	1	10
4,6-Dinitro-o-Cresol		<50.0	1	50
2,4-Dinitrophenol		<50.0	1	50
2-Nitrophenol		<20.0	1	20
4-Nitrophenol		<50.0	1	50
P-Chloro-m-Cresol		<10.0	1	10
Pentalchlorophenol		<5.00	1	5
Phenol		<10.0	1	10
2,4,6-Trichlorophenol		<10.0	1	10

Table 4.0(2)D - Base/Neutral Compounds

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Acenaphthene		<10.0	1	10
Acenaphthylene		<10.0	1	10
Anthracene		<10.0	1	10
Benzidine		<50.0	1	50
Benzo(a)Anthracene		<5.00	1	5
Benzo(a)Pyrene		<5.00	1	5
3,4-Benzofluoranthene		<10.0	1	10
Benzo(ghi)Perylene		<20.0	1	20
Benzo(k)Fluoranthene		<5.00	1	5
Bis(2-Chloroethoxy)Methane		<10.0	1	10
Bis(2-Chloroethyl)Ether		<10.0	1	10
Bis(2-Chloroisopropyl)Ether		<10.0	1	10
Bis(2-Ethylhexyl)Phthalate		<10.0	1	10
4-Bromophenyl Phenyl Ether		<10.0	1	10
Butyl benzyl Phthalate		<10.0	1	10
2-Chloronaphthalene		<10.0	1	10
4-Chlorophenyl phenyl ether		<10.0	1	10
Chrysene		<5.00	1	5
Dibenzo(a,h)Anthracene		<5.00	1	5
1,2-(o)Dichlorobenzene		<10.0	1	10
1,3-(m)Dichlorobenzene		<10.0	1	10
1,4-(p)Dichlorobenzene		<10.0	1	10
3,3-Dichlorobenzidine		<5.0	1	5
Diethyl Phthalate		<10.0	1	10
Dimethyl Phthalate		<10.0	1	10

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Di-n-Butyl Phthalate		<10.0	1	10
2,4-Dinitrotoluene		<10.0	1	10
2,6-Dinitrotoluene		<10.0	1	10
Di-n-Octyl Phthalate		<10.0	1	10
1,2-Diphenylhydrazine (as Azo- benzene)		<20.0	1	20
Fluoranthene		<10.0	1	10
Fluorene		<10.0	1	10
Hexachlorobenzene		<5.00	1	5
Hexachlorobutadiene		<10.0	1	10
Hexachlorocyclo-pentadiene		<10.0	1	10
Hexachloroethane		<20.0	1	20
Indeno(1,2,3-cd)pyrene		<5.00	1	5
Isophorone		<10.0	1	10
Naphthalene		<10.0	1	10
Nitrobenzene		<10.0	1	10
N-Nitrosodimethylamine		<50.0	1	50
N-Nitrosodi-n-Propylamine		<20.0	1	20
N-Nitrosodiphenylamine		<20.0	1	20
Phenanthrene		<10.0	1	10
Pyrene		<10.0	1	10
1,2,4-Trichlorobenzene		<10.0	1	10

Table 4.0(2)E - Pesticides

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Aldrin		<0.01	1	0.01
alpha-BHC (Hexachlorocyclohexane)		<0.05	1	0.05
beta-BHC (Hexachlorocyclohexane)		<0.05	1	0.05
gamma-BHC (Hexachlorocyclohexane)		<0.05	1	0.05
delta-BHC (Hexachlorocyclohexane)		<0.05	1	0.05
Chlordane		<0.20	1	0.2
4,4-DDT		<0.02	1	0.02
4,4-DDE		<0.10	1	0.1
4,4,-DDD		<0.10	1	0.1
Dieldrin		<0.02	1	0.02
Endosulfan I (alpha)		<0.01	1	0.01
Endosulfan II (beta)		<0.02	1	0.02
Endosulfan Sulfate		<0.10	1	0.1
Endrin		<0.02	1	0.02
Endrin Aldehyde		<0.10	1	0.1
Heptachlor		<0.01	1	0.01
Heptachlor Epoxide		<0.01	1	0.01
PCB-1242		<0.20	1	0.2
PCB-1254		<0.20	1	0.2
PCB-1221		<0.20	1	0.2
PCB-1232		<0.20	1	0.2

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
PCB-1248		<0.20	1	0.2
PCB-1260		<0.20	1	0.2
PCB-1016		<0.20	1	0.2
Toxaphene		<0.30	1	0.3

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

Section 3. Dioxin/Furan Compounds

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

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

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

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

Yes No

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

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

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

Grab Composite

Date and time sample(s) collected:

TABLE 4.0(2)F - DIOXIN/FURAN COMPOUNDS

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

Compound	Toxic Equivalency Factors	Wastewater Concentration (ppq)	Wastewater Equivalents (ppq)	Sludge Concentration (ppt)	Sludge Equivalents (ppt)	MAL (ppq)
PCB 126	0.1					0.5
PCB 169	0.03					0.5
Total						

C. Treatment plant pass through

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

Yes No

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

D. Pretreatment program

Does your POTW have an approved pretreatment program?

Yes No

If yes, complete Section 2 only of this Worksheet.

Is your POTW required to develop an approved pretreatment program?

Yes No

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

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

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

A. Substantial modifications

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

Yes No

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

B. Non-substantial modifications

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

Yes No

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

C. Effluent parameters above the MAL

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

Table 6.0(1) - Parameters Above the MAL

Pollutant	Concentration	MAL	Units	Date

D. Industrial user interruptions

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

Yes No

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

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

A. General information

Company Name: N/A

SIC Code: [REDACTED]

Telephone number: [REDACTED] Fax number: [REDACTED]

[REDACTED]

Contact name: [REDACTED]

Address: [REDACTED]

City, State, and Zip Code: [REDACTED]

B. Process information

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

N/A

C. Product and service information

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

N/A

D. Flow rate information

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

Process Wastewater:

Discharge, in gallons/day: N/A

Discharge Type: Continuous Batch Intermittent

Non-Process Wastewater:

Discharge, in gallons/day:

Discharge Type: Continuous Batch Intermittent

E. Pretreatment standards

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

Yes No

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

Yes No

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

Category:
Subcategories:

Category:
Subcategories:

Category:
Subcategories:

Category:
Subcategories:

Category:
Subcategories:

F. Industrial user interruptions

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

Yes No

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

<u>N/A</u>

ATTACHMENT A

Core Data Form

23. Street Address of the Regulated Entity: <i>(No PO Boxes)</i>	7315 and 7240 Corporate Drive							
	City	Manvel	State	TX	ZIP	77578	ZIP + 4	4759
24. County	Brazoria							

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:									
26. Nearest City	Manvel				State	TX	Nearest ZIP Code		77578
27. Latitude (N) In Decimal:	29.4737912			28. Longitude (W) In Decimal:	-95.3720581				
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds				
29	28	25.647	-95	22	19.4082				
29. Primary SIC Code (4 digits)	30. Secondary SIC Code (4 digits)		31. Primary NAICS Code (5 or 6 digits)		32. Secondary NAICS Code (5 or 6 digits)				
4952			221320						
33. What is the Primary Business of this entity? <i>(Do not repeat the SIC or NAICS description.)</i>									
Wastewater Treatment Plant									
34. Mailing Address:	7315 and 7240 Corporate Drive								
	City	Manvel	State	TX	ZIP	77578	ZIP + 4	4759	
35. E-Mail Address:	rhall@cityofmanvel.com								
36. Telephone Number			37. Extension or Code			38. Fax Number <i>(if applicable)</i>			
(281) 585-4997						() -			

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

<input type="checkbox"/> Dam Safety	<input type="checkbox"/> Districts	<input type="checkbox"/> Edwards Aquifer	<input type="checkbox"/> Emissions Inventory Air	<input type="checkbox"/> Industrial Hazardous Waste
<input type="checkbox"/> Municipal Solid Waste	<input type="checkbox"/> New Source Review Air	<input type="checkbox"/> OSSF	<input type="checkbox"/> Petroleum Storage Tank	<input type="checkbox"/> PWS
<input type="checkbox"/> Sludge	<input type="checkbox"/> Storm Water	<input type="checkbox"/> Title V Air	<input type="checkbox"/> Tires	<input type="checkbox"/> Used Oil
<input type="checkbox"/> Voluntary Cleanup	<input checked="" type="checkbox"/> Waste Water	<input type="checkbox"/> Wastewater Agriculture	<input type="checkbox"/> Water Rights	<input type="checkbox"/> Other:
WQ0013872001				

SECTION IV: Preparer Information

40. Name:	Katie Leatherwood, P.G.	41. Title:	Environmental Scientist
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(817) 735-7503		() -	katie.leatherwood@freese.com

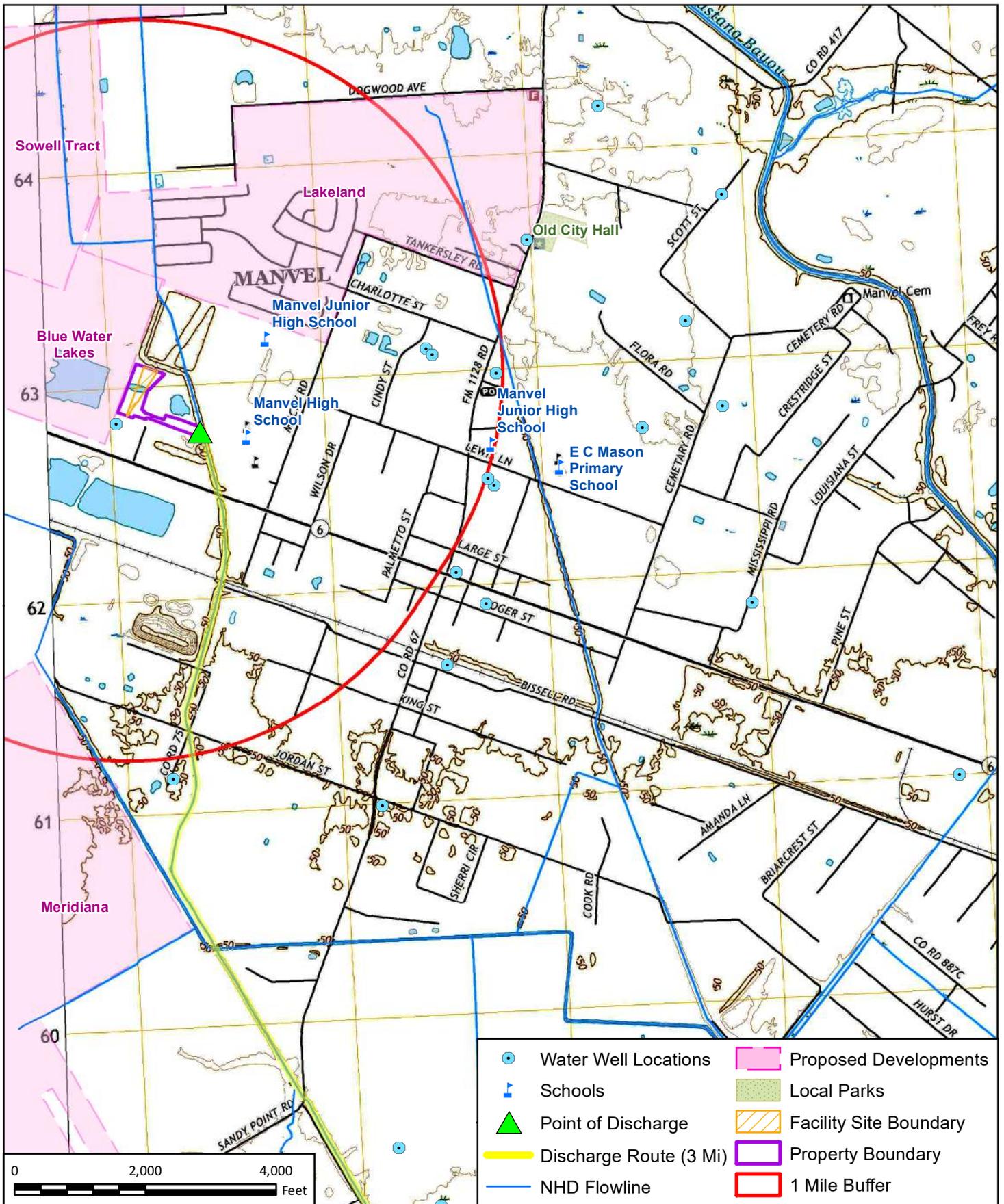
SECTION V: Authorized Signature

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

Company:	Freese & Nichols	Job Title:	Environmental Scientist
Name <i>(In Print)</i> :	Katie Leatherwood, P.G.	Phone:	(817) 735- 7503
Signature:		Date:	9.29.21

ATTACHMENT B

USGS Topographic Map



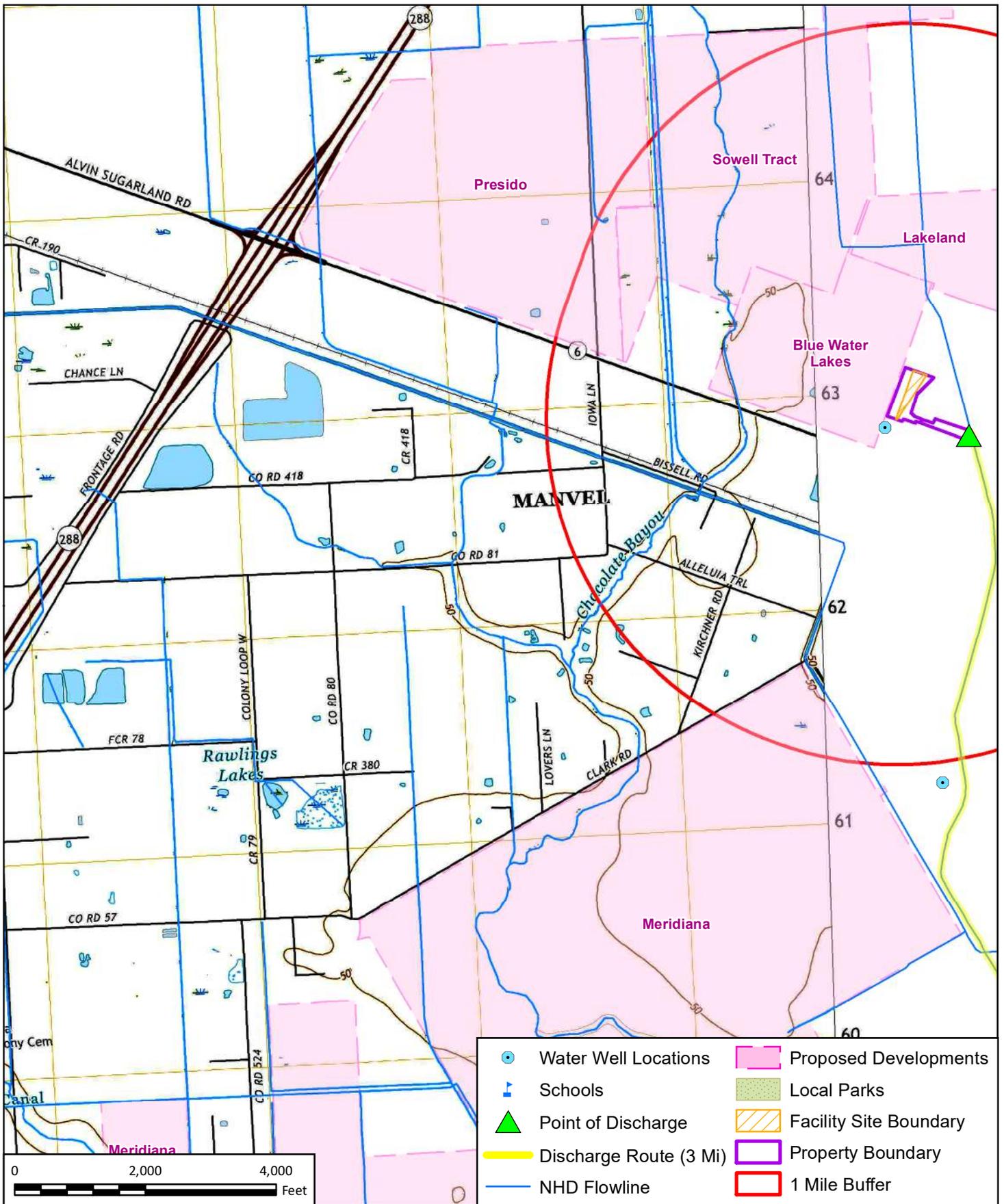
FRESE AND NICHOLS
 FRESE AND NICHOLS, INC
 801 Cherry Street, Suite 2800
 Fort Worth, TX 76102
 Phone - (817) 735 - 7300



CITY OF MANVEL
TPDES Permit Major Admendment
USGS Topographic Map
 Quad Name: Manvel

FN JOB NO	MNV21291
FILE NAME	Fig1a_Topo.mxd
DATE	9/24/2021
DESIGNED	MK
DRAFTED	MK

1a
FIGURE



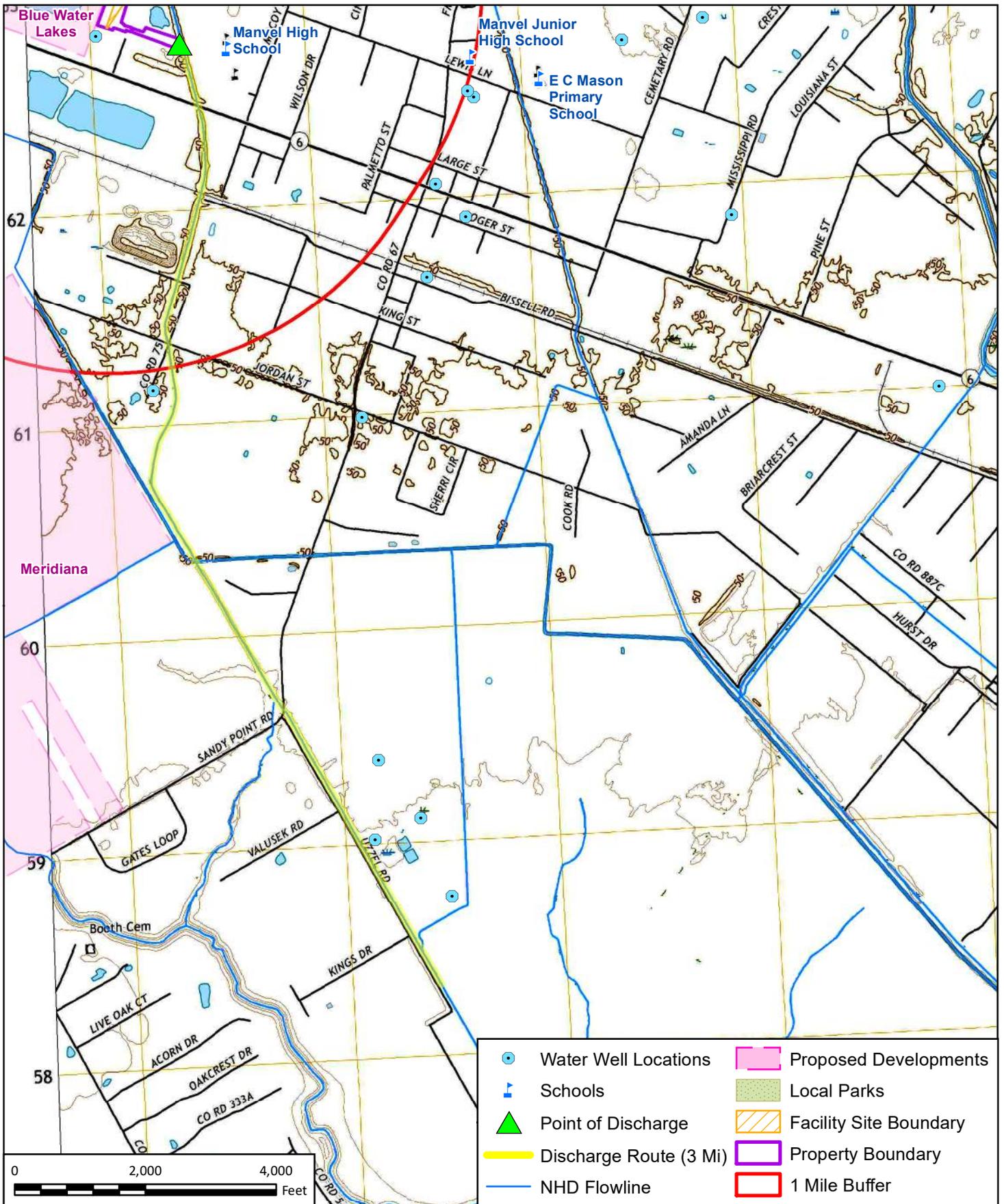
FRESE AND NICHOLS
 FRESE AND NICHOLS, INC
 801 Cherry Street, Suite 2800
 Fort Worth, TX 76102
 Phone - (817) 735 - 7300



CITY OF MANVEL
TPDES Permit Major Admendment
USGS Topographic Map
 Quad Name: Juliff

FN JOB NO	MNV21291
FILE NAME	Fig1b_Topo.mxd
DATE	8/30/2021
DESIGNED	MK
DRAFTED	MK

1b
FIGURE



- Water Well Locations
- ▲ Schools
- ▲ Point of Discharge
- Discharge Route (3 Mi)
- NHD Flowline
- Proposed Developments
- Local Parks
- Facility Site Boundary
- Property Boundary
- 1 Mile Buffer

FREES & NICHOLS
 FREES AND NICHOLS, INC
 801 Cherry Street, Suite 2800
 Fort Worth, TX 76102
 Phone - (817) 735 - 7300



CITY OF MANVEL
TPDES Permit Major Admendment
USGS Topographic Map
 Quad Name: Manvel

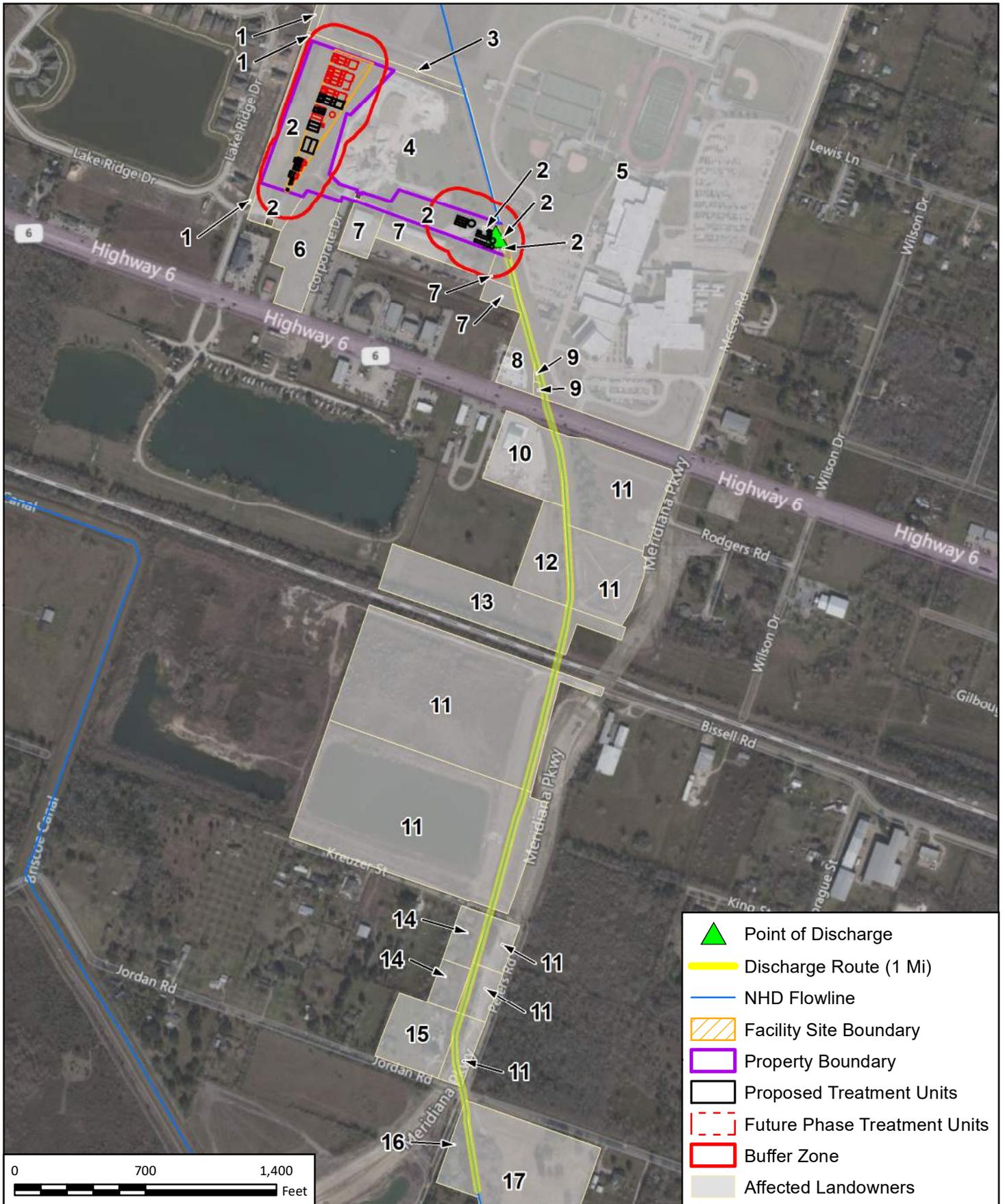
FN JOB NO	MNV21291
FILE NAME	Fig1c_Topo.mxd
DATE	9/24/2021
DESIGNED	MK
DRAFTED	MK

1c

FIGURE

ATTACHMENT C

Affected Landowner Map and Labels



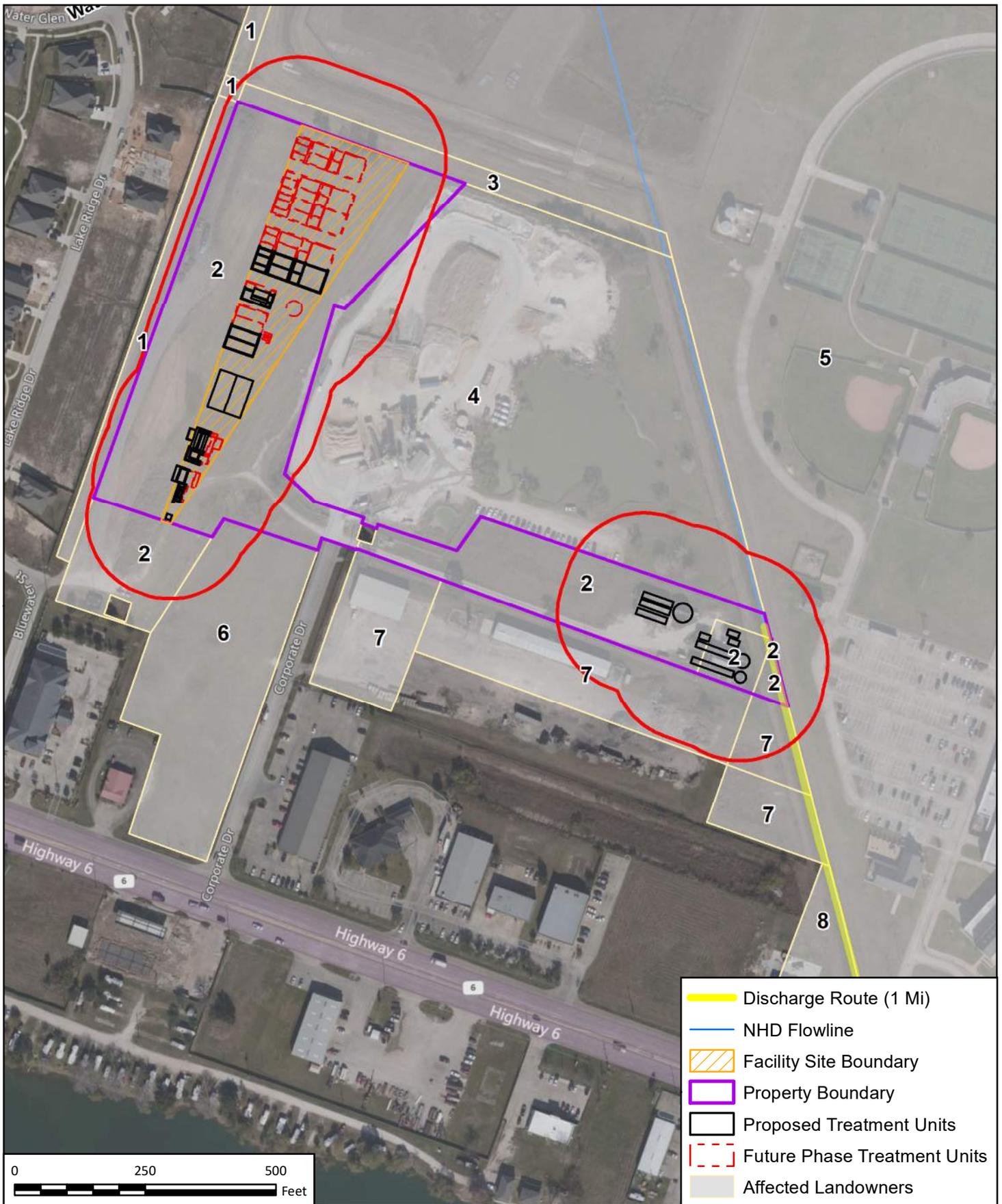
FRESE AND NICHOLS
 FRESE AND NICHOLS, INC
 801 Cherry Street, Suite 2800
 Fort Worth, TX 76102
 Phone - (817) 735 - 7300



CITY OF MANVEL
TPDES Permit Major Admendment
Affected Landowner Map

FN JOB NO	MNV21291
FILE NAME	Fig3a_Landowner.mxd
DATE	10/28/2021
DESIGNED	MK
DRAFTED	MK

3a
FIGURE



FRESE AND NICHOLS
 FRESE AND NICHOLS, INC
 801 Cherry Street, Suite 2800
 Fort Worth, TX 76102
 Phone - (817) 735 - 7300



CITY OF MANVEL
TPDES Permit Major Admendment
Affected Landowner Map

FN JOB NO	MNV21291
FILE NAME	Fig3b_Landowner.mxd
DATE	10/28/2021
DESIGNED	MK
DRAFTED	MK

3b
FIGURE

Cross-Referenced Landowner List

- | | | | |
|----|---|----|---|
| 1 | BEAZER HOMES TEXAS LP
10235 WEST LITTLE YORK STE 200
HOUSTON, TX 77040-3253 | 2 | CITY OF MANVEL
PO BOX 187
MANVEL, TX 77578-0187 |
| 3 | UNIMPROVED ROADWAY EASEMENT | 4 | ALCOMAT INC
7555 FM 762 RD
RICHMOND, TX 77469-9348 |
| 5 | ALVIN INDEPENDENT SCHOOL DISTRICT
301 E HOUSE ST
ALVIN, TX 77511-3579 | 6 | TTKG LLC
3915 CASE STREET
HOUSTON, TX 77005-3603 |
| 7 | BRAZORIA COUNTY
COURTHOUSE WEST ANNEX
451 N VELASCO ST STE 230
ANGLETON, TX 77515-4442 | 8 | GAGE MANVEL PROPERTY
19433 MORRIS AVE
MANVEL, TX 77578-3881 |
| 9 | FRIDKIN ALBERT E & WALTER KASE
CO-TRUSTEES
1914 W GRAY ST APT 407
HOUSTON, TX 77019-4829 | 10 | BSH REALTY
5401 STEVENS ROAD
MANVEL, TX 77578-4548 |
| 11 | GR-M1 LTD
% RISE DEVELOPMENT PARTNERS
1602 AVE D STE 100
KATY, TX 77493-3891 | 12 | MANVEL DEVELOPMENT CO INC
PO BOX 155
MANVEL, TX 77578-0155 |
| 13 | CENTERPOINT ENERGY INC
ELECTRIC OPERATIONS
PO BOX 1475
HOUSTON, TX 77251-1475 | 14 | GONZALES RICARDO & MANUEL GONZALES
6820 KRUIZER
MANVEL, TX 77578-4691 |
| 15 | LOWRY TERRY D
6835 JORDAN
MANVEL, TX 77578-4662 | 16 | KOBER KARL A
8435 PETERS RD
MANVEL, TX 77578-4605 |
| 17 | GUERRA JESUS H
2107 ROME DR
PEARLAND, TX 77581-3748 | | |

BEAZER HOMES TEXAS LP
10235 WEST LITTLE YORK STE 200
HOUSTON TX 77040-3253

CITY OF MANVEL
PO BOX 187
MANVEL TX 77578-0187

TTKG LLC
3915 CASE STREET
HOUSTON TX 77005-3603

ALCOMAT INC
7555 FM 762 RD
RICHMOND TX 77469-9348

BRAZORIA COUNTY
451 N VELASCO ST STE 230
ANGLETON TX 77515-4442

ALVIN INDEPENDENT SCHOOL DISTRICT
301 E HOUSE ST
ALVIN TX 77511-3579

GAGE MANVEL PROPERTY
19433 MORRIS AVE
MANVEL TX 77578-3881

FRIDKIN ALBERT E & WALTER KASE
CO TRUSTEES
1914 W GRAY ST APT 407
HOUSTON TX 77019-4829

BSH REALTY
5401 STEVENS ROAD
MANVEL TX 77578-4548

GR-M1 LTD
RISE DEVELOPMENT PARTNERS
1602 AVE D STE 100
KATY TX 77493-3891

CENTERPOINT ENERGY INC
ELECTRIC OPERATIONS
PO BOX 1475
HOUSTON TX 77251-1475

GONZALES RICARDO AND MANUEL
GONZALES
6820 KRUIZER
MANVEL TX 77578-4691

LOWRY TERRY D
6835 JORDAN
MANVEL TX 77578-4662

KOBER KARL A
8435 PETERS RD
MANVEL TX 77578-4605

GUERRA JESUS H
2107 ROME DR
PEARLAND TX 77581-3748

MANVEL DEVELOPMENT CO INC
PO BOX 155
MANVEL TX 77578-0155

ATTACHMENT D

Original Photographs and
Photo Plot Map



Photo 1. Outfall Discharge Point and Flood Control Ditch, looking downstream.



Photo 2. Outfall Discharge Point and Flood Control Drainage Ditch, looking upstream.



Photo 3. Outfall Discharge Point and Flood Control Drainage Ditch, looking across outfall.



Photo 4. Expanded Treatment Train Location, at northern boundary looking south.



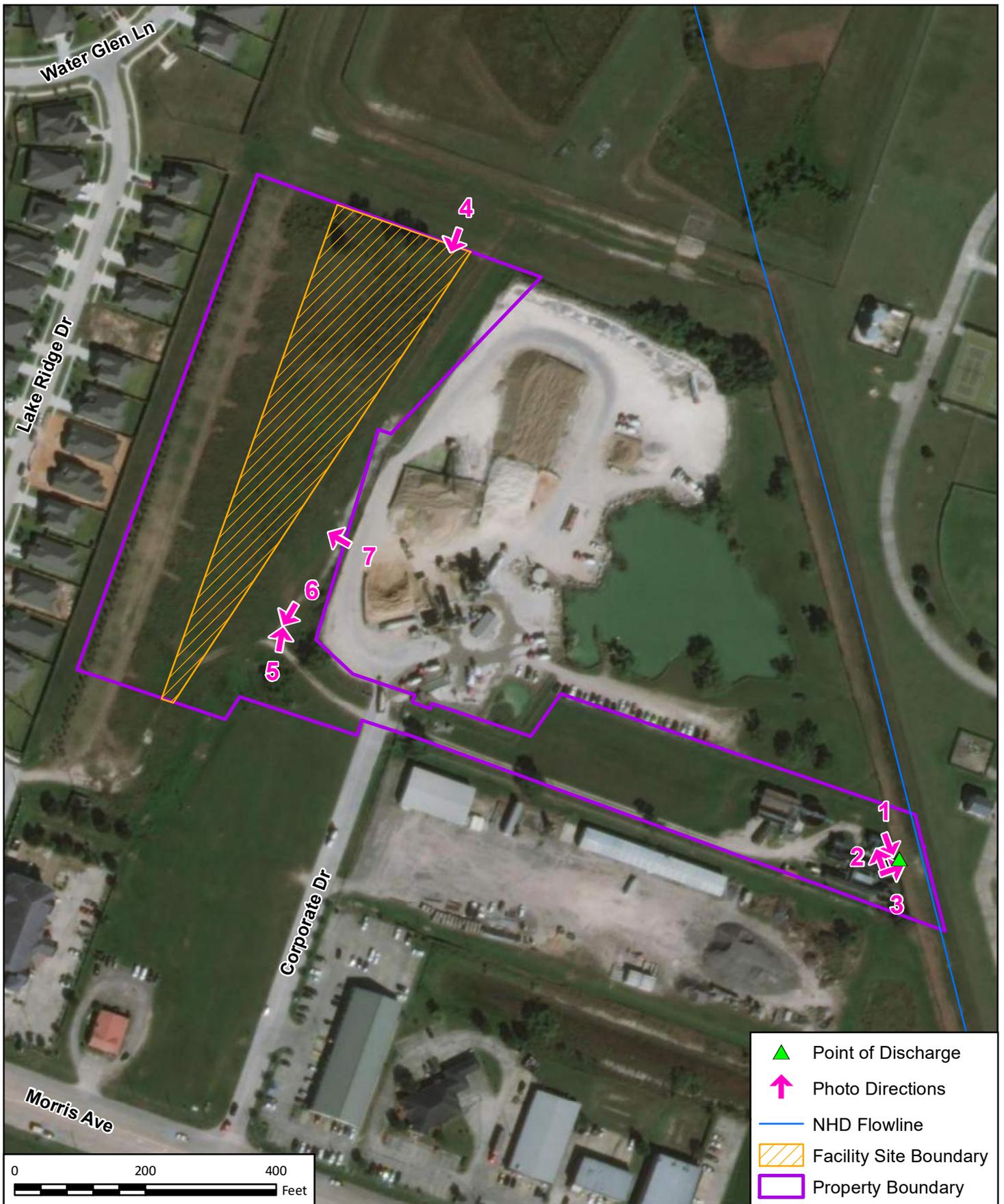
Photo 5. Expanded Treatment Train Location, near southern boundary looking north.



Photo 6. Expanded Treatment Train Location, along eastern boundary looking southwest.



Photo 7. Expanded Treatment Train Location, along eastern boundary looking northwest.



