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TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

November 8, 2023

Laurie Gharis
Texas Commission on Environmental Quality
Office of the Chief Clerk, MC-105
P.O. Box 13087
Austin, Texas 78711-3087

Re: Application by Undine Texas Environmental, LLC
TPDES Permit No. WQ0016046001
TCEQ Docket No. 2023-0163-MWD
SOAH Docket No. 582-23-20937

Dear Ms. Gharis:

I have enclosed the following revised technical documents to be included in the administrative record for the above-referenced case.

Sincerely,

A handwritten signature in cursive script that reads "Kathy J. Humphreys".

Kathy Humphreys
Staff Attorney
TCEQ Environmental Law Division

PERMIT REVIEW CHECKLIST
TCEQ WATER QUALITY ASSESSMENT TEAM
WATER QUALITY ASSESSMENT SECTION
WATER QUALITY DIVISION

Owner: Undine Texas Environmental, LLC
TPDES Permit Number: WQ0016046001 (TX0141771)
Permit Action: Renewal New New/Replace Expired Amendment
Other Review: Preliminary Review SRF Review
County: Brazoria
Segment Number: 1105
Received Date: 02/01/2022 (10/18/2023 updated with the revised standard worksheet)
Completion Date: 02/08/2022 (10/18/2023)
Discharge Route: Angleton Drainage District Ditch 7 to Angleton Drainage District Ditch 22 to Bastrop Bayou Tidal (Segment 1105)

1. **Previous analysis:** No Yes Date: New Permit
2. **Segment 303(d)-listed:** No Yes List Date: 2020
Dissolved Oxygen Impairment? No Yes
Bacteria in water
1105_01 From the confluence with Bastrop Bay 1.1 km (0.7 mi) downstream of the Intracoastal Waterway in Brazoria County to a point 8.6 km (5.3 mi) upstream of Business 288 at Lake Jackson in Brazoria County
3. **Approved TMDL:** No Yes Include language in memo if for DO
4. **Waste Load Evaluation (WLE):** No Yes
5. **Tidal:**
Is initial receiving water tidal? No Yes Is the Segment tidal? No Yes
6. **Discharge Directly to a Lake:** No Yes
7. **Watershed Protection rules apply:** No Yes N/A
 30 TAC CHAPTER 311 Watershed Protection rules
 30 TAC §§309.3(c) within 5 miles upstream of lake or reservoir that may be used as source for public drinking water supply 10/15/--/4 or 30/90/--/4 for pond plants
8. **Edwards Aquifer Rules apply:** No Yes
Within or near: Recharge Zone Contributing Zone Transition Zone
9. **DO criteria from Standards Implementation Team Worksheet:**
Angleton Drainage District Ditch 7: 3.0 mg/L
Angleton Drainage District Ditch 22 (non-tidal): 3.0 mg/L
Angleton Drainage District Ditch 22 (tidal): 4.0 mg/L
Segment 1105: 4.0 mg/L

10. **Existing effluent limits:** N/A, New Permit
11. **Effluent analysis** oxygen demanding and related constituent concentrations: N/A, New Permit.

12. **Proposed wastewater flow and quality:**

Phase:	Interim I	Interim II	Final
Q	= 0.0625MGD	= 0.125 MGD	= 0.25 MGD
CBOD ₅	= 10 mg/L	= 10 mg/L	= 10 mg/L
TSS	= 15 mg/L	= 15 mg/L	= 15 mg/L
NH ₃ -N	= 3 mg/L	= 3 mg/L	= 3 mg/L
DO*	= 2 mg/L	= 2 mg/L	= 2 mg/L

*: based on the SOPs, the min DO for 10 mg/L CBOD₅ is 4 mg/L, so the set 10/3/4 will be a start set for the model.

13. **Basis for analysis:**

- QUAL-TX model DOS BOX
- QUAL-TX for Windows model
- QUAL-TX model from WLE
- CSTR model
- LA-QUAL model
- WASP model
- QUAL2K model
- Best Professional Judgment (BPJ)

14. **Effluent flow path and distances for modeling:**

Angleton Drainage District Ditch 7 approx. 0.7 km to Angleton Drainage District Ditch 22 (non-tidal) approx. 3.0 km to Angleton Drainage District Ditch 22 (tidal) approx. 0.7 km to Segment.

