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FINAL

July 2018 Update to the Texas Water Quality Management Plan



July 2018 Update to the Texas Water Quality Management Plan

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Water Quality Division

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WQMP updates are also available on the TCEQ web site at:

< http://www.tceq.texas.gov/permitting/wqmp/WQmanagement_updates.html >

Developed in accordance with Sections 205(j), 208,
and 303 of the Federal Clean Water Act
and applicable regulations thereto.



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Introduction

The Texas Water Quality Management Plan (WQMP) is the product of a wastewater treatment facility planning process developed and updated in accordance with provisions of Sections 205(j), 208, and 303 of the federal Clean Water Act (CWA), as amended. The WQMP is an important part of the State's program for accomplishing its clean water goals.¹

The Texas Department of Water Resources, a predecessor agency of the Texas Commission on Environmental Quality (TCEQ), prepared the initial WQMP for waste treatment management during the late 1970s. The Clean Water Act mandates that the WQMP be updated as needed to fill information gaps and revise earlier certified and approved plans. Any updates to the plan need involve only the elements of the plan that require modification. The original plan and its subsequent updates are collectively referred to as the State of Texas Water Quality Management Plan.

The WQMP is tied to the State's water quality assessments that identify priority water quality problems. The WQMPs are used to direct planning for implementation measures that control and/or prevent water quality problems. Several elements may be contained in the WQMP, such as effluent limitations of wastewater facilities, total maximum daily loads (TMDLs), nonpoint source management controls, identification of designated management agencies, and ground water and source water protection planning. Some of these elements may be contained in separate documents which are prepared independently of the current WQMP update process, but may be referenced as needed to address planning for water quality control measures.

This document, as with previous updates², will become part of the WQMP after completion of its public participation process, certification by the TCEQ and approval by the United States Environmental Protection Agency (EPA).

The materials presented in this document revise only the information specifically addressed in the following sections. Previously certified and approved water quality management plans remain in effect.

The July 2018 WQMP update addresses the following topics:

1. Projected Effluent Limits Updates for water quality planning purposes
2. Service Area Population for Municipal Wastewater Facilities
3. Designation of Management Agencies for Municipal Wastewater Facilities
4. Total Maximum Daily Load Update

¹ A formal definition for a water quality management plan is found in 40 Code of Federal Regulations (CFR) 130.2(k).

² Fiscal Years 1974, 1975, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984/85, 1986/88, 1989, 1990, 1991, 1992, 1993/94, 1995, 1996, 1997/98, 02/1999, 05/1999, 07/1999, 10/1999, 01/2000, 04/2000, 07/2000, 10/2000, 01/2001, 04/2001, 07/2001, 10/2001, 01/2002, 04/2002, 07/2002, 10/2002, 01/2003, 04/2003, 07/2003, 10/2003, 01/2004, 04/2004, 07/2004, 10/2004, 01/2005, 04/2005, 07/2005, 10/2005, 01/2006, 04/2006, 07/2006, 10/2006, 01/2007, 04/2007, 07/2007, 10/2007, 01/2008, 04/2008, 07/2008, 10/2008, 01/2009, 04/2009, 07/2009, 10/2009, 01/2010, 04/2010, 07/2010, 10/2010, 01/2011, 04/2011, 07/2011, 10/2011, BPUB 2011, 01/2012, 04/2012, 07/2012, 10/2012, 01/2013, 04/2013, 07/2013, 10/2013, 01/2014, 04/2014, 07/2014, 10/2014, 01/2015, 04/2015, 07/2015, 10/2015, 01/2016, 04/2016, 07/2016, 10/2016, 01/2017, 04/2017, 07/2017, 10/2017, 01/2018, and 04/2018.

The public comment period for the July WQMP update was from August 10, 2018, through September 11, 2018.

The Projected Effluent Limit Update section provides information compiled from May 1, 2018 through July 31, 2018, and is based on water quality standards, and may be used for water quality planning purposes in Texas Pollutant Discharge Elimination System (TPDES) permit actions.

The Service Area Population and Designation of Management Agency sections for municipal wastewater facilities has been developed and evaluated by the TCEQ in cooperation with the Texas Water Development Board (TWDB) and regional water quality management planning agencies.

The Total Maximum Daily Load (TMDL) Update section provides information on proposed wasteload allocations for new dischargers and revisions to existing TMDLs and has been developed by the Water Quality Planning Division, TMDL Program.

Projected Effluent Limit Updates

Table 1 reflects proposed effluent limits for new dischargers and preliminary revisions to original proposed effluent limits for preexisting dischargers (MGD-Million Gallons per Day, CBOD₅ – 5 Day Carbonaceous Biochemical Oxygen Demand, NH₃-N – Ammonia-Nitrogen, BOD₅ – 5 Day Biochemical Oxygen Demand and DO – Dissolved Oxygen).

