Wastewater Implementation Strategies

Wastewater management encompasses a broad range of efforts that promote effective and responsible water use, treatment, and disposal while encouraging the protection and restoration of the region's — and this Project's — watersheds. Properly designed, operated, and maintained sanitary sewer systems collect and transport all sewage that flows into them to a publicly owned treatment works (POTW). Wastewater treatment facility operators bear a large responsibility for converting the sewage into water that can be safely released back into the Trinity River. Table 8 lists the permitted WWTFs in the Greater Trinity Watershed. For the waste not handled as part of a sanitary sewer system, liquid waste haulers provide services to OSSFs and portable/chemical toilets. Given the bacteria-laden nature of wastewater (Lusk, 2011), broad attention in this I-Plan will be given to the wastewater system. WWTFs, sanitary sewer systems, lift stations, and liquid waste haulers all have the potential to impact bacteria loading in impaired waterways (see Implementation Strategies 5.0 – 5.5 for OSSFs).

Implementation Strategies 1.0: Wastewater treatment facility effluent limits

In November 2009, TCEQ commissioners approved Rule Project No. 2009-005-309-PR. This rule requires the addition of bacteria limits for *E. coli* in freshwater discharges for all TPDES domestic wastewater permits during their next permit amendment or revision. This rule is defined in Title 30 Administrative Code Chapter (TAC) 309.3(h) and the frequency of testing required is defined in 30 TAC Chapter 319.5(b). Through this control action, responsible entities will continue to monitor *E. coli* concentrations in WWTF effluent as required by individual WWTF permits and any subsequent permit amendments or revisions.

Currently, three permitted WWTFs (Table 8) have direct impact in the Greater Trinity Project area watershed(s) and three of those are currently required to monitor *E. coli* levels in their effluent. The remaining plant will be required to monitor for *E. coli* upon renewal of the permit. For TCEQ bacteria TMDLs in the Dallas-Fort Worth area, TPDES-permitted WWTFs are allocated a daily waste load allocation (WLA_{WWTF}) calculated as their full permitted discharge flow rate multiplied by one half the instream geometric mean criterion. One-half of the water quality criterion (63 MPN/100mL) is used as the WWTF target to provide instream and downstream load capacity. Changes to effluent *E. coli* limits will occur following the approval of the TMDLs and during the next amendment or revision to an individual permit. Table 9 summarizes this implementation strategy.

Table 1. Permitted WWTFs in the Greater Trinity Watershed

Facility Name	Permit Number	Permit Daily Average E. coli[a]	Permit Effective Date	E. coli Permit Monitoring Frequency
Dallas Central WWTF	WQ0010060-001	63 MPN/100 mL	1/12/2017	5x/week
FTW Village Creek WWTF	WQ0010494-013	126 MPN/100 mL[b]	10/27/2014	5x/week
TRA Central Regional WWTF	WQ0010303-001	n/a[c]	2/4/2008	n/a[c]