- ▲ Point of Discharge
- ➔ Photo Directions
- NHD Flowline
- Facility Site Boundary
- Property Boundary

FRESE AND NICHOLS, INC
 801 Cherry Street, Suite 2800
 Fort Worth, TX 76102
 Phone - (817) 735 - 7300



CITY OF MANVEL
TPDES Permit Major Admendment
Photo Plot Map

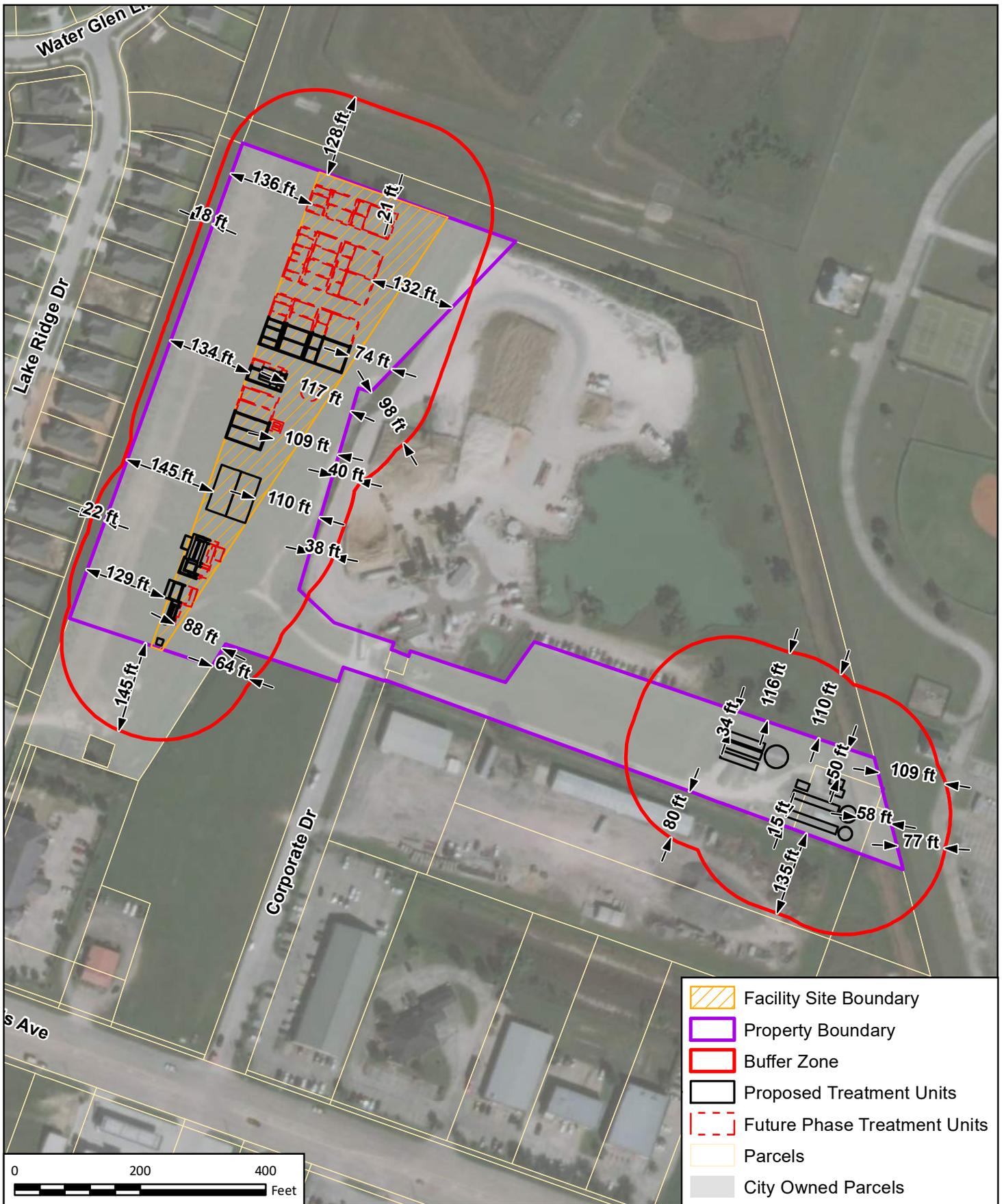
FN JOB NO	MNV21291
FILE NAME	Fig2_Photo.mxd
DATE	8/30/2021
DESIGNED	MK
DRAFTED	MK

2

FIGURE

ATTACHMENT E

Buffer Zone Map



FRESE AND NICHOLS, INC
 801 Cherry Street, Suite 2800
 Fort Worth, TX 76102
 Phone - (817) 735 - 7300



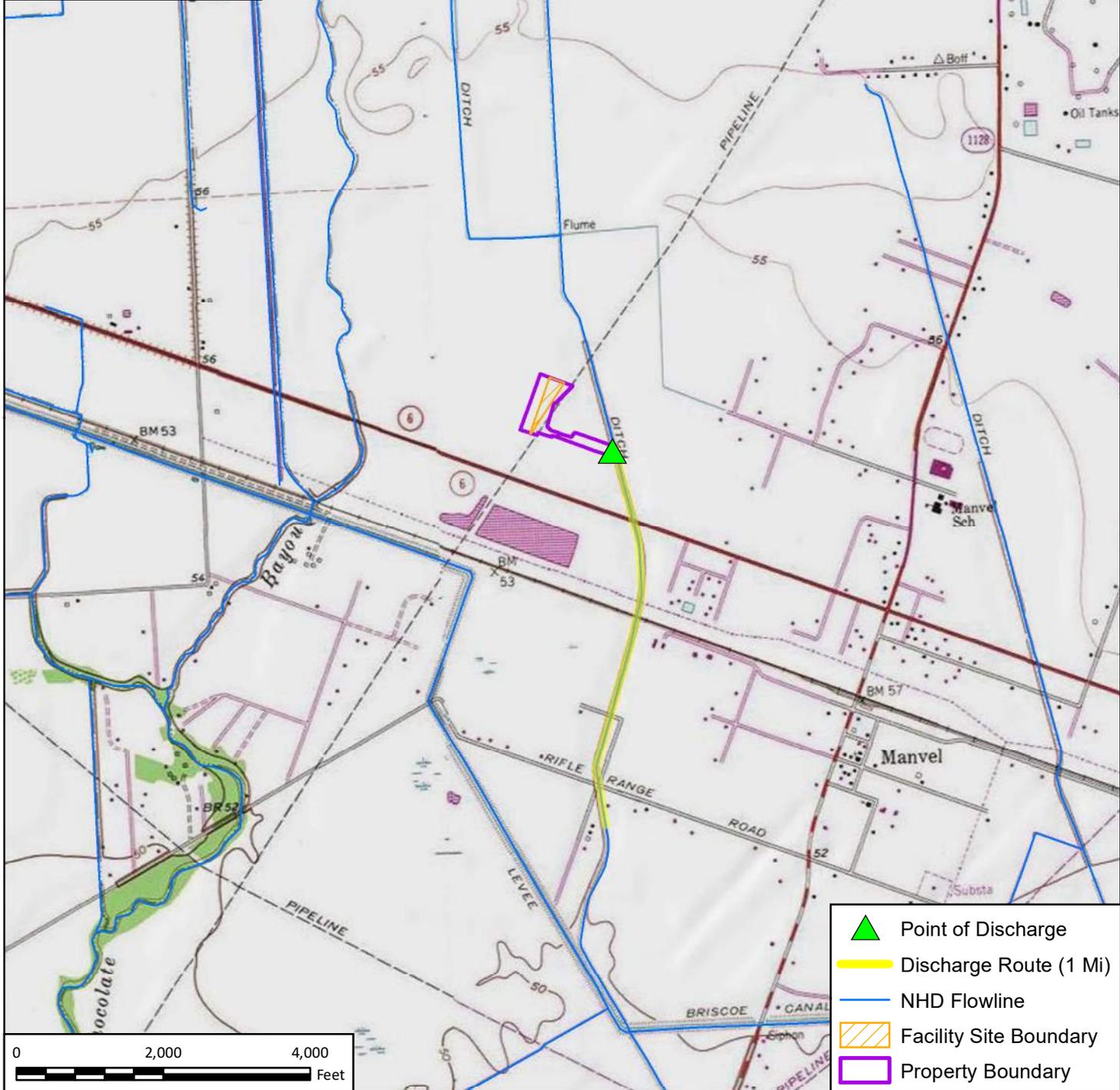
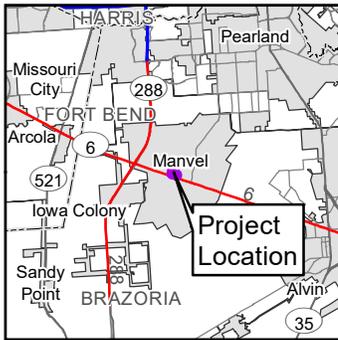
CITY OF MANVEL
TPDES Permit Major Admendment
Buffer Zone Map

FN JOB NO	MNV21291
FILE NAME	Fig4_Buffer.mxd
DATE	9/24/2021
DESIGNED	MK
DRAFTED	MK

4
FIGURE

ATTACHMENT F

SPIF USGS Topographic Map



-  Point of Discharge
-  Discharge Route (1 Mi)
-  NHD Flowline
-  Facility Site Boundary
-  Property Boundary

FRESE AND NICHOLS
 FRESE AND NICHOLS, INC
 801 Cherry Street, Suite 2800
 Fort Worth, TX 76102
 Phone - (817) 735 - 7300



CITY OF MANVEL

TPDES Permit Major Admendment

SPIF USGS Topographic Map

FN JOB NO	MNV21291
FILE NAME	Fig5_SPIF.mxd
DATE	8/30/2021
DESIGNED	MK
DRAFTED	MK

5

FIGURE

ATTACHMENT G

Treatment Process Description

Treatment Process Description

Existing: The existing treatment plant consists of two conventional activated sludge package plants, operating in parallel, each designed for treating 0.25 MGD average daily flow. The existing treatment plant is permitted for an annual average daily flow of 0.5 MGD and a 2-hour peak flow of 2.0 MGD. The influent raw wastewater is split between the two package plants. Package Plant No. 1 consists of a manual bar screen, two aeration basins, two secondary clarifiers, and three aerobic digesters. Package Plant No. 2 consists of a manual bar screen, an anoxic basin, two aeration basins, one secondary clarifier, and one aerobic digester. Secondary clarifier effluent from each train is combined and disinfected in two chlorine contact basins, which utilize gas chlorine. Following disinfection, the final effluent is discharged to the outfall. Blowers provide air to the aeration basins, digesters, and chlorine contact basins. Scum is pumped from the secondary clarifier(s) to the aeration basins. Settled solids are pumped from the secondary clarifier, with return activated sludge (RAS) sent to the aeration basins and waste activated sludge (WAS) sent to the digesters. From the digesters, decant flows to the aeration basins. Digested solids are removed and sent to disposal.

Phase 1: Phase 1 expansion includes a new 1.0 MGD treatment train. All influent raw wastewater will be screened with a mechanical coarse screen (3/8-inch opening) which includes an emergency overflow channel. Solids collected from the screen are processed through a washer/compactor and sent to a landfill. The screened flow enters a new influent pump station. The influent pump station has dedicated pumps to the existing package plants and to the new 1.0 MGD treatment train. Flows to the existing package plants will be processed as described in the “Existing” section. Flows to the new treatment train will be pumped to the grit removal system which includes an emergency bypass channel. Settled grit is pumped to the grit classifier and sent to a landfill. Grit classifier overflow is routed to the plant drain which returns upstream of the mechanical coarse screen. From the grit chamber, flow enters the mechanical fine screens (2-mm opening). Solids collected from the fine screen are processed through a washer/compactor and sent to a landfill. From the fine screen, wastewater flows to the membrane bioreactor (MBR) treatment train. The train starts with an equalization basin. Flow is pumped from the equalization basin to two anoxic basins, after which it flows by gravity to two pre-aeration basins, and then to two membrane bioreactor (MBR) basins. Wastewater is filtered through the membranes and sent via permeate pumps to UV disinfection. RAS is pumped from the MBR basins to the anoxic basins. WAS is pumped to two aerobic digesters. Blowers provide air to the equalization,

pre-aeration, MBR basins, and aerobic digesters. Digester decant is drained to the influent pump station. Digested solids are removed and dewatered via mechanical dewatering equipment. Digested solids from the existing package plant will be pumped to the new dewatering equipment as well. Overflow is routed back to the plant drain, and dewatered solids are sent to a landfill. Disinfected effluent is combined with the effluent from the existing package plants and is discharged to the existing outfall location. New dechlorination facilities will be added for the existing package plants following chlorine contact basins.

Phase 2: Phase 2 expansion includes a new 1.0 MGD MBR treatment train, with the same configuration as Phase 1. Additionally, the influent pumps, grit removal system, fine screens, aerobic digesters, and UV disinfection will be expanded. In Phase 2, the existing package plants (0.5 MGD) will be decommissioned.

Phase 3: Phase 3 expansion includes two new 1.0 MGD MBR treatment trains, with the same configuration as previous phases. Additionally, the coarse screens, influent pump station, grit removal system, fine screens, UV disinfection, and dewatering system will be expanded. Mechanical thickening will be added prior to aerobic digestion.

Phase 4: Phase 4 expansion includes one new 1.0 MGD MBR treatment train, with the same configuration as previous phases. Additionally, influent pumps, grit removal system, and UV disinfection will be expanded.

ATTACHMENT H

Treatment Units

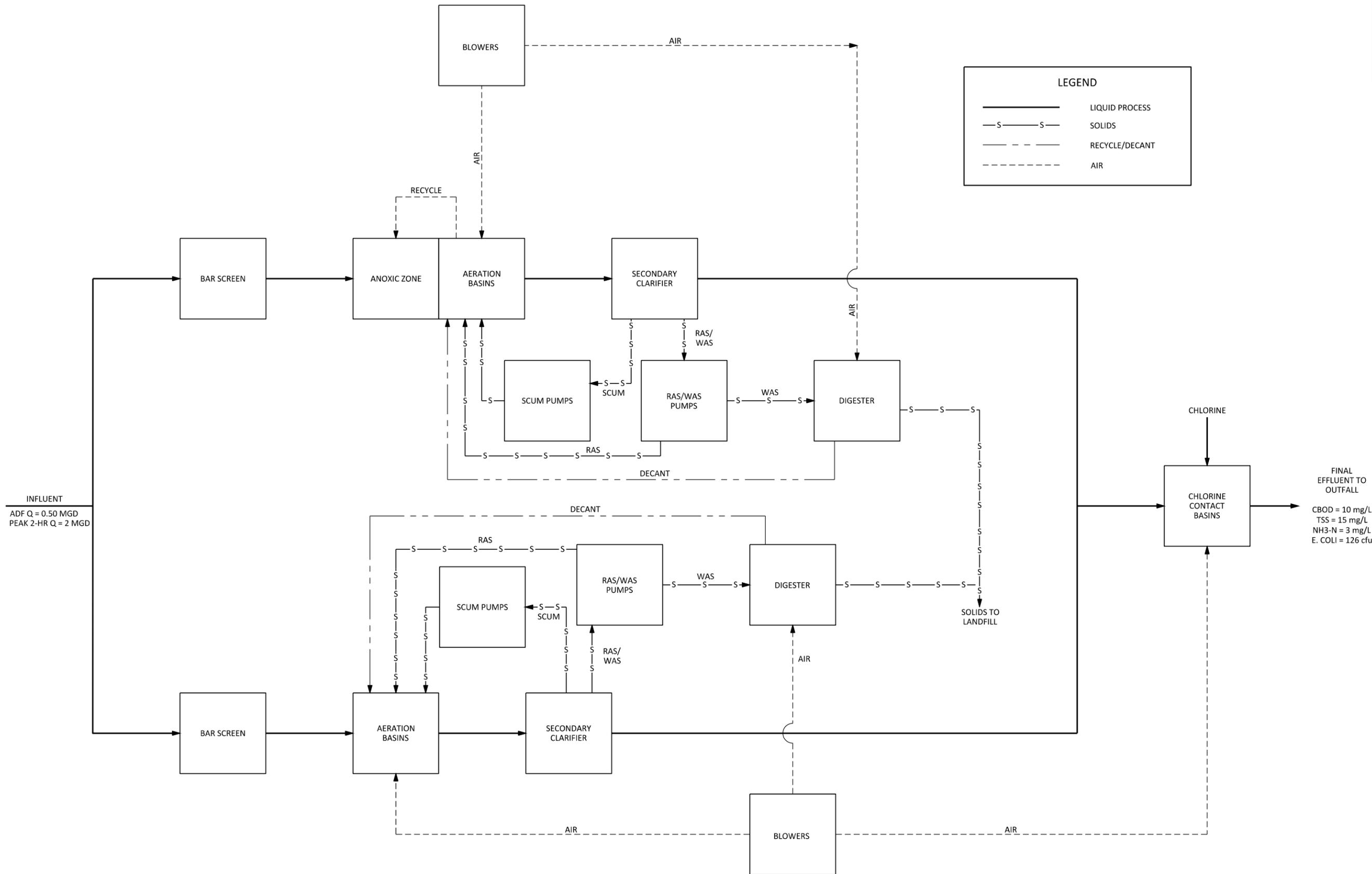
Table 1.0(1) - Treatment Units

Phase	Treatment Unit Type	Number of Units	Dimensions (L x W x D)
Phase 1	Coarse screen	1	35' x 14.5' x 16.6'
	Influent pump station	1	22' x 14' x 24.5'
	Grit removal system	1	28' x 25.5' x 21.5'
	Fine screen	2	41' x 25' x 10.1'
	MBR treatment train	1	161.7' x 40' x 20'
	Aerobic digester basin	2	62.2' x 50.7' x 20'
	Dewatering equipment	1	61.1' x 58.4'
	UV disinfection channel	1	58' x 25' x 9.3'
Phase 2	Coarse screen	1	35' x 14.5' x 16.6'
	Influent pump station	1	22' x 14' x 24.5'
	Grit removal system	1	28' x 25.5' x 21.5'
	Fine screen	3	41' x 34' x 10.1'
	MBR treatment train	2	161.7' x 80' x 20'
	Aerobic digesters	4	62.2' x 92' x 20'
	Dewatering equipment	1	61.1' x 58.4'
	UV disinfection	1	58' x 25' x 9.3'
Phase 3	Coarse screen	2	35' x 18.5' x 16.6'
	Influent pump station	2	22' x 28' x 24.5'
	Grit removal system	2	45' x 25.5' x 21.5'
	Fine screen	4	41' x 42' x 10.1'
	MBR treatment train	4	161.7' x 160' x 20'
	Thickening equipment	2	20' x 18'
	Aerobic digesters	4	62.2' x 92' x 20'
	Dewatering equipment	2	61.1' x 58.4'
	UV disinfection	2	58' x 37.2' x 9.3'
Phase 4	Coarse screen	2	35' x 18.5' x 16.6'
	Influent pump station	2	22' x 28' x 24.5'
	Grit removal system	2	45' x 25.5' x 21.5'
	Fine screen	4	41' x 42' x 10.1'
	MBR treatment train	5	161.7' x 200' x 20'
	Thickening equipment	2	20' x 18'
	Aerobic digesters	4	62.2' x 92' x 20'
	Dewatering equipment	3	61.1' x 58.4'
	UV disinfection	2	58' x 37.2' x 9.3'

ATTACHMENT I

Process Flow Diagrams

ACAD Ref: 24.0s (LMS Tech)
 Filename: N:\WW\Report\General Sheets\GN-ALL-DG-PROCC01.dwg
 Last Saved: 9/15/2021 6:14 AM. Saved By: 02128



Freese and Nichols, Inc.
 Texas Registered Engineering Firm F-7144

NOT FOR CONSTRUCTION
 THIS DOCUMENT IS RELEASED FOR THE
 PURPOSE OF INTERIM REVIEW UNDER THE
 AUTHORITY OF TEXAS REGULATION
 TEXAS NO. 105880 ON DATE 09/20/2021
 IT IS NOT TO BE USED FOR CONSTRUCTION,
 BIDDING OR PERMIT PURPOSES.

FREES & NICHOLS
 11200 Broadway Street, Suite 2320
 Pearland, Texas 77584
 Phone - (832) 456-4700
 Web - www.freese.com

CITY OF MANVEL, BRAZORIA COUNTY, TEXAS
CENTRAL WASTEWATER TREATMENT PLANT

GENERAL

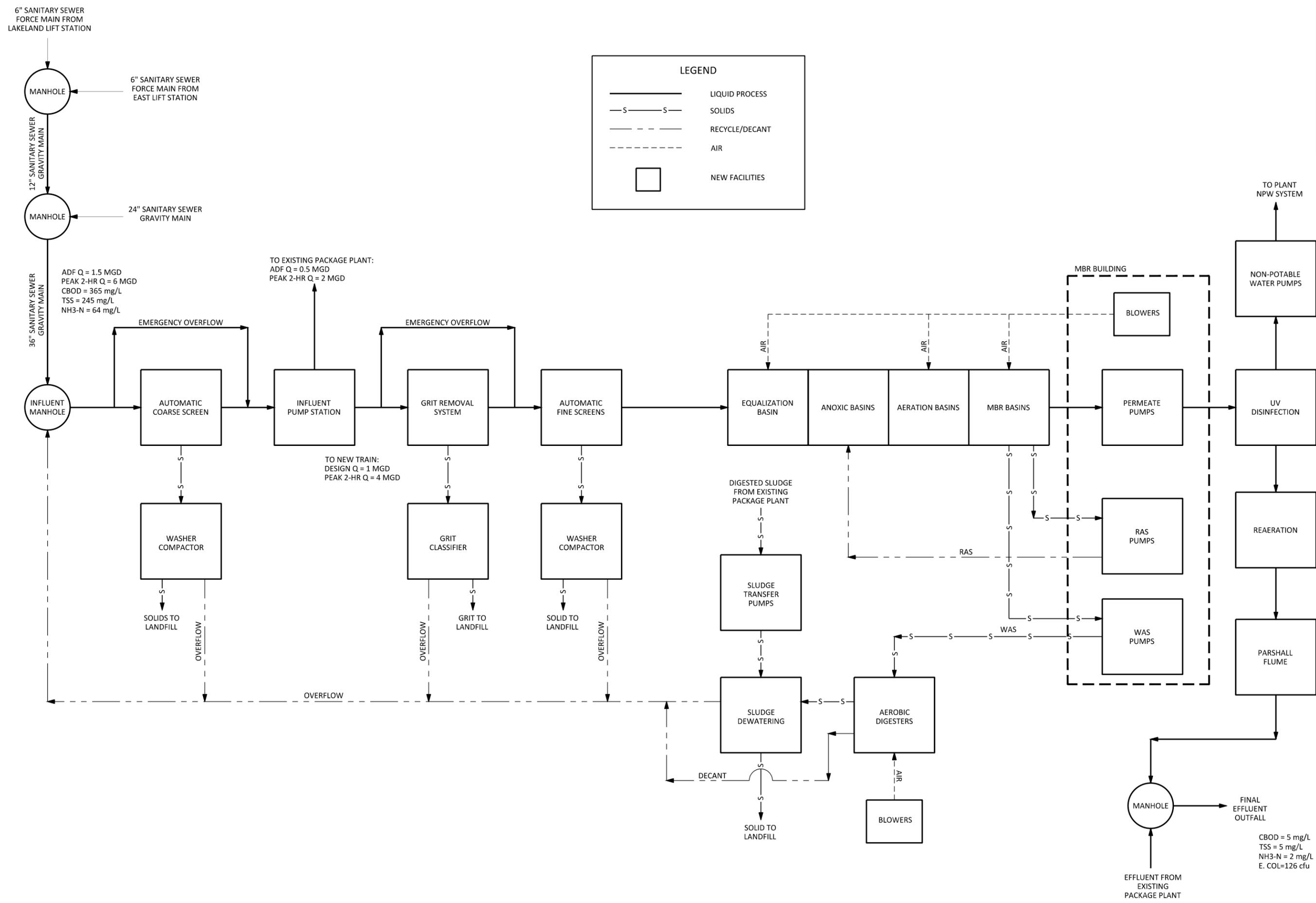
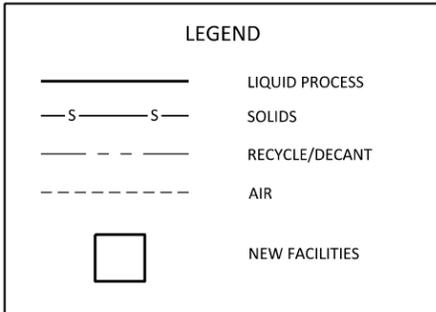
EXISTING PROCESS FLOW DIAGRAM

NO.	ISSUE	DATE	BY	DATE	DESIGNED	DRAWN	REVISION	CHECKED	DW/G
		MINV21291		09/20/21	RIA	WBH			DW/GB

FILE NAME	GN-ALL-DG-PROCC01.dwg
VERIFY SCALE	Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
SCALE	1

20% SUBMITTAL

SHEET **G-4**
 SEQ. **4**



6" SANITARY SEWER FORCE MAIN FROM LAKE LAND LIFT STATION

6" SANITARY SEWER FORCE MAIN FROM EAST LIFT STATION

12" SANITARY SEWER GRAVITY MAIN

24" SANITARY SEWER GRAVITY MAIN

36" SANITARY SEWER GRAVITY MAIN

INFLUENT MANHOLE

ADP Q = 1.5 MGD
PEAK 2-HR Q = 6 MGD
CBOD = 365 mg/L
TSS = 245 mg/L
NH3-N = 64 mg/L

EMERGENCY OVERFLOW

TO EXISTING PACKAGE PLANT:
ADF Q = 0.5 MGD
PEAK 2-HR Q = 2 MGD

TO NEW TRAIN:
DESIGN Q = 1 MGD
PEAK 2-HR Q = 4 MGD

EMERGENCY OVERFLOW

TO PLANT NPW SYSTEM

NON-POTABLE WATER PUMPS

UV DISINFECTION

RE-AERATION

PARSHALL FLUME

MANHOLE

FINAL EFFLUENT OUTFALL

CBOD = 5 mg/L
TSS = 5 mg/L
NH3-N = 2 mg/L
E. COL=126 cfu

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-7144

NOT FOR CONSTRUCTION
THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE TEXAS PROFESSIONAL ENGINEERING ACT, TEXAS REG. NO. 106580. ON DATE 09/20/2021. IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES.

FREES & NICHOLS
11200 Broadway Street, Suite 2320
Pearland, Texas 77584
Phone - (832) 456-4700
Web - www.freese.com

CITY OF MANVEL, BRAZORIA COUNTY, TEXAS

CENTRAL WASTEWATER TREATMENT PLANT

GENERAL

PROPOSED PROCESS FLOW DIAGRAM

NO.	ISSUE	DATE	BY	DATE	FRN JOB NO.	MINV21291	DATE	DESIGNED	DATE	09/20/21	DATE	DESIGNED	DATE	09/20/21	DATE	DESIGNED	DATE	09/20/21	

FILE NAME: GN-ALL-DG-PROCC02.dwg

VERIFY SCALE: 1 (Bar is one inch on original drawing, if not one inch on this sheet, adjust scale.)

20% SUBMITTAL

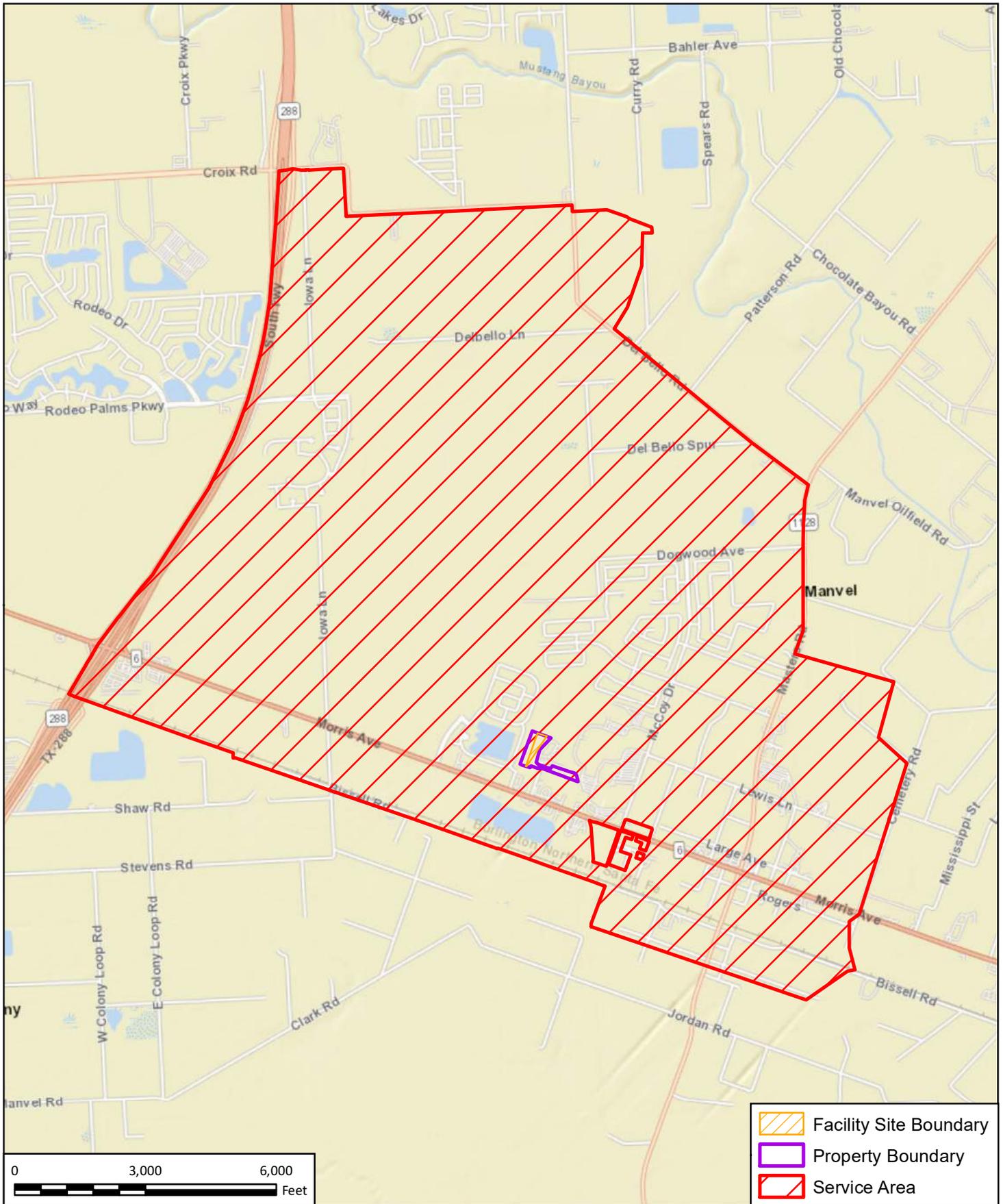
SHEET **G-5**

SEQ. **5**

ACAD Ref: 24.0s (IMS Tech)
Filename: N:\WW\Report\General Sheets\GN-ALL-DG-PROCC02.dwg
Last Saved: 9/15/2021 6:45 AM. Saved By: 02128

ATTACHMENT J

Site Drawing



FRESE AND NICHOLS
 FRESE AND NICHOLS, INC
 801 Cherry Street, Suite 2800
 Fort Worth, TX 76102
 Phone - (817) 735 - 7300



CITY OF MANVEL
TPDES Permit Major Admendment
Site Drawing

FN JOB NO	MNV21291
FILE NAME	Fig6_Site.mxd
DATE	9/24/2021
DESIGNED	MK
DRAFTED	MK

6
FIGURE



EverGro Organic Recycling



EverGro Organic Recycling

FRESE AND NICHOLS
 FRESE AND NICHOLS, INC
 801 Cherry Street, Suite 2800
 Fort Worth, TX 76102
 Phone - (817) 735 - 7300



CITY OF MANVEL
TPDES Permit Major Admendment
Sewage Sludge Disposal Site
EverGro Organic Recycling

FN JOB NO	MNV21291
FILE NAME	Fig7_Disposal.mxd
DATE	9/30/2021
DESIGNED	MK
DRAFTED	MK

7

FIGURE

ATTACHMENT K

Current Organic Loading

Current Organic Loading

Average Influent Loading (lbs/day = total average flow X average BOD5 conc. X 8.34):

Phase	Facility Design Flow (MGD)	Average Influent Loading (lb/day)
Phase 1	1.5	4,566
Phase 2	2.0	6,088
Phase 3	4.0	12,176
Phase 4	5.0	15,221

ATTACHMENT L
Design Calculations

WASTEWATER TREATMENT PLANT PROCESS CALCULATIONS

Facility:	Manvel WWTP	Project:	MNV21291
Notes:	Calculate the capacity of treatment units based on TCEQ Section 217 design criteria	Date:	7/20/2021
Scenario:	1.0 MGD Expansion (Existing 0.5 MGD Package Plant)	By:	RJA
		QC:	MUE

1. WASTEWATER AND PLANT CHARACTERIZATION

Flow rates

<u>Phase 1 (package plants + new 1.0 MGD train)</u>					
Annual average		1.5	MGD =	1,042	gpm
Peak 2-hour	Factor =	4	6.0	MGD =	4,167 gpm
<u>New 1.0 MGD train</u>					
Annual average		1.0	MGD =	694	gpm
Peak 2-hour	Factor =	4	4.0	MGD =	2,778 gpm
<u>Phase 2 (Future, +1.0 MGD train, remove pkg plants)</u>					
Annual average		2.0	MGD =	1,389	gpm
Peak 2-hour	Factor =	4	8.0	MGD =	5,556 gpm
<u>Phase 3 (Future, +two 1.0 MGD trains)</u>					
Annual average		4.0	MGD =	2,778	gpm
Peak 2-hour	Factor =	4	16.0	MGD =	11,111 gpm
<u>Phase 4 (Future, +1.0 MGD train)</u>					
Annual average		5.0	MGD =	3,472	gpm
Peak 2-hour	Factor =	4	20.0	MGD =	13,889 gpm

Raw Wastewater Concentrations

		Peak Month	
BOD (total)	mg/L	365	(Avg. + 1 std. dev.)
TSS	mg/L	245	(Avg. + 1 std. dev.)
TKN	mg/L	78	Avg NH3/TKN = 0.82
NH3-N	mg/L	64	(Avg. + 1 std. dev.)
TP	mg/L	8	(Avg. + 1 std. dev.)

Anticipated Effluent Requirements

BOD	mg/L	5	
TSS	mg/L	5	
NH3-N	mg/L	2	
TP	mg/L	-	N/A
DO	mg/L	6	

Select Treatment Processes from the list

Preliminary Treatment	Coarse Screening + Fine Screening
Primary Treatment	None
Biological Treatment	Membrane Bioreactor
Solids Treatment	Aerobic Digestion + Dewatering

2. HEADWORKS

Description:

The headworks will consist of coarse screens, followed by grit removal system and fine screen.

A. Coarse Screens

TCEQ Design Criteria (Chapter 217.121. Coarse Screens)

A wastewater treatment facility must use a coarse screen, unless all flow entering a wastewater treatment facility is processed through a grinder pump or grinding device.

For a manually cleaned coarse screen, the clear openings between the bars must be at least 0.5 inch but not more than 1.0 inch .

A manually cleaned coarse screen must use a bar rack sloped at least 30 degrees but not more than 60 degrees from horizontal.

Screen Type: Multi-Rake
 Manufacturers: Headworks, Huber, Vulcan

		PHASE 1	PHASE 2	PHASE 3	PHASE 4
Number of Coarse Screens:		1	1	2	2
Capacity (Peak) per Screen:	MGD	10	10	10	10
Total Capacity (Peak):	MGD	10	10	20	20
Opening Size:	inch	0.25	0.25	0.25	0.25
Channel Width:	ft	3	3	3	3
Channel Depth:	ft	23	23	23	23
Channel Length:	ft	20	20	20	20

B. Fine Screens

TCEQ Design Criteria (Chapter 217.122 Fine Screening Devices)

The clear openings in a fine screen must be less than 0.25 inch.

A fine screen must meet the manufacturer's recommendations with respect to velocity and head loss through the fine screen.

TCEQ Design Criteria (Chapter 217.157, Subchapter F)

Type of fine screen required for MBR: Rotary drum or traveling band

Fine screen opening size for flat plate / hollow fiber: 2-3 mm / 0.5-2 mm

Screen Type: Rotary Drum
 Manufacturers: Huber, Lakeside

		PHASE 1	PHASE 2	PHASE 3	PHASE 4
Number of Screens:		2	3	4	4
Capacity (Peak) per Screen:	MGD	6.7	6.7	6.7	6.7
Firm Capacity (Peak):	MGD	6.7	13.4	20.1	20.1
Opening Size:	mm	2	2	2	2
Channel Width:	ft	6	6	6	6
Channel Depth:	ft	8.5	8.5	8.5	8.5
Channel Length:	ft	32	32	32	32

C. Bypass Screen - Not Used

D. Grit Removal

TCEQ Design Criteria (Chapter 217.124 -127.126, Subchapter E)

A grit removal system must include at least two units capable of operating at the peak flow of the wastewater treatment facility when grit removal is required by subsection (a) of this section.

Each grit removal system must include:

an emergency overflow to accept flow when a grit removal unit is off-line; and

a means of diverting flow to the emergency overflow.

1 Hydraulically-induced vortex grit removal system (HeadCell™)

		PHASE 1	PHASE 2	PHASE 3	PHASE 4
Number of Units =		1	1	2	2
Capacity per unit =	MGD	4	8	8	10

Note: Stackable trays will be added to increase capacity of Headcell Unit in Phase 2 and Phase 4

3. PRIMARY CLARIFICATION UNITS - Not Used

4. ACTIVATED SLUDGE BASIN - Not Used
4A. MEMBRANE BIOREACTOR

TCEQ Design Criteria (Chapter 217.157, Subchapter F)

Design SRT	10-25 days
Design MLSS in bioreactor	4,000 - 10,000 mg/L
Design MLSS in membrane tank	4,000 - 14,000 mg/L
Typical Recycle rates	200% - 400% influent flow
Maximum Avg. daily flux	15 gpd per sf membrane area
Peak daily flux	1.25 times avg. daily flux
Peak 2-hr flux (maximum)	1.5 times avg. daily flux
Maximum P2HF/ADF peaking factor	2.5

Type of MBR System	Flat Plate	Hollow Fiber	
Average daily flow	1	1	MGD
Peak 2-hour flow	4	4	MGD
P2HF/ADF peaking factor	4	4	
EQ provided	Yes	Yes	
Peak 2-hour flow with EQ	1.63	TBD	MGD
Design SRT	20	12.4	days
Design MLSS in bioreactor	10,000	8,000	mg/L
Design MLSS in membrane tank	13,000	TBD	mg/L

SIZING TO BE PROVIDED BY MANUFACTURERS AND VERIFIED WITH WASTEWATER PROCESS MODEL SOFTWARE

5. SECONDARY CLARIFICATION UNITS - Not Used
6. SLUDGE PUMPING UNITS

Enter data in grey cells

Description:
 Membrane Bioreactor

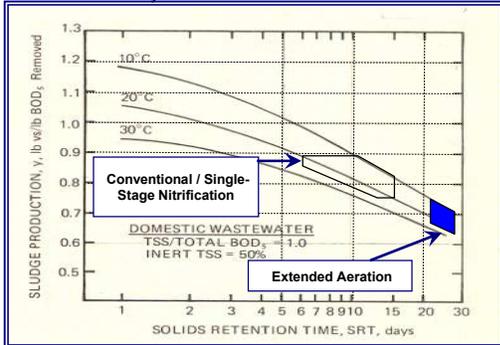
A. WAS Pump Sizing

TCEQ Design Criteria (Chapter 217.152, Subchapter F)

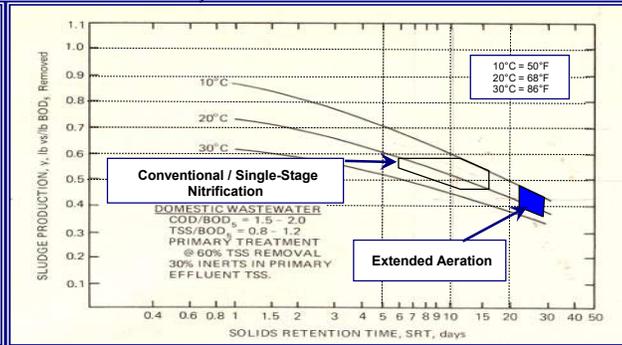
(3) A return sludge pumping system must be capable of pumping at least 200 gpd/sf but not more than 400 gpd/sf.

