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Draft Updated Implementation Plan for Nine Total Maximum Daily Loads for Indicator Fecal Bacteria in Four Austin Streams

Assessment Units: 1403J_01, 1403K_01, 1428B_01,
1428B_02, 1428B_03, AU 1428B_04, 1428B_05,
1429C_02, and 1429C_03

By the Improving Austin Streams Stakeholder Group, the University of Texas Center for Public Policy Dispute Resolution, and Suzanne Schwartz Facilitation

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Abbreviations

[Some commonly used abbreviations are shown here. Add or remove for your plan.]

AU	assessment unit
BMP	best management practice
cfu	colony-forming units
<i>E. coli</i>	<i>Escherichia coli</i> (also referred to as fecal bacteria)
EPA	Environmental Protection Agency, United States
I-Plan	implementation plan
mL	milliliter
MS4	municipal separate storm sewer system
OSSF	on-site sewage facility
SSO	sanitary sewer overflow
SWMP	stormwater management plan
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality

TMDL	total maximum daily load
TPDES	Texas Pollutant Discharge Elimination System
TSSWCB	Texas State Soil and Water Conservation Board
WWTF	wastewater treatment facility

Executive Summary

[Example text following for the Austin Streams Updated I-Plan]

The Texas Commission on Environmental Quality (TCEQ) first identified use impairments due to elevated concentrations of indicator fecal bacteria, which may indicate a health risk to people who swim or wade in the water bodies—activities called “contact recreation” in the state’s standards for surface water quality. The impairments were first noted in the Spicewood Tributary to Shoal Creek (Segment 1403J) and Taylor Slough South (1403K) in the *2002 Texas Water Quality Inventory and 303(d) List* (TCEQ 2002) and were added for Waller Creek (1429C) and Walnut Creek (1428B) in 2006 (TCEQ 2006). An assessment unit (AU) is the smallest geographic area for which TCEQ reports use attainment. The impaired segments and the affected assessment units (AUs) within them in the Austin area are:

- Spicewood Tributary to Shoal Creek, AU 1403J_01
- Taylor Slough South, AU 1403K_01
- Walnut Creek, AU 1428B_05
- Waller Creek, AUs 1429C_02 and 1429C_03

TCEQ identified concerns for continued attainment of the contact recreation use in four AUs of Walnut Creek in the *2012 Texas Integrated Report of Surface Water Quality for Clean Water Act Sections 305(b) and 303(d)* (TCEQ 2012). Those AUs are:

- Walnut Creek, AU 1428B_01
- Walnut Creek, AU 1428B_02
- Walnut Creek, AU 1428B_03
- Walnut Creek, AU 1428B_04

On January 21, 2015, TCEQ adopted *Five Total Maximum Daily Loads for Indicator Bacteria in Four Austin Streams* (TMDLs) to address the impairments (TCEQ 2015a). The U.S. Environmental Protection Agency (EPA) approved the TMDLs on March 18, 2015. After EPA guidelines were revised early in 2015 to allow for TMDLs for concerns as well as for impairments, at request of the Austin Streams stakeholders, TCEQ added four TMDLs for the AUs of concern via the *April 2015 Update to the Texas Water Quality Management Plan* (TCEQ 2015c). The TMDL report and the TMDL update established the maximum amount of indicator bacteria the water bodies could absorb and still meet the state’s contact recreation use standards.

In addition to advising TCEQ on development of the TMDLs, Austin-area stakeholders developed their *Implementation Plan for Five Total Maximum Daily*

Loads for Bacteria in Four Austin Streams (I-Plan) (TCEQ 2015b) to reduce bacteria in the affected water bodies, which TCEQ approved on January 21, 2015. Both the TMDLs and the I-Plan are available on TCEQ's [Austin TMDL project webpage](#).¹ This Updated I-Plan is posted there as well.