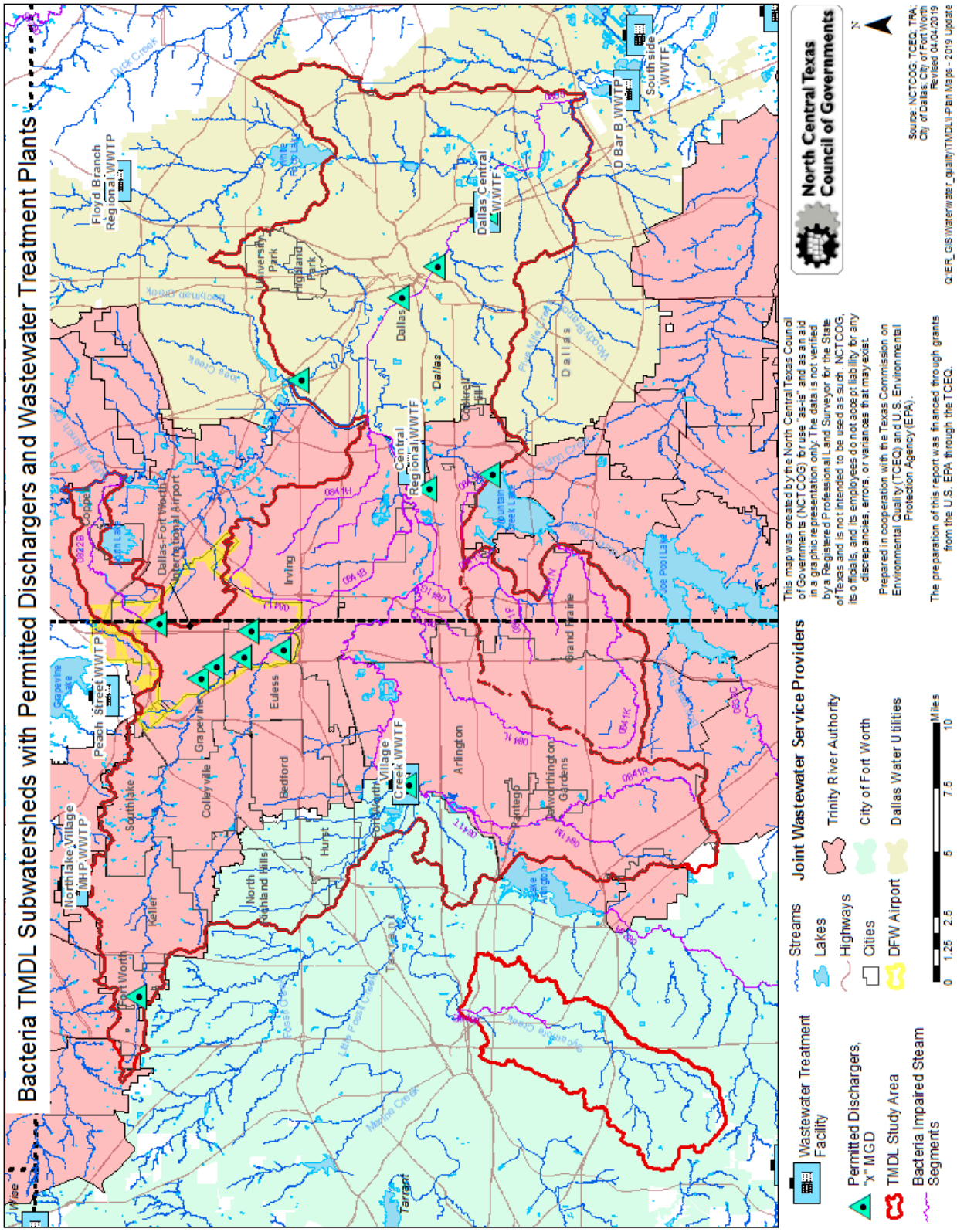
[a] There is also a daily maximum of 394 MPN/100mL.
[b] Subsequent renewals will include an *E. coli* limit of 63 MPN/100mL.
[c] Permit currently in renewal process. Renewed permit will include an *E. coli* limit of 126 MPN/100 mL and a monitoring frequency of 5x/week. Subsequent renewals will include an *E. coli* limit of 63 MPN/100 mL

Each of the entities listed in Table 8 is responsible for adhering to the requirements of their specific permits only. The terms and conditions in each individual permit are agreed upon by both the TCEQ and the permittee. Each permit specifically outlines the effluent constituents that require monitoring as well as the monitoring and reporting frequency to which the permittee must adhere. The TCEQ reviews and documents compliance with individual permits. WWTF permits are issued on a five-year cycle and must be renewed by the permittee. A map of WWTF coverage in the Project area can be found in Figure 7.