Select Solids Yield from the Chart below:

Without Primary Treatment



With Primary Treatment



	PHASE 1	PHASE 2	PHASE 3	PHASE 4
	Pkg Plant	MBR	MBR	MBR
Net secondary sludge production = lb VS/BOD removed	0.85	0.75	0.75	0.75

Notes: Typical minimum Solids Retention Time (SRT) maintained in WWTPs is 8 days.
 Secondary solids production is typically estimated at SRT of 8 days and at 15C temperature.

	PHASE 1	PHASE 2	PHASE 3	PHASE 4
	Pkg Plant	MBR	Peak Month	Peak Month
Select Mixed Liquor VS/TS Ratio =	0.75	0.75	0.75	0.75
Select solids concentration in WAS = mg/L	8,000	12,000	12,000	12,000

Secondary solids produced =
Wet secondary sludge produced =

	Peak Month				
lb TS/d	1,701	3,002	6,005	12,010	15,012
lb TS/hr	71	125	250	500	626
gal/d	25,500	30,000	60,000	120,000	150,000
GPM	18	21	42	83	104

B. RAS Pump Sizing

Recycle ratio = 4
ADF = 1.0 MGD

RAS flow rate = 4 MGD

No of pumps = 2 (one duty, one standby)

SIZING TO BE PROVIDED BY MANUFACTURERS

C. Primary Clarifier Sludge - Not Used

7. SOLIDS HANDLING

Enter data in grey cells

TCEQ Regulations 217.248. Sludge Thickening

(1) Capacity: The maximum monthly sludge production rate must be used as the basis for sludge thickening system sizing and design

(2) Flexibility

(A) A sludge thickening system must have a bypass to the digester.

(B) A wastewater treatment facility with a design flow greater than 1.0 million gallons per day must have:

- (i) at least two sludge thickening units;
- (ii) an alternate means of sludge thickening; or
- (iii) an alternate sludge disposal method.

(2) Design Basis

(C) The mechanical gravity thickener surface loading rate must be at least 400 gallons per day per square foot, but not more than 800 gallons per day per square foot.

(D) The minimum side water depth for a mechanical gravity thickener is 10 feet.

(E) A circular mechanical gravity thickener must have a minimum bottom slope of 1.5 inches per foot.

(F) The peripheral velocity of a scraper must be at least 15 feet per minute but no more than 20 feet per minute.

A. Gravity Thickener - Not Used

B. Mechanical Thickener

Max. monthly sludge capacity =

No. of hrs a week of mechanical thickener operation = hr
Mechanical Thickener throughput for solids = lb/hr
sludge hydraulic loading = gal/min

Thickened % solids =
gal TS/d thickened =

No. of Units =
Capacity of each unit = lb/hr
Total Capacity = lb/hr

No thickening		PHASE 3	PHASE 4
PHASE 1	PHASE 2	Peak Month	Peak Month
		30	30
		2,802	3,503
		467	583
		5%	5%
		28,800	36,000
		2	2
		1,751	1,751
		3,503	3,503

C. Aerobic Digesters

TCEQ Design Criteria (Chapter 217 Subchapter J)

Minimum Temperature =	deg C	20
Required Minimum Detention Time =	days	40
Min. Volatile Solids Loading Rate =	lb/1000 ft ³ /day	100
Max. Volatile Solids Loading Rate =	lb/1000 ft ³ /day	200
Aeration Requirement =	SCFM/1000 ft ³	20
If Mechanical Aeration is used =	HP/1000 ft ³	0.5

Volume Required for Aerobic Digestion

(Page 25-163 on MOP 8)

$$V = \frac{Q_i \times (X_i + YS_i)}{X \times \left((K_d \times P_v) + \left(\frac{1}{SRT} \right) \right)}$$

Where:

- V = Volume of the aerobic digester [L(cu ft.)]
- Q_i = Digester influent (WAS) flowrate [L/d(cu ft./d)]
- X_i = Digester influent (WAS) suspended solids (mg/L)
- Y = Portion of the influent BOD consisting of raw primary solids (%)
- S_i = Influent digester BOD₅ (mg/L)
- X = Digester suspended solids (mg/L)
- K_d = Reaction rate constant (d&1)
- P_v = Volatile fraction of digester suspended solids (%)
- SRT = Solids retention time (days)

Calculate the volume required for aerobic digesters for different flows

Note: Package plant WAS is partially digested at existing aerated sludge holding tanks at package plants.

	Phase 1	Phase 2	Phase 3	Phase 4
Pkg Plant (See Note)	MBR	MBR	MBR	MBR
Peak Month	Peak Month	Peak Month	Peak Month	Peak Month
Q _i =	25,500	30,000	60,000	28,800
X _i =	3,392	3,990	7,980	3,830
Y _{si} =	8,000	12,000	12,000	50,000
X =	0	0	0	0
K _d =	8,000	12,000	12,000	50,000
P _v =	0.10	0.10	0.10	0.10
SRT =	0.75	0.75	0.75	0.75
V =	40	40	40	40
V =	33,915	39,900	79,800	47,880
Exist. V =	14,785			

Reaction Rate Value K_d for an Aerobic Digester

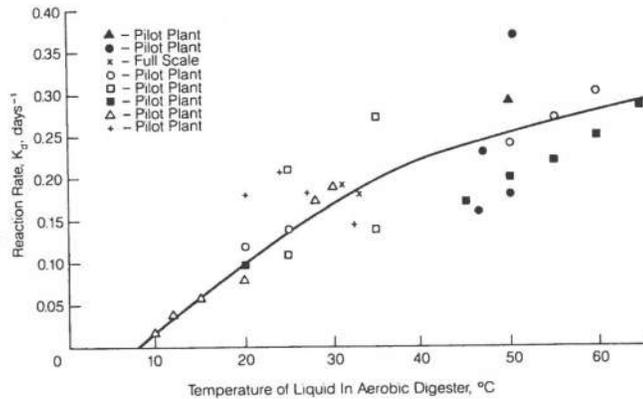


FIGURE 25.62 Experimentally determined reaction rate (K_d) versus aerobic digester liquid temperature. The value of K_d depends on solids characteristics and digester operating conditions (e.g., pH, TSS, and oxygen level) (U.S. EPA, 1978).

Number of Aerobic Digesters =
 Depth of Aerobic Digester =
 Required surface area of each aerobic digester =
 Assume width of each tank =
 Required length of each tank =
 Total Volume of Aerobic Digesters =
 Total Surface Area of Aerobic Digesters =

	PHASE 1	PHASE 2	PHASE 3	PHASE 4
	2	4	4	4
ft	18	18	18	18
ft ²	1,108	1,108	1,108	1,108
ft	56	56	56	56
ft	20	20	20	20
ft ³	40,320	80,640	80,640	80,640
ft ²	2,240	4,480	4,480	4,480
scfm/kcf	30	30	30	30
SCFM	1,210	2,419	2,419	2,419
	3	5	5	5

Design mixing requirement =
 Blower Capacity Required =
 Number of Blowers =

Note: One blower per basin and one standby blower

Each blower =
 Firm blower capacity =

SCFM

	605	605	605	605
	1,210	2,419	2,419	2,419

Blower HP Calculation

Static pressure =
 Friction =
 Blower discharge pressure =

psi 7.4
 psi 1.5 (assumed)
 psi 8.9
 ft 20.5

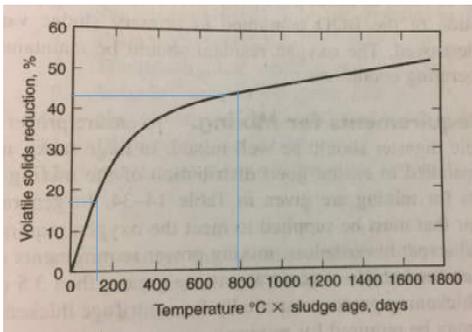
Efficiency =

0.70

Blower HP =
 Each blower =

HP 67
 HP 33

Metcalf & Eddy, Fig. 14-31, VS reduction in aerobic digester as function of digester liquid temp and digester sludge age



Temp C	20	20	20	20	20
SRT	6.5	40	40	40	40
Temp x SRT	129.6	800	800	800	800
% reduction	17	42	42	42	42

Assume VS Reduction after Digestion =
 Assume VS Reduction after Sludge Holding =

42% (Aerobic - 30-50%, Anaerobic - 45-60%)
 17%

Before Digestion

Volatile Solids in Digester Influent =
 Total Inert Solids in Digester Influent =

Pkg Plant	PHASE 1	PHASE 2	PHASE 3	PHASE 4	
lb VS/d	1,276	2,252	4,504	9,007	11,259
lb/d	425	751	1,501	3,002	3,753

After Digestion

Volatile Solids in Digester Effluent =
 Total Solids in Digester Effluent =

Pkg Plant	PHASE 1	PHASE 2	PHASE 3	PHASE 4	
lb VS/d	1,059	1,306	2,612	5,224	6,530
lb TS/d	1,484	2,057	4,113	8,227	10,283
Dry Ton/d	0.74	1.03	2.06	4.11	5.14
	1.5%	1.5%	1.5%	5%	5%
gal/d	11,866	16,440	32,880	19,728	24,660
gal/min	8	11	23	14	17

Digested Solids % =
 Digester Effluent Flow Rate =

D. **Dewatering of secondary sludge**

Assume hrs / week of belt press operation =
 Belt press throughput for secondary solids =
 Secondary sludge hydraulic loading =
 Dewatered solids % =
 Dewatered solids produced =

	Pkg Plant	PHASE 1	PHASE 2	PHASE 3	PHASE 4
hrs/week	15	18	30	30	30
lb/hr	693	800	960	1,920	2,399
gal/min	92	107	128	77	96
	15%	15%	15%	15%	15%
gal/d	1,187	1,644	3,288	6,576	8,220
CY/d	6	8	16	33	41

Number of Dewatering Units =
 Capacity of each unit =
 Total Dewatering Capacity =

	PHASE 1	PHASE 2	PHASE 3	PHASE 4
lbs/hr	1	1	2	2
lbs/hr	1,500	1,500	1,500	1,500
	1,500	1,500	3,000	3,000

Dumpster Sizing

Storage Time =
 Dumpster size =

	PHASE 1	PHASE 2	PHASE 3	PHASE 4
days	3.0	3.0	3.0	3.0
yd3	42	49	98	122
	50	50	100	130

8. FILTRATION - NOT USED

9. DISINFECTION

Enter data in grey cells

Description:

Ultraviolet Radiation Disinfection

A. TCEQ Design Criteria (Chapter 217.295, Subchapter N)

Approach channel min length before first ultraviolet UV bank = 4 ft
 Down stream channel min length = 4 ft
 Post-Disinfection Requirements
 Min Dissolved Oxygen Requirements (required if needed by WWTP permit) 5 mg/L

SIZING TO BE PROVIDED BY MANUFACTURERS

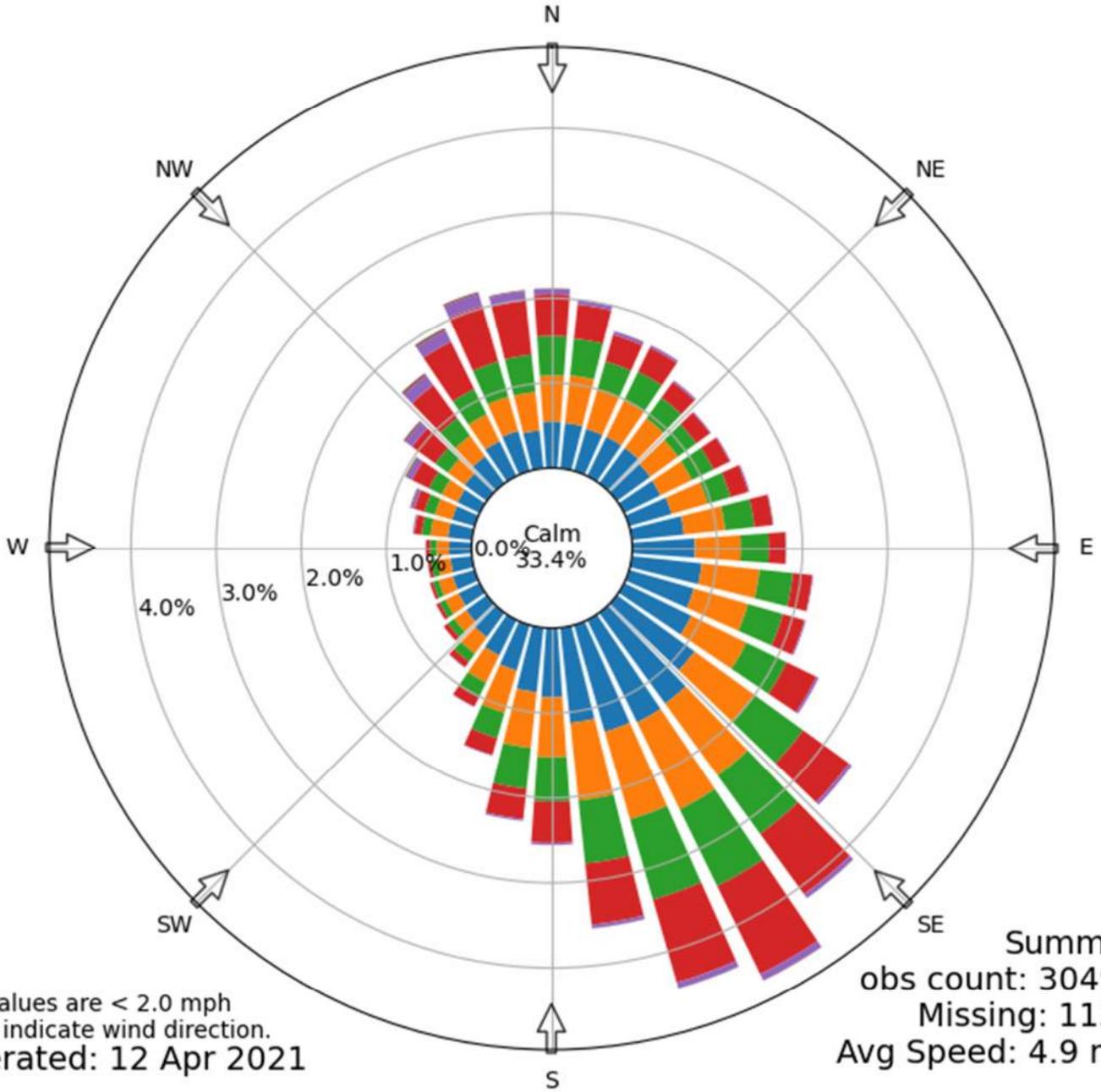
ATTACHMENT M

Wind Rose



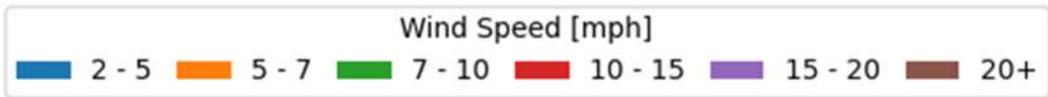
[AXH] Houston SW
Windrose Plot

Time Bounds: 01 Jun 2009 12:05 AM - 12 Apr 2021 03:35 AM America/Chicago



Calm values are < 2.0 mph
Arrows indicate wind direction.
Generated: 12 Apr 2021

Summary
obs count: 304981
Missing: 11354
Avg Speed: 4.9 mph



ATTACHMENT N

Sewage Sludge Solids Management Plan

Sludge Production Rates

		Phase I			
		Avg. Daily Flow = 1.5			
		Percent Capacity			
<u>I. Parameters</u>		100%	75%	50%	25%
Average Daily Flows (MGD)		1.5	1.125	0.75	0.375
Total Volume of Digesters	Volume =	55,105 cu. ft. or		412,214 gal	
MLSS Operating Range	MLSS (mg/l) =	3,000 - 14,000 (see description)			
CBOD ₅ Removal		Influent Concentration =		365 mg/L	
		Effluent Concentration =		5 mg/L	
		Net Removal =		360 mg/L	

The new treatment train, which is a membrane bioreactor (MBR), will be operated at 12,000-14,000 mg/L MLSS. Waste activated sludge (WAS) from the new train will be sent to new digesters for stabilization. The existing package plant operates at approximately 3,000 mg/L MLSS in the aeration basins and approximately 8,000 mg/L MLSS in the secondary clarifier underflow. WAS from the clarifiers will be sent to existing digesters. Digesters will be decanted prior to sludge removal for a solids concentration of approximately 1.5%. Supernatant will be returned to the facility headworks for treatment.

II. Daily Sludge Production

Lbs. BOD ₅ /day Removal	4,504	3,378	2,252	1,126
Lbs. of Dry Sludge/day (Note 1)	3,541	2,656	1,771	885
Lbs. of Wet Sludge/day (Note 2)	236,067	177,050	118,033	59,017
Gallons Wet Sludge/day	28,305	21,229	14,153	7,076

Notes:

(1) Refer to process calculations for detail sludge production calculations.

(2) assumes 1.5% solids, lbs. dry/0.015

III. Removal Schedule

Digester Vol. / Vol. Wet Sludge Produced = days between empties	14.6	19.4	29.1	58.3
--	------	------	------	------

The digested and dewatered sludge will be transported by the contracted sludge hauler to one of the approved landfill sites. The sludge hauler will supply sludge hauling manifests showing volumes and concentration of sludge removed from the plant.

Phase II

Avg. Daily Flow = 2.0

<u>I. Parameters</u>	Percent Capacity			
	100%	75%	50%	25%
Average Daily Flows (MGD)	2.0	1.5	1.0	0.5
Volume of Digester	Volume = 80,640 cu. ft.	or	603,229 gal	
MLSS Operating Range	MLSS (mg/l) =	12,000-14,000 (see description)		
CBOD ₅ Removal	Influent Concentration =	365 mg/L		
	Effluent Concentration =	5 mg/L		
	Net Removal =	360 mg/L		

In Phase II, the package plants will be decommissioned, and the MBR train and digester basins will be expanded. The MBR will be operated at 12,000-14,000 mg/L MLSS. WAS will be sent to digesters for stabilization. Digesters will be decanted prior to sludge removal for a solids concentration of approximately 1.5%. Supernatant will be returned to the facility headworks for treatment.

II. Daily Sludge Production

Lbs. BOD ₅ /day Removal	6,005	4,504	3,002	1,501
Lbs. of Dry Sludge/day (Note 1)	4,113	3,085	2,057	1,028
Lbs. of Wet Sludge/day (Note 2)	274,200	205,650	137,100	68,550
Gallons Wet Sludge/day	32,878	24,658	16,439	8,219

Notes:

(1) Refer to process calculations for detail sludge production calculations.

(2) assumes 1.5% solids, lbs. dry/0.015

III. Removal Schedule

Digester Vol. / Vol. Wet Sludge Produced = days between empties	18.3	24.5	36.7	73.4
--	------	------	------	------

The digested and dewatered sludge will be transported by the contracted sludge hauler to one of the approved landfill sites. The sludge hauler will supply sludge hauling manifests showing volumes and concentration of sludge removed from the plant.

Phase III

Avg. Daily Flow = 4.0

Percent Capacity

I. Parameters

	100%	75%	50%	25%
Average Daily Flows (MGD)	4.0	3.0	2.0	1.0
Volume of Digester	Volume = 80,640 cu. ft. or 603,229 gal			
MLSS Operating Range	MLSS (mg/l) = 12,000-14,000 (see description)			
CBOD ₅ Removal	Influent Concentration =			365 mg/L
	Effluent Concentration =			5 mg/L
	Net Removal =			360 mg/L

In Phase III, the MBR train will be expanded and mechanical pre-thickening will be added prior to digesters. The MBR will be operated at 12,000-14,000 mg/L MLSS. Thickened WAS will be sent to digesters for stabilization. Digesters will be decanted prior to sludge removal for a solids concentration of approximately 1.5%. Supernatant will be returned to the facility headworks for treatment.

II. Daily Sludge Production

Lbs. BOD ₅ /day Removal	12,010	9,007	6,005	3,002
Lbs. of Dry Sludge/day (Note 1)	8,226	6,170	4,113	2,057
Lbs. of Wet Sludge/day (Note 2)	548,400	411,300	274,200	137,100
Gallons Wet Sludge/day	65,755	49,317	32,878	16,439

Notes:

(1) Refer to process calculations for detail sludge production calculations.

(2) assumes 1.5% solids, lbs. dry/0.015

III. Removal Schedule

Digester Vol. / Vol. Wet Sludge Produced = days between empties	9.2	12.2	18.3	36.7
--	-----	------	------	------

The digested and dewatered sludge will be transported by the contracted sludge hauler to one of the approved landfill sites. The sludge hauler will supply sludge hauling manifests showing volumes and concentration of sludge removed from the plant.

Phase IV

Avg. Daily Flow = 5.0

<u>I. Parameters</u>	Percent Capacity			
	100%	75%	50%	25%
Average Daily Flows (MGD)	5.0	3.75	2.5	1.25
Volume of Digester	Volume = 80,640 cu. ft.	or	603,229 gal	
MLSS Operating Range	MLSS (mg/l) =	12,000-14,000 (see description)		
CBOD ₅ Removal	Influent Concentration =	365 mg/L		
	Effluent Concentration =	5 mg/L		
	Net Removal =	360 mg/L		

In Phase IV, the MBR train will be expanded. The MBR will be operated at 12,000-14,000 mg/L MLSS. Thickened WAS will be sent to digesters for stabilization. Digesters will be decanted prior to sludge removal for a solids concentration of approximately 1.5%. Supernatant will be returned to the facility headworks for treatment.

II. Daily Sludge Production

Lbs. BOD ₅ /day Removal	15,012	11,259	7,506	3,753
Lbs. of Dry Sludge/day (Note 1)	10,283	7,712	5,141	2,571
Lbs. of Wet Sludge/day (Note 2)	685,500	514,125	342,750	171,375
Gallons Wet Sludge/day	82,194	61,646	41,097	20,549

Notes:

(1) Refer to process calculations for detail sludge production calculations.

(2) assumes 1.5% solids, lbs. dry/0.015

III. Removal Schedule

Digester Vol. / Vol. Wet Sludge Produced = days between empties	7.3	9.8	14.7	29.4
--	-----	-----	------	------

The digested and dewatered sludge will be transported by the contracted sludge hauler to one of the approved landfill sites. The sludge hauler will supply sludge hauling manifests showing volumes and concentration of sludge removed from the plant.

ATTACHMENT O

Lab Reports



June 21, 2021

Laboratory Report

Ray Word
City of Manvel
20025 Morris Avenue
Manvel, TX 77578

The following test results meet all NELAP requirements for analytes for which certification is available. Any deviations from our quality system will be noted in the case narrative. All analyses performed by North Water District Laboratory Services, Inc. unless noted.

For questions regarding this report, contact Monica Martin at 936-321-6060.

Sincerely,

Deena Higginbotham
NPDES Project Manager



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Sample Results

Client Sample ID: 18 Mohm DI

Sample Matrix: Waste Water

Lab Sample ID: 21E3374-01

Date Collected: 05/24/2021 6:45

City of Manvel - Outfall 001 3 Part Grab Comp 1 [none]

Collected by: Ernie Means

Method	Analyte	*	Result Q	Units	DF	SDL	LRL	Batch	Analyzed	Analyst
--------	---------	---	----------	-------	----	-----	-----	-------	----------	---------

Metals, Total

EPA 1631E	Mercury	A	<0.00500U	ug/L	1	0.00250	0.00500	BEE3269	06/01/2021 11:25	TBB
-----------	---------	---	-----------	------	---	---------	---------	---------	------------------	-----

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Sample Results
 (Continued)

Client Sample ID: Outfall 001 3 Part Grab

Sample Matrix: Waste Water

Lab Sample ID: 21E3374-02

Date Collected: 05/24/2021 6:50

City of Manvel - Outfall 001 3 Part Grab Comp 1 [none]

Collected by: Ernie Means

Method	Analyte	*	Result Q	Units	DF	SDL	LRL	Batch	Analyzed	Analyst
--------	---------	---	----------	-------	----	-----	-----	-------	----------	---------

Metals, Total

EPA 1631E	Mercury	A	<0.00500U	ug/L	1	0.00250	0.00500	BEE3269	06/01/2021 11:20	TBB
-----------	---------	---	-----------	------	---	---------	---------	---------	------------------	-----

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Sample Results
 (Continued)

Client Sample ID: 18 Mohm DI

Sample Matrix: Waste Water

Lab Sample ID: 21E3375-01

Date Collected: 05/24/2021 15:50

City of Manvel - Outfall 001 3 Part Grab Comp 2 [none]

Collected by: Ernie Means

Method	Analyte	*	Result Q	Units	DF	SDL	LRL	Batch	Analyzed	Analyst
--------	---------	---	----------	-------	----	-----	-----	-------	----------	---------

Metals, Total

EPA 1631E	Mercury	A	<0.00500U	ug/L	1	0.00250	0.00500	BEE3269	06/01/2021 11:34	TBB
-----------	---------	---	-----------	------	---	---------	---------	---------	------------------	-----

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Sample Results
(Continued)

Client Sample ID: Outfall 001 3 Part Grab

Sample Matrix: Waste Water

Lab Sample ID: 21E3375-02

Date Collected: 05/24/2021 15:55

City of Manvel - Outfall 001 3 Part Grab Comp 2 [none]

Collected by: Ernie Means

Method	Analyte	*	Result Q	Units	DF	SDL	LRL	Batch	Analyzed	Analyst
--------	---------	---	----------	-------	----	-----	-----	-------	----------	---------

Metals, Total

EPA 1631E	Mercury	A	<0.00500U	ug/L	1	0.00250	0.00500	BEE3269	06/01/2021 11:29	TBB
-----------	---------	---	-----------	------	---	---------	---------	---------	------------------	-----

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Sample Results
 (Continued)

Client Sample ID: Outfall 001
 Lab Sample ID: 21E3581-01
 City of Manvel - Permit Renewal

[none]

Sample Matrix: Waste Water
 Date Collected: 05/25/2021 8:25
 Collected by: Jose Gutierrez

Method	Analyte	*	Result Q	Units	DF	SDL	LRL	Batch	Analyzed	Analyst
--------	---------	---	----------	-------	----	-----	-----	-------	----------	---------

General Chemistry

SM 4500-CN ⁻ G	Amenable Cyanide	A	<10.0U	ug/L	1	5.00	10.0	BEF0006	06/01/2021 16:15	EM
SM 4500-CN ⁻ C	Total Cyanide	A	<10.0U	ug/L	1	5.00	10.0	BEF0006	06/01/2021 16:15	EM
EPA 1664A	n-Hexane Extractable Material (O&G)	A	<5.00U	mg/L	1	5.00	5.00	BEF1064	06/08/2021 14:00	JSK

Field

Hach 10360	DO Field	N	7.00	mg/L	1	1.00	1.00	BEE3380	05/25/2021 08:25	JG
Calc	Flow Field	N	561	MGD	1	0.00	0.00	BEE3380	05/25/2021 08:25	JG
SM 4500-H+ B	pH	A	7.30	pH Units @ 25 °C	1	1.00	1.00	BEE3380	05/25/2021 08:25	JG
SM 4500-Cl G	Total Residual Chlorine	A	<0.25U	mg/L	1	0.25	0.25	BEE3380	05/25/2021 08:25	JG

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Sample Results
 (Continued)

Client Sample ID: Outfall 001 Sampler

Sample Matrix: Waste Water

Lab Sample ID: 21E3581-02

Date Collected: 05/25/2021 5:00

City of Manvel - Permit Renewal

[none]

Collected by: Jose Gutierrez

Method	Analyte	*	Result Q	Units	DF	SDL	LRL	Batch	Analyzed	Analyst
--------	---------	---	----------	-------	----	-----	-----	-------	----------	---------

Semivolatile Organic Compounds by GCMS

ASTM D7065	Nonylphenol	N	<333U	ug/L	2	6.00	333	BEE3531	06/12/2021 10:30	JLL
EPA 625.1	1,2,4-Trichlorobenzene	A	<10.0U	ug/L	1	0.0943	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	1,2-Diphenylhydrazine	A	<20.0U	ug/L	1	0.250	20.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	2,2'-Oxybis(1-chloropropane), bis(2-Chloro-1-methy	A	<10.0U	ug/L	1	0.129	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	2,4,5-Trichlorophenol	A	<10.0U	ug/L	1	0.210	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	2,4,6-Trichlorophenol	A	<10.0U	ug/L	1	0.385	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	2,4-Dichlorophenol	A	<10.0U	ug/L	1	0.256	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	2,4-Dimethylphenol	A	<10.0U	ug/L	1	0.294	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	2,4-Dinitrophenol	A	<50.0U	ug/L	1	2.85	50.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	2,4-Dinitrotoluene (2,4-DNT)	A	<10.0U	ug/L	1	0.0530	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	2,6-Dinitrotoluene (2,6-DNT)	A	<10.0U	ug/L	1	0.584	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	2-Chloronaphthalene	A	<10.0U	ug/L	1	0.123	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	2-Chlorophenol	A	<10.0U	ug/L	1	0.147	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylph	A	<50.0U	ug/L	1	0.511	50.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	2-Nitrophenol	A	<20.0U	ug/L	1	0.218	20.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	3,4-Methylphenol	A	<10.0U	ug/L	1	0.462	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	4-Bromophenyl phenyl ether (BDE-3)	A	<10.0U	ug/L	1	0.0682	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	4-Chloro-3-methylphenol	A	<10.0U	ug/L	1	0.218	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	4-Chlorophenyl phenylether	A	<10.0U	ug/L	1	0.207	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	4-Nitrophenol	A	<50.0U	ug/L	1	2.40	50.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Acenaphthene	A	<10.0U	ug/L	1	0.0776	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Acenaphthylene	A	<10.0U	ug/L	1	0.0594	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Anthracene	A	<10.0U	ug/L	1	0.0532	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Benzidine	A	<50.0U	ug/L	1	11.8	50.0	BEE3304	06/03/2021 08:32	JLL
EPA 625.1	Benzo(a)anthracene	A	<5.00U	ug/L	1	0.0738	5.00	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Benzo(a)pyrene	A	<5.00U	ug/L	1	0.143	5.00	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Benzo(b)fluoranthene	A	<5.00U	ug/L	1	0.0486	5.00	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Benzo(g,h,i)perylene	A	<20.0U	ug/L	1	0.112	20.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Benzo(k)fluoranthene	A	<5.00U	ug/L	1	0.0747	5.00	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	bis(2-Chloroethoxy)methane	A	<10.0U	ug/L	1	0.112	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	bis(2-Chloroethyl) ether	A	<10.0U	ug/L	1	0.184	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Bis(2-ethylhexyl)phthalate	A	<10.0U	ug/L	1	0.500	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Butyl benzyl phthalate	A	<10.0U	ug/L	1	0.123	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Chrysene	A	<5.00U	ug/L	1	0.0573	5.00	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Dibenzo(a,h)anthracene	A	<5.00U	ug/L	1	0.152	5.00	BEE3304	05/28/2021 09:02	JLL

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Sample Results
(Continued)

Client Sample ID: Outfall 001 Sampler (Continued)

Sample Matrix: Waste Water

Lab Sample ID: 21E3581-02

Date Collected: 05/25/2021 5:00

City of Manvel - Permit Renewal

[none]

Collected by: Jose Gutierrez

Method	Analyte	*	Result Q	Units	DF	SDL	LRL	Batch	Analyzed	Analyst
--------	---------	---	----------	-------	----	-----	-----	-------	----------	---------

Semivolatile Organic Compounds by GCMS (Continued)

EPA 625.1	Diethyl phthalate	A	<10.0U	ug/L	1	0.150	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Dimethyl phthalate	A	<10.0U	ug/L	1	0.0869	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Di-n-butyl phthalate	A	<10.0U	ug/L	1	0.505	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Di-n-octyl phthalate	A	<10.0U	ug/L	1	0.163	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Fluoranthene	A	<10.0U	ug/L	1	0.0676	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Fluorene	A	<10.0U	ug/L	1	0.0589	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Hexachlorobenzene	A	<5.00U	ug/L	1	0.0629	5.00	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Hexachlorobutadiene	A	<10.0U	ug/L	1	0.0697	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Hexachlorocyclopentadiene	A	<10.0U	ug/L	1	0.250	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Hexachloroethane	A	<20.0U	ug/L	1	0.0644	20.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Hexachlorophene	A	<10.0U	ug/L	1	0.343	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Indeno(1,2,3-cd) pyrene	A	<5.00U	ug/L	1	0.126	5.00	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Isophorone	A	<10.0U	ug/L	1	0.0853	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Naphthalene	A	<10.0U	ug/L	1	0.0742	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Nitrobenzene	A	<10.0U	ug/L	1	0.118	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	n-Nitrosodiethylamine	A	<20.0U	ug/L	1	0.162	20.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	n-Nitrosodimethylamine	A	<50.0U	ug/L	1	1.24	50.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	n-Nitroso-di-n-butylamine	A	<20.0U	ug/L	1	1.87	20.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	n-Nitrosodi-n-propylamine	A	<20.0U	ug/L	1	0.445	20.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	n-Nitrosodiphenylamine	A	<20.0U	ug/L	1	0.0609	20.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Pentachlorobenzene	A	<20.0U	ug/L	1	0.0514	20.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Pentachlorophenol	A	<5.00U	ug/L	1	0.437	5.00	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Phenanthrene	A	<10.0U	ug/L	1	0.0816	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Phenol, Total	A	<10.0U	ug/L	1	0.470	10.0	BEE3304	05/28/2021 09:02	JLL
EPA 625.1	Pyrene	A	<10.0U	ug/L	1	0.0848	10.0	BEE3304	05/28/2021 09:02	JLL

Organics by GC

SM 6640 B	2,4-D	A	<0.700U, CQ	ug/L	2	0.236	0.700	BEE3275	05/28/2021 02:07	KRB
SM 6640 B	Silvex (2,4,5-TP)	A	<0.300U, CQ	ug/L	2	0.238	0.300	BEE3275	05/28/2021 02:07	KRB
EPA 608.3	4,4'-DDD	A	<0.100U	ug/L	1	0.000800	0.100	BEE3398	06/04/2021 09:32	SO
EPA 608.3	4,4'-DDE	A	<0.100U	ug/L	1	0.000400	0.100	BEE3398	06/04/2021 09:32	SO
EPA 608.3	4,4'-DDT	A	<0.0200U	ug/L	1	0.00360	0.0200	BEE3398	06/04/2021 09:32	SO
EPA 608.3	Aldrin	A	<0.0100U	ug/L	1	0.000400	0.0100	BEE3398	06/04/2021 09:32	SO
EPA 608.3	alpha-BHC (alpha-Hexachlorocyclohexane)	A	<0.0500U	ug/L	1	0.00120	0.0500	BEE3398	06/04/2021 09:32	SO
EPA 608.3	beta-BHC (beta-Hexachlorocyclohexane)	A	<0.0500U	ug/L	1	0.00240	0.0500	BEE3398	06/04/2021 09:32	SO

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Sample Results
 (Continued)

Client Sample ID: Outfall 001 Sampler (Continued)

Sample Matrix: Waste Water

Lab Sample ID: 21E3581-02

Date Collected: 05/25/2021 5:00

City of Manvel - Permit Renewal

[none]

Collected by: Jose Gutierrez

Method	Analyte	*	Result Q	Units	DF	SDL	LRL	Batch	Analyzed	Analyst
--------	---------	---	----------	-------	----	-----	-----	-------	----------	---------

Organics by GC (Continued)

EPA 608.3	Chlordane (tech.)	A	<0.200U	ug/L	1	0.00200	0.200	BEE3398	06/04/2021 09:32	SO
EPA 608.3	cis-Chlordane (alpha-Chlordane)	A	<0.100U	ug/L	1	0.00200	0.100	BEE3398	06/04/2021 09:32	SO
EPA 608.3	delta-BHC	A	<0.0500U	ug/L	1	0.00120	0.0500	BEE3398	06/04/2021 09:32	SO
EPA 608.3	Dicofol	A	<1.00B, U	ug/L	1	0.0480	1.00	BEE3398	06/11/2021 06:34	EM
EPA 608.3	Dieldrin	A	<0.0200U	ug/L	1	0.000400	0.0200	BEE3398	06/04/2021 09:32	SO
EPA 608.3	Endosulfan I	A	<0.0100U	ug/L	1	0.00160	0.0100	BEE3398	06/04/2021 09:32	SO
EPA 608.3	Endosulfan II	A	<0.0200U	ug/L	1	0.000400	0.0200	BEE3398	06/04/2021 09:32	SO
EPA 608.3	Endosulfan sulfate	A	<0.100U	ug/L	1	0.00400	0.100	BEE3398	06/04/2021 09:32	SO
EPA 608.3	Endrin	A	<0.0200U	ug/L	1	0.000800	0.0200	BEE3398	06/04/2021 09:32	SO
EPA 608.3	Endrin aldehyde	A	<0.100U	ug/L	1	0.00280	0.100	BEE3398	06/04/2021 09:32	SO
EPA 608.3	gamma-BHC (Lindane, gamma-HexachlorocyclohexanE)	A	<0.0500U	ug/L	1	0.000400	0.0500	BEE3398	06/04/2021 09:32	SO
EPA 608.3	gamma-Chlordane	A	<0.100U	ug/L	1	0.00200	0.100	BEE3398	06/04/2021 09:32	SO
EPA 608.3	Heptachlor	A	<0.0100U	ug/L	1	0.000800	0.0100	BEE3398	06/04/2021 09:32	SO
EPA 608.3	Heptachlor epoxide	A	<0.0100U	ug/L	1	0.00160	0.0100	BEE3398	06/04/2021 09:32	SO
EPA 608.3	Methoxychlor	A	<2.00U	ug/L	1	0.00400	2.00	BEE3398	06/04/2021 09:32	SO
EPA 608.3	Mirex	A	<0.0200U	ug/L	1	0.00400	0.0200	BEE3398	06/11/2021 06:34	EM
EPA 608.3	Toxaphene (Chlorinated Camphene)	A	<0.300U	ug/L	1	0.0400	0.300	BEE3398	06/04/2021 09:32	SO
EPA 1657	Azinphos-methyl (Guthion)	A	<0.100U	ug/L	1	0.0333	0.100	BEF0013	06/15/2021 04:58	cro
EPA 1657	Chlorpyrifos	A	<0.0500U	ug/L	1	0.0257	0.0500	BEF0013	06/15/2021 04:58	cro
EPA 1657	Demeton	A	<0.200U	ug/L	1	0.0129	0.200	BEF0013	06/15/2021 04:58	cro
EPA 1657	Diazinon	A	<0.500U	ug/L	1	0.0322	0.500	BEF0013	06/15/2021 04:58	cro
EPA 1657	Malathion	A	<0.100U	ug/L	1	0.0133	0.100	BEF0013	06/15/2021 04:58	cro
EPA 1657	Parathion, ethyl	A	<0.100U	ug/L	1	0.0207	0.100	BEF0013	06/15/2021 04:58	cro
EPA 608	Aroclor-1016 (PCB-1016)	A	<0.200U	ug/L	1	0.00800	0.200	BEE3631	06/13/2021 11:36	EM
EPA 608	Aroclor-1221 (PCB-1221)	A	<0.200U	ug/L	1	0.00800	0.200	BEE3631	06/13/2021 11:36	EM
EPA 608	Aroclor-1232 (PCB-1232)	A	<0.200U	ug/L	1	0.00800	0.200	BEE3631	06/13/2021 11:36	EM
EPA 608	Aroclor-1242 (PCB-1242)	A	<0.200U	ug/L	1	0.00800	0.200	BEE3631	06/13/2021 11:36	EM
EPA 608	Aroclor-1248 (PCB-1248)	A	<0.200U	ug/L	1	0.00800	0.200	BEE3631	06/13/2021 11:36	EM
EPA 608	Aroclor-1254 (PCB-1254)	A	<0.200U	ug/L	1	0.00800	0.200	BEE3631	06/13/2021 11:36	EM
EPA 608	Aroclor-1260 (PCB-1260)	A	<0.200U	ug/L	1	0.00800	0.200	BEE3631	06/13/2021 11:36	EM
EPA 608	PCBs, Total	A	<0.200U	ug/L	1	0.00800	0.200	BEE3631	06/13/2021 11:36	EM