The goal of this Updated I-Plan is to continue reducing **indicator bacteria concentrations to attain the contact recreation use in the nine affected AUs**. Stakeholders in the watershed will implement this I-Plan through the **voluntary management measures and regulatory control actions** documented herein. Stakeholders will use an adaptive management approach to carry out the I-Plan in which they assess the efficiency and effectiveness of the measures they implement and adjust for changing conditions.

This Updated I-Plan summarizes the nine TMDLs adopted in 2015 and the progress stakeholders achieved under their 2015 I-Plan. It also identifies the management measures and control actions the stakeholders will use in the updated plan, the parties responsible for implementing each activity, and a schedule for completing them.

The 2015 TMDL report identified the probable sources of indicator bacteria in Austin streams as stormwater runoff from municipal separate storm sewer systems (MS4s), malfunctioning on-site sewage facilities (OSSFs), development, and pet and wildlife wastes.

Organizations that have MS4 permits or authorizations in the four Austin streams watersheds (TMDL watersheds) are the City of Austin (CoA), University of Texas at Austin (UT), Texas Department of Transportation (TxDOT), and Travis County. No domestic wastewater treatment facilities (WWTFs) discharge within the TMDL watersheds.

Responsible parties will report their progress to TCEQ annually in **April** and will meet each **May** to assess their progress and adjust implementation strategies as needed. TCEQ will post the stakeholders' annual status reports on the project's webpage.

[End example text]

Introduction

[Example text]

The Austin area is located where the Edwards Plateau meets the Blackland Prairie at the Balcones Fault (commonly called the Texas Hill Country) according to

¹ www.tceq.texas.gov/waterquality/tmdl/101-austinbacteria

the *2013 Texas Almanac* (TSHA 2013). The central and west Austin areas are located on the Balcones Escarpment, at the eastern edge of the Edwards Plateau. Land use in the TMDL watersheds is primarily urban (TCEQ 2015a).

In June 2021, after five years implementing their original I-Plan, the stakeholders decided to update their I-Plan based on currently available data and science and what they learned about the effectiveness of their chosen best management practices (BMPs). The stakeholder group was open to all individuals or representatives of organizations who:

- 1) Live or work in the affected watersheds
- 2) May be affected by or may affect water quality in the watersheds
- 3) Can develop or implement actions to address water quality problems

Stakeholders formed a Coordinating Committee to guide development of the updated plan and serve as a decision-making group, with the goal of making all decisions by consensus.

Stakeholders' goals for the Updated I-Plan are to:

- Restore water quality to meet the criterion used to measure the attainment of the contact recreation use.
- Manage the affected watersheds through cooperation among jurisdictions and residents, and by tailoring solutions to each responsible party's unique needs.

This updated I-Plan reflects the management measures and control actions that responsible parties will implement to meet those goals. Throughout the process of developing the update, stakeholders considered the issue of how best to involve the public, both in developing the Updated I-Plan as well as in actions to improve water quality. Participants noted that progress toward the goal of meeting the standard may be slow where stormwater is a pollutant source.

[End example text]

TMDL Summary

[Example text, taken from various sections of the Austin Streams TMDL]

A TMDL represents the maximum amount of a pollutant that a water body can receive in a single day without exceeding water quality standards. TCEQ, with advice from the stakeholders, developed TMDLs for the five impaired AUs identified on the Texas 303(d) list of impaired water bodies and, as requested by the Austin Streams stakeholders, developed TMDLs for the four AUs with concerns for continued attainment of the contact recreation use.

Figure one shows the approximate locations and areas of the affected watersheds. Tables 1 and 2 summarize the allocations developed for the *Five Total Maximum Daily Loads for Bacteria in Four Austin Streams* (TCEQ 2015a). The TMDL report, available on TCEQ's [Austin TMDL project webpage](#),² provides additional background information, including the problem definition, endpoint identification, source analysis, linkages between sources and receiving waters, and pollutant load allocations.

