



March 10, 2015
FINAL

January 2015 Update to the Texas Water Quality Management Plan

Prepared by the:
Office of Water, Water Quality Division

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

January 2015 Update to the Texas Water Quality Management Plan

Compiled and distributed by the
Water Quality Assessment Section
Water Quality Division
Texas Commission on Environmental Quality
P.O. Box 13087, MC-150
Austin, Texas 78711-3087

March 2015

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

< www.tceq.texas.gov/waterquality/assessment/WQmanagement_updates.html >

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



Bryan W. Shaw, Ph.D., P.E., *Chairman*
Toby Baker, *Commissioner*
Zak Covar, *Commissioner*
Richard A. Hyde, P.E., *Executive Director*

Authorization for use or reproduction of any original material contained in this publication—that is, not obtained from other sources—is freely granted. The commission would appreciate acknowledgement.

The TCEQ is an equal opportunity/affirmative action employer. The agency does not allow discrimination on the basis of race, color, religion, national origin, sex, disability, age, sexual orientation or veteran status. In compliance with the Americans with Disabilities Act, this document may be requested in alternate formats by contacting the TCEQ at (512) 239-0028, Fax 239-4488, or 1-800-RELAY-TX (TDD), or by writing P.O. Box 13087, Austin, TX 78711-3087.

Table of Contents

Introduction1
Projected Effluent Limit Updates3
Planning Information Summary6
Designated Management Agencies9
Total Maximum Daily Load Updates10

Tables

Table 1. Projected Effluent Limit Updates 4
Table 2. Service Area Population Updates 8
Table 3. Designated Management Agencies 9

Appendixes

Appendix I. Eighteen Total Maximum Daily Loads for Bacteria in Buffalo and Whiteoak Bayous
and Tributaries For Segment Numbers 1013, 1013A, 1013C, 1014, 1014A, 1014B,
1014E, 1014H, 1014K, 1014L, 1014M, 1014N, 1014O, 1017, 1017A, 1017B, 1017D,
and 1017E..... 11
Appendix II. Eight Total Maximum Daily Loads for Indicator Bacteria in Greens Bayou Above
Tidal and Tributaries For Segment Numbers 1016, 1016A, 1016B, 1016C, and 1016D. 12
Appendix III. 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 13
Appendix IV. Six Total Maximum Daily Loads for Bacteria in Waters of the Upper Gulf Coast:
Segments 2421, 2422, 2423, 2424, 2432, and 2439 14
Appendix V. One Total Maximum Daily Load for Bacteria in Upper Oyster Creek for Segment
Number 1245 15

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 on behalf of the Governor of Texas, 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 January 2015 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 Updates

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, and 10/2014.