Metals, Total

EPA 200.8	Aluminum	A	77.9	ug/L	1	0.167	2.50	BEE3522	06/04/2021 12:11	ORP
EPA 200.8	Antimony	A	<5.00U	ug/L	1	0.0589	5.00	BEE3522	06/02/2021 14:24	ORP
EPA 200.8	Arsenic	A	3.03	ug/L	1	0.0468	0.500	BEE3522	06/07/2021 15:01	TBB
EPA 200.8	Barium	A	71.2	ug/L	1	0.0200	3.00	BEE3522	06/02/2021 14:24	ORP

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Sample Results
(Continued)

Client Sample ID: Outfall 001 Sampler (Continued)

Sample Matrix: Waste Water

Lab Sample ID: 21E3581-02

Date Collected: 05/25/2021 5:00

City of Manvel - Permit Renewal

[none]

Collected by: Jose Gutierrez

Method	Analyte	*	Result Q	Units	DF	SDL	LRL	Batch	Analyzed	Analyst
--------	---------	---	----------	-------	----	-----	-----	-------	----------	---------

Metals, Total (Continued)

EPA 200.8	Beryllium	A	<0.500U	ug/L	1	0.0137	0.500	BEE3522	06/02/2021 14:24	ORP
EPA 200.8	Cadmium	A	<1.00U	ug/L	1	0.00798	1.00	BEE3522	06/02/2021 14:24	ORP
EPA 200.8	Chromium	A	<3.00U	ug/L	1	0.0839	3.00	BEE3522	06/02/2021 14:24	ORP
EPA 200.8	Copper	A	17.6	ug/L	1	0.182	2.00	BEE3522	06/03/2021 12:47	ORP
Calc	Chromium (III)		<0.00300	mg/L	1	8.39E-5	0.00300	[CALC]	06/02/2021 14:24	ORP
EPA 200.8	Lead	A	<0.500U	ug/L	1	0.0120	0.500	BEE3522	06/02/2021 14:24	ORP
EPA 200.8	Nickel	A	2.26	ug/L	1	0.0398	2.00	BEE3522	06/02/2021 14:24	ORP
EPA 200.8	Selenium	A	<5.00U	ug/L	1	0.354	5.00	BEE3522	06/03/2021 17:15	ORP
EPA 200.8	Silver	A	<0.500U	ug/L	1	0.00467	0.500	BEE3522	06/04/2021 12:11	ORP
EPA 200.8	Thallium	A	<0.500U	ug/L	1	0.0617	0.500	BEE3522	06/02/2021 14:24	ORP
EPA 200.8	Zinc	A	53.4	ug/L	1	0.207	5.00	BEE3522	06/02/2021 14:24	ORP

General Chemistry

SM 2320 B	Alkalinity as CaCO3	A	154	mg/L	1	10.0	10.0	BEE3187	05/26/2021 13:01	KJH
SM 5210 B	Carbonaceous BOD (CBOD)	A	12.5FF	mg/L	13514	2.03	2.03	BEE3050	05/30/2021 11:55	JLN
SM 2510 B	Conductivity	A	592	umhos/cm @ 25 °C	1	2.00	2.00	BEE3187	05/26/2021 13:01	KJH
EPA 300.0	Fluoride	A	0.498	mg/L	1	0.0105	0.250	BEE3069	05/25/2021 23:31	EM
EPA 350.1	Ammonia as N	A	0.104	mg/L	1	0.0200	0.0500	BEE3224	05/26/2021 15:08	JLK
EPA 300.0	Nitrate as N	A	3150	ug/L	1	14.2	125	BEE3069	05/25/2021 23:31	EM
EPA 300.0	Nitrite as N	A	<50.0U	ug/L	1	5.10	50.0	BEE3069	05/25/2021 23:31	EM
EPA 300.0	Sulfate	A	17.0	mg/L	1	0.0341	1.00	BEE3069	05/25/2021 23:31	EM
SM 2540 C	Residue-filterable (TDS)	A	340	mg/L	1	10.0	10.0	BEE3094	05/28/2021 00:00	BP
SM 4500-NH3 C	Total Kjeldahl Nitrogen - (TKN)	A	1.68	mg/L	1	0.100	1.00	BEF1039	06/08/2021 13:33	ARL
SM 4500-P E	Total Phosphorus	A	1.77	mg/L	1	0.100	0.200	BEE3452	05/28/2021 16:55	SJN
SM 2540 D	Residue-nonfilterable (TSS)	A	8.25	mg/L	1	1.00	1.00	BEE3175	05/27/2021 16:04	MSG

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Sample Results
 (Continued)

Client Sample ID: Outfall 001 Sampler

Sample Matrix: Waste Water

Lab Sample ID: 21E3581-02RE1

Date Collected: 05/25/2021 5:00

City of Manvel - Permit Renewal

[none]

Collected by: Jose Gutierrez

Method	Analyte	*	Result Q	Units	DF	SDL	LRL	Batch	Analyzed	Analyst
--------	---------	---	----------	-------	----	-----	-----	-------	----------	---------

General Chemistry

EPA 300.0	Chloride (Rerun)	A	65.1 CB	mg/L	1	0.0690	2.00	BEE3262	05/26/2021 13:15	SAT
-----------	------------------	---	---------	------	---	--------	------	---------	------------------	-----

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Sample Results
 (Continued)

Client Sample ID: Outfall 001 3 Part Grab

Sample Matrix: Waste Water

Lab Sample ID: 21E3581-03

Date Collected: 05/25/2021 8:30

City of Manvel - Permit Renewal [none]

Collected by: Jose Gutierrez

Method	Analyte	*	Result Q	Units	DF	SDL	LRL	Batch	Analyzed	Analyst
--------	---------	---	----------	-------	----	-----	-----	-------	----------	---------

Metals, Total

EPA 1631E	Mercury	A	<0.00500U	ug/L	1	0.00250	0.00500	BEE3269	06/01/2021 11:54	TBB
-----------	---------	---	-----------	------	---	---------	---------	---------	------------------	-----

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Sample Results
 (Continued)

Client Sample ID: Outfall 001 3 Part Grab Composite

Sample Matrix: Waste Water

Lab Sample ID: 21E3581-04

Date Collected: 05/25/2021 8:30

City of Manvel - Permit Renewal

[none]

Collected by: Jose Gutierrez

Method	Analyte	*	Result Q	Units	DF	SDL	LRL	Batch	Analyzed	Analyst
--------	---------	---	----------	-------	----	-----	-----	-------	----------	---------

Volatile Organic Compounds by GCMS

EPA 624.1	1,1,1-Trichloroethane	A	<10.0U	ug/L	1	0.622	10.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	1,1,2,2-Tetrachloroethane	A	<10.0U	ug/L	1	0.867	10.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	1,1,2-Trichloroethane	A	<10.0U	ug/L	1	0.789	10.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	1,1-Dichloroethane	A	<10.0U	ug/L	1	0.967	10.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	1,1-Dichloroethylene	A	<10.0U	ug/L	1	0.849	10.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	1,2-Dibromoethane (EDB, Ethylene dibromide)	A	<10.0U	ug/L	1	0.706	10.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	1,2-Dichlorobenzene (o-Dichlorobenzene)	A	<10.0U	ug/L	1	0.881	10.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	1,2-Dichloroethane (Ethylene dichloride)	A	<10.0U	ug/L	1	0.870	10.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	1,2-Dichloropropane	A	<10.0U	ug/L	1	0.854	10.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	1,3-Dichlorobenzene (m-Dichlorobenzene)	A	<10.0U	ug/L	1	0.717	10.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	1,4-Dichlorobenzene (p-Dichlorobenzene)	A	<10.0U	ug/L	1	0.641	10.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	2-Butanone (Methyl ethyl ketone, MEK)	A	<50.0U	ug/L	1	7.38	50.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	2-Chloroethyl vinyl ether	A	<10.0U	ug/L	1	3.14	10.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	Acrolein (Propenal)	A	<17.0U	ug/L	1	5.68	17.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	Acrylonitrile	A	<50.0U	ug/L	1	1.60	50.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	Benzene	A	<10.0U	ug/L	1	0.604	10.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	Bromodichloromethane	A	<10.0U	ug/L	1	0.727	10.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	Bromoform	A	<10.0U	ug/L	1	0.678	10.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	Carbon tetrachloride	A	<2.00U	ug/L	1	0.500	2.00	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	Chlorobenzene	A	<10.0U	ug/L	1	0.724	10.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	Chlorodibromomethane	A	<10.0U	ug/L	1	0.802	10.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	Chloroethane (Ethyl chloride)	A	<50.0U	ug/L	1	1.30	50.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	Chloroform	A	34.9	ug/L	1	0.688	10.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	cis-1,3-Dichloropropene	A	<10.0U	ug/L	1	0.580	10.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	Ethylbenzene	A	<10.0U	ug/L	1	0.727	10.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	Methyl bromide (Bromomethane)	A	<50.0U	ug/L	1	1.42	50.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	Methyl chloride (Chloromethane)	A	<50.0U	ug/L	1	0.765	50.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	Methylene chloride (Dichloromethane)	A	<20.0U	ug/L	1	1.60	20.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	Tetrachloroethylene (Perchloroethylene)	A	<10.0U	ug/L	1	0.703	10.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	Toluene	A	<10.0U	ug/L	1	0.649	10.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	Total Trihalomethanes (TTHMs)	A	45.0	ug/L	1	2.00	10.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	trans-1,2-Dichloroethylene	A	<10.0U	ug/L	1	0.899	10.0	BEF0380	06/02/2021 18:41	JLL

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Sample Results
(Continued)

Client Sample ID: Outfall 001 3 Part Grab Composite (Continued)

Sample Matrix: Waste Water

Lab Sample ID: 21E3581-04

Date Collected: 05/25/2021 8:30

City of Manvel - Permit Renewal [none]

Collected by: Jose Gutierrez

Method	Analyte	*	Result Q	Units	DF	SDL	LRL	Batch	Analyzed	Analyst
--------	---------	---	----------	-------	----	-----	-----	-------	----------	---------

Volatile Organic Compounds by GCMS (Continued)

EPA 624.1	trans-1,3-Dichloropropylene	A	<10.0U	ug/L	1	0.496	10.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	Trichloroethene (Trichloroethylene)	A	<10.0U	ug/L	1	0.744	10.0	BEF0380	06/02/2021 18:41	JLL
EPA 624.1	Vinyl chloride (Chloroethene)	A	<10.0U	ug/L	1	1.30	10.0	BEF0380	06/02/2021 18:41	JLL

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Sample Results
 (Continued)

Client Sample ID: 18 Mohm DI

Sample Matrix: Waste Water

Lab Sample ID: 21E3581-05

Date Collected: 05/25/2021 8:30

City of Manvel - Permit Renewal

[none]

Collected by: Jose Gutierrez

Method	Analyte	*	Result Q	Units	DF	SDL	LRL	Batch	Analyzed	Analyst
--------	---------	---	----------	-------	----	-----	-----	-------	----------	---------

Metals, Total

EPA 1631E	Mercury	A	<0.00500U	ug/L	1	0.00250	0.00500	BEE3269	06/01/2021 11:59	TBB
-----------	---------	---	-----------	------	---	---------	---------	---------	------------------	-----

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Sample Results
 (Continued)

Client Sample ID: Outfall 001
 Lab Sample ID: 21E3897-01

Sample Matrix: Waste Water
 Date Collected: 05/27/2021 13:50
 Collected by: Jose Gutierrez

City of Manvel - Non Potable - Ecoli Only 9536

Method	Analyte	*	Result Q	Units	DF	SDL	LRL	Batch	Analyzed	Analyst
--------	---------	---	----------	-------	----	-----	-----	-------	----------	---------

Microbiology

SM 9223 B (Colilert Quanti-Tray)	Escherichia coli (E. coli)	A	1.00	MPN/100 mL	1	1.00	1.00	BEE3481	05/28/2021 15:53	AKA
--	----------------------------	---	------	---------------	---	------	------	---------	------------------	-----

* A = Accredited, N = Not Accredited or Accreditation not available



130 S. Trade Center Parkway, Conroe TX 77385
 Tel: (936) 321-6060
 Email: lab@nwdls.com
 www. NWDLS.com
 TCEQ T104704238-21-33
 TCEQ-TOX T104704202-20-14

City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Sample Results
 (Continued)

Client Sample ID: Outfall 001 Sampler

Sample Matrix: Waste Water

Lab Sample ID: 21F0526-01

Date Collected: 06/01/2021 5:00

City of Manvel WWTP - Permit Renewal - Recollect [none]

Collected by: Jose Gutierrez

Method	Analyte	*	Result Q	Units	DF	SDL	LRL	Batch	Analyzed	Analyst
--------	---------	---	----------	-------	----	-----	-----	-------	----------	---------

Metals, Dissolved

SM 3500-Cr B	Chromium (VI)	A	<3.00U	ug/L	1	1.50	3.00	BEF0108	06/01/2021 16:32	KJH
--------------	---------------	---	--------	------	---	------	------	---------	------------------	-----

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control

Volatile Organic Compounds by GCMS

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
---------	--------	------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------

Batch: BEF0380 - SW-5030

Blank (BEF0380-BLK1)

Prepared & Analyzed: 06/02/2021

1,1,1-Trichloroethane	<10.0	U	10.0	ug/L						
1,1,2,2-Tetrachloroethane	<10.0	U	10.0	ug/L						
1,1,2-Trichloroethane	<10.0	U	10.0	ug/L						
1,1-Dichloroethane	<10.0	U	10.0	ug/L						
1,1-Dichloroethylene	<10.0	U	10.0	ug/L						
1,2-Dibromoethane (EDB, Ethylene dibromide)	<10.0	U	10.0	ug/L						
1,2-Dichlorobenzene (o-Dichlorobenzene)	<10.0	U	10.0	ug/L						
1,2-Dichloroethane (Ethylene dichloride)	<10.0	U	10.0	ug/L						
1,2-Dichloropropane	<10.0	U	10.0	ug/L						
1,3-Dichlorobenzene (m-Dichlorobenzene)	<10.0	U	10.0	ug/L						
1,4-Dichlorobenzene (p-Dichlorobenzene)	<10.0	U	10.0	ug/L						
2-Butanone (Methyl ethyl ketone, MEK)	<50.0	U	50.0	ug/L						
2-Chloroethyl vinyl ether	<10.0	U	10.0	ug/L						
Acrolein (Propenal)	<17.0	U	17.0	ug/L						
Acrylonitrile	<50.0	U	50.0	ug/L						
Benzene	<10.0	U	10.0	ug/L						
Bromodichloromethane	<10.0	U	10.0	ug/L						
Bromoform	<10.0	U	10.0	ug/L						
Carbon tetrachloride	<2.00	U	2.00	ug/L						
Chlorobenzene	<10.0	U	10.0	ug/L						
Chlorodibromomethane	<10.0	U	10.0	ug/L						
Chloroethane (Ethyl chloride)	<50.0	U	50.0	ug/L						
Chloroform	<10.0	U	10.0	ug/L						
cis-1,3-Dichloropropene	<10.0	U	10.0	ug/L						
Ethylbenzene	<10.0	U	10.0	ug/L						
Methyl bromide (Bromomethane)	<50.0	U	50.0	ug/L						
Methyl chloride (Chloromethane)	<50.0	U	50.0	ug/L						
Methylene chloride (Dichloromethane)	<20.0	U	20.0	ug/L						
Tetrachloroethylene (Perchloroethylene)	<10.0	U	10.0	ug/L						
Toluene	<10.0	U	10.0	ug/L						
Total Trihalomethanes (TTHMs)	<10.0	U	10.0	ug/L						
trans-1,2-Dichloroethylene	<10.0	U	10.0	ug/L						
trans-1,3-Dichloropropylene	<10.0	U	10.0	ug/L						
Trichloroethene (Trichloroethylene)	<10.0	U	10.0	ug/L						
Vinyl chloride (Chloroethene)	<10.0	U	10.0	ug/L						

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Volatile Organic Compounds by GCMS (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BEF0380 - SW-5030 (Continued)										
LCS (BEF0380-BS1)					Prepared & Analyzed: 06/02/2021					
1,1,1-Trichloroethane	38.9		2.00	ug/L	40.0		97.3	70-130		
1,1,2,2-Tetrachloroethane	39.2		3.00	ug/L	40.0		98.0	60-140		
1,1,2-Trichloroethane	38.8		2.00	ug/L	40.0		96.9	70-130		
1,1-Dichloroethane	38.9		3.00	ug/L	40.0		97.2	70-130		
1,1-Dichloroethylene	40.1		3.00	ug/L	40.0		100	50-150		
1,2-Dibromoethane (EDB, Ethylene dibromide)	38.2		2.00	ug/L	40.0		95.6	70-130		
1,2-Dichlorobenzene (o-Dichlorobenzene)	40.4		3.00	ug/L	40.0		101	65-135		
1,2-Dichloroethane (Ethylene dichloride)	39.6		3.00	ug/L	40.0		99.0	70-130		
1,2-Dichloropropane	38.1		3.00	ug/L	40.0		95.1	35-165		
1,3-Dichlorobenzene (m-Dichlorobenzene)	40.3		2.00	ug/L	40.0		101	70-130		
1,4-Dichlorobenzene (p-Dichlorobenzene)	41.0		2.00	ug/L	40.0		102	65-135		
2-Butanone (Methyl ethyl ketone, MEK)	477		22.0	ug/L	400		119	70-130		
2-Chloroethyl vinyl ether	39.9		9.00	ug/L	40.0		99.8	0-225		
Acrolein (Propenal)	229		17.0	ug/L	200		115	60-140		
Acrylonitrile	44.3		5.00	ug/L	40.0		111	60-140		
Benzene	38.7		2.00	ug/L	40.0		96.7	65-135		
Bromodichloromethane	38.6		2.00	ug/L	40.0		96.4	65-135		
Bromoform	38.3		2.00	ug/L	40.0		95.8	70-130		
Carbon tetrachloride	38.5		1.00	ug/L	40.0		96.2	70-130		
Chlorobenzene	39.6		2.00	ug/L	40.0		99.0	65-135		
Chlorodibromomethane	38.1		2.00	ug/L	40.0		95.2	70-135		
Chloroethane (Ethyl chloride)	39.1		4.00	ug/L	40.0		97.8	40-160		
Chloroform	39.1		2.00	ug/L	40.0		97.8	70-135		
cis-1,3-Dichloropropene	38.7		2.00	ug/L	40.0		96.7	25-175		
Ethylbenzene	41.9		2.00	ug/L	40.0		105	60-140		
Methyl bromide (Bromomethane)	41.1		4.00	ug/L	40.0		103	15-185		
Methyl chloride (Chloromethane)	39.1		2.00	ug/L	40.0		97.8	0-205		
Methylene chloride (Dichloromethane)	39.1		5.00	ug/L	40.0		97.7	60-140		
Tetrachloroethylene (Perchloroethylene)	37.4		2.00	ug/L	40.0		93.4	70-130		
Toluene	40.5		2.00	ug/L	40.0		101	70-130		
Total Trihalomethanes (TTHMs)	154		10.0	ug/L				70-130		
trans-1,2-Dichloroethylene	38.5		3.00	ug/L	40.0		96.3	70-130		
trans-1,3-Dichloropropylene	38.8		1.00	ug/L	40.0		97.1	50-150		
Trichloroethene (Trichloroethylene)	38.2		2.00	ug/L	40.0		95.5	65-135		
Vinyl chloride (Chloroethene)	39.4		4.00	ug/L	40.0		98.5	5-195		
4-Bromofluorobenzene-surr	48.1			ug/L				70-130		
<i>Surrogate: 1,2-Dichloroethane-d4-surr</i>			48.7	ug/L	50.0		97.4	70-130		
<i>Surrogate: Dibromofluoromethane-surr</i>			51.4	ug/L	50.0		103	70-130		
<i>Surrogate: Toluene-d8-surr</i>			50.7	ug/L	50.0		101	70-130		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Volatile Organic Compounds by GCMS (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BEF0380 - SW-5030 (Continued)										
Matrix Spike (BEF0380-MS1)			Source: 21E3581-04			Prepared & Analyzed: 06/02/2021				
1,1,1-Trichloroethane	40.3		2.00	ug/L	40.0	<2.00	101	52-162		
1,1,2,2-Tetrachloroethane	43.1		3.00	ug/L	40.0	<3.00	108	46-157		
1,1,2-Trichloroethane	40.4		2.00	ug/L	40.0	<2.00	101	52-150		
1,1-Dichloroethane	40.7		3.00	ug/L	40.0	<3.00	102	59-155		
1,1-Dichloroethylene	41.3		3.00	ug/L	40.0	<3.00	103	0-234		
1,2-Dibromoethane (EDB, Ethylene dibromide)	40.5		2.00	ug/L	40.0	<2.00	101	70-130		
1,2-Dichlorobenzene (o-Dichlorobenzene)	42.4		3.00	ug/L	40.0	<3.00	106	18-190		
1,2-Dichloroethane (Ethylene dichloride)	41.1		3.00	ug/L	40.0	<3.00	103	49-155		
1,2-Dichloropropane	39.4		3.00	ug/L	40.0	<3.00	98.5	0-210		
1,3-Dichlorobenzene (m-Dichlorobenzene)	41.7		2.00	ug/L	40.0	<2.00	104	59-156		
1,4-Dichlorobenzene (p-Dichlorobenzene)	42.0		2.00	ug/L	40.0	<2.00	105	18-190		
2-Butanone (Methyl ethyl ketone, MEK)	363		22.0	ug/L	400	<22.0	90.7	70-130		
2-Chloroethyl vinyl ether	40.0		9.00	ug/L	40.0	<9.00	100	0-305		
Acrolein (Propenal)	223		17.0	ug/L	200	<17.0	112	40-160		
Acrylonitrile	46.5		5.00	ug/L	40.0	<5.00	116	40-160		
Benzene	40.7		2.00	ug/L	40.0	<2.00	102	37-151		
Bromodichloromethane	52.5		2.00	ug/L	40.0	8.83	109	35-155		
Bromoform	40.6		2.00	ug/L	40.0	<2.00	101	45-169		
Carbon tetrachloride	39.7		1.00	ug/L	40.0	<1.00	99.3	70-140		
Chlorobenzene	41.7		2.00	ug/L	40.0	<2.00	104	37-160		
Chlorodibromomethane	43.5		2.00	ug/L	40.0	<2.00	109	53-149		
Chloroethane (Ethyl chloride)	39.9		4.00	ug/L	40.0	<4.00	99.7	14-230		
Chloroform	55.6		2.00	ug/L	40.0	34.9	51.7	51-138		
cis-1,3-Dichloropropene	40.1		2.00	ug/L	40.0	<2.00	100	0-227		
Ethylbenzene	43.9		2.00	ug/L	40.0	<2.00	110	37-162		
Methyl bromide (Bromomethane)	38.0		4.00	ug/L	40.0	<4.00	95.0	0-242		
Methyl chloride (Chloromethane)	39.8		2.00	ug/L	40.0	<2.00	99.5	0-273		
Methylene chloride (Dichloromethane)	40.9		5.00	ug/L	40.0	<5.00	102	0-221		
Tetrachloroethylene (Perchloroethylene)	33.7		2.00	ug/L	40.0	<2.00	84.2	64-148		
Toluene	42.5		2.00	ug/L	40.0	<2.00	106	47-150		
Total Trihalomethanes (TTHMs)	192		10.0	ug/L		45.0		70-130		
trans-1,2-Dichloroethylene	40.6		3.00	ug/L	40.0	<3.00	102	54-156		
trans-1,3-Dichloropropylene	41.2		1.00	ug/L	40.0	<1.00	103	17-183		
Trichloroethene (Trichloroethylene)	39.1		2.00	ug/L	40.0	<2.00	97.8	70-157		
Vinyl chloride (Chloroethene)	38.6		4.00	ug/L	40.0	<4.00	96.4	0-251		
4-Bromofluorobenzene-surr	47.7			ug/L		0.00		70-130		
<hr/>										
Surrogate: 1,2-Dichloroethane-d4-surr			48.9	ug/L	50.0		97.8	70-130		
Surrogate: Dibromofluoromethane-surr			50.6	ug/L	50.0		101	70-130		
Surrogate: Toluene-d8-surr			49.7	ug/L	50.0		99.4	70-130		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Volatile Organic Compounds by GCMS (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BEF0380 - SW-5030 (Continued)										
Matrix Spike Dup (BEF0380-MSD1)			Source: 21E3581-04			Prepared & Analyzed: 06/02/2021				
1,1,1-Trichloroethane	40.7		2.00	ug/L	40.0	<2.00	102	52-162	0.909	36
1,1,2,2-Tetrachloroethane	42.6		3.00	ug/L	40.0	<3.00	107	46-157	1.20	61
1,1,2-Trichloroethane	41.3		2.00	ug/L	40.0	<2.00	103	52-150	2.19	45
1,1-Dichloroethane	40.6		3.00	ug/L	40.0	<3.00	101	59-155	0.418	40
1,1-Dichloroethylene	40.7		3.00	ug/L	40.0	<3.00	102	0-234	1.42	32
1,2-Dibromoethane (EDB, Ethylene dibromide)	40.5		2.00	ug/L	40.0	<2.00	101	70-130	0.0142	30
1,2-Dichlorobenzene (o-Dichlorobenzene)	40.9		3.00	ug/L	40.0	<3.00	102	18-190	3.48	57
1,2-Dichloroethane (Ethylene dichloride)	41.6		3.00	ug/L	40.0	<3.00	104	49-155	1.28	49
1,2-Dichloropropane	40.2		3.00	ug/L	40.0	<3.00	101	0-210	2.06	55
1,3-Dichlorobenzene (m-Dichlorobenzene)	39.8		2.00	ug/L	40.0	<2.00	99.4	59-156	4.69	43
1,4-Dichlorobenzene (p-Dichlorobenzene)	40.6		2.00	ug/L	40.0	<2.00	101	18-190	3.40	57
2-Butanone (Methyl ethyl ketone, MEK)	365		22.0	ug/L	400	<22.0	91.3	70-130	0.635	30
2-Chloroethyl vinyl ether	42.0		9.00	ug/L	40.0	<9.00	105	0-305	4.84	71
Acrolein (Propenal)	193		17.0	ug/L	200	<17.0	96.7	40-160	14.5	60
Acrylonitrile	46.3		5.00	ug/L	40.0	<5.00	116	40-160	0.548	60
Benzene	40.5		2.00	ug/L	40.0	<2.00	101	37-151	0.347	61
Bromodichloromethane	53.2		2.00	ug/L	40.0	8.83	111	35-155	1.42	56
Bromoform	40.4		2.00	ug/L	40.0	<2.00	101	45-169	0.416	42
Carbon tetrachloride	40.4		1.00	ug/L	40.0	<1.00	101	70-140	1.75	41
Chlorobenzene	40.4		2.00	ug/L	40.0	<2.00	101	37-160	3.16	53
Chlorodibromomethane	43.6		2.00	ug/L	40.0	<2.00	109	53-149	0.242	50
Chloroethane (Ethyl chloride)	40.1		4.00	ug/L	40.0	<4.00	100	14-230	0.579	78
Chloroform	55.6		2.00	ug/L	40.0	34.9	51.9	51-138	0.116	54
cis-1,3-Dichloropropene	41.2		2.00	ug/L	40.0	<2.00	103	0-227	2.61	58
Ethylbenzene	43.0		2.00	ug/L	40.0	<2.00	108	37-162	2.01	63
Methyl bromide (Bromomethane)	39.2		4.00	ug/L	40.0	<4.00	98.0	0-242	3.09	61
Methyl chloride (Chloromethane)	40.4		2.00	ug/L	40.0	<2.00	101	0-273	1.46	60
Methylene chloride (Dichloromethane)	41.2		5.00	ug/L	40.0	<5.00	103	0-221	0.615	28
Tetrachloroethylene (Perchloroethylene)	34.4		2.00	ug/L	40.0	<2.00	86.1	64-148	2.16	39
Toluene	42.6		2.00	ug/L	40.0	<2.00	106	47-150	0.295	41
Total Trihalomethanes (TTHMs)	193		10.0	ug/L		45.0		70-130	0.391	30
trans-1,2-Dichloroethylene	40.7		3.00	ug/L	40.0	<3.00	102	54-156	0.278	45
trans-1,3-Dichloropropylene	41.3		1.00	ug/L	40.0	<1.00	103	17-183	0.291	86
Trichloroethene (Trichloroethylene)	40.2		2.00	ug/L	40.0	<2.00	100	70-157	2.68	48
Vinyl chloride (Chloroethene)	39.6		4.00	ug/L	40.0	<4.00	99.0	0-251	2.64	66
4-Bromofluorobenzene-surr	49.8			ug/L		0.00		70-130	4.27	
<hr/>										
Surrogate: 1,2-Dichloroethane-d4-surr			48.4	ug/L	50.0		96.7	70-130		
Surrogate: Dibromofluoromethane-surr			50.2	ug/L	50.0		100	70-130		
Surrogate: Toluene-d8-surr			50.6	ug/L	50.0		101	70-130		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Semivolatile Organic Compounds by GCMS

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
---------	--------	------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------

Batch: BEE3304 - EPA 625 LLE

Blank (BEE3304-BLK1)

Prepared: 05/26/2021 Analyzed: 05/28/2021

1,2,4-Trichlorobenzene	<0.300	U	0.300	ug/L						
1,2-Diphenylhydrazine	<0.750	U	0.750	ug/L						
2,2'-Oxybis(1-chloropropane), bis(2-Chloro-1-methy	<0.400	U	0.400	ug/L						
2,4,5-Trichlorophenol	<0.700	U	0.700	ug/L						
2,4,6-Trichlorophenol	<1.20	U	1.20	ug/L						
2,4-Dichlorophenol	<0.800	U	0.800	ug/L						
2,4-Dimethylphenol	<0.900	U	0.900	ug/L						
2,4-Dinitrophenol	<8.60	U	8.60	ug/L						
2,4-Dinitrotoluene (2,4-DNT)	<0.200	U	0.200	ug/L						
2,6-Dinitrotoluene (2,6-DNT)	<1.80	U	1.80	ug/L						
2-Chloronaphthalene	<0.400	U	0.400	ug/L						
2-Chlorophenol	<0.500	U	0.500	ug/L						
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylph	<1.60	U	1.60	ug/L						
2-Nitrophenol	<0.700	U	0.700	ug/L						
3,3'-Dichlorobenzidine	<11.7	U	11.7	ug/L						
3,4-Methylphenol	<1.40	U	1.40	ug/L						
4-Bromophenyl phenyl ether (BDE-3)	<0.300	U	0.300	ug/L						
4-Chloro-3-methylphenol	<0.700	U	0.700	ug/L						
4-Chlorophenyl phenylether	<0.700	U	0.700	ug/L						
4-Nitrophenol	<7.20	U	7.20	ug/L						
Acenaphthene	<0.300	U	0.300	ug/L						
Acenaphthylene	<0.200	U	0.200	ug/L						
Anthracene	<0.200	U	0.200	ug/L						
Benidine	<35.5	U	35.5	ug/L						
Benzo(a)anthracene	<0.300	U	0.300	ug/L						
Benzo(a)pyrene	<0.500	U	0.500	ug/L						
Benzo(b)fluoranthene	<0.200	U	0.200	ug/L						
Benzo(g,h,i)perylene	<0.400	U	0.400	ug/L						
Benzo(k)fluoranthene	<0.300	U	0.300	ug/L						
bis(2-Chloroethoxy)methane	<0.400	U	0.400	ug/L						
bis(2-Chloroethyl) ether	<0.600	U	0.600	ug/L						
Bis(2-ethylhexyl)phthalate	<1.50	U	1.50	ug/L						
Butyl benzyl phthalate	<0.400	U	0.400	ug/L						
Chrysene	<0.200	U	0.200	ug/L						
Dibenzo(a,h)anthracene	<0.500	U	0.500	ug/L						
Diethyl phthalate	<0.500	U	0.500	ug/L						
Dimethyl phthalate	<0.300	U	0.300	ug/L						
Di-n-butyl phthalate	<1.60	U	1.60	ug/L						
Di-n-octyl phthalate	<0.500	U	0.500	ug/L						
Fluoranthene	<0.300	U	0.300	ug/L						
Fluorene	<0.200	U	0.200	ug/L						
Hexachlorobenzene	<0.200	U	0.200	ug/L						
Hexachlorobutadiene	<0.300	U	0.300	ug/L						
Hexachlorocyclopentadiene	<0.750	U	0.750	ug/L						
Hexachloroethane	<0.200	U	0.200	ug/L						
Hexachlorophene	<1.10	U	1.10	ug/L						

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Semivolatile Organic Compounds by GCMS (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
---------	--------	------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------

Batch: BEE3304 - EPA 625 LLE (Continued)

Blank (BEE3304-BLK1)

Prepared: 05/26/2021 Analyzed: 05/28/2021

Indeno(1,2,3-cd) pyrene	<0.400	U	0.400	ug/L						
Isophorone	<0.300	U	0.300	ug/L						
Naphthalene	<0.300	U	0.300	ug/L						
Nitrobenzene	<0.400	U	0.400	ug/L						
n-Nitrosodiethylamine	<0.500	U	0.500	ug/L						
n-Nitrosodimethylamine	<3.80	U	3.80	ug/L						
n-Nitroso-di-n-butylamine	<5.70	U	5.70	ug/L						
n-Nitrosodi-n-propylamine	<1.40	U	1.40	ug/L						
n-Nitrosodiphenylamine	<0.200	U	0.200	ug/L						
Pentachlorobenzene	<0.200	U	0.200	ug/L						
Pentachlorophenol	<1.40	U	1.40	ug/L						
Phenanthrene	<0.300	U	0.300	ug/L						
Phenol, Total	<1.50	U	1.50	ug/L						
Pyrene	<0.300	U	0.300	ug/L						

LCS (BEE3304-BS1)

Prepared: 05/26/2021 Analyzed: 06/03/2021

3,3'-Dichlorobenzidine	24.5		11.7	ug/L	50.0		49.0	0-262		
Benzidine	<35.5	J1, U	35.5	ug/L	50.0			60-140		

Surrogate: 2-Fluorobiphenyl-surr			1.82	ug/L	2.00		90.8	60-140		
Surrogate: Nitrobenzene-d5-surr			2.56	ug/L	2.00		128	60-140		
Surrogate: p-Terphenyl-d14-surr			1.30	ug/L	2.00		64.9	60-140		

LCS (BEE3304-BS2)

Prepared: 05/26/2021 Analyzed: 05/28/2021

1,2,4-Trichlorobenzene	1.51		0.300	ug/L	2.00		75.5	44-142		
1,2-Diphenylhydrazine	1.83		0.750	ug/L	2.00		91.4	60-140		
2,2'-Oxybis(1-chloropropane), bis(2-Chloro-1-methy	2.11		0.400	ug/L	2.00		106	60-140		
2,4,5-Trichlorophenol	3.36		0.700	ug/L	4.00		83.9	60-140		
2,4,6-Trichlorophenol	3.56		1.20	ug/L	4.00		89.0	37-144		
2,4-Dichlorophenol	4.69		0.800	ug/L	4.00		117	39-135		
2,4-Dimethylphenol	3.67		0.900	ug/L	4.00		91.8	32-120		
2,4-Dinitrophenol	8.17	U	8.60	ug/L	10.0		81.7	0-191		
2,4-Dinitrotoluene (2,4-DNT)	1.66		0.200	ug/L	2.00		83.2	39-139		
2,6-Dinitrotoluene (2,6-DNT)	3.14		1.80	ug/L	2.00		157	50-158		
2-Chloronaphthalene	1.80		0.400	ug/L	2.00		89.8	60-120		
2-Chlorophenol	3.66		0.500	ug/L	4.00		91.5	23-134		
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylph	3.36		1.60	ug/L	4.00		84.0	0-181		
2-Nitrophenol	3.31		0.700	ug/L	4.00		82.8	29-182		
3,4-Methylphenol	5.17		1.40	ug/L	4.00		129	60-140		
4-Bromophenyl phenyl ether (BDE-3)	2.03		0.300	ug/L	2.00		102	53-127		
4-Chloro-3-methylphenol	3.38		0.700	ug/L	4.00		84.5	22-147		
4-Chlorophenyl phenylether	1.94		0.700	ug/L	2.00		96.8	25-158		
4-Nitrophenol	8.57		7.20	ug/L	10.0		85.7	0-132		
Acenaphthene	1.45		0.300	ug/L	2.00		72.6	47-145		
Acenaphthylene	2.18		0.200	ug/L	2.00		109	33-145		
Anthracene	1.74		0.200	ug/L	2.00		87.0	27-133		
Benzo(a)anthracene	1.59		0.300	ug/L	2.00		79.3	33-143		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Semivolatile Organic Compounds by GCMS (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BEE3304 - EPA 625 LLE (Continued)										
LCS (BEE3304-BS2)										
					Prepared: 05/26/2021 Analyzed: 05/28/2021					
Benzo(a)pyrene	1.45		0.500	ug/L	2.00		72.6	17-163		
Benzo(b)fluoranthene	1.61		0.200	ug/L	2.00		80.6	24-159		
Benzo(g,h,i)perylene	1.55		0.400	ug/L	2.00		77.5	0-219		
Benzo(k)fluoranthene	1.56		0.300	ug/L	2.00		77.9	11-162		
bis(2-Chloroethoxy)methane	1.70		0.400	ug/L	2.00		85.1	33-184		
bis(2-Chloroethyl) ether	2.15		0.600	ug/L	2.00		108	12-158		
Bis(2-ethylhexyl)phthalate	1.76		1.50	ug/L	2.00		88.0	8-158		
Butyl benzyl phthalate	1.63		0.400	ug/L	2.00		81.6	0-152		
Chrysene	1.56		0.200	ug/L	2.00		78.2	17-168		
Dibenzo(a,h)anthracene	1.63		0.500	ug/L	2.00		81.4	0-227		
Diethyl phthalate	2.08		0.500	ug/L	2.00		104	0-120		
Dimethyl phthalate	1.76		0.300	ug/L	2.00		87.8	0-120		
Di-n-butyl phthalate	2.33		1.60	ug/L	2.00		116	1-120		
Di-n-octyl phthalate	1.66		0.500	ug/L	2.00		83.1	4-146		
Fluoranthene	1.56		0.300	ug/L	2.00		78.0	26-137		
Fluorene	1.57		0.200	ug/L	2.00		78.7	59-121		
Hexachlorobenzene	1.31		0.200	ug/L	2.00		65.3	0-152		
Hexachlorobutadiene	1.04		0.300	ug/L	2.00		51.9	24-120		
Hexachlorocyclopentadiene	2.05		0.750	ug/L	2.00		102	60-140		
Hexachloroethane	1.21		0.200	ug/L	2.00		60.7	40-120		
Hexachlorophene	1.48		1.10	ug/L	2.00		74.0	60-140		
Indeno(1,2,3-cd) pyrene	1.56		0.400	ug/L	2.00		77.8	0-171		
Isophorone	1.81		0.300	ug/L	2.00		90.6	21-196		
Naphthalene	1.47		0.300	ug/L	2.00		73.7	21-133		
Nitrobenzene	1.51		0.400	ug/L	2.00		75.5	35-180		
n-Nitrosodiethylamine	1.97		0.500	ug/L	2.00		98.5	60-140		
n-Nitrosodimethylamine	1.92	J1, U	3.80	ug/L	10.0		19.2	60-140		
n-Nitroso-di-n-butylamine	2.77	U	5.70	ug/L	2.00		138	60-140		
n-Nitrosodi-n-propylamine	4.76	J1	1.40	ug/L	2.00		238	0-230		
n-Nitrosodiphenylamine	1.44		0.200	ug/L	2.00		71.9	60-140		
Pentachlorobenzene	1.47		0.200	ug/L	2.00		73.5	60-140		
Pentachlorophenol	3.03		1.40	ug/L	4.00		75.8	14-176		
Phenanthrene	1.68		0.300	ug/L	2.00		84.1	54-120		
Phenol, Total	3.80		1.50	ug/L	4.00		94.9	5-120		
Pyrene	1.67		0.300	ug/L	2.00		83.6	52-120		
<hr/>										
Surrogate: 2,4,6-Tribromophenol-surr			3.03	ug/L	4.00		75.8	60-140		
Surrogate: 2-Fluorobiphenyl-surr			1.78	ug/L	2.00		89.2	60-140		
Surrogate: 2-Fluorophenol-surr			3.24	ug/L	4.00		80.9	60-140		
Surrogate: Nitrobenzene-d5-surr			1.72	ug/L	2.00		85.8	60-140		
Surrogate: Phenol-d5-surr			3.60	ug/L	4.00		89.9	60-140		
Surrogate: p-Terphenyl-d14-surr			1.73	ug/L	2.00		86.7	60-140		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Semivolatile Organic Compounds by GCMS (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
---------	--------	------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------