Table 2. Implementation Strategy 1.0 Summary — Wastewater treatment facility effluent limits

Targeted Source(s)	WWTF effluent
Estimated Potential Load Reduction	Implementation Strategy (IS) 1.0 may result in a 2% reduction of calculated bacteria loading from WWTF effluent
Technical and Financial Assistance Needed	Technical: none — permit requirements are already being met Financial: none — permit requirements are already being met
Education Component	None
Schedule of Implementation	Immediate. New requirements for WWTF permits would come from TCEQ
Interim, Measurable Milestone	The number of permits requiring bacteria monitoring with reduced daily average limits
Progress Indicators	Allowable daily average will be reduced from 126 MPN/100 mL to no more than 63 MPN/100 mL for all WWTF discharging to impaired waterways
Monitoring Component	An annual report to Coordination Committee from NCTCOG to include information on the progress of implementation strategies, in addition to self-reporting by WWTF to TCEQ
Responsible Entity	WWTFs will meet permit requirements and monitor E. coli as appropriate NCTCOG will contact TCEQ to secure the necessary permit information pertaining to bacteria limits NCTCOG will provide Coordination Committee with information on WWTF effluent limits

Figure 1. WWTF Location and Coverage Map with Permitted Dischargers



Implementation Strategy 1.1: Evaluation of non-participants in Sanitary Sewer Overflow Initiative (SSOI) and Capacity Management, Operation, and Maintenance (C-MOM) programs

Sanitary sewer systems that are properly designed, operated, and maintained will collect and transport all the sewage and industrial wastewater that flow into them to a wastewater treatment facility for appropriate treatment. If, however, there is significant inflow/infiltration (I/I) to the collection system; the system is not properly operated and maintained; or its capacity is inadequate, then sanitary sewers can overflow (Figure 8). The goals of the TCEQ SSOI are to reduce the number of sanitary sewer overflows (SSOs) that occur each year in Texas and to address SSOs before they harm human health, safety, or the environment and before they become enforcement issues (TCEQ, 2008).

Wastewater treatment facilities with sanitary sewer systems and subscribers within collection systems are eligible to participate in the TCEQ SSOI which provides benefits in that, a participating facility will not be subject to formal enforcement for most continuing SSO violations, as long as the SSOs are addressed by the SSO plan. Participation also allows the facility to spend resources on correction as opposed to having to pay penalties associated with an enforcement order, in addition to the money required to complete corrective action; and participation ensures that SSOs addressed by the SSO plan will not affect the facility's compliance history rating.

C-MOM is a self-adopted program for owners and operators of sanitary sewer systems and involves proper management, operations, and maintenance of the collection system. Additionally, C-MOM programs ensure adequate capacity for peak flows, and take steps to prevent or mitigate SSOs.

Both SSOI and C-MOM programs have the potential to decrease bacteria loading by reducing SSOs. Table 10 lists SSOI participants and non-participants as of July 2019. As summarized in Table 11, the Coordination Committee or their appointees will evaluate the entities that do not participate in either the SSOI or C-MOM programs and as appropriate, encourage participation in one of those two programs.

Table 3. SSOI Participants

Current and Past Participants as of 7/22/2019	Not Currently Participating
City of Arlington	City of Cockrell Hill
City of Bedford	City of Colleyville
City of Dallas	City of Coppell
City of Euless	City of Dalworthington Gardens
City of Fort Worth	City of Haslet
City of Grand Prairie	City of Keller
City of Grapevine	City of Kennedale
City of Hurst	City of Mansfield
City of Irving	City of Richland Hills
City of North Richland Hills	City of Southlake
Trinity River Authority – Central WWTP System	City of University Park
	Town of Highland Park
	Town of Pantego

Table 4. Implementation Strategy 1.1 Summary — Evaluation of non-participants in SSOI and C-MOM programs