Effluent flows indicated in Table 1 reflect future needs and do not reflect current permits for these facilities. These revisions may be useful for water quality management planning purposes. The effluent flows and constituent limits indicated in the table have been preliminarily determined to be appropriate to satisfy the stream standards for dissolved oxygen in their respective receiving waters. These flow volumes and effluent sets may be modified at the time of permit action. These limits are based on water quality standards (WQS) effective at the time of the TCEQ production of this update. WQS are subject to revision on a triennial basis.

Table 1. Projected Effluent Limit Updates

State Permit Number	Segment Number	EPA ID Number	Permittee Name County	Flow (MGD)	CBOD ₅ (mg/L)	CBOD ₅ (lbs/day)	NH ₃ -N (mg/L)	NH ₃ -N (lbs/day)	BOD ₅ (mg/L)	BOD ₅ (lbs/day)	DO (mg/L)	Months/ Comments
10008-002	1004	TX0022268	City of Conroe Montgomery	12.0	5	500.40	2	200.16			5	
10008-003	1004	TX0138274	City of Conroe Montgomery	12.0	5	500.40	1	100.08			6	
10134-007	1102	TX0116581	City of Pearland Brazoria	8.0	5	333.60	2	133.44			4	
10176-002	1221	TX0111791	City of Gatesville Coryell	2.7	10	225.18	2	45.04			6	
10223-001	1412	TX0138517	City of Midland Midland	21.0	10	1751.40	3	525.42			4	
10303-001	0841	TX0022802	Trinity River Authority of Texas Dallas <i>*Outfalls 001 & 003</i>	189.0	7	11033.82	2	3152.52			6	Apr.-Nov.
				189.0	7	11033.82	4	6305.04			6	Dec.-Mar.
10303-001	0822	TX0022802	Trinity River Authority of Texas Dallas <i>*Outfall 002</i>	7.1	4	236.86	1	59.21			6	<i>*Outfalls 001, 002, & 003 will be limited to a combined flow of 189 MGD</i>
10315-001	1004	TX0068845	City of Willis Montgomery	0.99	10	82.57	3	24.77			6	
10781-003	0803	TX0072974	City of Huntsville Walker	4.5	5	187.65	2	75.06			4	June-August
				4.5	7	262.71	2	75.06			5	Sept.-May
11388-001	1001	TX0054151	Crosby Municipal Utility District Harris	1.5	7	87.57	2	25.02			5	
12039-001	2421	TX0078441	Galveston County WCID No. 12 Galveston	1.5	10	125.10	3	37.53			4	

State Permit Number	Segment Number	EPA ID Number	Permittee Name County	Flow (MGD)	CBOD ₅ (mg/L)	CBOD ₅ (lbs/day)	NH ₃ -N (mg/L)	NH ₃ -N (lbs/day)	BOD ₅ (mg/L)	BOD ₅ (lbs/day)	DO (mg/L)	Months/ Comments
14055-001	0512	TX0117455	Monarch Utilities I LP Wood	0.05					10	4.17	4	
14133-001	1008	TX0119857	Utilities Investment Co., Inc. Montgomery	0.49	10	40.87	3	12.26			4	
14719-002	0818	TX0138339	Land Advisors, Ltd. Kaufman	0.20	10	16.68	2	3.34			4	
15030-001	1903	TX0133442	Forest Glen Utility Company Medina	0.24					20	40.03	2	
15261-001	1010	TX0135453	Crystal Springs Water Co., Inc. Montgomery	0.325	10	27.11	3	8.13			6	
15657-001	1107	TX0138321	St. Ives RV Resort LLC Brazoria	0.015	10	1.25	3	0.38			4	
15661-001	1412	TX0138363	Park Sewer Company Midland	0.35785	5	14.92	2	5.97			4	
15663-001	1228	TX0138398	Joshua Land Farm LLC Johnson	0.3	10	25.02	3	7.51			4	
15664-001	1243	TX0138401	ML Dev, LP Bell	0.250	10	20.85	3	6.26			4	
15665-001	0818	TX0138410	Norhill Energy, LLC Rockwall	0.09	10	7.51	3	2.25			4	
15666-001	0821	TX0138428	Norhill Energy, LLC Collin	0.075					10	6.26	4	
15667-001	0818	TX0138436	Norhill Energy, LLC Rockwall	0.075					20	12.51	2	
15679-001	0831	TX0138508	WPS I LLC Parker	0.060	10	5.00	3	1.50			4	
15683-001	1009	TX0138525	Friendswood Development Co., LLC Harris	0.99	7	57.80	2	16.51			6	

State Permit Number	Segment Number	EPA ID Number	Permittee Name County	Flow (MGD)	CBOD ₅ (mg/L)	CBOD ₅ (lbs/day)	NH ₃ -N (mg/L)	NH ₃ -N (lbs/day)	BOD ₅ (mg/L)	BOD ₅ (lbs/day)	DO (mg/L)	Months/ Comments
15685-001	1010	TX0138533	Grangerland Dev., LLC Montgomery	0.400	10	33.36	3	10.01			4	
15686-001	0820	TX0138541	D.R. Horton – Texas, Ltd; Dallas	0.40	7	23.35	2	6.67			5	
15689-001	1010	TX0138568	Crockett Martin Corp. Montgomery	0.025	10	2.09	3	0.63			4	
15691-001	1008	TX0138576	Tomball ISD Harris	0.35	10	29.19	3	8.76			4	

Planning Information Summary

The Water Quality Planning Division of the TCEQ coordinated with the TWDB and regional planning agencies to compile the wastewater facility information in this section. Domestic facility financing decisions under the State Revolving Loan Fund (SRF) program must be consistent with the certified and approved WQMP.