Batch: BEE3304 - EPA 625 LLE (Continued)

LCS Dup (BEE3304-BS1)		Prepared: 05/26/2021 Analyzed: 06/03/2021								
3,3'-Dichlorobenzidine	21.2		11.7	ug/L	50.0		42.4	0-262	14.5	108
Benzidine	<35.5	J1, U	35.5	ug/L	50.0			60-140	200	40
Surrogate: 2-Fluorobiphenyl-surr			1.84	ug/L	2.00		91.9	60-140		
Surrogate: Nitrobenzene-d5-surr		S	3.38	ug/L	2.00		169	60-140		
Surrogate: p-Terphenyl-d14-surr			1.35	ug/L	2.00		67.7	60-140		

LCS Dup (BEE3304-BS2)		Prepared: 05/26/2021 Analyzed: 05/28/2021								
1,2,4-Trichlorobenzene	1.59		0.300	ug/L	2.00		79.3	44-142	4.93	50
1,2-Diphenylhydrazine	1.89		0.750	ug/L	2.00		94.5	60-140	3.33	40
2,2'-Oxybis(1-chloropropane), bis(2-Chloro-1-methy	2.15		0.400	ug/L	2.00		107	60-140	1.71	40
2,4,5-Trichlorophenol	3.70		0.700	ug/L	4.00		92.4	60-140	9.71	40
2,4,6-Trichlorophenol	3.91		1.20	ug/L	4.00		97.7	37-144	9.24	58
2,4-Dichlorophenol	5.18		0.800	ug/L	4.00		129	39-135	9.91	50
2,4-Dimethylphenol	3.80		0.900	ug/L	4.00		94.9	32-120	3.33	58
2,4-Dinitrophenol	8.16	U	8.60	ug/L	10.0		81.6	0-191	0.127	132
2,4-Dinitrotoluene (2,4-DNT)	1.73		0.200	ug/L	2.00		86.4	39-139	3.67	42
2,6-Dinitrotoluene (2,6-DNT)	3.95	J1	1.80	ug/L	2.00		198	50-158	23.0	48
2-Chloronaphthalene	1.99		0.400	ug/L	2.00		99.3	60-120	10.0	24
2-Chlorophenol	3.92		0.500	ug/L	4.00		98.0	23-134	6.87	61
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylph	3.50		1.60	ug/L	4.00		87.6	0-181	4.18	203
2-Nitrophenol	3.39		0.700	ug/L	4.00		84.7	29-182	2.17	55
3,4-Methylphenol	5.47		1.40	ug/L	4.00		137	60-140	5.61	40
4-Bromophenyl phenyl ether (BDE-3)	2.10		0.300	ug/L	2.00		105	53-127	3.33	43
4-Chloro-3-methylphenol	3.76		0.700	ug/L	4.00		93.9	22-147	10.6	73
4-Chlorophenyl phenylether	2.02		0.700	ug/L	2.00		101	25-158	4.21	61
4-Nitrophenol	9.10		7.20	ug/L	10.0		91.0	0-132	6.04	131
Acenaphthene	1.66		0.300	ug/L	2.00		83.0	47-145	13.4	48
Acenaphthylene	2.27		0.200	ug/L	2.00		114	33-145	3.94	74
Anthracene	1.70		0.200	ug/L	2.00		85.0	27-133	2.24	66
Benzo(a)anthracene	1.78		0.300	ug/L	2.00		89.1	33-143	11.6	53
Benzo(a)pyrene	1.55		0.500	ug/L	2.00		77.3	17-163	6.36	72
Benzo(b)fluoranthene	1.68		0.200	ug/L	2.00		84.1	24-159	4.23	71
Benzo(g,h,i)perylene	1.65		0.400	ug/L	2.00		82.3	0-219	5.95	97
Benzo(k)fluoranthene	1.67		0.300	ug/L	2.00		83.4	11-162	6.85	63
bis(2-Chloroethoxy)methane	1.90		0.400	ug/L	2.00		94.8	33-184	10.9	54
bis(2-Chloroethyl) ether	1.73		0.600	ug/L	2.00		86.6	12-158	21.7	108
Bis(2-ethylhexyl) phthalate	1.89		1.50	ug/L	2.00		94.4	8-158	7.11	82
Butyl benzyl phthalate	1.71		0.400	ug/L	2.00		85.3	0-152	4.49	60
Chrysene	1.68		0.200	ug/L	2.00		84.2	17-168	7.41	87
Dibenzo(a,h)anthracene	1.73		0.500	ug/L	2.00		86.4	0-227	5.92	126
Diethyl phthalate	2.16		0.500	ug/L	2.00		108	0-120	3.74	100
Dimethyl phthalate	1.98		0.300	ug/L	2.00		98.9	0-120	11.8	183
Di-n-butyl phthalate	2.41		1.60	ug/L	2.00		120	1-120	3.49	47
Di-n-octyl phthalate	1.80		0.500	ug/L	2.00		90.2	4-146	8.21	69
Fluoranthene	1.64		0.300	ug/L	2.00		82.0	26-137	4.93	66
Fluorene	1.66		0.200	ug/L	2.00		82.9	59-121	5.14	38

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Semivolatile Organic Compounds by GCMS (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit
Batch: BEE3304 - EPA 625 LLE (Continued)									
LCS Dup (BEE3304-BSD2)					Prepared: 05/26/2021 Analyzed: 05/28/2021				
Hexachlorobenzene	1.38		0.200	ug/L	2.00		69.1 0-152	5.66	55
Hexachlorobutadiene	1.09		0.300	ug/L	2.00		54.3 24-120	4.61	62
Hexachlorocyclopentadiene	2.00		0.750	ug/L	2.00		100 60-140	2.18	40
Hexachloroethane	1.33		0.200	ug/L	2.00		66.6 40-120	9.28	52
Hexachlorophene	1.58		1.10	ug/L	2.00		79.0 60-140	6.53	40
Indeno(1,2,3-cd) pyrene	1.67		0.400	ug/L	2.00		83.4 0-171	6.98	99
Isophorone	1.79		0.300	ug/L	2.00		89.7 21-196	1.01	93
Naphthalene	1.62		0.300	ug/L	2.00		81.2 21-133	9.71	65
Nitrobenzene	2.02		0.400	ug/L	2.00		101 35-180	29.0	62
n-Nitrosodiethylamine	2.03		0.500	ug/L	2.00		102 60-140	3.11	40
n-Nitrosodimethylamine	1.29	J1, U	3.80	ug/L	10.0		12.9 60-140	39.6	40
n-Nitroso-di-n-butylamine	2.76	U	5.70	ug/L	2.00		138 60-140	0.371	40
n-Nitrosodi-n-propylamine	2.39		1.40	ug/L	2.00		119 0-230	66.5	87
n-Nitrosodiphenylamine	1.26		0.200	ug/L	2.00		62.9 60-140	13.3	40
Pentachlorobenzene	1.50		0.200	ug/L	2.00		74.8 60-140	1.75	40
Pentachlorophenol	3.15		1.40	ug/L	4.00		78.7 14-176	3.74	86
Phenanthrene	1.75		0.300	ug/L	2.00		87.7 54-120	4.16	39
Phenol, Total	4.19		1.50	ug/L	4.00		105 5-120	9.83	64
Pyrene	1.69		0.300	ug/L	2.00		84.7 52-120	1.42	49
<hr/>									
Surrogate: 2,4,6-Tribromophenol-surr			3.55	ug/L	4.00		88.8 60-140		
Surrogate: 2-Fluorobiphenyl-surr			1.81	ug/L	2.00		90.5 60-140		
Surrogate: 2-Fluorophenol-surr			3.57	ug/L	4.00		89.2 60-140		
Surrogate: Nitrobenzene-d5-surr			1.74	ug/L	2.00		87.2 60-140		
Surrogate: Phenol-d5-surr			3.89	ug/L	4.00		97.3 60-140		
Surrogate: p-Terphenyl-d14-surr			1.79	ug/L	2.00		89.7 60-140		

Matrix Spike (BEE3304-MS1)

Source: 21E3581-02

Prepared: 05/26/2021 Analyzed: 05/28/2021

1,2,4-Trichlorobenzene	1.62		0.300	ug/L	2.00	<0.300	81.0 44-142		
1,2-Diphenylhydrazine	1.61		0.750	ug/L	2.00	<0.750	80.5 60-140		
2,2'-Oxybis(1-chloropropane), bis(2-Chloro-1-methy	2.01		0.400	ug/L	2.00	<0.400	101 60-140		
2,4,5-Trichlorophenol	3.23		0.700	ug/L	4.00	<0.700	80.8 60-140		
2,4,6-Trichlorophenol	4.16		1.20	ug/L	4.00	<1.20	104 37-144		
2,4-Dichlorophenol	5.22		0.800	ug/L	4.00	<0.800	130 39-135		
2,4-Dimethylphenol	4.20		0.900	ug/L	4.00	<0.900	105 32-120		
2,4-Dinitrophenol	8.03	U	8.60	ug/L	10.0	<8.60	80.3 0-191		
2,4-Dinitrotoluene (2,4-DNT)	1.45		0.200	ug/L	2.00	<0.200	72.3 39-139		
2,6-Dinitrotoluene (2,6-DNT)	2.99		1.80	ug/L	2.00	<1.80	150 50-158		
2-Chloronaphthalene	1.87		0.400	ug/L	2.00	<0.400	93.7 60-120		
2-Chlorophenol	3.91		0.500	ug/L	4.00	<0.500	97.8 23-134		
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylph	3.34		1.60	ug/L	4.00	<1.60	83.6 0-181		
2-Nitrophenol	4.12		0.700	ug/L	4.00	<0.700	103 29-182		
3,4-Methylphenol	6.03		1.40	ug/L	4.00	0.750	132 60-140		
4-Bromophenyl phenyl ether (BDE-3)	1.78		0.300	ug/L	2.00	<0.300	88.8 53-127		
4-Chloro-3-methylphenol	3.36		0.700	ug/L	4.00	<0.700	83.9 22-147		
4-Chlorophenyl phenylether	1.80		0.700	ug/L	2.00	<0.700	90.1 25-158		
4-Nitrophenol	7.31		7.20	ug/L	10.0	<7.20	73.1 0-132		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Semivolatile Organic Compounds by GCMS (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BEE3304 - EPA 625 LLE (Continued)										
Matrix Spike (BEE3304-MS1)			Source: 21E3581-02			Prepared: 05/26/2021 Analyzed: 05/28/2021				
Acenaphthene	1.41		0.300	ug/L	2.00	<0.300	70.6	47-145		
Acenaphthylene	2.09		0.200	ug/L	2.00	<0.200	104	33-145		
Anthracene	1.46		0.200	ug/L	2.00	<0.200	73.2	27-133		
Benzo(a)anthracene	1.62		0.300	ug/L	2.00	<0.300	80.9	33-143		
Benzo(a)pyrene	1.35		0.500	ug/L	2.00	<0.500	67.7	17-163		
Benzo(b)fluoranthene	1.52		0.200	ug/L	2.00	<0.200	76.0	24-159		
Benzo(g,h,i)perylene	1.44		0.400	ug/L	2.00	<0.400	72.0	0-219		
Benzo(k)fluoranthene	1.52		0.300	ug/L	2.00	<0.300	76.2	11-162		
bis(2-Chloroethoxy)methane	1.80		0.400	ug/L	2.00	<0.400	90.2	33-184		
bis(2-Chloroethyl) ether	1.62		0.600	ug/L	2.00	<0.600	80.8	12-158		
Bis(2-ethylhexyl) phthalate	1.43	U	1.50	ug/L	2.00	<1.50	71.6	8-158		
Butyl benzyl phthalate	1.48		0.400	ug/L	2.00	<0.400	74.0	0-152		
Chrysene	1.49		0.200	ug/L	2.00	<0.200	74.3	17-168		
Dibenzo(a,h)anthracene	1.50		0.500	ug/L	2.00	<0.500	75.0	0-227		
Diethyl phthalate	1.69		0.500	ug/L	2.00	<0.500	84.7	0-120		
Dimethyl phthalate	1.74		0.300	ug/L	2.00	<0.300	87.2	0-120		
Di-n-butyl phthalate	2.05		1.60	ug/L	2.00	<1.60	102	1-120		
Di-n-octyl phthalate	1.32		0.500	ug/L	2.00	<0.500	66.1	4-146		
Fluoranthene	1.45		0.300	ug/L	2.00	<0.300	72.7	26-137		
Fluorene	1.45		0.200	ug/L	2.00	<0.200	72.7	59-121		
Hexachlorobenzene	1.16		0.200	ug/L	2.00	<0.200	58.0	0-152		
Hexachlorobutadiene	1.15		0.300	ug/L	2.00	<0.300	57.6	24-120		
Hexachlorocyclopentadiene	2.67		0.750	ug/L	2.00	<0.750	134	60-140		
Hexachloroethane	1.24		0.200	ug/L	2.00	<0.200	61.8	40-120		
Hexachlorophene	1.30		1.10	ug/L	2.00	<1.10	65.2	60-140		
Indeno(1,2,3-cd) pyrene	1.44		0.400	ug/L	2.00	<0.400	72.2	0-171		
Isophorone	2.16		0.300	ug/L	2.00	<0.300	108	21-196		
Naphthalene	1.62		0.300	ug/L	2.00	<0.300	80.9	21-133		
Nitrobenzene	1.86		0.400	ug/L	2.00	<0.400	93.1	35-180		
n-Nitrosodiethylamine	1.94		0.500	ug/L	2.00	<0.500	97.1	60-140		
n-Nitrosodimethylamine	1.47	J1, U	3.80	ug/L	10.0	<3.80	14.7	60-140		
n-Nitroso-di-n-butylamine	2.48	U	5.70	ug/L	2.00	<5.70	124	60-140		
n-Nitrosodi-n-propylamine	2.43		1.40	ug/L	2.00	<1.40	122	0-230		
n-Nitrosodiphenylamine	2.94	J1	0.200	ug/L	2.00	<0.200	147	60-140		
Pentachlorobenzene	1.33		0.200	ug/L	2.00	<0.200	66.4	60-140		
Pentachlorophenol	2.74		1.40	ug/L	4.00	<1.40	68.5	14-176		
Phenanthrene	1.66		0.300	ug/L	2.00	<0.300	82.8	54-120		
Phenol, Total	4.29		1.50	ug/L	4.00	<1.50	107	5-120		
Pyrene	1.47		0.300	ug/L	2.00	<0.300	73.7	52-120		
<hr/>										
Surrogate: 2,4,6-Tribromophenol-surr			2.68	ug/L	4.00		67.1	60-140		
Surrogate: 2-Fluorobiphenyl-surr			1.63	ug/L	2.00		81.7	60-140		
Surrogate: 2-Fluorophenol-surr			3.38	ug/L	4.00		84.5	60-140		
Surrogate: Nitrobenzene-d5-surr			1.79	ug/L	2.00		89.4	60-140		
Surrogate: Phenol-d5-surr			3.88	ug/L	4.00		97.0	60-140		
Surrogate: p-Terphenyl-d14-surr			1.47	ug/L	2.00		73.5	60-140		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Semivolatile Organic Compounds by GCMS (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BEE3304 - EPA 625 LLE (Continued)										
Matrix Spike Dup (BEE3304-MSD1)			Source: 21E3581-02			Prepared: 05/26/2021 Analyzed: 05/28/2021				
1,2,4-Trichlorobenzene	1.75		0.300	ug/L	2.00	<0.300	87.6	44-142	7.75	50
1,2-Diphenylhydrazine	1.69		0.750	ug/L	2.00	<0.750	84.5	60-140	4.83	40
2,2'-Oxybis(1-chloropropane), bis(2-Chloro-1-methyl	2.31		0.400	ug/L	2.00	<0.400	115	60-140	13.6	40
2,4,5-Trichlorophenol	3.16		0.700	ug/L	4.00	<0.700	79.0	60-140	2.25	40
2,4,6-Trichlorophenol	4.16		1.20	ug/L	4.00	<1.20	104	37-144	0.0753	58
2,4-Dichlorophenol	5.59	J1	0.800	ug/L	4.00	<0.800	140	39-135	6.88	50
2,4-Dimethylphenol	4.56		0.900	ug/L	4.00	<0.900	114	32-120	8.17	58
2,4-Dinitrophenol	9.89		8.60	ug/L	10.0	<8.60	98.9	0-191	20.8	132
2,4-Dinitrotoluene (2,4-DNT)	1.51		0.200	ug/L	2.00	<0.200	75.5	39-139	4.34	42
2,6-Dinitrotoluene (2,6-DNT)	2.99		1.80	ug/L	2.00	<1.80	149	50-158	0.313	48
2-Chloronaphthalene	1.85		0.400	ug/L	2.00	<0.400	92.7	60-120	1.09	24
2-Chlorophenol	4.55		0.500	ug/L	4.00	<0.500	114	23-134	15.0	61
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylph	3.64		1.60	ug/L	4.00	<1.60	90.9	0-181	8.34	203
2-Nitrophenol	4.33		0.700	ug/L	4.00	<0.700	108	29-182	5.06	55
3,4-Methylphenol	2.80	J1	1.40	ug/L	4.00	0.750	51.2	60-140	73.3	40
4-Bromophenyl phenyl ether (BDE-3)	1.82		0.300	ug/L	2.00	<0.300	91.2	53-127	2.65	43
4-Chloro-3-methylphenol	3.45		0.700	ug/L	4.00	<0.700	86.4	22-147	2.85	73
4-Chlorophenyl phenylether	1.81		0.700	ug/L	2.00	<0.700	90.4	25-158	0.363	61
4-Nitrophenol	7.73		7.20	ug/L	10.0	<7.20	77.3	0-132	5.57	131
Acenaphthene	1.45		0.300	ug/L	2.00	<0.300	72.6	47-145	2.80	48
Acenaphthylene	2.24		0.200	ug/L	2.00	<0.200	112	33-145	7.09	74
Anthracene	1.53		0.200	ug/L	2.00	<0.200	76.3	27-133	4.07	66
Benzo(a)anthracene	1.64		0.300	ug/L	2.00	<0.300	82.2	33-143	1.65	53
Benzo(a)pyrene	1.38		0.500	ug/L	2.00	<0.500	69.0	17-163	1.81	72
Benzo(b)fluoranthene	1.57		0.200	ug/L	2.00	<0.200	78.3	24-159	2.94	71
Benzo(g,h,i)perylene	1.52		0.400	ug/L	2.00	<0.400	76.0	0-219	5.42	97
Benzo(k)fluoranthene	1.60		0.300	ug/L	2.00	<0.300	80.2	11-162	5.06	63
bis(2-Chloroethoxy)methane	2.14		0.400	ug/L	2.00	<0.400	107	33-184	17.1	54
bis(2-Chloroethyl) ether	1.72		0.600	ug/L	2.00	<0.600	86.2	12-158	6.53	108
Bis(2-ethylhexyl) phthalate	1.53		1.50	ug/L	2.00	<1.50	76.5	8-158	6.56	82
Butyl benzyl phthalate	1.49		0.400	ug/L	2.00	<0.400	74.4	0-152	0.635	60
Chrysene	1.54		0.200	ug/L	2.00	<0.200	77.0	17-168	3.63	87
Dibenzo(a,h)anthracene	1.60		0.500	ug/L	2.00	<0.500	80.2	0-227	6.73	126
Diethyl phthalate	1.65		0.500	ug/L	2.00	<0.500	82.6	0-120	2.44	100
Dimethyl phthalate	1.72		0.300	ug/L	2.00	<0.300	86.1	0-120	1.23	183
Di-n-butyl phthalate	2.14		1.60	ug/L	2.00	<1.60	107	1-120	4.28	47
Di-n-octyl phthalate	1.37		0.500	ug/L	2.00	<0.500	68.4	4-146	3.36	69
Fluoranthene	1.48		0.300	ug/L	2.00	<0.300	73.9	26-137	1.64	66
Fluorene	1.48		0.200	ug/L	2.00	<0.200	74.1	59-121	1.89	38
Hexachlorobenzene	1.15		0.200	ug/L	2.00	<0.200	57.5	0-152	0.806	55
Hexachlorobutadiene	1.26		0.300	ug/L	2.00	<0.300	63.1	24-120	9.18	62
Hexachlorocyclopentadiene	2.85	J1	0.750	ug/L	2.00	<0.750	143	60-140	6.42	40
Hexachloroethane	1.49		0.200	ug/L	2.00	<0.200	74.6	40-120	18.7	52
Hexachlorophene	1.30		1.10	ug/L	2.00	<1.10	65.0	60-140	0.323	40
Indeno(1,2,3-cd) pyrene	1.53		0.400	ug/L	2.00	<0.400	76.6	0-171	5.88	99
Isophorone	2.50		0.300	ug/L	2.00	<0.300	125	21-196	14.7	93

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Semivolatile Organic Compounds by GCMS (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
---------	--------	------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------

Batch: BEE3304 - EPA 625 LLE (Continued)

Matrix Spike Dup (BEE3304-MSD1)

Source: 21E3581-02

Prepared: 05/26/2021 Analyzed: 05/28/2021

Naphthalene	1.77		0.300	ug/L	2.00	<0.300	88.3	21-133	8.74	65
Nitrobenzene	2.09		0.400	ug/L	2.00	<0.400	105	35-180	11.7	62
n-Nitrosodiethylamine	1.99		0.500	ug/L	2.00	<0.500	99.3	60-140	2.28	40
n-Nitrosodimethylamine	1.47	J1, U	3.80	ug/L	10.0	<3.80	14.7	60-140	0.552	40
n-Nitroso-di-n-butylamine	3.33	J1, U	5.70	ug/L	2.00	<5.70	166	60-140	29.3	40
n-Nitrosodi-n-propylamine	2.59		1.40	ug/L	2.00	<1.40	129	0-230	6.12	87
n-Nitrosodiphenylamine	0.839	J1	0.200	ug/L	2.00	<0.200	42.0	60-140	111	40
Pentachlorobenzene	1.38		0.200	ug/L	2.00	<0.200	68.9	60-140	3.79	40
Pentachlorophenol	2.75		1.40	ug/L	4.00	<1.40	68.8	14-176	0.361	86
Phenanthrene	1.69		0.300	ug/L	2.00	<0.300	84.7	54-120	2.27	39
Phenol, Total	5.09	J1	1.50	ug/L	4.00	<1.50	127	5-120	16.9	64
Pyrene	1.51		0.300	ug/L	2.00	<0.300	75.7	52-120	2.77	49

Surrogate: 2,4,6-Tribromophenol-surr

2.72 ug/L 4.00 68.1 60-140

Surrogate: 2-Fluorobiphenyl-surr

1.68 ug/L 2.00 84.2 60-140

Surrogate: 2-Fluorophenol-surr

4.07 ug/L 4.00 102 60-140

Surrogate: Nitrobenzene-d5-surr

2.03 ug/L 2.00 101 60-140

Surrogate: Phenol-d5-surr

4.55 ug/L 4.00 114 60-140

Surrogate: p-Terphenyl-d14-surr

1.47 ug/L 2.00 73.4 60-140

Batch: BEE3531 - SW-3511

Blank (BEE3531-BLK1)

Prepared: 05/27/2021 Analyzed: 06/12/2021

Nonylphenol	<6.00	U	6.00	ug/L						
-------------	-------	---	------	------	--	--	--	--	--	--

LCS (BEE3531-BS1)

Prepared: 05/27/2021 Analyzed: 06/12/2021

Nonylphenol	35.1		6.00	ug/L	40.0		87.8	56-112		
Surrogate: n-NP-surr			5.94	ug/L	8.00		74.3	60-140		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Semivolatile Organic Compounds by GCMS (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BEE3531 - SW-3511 (Continued)										
LCS Dup (BEE3531-BS1)					Prepared: 05/27/2021 Analyzed: 06/12/2021					
Nonylphenol	36.2		6.00	ug/L	40.0		90.6	56-112	3.13	22
Surrogate: n-NP-surr			6.52	ug/L	8.00		81.5	60-140		
Matrix Spike (BEE3531-MS1) Source: 21E3581-02										
					Prepared: 05/27/2021 Analyzed: 06/12/2021					
Nonylphenol	26.2		6.00	ug/L	40.0	<6.00	65.6	56-112		
Surrogate: n-NP-surr			5.02	ug/L	8.00		62.8	60-140		
Matrix Spike Dup (BEE3531-MSD1) Source: 21E3581-02										
					Prepared: 05/27/2021 Analyzed: 06/12/2021					
Nonylphenol	23.4		6.00	ug/L	40.0	<6.00	58.5	56-112	11.4	22
Surrogate: n-NP-surr	S		4.63	ug/L	8.00		57.9	60-140		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Organics by GC

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
---------	--------	------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------

Batch: BEE3275 - SW-3511

Blank (BEE3275-BLK1)

Prepared: 05/26/2021 Analyzed: 05/27/2021

2,4-D	<0.700	U	0.700	ug/L						
Silvex (2,4,5-TP)	<0.300	U	0.300	ug/L						

LCS (BEE3275-BS1)

Prepared: 05/26/2021 Analyzed: 05/27/2021

2,4-D	7.74	J1	0.700	ug/L	5.12		151	70-130		
Silvex (2,4,5-TP)	7.64	J1	0.300	ug/L	4.98		154	70-130		
Surrogate: DCAA-surr		S	35.4	ug/L	24.9		142	70-130		

LCS Dup (BEE3275-BSD1)

Prepared: 05/26/2021 Analyzed: 05/27/2021

2,4-D	7.59	J1	0.700	ug/L	5.13		148	70-130	1.89	30
Silvex (2,4,5-TP)	7.54	J1	0.300	ug/L	4.98		152	70-130	1.28	30
Surrogate: DCAA-surr		S	40.1	ug/L	24.9		161	70-130		

Leach Fluid Blank (BEE3275-LBK1)

Prepared: 05/26/2021 Analyzed: 05/28/2021

2,4-D	<0.944	U	0.944	ug/L						
Silvex (2,4,5-TP)	<0.952	U	0.952	ug/L						
Surrogate: DCAA-surr			111	ug/L	100		111	70-130		

Matrix Spike (BEE3275-MS1)

Source: 21E3665-02

Prepared: 05/26/2021 Analyzed: 05/28/2021

2,4-D	8.57	J1	0.700	ug/L	5.15	<0.700	166	70-130		
Silvex (2,4,5-TP)	8.58	J1	0.300	ug/L	5.00	<0.300	172	70-130		
Surrogate: DCAA-surr		S	40.8	ug/L	25.0		163	70-130		

Batch: BEE3398 - EPA 608 SPE

Blank (BEE3398-BLK1)

Prepared: 05/27/2021 Analyzed: 06/04/2021

4,4'-DDD	<0.100	U	0.100	ug/L						
4,4'-DDE	<0.100	U	0.100	ug/L						
4,4'-DDT	<0.0200	U	0.0200	ug/L						
Aldrin	<0.0100	U	0.0100	ug/L						
alpha-BHC	<0.0500	U	0.0500	ug/L						
(alpha-Hexachlorocyclohexane)										
beta-BHC	<0.0500	U	0.0500	ug/L						
(beta-Hexachlorocyclohexane)										
Chlordane (tech.)	<0.200	U	0.200	ug/L						
cis-Chlordane (alpha-Chlordane)	<0.100	U	0.100	ug/L						
delta-BHC	<0.0500	U	0.0500	ug/L						
Dicofol	<1.00	B, U	1.00	ug/L						
Dieldrin	<0.0200	U	0.0200	ug/L						
Endosulfan I	<0.0100	U	0.0100	ug/L						
Endosulfan II	<0.0200	U	0.0200	ug/L						
Endosulfan sulfate	<0.100	U	0.100	ug/L						
Endrin	<0.0200	U	0.0200	ug/L						
Endrin aldehyde	<0.100	U	0.100	ug/L						
gamma-BHC (Lindane,	<0.0500	U	0.0500	ug/L						
gamma-Hexachlorocyclohexane)										
gamma-Chlordane	<0.100	U	0.100	ug/L						

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Organics by GC (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit
Batch: BEE3398 - EPA 608 SPE (Continued)									
Blank (BEE3398-BLK1)					Prepared: 05/27/2021 Analyzed: 06/04/2021				
Heptachlor	<0.0100	U	0.0100	ug/L					
Heptachlor epoxide	<0.0100	U	0.0100	ug/L					
Methoxychlor	<2.00	U	2.00	ug/L					
Mirex	<0.0200	U	0.0200	ug/L					
Toxaphene (Chlorinated Camphene)	<0.300	U	0.300	ug/L					
<hr/>									
LCS (BEE3398-BS1)					Prepared: 05/27/2021 Analyzed: 06/04/2021				
4,4'-DDD	0.0847	U	0.100	ug/L	0.120		70.5 31-141		
4,4'-DDE	0.0634	U	0.100	ug/L	0.120		52.8 30-145		
4,4'-DDT	0.0707		0.0200	ug/L	0.120		58.9 25-160		
Aldrin	0.0706		0.0100	ug/L	0.120		58.8 42-140		
alpha-BHC (alpha-Hexachlorocyclohexane)	0.103		0.0500	ug/L	0.120		85.9 37-140		
beta-BHC (beta-Hexachlorocyclohexane)	0.0936		0.0500	ug/L	0.120		78.0 17-147		
cis-Chlordane (alpha-Chlordane)	0.0639	U	0.100	ug/L	0.120		53.2 45-140		
delta-BHC	0.101		0.0500	ug/L	0.120		84.0 19-140		
Dieldrin	0.0890		0.0200	ug/L	0.120		74.2 36-146		
Endosulfan I	0.0675		0.0100	ug/L	0.120		56.2 45-153		
Endosulfan II	0.103		0.0200	ug/L	0.120		86.2 1-202		
Endosulfan sulfate	0.0935	U	0.100	ug/L	0.120		77.9 26-144		
Endrin	0.0827		0.0200	ug/L	0.120		68.9 30-147		
Endrin aldehyde	0.0906	U	0.100	ug/L	0.120		75.5 60-140		
gamma-BHC (Lindane, gamma-HexachlorocyclohexanE)	0.100		0.0500	ug/L	0.120		83.5 32-140		
gamma-Chlordane	0.0740	U	0.100	ug/L	0.120		61.7 45-140		
Heptachlor	0.0720		0.0100	ug/L	0.120		60.0 34-140		
Heptachlor epoxide	0.0854		0.0100	ug/L	0.120		71.2 37-142		
Methoxychlor	0.0976	U	2.00	ug/L	0.120		81.3 60-140		
Toxaphene (Chlorinated Camphene)	<0.300	U	0.300	ug/L			41-140		
<hr/>									
Surrogate: 2,4,5,6 Tetrachloro-m-xylene-surr		S	0.0698	ug/L	0.120		58.2 60-140		
Surrogate: Decachlorobiphenyl-surr		S	0.0421	ug/L	0.120		35.1 60-140		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Organics by GC (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BEE3398 - EPA 608 SPE (Continued)										
LCS (BEE3398-BS2)										
					Prepared: 05/27/2021 Analyzed: 06/11/2021					
Dicofol	0.528	U	1.00	ug/L	0.480		110	60-140		
Mirex	0.0599		0.0200	ug/L	0.0480		125	60-140		

Surrogate: 2,4,5,6			0.108	ug/L	0.120		89.9	60-140		
Tetrachloro-m-xylene-surr										
Surrogate: Decachlorobiphenyl-surr			0.0803	ug/L	0.120		66.9	60-140		

LCS (BEE3398-BS3)										
					Prepared: 05/27/2021 Analyzed: 06/04/2021					
4,4'-DDD	<0.100	U	0.100	ug/L				31-141		
4,4'-DDE	<0.100	U	0.100	ug/L				30-145		
4,4'-DDT	<0.0200	U	0.0200	ug/L				25-160		
Aldrin	<0.0100	U	0.0100	ug/L				42-140		
alpha-BHC	<0.0500	U	0.0500	ug/L				37-140		
(alpha-Hexachlorocyclohexane)										
beta-BHC	<0.0500	U	0.0500	ug/L				17-147		
(beta-Hexachlorocyclohexane)										
cis-Chlordane (alpha-Chlordane)	<0.100	U	0.100	ug/L				45-140		
delta-BHC	<0.0500	U	0.0500	ug/L				19-140		
Dieldrin	<0.0200	U	0.0200	ug/L				36-146		
Endosulfan I	<0.0100	U	0.0100	ug/L				45-153		
Endosulfan II	<0.0200	U	0.0200	ug/L				1-202		
Endosulfan sulfate	<0.100	U	0.100	ug/L				26-144		
Endrin	<0.0200	U	0.0200	ug/L				30-147		
Endrin aldehyde	<0.100	U	0.100	ug/L				60-140		
gamma-BHC (Lindane, gamma-HexachlorocyclohexanE)	<0.0500	U	0.0500	ug/L				32-140		
gamma-Chlordane	<0.100	U	0.100	ug/L				45-140		
Heptachlor	<0.0100	U	0.0100	ug/L				34-140		
Heptachlor epoxide	<0.0100	U	0.0100	ug/L				37-142		
Methoxychlor	<2.00	U	2.00	ug/L				60-140		
Toxaphene (Chlorinated Camphene)	0.836		0.300	ug/L	1.20		69.6	41-140		

Surrogate: 2,4,5,6	S		0.0610	ug/L	0.120		50.8	60-140		
Tetrachloro-m-xylene-surr										
Surrogate: Decachlorobiphenyl-surr	S		0.0446	ug/L	0.120		37.2	60-140		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Organics by GC (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit
Batch: BEE3398 - EPA 608 SPE (Continued)									
LCS Dup (BEE3398-BS1)					Prepared: 05/27/2021 Analyzed: 06/04/2021				
4,4'-DDD	0.0896	U	0.100	ug/L	0.120	74.7	31-141	5.72	39
4,4'-DDE	0.0682	U	0.100	ug/L	0.120	56.8	30-145	7.31	35
4,4'-DDT	0.0725		0.0200	ug/L	0.120	60.4	25-160	2.58	42
Aldrin	0.0719		0.0100	ug/L	0.120	60.0	42-140	1.87	35
alpha-BHC (alpha-Hexachlorocyclohexane)	0.0966		0.0500	ug/L	0.120	80.5	37-140	6.44	36
beta-BHC (beta-Hexachlorocyclohexane)	0.0952		0.0500	ug/L	0.120	79.4	17-147	1.66	44
cis-Chlordane (alpha-Chlordane)	0.0655	U	0.100	ug/L	0.120	54.5	45-140	2.43	35
delta-BHC	0.102		0.0500	ug/L	0.120	85.1	19-140	1.28	52
Dieldrin	0.0880		0.0200	ug/L	0.120	73.3	36-146	1.11	49
Endosulfan I	0.0679		0.0100	ug/L	0.120	56.6	45-153	0.665	28
Endosulfan II	0.107		0.0200	ug/L	0.120	89.2	1-202	3.38	53
Endosulfan sulfate	0.0969	U	0.100	ug/L	0.120	80.7	26-144	3.52	38
Endrin	0.0814		0.0200	ug/L	0.120	67.9	30-147	1.54	48
Endrin aldehyde	0.0948	U	0.100	ug/L	0.120	79.0	60-140	4.60	40
gamma-BHC (Lindane, gamma-HexachlorocyclohexaneE)	0.0975		0.0500	ug/L	0.120	81.3	32-140	2.65	39
gamma-Chlordane	0.0722	U	0.100	ug/L	0.120	60.2	45-140	2.54	35
Heptachlor	0.0674		0.0100	ug/L	0.120	56.1	34-140	6.71	43
Heptachlor epoxide	0.0855		0.0100	ug/L	0.120	71.2	37-142	0.0702	26
Methoxychlor	0.0979	U	2.00	ug/L	0.120	81.6	60-140	0.325	40
Toxaphene (Chlorinated Camphene)	<0.300	U	0.300	ug/L			41-140		41

Surrogate: 2,4,5,6 Tetrachloro-m-xylene-surr		S	0.0620	ug/L	0.120	51.6	60-140		
Surrogate: Decachlorobiphenyl-surr		S	0.0481	ug/L	0.120	40.1	60-140		

LCS Dup (BEE3398-BS2)					Prepared: 05/27/2021 Analyzed: 06/11/2021				
Dicofol	0.623	U	1.00	ug/L	0.480	130	60-140	16.5	40
Mirex	0.0660		0.0200	ug/L	0.0480	137	60-140	9.59	40

Surrogate: 2,4,5,6 Tetrachloro-m-xylene-surr			0.148	ug/L	0.120	123	60-140		
Surrogate: Decachlorobiphenyl-surr			0.0805	ug/L	0.120	67.1	60-140		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Organics by GC (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit
Batch: BEE3398 - EPA 608 SPE (Continued)									
LCS Dup (BEE3398-bsd3)					Prepared: 05/27/2021 Analyzed: 06/04/2021				
4,4'-DDD	<0.100	U	0.100	ug/L			31-141		39
4,4'-DDE	<0.100	U	0.100	ug/L			30-145		35
4,4'-DDT	<0.0200	U	0.0200	ug/L			25-160		42
Aldrin	<0.0100	U	0.0100	ug/L			42-140		35
alpha-BHC (alpha-Hexachlorocyclohexane)	<0.0500	U	0.0500	ug/L			37-140		36
beta-BHC (beta-Hexachlorocyclohexane)	<0.0500	U	0.0500	ug/L			17-147		44
cis-Chlordane (alpha-Chlordane)	<0.100	U	0.100	ug/L			45-140		35
delta-BHC	<0.0500	U	0.0500	ug/L			19-140		52
Dieldrin	<0.0200	U	0.0200	ug/L			36-146		49
Endosulfan I	<0.0100	U	0.0100	ug/L			45-153		28
Endosulfan II	<0.0200	U	0.0200	ug/L			1-202		53
Endosulfan sulfate	<0.100	U	0.100	ug/L			26-144		38
Endrin	<0.0200	U	0.0200	ug/L			30-147		48
Endrin aldehyde	<0.100	U	0.100	ug/L			60-140		40
gamma-BHC (Lindane, gamma-HexachlorocyclohexanE)	<0.0500	U	0.0500	ug/L			32-140		39
gamma-Chlordane	<0.100	U	0.100	ug/L			45-140		35
Heptachlor	<0.0100	U	0.0100	ug/L			34-140		43
Heptachlor epoxide	<0.0100	U	0.0100	ug/L			37-142		26
Methoxychlor	<2.00	U	2.00	ug/L			60-140		40
Toxaphene (Chlorinated Camphene)	0.999		0.300	ug/L	1.20		83.3 41-140	17.8	41