The Projected Effluent Limit Update section provides information compiled from November 1, 2014 through January 31, 2015, 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 waste load 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 |
|---------------------|----------------|---------------|---|------------|--------------------------|-----------------------------|---------------------------|------------------------------|-------------------------|----------------------------|-----------|--------------------------|
| 10134-008 | 1102 | TX0117501 | City of Pearland Brazoria | 6.0 | 5 | 250.20 | 1.7 | 85.07 | | | 6 | |
| 10462-001 | 2303 | TX0070211 | Zapata County Zapata | 1.6 | 5 | 66.72 | 1.9 | 25.35 | | | 6 | |
| 10940-001 | 0505 | TX0026531 | City of White Oak Gregg | 2.0 | 10 | 166.80 | 3 | 50.04 | | | 4 | |
| 14387-001 | 1218 | TX0125377 | Bell County WCID No. 1 Bell | 6.0 | 7 | 350.28 | 2 | 100.08 | | | 5 | OTFL 001 |
| | 1216 | | | 1.8 | 5 | 75.06 | 1 | 15.01 | | | 6 | OTFL 002 May - Oct |
| | 1216 | | | 2.2 | 7 | 128.44 | 2 | 36.70 | | | 6 | OTFL 002 Nov - Apr |
| 15095-001 | 1908 | TX0135691 | 633-4S Ranch Ltd. And Stahl Lane Ltd. Comal | 0.48 | 5 | 20.02 | 2 | 8.01 | | | 4 | |
| 15279-001 | 1108 | TX0135577 | Brazoria County MUD No. 43 Brazoria | 0.30 | 10 | 25.02 | 3 | 7.51 | | | 6 | |
| 15296-001 | 1004 | TX0135755 | Woodland Oaks Utility, L.P. Montgomery | 0.25 | 10 | 20.85 | 3 | 6.26 | | | 6 | |
| 15297-001 | 1008 | TX0135771 | Gosling Office Park, L.L.C. Harris | 0.0075 | 10 | 0.63 | 3 | 0.19 | | | 6 | |
| 15299-001 | 1016 | TX0135798 | Jarrar Holdings L.L.C. Harris | 0.012 | 10 | 1.00 | 3 | 0.30 | | | 4 | |
| 15300-001 | 0818 | TX0135801 | Smith, William Donald Van Zandt | 0.01 | 10 | 0.83 | 3 | 0.25 | | | 4 | OTFL 001 Discharge Route |
| | | | | 0.04 | 10 | 3.34 | 3 | 1.00 | | | 4 | OTFL 002 Discharge Route |

| 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 |
|---------------------|----------------|---------------|--|------------|--------------------------|-----------------------------|---------------------------|------------------------------|-------------------------|----------------------------|-----------|-------------------------|
| 15303-001 | 2434 | TX0135828 | Follets Island Custom Homes, L.L.C. Brazoria | 0.048 | 10 | 4.00 | 3 | 1.20 | | | 4 | |
| 15308-001 | 1245 | TX0135879 | Fort Bend County MUD No. 142 | 0.45 | 10 | 37.53 | 3 | 11.26 | | | 6 | Upper Oyster Creek TMDL |
| 15309-001 | 1202 | TX0135909 | Fulshear Lakes Ltd. Fort Bend | 0.72 | 10 | 60.05 | 3 | 18.01 | | | 4 | |
| 15312-001 | 1008 | TX0135925 | Rosehill Reserve Ltd. Harris | 0.30 | 10 | 25.02 | 3 | 7.51 | | | 6 | |
| 15313-001 | 1004 | TX0135941 | Montgomery County MUD No. 127 Montgomery | 0.60 | 5 | 25.02 | 1.4 | 7.01 | | | 6 | |
| 15314-001 | 1811 | TX0135976 | Randolph Todd Company, L.L.C. Comal | 0.39 | 5 | 16.26 | 2 | 6.51 | | | 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 Brownsville | City of Brownsville | T/C | 2015 | Nueces Rio Grande Coastal/ LRGVDC | 2494 | Cameron | 11/7/2014 | Rehabilitation of existing sewer infrastructure | 2010 | 180,444 |
| | | | | | | | | | 2020 | 218,268 |
| | | | | | | | | | 2030 | 257,460 |
| | | | | | | | | | 2040 | 296,637 |
| City of Castroville | City of Castroville | T/C | 2015 | San Antonio River | 1903 | Medina | 12/2/2014 | Additional sewer lines | 2010 | 2,680 |
| | | | | | | | | | 2020 | 7,187 |
| | | | | | | | | | 2030 | 11,695 |
| | | | | | | | | | 2040 | 16,203 |
| City of Castroville | City of Castroville | T/C | 2015 | San Antonio River | 1903 | Medina | 1/26/2015 | Expansion of WWTP | 2010 | 2,680 |
| | | | | | | | | | 2020 | 7,187 |
| | | | | | | | | | 2030 | 11,695 |
| | | | | | | | | | 2040 | 16,203 |
| City of Euless | City of Euless | T/C | 2015 | Trinity River/ NCTCOG | 0841 | Tarrant | 1/9/2015 | Extend existing Reclaimed Water System | 2010 | 51,277 |
| | | | | | | | | | 2020 | 54,727 |
| | | | | | | | | | 2030 | 58,424 |
| | | | | | | | | | 2040 | 62,081 |
| City of Houston | City of Houston | T/C | 2015 | San Jacinto River/ H-GAC | Various | Harris | 12/1/2014 | Rehabilitation/replacement of existing wastewater collection systems | 2010 | 2,100,263 |
| | | | | | | | | | 2020 | 2,472,783 |
| | | | | | | | | | 2030 | 2,741,099 |
| | | | | | | | | | 2040 | 3,006,695 |
| City of Johnson City | City of Johnson City | T/C | 2015 | Colorado River | 1414 | Blanco | 11/10/2014 | Improvements for existing WWTP | 2010 | 1,440 |
| | | | | | | | | | 2020 | 1,590 |
| | | | | | | | | | 2030 | 1,740 |
| | | | | | | | | | 2040 | 1,890 |
| City of Laredo | City of Laredo | T/C | 2015 | Rio Grande | 2304 | Webb | 11/10/2014 | Expansion of WWTP | 2010 | 105,490 |
| | | | | | | | | | 2020 | 136,069 |
| | | | | | | | | | 2030 | 170,310 |
| | | | | | | | | | 2040 | 207,979 |
| City of San Marcos | City of San Marcos | T/C | 2015 | Guadalupe River | 1814 | Hays | 1/26/2015 | Rehabilitation of WWTP | 2010 | 48,814 |
| | | | | | | | | | 2020 | 69,906 |
| | | | | | | | | | 2030 | 90,990 |
| | | | | | | | | | 2040 | 114,477 |
| City of Van Alstyne | City of Van Alstyne | T/C | 2015 | Trinity River | 0821 | Grayson | 1/23/2015 | Rehabilitation of WWTP | 2010 | 3,046 |
| | | | | | | | | | 2020 | 7,500 |
| | | | | | | | | | 2030 | 13,500 |
| | | | | | | | | | 2040 | 17,000 |