The purpose of this section is to present data reflecting facility planning needs, including previous water quality management plan needs requiring revision. Data are also presented to update other plan information for the TWDB's SRF projects. Table 2 contains the updated Service area population information. The table is organized in alphabetical order and includes the following 10 categories of information:

1. Planning Area – Area for which facility needs are proposed. The facility planning areas are subject to change during the facility planning process and any such changes will be documented in a later water quality management plan update. All planning areas listed are also designated management agencies (DMAs) unless otherwise noted in the “Comments” column.
2. Service Area – Area that receives the provided wastewater service.
3. Needs – A “T” indicates a need for either initial construction of a wastewater treatment plant, additional treatment capacity, or the upgrading of a wastewater treatment plant to meet existing or more stringent effluent requirements. A “C” indicates a need for improvements to, expansion of, rehabilitation of, or the initial construction of a wastewater collection system in the facility planning area. “T/C” indicates a need for both treatment and collection system facilities. More detailed facility planning conducted during a construction project may define additional needs and those needs will be reflected in a future update to the WQMP.
4. Needs Year – The year in which the needs were identified for the planning area.
5. Basin Name – The river basin or designated planning area where the entity is located. The seven water quality management planning areas designated by the Governor are Corpus Christi [Coastal Bend Council of Governments (CBCOG)], Killeen-Temple [Central Texas Council of Governments (CTCOG)], Texarkana [Ark-Tex Council of Governments (ATCOG)], Southeast Texas [South East Texas Regional Planning Council (SETRPC)], Lower Rio Grande Valley [Lower Rio Grande Valley Development Council (LRGVDC)], Dallas-Fort Worth [North Central Texas Council of Governments (NCTCOG)] and Houston [Houston-Galveston Area Council (H-GAC)]. Basin names are shown for agencies outside one of these areas.
6. Segment – The classified stream segment or tributary into which any recommended facility may discharge existing or projected wastewater. In the case of no-discharge facilities, this is the classified stream segment drainage area in which the facilities are located.
7. County – The county in which the facility planning area is located.
8. Date – The date the planning information was reviewed by the TCEQ.

9. Comments – Additional explanation or other information concerning the facility planning area.
10. Population – The base year and projected populations for each facility planning area. Population projections presented are consistent with the latest available statewide population projections or represent the most current information obtained from facility planning analyses.

The facility information in this section is intended to be utilized in the preparation of facility plans and the subsequent design and construction of wastewater facilities. Design capacities of the treatment and collection systems will be based upon the population projections contained in this document plus any additional needed capacity established for commercial/industrial flows and documented infiltration/inflow volumes (treatment or rehabilitation). The probable needs shown under the “Needs” heading are preliminary findings; specific needs for an area shall be as established in the completed and certified detailed engineering studies conducted during facility planning under the SRF and other state loan programs.

Specific effluent quality for any wastewater discharges resulting from any of the facilities recommended in this document will be in accordance with the rule on the Texas Surface Water Quality Standards in effect at the time of permit issuance for the specific facility.

Table 2. Service Area Population Updates

Planning Agency	Service Area	Needs	Needs Year	Basin Name / COG	Segment	County	WQMP Date	Comments	Year	Population
City of Alton	City Limits	T	2018	Nueces-Rio Grande River Basin/ LRGVDC	2491	Hidalgo	4/12/2018	Construction of new WWTP	2017	15,640
									2020	17,682
									2030	19,420
									2040	23,215
City of Falfurrias	City Limits	C	2018	Nueces-Rio Grande River Basin / CBCOG	NA	Brooks	6/7/2018	Collection system improvements	2017	4,232
									2020	5,217
									2030	5,414
									2040	5,612
City of Gladewater	City Limits	T	2018	Sabine River Basin	0505	Upshur	6/6/2018	Expansion of WWTP	2017	6,875
									2020	7,034
									2030	7,664
									2040	8,324
City of McAllen	City Limits	C	2018	Rio Grande River Basin / LRGVDC	2491	Hidalgo	5/24/2018	Collection system expansion	2017	164,597
									2020	164,597
									2030	204,382
									2040	244,325
City of Quinlan	City Limits	C	2018	Trinity River Basin/ NCTCOG	0507	Hunt	4/17/2018	Collection system improvements	2017	1,422
									2020	1,441
									2030	1,505
									2040	1,591
City of San Juan	City Limits	T	2018	Rio Grande River Basin / LRGVDC	2202	Hidalgo	3/15/2018	Addition of sludge handling equipment to WWTP	2017	37,652
									2020	43,300
									2030	57,265
									2040	63,690