Surrogate: 2,4,5,6 Tetrachloro-m-xylene-surr			0.0731	ug/L	0.120		60.9 60-140		
Surrogate: Decachlorobiphenyl-surr		S	0.0406	ug/L	0.120		33.8 60-140		

Matrix Spike (BEE3398-MS1)

Source: 21E3581-02

Prepared: 05/27/2021 Analyzed: 06/04/2021

4,4'-DDD	0.0852	U	0.100	ug/L	0.120	<0.100	71.0 31-141		
4,4'-DDE	0.0645	U	0.100	ug/L	0.120	<0.100	53.7 30-145		
4,4'-DDT	0.0841		0.0200	ug/L	0.120	<0.0200	70.1 25-160		
Aldrin	0.0771		0.0100	ug/L	0.120	<0.0100	64.3 42-140		
alpha-BHC (alpha-Hexachlorocyclohexane)	0.112		0.0500	ug/L	0.120	<0.0500	93.2 37-140		
beta-BHC (beta-Hexachlorocyclohexane)	0.103		0.0500	ug/L	0.120	<0.0500	86.1 17-147		
cis-Chlordane (alpha-Chlordane)	0.0617	U	0.100	ug/L	0.120	<0.100	51.4 45-140		
delta-BHC	0.103		0.0500	ug/L	0.120	<0.0500	85.6 19-140		
Dieldrin	0.0924		0.0200	ug/L	0.120	<0.0200	77.0 36-146		
Endosulfan I	0.0739		0.0100	ug/L	0.120	<0.0100	61.6 45-153		
Endosulfan II	0.109		0.0200	ug/L	0.120	<0.0200	90.8 1-202		
Endosulfan sulfate	0.100		0.100	ug/L	0.120	<0.100	83.5 26-144		
Endrin	0.0868		0.0200	ug/L	0.120	<0.0200	72.4 30-147		
Endrin aldehyde	0.0984	U	0.100	ug/L	0.120	<0.100	82.0 60-140		
gamma-BHC (Lindane, gamma-HexachlorocyclohexanE)	0.108		0.0500	ug/L	0.120	0.0218	71.5 32-140		
gamma-Chlordane	0.0703	J1, U	0.100	ug/L	0.120	0.0168	44.6 45-140		
Heptachlor	0.0880		0.0100	ug/L	0.120	<0.0100	73.4 34-140		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Organics by GC (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
---------	--------	------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------

Batch: BEE3398 - EPA 608 SPE (Continued)

Matrix Spike (BEE3398-MS1)		Source: 21E3581-02		Prepared: 05/27/2021 Analyzed: 06/04/2021						
Heptachlor epoxide	0.0924		0.0100	ug/L	0.120	<0.0100	77.0	37-142		
Methoxychlor	0.114	U	2.00	ug/L	0.120	0.0188	79.0	60-140		
Toxaphene (Chlorinated Camphene)	<0.300	U	0.300	ug/L		<0.300		41-140		
<hr/>										
Surrogate: 2,4,5,6		S	0.0687	ug/L	0.120		57.2	60-140		
Tetrachloro-m-xylene-surr										
Surrogate: Decachlorobiphenyl-surr			0.0865	ug/L	0.120		72.1	60-140		

Batch: BEE3631 - EPA 608 SPE

Blank (BEE3631-BLK1)				Prepared: 05/28/2021 Analyzed: 06/13/2021						
Aroclor-1016 (PCB-1016)	<0.200	U	0.200	ug/L						
Aroclor-1221 (PCB-1221)	<0.200	U	0.200	ug/L						
Aroclor-1232 (PCB-1232)	<0.200	U	0.200	ug/L						
Aroclor-1242 (PCB-1242)	<0.200	U	0.200	ug/L						
Aroclor-1248 (PCB-1248)	<0.200	U	0.200	ug/L						
Aroclor-1254 (PCB-1254)	<0.200	U	0.200	ug/L						
Aroclor-1260 (PCB-1260)	<0.200	U	0.200	ug/L						
PCBs, Total	<0.200	U	0.200	ug/L						

LCS (BEE3631-BS1)				Prepared: 05/28/2021 Analyzed: 06/13/2021						
Aroclor-1016 (PCB-1016)	1.13	J1	0.200	ug/L	0.800		142	60-140		
Aroclor-1260 (PCB-1260)	0.782		0.200	ug/L	0.800		97.7	60-140		
PCBs, Total	0.888		0.200	ug/L	0.800		111	60-140		
<hr/>										
Surrogate: 2,4,5,6			0.0600	ug/L	0.0800		75.0	60-140		
Tetrachloro-m-xylene-surr										
Surrogate: Decachlorobiphenyl-surr			0.0567	ug/L	0.0800		70.9	60-140		

LCS Dup (BEE3631-BS1)				Prepared: 05/28/2021 Analyzed: 06/13/2021						
Aroclor-1016 (PCB-1016)	0.906		0.200	ug/L	0.800		113	60-140	22.4	40
Aroclor-1260 (PCB-1260)	0.792		0.200	ug/L	0.800		99.0	60-140	1.26	40
PCBs, Total	0.826		0.200	ug/L	0.800		103	60-140	7.20	40
<hr/>										
Surrogate: 2,4,5,6		S	0.0423	ug/L	0.0800		52.9	60-140		
Tetrachloro-m-xylene-surr										
Surrogate: Decachlorobiphenyl-surr		S	0.0419	ug/L	0.0800		52.3	60-140		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Organics by GC (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
---------	--------	------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------

Batch: BEE3631 - EPA 608 SPE (Continued)

Matrix Spike (BEE3631-MS1)		Source: 21E3581-02		Prepared: 05/28/2021 Analyzed: 06/13/2021						
Aroclor-1016 (PCB-1016)	1.83	J1	0.200	ug/L	0.800	<0.200	228	60-140		
Aroclor-1260 (PCB-1260)	0.502		0.200	ug/L	0.800	<0.200	62.7	60-140		
PCBs, Total	0.900		0.200	ug/L	0.800	<0.200	112	60-140		
<hr/>										
Surrogate: 2,4,5,6		S	0.0477	ug/L	0.0800		59.6	60-140		
Tetrachloro-m-xylene-surr										
Surrogate: Decachlorobiphenyl-surr		S	0.0455	ug/L	0.0800		56.9	60-140		

Batch: BEF0013 - EPA 1657 SPE

Blank (BEF0013-BLK1)		Prepared: 06/01/2021 Analyzed: 06/05/2021								
Azinphos-methyl (Guthion)	<0.100	U	0.100	ug/L						
Chlorpyrifos	<0.0500	U	0.0500	ug/L						
Demeton	<0.200	U	0.200	ug/L						
Diazinon	<0.500	U	0.500	ug/L						
Malathion	<0.100	U	0.100	ug/L						
Parathion, ethyl	<0.100	U	0.100	ug/L						

LCS (BEF0013-BS1)		Prepared: 06/01/2021 Analyzed: 06/05/2021								
Azinphos-methyl (Guthion)	0.0951	U	0.100	ug/L	0.250		38.0	37-150		
Chlorpyrifos	0.204		0.0500	ug/L	0.250		81.5	48-150		
Demeton	0.132	U	0.200	ug/L	0.500		26.3	16-150		
Diazinon	0.195	U	0.500	ug/L	0.250		77.8	50-150		
Malathion	0.142		0.100	ug/L	0.250		56.8	50-150		
Parathion, ethyl	0.181		0.100	ug/L	0.250		72.3	50-150		
<hr/>										
Surrogate: Tributyl Phosphate-surr			0.208	ug/L	0.200		104	40-120		
Surrogate: Triphenyl Phosphate-surr			0.151	ug/L	0.200		75.4	40-120		

LCS Dup (BEF0013-BSD1)		Prepared: 06/01/2021 Analyzed: 06/15/2021								
Azinphos-methyl (Guthion)	0.112		0.100	ug/L	0.250		44.9	37-150	16.7	40
Chlorpyrifos	0.228		0.0500	ug/L	0.250		91.2	48-150	11.3	40
Demeton	0.132	U	0.200	ug/L	0.500		26.3	16-150	0.155	40
Diazinon	0.259	U	0.500	ug/L	0.250		104	50-150	28.4	40
Malathion	0.170		0.100	ug/L	0.250		68.0	50-150	17.9	40
Parathion, ethyl	0.244		0.100	ug/L	0.250		97.8	50-150	30.0	40
<hr/>										
Surrogate: Tributyl Phosphate-surr			0.190	ug/L	0.200		94.8	40-120		
Surrogate: Triphenyl Phosphate-surr			0.193	ug/L	0.200		96.5	40-120		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Organics by GC (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
---------	--------	------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------

Batch: BEF0013 - EPA 1657 SPE (Continued)

Matrix Spike (BEF0013-MS1)

Source: 21E3581-02

Prepared: 06/01/2021 Analyzed: 06/15/2021

Azinphos-methyl (Guthion)	<0.100	J1, U	0.100	ug/L	0.250	<0.100		25-150		
Chlorpyrifos	<0.0500	J1, U	0.0500	ug/L	0.250	<0.0500		25-150		
Demeton	0.118	J1, U	0.200	ug/L	0.500	<0.200	23.6	25-150		
Diazinon	0.272	U	0.500	ug/L	0.250	<0.500	109	25-150		
Malathion	0.196		0.100	ug/L	0.250	<0.100	78.6	25-150		
Parathion, ethyl	0.247		0.100	ug/L	0.250	<0.100	98.7	25-150		
<hr/>										
Surrogate: Tributyl Phosphate-surr		S	0.344	ug/L	0.200		172	40-120		
Surrogate: Triphenyl Phosphate-surr		S	0.268	ug/L	0.200		134	40-120		

Matrix Spike Dup (BEF0013-MSD1)

Source: 21E3581-02

Prepared: 06/01/2021 Analyzed: 06/15/2021

Azinphos-methyl (Guthion)	<0.100	J1, U	0.100	ug/L	0.250	<0.100		25-150		40
Chlorpyrifos	0.138	J1	0.0500	ug/L	0.250	<0.0500	55.1	25-150	200	40
Demeton	0.0353	J1, U	0.200	ug/L	0.500	<0.200	7.07	25-150	108	40
Diazinon	0.125	J1, U	0.500	ug/L	0.250	<0.500	49.8	25-150	74.5	40
Malathion	0.0885	J1, U	0.100	ug/L	0.250	<0.100	35.4	25-150	75.8	40
Parathion, ethyl	0.122	J1	0.100	ug/L	0.250	<0.100	48.6	25-150	68.0	40
<hr/>										
Surrogate: Tributyl Phosphate-surr			0.142	ug/L	0.200		71.2	40-120		
Surrogate: Triphenyl Phosphate-surr			0.150	ug/L	0.200		74.9	40-120		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Metals, Total

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
---------	--------	------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------

Batch: BEE3269 - EPA 1631

Blank (BEE3269-BLK1)

Prepared: 05/26/2021 Analyzed: 06/01/2021

Mercury <0.00500 U 0.00500 ug/L

Blank (BEE3269-BLK2)

Prepared: 05/26/2021 Analyzed: 06/01/2021

Mercury <0.00500 U 0.00500 ug/L

Blank (BEE3269-BLK3)

Prepared: 05/26/2021 Analyzed: 06/01/2021

Mercury <0.00500 U 0.00500 ug/L

Matrix Spike (BEE3269-MS1)

Source: 21E3208-01

Prepared: 05/26/2021 Analyzed: 06/01/2021

Mercury 0.0139 J1 0.00526 ug/L 0.0526 <0.00526 26.4 71-125

Matrix Spike Dup (BEE3269-MSD1)

Source: 21E3208-01

Prepared: 05/26/2021 Analyzed: 06/01/2021

Mercury 0.0145 J1 0.00526 ug/L 0.0526 <0.00526 27.5 71-125 3.88 24

Batch: BEE3522 - EPA 200.8

Blank (BEE3522-BLK1)

Prepared: 05/28/2021 Analyzed: 06/02/2021

Antimony	<5.00	U	5.00	ug/L
Barium	<3.00	U	3.00	ug/L
Beryllium	<0.500	U	0.500	ug/L
Cadmium	<1.00	U	1.00	ug/L
Chromium	<3.00	U	3.00	ug/L
Lead	<0.500	U	0.500	ug/L
Nickel	<2.00	U	2.00	ug/L
Thallium	<0.500	U	0.500	ug/L
Zinc	<5.00	U	5.00	ug/L

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Metals, Total (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit
Batch: BEE3522 - EPA 200.8 (Continued)									
Blank (BEE3522-BLK2)					Prepared: 05/28/2021 Analyzed: 06/03/2021				
Copper	<2.00	U	2.00	ug/L					
Blank (BEE3522-BLK3)					Prepared: 05/28/2021 Analyzed: 06/03/2021				
Aluminum	<2.50	U	2.50	ug/L					
Selenium	<5.00	U	5.00	ug/L					
Blank (BEE3522-BLK4)					Prepared: 05/28/2021 Analyzed: 06/04/2021				
Silver	<0.500	U	0.500	ug/L					
Blank (BEE3522-BLK5)					Prepared: 05/28/2021 Analyzed: 06/07/2021				
Arsenic	<0.500	U	0.500	ug/L					
LCS (BEE3522-BS1)					Prepared: 05/28/2021 Analyzed: 06/02/2021				
Antimony	109		1.00	ug/L	100	109	85-115		
Barium	323		3.00	ug/L	300	108	85-115		
Beryllium	19.8		0.200	ug/L	20.0	98.8	85-115		
Cadmium	107		1.00	ug/L	100	107	85-115		
Chromium	315		3.00	ug/L	300	105	85-115		
Lead	51.2		0.500	ug/L	50.0	102	85-115		
Nickel	107		2.00	ug/L	100	107	85-115		
Thallium	53.7		0.500	ug/L	50.0	107	85-115		
Zinc	209		2.00	ug/L	200	105	85-115		
LCS (BEE3522-BS2)					Prepared: 05/28/2021 Analyzed: 06/03/2021				
Copper	112		2.00	ug/L	100	112	85-115		
LCS (BEE3522-BS3)					Prepared: 05/28/2021 Analyzed: 06/03/2021				
Aluminum	275		2.50	ug/L	250	110	85-115		
Selenium	209		5.00	ug/L	200	104	85-115		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Metals, Total (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
---------	--------	------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------

Batch: BEE3522 - EPA 200.8 (Continued)

LCS (BEE3522-BS4)

Prepared: 05/28/2021 Analyzed: 06/04/2021

Silver	61.7	J1	0.500	ug/L	50.0		123	85-115		
--------	------	----	-------	------	------	--	-----	--------	--	--

LCS (BEE3522-BS5)

Prepared: 05/28/2021 Analyzed: 06/07/2021

Arsenic	53.3		0.500	ug/L	50.0		107	85-115		
---------	------	--	-------	------	------	--	-----	--------	--	--

Duplicate (BEE3522-DUP1)

Source: 21E0357-01

Prepared: 05/28/2021 Analyzed: 06/02/2021

Antimony	0.417	U	1.00	ug/L		0.354		16.3	20
Barium	58.2		3.00	ug/L		54.8		6.13	20
Beryllium	<0.200	U	0.200	ug/L		<0.200			20
Cadmium	<1.00	U	1.00	ug/L		<1.00			20
Chromium	0.766	U	3.00	ug/L		0.613		22.2	20
Lead	0.124	U	0.500	ug/L		0.113		9.28	20
Nickel	2.60		2.00	ug/L		2.48		4.56	20
Thallium	<0.500	U	0.500	ug/L		<0.500			20
Zinc	33.8		2.00	ug/L		32.8		2.88	20

Duplicate (BEE3522-DUP2)

Source: 21E3571-02

Prepared: 05/28/2021 Analyzed: 06/02/2021

Antimony	0.478	U	1.00	ug/L		0.480		0.418	20
Barium	179		3.00	ug/L		182		1.64	20
Beryllium	0.0210	U	0.200	ug/L		0.0150		33.3	20
Cadmium	0.0690	U	1.00	ug/L		0.0600		14.0	20
Chromium	3.28		3.00	ug/L		3.25		0.857	20
Lead	1.57		0.500	ug/L		1.66		5.40	20
Nickel	9.08		2.00	ug/L		9.13		0.516	20
Thallium	<0.500	U	0.500	ug/L		<0.500			20
Zinc	147		2.00	ug/L		146		0.629	20

Duplicate (BEE3522-DUP3)

Source: 21E0357-01

Prepared: 05/28/2021 Analyzed: 06/03/2021

Copper	4.78		2.00	ug/L		4.54		5.00	20
--------	------	--	------	------	--	------	--	------	----

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Metals, Total (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BEE3522 - EPA 200.8 (Continued)										
Duplicate (BEE3522-DUP4)			Source: 21E3571-02			Prepared: 05/28/2021 Analyzed: 06/03/2021				
Copper	40.3		2.00	ug/L		40.3			0.0943	20
Duplicate (BEE3522-DUP5)			Source: 21E0357-01			Prepared: 05/28/2021 Analyzed: 06/03/2021				
Aluminum	13.7		2.50	ug/L		15.5			12.7	20
Selenium	1.53	U	5.00	ug/L		1.46			5.09	20
Duplicate (BEE3522-DUP6)			Source: 21E3571-02			Prepared: 05/28/2021 Analyzed: 06/03/2021				
Aluminum	329		2.50	ug/L		324			1.53	20
Selenium	3.26	U	5.00	ug/L		3.15			3.49	20
Duplicate (BEE3522-DUP7)			Source: 21E0357-01			Prepared: 05/28/2021 Analyzed: 06/04/2021				
Silver	0.00600	U	0.500	ug/L		0.00600			0.00	20
Duplicate (BEE3522-DUP8)			Source: 21E3571-02			Prepared: 05/28/2021 Analyzed: 06/04/2021				
Silver	0.0500	U	0.500	ug/L		0.0540			7.69	20
Duplicate (BEE3522-DUP9)			Source: 21E0357-01			Prepared: 05/28/2021 Analyzed: 06/07/2021				
Arsenic	2.04		0.500	ug/L		2.02			1.23	20
Duplicate (BEE3522-DUPA)			Source: 21E3571-02			Prepared: 05/28/2021 Analyzed: 06/07/2021				
Arsenic	2.49		0.500	ug/L		2.43			2.60	20
MRL Check (BEE3522-MRL1)						Prepared: 05/28/2021 Analyzed: 06/02/2021				
Lead	0.442	U	0.500	ug/L	0.500		88.4	70-130		
MRL Check (BEE3522-MRL2)						Prepared: 05/28/2021 Analyzed: 06/03/2021				
Copper	2.17		2.00	ug/L	2.00		108	70-130		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Metals, Total (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BEE3522 - EPA 200.8 (Continued)										
Matrix Spike (BEE3522-MS1)			Source: 21E0357-01			Prepared: 05/28/2021 Analyzed: 06/02/2021				
Antimony	93.5		1.00	ug/L	100	0.354	93.2	75-125		
Barium	322		3.00	ug/L	300	54.8	89.0	75-125		
Beryllium	16.6		0.200	ug/L	20.0	<0.200	83.1	75-125		
Cadmium	87.1		1.00	ug/L	100	<1.00	87.1	75-125		
Chromium	259		3.00	ug/L	300	0.613	86.0	75-125		
Lead	44.2		0.500	ug/L	50.0	0.113	88.1	75-125		
Nickel	88.1		2.00	ug/L	100	2.48	85.6	75-125		
Thallium	43.2		0.500	ug/L	50.0	<0.500	86.4	75-125		
Zinc	205		2.00	ug/L	200	32.8	86.3	75-125		
<hr/>										
Matrix Spike (BEE3522-MS2)			Source: 21E3571-02			Prepared: 05/28/2021 Analyzed: 06/02/2021				
Antimony	91.9		1.00	ug/L	100	0.480	91.4	75-125		
Barium	485		3.00	ug/L	300	182	101	75-125		
Beryllium	18.0		0.200	ug/L	20.0	0.0150	89.9	75-125		
Cadmium	107		1.00	ug/L	100	0.0600	107	75-125		
Chromium	267		3.00	ug/L	300	3.25	88.1	75-125		
Lead	50.6		0.500	ug/L	50.0	1.66	98.0	75-125		
Nickel	88.8		2.00	ug/L	100	9.13	79.7	75-125		
Thallium	45.2		0.500	ug/L	50.0	<0.500	90.3	75-125		
Zinc	332		2.00	ug/L	200	146	93.0	75-125		
<hr/>										
Matrix Spike (BEE3522-MS3)			Source: 21E0357-01			Prepared: 05/28/2021 Analyzed: 06/03/2021				
Copper	94.7		2.00	ug/L	100	4.54	90.2	75-125		
<hr/>										
Matrix Spike (BEE3522-MS4)			Source: 21E3571-02			Prepared: 05/28/2021 Analyzed: 06/03/2021				
Copper	142		2.00	ug/L	100	40.3	101	75-125		
<hr/>										
Matrix Spike (BEE3522-MS5)			Source: 21E0357-01			Prepared: 05/28/2021 Analyzed: 06/03/2021				
Aluminum	213		2.50	ug/L	250	15.5	78.9	75-125		
Selenium	164		5.00	ug/L	200	1.46	81.0	75-125		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Metals, Total (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BEE3522 - EPA 200.8 (Continued)										
Matrix Spike (BEE3522-MS6)			Source: 21E3571-02			Prepared: 05/28/2021 Analyzed: 06/03/2021				
Selenium	189		5.00	ug/L	200	3.15	92.9	75-125		
Matrix Spike (BEE3522-MS7)			Source: 21E0357-01			Prepared: 05/28/2021 Analyzed: 06/04/2021				
Silver	51.2		0.500	ug/L	50.0	0.00600	102	75-125		
Matrix Spike (BEE3522-MS8)			Source: 21E3571-02			Prepared: 05/28/2021 Analyzed: 06/04/2021				
Aluminum	681	J1	5.00	ug/L	250	324	143	75-125		
Silver	44.2		0.500	ug/L	50.0	0.0540	88.4	75-125		
Matrix Spike (BEE3522-MS9)			Source: 21E0357-01			Prepared: 05/28/2021 Analyzed: 06/07/2021				
Arsenic	45.1		0.500	ug/L	50.0	2.02	86.1	75-125		
Matrix Spike (BEE3522-MSA)			Source: 21E3571-02			Prepared: 05/28/2021 Analyzed: 06/07/2021				
Arsenic	56.4		0.500	ug/L	50.0	2.43	108	75-125		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Metals, Dissolved

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
---------	--------	------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------

Batch: BEF0108 - Cr VI

Matrix Spike (BEF0108-MS1)			Source: 21F0526-01		Prepared & Analyzed: 06/01/2021					
Chromium (VI)	246		3.00	ug/L	250	<3.00	98.4	70-130		

Matrix Spike Dup (BEF0108-MSD1)			Source: 21F0526-01		Prepared & Analyzed: 06/01/2021					
Chromium (VI)	243		3.00	ug/L	250	<3.00	97.1	70-130	1.33	20

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

General Chemistry

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
---------	--------	------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------

Batch: BEE3050 - CBOD-5210

LCS (BEE3050-BS1)				Prepared: 05/25/2021 Analyzed: 05/30/2021							
Carbonaceous BOD (CBOD)	172			mg/L	198		86.8	85-115			
Duplicate (BEE3050-DUP1)		Source: 21E3514-02		Prepared: 05/25/2021 Analyzed: 05/30/2021							
Carbonaceous BOD (CBOD)	2.40	J1	2.40	mg/L		2.78			200	40	
Duplicate (BEE3050-DUP2)		Source: 20I4041-01		Prepared: 05/25/2021 Analyzed: 05/30/2021							
Carbonaceous BOD (CBOD)	3.42		2.40	mg/L		2.92			15.7	40	
Duplicate (BEE3050-DUP3)		Source: 21E3455-02		Prepared: 05/25/2021 Analyzed: 05/30/2021							
Carbonaceous BOD (CBOD)	<2.40	U	2.40	mg/L		<2.40				40	
Duplicate (BEE3050-DUP4)		Source: 21E0358-01		Prepared: 05/25/2021 Analyzed: 05/30/2021							
Carbonaceous BOD (CBOD)	3.91		2.40	mg/L		4.21			7.32	40	

Batch: BEE3069 - EPA 300.0

Duplicate (BEE3069-DUP1)		Source: 21D1033-01RE1		Prepared & Analyzed: 05/25/2021							
Chloride	309		5.00	mg/L		316			2.24	15	
Nitrate as N	<625	U	625	ug/L		<625				15	
Nitrite as N	<250	U	250	ug/L		<250				15	
Fluoride	0.550	U	1.25	mg/L		0.560			1.80	15	
Sulfate	0.460	U	5.00	mg/L		0.275			50.3	15	
Duplicate (BEE3069-DUP2)		Source: 21D0991-04		Prepared & Analyzed: 05/25/2021							
Chloride	21.2		1.00	mg/L		21.2			0.127	15	
Nitrite as N	<50.0	U	50.0	ug/L		<50.0				15	
Nitrate as N	319		125	ug/L		313			1.90	15	
Fluoride	0.0620	U	0.250	mg/L		0.0490			23.4	15	
Sulfate	9.56		1.00	mg/L		9.58			0.157	15	

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

General Chemistry (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
---------	--------	------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------

Batch: BEE3069 - EPA 300.0 (Continued)

MRL Check (BEE3069-MRL1)

Prepared & Analyzed: 05/25/2021

Chloride	0.936	U	1.00	mg/L	1.00		93.6	50-150		
Nitrate as N	109	U	125	ug/L	125		87.2	50-150		
Sulfate	0.834	U	1.00	mg/L	1.00		83.4	50-150		
Fluoride	0.227	U	0.250	mg/L	0.250		90.8	50-150		
Nitrite as N	38.0	U	50.0	ug/L	50.0		76.0	50-150		

Matrix Spike (BEE3069-MS1)

Source: 21D1033-01RE1

Prepared & Analyzed: 05/25/2021

Nitrate as N	24800		625	ug/L	25000	<625	99.2	80-120		
Fluoride	49.7		1.25	mg/L	50.0	0.560	98.3	80-120		
Chloride	555	L	5.00	mg/L	200	316	119	80-120		
Sulfate	194		5.00	mg/L	200	0.275	97.1	80-120		
Nitrite as N	9680		250	ug/L	10000	<250	96.8	80-120		

Matrix Spike (BEE3069-MS2)

Source: 21D0991-04

Prepared & Analyzed: 05/25/2021

Fluoride	11.2		0.278	mg/L	11.1	0.0490	100	80-120		
Nitrate as N	6130		139	ug/L	5560	313	105	80-120		
Chloride	74.1		1.11	mg/L	44.4	21.2	119	80-120		
Sulfate	56.2		1.11	mg/L	44.4	9.58	105	80-120		
Nitrite as N	1960		55.6	ug/L	2220	<55.6	88.1	80-120		

Batch: BEE3094 - TDS

Blank (BEE3094-BLK1)

Prepared: 05/25/2021 Analyzed: 05/28/2021

Residue-filterable (TDS)	<10.0	U	10.0	mg/L						
--------------------------	-------	---	------	------	--	--	--	--	--	--

LCS (BEE3094-BS1)

Prepared: 05/25/2021 Analyzed: 05/28/2021

Residue-filterable (TDS)	145		10.0	mg/L				90-110		
--------------------------	-----	--	------	------	--	--	--	--------	--	--

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

General Chemistry (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BEE3094 - TDS (Continued)										
Duplicate (BEE3094-DUP1)										
			Source: 21D1033-01		Prepared: 05/25/2021 Analyzed: 05/28/2021					
Residue-filterable (TDS)	664		10.0	mg/L		667			0.451	10
Batch: BEE3175 - TSS										
Blank (BEE3175-BLK1)										
					Prepared: 05/26/2021 Analyzed: 05/27/2021					
Residue-nonfilterable (TSS)	<1.00	U	1.00	mg/L						
LCS (BEE3175-BS1)										
					Prepared: 05/26/2021 Analyzed: 05/27/2021					
Residue-nonfilterable (TSS)	92.5		1.00	mg/L	100		92.5	85-115		
Duplicate (BEE3175-DUP1)										
			Source: 21E0358-01		Prepared: 05/26/2021 Analyzed: 05/27/2021					
Residue-nonfilterable (TSS)	1.50		1.00	mg/L		1.50			0.00	10
Duplicate (BEE3175-DUP2)										
			Source: 21E3740-08		Prepared: 05/26/2021 Analyzed: 05/27/2021					
Residue-nonfilterable (TSS)	4.00		1.00	mg/L		4.00			0.00	10
Batch: BEE3187 - Alkalinity										
Blank (BEE3187-BLK1)										
					Prepared & Analyzed: 05/26/2021					
Conductivity	<2.00	U	2.00	umhos/cm @ 25 °C						
LCS (BEE3187-BS1)										
					Prepared & Analyzed: 05/26/2021					
Conductivity	1380			umhos/cm @ 25 °C	1410		98.1	90-110		
LCS (BEE3187-BS2)										
					Prepared & Analyzed: 05/26/2021					
Conductivity	521			umhos/cm @ 25 °C	500		104	90-110		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

General Chemistry (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BEE3187 - Alkalinity (Continued)										
LCS (BEE3187-BS4)										
Alkalinity as CaCO3	107			mg/L	100		107	90-110		
					Prepared & Analyzed: 05/26/2021					
Duplicate (BEE3187-DUP1)										
Source: 21E2023-01										
Alkalinity as CaCO3	267		10.0	mg/L		271			1.37	15
Conductivity	1760		2.00	umhos/cm @ 25 °C		1750			0.570	15
					Prepared & Analyzed: 05/26/2021					
Duplicate (BEE3187-DUP2)										
Source: 21D0991-02										
Alkalinity as CaCO3	44.5		10.0	mg/L		45.5			2.11	15
Conductivity	196		2.00	umhos/cm @ 25 °C		196			0.153	15
					Prepared & Analyzed: 05/26/2021					
Batch: BEE3224 - NH3-N SEAL-350.1										
Matrix Spike (BEE3224-MS1)										
Source: 21E3601-02										
Ammonia as N	1.28	J1	0.0500	mg/L	1.25	0.292	79.2	90-110		
					Prepared & Analyzed: 05/26/2021					
Matrix Spike (BEE3224-MS2)										
Source: 21E3646-03										
Ammonia as N	1.16	J1	0.0500	mg/L	1.25	0.0394	89.9	90-110		
					Prepared & Analyzed: 05/26/2021					
Matrix Spike Dup (BEE3224-MSD1)										
Source: 21E3601-02										
Ammonia as N	1.28	J1	0.0500	mg/L	1.25	0.292	79.2	90-110	0.0156	20
					Prepared & Analyzed: 05/26/2021					
Matrix Spike Dup (BEE3224-MSD2)										
Source: 21E3646-03										
Ammonia as N	1.17		0.0500	mg/L	1.25	0.0394	90.1	90-110	0.197	20
					Prepared & Analyzed: 05/26/2021					
Batch: BEE3262 - EPA 300.0										
Duplicate (BEE3262-DUP1)										
Source: 21E3581-02RE1										
Chloride	65.1		2.00	mg/L		65.1			0.0461	15
					Prepared & Analyzed: 05/26/2021					

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

General Chemistry (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BEE3262 - EPA 300.0 (Continued)										
Duplicate (BEE3262-DUP2)			Source: 21E3831-02			Prepared & Analyzed: 05/26/2021				
Chloride	34.0		1.00	mg/L		34.1			0.215	15
MRL Check (BEE3262-MRL1)										
Chloride	0.941	U	1.00	mg/L	1.00		94.1	50-150		
Matrix Spike (BEE3262-MS1)										
Source: 21E3581-02RE1			Prepared & Analyzed: 05/26/2021							
Chloride	157		2.00	mg/L	80.0	65.1	115	80-120		
Matrix Spike (BEE3262-MS2)										
Source: 21E3831-02			Prepared & Analyzed: 05/26/2021							
Chloride	86.1		1.11	mg/L	44.4	34.1	117	80-120		
Batch: BEE3452 - Phosphorus										
Blank (BEE3452-BLK1)										
Total Phosphorus	<0.0100	U	0.0100	mg/L						
LCS (BEE3452-BS1)										
Total Phosphorus	0.235		0.0100	mg/L	0.250		93.9	90-110		
LCS (BEE3452-BS2)										
Total Phosphorus	0.246		0.0100	mg/L	0.250		98.5	90-110		
MRL Check (BEE3452-MRL1)										
Total Phosphorus	0.0141		0.0100	mg/L	0.00999		141	50-150		
Matrix Spike (BEE3452-MS1)										
Source: 21E3278-02			Prepared: 05/27/2021 Analyzed: 05/28/2021							
Total Phosphorus	7.62		0.200	mg/L	5.00	2.36	105	80-120		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

General Chemistry (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BEE3452 - Phosphorus (Continued)										
Matrix Spike Dup (BEE3452-MSD1)			Source: 21E3278-02		Prepared: 05/27/2021 Analyzed: 05/28/2021					
Total Phosphorus	8.01		0.200	mg/L	5.00	2.36	113	80-120	4.94	20
Batch: BEF0006 - CN-4500										
Blank (BEF0006-BLK1)			Prepared & Analyzed: 06/01/2021							
Total Cyanide	<10.0	U	10.0	ug/L						
LCS (BEF0006-BS1)			Prepared & Analyzed: 06/01/2021							
Total Cyanide	211		10.0	ug/L	200		105	90-110		
MRL Check (BEF0006-MRL1)			Prepared & Analyzed: 06/01/2021							
Total Cyanide	20.1		10.0	ug/L	20.0		100	50-150		
Matrix Spike (BEF0006-MS1)			Source: 21E3665-01		Prepared & Analyzed: 06/01/2021					
Total Cyanide	228		10.0	ug/L	200	9.32	109	80-120		
Matrix Spike Dup (BEF0006-MSD1)			Source: 21E3665-01		Prepared & Analyzed: 06/01/2021					
Total Cyanide	217		10.0	ug/L	200	9.32	104	80-120	4.79	20
Batch: BEF1039 - TKN T										
Blank (BEF1039-BLK1)			Prepared: 06/07/2021 Analyzed: 06/08/2021							
Total Kjeldahl Nitrogen - (TKN)	<1.00	U	1.00	mg/L						
LCS (BEF1039-BS1)			Prepared: 06/07/2021 Analyzed: 06/08/2021							
Total Kjeldahl Nitrogen - (TKN)	2.69		1.00	mg/L	2.50		108	85-115		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

General Chemistry (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BEF1039 - TKN T (Continued)										
LCS (BEF1039-BS2)										
Total Kjeldahl Nitrogen - (TKN)	3.58		1.00	mg/L	4.00		89.6	85-115		
Prepared: 06/07/2021 Analyzed: 06/08/2021										
Duplicate (BEF1039-DUP1)										
Total Kjeldahl Nitrogen - (TKN)	<1.00	U	1.00	mg/L		<1.00				20
Source: 21E2066-02RE1 Prepared: 06/07/2021 Analyzed: 06/08/2021										
Matrix Spike (BEF1039-MS1)										
Total Kjeldahl Nitrogen - (TKN)	1.12	J1	1.00	mg/L	4.00	<1.00	28.0	85-115		
Prepared: 06/07/2021 Analyzed: 06/08/2021										
Batch: BEF1064 - EPA 1664										
Blank (BEF1064-BLK1)										
n-Hexane Extractable Material (O&G)	<5.00	U	5.00	mg/L						
Prepared & Analyzed: 06/08/2021										
LCS (BEF1064-BS1)										
n-Hexane Extractable Material (O&G)	34.7		5.00	mg/L	40.0		86.7	77.5-114.5		
Prepared & Analyzed: 06/08/2021										
LCS Dup (BEF1064-BS1)										
n-Hexane Extractable Material (O&G)	32.6		5.00	mg/L	40.0		81.4	77.5-114.5	6.31	20
Prepared & Analyzed: 06/08/2021										
Matrix Spike (BEF1064-MS1)										
n-Hexane Extractable Material (O&G)	155		5.00	mg/L	160	19.2	85.0	77.5-114.5		
Source: 21E3631-01 Prepared & Analyzed: 06/08/2021										

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:33

Quality Control
 (Continued)

Microbiology

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
---------	--------	------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------

Batch: BEE3481 - TC EC Quantitray

Blank (BEE3481-BLK1)

Prepared: 05/27/2021 Analyzed: 05/28/2021

Escherichia coli (E. coli) <1.00 U 1.00 MPN/100 mL

Duplicate (BEE3481-DUP1)

Source: 21E3911-01

Prepared: 05/27/2021 Analyzed: 05/28/2021

Escherichia coli (E. coli) <1.00 U 1.00 MPN/100 mL <1.00 200

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
20025 Morris Avenue
Manvel, TX 77578

Reported:
06/21/2021 14:33

Sample Condition Checklist

Work Order: 21E3374

Check Points

- No Custody Seals
- No Containers Intact
- No COC/Labels Agree
- No Received On Ice
- No Appropriate Containers
- No Appropriate Sample Volume
- No Coolers Intact
- No Samples Accepted

Work Order: 21E3375

Check Points

- No Custody Seals
- Yes Containers Intact
- Yes COC/Labels Agree
- Yes Received On Ice
- Yes Appropriate Containers
- Yes Appropriate Sample Volume
- Yes Coolers Intact
- Yes Samples Accepted

Work Order: 21E3581

Check Points

- No Custody Seals
- No Containers Intact
- No COC/Labels Agree
- No Received On Ice
- No Appropriate Containers
- No Appropriate Sample Volume
- No Coolers Intact
- No Samples Accepted

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
20025 Morris Avenue
Manvel, TX 77578

Reported:
06/21/2021 14:33

Work Order: 21E3897

Check Points

- No Custody Seals
- Yes Containers Intact
- Yes COC/Labels Agree
- Yes Received On Ice
- Yes Appropriate Containers
- Yes Appropriate Sample Volume
- Yes Coolers Intact
- Yes Samples Accepted

Work Order: 21F0526

Check Points

- No Custody Seals
- Yes Containers Intact
- Yes COC/Labels Agree
- Yes Received On Ice
- Yes Appropriate Containers
- Yes Appropriate Sample Volume
- Yes Coolers Intact
- Yes Samples Accepted

* A = Accredited, N = Not Accredited or Accreditation not available



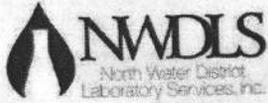
City of Manvel
20025 Morris Avenue
Manvel, TX 77578

Reported:
06/21/2021 14:33

Term and Qualifier Definitions

Item	Definition
B	Analyte was found in the associated method blank.
CB	Associated calibration blank QC is outside the established quality control criteria - data not affected and acceptable to report.
CQ	CCV out of control high, no hits in samples, data unaffected
FF	The blank for biochemical oxygen demand depleted more than the method limit of 0.20 mg/l.
J1	Estimated value - The reported value is outside the established quality control criteria for accuracy and/or precision.
L	Off scale high - The concentration of the analyte exceeds the linear range.
S	The surrogate recovery was outside the established laboratory recovery limit.
U	Non-detected compound.
RPD	Relative Percent Difference
%REC	Percent Recovery
Source	Sample that was matrix spiked or duplicated
*	A = Accredited, N = Not Accredited or Accreditation not available
DF	Dilution Factor - the factor applied to the reported data due to sample preparation, dilution, or moisture content
MDL	Method Detection Limit - The minimum concentration of a substance (or analyte) that can be measured and reported with 99% confidence that the analyte concentration is greater than zero. Based on standard deviation of replicate spiked samples take through all steps of the analytical procedure following 40 CFR Part 136 Appendix B.
SDL	Sample Detection Limit - The minimum concentration of a substance (analyte) that can be measured and reported with 99% confidence that the analyte concentration is greater than zero. The SDL is an adjusted limit thus sample specific and accounts for preparation weights and volumes, dilutions, and moisture content of soil/sediments. If there are no sample specific parameters, the MDL = SDL.
MRL	Method Reporting Limit - Analyte concentration that corresponds to the lowest level lab reports with confidence in accuracy of quantitation and without qualification (i.e. J-flagged). The MRL is at or above the lowest calibration standard.
LRL	Laboratory Reporting Limit - Analyte concentration that corresponds to the lowest level lab reports with confidence in accuracy of quantitation and without qualification (i.e. J-flagged). The LRL is an adjusted limit thus sample specific and accounts for preparation weights and volumes, dilutions, and moisture content of soil/sediments. If there are no sample specific parameters, the MRL = LRL.