Targeted Source(s)	Sanitary sewer system (SSS) failures and SSOs
Estimated Potential Load Reduction	IS 1.1, over 25 years, may result in a 35% reduction of calculated bacteria loading from SSSs and SSOs
Technical and Financial Assistance Needed	Technical: non-participants may need some level of technical assistance to begin SSOI and/or C-MOM participation Financial: grant funding, loans, and existing local funding as appropriate
Education Component	Outreach to SSS operators that are non-SSOI/non-C-MOM participants
Schedule of Implementation	By 2018, all non-participating MS4s will have been contacted by Coordination Committee members, either as a whole or individually By 2028, SSOI/C-MOM participation will increase by 15%
Interim, Measurable Milestone	By 2018, 100% contact of non-participants
Progress Indicators	The number of participants in SSOI and/or C-MOM
Monitoring Component	An annual report to Coordination Committee from NCTCOG to include information on the progress of implementation strategies
Responsible Entity	NCTCOG will gather and distribute information about SSOI and C-MOM participation and use to the Coordination Committee Wastewater subcommittee and Coordination Committee will conduct outreach to non-participants NCTCOG will contact TCEQ Office of Compliance and Enforcement Program Support Section annually to obtain a current list of SSOI participants for use in education and outreach efforts

Implementation Strategy 1.2: Lift station evaluation

For a variety of reasons, lift stations may occasionally cease functioning and may discharge sewage into waterways. One example is lift stations ceasing to function during extensive power outages following severe weather. Lift stations may also fail to function during circumstances other than power outages, such as due to mechanical failure or during repair. However, unlike many SSOs, lift station failures can result in the discharge of large volumes of untreated wastewater into waterways.

The stakeholders encourage entities with lift stations to survey and evaluate existing stations by 2018 to determine the appropriateness of implementing best management practices (BMPs) to prevent SSOs caused by lift stations. Using this information, the Coordination Committee will re-evaluate the need for identifying or developing lift station BMPs for the BMP Library (see Implementation Strategy 8.0). Table 12 provides a summary of components necessary for lift station evaluation.

Table 5. Implementation Strategy 1.2 Summary—Lift station evaluation

Targeted Source(s)	SSS failures and SSOs from lift station failures
Estimated Potential Load Reduction	IS 1.2 may result in a 2% reduction in bacteria loading
Technical and Financial Assistance Needed	Technical: technical assistance may be necessary for lift station assessment and any potential repairs or alternations Financial: if technical assistance is not available internally to lift station owners and/or operators, then grant, loans, or local funding may be necessary for both evaluation and any potential repairs or alternations
Education Component	Outreach to SSS lift station operators
Schedule of Implementation	By 2018, all entities with lift stations will have evaluated the need for maintenance programs to reduce SSOs caused by non or malfunctioning lift stations
Interim, Measurable Milestone	None
Progress Indicators	Number of lift stations being evaluated by station owners and/or operators
Monitoring Component	Reports containing lift station owners and/or operators and their progress on evaluation will be made available to Wastewater technical subcommittee and Coordination Committee annually
Responsible Entity	Lift station owners and/or operators will evaluate lift stations and report progress to NCTCOG NCTCOG will report on progress indicator to the Wastewater technical subcommittee and Coordination Committee

Implementation Strategy 1.3: Regional participation in Fats, Oils, and Grease program

Fats, oils, and grease (FOG) are considered the leading cause of blockages in sanitary sewers, and the EPA estimates that blockages account for nearly 50 percent of all SSOs (USEPA, 2007). North Texas Grease Abatement Council, now known since 2015 as the Wastewater And Treatment Education Roundtable (WATER), and NCTCOG have partnered to provide the cities and other agencies with public education materials related to FOG. Many organizations within the bacteria TMDL watersheds, such as Arlington, Colleyville, Dallas, Irving, North Richland Hills, and the TRA already use these materials to reduce FOG in the SSS and with it, SSOs. As summarized in Table 13, the stakeholders encourage organizations and wastewater plant operators to continue participation in the regional FOG education program. As resources are available, WATER is encouraged to expand educational materials to include the impact of FOG and SSOs on bacteria levels.