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 Euless | City of Euless | T/C | 8/26/2014 |
| City of Van Alstyne | City of Van Alstyne | T/C | 8/13/2013 |

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 waste load 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 appendixes may reflect proposed waste load 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 for 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. Eighteen Total Maximum Daily Loads for Bacteria in Buffalo and Whiteoak Bayous and Tributaries For Segment Numbers 1013, 1013A, 1013C, 1014, 1014A, 1014B, 1014E, 1014H, 1014K, 1014L, 1014M, 1014N, 1014O, 1017, 1017A, 1017B, 1017D, and 1017E

TMDL Updates to the Water Quality Management Plan (WQMP): Buffalo and Whiteoak Bayous and Tributaries (Segments 1013, 1013A, 1013C, 1014, 1014A, 1014B, 1014E, 1014H, 1014K, 1014L, 1014M, 1014N, 1014O, 1017, 1017A, 1017B, 1017D, and 1017E)

The document *Eighteen Total Maximum Daily Loads for Bacteria in Buffalo and Whiteoak Bayous and Tributaries For Segment Numbers 1013, 1013A, 1013C, 1014, 1014A, 1014B, 1014E, 1014H, 1014K, 1014L, 1014M, 1014N, 1014O, 1017, 1017A, 1017B, 1017D, and 1017E* was adopted by the TCEQ on 04/08/09 and approved by EPA on 06/11/09, and became an update to the state’s Water Quality Management Plan (WQMP). Twelve subsequent WQMP updates prior to this one have updated the list of individual waste load allocations (WLAs) found in the original TMDL document. Additionally, an addendum to the original TMDL was submitted through the April 2013 WQMP update. This addendum added one new assessment unit (AU) to the original TMDL project.

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

- correct the flow and update the WLA for one 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 (AFG) in one AU. This was originally presented in Table 53 in the TMDL document, and the affected AU is included here as Table 2.