* A = Accredited, N = Not Accredited or Accreditation not available



CHAIN OF CUSTODY RECORD

North Water District Laboratory Services
 130 S. Trade Center Pkwy, Conroe Tx 77385
 (936) 321-6060 - lab@nwdls.com



Page 1 of 1

21E3374

TCEQ T104704238-21-33 TCEQ-TOX T104704202-20-14

City of Manvel Ray Word 20025 Morris Avenue Manvel, TX 77578 Phone: (832) 343-8896	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:60%;"> Project Name : City of Manvel - Outfall 001 3 Part Grab Comp 1 </td> <td style="width:40%; text-align: right; vertical-align: top;"> Schedule Comments: </td> </tr> <tr> <td colspan="2"> Project Comments: DAY OF GRAB 1 - TAKE GLASS RECEPTACLE & PLACE IN SAMPLER COORDINATE GRAB 1 & GRAB 2 COLLECTION TIMES WITH OTHER FIELD TECH IF NEEDED </td> </tr> </table>	Project Name : City of Manvel - Outfall 001 3 Part Grab Comp 1	Schedule Comments:	Project Comments: DAY OF GRAB 1 - TAKE GLASS RECEPTACLE & PLACE IN SAMPLER COORDINATE GRAB 1 & GRAB 2 COLLECTION TIMES WITH OTHER FIELD TECH IF NEEDED	
Project Name : City of Manvel - Outfall 001 3 Part Grab Comp 1	Schedule Comments:				
Project Comments: DAY OF GRAB 1 - TAKE GLASS RECEPTACLE & PLACE IN SAMPLER COORDINATE GRAB 1 & GRAB 2 COLLECTION TIMES WITH OTHER FIELD TECH IF NEEDED					

Sample ID	Collection Point	Date/Time Begin	Date/Time Sampled	Sample Type	Container	Analysis/Preservation	Field Results
21E3374-01	18 Mohm DI		5/24/21 0645	AQ Grab	A Glass 4oz Boston Round	LL Hg-1631 BrCl	
21E3374-02	Outfall 001 3 Part Grab		5/24/21 0650	AQ Grab	A Glass VOA 40mL HCl pH<2 B Glass VOA 40mL HCl pH<2 C Glass VOA 40mL HCl pH<2 D Glass VOA 40mL E Glass VOA 40mL F Glass VOA 40mL G Glass 4oz Boston Round	LL Hg-1631 BrCl Composite VOA 4°C	

Field Remarks:		Preservation: H2SO4 HNO3 NaOH Other: _____			
Sampler (Signature) 	Relinquished By: (Signature) 	Date/Time 5/24/21 1330	Received By: (Signature)	Date/Time	
Print Name Eric Mears	Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Date/Time	
Affiliation NWDLS	Relinquished To Lab By: (Signature)	Date/Time	Received for Laboratory By: (Signature)	Date/Time 5/24/21 1330	EOM
Custody Seal : Yes / No Container Intact : Yes / No	COC Labels Agree: Yes / No Appropriate Containers: Yes / No	Appropriate Volume: Yes / No Coolers Intact: Yes / No	Received on Ice: Yes / No Samples Accepted: Yes / No	Temperature: _____ °C Thermometer ID: _____	

wko_NWDLS_COC_noDate_LS version 4: 02/22/2021

Alvin



CHAIN OF CUSTODY RECORD

North Water District Laboratory Services
 130 S. Trade Center Pkwy, Conroe Tx 77385
 (936) 321-6060 - lab@nwdls.com



Page 1 of 1

21E3375

TCEQ T104704238-21-33 TCEQ-TOX T104704202-20-14

City of Manvel Ray Word 20025 Morris Avenue Manvel, TX 77578 Phone: (832) 343-8896	Project Name : City of Manvel - Outfall 001 3 Part Grab Comp 2 Project Comments: COORDINATE GRAB 1 & GRAB 2 COLLECTION TIMES WITH OTHER FIELD TECH IF NEEDED	Schedule Comments:
--	--	---------------------------

Sample ID	Collection Point	Date/Time Begin	Date/Time Sampled	Sample Type	Container	Analysis/Preservation	Field Results
21E3375-01	18 Mohm DI		5/24/21 1550	AQ Grab	A Glass 4oz Boston Round	LL Hg-1631 BrCl	
21E3375-02	Outfall 001 3 Part Grab		5/24/21 1555	AQ Grab	A Glass VOA 40mL HCl pH<2 B Glass VOA 40mL HCl pH<2 C Glass VOA 40mL HCl pH<2 D Glass VOA 40mL E Glass VOA 40mL F Glass VOA 40mL G Glass 4oz Boston Round	LL Hg-1631 BrCl Composite VOA 4°C	

Field Remarks:		Preservation: H2SO4 HNO3 NaOH Other: _____	
Sampler (Signature) <i>[Signature]</i>	Relinquished By: (Signature) <i>[Signature]</i>	Date/Time 5/25/21 1230	Received By: (Signature) _____
Print Name Ewiz News	Relinquished By: (Signature)	Date/Time	Received By: (Signature)
Affiliation NWDLS	Relinquished To Lab By: (Signature)	Date/Time	Received for Laboratory By: (Signature) <i>[Signature]</i>
Custody Seal : Yes / No COC Labels Agree: Yes / No Appropriate Volume: Yes / No Received on Ice: Yes / No Temperature: °C		Container Intact : Yes / No Appropriate Containers: Yes / No Coolers Intact: Yes / No Samples Accepted: Yes / No Thermometer ID: _____	

Alvin

wko_NWDLS_COC_noDate_LS version 4: 02/22/2021



CHAIN OF CUSTODY RECORD

North Water District Laboratory Services
 130 S. Trade Center Pkwy, Conroe Tx 77385
 (936) 321-6060 - lab@nwdls.com



Page 1 of 3

21E3581

TCEQ T104704238-21-33 TCEQ-TOX T104704202-20-14

City of Manvel Ray Word 20025 Morris Avenue Manvel, TX 77578 Phone: (832) 343-8896	Project Name : City of Manvel - Permit Renewal		Schedule Comments:
	Project Comments: DO reading must be recorded before 9am Mark out Duplicated Outfall samples on the regular chain		

Sample ID	Collection Point	Date/Time Begin	Date/Time Sampled	Sample Type	Container	Analysis/Preservation	Field Results
21E3581-01	Outfall 001		5/25/2021 / 8:25	AQ Grab	A HDPE 250mL NaOH B HDPE S250mL Na2S2O3 C Glass Wide 1L w/ Teflon-lined Lid D HDPE S250mL Na2S2O3	ENT-ASTMD6503 Na2S2O3 <10°C TG-EC-9223 Na2S2O3 <10°C CN AMEN-4500 NaOH 4°C CN T-4500 NaOH 4°C O&G-1664 HCl 4°C	DO Field <u>7.00</u> Flow MGD Field <u>560.9</u> pH Field <u>7.30</u> Total Chlorine <u>0.00</u> Residual WW Field

~~ENT~~ & Ecoli Moved to Thursday



CHAIN OF CUSTODY RECORD

North Water District Laboratory Services
 130 S. Trade Center Pkwy, Conroe Tx 77385
 (936) 321-6060 - lab@nwdls.com



21E3581

(Continued)

TCEQ T104704238-21-33 TCEQ-TOX T104704202-20-14

City of Manvel Ray Word 20025 Morris Avenue Manvel, TX 77578 Phone: (832) 343-8896		Project Name : City of Manvel - Permit Renewal		Schedule Comments:			
		Project Comments: DO reading must be recorded before 9am Mark out Duplicated Outfall samples on the regular chain					
21E3581-02	Outfall 001 Sampler	5-24-21/5:00	5/25/2021/5:00	AQ 24HR Comp	A HDPE 250mL AAHDPE 1L B Amber 1L w/ Teflon-lined Lid C Amber 1L w/ Teflon-lined Lid D HDPE 1L E PreCleaned HDPE 250mL HNO3 F HDPE 250mL G Glass VOA 60mL H Glass VOA 60mL I Glass VOA 60mL J HDPE 250mL K HDPE 250mL H2SO4 L Amber 250mL w/ Teflon-lined Lid M Amber 250mL w/ Teflon-lined Lid N Amber 250mL w/ Teflon-lined Lid O Amber 250mL w/ Teflon-lined Lid P Amber 1L w/ Teflon-lined Lid Q Amber 1L w/ Teflon-lined Lid R Amber 1L w/ Teflon-lined Lid S Amber 1L w/ Teflon-lined Lid T Amber 250mL w/ Teflon-lined Lid U Amber 250mL w/ Teflon-lined Lid V Amber 250mL w/ Teflon-lined Lid W Amber 250mL w/ Teflon-lined Lid X HDPE 250mL Y HDPE 250mL H2SO4 Z HDPE 250mL H2SO4	Aluminum ICPMS 200.8 HNO3 Antimony ICPMS 200.8 HNO3 Arsenic ICPMS 200.8 HNO3 Barium ICPMS 200.8 HNO3 Beryllium ICPMS 200.8 HNO3 Cadmium ICPMS 200.8 HNO3 Chromium ICPMS 200.8 HNO3 Copper ICPMS 200.8 HNO3 Lead ICPMS 200.8 HNO3 LPR Metals [Group Analysis] Nickel ICPMS 200.8 HNO3 Selenium ICPMS 200.8 HNO3 Silver ICPMS 200.8 HNO3 Thallium ICPMS 200.8 HNO3 Zinc ICPMS 200.8 HNO3 HERB-6640 4°C Nonylphenol-D7065 4°C OCP-608 4°C OPP-1657 4°C PCB-608 4°C SVOA-625 4°C Alkalinity-2320 4°C Carbaryl-Diuron-632 4°C CBOD-5210 4°C Chloride IC 300.0 4°C Conductivity-2510 4°C Cr III ICPMS [Group Analysis] Cr VI-D 3500 4°C Fluoride IC 300.0 4°C LPR Anions [Group Analysis] NH3-N SEAL-350.1 H2SO4 4°C Nitrate as N IC 300.0 4°C Nitrite as N IC 300.0 4°C Sulfate IC 300.0 4°C TDS-2540 4°C TKN T-4500 C H2SO4 4°C Total Phosphorus-4500 H2SO4 4°C TSS-2540 4°C	



CHAIN OF CUSTODY RECORD

North Water District Laboratory Services
 130 S. Trade Center Pkwy, Conroe Tx 77385
 (936) 321-6060 - lab@nwdls.com



Page 3 of 3

21E3581

(Continued)

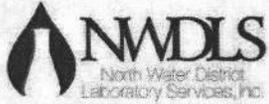
TCEQ T104704238-21-33 TCEQ-TOX T104704202-20-14

City of Manvel Ray Word 20025 Morris Avenue Manvel, TX 77578 Phone: (832) 343-8896		Project Name : City of Manvel - Permit Renewal						Schedule Comments:	
		Project Comments: DO reading must be recorded before 9am Mark out Duplicated Outfall samples on the regular chain							
21E3581-03	Outfall 001 3 Part Grab		5/25/2021 / 8:30	AQ Grab	A Glass VOA 40mL HCl pH<2 B Glass VOA 40mL HCl pH<2 C Glass VOA 40mL HCl pH<2 D Glass VOA 40mL E Glass VOA 40mL F Glass VOA 40mL G Glass 4oz Boston Round	LL Hg-1631 Composite VOA	BrCl 4°C		
21E3581-04	Outfall 001 3 Part Grab		5/25/2021	AQ Grab 3-Part Cor		VOA-624	4°C		
21E3581-05	18 Mohm DI		5/25/2021	AQ Grab	A Glass 4oz Boston Round	LL Hg-1631	BrCl		

Field Remarks:		Preservation: H2SO4 HNO3 NaOH Other: _____	
Sampler (Signature) <i>Jose Gutierrez</i>	Relinquished By: (Signature)	Date/Time	Received By: (Signature)
Print Name <i>Jose Gutierrez</i>	Relinquished By: (Signature)	Date/Time	Received By: (Signature)
Affiliation <i>NWDLS</i>	Relinquished To Lab By: (Signature) <i>Jose Gutierrez</i>	Date/Time <i>5-25-21/14:20</i>	Received for Laboratory By: (Signature) <i>SMC</i>
Custody Seal: Yes / No	COC Labels Agree: Yes / No	Appropriate Volume: Yes / No	Received on Ice: Yes / No
Container Intact: Yes / No	Appropriate Containers: Yes / No	Coolers Intact: Yes / No	Samples Accepted: Yes / No
			Temperature: _____ °C
			Thermometer ID: _____

Alvin

wko_NWDLS_COC_LS version 4: 02/22/2021



CHAIN OF CUSTODY RECORD

North Water District Laboratory Services
 130 S. Trade Center Pkwy, Conroe Tx 77385
 (936) 321-6060 - lab@nwdls.com



Page 1 of 1

21E3897

TCEQ T104704238-21-33 TCEQ-TOX T104704202-20-14

City of Manvel Ray Word 20025 Morris Avenue Manvel, TX 77578 Phone: (832) 343-8896	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:60%;"> Project Name : City of Manvel - Non Potable - Ecoli Only </td> <td style="width:40%; text-align: right;"> Schedule Comments: </td> </tr> <tr> <td colspan="2"> Project Comments: Operator Ray Word - 281-734-4401 Combo - 1121 - push the lock together and pull apart </td> </tr> </table>	Project Name : City of Manvel - Non Potable - Ecoli Only	Schedule Comments:	Project Comments: Operator Ray Word - 281-734-4401 Combo - 1121 - push the lock together and pull apart	
Project Name : City of Manvel - Non Potable - Ecoli Only	Schedule Comments:				
Project Comments: Operator Ray Word - 281-734-4401 Combo - 1121 - push the lock together and pull apart					

Sample ID	Collection Point	Date/Time Begin	Date/Time Sampled	Sample Type	Container	Analysis/Preservation	Field Results
21E3897-01	Outfall 001		5/27/2021 / 13:50	Q Grab	A HDPE S250mL Na2S2O3	TC EC-9223 Na2S2O3 <10°C	

Field Remarks:		Preservation: H2SO4 HNO3 NaOH Other: _____			
Sampler (Signature) <i>AM B</i>	Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Date/Time	
Print Name <i>Jose Gutierrez</i>	Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Date/Time	
Affiliation <i>NWDLS</i>	Relinquished To Lab By: (Signature) <i>AM B</i>	Date/Time <i>5.27.21/13:30</i>	Received for Laboratory By: (Signature) <i>JML</i>	Date/Time <i>5.27.21</i>	
Custody Seal : Yes / No	COC Labels Agree: Yes / No	Appropriate Volume: Yes / No	Received on Ice: Yes / No	Temperature: _____ °C	
Container Intact : Yes / No	Appropriate Containers: Yes / No	Coolers Intact: Yes / No	Samples Accepted: Yes / No	Thermometer ID: _____	

Alvin

wko_NWDLS_COC_LS version 4: 02/22/2021



CHAIN OF CUSTODY RECORD

North Water District Laboratory Services
 130 S. Trade Center Pkwy, Conroe Tx 77385
 (936) 321-6060 - lab@nwdls.com



Page 1 of 1

21F0526

TCEQ T104704238-21-33 TCEQ-TOX T104704202-20-14

City of Manvel Ray Word 20025 Morris Avenue Manvel, TX 77578 Phone: (832) 343-8896	Project Name : City of Manvel WWTP - Permit Renewal - Recollect Schedule Comments: Project Comments:
--	---

Sample ID	Collection Point	Date/Time Begin	Date/Time Sampled	Sample Type	Container	Analysis/Preservation	Field Results
21F0526-01	Outfall 001 Sampler	5-31-21/5:00	6/1/2021 / 5:00	AQ 24HR Comp	A HDPE 250mL	Cr VI-D 3500 4°C	

Field Remarks:		Preservation: H2SO4 HNO3 NaOH Other: _____ (Circle and Write ID)			
Sampler (Signature) <i>AM B</i>	Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Date/Time	
Print Name Jose Gutierrez	Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Date/Time	
Affiliation NWDLS	Relinquished To Lab By: (Signature) <i>AM B</i>	Date/Time 6-1-21/15:00	Received for Laboratory By: (Signature) <i>SMC</i>	Date/Time 6-1-21	
Custody Seal : Yes / No	COC Labels Agree: Yes / No	Appropriate Volume: Yes / No	Received on Ice: Yes / No	Temperature: _____ °C	
Container Intact : Yes / No	Appropriate Containers: Yes / No	Coolers Intact: Yes / No	Samples Accepted: Yes / No	Thermometer ID: _____	

Alvin

wko_NWDLS_COC_LS version 4: 02/22/2021

NWDS-G

North Water District Laboratory
Deena McDaniel
130 S Trade Center Parkway
Conroe, TX 77385

Project
967139

Printed 06/10/2021 9:38

TABLE OF CONTENTS

21E3581

This report consists of this Table of Contents and the following pages:

<u>Report Name</u>	<u>Description</u>	<u>Pages</u>
967139_r03_03_ProjectResults	Ana-Lab Project P:967139 C:NWDS Project Results t:304 PO: #26201	2
967139_r10_05_ProjectQC	Ana-Lab Project P:967139 C:NWDS Project Quality Control Groups	1
967139_r99_09_CoC__1_of_1	Ana-Lab CoC NWDS 967139_1_of_1	2
Total Pages:		5

Email: projectmanger@ana-lab.com



Report Page 1 of 6

NWDS-G

North Water District Laboratory
 Deena McDaniel
 130 S Trade Center Parkway
 Conroe, TX 77385

Project
967139

Printed: 06/10/2021

21E3581

RESULTS

Sample Results

1991126	21E3581-02					Received:	05/27/2021
Non-Potable Water	Collected by: Client	North Water District				PO:	#26201
	Taken: 05/25/2021	05:00:00					
<hr/>							
EPA 632	Prepared:	954355	05/28/2021	07:00:00	Analyzed	955866	06/03/2021 14:09:00 BRU
Parameter	Results	Units	RL	Flags	CAS	Bottle	
NELAC Carbaryl (Sevin)	<2.71	ug/L	2.71	D	63-25-2	03	
z Diuron	<0.0487	ug/L	0.0487	D	330-54-1	03	

Sample Preparation

1991126	21E3581-02					Received:	05/27/2021
	05/25/2021						#26201
<hr/>							
	Prepared:	05/28/2021	10:42:53	Calculated	05/28/2021	10:42:53	CAL
z Environmental Fee (per Project)	Verified						
<hr/>							
EPA 632	Prepared:	954355	05/28/2021	07:00:00	Analyzed	954355	05/28/2021 07:00:00 MCC
Liquid-Liquid Extr. W/Hex Ex	1/924	ml					02
EPA 632	Prepared:	954355	05/28/2021	07:00:00	Analyzed	955866	06/03/2021 14:09:00 BRU
NELAC Carbaryl/Diuron	Entered						03



NWDS-G

North Water District Laboratory
Deena McDaniel
130 S Trade Center Parkway
Conroe, TX 77385

Project
967139

Printed: 06/10/2021

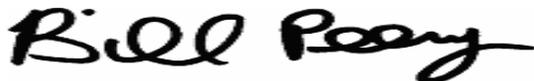
Qualifiers:

D - Duplicate RPD was higher than expected

We report results on an As Received (or Wet) basis unless marked 'Dry Weight'. Unless otherwise noted, testing was performed at Ana-lab corporate laboratory which holds International, Federal, and state accreditations. Please see <https://www.ana-lab-work.com/index.php/accreditations/>

These analytical results relate to the sample tested. This report may NOT be reproduced EXCEPT in FULL without written approval of Ana-Lab Corp. Unless otherwise specified, these test results meet the requirements of NELAC.

RL is the Reporting Limit (sample specific quantitation limit) and is at or above the Method Detection Limit (MDL). CAS is Chemical Abstract Service number. RL is our Reporting Limit, or Minimum Quantitation Level. The RL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL), and any dilutions and/or concentrations performed during sample preparation (EQL). Our analytical result must be above this RL before we report a value in the 'Results' column of our report (without a 'J' flag). Otherwise, we report ND (Not Detected above RL), because the result is "<" (less than) the number in the RL column. MAL is Minimum Analytical Level and is typically from regulatory agencies. Unless we report a result in the result column, or interferences prevent it, we work to have our RL at or below the MAL.



Bill Peery, MS, VP Technical Services



NWDS-G

North Water District Laboratory
 Deena McDaniel
 130 S Trade Center Parkway
 Conroe, TX 77385

Project

967139

Printed 06/10/2021

Analytical Set **955866**

EPA 632

Blank

<u>Parameter</u>	<u>PrepSet</u>	<u>Reading</u>	<u>MDL</u>	<u>MQL</u>	<u>Units</u>	<u>File</u>
Carbaryl (Sevin)	954355	ND	66.1	2500	ug/L	122377363
Diuron	954355	ND	44.4	45.0	ug/L	122377363

CCV

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Carbaryl (Sevin)	1020	1000	ug/L	102	70.0 - 130	122377362
Carbaryl (Sevin)	1030	1000	ug/L	103	70.0 - 130	122377369
Carbaryl (Sevin)	1060	1000	ug/L	106	70.0 - 130	122377375
Carbaryl (Sevin)	1050	1000	ug/L	105	70.0 - 130	122377378
Diuron	993	1000	ug/L	99.3	70.0 - 130	122377362
Diuron	1000	1000	ug/L	100	70.0 - 130	122377369
Diuron	1010	1000	ug/L	101	70.0 - 130	122377375
Diuron	993	1000	ug/L	99.3	70.0 - 130	122377378

LCS Dup

<u>Parameter</u>	<u>PrepSet</u>	<u>LCS</u>	<u>LCSD</u>	<u>Known</u>	<u>Limits%</u>	<u>LCS%</u>	<u>LCSD%</u>	<u>Units</u>	<u>RPD</u>	<u>Limit%</u>
Carbaryl (Sevin)	954355	505	717	1000	17.1 - 131	50.5	71.7	ug/L	34.7 *	30.0
Diuron	954355	621	413	1000	0.100 - 138	62.1	41.3	ug/L	40.2 *	30.0

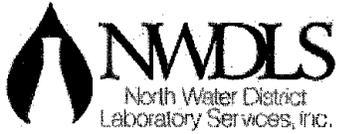
* Out RPD is Relative Percent Difference: $\text{abs}(r_1-r_2) / \text{mean}(r_1,r_2) * 100\%$

Recover% is Recovery Percent: $\text{result} / \text{known} * 100\%$

Blank - Method Blank; CCV - Continuing Calibration Verification



1
2
3
4



SUBCONTRACT ORDER

Sending Laboratory:

North Water District Laboratory Services, Inc.
 130 South Trade Center Parkway
 Conroe, TX 77385
 Phone: 936-321-6060
 Fax: 936-321-6061

Project Manager: Deena Higginbotham

Subcontracted Laboratory:

Ana-Lab Corporation
 2600 Dudley Road
 Kilgore, TX 75662
 Phone: (903) 984-0551
 Fax: (903) 984-5914

Work Order: 21E3581

1991126

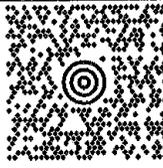
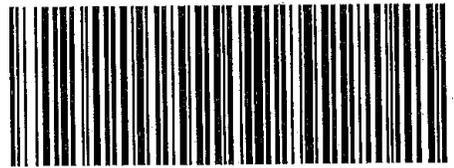
Analysis	Due	Expires	Comments
Sample ID: 21E3581-02 Waste Water Sampled: 05/25/2021 05:00			
Carbaryl-Diuron-632	06/08/2021	06/01/2021 05:00	
<i>Analyte(s):</i> Carbaryl	Diuron		
<i>Containers Supplied:</i>			

	5-20-21	JPS	5-20-21
Released By	Date	Received By	Date
WPS	5/27/21	Ray Shew	5/27/21

See Attached for Tracking # and Temp

1
2
3
4

967139 CoC Print Group 001 of 001

APRIL L. CANADY 9363216060 NWDLS 130 SOUTH TRADE CENTER CONROE TX 77385		8 LBS	1 OF 1
SHIP TO: LOG-IN 9039840551 ANA-LAB 2600 DUDLEY RD KILGORE TX 75662			
	TX 756 0-32 		
UPS NEXT DAY AIR			1
TRACKING #: 1Z 12W 40V 01 9416 2718			
			
BILLING: P/P			

5/27 1039 *K*
Date Time Tech
Temp: 0.3/0.4 C
Therm#: 6448 Corr Fact: 0.1 C



June 21, 2021

Laboratory Report

Ray Word
City of Manvel
20025 Morris Avenue
Manvel, TX 77578

The following test results meet all NELAP requirements for analytes for which certification is available. Any deviations from our quality system will be noted in the case narrative. All analyses performed by North Water District Laboratory Services, Inc. unless noted.

For questions regarding this report, contact Monica Martin at 936-321-6060.

Sincerely,

A handwritten signature in black ink, reading "Deena Higginbotham", is placed over a light gray rectangular background.

Deena Higginbotham
NPDES Project Manager



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:38

Sample Results

Client Sample ID: Outfall 001 Sampler

Sample Matrix: Waste Water

Lab Sample ID: 21E3581-02

Date Collected: 05/25/2021 5:00

City of Manvel - Permit Renewal [none]

Collected by: Jose Gutierrez

Method	Analyte	*	Result Q	Units	DF	SDL	LRL	Batch	Analyzed	Analyst
--------	---------	---	----------	-------	----	-----	-----	-------	----------	---------

Semivolatile Organic Compounds by GCMS

EPA 625.1	3,3'-Dichlorobenzidine	A	<3.87U	ug/L	1	3.87	11.7	BEE3304	06/03/2021 08:32	JLL
-----------	------------------------	---	--------	------	---	------	------	---------	------------------	-----

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:38

Quality Control

Semivolatile Organic Compounds by GCMS

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
---------	--------	------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------

Batch: BEE3304 - EPA 625 LLE

Blank (BEE3304-BLK1)

Prepared: 05/26/2021 Analyzed: 05/28/2021

1,2,4-Trichlorobenzene	<0.300	U	0.300	ug/L						
1,2-Diphenylhydrazine	<0.750	U	0.750	ug/L						
2,2'-Oxybis(1-chloropropane), bis(2-Chloro-1-methy	<0.400	U	0.400	ug/L						
2,4,5-Trichlorophenol	<0.700	U	0.700	ug/L						
2,4,6-Trichlorophenol	<1.20	U	1.20	ug/L						
2,4-Dichlorophenol	<0.800	U	0.800	ug/L						
2,4-Dimethylphenol	<0.900	U	0.900	ug/L						
2,4-Dinitrophenol	<8.60	U	8.60	ug/L						
2,4-Dinitrotoluene (2,4-DNT)	<0.200	U	0.200	ug/L						
2,6-Dinitrotoluene (2,6-DNT)	<1.80	U	1.80	ug/L						
2-Chloronaphthalene	<0.400	U	0.400	ug/L						
2-Chlorophenol	<0.500	U	0.500	ug/L						
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylph	<1.60	U	1.60	ug/L						
2-Nitrophenol	<0.700	U	0.700	ug/L						
3,3'-Dichlorobenzidine	<11.7	U	11.7	ug/L						
3,4-Methylphenol	<1.40	U	1.40	ug/L						
4-Bromophenyl phenyl ether (BDE-3)	<0.300	U	0.300	ug/L						
4-Chloro-3-methylphenol	<0.700	U	0.700	ug/L						
4-Chlorophenyl phenylether	<0.700	U	0.700	ug/L						
4-Nitrophenol	<7.20	U	7.20	ug/L						
Acenaphthene	<0.300	U	0.300	ug/L						
Acenaphthylene	<0.200	U	0.200	ug/L						
Anthracene	<0.200	U	0.200	ug/L						
Benidine	<35.5	U	35.5	ug/L						
Benzo(a)anthracene	<0.300	U	0.300	ug/L						
Benzo(a)pyrene	<0.500	U	0.500	ug/L						
Benzo(b)fluoranthene	<0.200	U	0.200	ug/L						
Benzo(g,h,i)perylene	<0.400	U	0.400	ug/L						
Benzo(k)fluoranthene	<0.300	U	0.300	ug/L						
bis(2-Chloroethoxy)methane	<0.400	U	0.400	ug/L						
bis(2-Chloroethyl) ether	<0.600	U	0.600	ug/L						
Bis(2-ethylhexyl)phthalate	<1.50	U	1.50	ug/L						
Butyl benzyl phthalate	<0.400	U	0.400	ug/L						
Chrysene	<0.200	U	0.200	ug/L						
Dibenzo(a,h)anthracene	<0.500	U	0.500	ug/L						
Diethyl phthalate	0.249		0.500	ug/L						
Dimethyl phthalate	<0.300	U	0.300	ug/L						
Di-n-butyl phthalate	0.568		1.60	ug/L						
Di-n-octyl phthalate	<0.500	U	0.500	ug/L						
Fluoranthene	<0.300	U	0.300	ug/L						
Fluorene	<0.200	U	0.200	ug/L						
Hexachlorobenzene	<0.200	U	0.200	ug/L						
Hexachlorobutadiene	<0.300	U	0.300	ug/L						
Hexachlorocyclopentadiene	<0.750	U	0.750	ug/L						
Hexachloroethane	<0.200	U	0.200	ug/L						
Hexachlorophene	<1.10	U	1.10	ug/L						

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:38

Quality Control
 (Continued)

Semivolatile Organic Compounds by GCMS (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
---------	--------	------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------

Batch: BEE3304 - EPA 625 LLE (Continued)

Blank (BEE3304-BLK1)

Prepared: 05/26/2021 Analyzed: 05/28/2021

Indeno(1,2,3-cd) pyrene	<0.400	U	0.400	ug/L						
Isophorone	<0.300	U	0.300	ug/L						
Naphthalene	<0.300	U	0.300	ug/L						
Nitrobenzene	<0.400	U	0.400	ug/L						
n-Nitrosodiethylamine	<0.500	U	0.500	ug/L						
n-Nitrosodimethylamine	<3.80	U	3.80	ug/L						
n-Nitroso-di-n-butylamine	<5.70	U	5.70	ug/L						
n-Nitrosodi-n-propylamine	<1.40	U	1.40	ug/L						
n-Nitrosodiphenylamine	<0.200	U	0.200	ug/L						
Pentachlorobenzene	<0.200	U	0.200	ug/L						
Pentachlorophenol	<1.40	U	1.40	ug/L						
Phenanthrene	<0.300	U	0.300	ug/L						
Phenol, Total	<1.50	U	1.50	ug/L						
Pyrene	<0.300	U	0.300	ug/L						

LCS (BEE3304-BS1)

Prepared: 05/26/2021 Analyzed: 06/03/2021

3,3'-Dichlorobenzidine	24.5		11.7	ug/L	50.0		49.0	0-262		
Benzidine	<35.5	J1, U	35.5	ug/L	50.0			60-140		

Surrogate: 2-Fluorobiphenyl-surr			1.82	ug/L	2.00		90.8	60-140		
Surrogate: Nitrobenzene-d5-surr			2.56	ug/L	2.00		128	60-140		
Surrogate: p-Terphenyl-d14-surr			1.30	ug/L	2.00		64.9	60-140		

LCS (BEE3304-BS2)

Prepared: 05/26/2021 Analyzed: 05/28/2021

1,2,4-Trichlorobenzene	1.51		0.300	ug/L	2.00		75.5	44-142		
1,2-Diphenylhydrazine	1.83		0.750	ug/L	2.00		91.4	60-140		
2,2'-Oxybis(1-chloropropane), bis(2-Chloro-1-methyl	2.11		0.400	ug/L	2.00		106	60-140		
2,4,5-Trichlorophenol	3.36		0.700	ug/L	4.00		83.9	60-140		
2,4,6-Trichlorophenol	3.56		1.20	ug/L	4.00		89.0	37-144		
2,4-Dichlorophenol	4.69		0.800	ug/L	4.00		117	39-135		
2,4-Dimethylphenol	3.67		0.900	ug/L	4.00		91.8	32-120		
2,4-Dinitrophenol	8.17		8.60	ug/L	10.0		81.7	0-191		
2,4-Dinitrotoluene (2,4-DNT)	1.66		0.200	ug/L	2.00		83.2	39-139		
2,6-Dinitrotoluene (2,6-DNT)	3.14		1.80	ug/L	2.00		157	50-158		
2-Chloronaphthalene	1.80		0.400	ug/L	2.00		89.8	60-120		
2-Chlorophenol	3.66		0.500	ug/L	4.00		91.5	23-134		
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylph	3.36		1.60	ug/L	4.00		84.0	0-181		
2-Nitrophenol	3.31		0.700	ug/L	4.00		82.8	29-182		
3,4-Methylphenol	5.17		1.40	ug/L	4.00		129	60-140		
4-Bromophenyl phenyl ether (BDE-3)	2.03		0.300	ug/L	2.00		102	53-127		
4-Chloro-3-methylphenol	3.38		0.700	ug/L	4.00		84.5	22-147		
4-Chlorophenyl phenylether	1.94		0.700	ug/L	2.00		96.8	25-158		
4-Nitrophenol	8.57		7.20	ug/L	10.0		85.7	0-132		
Acenaphthene	1.45		0.300	ug/L	2.00		72.6	47-145		
Acenaphthylene	2.18		0.200	ug/L	2.00		109	33-145		
Anthracene	1.74		0.200	ug/L	2.00		87.0	27-133		
Benzo(a)anthracene	1.59		0.300	ug/L	2.00		79.3	33-143		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:38

Quality Control
 (Continued)

Semivolatile Organic Compounds by GCMS (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BEE3304 - EPA 625 LLE (Continued)										
LCS (BEE3304-BS2)										
					Prepared: 05/26/2021 Analyzed: 05/28/2021					
Benzo(a)pyrene	1.45		0.500	ug/L	2.00		72.6	17-163		
Benzo(b)fluoranthene	1.61		0.200	ug/L	2.00		80.6	24-159		
Benzo(g,h,i)perylene	1.55		0.400	ug/L	2.00		77.5	0-219		
Benzo(k)fluoranthene	1.56		0.300	ug/L	2.00		77.9	11-162		
bis(2-Chloroethoxy)methane	1.70		0.400	ug/L	2.00		85.1	33-184		
bis(2-Chloroethyl) ether	2.15		0.600	ug/L	2.00		108	12-158		
Bis(2-ethylhexyl)phthalate	1.76		1.50	ug/L	2.00		88.0	8-158		
Butyl benzyl phthalate	1.63		0.400	ug/L	2.00		81.6	0-152		
Chrysene	1.56		0.200	ug/L	2.00		78.2	17-168		
Dibenzo(a,h)anthracene	1.63		0.500	ug/L	2.00		81.4	0-227		
Diethyl phthalate	2.08		0.500	ug/L	2.00		104	0-120		
Dimethyl phthalate	1.76		0.300	ug/L	2.00		87.8	0-120		
Di-n-butyl phthalate	2.33		1.60	ug/L	2.00		116	1-120		
Di-n-octyl phthalate	1.66		0.500	ug/L	2.00		83.1	4-146		
Fluoranthene	1.56		0.300	ug/L	2.00		78.0	26-137		
Fluorene	1.57		0.200	ug/L	2.00		78.7	59-121		
Hexachlorobenzene	1.31		0.200	ug/L	2.00		65.3	0-152		
Hexachlorobutadiene	1.04		0.300	ug/L	2.00		51.9	24-120		
Hexachlorocyclopentadiene	2.05		0.750	ug/L	2.00		102	60-140		
Hexachloroethane	1.21		0.200	ug/L	2.00		60.7	40-120		
Hexachlorophene	1.48		1.10	ug/L	2.00		74.0	60-140		
Indeno(1,2,3-cd) pyrene	1.56		0.400	ug/L	2.00		77.8	0-171		
Isophorone	1.81		0.300	ug/L	2.00		90.6	21-196		
Naphthalene	1.47		0.300	ug/L	2.00		73.7	21-133		
Nitrobenzene	1.51		0.400	ug/L	2.00		75.5	35-180		
n-Nitrosodiethylamine	1.97		0.500	ug/L	2.00		98.5	60-140		
n-Nitrosodimethylamine	1.92	J1	3.80	ug/L	10.0		19.2	60-140		
n-Nitroso-di-n-butylamine	2.77		5.70	ug/L	2.00		138	60-140		
n-Nitrosodi-n-propylamine	4.76	J1	1.40	ug/L	2.00		238	0-230		
n-Nitrosodiphenylamine	1.44		0.200	ug/L	2.00		71.9	60-140		
Pentachlorobenzene	1.47		0.200	ug/L	2.00		73.5	60-140		
Pentachlorophenol	3.03		1.40	ug/L	4.00		75.8	14-176		
Phenanthrene	1.68		0.300	ug/L	2.00		84.1	54-120		
Phenol, Total	3.80		1.50	ug/L	4.00		94.9	5-120		
Pyrene	1.67		0.300	ug/L	2.00		83.6	52-120		
<hr/>										
Surrogate: 2,4,6-Tribromophenol-surr			3.03	ug/L	4.00		75.8	60-140		
Surrogate: 2-Fluorobiphenyl-surr			1.78	ug/L	2.00		89.2	60-140		
Surrogate: 2-Fluorophenol-surr			3.24	ug/L	4.00		80.9	60-140		
Surrogate: Nitrobenzene-d5-surr			1.72	ug/L	2.00		85.8	60-140		
Surrogate: Phenol-d5-surr			3.60	ug/L	4.00		89.9	60-140		
Surrogate: p-Terphenyl-d14-surr			1.73	ug/L	2.00		86.7	60-140		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:38

Quality Control
 (Continued)

Semivolatile Organic Compounds by GCMS (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
---------	--------	------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------

Batch: BEE3304 - EPA 625 LLE (Continued)

LCS Dup (BEE3304-BS1)		Prepared: 05/26/2021 Analyzed: 06/03/2021								
3,3'-Dichlorobenzidine	21.2		11.7	ug/L	50.0		42.4	0-262	14.5	108
Benzidine	<35.5	J1, U	35.5	ug/L	50.0			60-140	200	40
Surrogate: 2-Fluorobiphenyl-surr			1.84	ug/L	2.00		91.9	60-140		
Surrogate: Nitrobenzene-d5-surr		S	3.38	ug/L	2.00		169	60-140		
Surrogate: p-Terphenyl-d14-surr			1.35	ug/L	2.00		67.7	60-140		