Designated Management Agencies

In order to be designated as a management agency for wastewater collection or treatment, an entity must demonstrate the legal, institutional, managerial and financial capability necessary to carry out the entity's responsibilities in accordance with Section 208 (c) of the Clean Water Act (see below list of requirements). Before an entity can apply for a state revolving fund loan, it must be recommended for designation as the management agency in the approved WQMP. Designation as a management agency does not require the designated entity to provide wastewater services, but enables it to apply for grants and loans to provide the services. The facilities listed in Table 3 have submitted Designated Management Agencies (DMA) resolutions to the TCEQ. The TCEQ submits this DMA information to the EPA for approval as an update to the WQMP.

Section 208 (c) (2) Requirements for Management Agency:

- 208(c)(2)(A): to carry out portions of an area-wide waste treatment plan.
- 208(c)(2)(B): to manage waste treatment works.
- 208(c)(2)(C): directly or by contract to design and construct new works.
- 208(c)(2)(D): to accept and utilize grants.
- 208(c)(2)(E): to raise revenues, including assessment of waste treatment charges.
- 208(c)(2)(F): to incur short and long term indebtedness.
- 208(c)(2)(G): to assure community pays proportionate cost.
- 208(c)(2)(H): to refuse to receive waste from non-compliant dischargers.
- 208(c)(2)(I): to accept for treatment industrial wastes.

Table 3. Designated Management Agencies

Planning Agency	Service Area	DMA Needs	DMA Date
City of Alton	City Limits	T	1/9/2018
City of Falfurrias	City Limits	C	3/7/2018
City of Gladewater	City Limits	T	12/15/2016
City of McAllen	City Limits	C	1/9/2012
City of Quinlan	City Limits	C	1/24/2017
City of San Juan	City Limits	T	8/28/2012

Total Maximum Daily Load Updates

The Total Maximum Daily Load (TMDL) Program works to improve water quality in impaired or threatened waters bodies in Texas. The program is authorized by and created to fulfill the requirements of Section 303(d) of the federal Clean Water Act.

The goal of a TMDL is to restore the full use of a water body that has limited quality in relation to one or more of its uses. The TMDL defines an environmental target and based on that target, the State develops an implementation plan with wasteload allocations for point source dischargers to mitigate anthropogenic (human-caused) sources of pollution within the watershed and restore full use of the water body.

The development of TMDLs is a process of intensive data collection and analysis. After adoption by the TCEQ, TMDLs are submitted to the EPA for review and approval.

The attached appendices may reflect proposed wasteload allocations for new dischargers and revisions to TMDLs. To be consistent, updates will be provided in the same units of measure used in the original TMDL document. Also note that for bacteria TMDLs, loads may be expressed in counts per day, organisms per day, colony forming units per day, or similar expressions. These typically reflect different lab methods, but for the purposes of the TMDL program, these terms are considered synonymous.

Appendix I. Nine Total Maximum Daily Loads for Bacteria in Clear Creek and Tributaries: Segments 1101, 1101B, 1101D, 1102, 1102A, 1102B, 1102C, 1102D, and 1102E

TMDL Updates to the Water Quality Management Plan (WQMP): Clear Creek and Tributaries (Segments 1101, 1101B, 1101D, 1102, 1102A, 1102B, 1102C, 1102D, and 1102E)

The document *Nine Total Maximum Daily Loads for Bacteria in Clear Creek and Tributaries: Segments 1101, 1101B, 1101D, 1102, 1102A, 1102B, 1102C, 1102D, and 1102E* was adopted by the TCEQ on 09/10/08 and approved by EPA on 03/06/09, and became an update to the state's Water Quality Management Plan. It has had six subsequent WQMP updates prior to this one that provided individual Waste Load Allocations (WLAs) for permitted facilities. Additionally, an addendum to the original TMDL was submitted through the October 2012 WQMP update. This addendum added four new assessment units (AUs) to the original TMDL project.

The purpose of this update is to make the following changes to the TMDL, presented in Table 1:

- update the WLA for one facility that has increased its permitted discharge
- remove a cancelled permit, and
- update the information related to outfalls for one facility.

The changes reflected in this update resulted in the shifting of allocations between the sum of the individual WLAs and the allowance for future growth in two AUs. This was originally presented in Tables 18, 19, and 21 in the original TMDL document, and the affected AUs are included here in Tables 2, 3, and 4.

The change reflected in this update also affected the TMDL allocations for the AU and segment. These are presented in Tables 2 and 3.

Table 1 – Changes to Individual Waste Load Allocations (Updates Table 16, p. 47 in the TMDL document.)