² www.tceq.texas.gov/waterquality/tmdl/101-austinbacteria

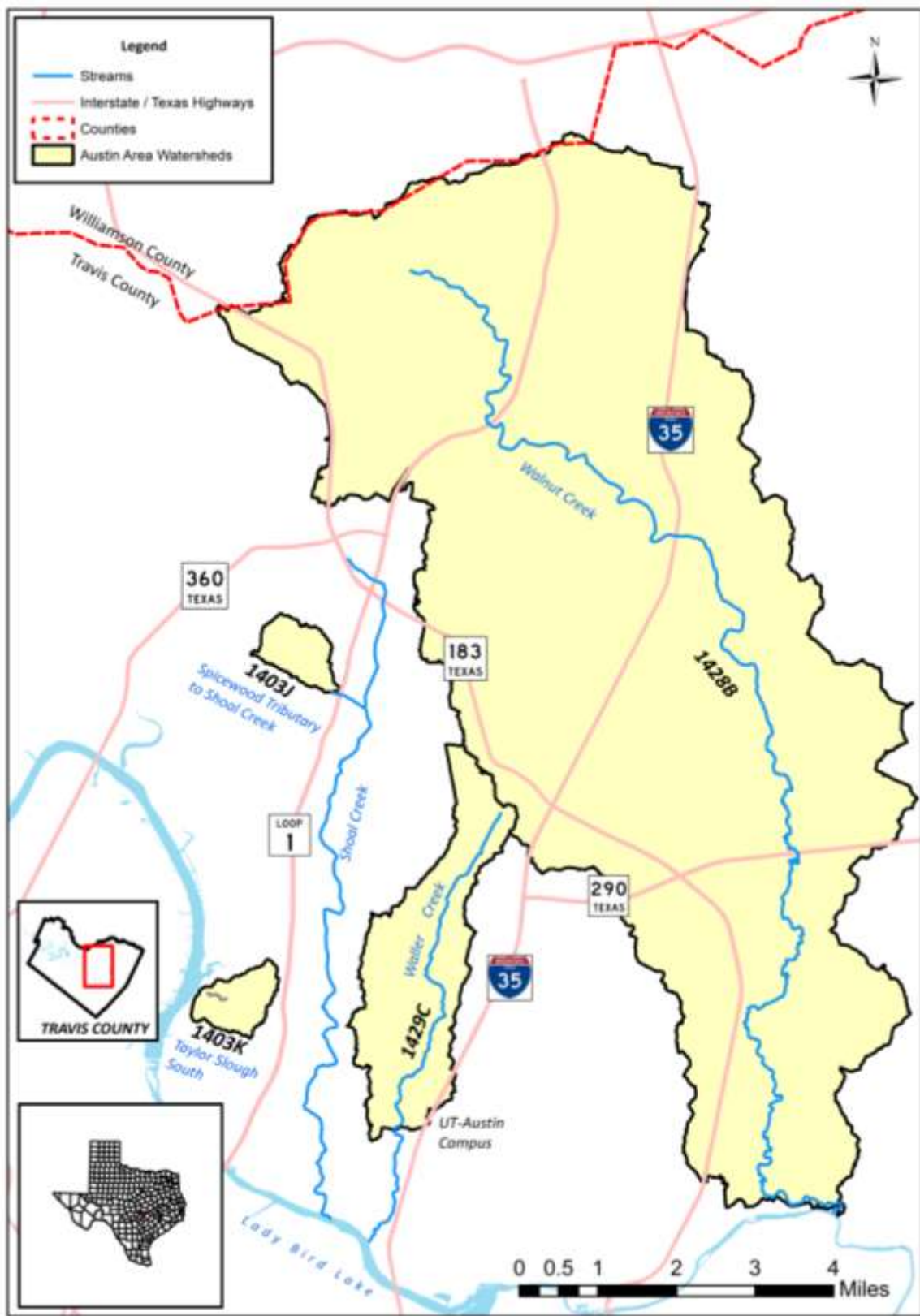


Figure 1. Overview map showing the four Austin streams TMDL watersheds

Table 1. TMDL allocation summary for impaired AUs

Loads are provided in billion cfu/day.