LCS Dup (BEE3304-BS2)		Prepared: 05/26/2021 Analyzed: 05/28/2021								
1,2,4-Trichlorobenzene	1.59		0.300	ug/L	2.00		79.3	44-142	4.93	50
1,2-Diphenylhydrazine	1.89		0.750	ug/L	2.00		94.5	60-140	3.33	40
2,2'-Oxybis(1-chloropropane), bis(2-Chloro-1-methy	2.15		0.400	ug/L	2.00		107	60-140	1.71	40
2,4,5-Trichlorophenol	3.70		0.700	ug/L	4.00		92.4	60-140	9.71	40
2,4,6-Trichlorophenol	3.91		1.20	ug/L	4.00		97.7	37-144	9.24	58
2,4-Dichlorophenol	5.18		0.800	ug/L	4.00		129	39-135	9.91	50
2,4-Dimethylphenol	3.80		0.900	ug/L	4.00		94.9	32-120	3.33	58
2,4-Dinitrophenol	8.16		8.60	ug/L	10.0		81.6	0-191	0.127	132
2,4-Dinitrotoluene (2,4-DNT)	1.73		0.200	ug/L	2.00		86.4	39-139	3.67	42
2,6-Dinitrotoluene (2,6-DNT)	3.95	J1	1.80	ug/L	2.00		198	50-158	23.0	48
2-Chloronaphthalene	1.99		0.400	ug/L	2.00		99.3	60-120	10.0	24
2-Chlorophenol	3.92		0.500	ug/L	4.00		98.0	23-134	6.87	61
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylph	3.50		1.60	ug/L	4.00		87.6	0-181	4.18	203
2-Nitrophenol	3.39		0.700	ug/L	4.00		84.7	29-182	2.17	55
3,4-Methylphenol	5.47		1.40	ug/L	4.00		137	60-140	5.61	40
4-Bromophenyl phenyl ether (BDE-3)	2.10		0.300	ug/L	2.00		105	53-127	3.33	43
4-Chloro-3-methylphenol	3.76		0.700	ug/L	4.00		93.9	22-147	10.6	73
4-Chlorophenyl phenylether	2.02		0.700	ug/L	2.00		101	25-158	4.21	61
4-Nitrophenol	9.10		7.20	ug/L	10.0		91.0	0-132	6.04	131
Acenaphthene	1.66		0.300	ug/L	2.00		83.0	47-145	13.4	48
Acenaphthylene	2.27		0.200	ug/L	2.00		114	33-145	3.94	74
Anthracene	1.70		0.200	ug/L	2.00		85.0	27-133	2.24	66
Benzo(a)anthracene	1.78		0.300	ug/L	2.00		89.1	33-143	11.6	53
Benzo(a)pyrene	1.55		0.500	ug/L	2.00		77.3	17-163	6.36	72
Benzo(b)fluoranthene	1.68		0.200	ug/L	2.00		84.1	24-159	4.23	71
Benzo(g,h,i)perylene	1.65		0.400	ug/L	2.00		82.3	0-219	5.95	97
Benzo(k)fluoranthene	1.67		0.300	ug/L	2.00		83.4	11-162	6.85	63
bis(2-Chloroethoxy)methane	1.90		0.400	ug/L	2.00		94.8	33-184	10.9	54
bis(2-Chloroethyl) ether	1.73		0.600	ug/L	2.00		86.6	12-158	21.7	108
Bis(2-ethylhexyl) phthalate	1.89		1.50	ug/L	2.00		94.4	8-158	7.11	82
Butyl benzyl phthalate	1.71		0.400	ug/L	2.00		85.3	0-152	4.49	60
Chrysene	1.68		0.200	ug/L	2.00		84.2	17-168	7.41	87
Dibenzo(a,h)anthracene	1.73		0.500	ug/L	2.00		86.4	0-227	5.92	126
Diethyl phthalate	2.16		0.500	ug/L	2.00		108	0-120	3.74	100
Dimethyl phthalate	1.98		0.300	ug/L	2.00		98.9	0-120	11.8	183
Di-n-butyl phthalate	2.41		1.60	ug/L	2.00		120	1-120	3.49	47
Di-n-octyl phthalate	1.80		0.500	ug/L	2.00		90.2	4-146	8.21	69
Fluoranthene	1.64		0.300	ug/L	2.00		82.0	26-137	4.93	66
Fluorene	1.66		0.200	ug/L	2.00		82.9	59-121	5.14	38

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:38

Quality Control
 (Continued)

Semivolatile Organic Compounds by GCMS (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit
Batch: BEE3304 - EPA 625 LLE (Continued)									
LCS Dup (BEE3304-BSD2)					Prepared: 05/26/2021 Analyzed: 05/28/2021				
Hexachlorobenzene	1.38		0.200	ug/L	2.00	69.1	0-152	5.66	55
Hexachlorobutadiene	1.09		0.300	ug/L	2.00	54.3	24-120	4.61	62
Hexachlorocyclopentadiene	2.00		0.750	ug/L	2.00	100	60-140	2.18	40
Hexachloroethane	1.33		0.200	ug/L	2.00	66.6	40-120	9.28	52
Hexachlorophene	1.58		1.10	ug/L	2.00	79.0	60-140	6.53	40
Indeno(1,2,3-cd) pyrene	1.67		0.400	ug/L	2.00	83.4	0-171	6.98	99
Isophorone	1.79		0.300	ug/L	2.00	89.7	21-196	1.01	93
Naphthalene	1.62		0.300	ug/L	2.00	81.2	21-133	9.71	65
Nitrobenzene	2.02		0.400	ug/L	2.00	101	35-180	29.0	62
n-Nitrosodiethylamine	2.03		0.500	ug/L	2.00	102	60-140	3.11	40
n-Nitrosodimethylamine	1.29	J1	3.80	ug/L	10.0	12.9	60-140	39.6	40
n-Nitroso-di-n-butylamine	2.76		5.70	ug/L	2.00	138	60-140	0.371	40
n-Nitrosodi-n-propylamine	2.39		1.40	ug/L	2.00	119	0-230	66.5	87
n-Nitrosodiphenylamine	1.26		0.200	ug/L	2.00	62.9	60-140	13.3	40
Pentachlorobenzene	1.50		0.200	ug/L	2.00	74.8	60-140	1.75	40
Pentachlorophenol	3.15		1.40	ug/L	4.00	78.7	14-176	3.74	86
Phenanthrene	1.75		0.300	ug/L	2.00	87.7	54-120	4.16	39
Phenol, Total	4.19		1.50	ug/L	4.00	105	5-120	9.83	64
Pyrene	1.69		0.300	ug/L	2.00	84.7	52-120	1.42	49
<hr/>									
Surrogate: 2,4,6-Tribromophenol-surr			3.55	ug/L	4.00	88.8	60-140		
Surrogate: 2-Fluorobiphenyl-surr			1.81	ug/L	2.00	90.5	60-140		
Surrogate: 2-Fluorophenol-surr			3.57	ug/L	4.00	89.2	60-140		
Surrogate: Nitrobenzene-d5-surr			1.74	ug/L	2.00	87.2	60-140		
Surrogate: Phenol-d5-surr			3.89	ug/L	4.00	97.3	60-140		
Surrogate: p-Terphenyl-d14-surr			1.79	ug/L	2.00	89.7	60-140		

Matrix Spike (BEE3304-MS1)

Source: 21E3581-02

Prepared: 05/26/2021 Analyzed: 05/28/2021

1,2,4-Trichlorobenzene	1.62		0.300	ug/L	2.00	<0.300	81.0	44-142	
1,2-Diphenylhydrazine	1.61		0.750	ug/L	2.00	<0.750	80.5	60-140	
2,2'-Oxybis(1-chloropropane), bis(2-Chloro-1-methyl	2.01		0.400	ug/L	2.00	<0.400	101	60-140	
2,4,5-Trichlorophenol	3.23		0.700	ug/L	4.00	<0.700	80.8	60-140	
2,4,6-Trichlorophenol	4.16		1.20	ug/L	4.00	<1.20	104	37-144	
2,4-Dichlorophenol	5.22		0.800	ug/L	4.00	<0.800	130	39-135	
2,4-Dimethylphenol	4.20		0.900	ug/L	4.00	<0.900	105	32-120	
2,4-Dinitrophenol	8.03		8.60	ug/L	10.0	<8.60	80.3	0-191	
2,4-Dinitrotoluene (2,4-DNT)	1.45		0.200	ug/L	2.00	<0.200	72.3	39-139	
2,6-Dinitrotoluene (2,6-DNT)	2.99		1.80	ug/L	2.00	<1.80	150	50-158	
2-Chloronaphthalene	1.87		0.400	ug/L	2.00	<0.400	93.7	60-120	
2-Chlorophenol	3.91		0.500	ug/L	4.00	<0.500	97.8	23-134	
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylph	3.34		1.60	ug/L	4.00	<1.60	83.6	0-181	
2-Nitrophenol	4.12		0.700	ug/L	4.00	<0.700	103	29-182	
3,4-Methylphenol	6.03		1.40	ug/L	4.00	0.750	132	60-140	
4-Bromophenyl phenyl ether (BDE-3)	1.78		0.300	ug/L	2.00	<0.300	88.8	53-127	
4-Chloro-3-methylphenol	3.36		0.700	ug/L	4.00	<0.700	83.9	22-147	
4-Chlorophenyl phenylether	1.80		0.700	ug/L	2.00	<0.700	90.1	25-158	
4-Nitrophenol	7.31		7.20	ug/L	10.0	<7.20	73.1	0-132	

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:38

Quality Control
 (Continued)

Semivolatile Organic Compounds by GCMS (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
---------	--------	------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------

Batch: BEE3304 - EPA 625 LLE (Continued)

Matrix Spike (BEE3304-MS1)

Source: 21E3581-02

Prepared: 05/26/2021 Analyzed: 05/28/2021

Acenaphthene	1.41		0.300	ug/L	2.00	<0.300	70.6	47-145		
Acenaphthylene	2.09		0.200	ug/L	2.00	<0.200	104	33-145		
Anthracene	1.46		0.200	ug/L	2.00	<0.200	73.2	27-133		
Benzo(a)anthracene	1.62		0.300	ug/L	2.00	<0.300	80.9	33-143		
Benzo(a)pyrene	1.35		0.500	ug/L	2.00	<0.500	67.7	17-163		
Benzo(b)fluoranthene	1.52		0.200	ug/L	2.00	<0.200	76.0	24-159		
Benzo(g,h,i)perylene	1.44		0.400	ug/L	2.00	<0.400	72.0	0-219		
Benzo(k)fluoranthene	1.52		0.300	ug/L	2.00	<0.300	76.2	11-162		
bis(2-Chloroethoxy)methane	1.80		0.400	ug/L	2.00	<0.400	90.2	33-184		
bis(2-Chloroethyl) ether	1.62		0.600	ug/L	2.00	<0.600	80.8	12-158		
Bis(2-ethylhexyl) phthalate	1.43		1.50	ug/L	2.00	<1.50	71.6	8-158		
Butyl benzyl phthalate	1.48		0.400	ug/L	2.00	<0.400	74.0	0-152		
Chrysene	1.49		0.200	ug/L	2.00	<0.200	74.3	17-168		
Dibenzo(a,h)anthracene	1.50		0.500	ug/L	2.00	<0.500	75.0	0-227		
Diethyl phthalate	1.69		0.500	ug/L	2.00	<0.500	84.7	0-120		
Dimethyl phthalate	1.74		0.300	ug/L	2.00	<0.300	87.2	0-120		
Di-n-butyl phthalate	2.05		1.60	ug/L	2.00	<1.60	102	1-120		
Di-n-octyl phthalate	1.32		0.500	ug/L	2.00	<0.500	66.1	4-146		
Fluoranthene	1.45		0.300	ug/L	2.00	<0.300	72.7	26-137		
Fluorene	1.45		0.200	ug/L	2.00	<0.200	72.7	59-121		
Hexachlorobenzene	1.16		0.200	ug/L	2.00	<0.200	58.0	0-152		
Hexachlorobutadiene	1.15		0.300	ug/L	2.00	<0.300	57.6	24-120		
Hexachlorocyclopentadiene	2.67		0.750	ug/L	2.00	<0.750	134	60-140		
Hexachloroethane	1.24		0.200	ug/L	2.00	<0.200	61.8	40-120		
Hexachlorophene	1.30		1.10	ug/L	2.00	<1.10	65.2	60-140		
Indeno(1,2,3-cd) pyrene	1.44		0.400	ug/L	2.00	<0.400	72.2	0-171		
Isophorone	2.16		0.300	ug/L	2.00	<0.300	108	21-196		
Naphthalene	1.62		0.300	ug/L	2.00	<0.300	80.9	21-133		
Nitrobenzene	1.86		0.400	ug/L	2.00	<0.400	93.1	35-180		
n-Nitrosodiethylamine	1.94		0.500	ug/L	2.00	<0.500	97.1	60-140		
n-Nitrosodimethylamine	1.47	J1	3.80	ug/L	10.0	<3.80	14.7	60-140		
n-Nitroso-di-n-butylamine	2.48		5.70	ug/L	2.00	<5.70	124	60-140		
n-Nitrosodi-n-propylamine	2.43		1.40	ug/L	2.00	<1.40	122	0-230		
n-Nitrosodiphenylamine	2.94	J1	0.200	ug/L	2.00	<0.200	147	60-140		
Pentachlorobenzene	1.33		0.200	ug/L	2.00	<0.200	66.4	60-140		
Pentachlorophenol	2.74		1.40	ug/L	4.00	<1.40	68.5	14-176		
Phenanthrene	1.66		0.300	ug/L	2.00	<0.300	82.8	54-120		
Phenol, Total	4.29		1.50	ug/L	4.00	<1.50	107	5-120		
Pyrene	1.47		0.300	ug/L	2.00	<0.300	73.7	52-120		
<hr/>										
Surrogate: 2,4,6-Tribromophenol-surr			2.68	ug/L	4.00		67.1	60-140		
Surrogate: 2-Fluorobiphenyl-surr			1.63	ug/L	2.00		81.7	60-140		
Surrogate: 2-Fluorophenol-surr			3.38	ug/L	4.00		84.5	60-140		
Surrogate: Nitrobenzene-d5-surr			1.79	ug/L	2.00		89.4	60-140		
Surrogate: Phenol-d5-surr			3.88	ug/L	4.00		97.0	60-140		
Surrogate: p-Terphenyl-d14-surr			1.47	ug/L	2.00		73.5	60-140		

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:38

Quality Control
 (Continued)

Semivolatile Organic Compounds by GCMS (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BEE3304 - EPA 625 LLE (Continued)										
Matrix Spike Dup (BEE3304-MSD1)			Source: 21E3581-02			Prepared: 05/26/2021 Analyzed: 05/28/2021				
1,2,4-Trichlorobenzene	1.75		0.300	ug/L	2.00	<0.300	87.6	44-142	7.75	50
1,2-Diphenylhydrazine	1.69		0.750	ug/L	2.00	<0.750	84.5	60-140	4.83	40
2,2'-Oxybis(1-chloropropane), bis(2-Chloro-1-methy	2.31		0.400	ug/L	2.00	<0.400	115	60-140	13.6	40
2,4,5-Trichlorophenol	3.16		0.700	ug/L	4.00	<0.700	79.0	60-140	2.25	40
2,4,6-Trichlorophenol	4.16		1.20	ug/L	4.00	<1.20	104	37-144	0.0753	58
2,4-Dichlorophenol	5.59	J1	0.800	ug/L	4.00	<0.800	140	39-135	6.88	50
2,4-Dimethylphenol	4.56		0.900	ug/L	4.00	<0.900	114	32-120	8.17	58
2,4-Dinitrophenol	9.89		8.60	ug/L	10.0	<8.60	98.9	0-191	20.8	132
2,4-Dinitrotoluene (2,4-DNT)	1.51		0.200	ug/L	2.00	<0.200	75.5	39-139	4.34	42
2,6-Dinitrotoluene (2,6-DNT)	2.99		1.80	ug/L	2.00	<1.80	149	50-158	0.313	48
2-Chloronaphthalene	1.85		0.400	ug/L	2.00	<0.400	92.7	60-120	1.09	24
2-Chlorophenol	4.55		0.500	ug/L	4.00	<0.500	114	23-134	15.0	61
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylph	3.64		1.60	ug/L	4.00	<1.60	90.9	0-181	8.34	203
2-Nitrophenol	4.33		0.700	ug/L	4.00	<0.700	108	29-182	5.06	55
3,4-Methylphenol	2.80	J1	1.40	ug/L	4.00	0.750	51.2	60-140	73.3	40
4-Bromophenyl phenyl ether (BDE-3)	1.82		0.300	ug/L	2.00	<0.300	91.2	53-127	2.65	43
4-Chloro-3-methylphenol	3.45		0.700	ug/L	4.00	<0.700	86.4	22-147	2.85	73
4-Chlorophenyl phenylether	1.81		0.700	ug/L	2.00	<0.700	90.4	25-158	0.363	61
4-Nitrophenol	7.73		7.20	ug/L	10.0	<7.20	77.3	0-132	5.57	131
Acenaphthene	1.45		0.300	ug/L	2.00	<0.300	72.6	47-145	2.80	48
Acenaphthylene	2.24		0.200	ug/L	2.00	<0.200	112	33-145	7.09	74
Anthracene	1.53		0.200	ug/L	2.00	<0.200	76.3	27-133	4.07	66
Benzo(a)anthracene	1.64		0.300	ug/L	2.00	<0.300	82.2	33-143	1.65	53
Benzo(a)pyrene	1.38		0.500	ug/L	2.00	<0.500	69.0	17-163	1.81	72
Benzo(b)fluoranthene	1.57		0.200	ug/L	2.00	<0.200	78.3	24-159	2.94	71
Benzo(g,h,i)perylene	1.52		0.400	ug/L	2.00	<0.400	76.0	0-219	5.42	97
Benzo(k)fluoranthene	1.60		0.300	ug/L	2.00	<0.300	80.2	11-162	5.06	63
bis(2-Chloroethoxy)methane	2.14		0.400	ug/L	2.00	<0.400	107	33-184	17.1	54
bis(2-Chloroethyl) ether	1.72		0.600	ug/L	2.00	<0.600	86.2	12-158	6.53	108
Bis(2-ethylhexyl) phthalate	1.53		1.50	ug/L	2.00	<1.50	76.5	8-158	6.56	82
Butyl benzyl phthalate	1.49		0.400	ug/L	2.00	<0.400	74.4	0-152	0.635	60
Chrysene	1.54		0.200	ug/L	2.00	<0.200	77.0	17-168	3.63	87
Dibenzo(a,h)anthracene	1.60		0.500	ug/L	2.00	<0.500	80.2	0-227	6.73	126
Diethyl phthalate	1.65		0.500	ug/L	2.00	<0.500	82.6	0-120	2.44	100
Dimethyl phthalate	1.72		0.300	ug/L	2.00	<0.300	86.1	0-120	1.23	183
Di-n-butyl phthalate	2.14		1.60	ug/L	2.00	<1.60	107	1-120	4.28	47
Di-n-octyl phthalate	1.37		0.500	ug/L	2.00	<0.500	68.4	4-146	3.36	69
Fluoranthene	1.48		0.300	ug/L	2.00	<0.300	73.9	26-137	1.64	66
Fluorene	1.48		0.200	ug/L	2.00	<0.200	74.1	59-121	1.89	38
Hexachlorobenzene	1.15		0.200	ug/L	2.00	<0.200	57.5	0-152	0.806	55
Hexachlorobutadiene	1.26		0.300	ug/L	2.00	<0.300	63.1	24-120	9.18	62
Hexachlorocyclopentadiene	2.85	J1	0.750	ug/L	2.00	<0.750	143	60-140	6.42	40
Hexachloroethane	1.49		0.200	ug/L	2.00	<0.200	74.6	40-120	18.7	52
Hexachlorophene	1.30		1.10	ug/L	2.00	<1.10	65.0	60-140	0.323	40
Indeno(1,2,3-cd) pyrene	1.53		0.400	ug/L	2.00	<0.400	76.6	0-171	5.88	99
Isophorone	2.50		0.300	ug/L	2.00	<0.300	125	21-196	14.7	93

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
 20025 Morris Avenue
 Manvel, TX 77578

Reported:
 06/21/2021 14:38

Quality Control
 (Continued)

Semivolatile Organic Compounds by GCMS (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BEE3304 - EPA 625 LLE (Continued)										
Matrix Spike Dup (BEE3304-MSD1)			Source: 21E3581-02			Prepared: 05/26/2021 Analyzed: 05/28/2021				
Naphthalene	1.77		0.300	ug/L	2.00	<0.300	88.3	21-133	8.74	65
Nitrobenzene	2.09		0.400	ug/L	2.00	<0.400	105	35-180	11.7	62
n-Nitrosodiethylamine	1.99		0.500	ug/L	2.00	<0.500	99.3	60-140	2.28	40
n-Nitrosodimethylamine	1.47	J1	3.80	ug/L	10.0	<3.80	14.7	60-140	0.552	40
n-Nitroso-di-n-butylamine	3.33	J1	5.70	ug/L	2.00	<5.70	166	60-140	29.3	40
n-Nitrosodi-n-propylamine	2.59		1.40	ug/L	2.00	<1.40	129	0-230	6.12	87
n-Nitrosodiphenylamine	0.839	J1	0.200	ug/L	2.00	<0.200	42.0	60-140	111	40
Pentachlorobenzene	1.38		0.200	ug/L	2.00	<0.200	68.9	60-140	3.79	40
Pentachlorophenol	2.75		1.40	ug/L	4.00	<1.40	68.8	14-176	0.361	86
Phenanthrene	1.69		0.300	ug/L	2.00	<0.300	84.7	54-120	2.27	39
Phenol, Total	5.09	J1	1.50	ug/L	4.00	<1.50	127	5-120	16.9	64
Pyrene	1.51		0.300	ug/L	2.00	<0.300	75.7	52-120	2.77	49
<hr/>										
Surrogate: 2,4,6-Tribromophenol-surr			2.72	ug/L	4.00		68.1	60-140		
Surrogate: 2-Fluorobiphenyl-surr			1.68	ug/L	2.00		84.2	60-140		
Surrogate: 2-Fluorophenol-surr			4.07	ug/L	4.00		102	60-140		
Surrogate: Nitrobenzene-d5-surr			2.03	ug/L	2.00		101	60-140		
Surrogate: Phenol-d5-surr			4.55	ug/L	4.00		114	60-140		
Surrogate: p-Terphenyl-d14-surr			1.47	ug/L	2.00		73.4	60-140		

* A = Accredited, N = Not Accredited or Accreditation not available



130 S. Trade Center Parkway, Conroe TX 77385
Tel: (936) 321-6060
Email: lab@nwdls.com
www. NWDLS.com
TCEQ T104704238-21-33
TCEQ-TOX T104704202-20-14

City of Manvel
20025 Morris Avenue
Manvel, TX 77578

Reported:
06/21/2021 14:38

Sample Condition Checklist

Work Order: 21E3581

Check Points

No	Custody Seals
No	Containers Intact
No	COC/Labels Agree
No	Received On Ice
No	Appropriate Containers
No	Appropriate Sample Volume
No	Coolers Intact
No	Samples Accepted

* A = Accredited, N = Not Accredited or Accreditation not available



City of Manvel
20025 Morris Avenue
Manvel, TX 77578

Reported:
06/21/2021 14:38

Term and Qualifier Definitions

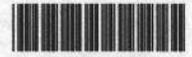
Item	Definition
J1	Estimated value - The reported value is outside the established quality control criteria for accuracy and/or precision.
S	The surrogate recovery was outside the established laboratory recovery limit.
U	Non-detected compound.
RPD	Relative Percent Difference
%REC	Percent Recovery
Source	Sample that was matrix spiked or duplicated
*	A = Accredited, N = Not Accredited or Accreditation not available
DF	Dilution Factor - the factor applied to the reported data due to sample preparation, dilution, or moisture content
MDL	Method Detection Limit - The minimum concentration of a substance (or analyte) that can be measured and reported with 99% confidence that the analyte concentration is greater than zero. Based on standard deviation of replicate spiked samples take through all steps of the analytical procedure following 40 CFR Part 136 Appendix B.
SDL	Sample Detection Limit - The minimum concentration of a substance (analyte) that can be measured and reported with 99% confidence that the analyte concentration is greater than zero. The SDL is an adjusted limit thus sample specific and accounts for preparation weights and volumes, dilutions, and moisture content of soil/sediments. If there are no sample specific parameters, the MDL = SDL.
MRL	Method Reporting Limit - Analyte concentration that corresponds to the lowest level lab reports with confidence in accuracy of quantitation and without qualification (i.e. J-flagged). The MRL is at or above the lowest calibration standard.
LRL	Laboratory Reporting Limit - Analyte concentration that corresponds to the lowest level lab reports with confidence in accuracy of quantitation and without qualification (i.e. J-flagged). The LRL is an adjusted limit thus sample specific and accounts for preparation weights and volumes, dilutions, and moisture content of soil/sediments. If there are no sample specific parameters, the MRL = LRL.

* A = Accredited, N = Not Accredited or Accreditation not available



CHAIN OF CUSTODY RECORD

North Water District Laboratory Services
 130 S. Trade Center Pkwy, Conroe Tx 77385
 (936) 321-6060 - lab@nwdls.com



Page 1 of 3

21E3581

TCEQ T104704238-21-33 TCEQ-TOX T104704202-20-14

City of Manvel Ray Word 20025 Morris Avenue Manvel, TX 77578 Phone: (832) 343-8896	Project Name : City of Manvel - Permit Renewal		Schedule Comments:
	Project Comments: DO reading must be recorded before 9am Mark out Duplicated Outfall samples on the regular chain		

Sample ID	Collection Point	Date/Time Begin	Date/Time Sampled	Sample Type	Container	Analysis/Preservation	Field Results
21E3581-01	Outfall 001		5/25/2021 / 8:25	AQ Grab	A HDPE 250mL NaOH B HDPE S250mL Na2S2O3 C Glass Wide 1L w/ Teflon-lined Lid D HDPE S250mL Na2S2O3	ENT-ASTMD6503 Na2S2O3 <10°C TG-EC-9223 Na2S2O3 <10°C CN AMEN-4500 NaOH 4°C CN T-4500 NaOH 4°C O&G-1664 HCl 4°C	DO Field <u>7.00</u> Flow MGD Field <u>560.9</u> pH Field <u>7.30</u> Total Chlorine <u>0.00</u> Residual WW Field

~~ENT~~ & Ecoli Moved to Thursday



CHAIN OF CUSTODY RECORD

North Water District Laboratory Services
 130 S. Trade Center Pkwy, Conroe Tx 77385
 (936) 321-6060 - lab@nwdls.com



21E3581

(Continued)

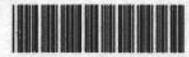
TCEQ T104704238-21-33 TCEQ-TOX T104704202-20-14

City of Manvel Ray Word 20025 Morris Avenue Manvel, TX 77578 Phone: (832) 343-8896		Project Name : City of Manvel - Permit Renewal		Schedule Comments:			
		Project Comments: DO reading must be recorded before 9am Mark out Duplicated Outfall samples on the regular chain					
21E3581-02	Outfall 001 Sampler	5-24-21 / 5:00	5/25/2021 / 5:00	AQ 24HR Comp	A HDPE 250mL AAHDPE 1L B Amber 1L w/ Teflon-lined Lid C Amber 1L w/ Teflon-lined Lid D HDPE 1L E PreCleaned HDPE 250mL HNO3 F HDPE 250mL G Glass VOA 60mL H Glass VOA 60mL I Glass VOA 60mL J HDPE 250mL K HDPE 250mL H2SO4 L Amber 250mL w/ Teflon-lined Lid M Amber 250mL w/ Teflon-lined Lid N Amber 250mL w/ Teflon-lined Lid O Amber 250mL w/ Teflon-lined Lid P Amber 1L w/ Teflon-lined Lid Q Amber 1L w/ Teflon-lined Lid R Amber 1L w/ Teflon-lined Lid S Amber 1L w/ Teflon-lined Lid T Amber 250mL w/ Teflon-lined Lid U Amber 250mL w/ Teflon-lined Lid V Amber 250mL w/ Teflon-lined Lid W Amber 250mL w/ Teflon-lined Lid X HDPE 250mL Y HDPE 250mL H2SO4 Z HDPE 250mL H2SO4	Aluminum ICPMS 200.8 HNO3 Antimony ICPMS 200.8 HNO3 Arsenic ICPMS 200.8 HNO3 Barium ICPMS 200.8 HNO3 Beryllium ICPMS 200.8 HNO3 Cadmium ICPMS 200.8 HNO3 Chromium ICPMS 200.8 HNO3 Copper ICPMS 200.8 HNO3 Lead ICPMS 200.8 HNO3 LPR Metals [Group Analysis] Nickel ICPMS 200.8 HNO3 Selenium ICPMS 200.8 HNO3 Silver ICPMS 200.8 HNO3 Thallium ICPMS 200.8 HNO3 Zinc ICPMS 200.8 HNO3 HERB-6640 4°C Nonylphenol-D7065 4°C OCP-608 4°C OPP-1657 4°C PCB-608 4°C SVOA-625 4°C Alkalinity-2320 4°C Carbaryl-Diuron-632 4°C CBOD-5210 4°C Chloride IC 300.0 4°C Conductivity-2510 4°C Cr III ICPMS [Group Analysis] Cr VI-D 3500 4°C Fluoride IC 300.0 4°C LPR Anions [Group Analysis] NH3-N SEAL-350.1 H2SO4 4°C Nitrate as N IC 300.0 4°C Nitrite as N IC 300.0 4°C Sulfate IC 300.0 4°C TDS-2540 4°C TKN T-4500 C H2SO4 4°C Total Phosphorus-4500 H2SO4 4°C TSS-2540 4°C	



CHAIN OF CUSTODY RECORD

North Water District Laboratory Services
 130 S. Trade Center Pkwy, Conroe Tx 77385
 (936) 321-6060 - lab@nwdls.com



Page 3 of 3

21E3581

(Continued)

TCEQ T104704238-21-33 TCEQ-TOX T104704202-20-14

City of Manvel Ray Word 20025 Morris Avenue Manvel, TX 77578 Phone: (832) 343-8896		Project Name : City of Manvel - Permit Renewal						Schedule Comments:	
		Project Comments: DO reading must be recorded before 9am Mark out Duplicated Outfall samples on the regular chain							
21E3581-03	Outfall 001 3 Part Grab		5/25/2021 / 8:30	AQ Grab	A Glass VOA 40mL HCl pH<2 B Glass VOA 40mL HCl pH<2 C Glass VOA 40mL HCl pH<2 D Glass VOA 40mL E Glass VOA 40mL F Glass VOA 40mL G Glass 4oz Boston Round	LL Hg-1631 Composite VOA	BrCl 4°C		
21E3581-04	Outfall 001 3 Part Grab		5/25/2021	AQ Grab 3-Part Cor		VOA-624	4°C		
21E3581-05	18 Mohm DI		5/25/2021	AQ Grab	A Glass 4oz Boston Round	LL Hg-1631	BrCl		

Field Remarks:		Preservation: H2SO4 HNO3 NaOH Other: _____	
Sampler (Signature) <i>Jose Gutierrez</i>	Relinquished By: (Signature)	Date/Time	Received By: (Signature)
Print Name <i>Jose Gutierrez</i>	Relinquished By: (Signature)	Date/Time	Received By: (Signature)
Affiliation <i>NWDLS</i>	Relinquished To Lab By: (Signature) <i>Jose Gutierrez</i>	Date/Time <i>5-25-21/14:20</i>	Received for Laboratory By: (Signature) <i>SMC</i>
Custody Seal: Yes / No	COC Labels Agree: Yes / No	Appropriate Volume: Yes / No	Received on Ice: Yes / No
Container Intact: Yes / No	Appropriate Containers: Yes / No	Coolers Intact: Yes / No	Samples Accepted: Yes / No
			Temperature: _____ °C
			Thermometer ID: _____

Alvin

wko_NWDLS_COC_LS version 4: 02/22/2021

Project
967139

Printed 06/10/2021 9:38

NWDS-G

North Water District Laboratory
 Deena McDaniel
 130 S Trade Center Parkway
 Conroe, TX 77385

TABLE OF CONTENTS

21E3581

This report consists of this Table of Contents and the following pages:

<u>Report Name</u>	<u>Description</u>	<u>Pages</u>
967139_r03_03_ProjectResults	Ana-Lab Project P:967139 C:NWDS Project Results t:304 PO: #26201	2
967139_r10_05_ProjectQC	Ana-Lab Project P:967139 C:NWDS Project Quality Control Groups	1
967139_r99_09_CoC__1_of_1	Ana-Lab CoC NWDS 967139_1_of_1	2
Total Pages:		5

Email: projectmanger@ana-lab.com



Report Page 1 of 6

NWDS-G

North Water District Laboratory
 Deena McDaniel
 130 S Trade Center Parkway
 Conroe, TX 77385

Project
967139

Printed: 06/10/2021

21E3581

RESULTS

Sample Results

1991126	21E3581-02					Received:	05/27/2021
Non-Potable Water	Collected by: Client	North Water District				PO:	#26201
	Taken: 05/25/2021	05:00:00					
<hr/>							
EPA 632		Prepared: 954355	05/28/2021	07:00:00	Analyzed 955866	06/03/2021	14:09:00 BRU
Parameter	Results	Units	RL	Flags	CAS	Bottle	
NELAC Carbaryl (Sevin)	<2.71	ug/L	2.71	D	63-25-2	03	
z Diuron	<0.0487	ug/L	0.0487	D	330-54-1	03	

Sample Preparation

1991126	21E3581-02					Received:	05/27/2021
	05/25/2021						#26201
<hr/>							
		Prepared:	05/28/2021	10:42:53	Calculated	05/28/2021	10:42:53 CAL
z Environmental Fee (per Project)		Verified					
<hr/>							
EPA 632		Prepared: 954355	05/28/2021	07:00:00	Analyzed 954355	05/28/2021	07:00:00 MCC
Liquid-Liquid Extr. W/Hex Ex	1/924	ml					02
EPA 632		Prepared: 954355	05/28/2021	07:00:00	Analyzed 955866	06/03/2021	14:09:00 BRU
<hr/>							
NELAC Carbaryl/Diuron		Entered					03



NWDS-G

North Water District Laboratory
Deena McDaniel
130 S Trade Center Parkway
Conroe, TX 77385

Project
967139

Printed: 06/10/2021

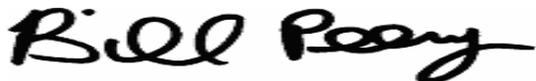
Qualifiers:

D - Duplicate RPD was higher than expected

We report results on an As Received (or Wet) basis unless marked 'Dry Weight'. Unless otherwise noted, testing was performed at Ana-lab corporate laboratory which holds International, Federal, and state accreditations. Please see <https://www.ana-lab-work.com/index.php/accreditations/>

These analytical results relate to the sample tested. This report may NOT be reproduced EXCEPT in FULL without written approval of Ana-Lab Corp. Unless otherwise specified, these test results meet the requirements of NELAC.

RL is the Reporting Limit (sample specific quantitation limit) and is at or above the Method Detection Limit (MDL). CAS is Chemical Abstract Service number. RL is our Reporting Limit, or Minimum Quantitation Level. The RL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL), and any dilutions and/or concentrations performed during sample preparation (EQL). Our analytical result must be above this RL before we report a value in the 'Results' column of our report (without a 'J' flag). Otherwise, we report ND (Not Detected above RL), because the result is "<" (less than) the number in the RL column. MAL is Minimum Analytical Level and is typically from regulatory agencies. Unless we report a result in the result column, or interferences prevent it, we work to have our RL at or below the MAL.



Bill Peery, MS, VP Technical Services



NWDS-G

North Water District Laboratory
 Deena McDaniel
 130 S Trade Center Parkway
 Conroe, TX 77385

Project

967139

Printed 06/10/2021

Analytical Set **955866**

EPA 632

Blank

<u>Parameter</u>	<u>PrepSet</u>	<u>Reading</u>	<u>MDL</u>	<u>MQL</u>	<u>Units</u>	<u>File</u>
Carbaryl (Sevin)	954355	ND	66.1	2500	ug/L	122377363
Diuron	954355	ND	44.4	45.0	ug/L	122377363

CCV

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Carbaryl (Sevin)	1020	1000	ug/L	102	70.0 - 130	122377362
Carbaryl (Sevin)	1030	1000	ug/L	103	70.0 - 130	122377369
Carbaryl (Sevin)	1060	1000	ug/L	106	70.0 - 130	122377375
Carbaryl (Sevin)	1050	1000	ug/L	105	70.0 - 130	122377378
Diuron	993	1000	ug/L	99.3	70.0 - 130	122377362
Diuron	1000	1000	ug/L	100	70.0 - 130	122377369
Diuron	1010	1000	ug/L	101	70.0 - 130	122377375
Diuron	993	1000	ug/L	99.3	70.0 - 130	122377378

LCS Dup

<u>Parameter</u>	<u>PrepSet</u>	<u>LCS</u>	<u>LCSD</u>	<u>Known</u>	<u>Limits%</u>	<u>LCS%</u>	<u>LCSD%</u>	<u>Units</u>	<u>RPD</u>	<u>Limit%</u>
Carbaryl (Sevin)	954355	505	717	1000	17.1 - 131	50.5	71.7	ug/L	34.7 *	30.0
Diuron	954355	621	413	1000	0.100 - 138	62.1	41.3	ug/L	40.2 *	30.0

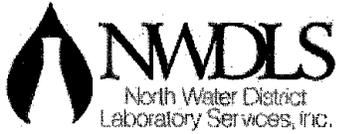
* Out RPD is Relative Percent Difference: $\text{abs}(r_1-r_2) / \text{mean}(r_1,r_2) * 100\%$

Recover% is Recovery Percent: $\text{result} / \text{known} * 100\%$

Blank - Method Blank; CCV - Continuing Calibration Verification



1
2
3
4



SUBCONTRACT ORDER

Sending Laboratory:

North Water District Laboratory Services, Inc.
 130 South Trade Center Parkway
 Conroe, TX 77385
 Phone: 936-321-6060
 Fax: 936-321-6061

Project Manager: Deena Higginbotham

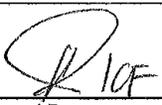
Subcontracted Laboratory:

Ana-Lab Corporation
 2600 Dudley Road
 Kilgore, TX 75662
 Phone: (903) 984-0551
 Fax: (903) 984-5914

Work Order: 21E3581

1991126

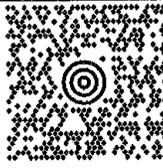
Analysis	Due	Expires	Comments
Sample ID: 21E3581-02 Waste Water Sampled: 05/25/2021 05:00			
Carbaryl-Diuron-632	06/08/2021	06/01/2021 05:00	
<i>Analyte(s):</i> Carbaryl	Diuron		
<i>Containers Supplied:</i>			

	<u>5-20-21</u>		<u>5-20-21</u>
Released By	Date	Received By	Date
WPS	5/27/21		5/27/21

See Attached for Tracking # and Temp

1
2
3
4

967139 CoC Print Group 001 of 001

APRIL L. CANADY 9363216060 NWDLS 130 SOUTH TRADE CENTER CONROE TX 77385		8 LBS	1 OF 1
SHIP TO: LOG-IN 9039840551 ANA-LAB 2600 DUDLEY RD KILGORE TX 75662			
	TX 756 0-32 		
UPS NEXT DAY AIR			1
TRACKING #: 1Z 12W 40V 01 9416 2718			
			
BILLING: P/P			
			

5/27 1039 *K*
Date Time Tech
Temp: 0.3/0.4 C
Therm#: 6448 Corr Fact: 0.1 C