State Permit Number / EPA Permit Number/ Outfall Number	Assessment Unit	Permittee Name	Flow (MGD)	Waste Load Allocation (WLA) – Fecal Coliform MPN/day	Waste Load Allocation (WLA) – <i>E. coli</i> MPN/day	Waste Load Allocation (WLA) – Enterococci MPN/day	Comments
10568-003 / TX0071447 001	1101_02	CITY OF LEAGUE CITY	NA	NA	NA	NA	Permit cancelled
10526-001 / TX0023833 001	1101_03	CITY OF NASSAU BAY	1.33	1.01E+10	6.34E+09	1.76E+09	Previously this facility had two outfalls with a combined discharge of 1.33 MGD. Outfall 002 has been discontinued. Remaining Outfall 001 retains the 1.33 MGD permitted discharge. This has no effect on the TMDL calculations.
10134-007 / TX0116581 001	1102B_01	CITY OF PEARLAND	8.0	6.06E+10	3.82E+10	N/A	Increased discharge

Table 2 - *E. coli* and Fecal Coliform TMDL Calculations for Freshwater Segments (Table 18, p. 50 in original TMDL)

Segment	Sampling Location	Stream Name	Indicator Bacteria	TMDL (counts/day)	WLA _{WWTF} (counts/day)	WLA _{StormWater} (counts/day)	LA (counts/day)	MOS (counts/day)	Future Growth (counts/day)
1102B	16473	Mary's Creek/North Fork Mary's Creek	<i>E. coli</i>	2.46E+11	4.97E+10	1.32E+11	8.42E+09	1.23E+10	4.37E+10

Table 3 - Enterococci TMDL Calculations for Tidal Segments (Updates Table 19, p. 51 in original TMDL document.)

Segment	Stream Name	TMDL (counts/day)	WLA _{WWTF} (counts/day)	WLA _{Stormwater} (counts/day)	LA (counts/day)	MOS (counts/day)	Future Growth (counts/day)
1101	Clear Creek Tidal (Reaches A through K, Tributaries A through E, Trib. One, and Magnolia Creek)	9.50E+12	5.02E+10	8.88E+12	9.00E+10	4.75E+11	4.81E+09

Table 4 – TMDL Allocation Table (Updates Table 21, p. 52 in the original TMDL.)

Segment	Stream Name	Assessment Unit	Indicator Bacteria	TMDL (counts/day)	WLA _{WWTF} (counts/day)	WLA _{StormWater} (counts/day)	LA (counts/day)	MOS (counts/day)	Future Growth (counts/day)
1101	Clear Creek Tidal	1101_02	<i>Enterococcus</i>	2.69E+12	1.59E+10	2.50E+12	3.44E+10	1.35E+11	4.70E+09
1102B	Mary's Creek	1102B_01	<i>E. coli</i>	2.46E+11	4.97E+10	1.32E+11	8.42E+09	1.23E+10	4.37E+10

In addition, Table 5 below provides an update to Table 13 found in the October 2012 addendum to this TMDL project (Addendum One to Nine Total Maximum Daily Loads for Bacteria in Clear Creek and Tributaries: Four Total Maximum Daily Loads for Bacteria in Clear Creek and Tributaries For Segments 1101A, 1101C, 1101E, and 1102G, Assessment Units 1101A_01, 1101C_01, 1101E_01, and 1102G_01). One of the new permits discussed earlier in this update also affects an AU in this addendum.

Table 6 below provides updates to Table 15 found in Addendum 1 to this TMDL project. The addendum added four AUs that were not included in the original TMDL. 1101A_01 was treated as an upstream contributing load to 1101_02 in the original TMDL. The cancelled permit (15068-003/TX0071447) affects the loadings of both 1101A_01 as well as the original TMDL AU 1101_02.

In Table 16 of Addendum 1, the WLAs for permitted facilities are the sum of the individual WLAs and the allowance for future growth within each AU. Therefore, these overall numbers did not change, and Table 16 of Addendum 1 remains the same.

Table 5 – Changes to Individual Waste Load Allocations (Updates Table 13, p. 18 in Addendum 1 to the TMDL.)

State Permit Number / EPA Permit Number	Outfall	Segment Number	Permittee Name	Flow (MGD)	Waste Load Allocation (WLA) – <i>E. coli</i> Billion MPN/day	Waste Load Allocation (WLA) – Enterococci Billion MPN/day	Comments
10568-003 / TX0071447	001	1101A_01	CITY OF LEAGUE CITY	NA	NA	NA	Permit cancelled

Table 6 – TMDL Allocation Table (Updates Table 15, p. 20 in Addendum 1 to the TMDL.)