Table 6. Implementation Strategy 1.3 Summary — Regional participation in Fats, Oils, and Grease program

Targeted Source(s)	SSO and SSS failures
Estimated Potential Load Reduction	IS 1.3 may result in a 20% reduction in bacteria loading from SSOs and SSS failures
Technical and Financial Assistance Needed	Technical: technical assistance with FOG is available through existing programs Financial: participation in some FOG programs may require cost sharing, in addition to costs associated with educational materials; training for grease trap operators may also be necessary through grant funding, loans, and existing local funding as appropriate
Education Component	Outreach to RSWMP participants to ensure participation and outreach to non-RSWMP participants to encourage participation in regional FOG program(s) Public education is a primary component in FOG programs and an existing program is already in place Separate education programs may be necessary for grease trap operators
Schedule of Implementation	Existing FOG public education participants will begin immediately and continue their programs as feasible. By 2018, outreach will be conducted to all MS4s with SSSs not participating in the regional FOG program
Interim, Measurable Milestone	Over 25 years, all SSS owners and/or operators will actively participate in FOG programs
Progress Indicators	Number of FOG program participants
Monitoring Component	NCTCOG will collect FOG participant information and report to Wastewater technical subcommittee and Coordination Committee

Responsible Entity	NCTCOG will gather and distribute information of FOG program participation and report results to the Coordination Committee and Wastewater technical subcommittee Wastewater technical subcommittee and Coordination Committee will conduct outreach to non-participants

Implementation Strategy 1.4: Sanitary sewer overflow reporting

State law and TCEQ regulations specify reporting requirements for SSOs in Texas Water Code Chapter 26.039 and 30 TAC 305.125(9). Without accurate and available information on SSOs, gauging the effectiveness of SSO BMPs becomes difficult. Figure 8 provides a four-year representation of SSOs in the Project area categorized by the amount of released sewage. Table 14 summarizes the implementation strategies for SSOs.

1.4.1: Wastewater and wastewater collection licensing

The Coordination Committee recommends TCEQ increase understanding of reporting requirements for SSOs and SSO mitigation by ensuring such information is included in wastewater licensing classes, including those for wastewater collection.

1.4.2: Electronic reporting

The Coordination Committee encourages TCEQ to adopt electronic SSO reporting in addition to maintaining current methods. The TCEQ should further develop its system to allow electronic collection, analysis, and dissemination of this information. This action is not intended to increase the data-entry requirements for TCEQ staff; instead, it is intended to streamline reporting and analysis. Given technological disparities, however, the Committee encourages TCEQ to maintain the existing faxed SSO report for some time while electronic reporting is instituted.

1.4.3: Reporting form changes

Current "source" descriptions on TCEQ's reporting form are subject to interpretation. More accurate source descriptions would provide necessary information in future prevention of SSOs. TCEQ is encouraged to change the reporting form to better reflect actual cause of SSOs, for example specifying cause of blockage, and provide some type of education for those entities reporting.

Table 7. Implementation Strategy 1.4 Summary — Sanitary sewer overflow reporting

Targeted Source(s)	SSOs
Estimated Potential Load Reduction	IS 1.4. – 1.4.3 will contribute to the improved handling of SSOs and may result in a 2% reduction in calculated bacteria loading from SSOs over 25 years

Technical and Financial Assistance Needed	Technical: TCEQ may require technical assistance to develop appropriate database and reporting technologies as well as for wastewater licensing course materials SSS owners and/or operators may need high speed internet access or equivalent Financial: Existing and grant funding and loans as available
Education Component	TCEQ will provide appropriate instructions to SSS operators for using statewide SSO database TCEQ will provide appropriate educational materials for wastewater licensing course participants
Schedule of Implementation	As resources are available, the implementation of this activity will begin immediately and will continue for the entire implementation process
Interim, Measurable Milestone	Deployment of an appropriate database for tracking SSOs Wastewater licensing classes emphasizing accurate SSO reporting Reporting form changed for more accurate SSO cause description
Progress Indicators	Creation of a database Wastewater licensing course materials emphasizing SSO reporting Changed reporting form
Monitoring Component	NCTCOG will collect information from TCEQ regarding any updates to educational materials for wastewater licensing course participants, as well as any progress on database improvements
Responsible Entity	NCTCOG will coordinate with TCEQ on exploration of options for developing appropriate materials for use in wastewater licensing courses conducted through the TCEQ. NCTCOG will also coordinate with TCEQ to identify desired modifications to the SSO reporting form that would result in more effective SSO cause identification. SSS owners and/or operators will report SSOs as appropriate and ensure employee SSO reporting training NCTCOG will collect and share information with the Wastewater technical subcommittee and Coordination Committee