15. **Other dischargers** to consider: None

16. **Headwater flow** ($\geq 7Q_2$): Table 4 applies? Yes (Freshwater streams, Apr – Oct only) No
0.0 cfs for Angleton Drainage District Ditch 7 & 22 above tidal (2 DO criterion)

17. **Hydraulics:**

No information provided in the application, used default values for fresh water reaches:
a = 0.131 b = 0.500 c = 0.720 d = 0.400

Pool 1 about 0.4 km downstream of the discharge point:

L=33 m, w=4.1 m, d=0.5 m (estimated)

a = 0.487 b = 1.0 c = 0.0 d = 0.0 e=0.5 K₂=Kl/D=1.0/0.5=2.0 SOD=0.72

Pool 2:

L=29 m, w=7.5 m, d=0.3 m (estimated)

a = 0.444 b = 1.0 c = 0.0 d = 0.0 e=0.3 K₂=Kl/D=1.0/0.3=3.33 SOD=0.78

Constant Depth-Width for Angleton Drainage District Ditch 22 tidal

L=700 m, w=19.7 m, d=1.0 m (estimated)

a = 0.0508 b = 1.0 c = 0.0 d = 0.0 e=1.0 K₂=Kl/D=1.25/1.0=1.25 SOD=0.96

Data pulled from SWQM stations 18502 (upstream) and 18503 (downstream) at Bastrop Bayou Tidal shows median summer salinity of 1.0 ppt. Standards classifies 'saltwater' as having a salinity of > 2 ppt in a significant portion of the water column.

Default temperature (30.5 °C) and salinity (0.5 ppt) were used.

18. **Modeling Results:**

DO Criteria (mg/L): **3.0/ 3.0** 4.0
Angleton Drainage District Ditch 7 /22 ADD Ditch 22 tidal

<u>Flow</u>	<u>Effluent Set</u>	<u>Minimum DO (mg/L)</u>	<u>Minimum DO (mg/L)</u>
0.25 MGD	1.3/0.05/6.0	6.00 OK Initial.	5.90-6.08(Initialization) OK
0.0625 MGD	10/3/4.0	4.93 OK /5.88 OK	5.82 OK
0.125 MGD	10/3/4.0	4.49 OK /5.43 OK	5.49 OK
0.25 MGD	10/3/4.0	4.22 OK /4.85 OK	5.03 OK*

Note: Up to 0.2 mg/L below the DO criterion is considered consistent

*Effluent at end of model is back to background or better (0.79/0.00/5.92)

19. **Recommended limits:**

Phase:	Interim I	Interim II	Final
Q	= 0.0625MGD	=0.125 MGD	= 0.25 MGD
CBOD ₅	= 10 mg/L	= 10 mg/L	= 10 mg/L
NH ₃ -N	= 3 mg/L	= 3 mg/L	= 3 mg/L
DO	= 4 mg/L	= 4 mg/L	= 4 mg/L

20. **WQMP status:** Consistent With Update required N/A

21. **Files saved as:**
16046001NL.INP & 16046001.INP

22. **Documentation:**

Modeling file with memo (*include standards worksheet*)

WQMP Coordinator: (any permit that requires modification of WLAs in WQMP or TMDL database; include flow information for all outfalls and all phases)

Municipals: for WQMP new and amend, name change, add monitoring req, segment change)

Municipals: TMDL completed for any constituent, renewal with change in name (paper copy only) new or amend permits (paper and electronic copies)

Industrials: TMDL completed for any constituent, renewal with change in flow or name (paper copy only;) new or amend permits (paper and electronic copies)

WQMP packet: *some municipal permits; provide electronic copy (memo and model input) and hard copy (memo, worksheet, map); not for more stringent effluent limits or <0.2 MGD with uncalibrated (default) QUAL-TX model; see memowqmp.doc for memo language)*

TMDL team

TMDL underway for DO only, new or amend permits; email memo)

TMDL completed for any constituent, new or amend permits; email memo)

Copy memo to I:\Permrev\WWTP\Section Permit Memos\Modeling

Notify Team Leader if:

<5/2/6 limits for municipal

NH₃-N limit < 2 mg/L

No effluent limits can be recommended

Recommend addition of DO monitoring for an industrial permit

Update the Water Quality Application Tracking Database with modeling review assigned date, memo date, modeling review end date, modeling review comments if any, reviewer begin date for the next reviewer and peer review assigned date if any. Enter a new record for Supersedes memo.