Stream	AU	TMDL	WLA _{WWTF}	WLA _{SW}	MOS	LA _{USL}	LA _{AU}	LA _{Total}
Spicewood Tributary to Shoal Creek	1403J_01	11.93	0.00	11.33	0.60	0.00	0.00	0.00
Taylor Slough South	1403K_01	9.93	0.00	9.43	0.50	0.00	0.00	0.00
Walnut Creek	1428B_05	74.91	0.00	71.16	3.75	0.00	0.00	0.00
Waller Creek	1429C_02	90.29	0.00	50.72	2.67	36.90	0.00	36.90
Waller Creek	1429C_03	36.90	0.00	35.05	1.85	0.00	0.00	0.00

Table 2. TMDL allocation summary for AUs of concern

Loads are provided in billion cfu/day.

Stream	AU	TMDL	WLA _{WWTF}	WLA _{SW}	MOS	LA _{USL}	LA _{AU}	LA _{Total}
Walnut Creek	1428B_01	283.36	0.00	17.89	0.94	264.53	0.00	264.53
Walnut Creek	1428B_02	264.53	0.00	87.89	4.63	172.01	0.00	172.01
Walnut Creek	1428B_03	172.01	0.00	10.16	0.53	161.32	0.00	161.32
Walnut Creek	1428B_04	161.32	0.00	82.09	4.32	74.91	0.00	74.91

Detailed information about the TMDLs and the original I-Plan is available in *Five Total Maximum Daily Loads for Indicator Bacteria in Four Austin Streams* (TCEQ 2015) and the *Implementation Plan for Five Total Maximum Daily Loads for Bacteria in Four Austin Streams* (TCEQ 2015), both available on TCEQ's [Austin TMDL project webpage](#).³

[End example text]

Implementation Progress through 2020

[Provide a brief summary here.]

Implementation Strategy

[Example text]

³ www.tceq.texas.gov/waterquality/tmdl/101-austinbacteria

This revised I-Plan documents **XX** management measures and **XX** control actions to reduce bacteria loads. Management measures are voluntary activities, such as restoring and improving riparian buffer zones. Control actions are regulatory activities, such as compliance with WWTF or MS4 permits.

The participating partners may accomplish the activities described in the plan through rule, order, guidance, or other formal or informal action. The I-Plan will be implemented using adaptive management, wherein measures are periodically assessed for efficiency and effectiveness. This iterative process to evaluate and adjust the management measures and control actions in the I-Plan will ensure continuing progress toward achieving water quality goals and shows a commitment to improving water quality.

Management measures may be adjusted or eliminated by agreement of the stakeholders during each annual assessment of progress or when the time period for this plan has been completed. Control actions will be adjusted based on changes in the regulations that form their basis, including adding or removing actions needed to comply with applicable permits.

Management Measures Summary

[List the management measures in the Updated I-Plan.]

Control Actions Summary

The control actions in this plan are drawn from the activities of responsible parties that hold MS4 permits or authorizations under a Texas Pollutant Discharge Elimination System (TPDES) specific (Phase I) or general (Phase II) permit.

[List the control actions in the Updated I-Plan.]

[End example text]

Data Used in the Update

[Summarize and discuss the data and information used for the Updated I-Plan.]

Management Measure 1: [Measure name]

[Describe the measure.]

Sub-Measure 1.1. [Measure name] *(if applicable)*

[Describe the measure. For each measure (or for sub-measure if used) provide a table similar to the one below.]

Table X. Management Measure X.X. Measure name.