Implementation Strategy 1.5: Funding opportunities for repair/replacement of sanitary sewer lines

Summarized below in Table 15, NCTCOG and stakeholders will pursue funding opportunities for rehabilitation or replacement of sanitary sewer lines, including Texas Water Development Board funding and regional supplemental environmental projects (SEPs) to repair, maintain, or extend wastewater infrastructure. NCTCOG will share information on funding opportunities to interested parties by web posting to a new or existing web page.

Table 8. Implementation Strategy 1.5 Summary — Funding opportunities for repair/replacement of sanitary sewer lines

Targeted Source(s)	SSO and SSS failures
Estimated Potential Load Reduction	IS 1.5 may result in a 5% reduction in calculated bacteria loading over 25 years by reducing the portion of the wasteload contributed by leaking or broken sewer lines
Technical and Financial Assistance Needed	Technical: engineering and technical expertise may be necessary Financial: existing or new grants, SEPs, or other funding mechanisms available at the local, state, or federal level
Education Component	NCTCOG will make new funding opportunities known to SSS owners and operators via web postings
Schedule of Implementation	As resources are available, the implementation of this activity will begin immediately and will continue for the entire implementation process
Interim, Measurable Milestone	Available funding opportunities identified on a NCTCOG web page
Progress Indicators	Creation of a new or modification of an existing web page for funding opportunities and the number of successful grant or funding applications for wastewater infrastructure received in the Project Area
Monitoring Component	Web page use reports for Coordination Committee and annual Water Quality Management Plan Update, which details some wastewater funding in the Project area
Responsible Entity	NCTCOG will create or modify existing web page and maintain current information SSS stakeholders will utilize information and seek funding opportunities to upgrade wastewater infrastructure

Implementation Strategy 1.6: Relocation of sewer mains from waterways

Although waterways are convenient locations for sewer mains in terms of access rights and elevation, failures in the system in such locations have a direct impact on water quality and bacteria levels. The Coordination Committee encourages MS4s to relocate sewer mains out of waterways as practicable, as part of infrastructure replacement programs. Table 16 outlines the details of this implementation strategy.

Table 9. Implementation Strategy 1.6 Summary — Relocation of sewer mains from waterways

Targeted Source(s)	SSO and SSS failures
Estimated Potential Load Reduction	IS 1.6 may result in a 4% reduction over 25 years of calculated bacteria loading by reducing the potential for additional loading from leaking or collapsed sewer lines
Technical and Financial Assistance Needed	Technical: engineering and other technical expertise will be necessary in order to relocate wastewater lines from waterways Financial: grant funding, loans, and existing local funding as available
Education Component	Public education regarding relocation benefits may be needed Additionally, education for decision-makers, such as city councils, may also be necessary
Schedule of Implementation	Beginning immediately as appropriate, SSS owners and/or operators will consider relocation of sewer lines out of waterways as part of infrastructure repair and replacement
Interim, Measurable Milestone	Over 25 years, as many sewer lines as practicable will be relocated from waterways
Progress Indicators	Number of sewer lines relocated
Monitoring Component	Voluntary reports from SSS owners and/or operators to NCTCOG on relocations
Responsible Entity	SSS owners and/or operators will relocate sewer mains from waterways as feasible

Implementation Strategy 1.7: Liquid waste management and liquid waste hauler program expansion

Waste haulers routinely transport bacteria-laden materials, including septic, grease trap, and grit trap wastes. When this highly concentrated, untreated waste is discharged into waterways instead of being properly disposed of or treated, it may represent a significant local increase in bacterial loading.