Update the WQMP tab in the Water Quality Application Tracking Database (*municipal renewals only or amend with no changes in loadings; also for new replacing expired if consistent with expired permit – include note to that effect*)

Permit file with memo to biomonitoring reviewer or municipal/industrial permits team leader as appropriate (*sign/date blue sheet*)

23. **Permit Review by:**

Xing Lu

Xing Lu

02/08/2022
Date

TCEQ Interoffice Memorandum

To: Municipal Permits Team
Wastewater Permitting Section

Thru: Josi Robertson
Modeler, Water Quality Assessment Team
Water Quality Assessment Section

From: Xing Lu, P.E. *Xing Lu*
Modeler, Water Quality Assessment Team
Water Quality Assessment Section

Date: October 18, 2023

Subject: Undine Texas Environmental, LLC
New Permit (WQ0016046001, TX0141771)
Discharge into a tributary of Bastrop Bayou Tidal (Segment No. 1105)

This memo supersedes the memo dated February 8, 2022.

The referenced applicant is seeking a permit authorizing the discharge of treated domestic wastewater into the watershed of Bastrop Bayou Tidal (Segment No. 1105). A dissolved oxygen analysis of the referenced discharge was conducted using an uncalibrated QUAL-TX model for the proposed Interim I flow phase of 0.0625 MGD, an Interim II flow phase of 0.125 MGD, and a Final flow phase of 0.25 MGD. The facility is located in Brazoria County.

Based on model results, the effluent limits set of **10 mg/L CBOD₅, 3 mg/L NH₃-N, and 4.0 mg/L dissolved oxygen** is predicted to be adequate to maintain the dissolved oxygen levels above the criteria stipulated by the Standards Implementation Team for Angleton Drainage District Ditch 7 (**3.0 mg/L**), Angleton Drainage District Ditch 22 (non-tidal) (**3.0 mg/L**), and Angleton Drainage District Ditch 22 (tidal) (4.0 mg/L).

Coefficients and kinetics used in the model are a combination of estimated and standardized default values. The results of this evaluation can be reexamined upon receipt of information that conflicts with the assumptions employed in this analysis.

Segment No. 1105 is currently listed on the State's inventory of impaired and threatened waters (the 2020 Clean Water Act Section 303(d) list). The list is for bacteria in water from the confluence with Bastrop Bay 1.1 km (0.7 mi) downstream of the Intracoastal Waterway in Brazoria County to a point 8.6 km (5.3 mi) upstream of Business 288 at Lake Jackson in Brazoria County (AU 1105_01).

The effluent limits recommended above have been reviewed for consistency with the State of Texas Water Quality Management Plan (WQMP). The proposed limits are not contained in the approved WQMP. However, these limits will be included in the next WQMP update.

TCEQ Interoffice Memorandum

To: Municipal Permits Team
Wastewater Permitting Section

Thru: Peter Schaefer, Standards Implementation Team Leader
Water Quality Assessment Section
Water Quality Division

From: M. A. Wallace, PhD, Standards Implementation Team *MAW* 10/17/23
Water Quality Assessment Section
Water Quality Division

Date: 10/17/2023

Subject: Undine Texas Environmental, LLC; Permit No. WQ0016046001
New; Application Received: 9/24/2021

This memo supersedes my memo dated 1/21/2022.

The discharge route for the above referenced permit is via pipe to Angleton Drainage District Ditch 7, thence to Angleton Drainage District Ditch 22, thence to Bastrop Bayou Tidal in Segment 1105 of the San Jacinto – Brazos Coastal Basin. The designated uses and dissolved oxygen criterion as stated in Appendix A of the Texas Surface Water Quality Standards (30 Texas Administrative Code §307.10) for Segment 1105 are primary contact recreation, high aquatic life use, and 4.0 mg/L dissolved oxygen.

Since the discharge is directly to an unclassified water body, the permit action was reviewed in accordance with 30 Texas Administrative Code §307.4(h) and (l) of the 2018 Texas Surface Water Quality Standards and the TCEQ's implementation procedures for the standards. Based on a receiving water assessment and/or other available information, a preliminary determination of the aquatic life uses in the area of the discharge impact has been performed and the corresponding dissolved oxygen criterion assigned.