In Table 54 of the TMDL, the WLAs for permitted facilities are the sum of the individual WLAs and the allowance for future growth within each assessment unit. Therefore, these overall numbers did not change, and Table 54 of the TMDL remains the same.

Table 1 – Change to Individual Waste Load Allocation (Updates Table 45, pp. 99-103 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 |
|---------------------|---------|-------------------|----------------|---------------------------|------------|---|----------------|
| 13623-001 | 001 | TX0109126 | 1017_01 | WEST HARRIS COUNTY MUD 21 | 0.25 | 0.596 | Corrected flow |

Table 2 - *E. coli* TMDL Summary Calculation (Updates Table 53, pp. 118-119 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) | Upstream Load (Billion MPN/day) | Future Growth (Billion MPN/day) |
|-----------------|------------------------|---------------------------------------|---|----------------------|-----------------------|---------------------------------|---------------------------------|
| 1017_01 | 173.57 | 74.10 | 58.94 | 6.55 | 0 | 0 | 33.98 |

Appendix II. Eight Total Maximum Daily Loads for Indicator Bacteria in Greens Bayou Above Tidal and Tributaries For Segment Numbers 1016, 1016A, 1016B, 1016C, and 1016D

TMDL Updates to the WQMP: Eight Total Maximum Daily Loads for Indicator Bacteria in Greens Bayou Above Tidal and Tributaries (Segments 1016, 1016A, 1016B, 1016C, and 1016D)

The document *Eight Total Maximum Daily Loads for Indicator Bacteria in Greens Bayou Above Tidal and Tributaries: Segments 1016, 1016A, 1016B, 1016C, and 1016D* was adopted by the TCEQ on 06/02/10 and approved by EPA on 08/12/10, and became an update to the state's Water Quality Management Plan (WQMP). It has had seven subsequent WQMP updates prior to this one that provided individual Waste Load Allocations (WLAs) for permitted facilities.

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

- add one new permit.

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

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

Table 1 – Change to Individual Waste Load Allocation (Updates Table 15, pp. 39-42 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 |
|---------------------|---------|-------------------|----------------|---------------------|------------|---|---------------|
| 15299-001 | 001 | TX0135798 | 1016_01 | JARRAR HOLDINGS LLC | 0.012 | 0.029 | New permit |

Table 2 - *E. coli* TMDL Summary Calculations For Greens Bayou Assessment Units (Updates Table 17, p. 46 in the TMDL document.)

| Assessment Unit | 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) |
|-----------------|-------------------|--------------------------|------------------------|---------------------------------------|---|----------------------|-----------------------|---------------------------------|
| 1016_01 | 11371 | Greens Bayou Above Tidal | 403 | 61.4 | 293 | 0 | 20.2 | 28.4 |
| 1016_02 | 11371 | Greens Bayou Above Tidal | 1,020 | 106.7 | 789 | 0 | 51.2 | 73.1 |
| 1016_03 | 11369 | Greens Bayou Above Tidal | 1,780 | 196 | 1,050 | 231 | 89.0 | 214 |

Appendix III. 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 Water Quality Management Plan (WQMP). Twelve subsequent WQMP updates prior to this one have updated the list of individual waste load 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:

- add two 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 (AFG) in three AUs. This was originally presented in Table 18 in the original TMDL document, and the three affected AUs are included here as Table 2.

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 assessment unit. Therefore, these overall numbers did not change, and Table 19 of the TMDL remains the same.

Table 1 - Changes to Individual Waste Load 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 |
|---------------------|---------|-------------------|----------------|--------------------------|------------|---|---------------|
| 15297-001 | 001 | TX0135771 | 1008_03 | GOSLING OFFICE PARK, LLC | 0.0075 | 0.0179 | New permit |
| 15312-001 | 001 | TX0135925 | 1008H_01 | ROSEHILL RESERVE, LTD | 0.3 | 0.72 | New permit |