Item	Description
Best Management Practice	
Responsible Party (Parties)	
Area of Emphasis	
Educational Activities	
Schedule of Implementation	
Interim, Measurable Milestones	
Progress Indicators	
Monitoring Component <i>(if applicable)</i>	

Control Action 1: Compliance with MS4 SWMPs

In watersheds for which TMDLs have been adopted, TCEQ requires organizations that hold TPDES Phase I or Phase II permits or authorizations to include all the measures in an approved I-Plan, or alternate, equivalent measures, in their Stormwater Management Plans (SWMPs.) Specifically, SWMPs must include the following:

- List Targeted Controls
- Provide Measurable Goals
- Identify Benchmarks
- Monitor or assess progress in achieving benchmarks
- Determine the effectiveness of BMPs
- Submit Annual Reports

Table X. MS4s permits and authorization in the Austin Streams watershed

MS4 Permit Holders	Permit Type	TPDES Permit Number
University of Texas at Austin	Phase I	TXRxxxxxxx
City of Austin	Phase I	TXRxxxxxxx
County of Travis	Phase II	TXRxxxxxxx
Texas Department of Transportation	Combined Phase I and Phase II	TXRxxxxxxxxxxx

IInclude either:

- 1) A table for each permit holder describing the BMPs they are implementing under their SWMPs similar to the table format for management measures. See example table following.
- 2) SWMPs may instead be included by reference at the discretion of the stakeholder group since the schedules for revising the I-Plan and the SWMPs do not usually coincide. If included by reference, the Plan should provide a description of the types of applicable BMPs that the MS4 permit holders are implementing and a website link to the SWMPs that does not change. If including SWMPs by reference, TCEQ can provide boilerplate text on request. **I**

[1) Example table if each permit holder is listing the applicable BMPs from their individual permits.]

Table X. BMPs that will be implemented by **Name of MS4 Responsible Party**

SWMP Element	Description
Educate the public about stormwater issues and plans	
Detect and eliminate illicit discharges	
Manage stormwater runoff from construction and post-construction sites	
Practice pollution prevention	
Limit pollutants in industrial and high-risk stormwater runoff	
Implement a floatables program	
Maintain MS4 BMPs	
Monitor and evaluate water quality <i>[indicate which of three allowable methods is used]</i>	

[End example table.]

Implementation Tracking, Sustainability, and Milestones

Implementation tracking provides information that stakeholders can use to determine if progress is being made toward meeting the goals of the TMDL and I-Plan. Tracking also allows stakeholders to identify whether specific actions are or are not working and make any changes that may be necessary to get the I-Plan back on target. Implementation milestones track the completion of activities associated with control actions or management measures. Schedules and milestones for this revised I-Plan are included in the descriptions of each management measure and control action.

The responsible parties and other stakeholders will track progress using both water quality indicators and implementation milestones. These terms are defined as:

- **Water Quality Indicator** – A measure of water quality conditions for comparison to pre-existing conditions, constituent loadings, and water quality standards.
- **Implementation Milestone** – A measure of administrative actions undertaken to cause an improvement in water quality.

Water Quality Indicators

The measure of success for this I-Plan will be attainment of the geometric mean criteria for the contact recreation use in each of the affected water bodies.

Stakeholders will monitor trends in the geometric mean concentrations to determine if progress is being made.

[If the I-Plan includes water quality monitoring activities, summary information may be added here as desired.]

Communications Strategy

Communication is necessary to ensure that stakeholders understand the updated I-Plan and its progress in improving water quality. TCEQ will work with responsible parties and other stakeholders to hold annual meetings or obtain annual progress updates for up to five years. Responsible parties and stakeholders will continue to provide the status updates and take part in any meetings over the five-year period to evaluate implementation activities. At the completion of the scheduled activities, stakeholders will assemble and evaluate the actions, overall impacts, and results of their implementation efforts, and the need for a second updated I-Plan.

References

[Example references]

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[Name. Date. Name and publication info of the TMDL for this I-Plan. *If a
changing source, such as a database, include:* Accessed Month dd, yyyy]

[End example references]