NCTCOG and the Coordination Committee encourage MS4 permittees to maintain existing liquid waste hauler permit and inspection programs and expand them if necessary. Because liquid waste hauler regulation also takes place at the state level, the stakeholders request that TCEQ increase educational efforts to haulers, modify the registration form, and change regulations to include local notification. Table 17 summarizes the implementation strategies for liquid waste.

1.7.1: Liquid waste hauler inspection program

Using sample ordinances available through the online BMP Library (see Implementation Strategy 8.0), municipal MS4s are encouraged to evaluate liquid waste hauler operations within their jurisdictions and create or expand inspection programs to include permitting, inspections, and tracking of liquid waste haulers; with a goal of having inspection programs in 100 percent of large MS4s by 2028 and 25 percent of small MS4s by 2033.

1.7.2: TCEQ and liquid waste haulers

The Coordination Committee encourages TCEQ to increase its educational efforts toward liquid waste haulers, especially in regard to operations in areas with bacteria impaired waterways, illegal discharge penalties, and mitigation procedures.

1.7.2.1: Liquid waste hauler registration form addition

The Coordination Committee also requests TCEQ add a check box on liquid waste hauler registration forms for the operator to acknowledge that they know they are operating within an area with bacteria TMDL-listed waterways.

1.7.2.2: Requested change to liquid waste hauler regulations to include municipal notification

Request TCEQ amend regulatory guidance document to have waste haulers notify any municipalities, counties, and other jurisdictions that they are transporting through or where they are serving.

1.7.3: Implementation of standards for portable/chemical toilets

MS4s are encouraged to implement standards concerning waste management on all sites requiring use of portable/chemical toilets to ensure placement as far from stormwater inlets, gutter lines, and water bodies as feasible and to ensure regular service scheduling of onsite waste facilities.

Table 10. Implementation Strategy 1.7 Summary — Liquid waste management and liquid waste hauler program expansion

Targeted Source(s)	Improperly disposed waste from liquid waste haulers
Estimated Potential Load Reduction	IS 1.7 – 1.7.2 may result in a 5% reduction of calculated bacteria loading over 25 years by reducing the portion of the waste load contributed by improper handling, transportation, and disposal of liquid wastes
Technical and Financial Assistance Needed	Technical: some technical assistance may be necessary for MS4s without liquid waste hauler inspection and tracking programs to implement standards for portable and/or chemical toilets Financial: grants and/or existing funding and loans as available
Education Component	Outreach to MS4s without inspection and tracking programs may be necessary Educational efforts by TCEQ for liquid waste haulers regarding operations and any changes to registration form
Schedule of Implementation	100% of large MS4s will have inspection and tracking programs in place by 2028 25% of small MS4s will have inspection and tracking programs in place by 2033 Beginning immediately as feasible, TCEQ will consider changes to liquid waste hauler registration forms and changes to notification requirements
Interim, Measurable Milestone	By 2028, 100% of large MS4s will have liquid waste hauler inspection and tracking programs in place by 2033, 25% of small MS4s will have liquid waste hauler inspection and tracking programs in place
Progress Indicators	Number of MS4s with inspection and tracking programs Number of MS4s with standards for portable and/or chemical toilets Changes to liquid waste hauler registration form(s)
Monitoring Component	Reports to Coordination Committee and Stormwater technical subcommittee regarding MS4 programs and TCEQ program/form changes for liquid waste haulers
Responsible Entity	MS4s will adopt liquid waste hauler inspection and tracking programs NCTCOG will coordinate with stakeholders and TCEQ staff to identify potential changes to the liquid waste hauler registration forms that will enhance their effectiveness. NCTCOG will compile information on programs and forms for annual report to Coordination Committee and Stormwater technical subcommittee

Figure 2. Map — SSOs Occurring between January 2016 – December 2018