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

| Assessment Unit | 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) |
|-----------------|-------------------|--------------|------------------------|---------------------------------------|---|----------------------|-----------------------|---------------------------------|
| 1008_03 | 11313 | Spring Creek | 1420 | 94.1 | 141 | 1050 | 70.9 | 64.0 |
| 1008_04 | 11312 | Spring Creek | 1510 | 129.8 | 146 | 1090 | 75.7 | 68.5 |
| 1008H_01 | 11185 | Willow Creek | 166 | 16.25 | 14.9 | 104 | 8.28 | 22.6 |

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): Two Total Maximum Daily Loads for Bacteria in Bastrop Bay/Oyster Lake and Christmas Bay (Segments 2433OW and 2434OW), Addendum Three to Six Total Maximum Daily Loads for Bacteria in Waters of the Upper Gulf Coast

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). Six subsequent WQMP updates prior to this one have updated the list of individual waste load 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:

- add a new permit.

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

In addition, this new facility discharges into a segment not included in the original TMDL. It was part of the third addendum to the original TMDL.

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

| State Permit Number / EPA Permit Number/ Outfall 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 |
|---|----------------|---------------------------------|------------|--|--|--|------------|
| 15303-001 / TX0135828 / Outfall 001 | 2434 | FOLLETS ISLAND CUSTOM HOMES LLC | 0.048 | 363,399,531 | 228,941,704 | 63,594,918 | New permit |

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

Appendix V. One Total Maximum Daily Load for Bacteria in Upper Oyster Creek for Segment Number 1245

TMDL Updates to the Water Quality Management Plan (WQMP): Bacteria in Upper Oyster Creek (Segment 1245)

The document *One Total Maximum Daily Load for Bacteria in Upper Oyster Creek for Segment Number 1245* was adopted by the TCEQ on 08/08/07 and approved by EPA on 09/28/07, and became an update to the state’s Water Quality Management Plan (WQMP). Nine subsequent WQMP updates prior to this one have provided individual Waste Load Allocations (WLAs) for permitted facilities.

The purpose of this WQMP update is to make the following changes to the TMDL (Table 1):

- add a new permit, and
- remove an expired permit.

Table 1 –Permitted Bacteria Allocation for Amended Discharges (pp. 35-37 in original TMDL document.)

| State Permit Number | Outfall | EPA Permit Number | Segment Number | Permittee Name | Flow (MGD) | Waste Load Allocation (WLA) | TMDL/ Comments |
|---------------------|---------|-------------------|----------------|---------------------------|------------|---|----------------|
| 15308-001 | 001 | TX0135879 | 1245 | FORT BEND COUNTY MUD #142 | 0.45 | 6.71×10^9 cfu <i>E. coli</i> per day | New permit |
| 14917-001 | 001 | TX0131717 | 1245 | FORT BEND COUNTY MUD #134 | NA | NA | Permit expired |

Note that this TMDL was written for *E. coli* and that it used the single sample criterion of 394 cfu/100 mL.

The addition of the discharge for this facility in Allocation Reach 2 also changes the TMDL equation for the reach, given in Table 11 of the TMDL document. Note that other changes have already taken place that affected this equation, which have been outlined in previous WQMP Updates. The WLA Continuous for Allocation Reach 2 will now be 1.76×10^{11} cfu *E. coli* per day.

The Allowable Loading for Allocation Reach 2 will also have to increase to allow for the increased flow (and therefore increased allowable *E. coli* concentration) in Upper Oyster Creek as a result of this new discharge. As established on pages 32 and 33 and in Table 9 of the TMDL document, this “additional loading” is determined by calculating the “...difference between loadings if WWTFs operated at their full allowable daily discharges and the loadings that would be allowable under the average WWTF discharges reported...” The actual average discharge data related to this increase in discharge are not available; therefore, it is not possible to calculate this additional loading at this time. However, as long as all new/increased discharges have *E. coli* concentrations at or below the criterion, they will result in a neutral impact on Segment 1245 by increasing stream flow while adding bacteria at concentrations meeting protective criteria, as explained in the Future Growth section of the TMDL document on page 37.