Angleton Drainage District Ditch 7; limited aquatic life use; 3.0 mg/L dissolved oxygen.

Angleton Drainage District Ditch 22 (non-tidal); limited aquatic life use; 3.0 mg/L dissolved oxygen.

Angleton Drainage District Ditch 22 (tidal); high aquatic life use; 4.0 mg/L dissolved oxygen.

In accordance with 30 Texas Administrative Code §307.5 and the TCEQ implementation procedures (June 2010) for the Texas Surface Water Quality Standards, an antidegradation review of the receiving waters was performed. A Tier 1 antidegradation review has preliminarily determined that existing water quality uses will not be impaired by this permit action. Numerical and narrative criteria to protect existing uses will be maintained. A Tier 2 review has preliminarily determined that no significant degradation of water quality is expected in Angleton Drainage District Ditch 22's tidal reach and Bastrop Bayou Tidal, which have been identified as having high aquatic life uses. Existing uses will be maintained and protected. The preliminary determination can be reexamined and may be modified if new information is received.

The discharge from this permit action is not expected to have an effect on any federal endangered or threatened aquatic or aquatic dependent species or proposed species or their critical habitat. This determination is based on the United States Fish and Wildlife Service's (USFWS) biological opinion on the State of Texas authorization of the Texas Pollutant Discharge Elimination System (TPDES; September 14, 1998; October 21, 1998 update). To make this determination for TPDES permits, TCEQ and EPA only considered aquatic or aquatic dependent species occurring in watersheds of critical concern or high priority as listed in Appendix A of the USFWS biological opinion. Though the piping plover, *Charadrius melodus* Ord, can occur in Brazoria County, the county is north of Copano Bay and not a watershed of high priority per Appendix A of the biological opinion. The determination is subject to reevaluation due to subsequent updates or amendments to the biological opinion. The permit does not require EPA review with respect to the presence of endangered or threatened species.

New Permit Review for Unclassified Waters by Standards Imp. Team

Name: Undine Texas Environmental, LLC

Number: 16046001

County: Brazoria

Region: 12

Basin: San Jacinto – Brazos Coastal

Date Application Received: 9/24/21

1. Segment in Which Discharge is Located: 1105 – Bastrop Bayou Tidal
2. Designated Uses and Pertinent Criteria: PCR, H, 4.0 mg/L DO
3. Unclassified Receiving Water Characteristics: via pipe → Angleton Drainage District Ditch 7 → ~0.3 mi. → Angleton Drainage District Ditch 22 → ~2.5 mi. → 1105

Angleton Drainage District Ditch 7 has a visible pool just downstream of the discharge per aerials. The drainage ditches appear channelized and maintained with an earthen bottom; therefore, revise call to intermittent with pools and limited ALU.

Angleton Drainage District Ditch 22 becomes tidal ~1.83 miles downstream of Ditch 7 and is included in the table below.

The drainage ditches were verified on the City’s boundary map (pg.4), https://angletondrainagedistrict.org/wp-content/uploads/2020/10/add_boundary.pdf
 Outfall 001 location: -95.438, 29.117

4. Additional Comments: 0.0625/0.125/0.25 MGD; proposed 10/15/3 and 2.0 mg/L DO.

2020 303(d): 1105_01 Bastrop Bayou Tidal, bacteria
 2020 305(b): 1105_01, DO

5. Recommended Receiving Water Uses and Associated Criteria:

Stream name	Stream Order	Aq. Life Use	DO	AL Criteria		HH Criteria		
				Acute	Chron	Incid	Sustain.	HH-PS+ Fish
Angleton Drainage District Ditch 7		L	3	X	X	X		
Angleton Drainage District Ditch 22 (non-tidal)		L	3	X	X	X		
Angleton Drainage District Ditch 22 (tidal)		H	4	X	X		X	

6. Antidegradation Review: no significant degradation is expected as the discharge amount is relatively small and end-of-pipe bacterial limits will apply.
7. Endangered species: No; Piping plover in county but not in segment.

Reviewer: M. A. Wallace, PhD; 1/21/22; revised_10/17/23

Date to Peer Reviewer (PR)	PR initials	Date to SR for reevaluation	Date to PR for Final Review	Date to SR for Finalization	Date to Crit Conditions
1/21/22	BC			1/28/22	1/31/22
10/17/23	PS			10/17/23	