Segment	Stream Name	Indicator	TMDL	WLA _{WWTF}	WLA _{STORMWATER}	LA	MOS	TMDL Future	WLA _{WWTF-Future}
1101A_01	Magnolia Creek	ENT	95.0	15.90	62.5	11.0	4.75	99.4	5.25
1101A_01	Magnolia Creek	<i>EC</i>	279.0	57.24	183.6	32.4	14.0	292.0	4.76

Appendix II. Fifteen Total Maximum Daily Loads for Indicator Bacteria in Watersheds Upstream of Lake Houston For Segment Numbers 1004E, 1008, 1008H, 1009, 1009C, 1009D, 1009E, 1010 and 1011

TMDL Updates to the Water Quality Management Plan (WQMP): Watersheds Upstream of Lake Houston (1004E, 1008, 1008H, 1009, 1009C, 1009D, 1009E, 1010, and 1011)

The document *Fifteen Total Maximum Daily Loads for Indicator Bacteria in Watersheds Upstream of Lake Houston For Segment Numbers 1004E, 1008, 1008H, 1009, 1009C, 1009D, 1009E, 1010, and 1011* was adopted by the TCEQ on 04/06/11 and approved by EPA on 06/29/11, and became an update to the state's WQMP. Twenty-five subsequent WQMP updates prior to this one have updated the list of individual wasteload allocations (WLAs) found in the original TMDL document. Additionally, an addendum to the original TMDL was submitted through the October 2013 WQMP update. This addendum added six new assessment units (AUs) to the original TMDL project.

The purpose of this update is to make the following changes to the TMDL, presented in Table 1:

- update the WLAs for two facilities that have increased their permitted discharges,
- remove four expired permits, and
- add seven new permits.

The changes reflected in this update resulted in the shifting of allocations between the sum of the individual WLAs and the allowance for future growth in twelve AUs. This was originally presented in Table 18 in the original TMDL document, and the twelve affected AUs are included here as Table 2.

For AUs 1004E_02 and 1008_02, the existing future growth allocation was insufficient to cover the increased flow to the AUs for this update. However, ample loading is available in the WLA_{StormWater} and load allocation (LA) terms. Loading was taken from each of those terms (in a way that maintains the proportions for them as updated in the July 2016 WQMP update) and allotted to future growth. This results in no changes to the overall TMDL allocations.

In Table 19 of the original TMDL, the WLAs for permitted facilities are the sum of the individual WLAs and the allowance for future growth within each AU. Because loading was moved from the WLA_{StormWater} and LA terms to be used for future growth for AUs 1004E_02 and 1008_02, those AUs are updated in Table 3. These overall numbers for the other AUs did not change, and again this results in no changes to the overall TMDL allocations.

Table 1 – Changes to Individual Wasteload Allocations (Updates Table 16, pp. 49-56 in the TMDL document.)

State Permit Number	Outfall	EPA Permit Number	Segment Number	Permittee Name	Flow (MGD)	Waste Load Allocation (WLA) – <i>E. coli</i> in Billion MPN/day	TMDL Comments
14133-001	001	TX0119857	1008_02	UTILITIES INVESTMENT COMPANY INC	0.49	1.169	Increased discharge
15261-001	001	TX0135453	1010_03	CRYSTAL SPRINGS WATER CO. INC.	0.325	0.775	Increased discharge
10008_003	001	TX0138274	1004E_02	CITY OF CONROE	12.0	28.618	New permit
15691-001	001	TX0138576	1008H_01	TOMBALL ISD	0.35	0.835	New permit
15683-001	001	TX0138525	1009E_01	FRIENDSWOOD DEVELOPMENT COMPANY, LLC	0.99	2.361	New permit
15689-001	001	TX00138568	1010_03	CROCKETT MARTIN CORP.	0.025	0.060	New permit
15685-001	001	TX00138533	1010_04	GRANGERLAND DEVELOPMENT, LLC	0.4	0.954	New permit
15145-002	001	TX0138151	1011_01	BRADBURY DEVELOPMENT LIMITED	5	11.924	New permit
15557-002	001	TX0138282	1011_01	CRYSTAL SPRINGS WATER CO., INC.	0.1	0.238	New permit
15343-001	001	TX0136212	1008_03	LARG MANAGEMENT GROUP, L.L.C.	NA	NA	Permit expired
14797-001	001	TX0129569	1009_01	TEXAS DA HON BOR, LLC	NA	NA	Permit expired
14896-001	001	TX0129852	1009_01	MASON WESTGREEN LP	NA	NA	Permit expired
14870-001	001	TX0128660	1009_04	HARRIS COUNTY MUD 454	NA	NA	Permit expired

Table 2 - *E. coli* TMDL Summary Calculations for Lake Houston Assessment Units (Updates Table 18, pp. 61 in the TMDL document.)

AU	Sampling Location	Stream Name	TMDL (Billion MPN /day)	WLA _{WWTF} (Billion MPN /day)	WLA _{StormWater} (Billion MPN /day)	LA (Billion MPN /day)	MOS (Billion MPN /day)	Future Growth (Billion MPN /day)
1004E_02	16626	Stewarts Creek	44.9	28.62	7.45	6.09	2.24	0.50
1008_02	11314	Spring Creek	287	7.24	71.48	193.37	14.4	0.51
1008_03	11313	Spring Creek	1420	100.08	322	869	70.9	58.02
1008_04	11312	Spring Creek	1510	135.76	334	902	75.7	62.54
1008H_01	11185	Willow Creek	166	17.35	51.1	67.8	8.28	21.47
1009_01	11333	Cypress Creek	227	17.12	82.47	113.93	11.4	2.08
1009_02	11331	Cypress Creek	615	98.42	196	270	30.8	19.78
1009_03	11328	Cypress Creek	1340	183.87	415	574	67.0	100.13
1009_04	11324	Cypress Creek	1550	221.79	469	648	77.4	133.81
1009E_01	14159	Little Cypress Creek	91.1	16.39	16.14	48.42	4.56	5.59
1010_04	11334	Caney Creek	493	17.38	57.4	383.8	24.7	9.72
1011_02	17746	Peach Creek	422	16.63	34.5	348.5	21.1	1.27

Table 3 – *E. coli* TMDL Final Calculations for Lake Houston Assessment Units (Updates Table 19, pp. 62 in the TMDL document.)

Assessment Unit	TMDL (Billion MPN/day)	WLA _{WWTF} (Billion MPN/day)	WLA _{StormWater} (Billion MPN/day)	LA (Billion MPN/day)	MOS (Billion MPN/day)
1004E_02	44.9	29.12	7.45	6.09	2.24
1008_02	287	7.75	71.48	193.37	14.4

In addition, Table 4 below provides an update to Table 11 found in the October 2013 addendum to this TMDL project (*Addendum One to Fifteen Total Maximum Daily Loads for Indicator Bacteria in Watersheds Upstream of Lake Houston: Six Additional Total Maximum Daily Loads for Indicator Bacteria in Watersheds Upstream of Lake Houston For Segments 1008B, 1008C, 1008E, and 1011 Assessment Units 1008B_01, 1008B_02, 1008C_01, 1008C_02, 1008E_01, and 1011_01*). Two of the new permits discussed earlier in this update also affect an AU in this addendum.

Table 5 below provides updates to Table 12 found in the October 2013 addendum to this TMDL project. The addendum added six AUs that were not included in the original TMDL. Five of these (1008B_01, 1008B_02, 1008C_01, 1008C_02, and 1008E_01) were lumped together as contributing loading to 1008_03 and 1008_04 in the original TMDL. The sixth additional AU (1011_01) was treated as an upstream contributing load to

1011_02 in the original TMDL. The permits for two new facilities (15145-002/TX0138151 and 15557-002/TX0138282) affect the loadings of both 1011_01 as well as the original TMDL AU 1011_02.

For AU 1011_01, the existing future growth allocation was insufficient to cover the increased flow to the AU for this update. However, ample loading is available in the $WLA_{StormWater}$ and LA terms. Loading was taken from each of those terms (in a way that maintains the proportions for them as updated in the July 2016 WQMP update) and allotted to future growth. This results in no change to the overall TMDL allocation.

Table 4 – Changes to Individual Waste Load Allocations and Permittee Names (Updates Table 11, p. 23 in the TMDL Addendum document.)

State Permit Number	Outfall	EPA Permit Number	Segment Number	Permittee Name	Flow (MGD)	Waste Load Allocation (WLA) - <i>E. coli</i> in Billion MPN/day	TMDL Comments
15145-002	001	TX0138151	1011_01	BRADBURY DEVELOPMENT LIMITED	5	11.924	New permit
15557-002	001	TX0138282	1011_01	CRYSTAL SPRINGS WATER CO., INC.	0.1	0.238	New permit

Table 5 – *E. coli* TMDL Summary for Impaired AUs of the Addendum (Updates Table 12, p. 26 in the TMDL Addendum document.) Loads are in billion MPN/day.

AU	Stream Name	TMDL	MOS	WLA_{WWTF}	WLA_{SW}	LA_{AU}	LA_{RES}	LA_{TOTAL}	Future Growth
1011_01	Peach Creek	214.1	10.7	13.21	2.87	186.77	0	186.77	0.55

In Table 13 of the TMDL addendum, the WLAs for permitted facilities are the sum of the individual WLAs and the allowance for future growth within each AU. Because loading was moved from the $WLA_{StormWater}$ and LA terms to be used for future growth for AU 1011_01, this AU is updated in Table 6. These overall numbers for the other AUs did not change, and again this results in no changes to the overall TMDL allocation.

Table 6 – Final *E. coli* TMDL Allocations for Impaired AUs of the Addendum (Updates Table 13, p. 27 in the TMDL Addendum document.) Loads are in billion MPN/day.

AU	TMDL	WLA_{WWTF}	WLA_{SW}	LA_{TOTAL}	MOS
1011_01	214.1	13.76	2.87	186.77	10.7

Appendix III. Lake Houston, East Fork San Jacinto River, West Fork San Jacinto River, and Crystal Creek Watersheds For Segments 1002, 1003, 1004, and 1004D

TMDL Updates to the WQMP: Lake Houston, East Fork San Jacinto River, West Fork San Jacinto River, and Crystal Creek Watersheds (1002, 1003, 1004, and 1004D)

The document *Seven Total Maximum Daily Loads for Indicator Bacteria in Lake Houston, East Fork San Jacinto River, West Fork San Jacinto River, and Crystal Creek Watersheds For Segments 1002, 1003, 1004, and 1004D* was adopted by the TCEQ on 08/24/16 and approved by EPA on 10/07/16, and became an update to the state's Water Quality Management Plan (WQMP). Two subsequent WQMP updates prior to this one have updated the list of individual wasteload allocations (WLAs) found in the original TMDL document.

The purpose of this update is to make the following changes to the TMDL, presented in Table 1:

- update the WLAs for two facilities that have increased their permitted discharges
- remove an expired permit, and
- replace an expired permit with a new permit.

The changes reflected in this update resulted in the shifting of allocations between the sum of the individual WLAs and the allowance for future growth in four assessment units (AUs). This was originally presented in Table 17 in the original TMDL document, and the four affected AUs are included here as Table 2.

In Table 18 of the original TMDL, the WLAs for permitted facilities are the sum of the individual WLAs and the allowance for future growth within each AU. Therefore, these overall numbers did not change, and Table 18 of the TMDL remains the same.

Table 1 – Changes to Individual Wasteload Allocations (Updates Table 13, pp. 54-55 in the TMDL document.)

State Permit Number	Outfall	EPA Permit Number	Segment Number	Permittee Name	Flow (MGD)	Waste Load Allocation (WLA) – <i>E. coli</i> in Billion MPN/day	TMDL Comments
10008-002	001	TX0022268	1004_02	CITY OF CONROE	12.0	28.618	Increased discharge
10315-001	001	TX0068845	1004D_01	CITY OF WILLIS	0.99	2.361	Increased discharge
14709-001	001	TX0102962	1004D_01	STONE HEDGE UTILITY CO, INC.	NA	NA	Permit expired
12456-001	001	TX0088901	1015A_01*	CRANE CO.	NA	NA	Permit expired; replaced by 12456-002
12456-002	001	TX0138461	1015A_01*	CRANE CO.	0.005	0.0119	New permit; replaces 12456-001

* Mound Creek (1015A) was not impaired when these TMDLs were developed, but as a tributary to Lake Creek, its watershed contributes to impaired West Fork San Jacinto AU 1004_02. Since the new permit is replacing the old permit with the same flow, this has no effect on any of the TMDL allocations.

Table 2 - *E. coli* TMDL Summary Calculations for Lake Houston Assessment Units (Updates Table 17, p. 59 in the TMDL document.) All loads expressed as billion MPN/day.

AU	Segment Name	TMDL	MOS	WLA _{WWTF}	WLA _{SW}	LA _{AU}	LA _{TRIB}	LA _{RES}	LA _{TOTAL}	Future Growth
1002_06	Lake Houston	6,197	106.57	95.38	288.17	1,535.70	3,106.9	958.7	5,601.30	105.58
1004_01	West Fork San Jacinto River	2,779	88.77	92.16	196.81	1,294.21	44.86	958.7	2,297.77	103.49
1004_02	West Fork San Jacinto River	1,141	9.12	43.76	4.04	75.26	0	958.7	1,033.96	50.12
1004D_01	Crystal Creek	137.8	6.89	4.78	18.79	100.92	0	0	100.92	6.42

Appendix IV. Six Total Maximum Daily Loads for Bacteria in Waters of the Upper Gulf Coast: Segments 2421, 2422, 2423, 2424, 2432, and 2439

TMDL Updates to the Water Quality Management Plan (WQMP): Six Total Maximum Daily Loads for Bacteria in Waters of the Upper Gulf Coast (Segments 2421, 2422, 2423, 2424, 2432, and 2439)

The *document Six Total Maximum Daily Loads for Bacteria in Waters of the Upper Gulf Coast: Segments 2421, 2422, 2423, 2424, 2432, and 2439* was adopted by the TCEQ on 08/20/08 and approved by EPA on 02/04/09, and became an update to the state's Water Quality Management Plan (WQMP). Nine subsequent WQMP updates prior to this one have updated the list of individual wasteload allocations (WLAs) found in the original TMDL document. Additionally, two addenda to the original TMDL were submitted through the January 2012 and April 2012 WQMP updates. These addenda added four new assessment units (AUs) to the original TMDL project.

The purpose of this update is to make the following change to the TMDL, presented in Table 1:

- update the WLA for one facility that has increased its permitted discharge.

Note that this is a concentration-based TMDL, and therefore there are no final TMDL equations to be affected by this change.

Table 1 –Daily Loads for WWTFs based on Concentration Allocations (Updates p. A-1 in TMDL)

State Permit Number	Outfall	EPA Permit Number	Segment Number	Permittee Name	Flow (MGD)	Waste Load Allocation (WLA) Fecal Coliform (org/day)*	Waste Load Allocation (WLA) <i>E. coli</i> (org/day) *	Waste Load Allocation (WLA) Enterococcus (org/day) *	Comments
12039-001	001	TX0078441	2421	GALVESTON COUNTY WCID # 12	1.5	11,356,235,340	7,154,428,264	1,987,341,185	Increased discharge

*Concentrations limits will be based on the applicable indicator bacteria criterion geometric means (Fecal coliform or *E. coli* or Enterococcus).