# Stormwater Control Plan forGroup XXXXXXX GROUPING NAME

|  |  |  |  |
| --- | --- | --- | --- |
| ***Waterbody*** | ***RI Waterbody ID*** | ***EPA Approval Date*** | ***Amendment Date(s)*** |
| *Waterbody Name* | *RI0007024R-01* | *TBD* | *N/A* |
| *Waterbody Name* | *RI0007024R-01* | *TBD* | *N/A* |

## Executive Summary

Introduction to the SCP Group referencing **Table 1** and the included water bodies. Include any specific water quality information related to the watershed, such as any watershed-based TMDLs. Provide general description of the watershed and reference **Table 2**. Refer to the **ArcGIS Online** **SCP Map Viewer**. The evaluation and recommendation for improvements to the existing stormwater systems within SCP Group XXXXXX contained within this report will serve as an update to Rhode Island Department of Transportation’s (RIDOT) stormwater management plan as required by the TMDL.

Note: SCP data may have been updated since submission of this SCP Group (refer to the ArcGIS Online SCP Map Viewer for any updates). The data presented in the following SCP report(s) reflects what was approved by EPA at the time of SCP submittal.

Table 1: Grouping Name Summary

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Water Body Segment | RIDEM WBID | Impairment(s)1 | Evaluation  Methodology | RIDOT Reduction Target  % (Load OR Acres) | Existing Treatment | Potential Treatment | Remaining RIDOT ReductionTarget2 | NonRIDOT Treatment Credit (%) |
| *Assapumpsett Brook* | *RI0002007R-01* | *Pathogens*  *\*Fecal Coliform* | *IC Method*  *IC Method* | *55% (40 ac)* | *0 ac* | *5 ac* | *5 ac* | *20%* |
| *Woonasquatucket River & Tributaries* | *RI0002007R-10B* | *Mercury3*  *\*Fecal Coliform* | *N/A*  *IC Method* | *N/A*  *55% (40 ac)* | *N/A*  *0 ac* | *N/A*  *5 ac* | *N/A*  *5 ac* | *20%* |
| *Woonasquatucket River & Tributaries* | *RI0002007R-10C* | *Mercury3*  *\*Fecal Coliform*  *Dissolved Oxygen*  *Pathogens*  *\*Zinc* | *N/A*  *IC Method*  *IC Method*  *IC Method*  *TMDL Method* | *N/A*  *55% (40 ac)*  *4% (2 lb/yr)* | *N/A*  *0 ac*  *0 lb/yr* | *N/A*  *5 ac*  *1 lb/yr* | *N/A*  *5 ac*  *1 lb/yr* | *20%* |
| *Woonasquatucket River & Tributaries* | *RI0002007R-10D* | *Mercury3*  *Dissolved Oxygen*  *Fecal Coliform*  *\*Copper*  *\*Lead*  *\*Zinc* | *N/A*  *IC Method*  *IC Method*  *TMDL Method*  *TMDL Method*  *TMDL Method* | *N/A*  *55% (40 ac)*  *35% (40 lb/yr)*  *43% (40 lb/yr)*  *41% (40 lb/yr)* | *N/A*  *0 ac*  *0 lb/yr*  *0 lb/yr*  *0 lb/yr* | *N/A*  *5 ac*  *5 lb/yr*  *5 lb/yr*  *5 lb/yr* | *N/A*  *5 ac*  *35 lb/yr*  *35 lb/yr*  *35 lb/yr* | *20%* |

1. RIDEM, March 2018, 2016 Integrated Water Quality Monitoring and Assessment List – Appendix A 2016 Index of Waterbodies and Category Listing. Available at: http://dem.ri.gov/programs/benviron/water/quality/surfwq/pdfs/iwr16.pdf.
2. Remaining RIDOT reduction target accounting for existing and potential STUs.
3. Non-stormwater related impairment

\* Impairment is covered by TMDL: Woonasquatucket River Fecal Coliform Bacteria and Dissolved Metals Total Maximum Daily Loads, RIDEM, April 2007

Table 2: Grouping Name Watershed Summary

|  |  |
| --- | --- |
| Towns: | Smithfield, Johnston, Providence, and North Providence |
| General Land Uses: | Forest, Conservation, Farmland, Open Space, Residential, Urban Development |
| Watershed Size: | 10,565 acres |
| Impervious Cover: | 43.1% |
| RIDOT Roadways: | I-95, I-295, State HWY 128, State HWY 104, US HWY 44, State HWY 15, State HWY 10, State HWY 7, State HWY 5, US HWY 44, US HWY 28, US HWY 6, US HWY 6A |
| Applicable TMDLs: | Woonasquatucket River Fecal Coliform Bacteria and Dissolved Metals Total Maximum Daily Loads – April 2007 |

Date Submitted to EPA: TBD

EPA Approved: TBD

Date Amended: N/A

Amendment Notes: N/A

# SCP Group Name Segment Name (RIXXXXXXXX-XX) City, State

## Key Findings

This SCP Report is for Segment Name (RIXXXXXXX-XX) located within the Subwatershed Name(s) (**Figure 1-A**).

Table 1-A: Subwatershed Summary

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Impairment(s) | Evaluation  Methodology | RIDOT Reduction Target (% / Load OR Acres) | Existing Treatment | Potential Treatment | Runoff Reduction | Remaining RIDOT Reduction Target | NonRIDOT Treatment Credit |
| *Fecal Coliform*  *Phosphorus* | *IC Method*  *TMDL Method* | *55% (49 ac)*  *40% (40 lb/yr)* | *1.4 ac*  *5 lb/yr* | *3.2 ac*  *10 lb/yr* | *7.9 ac-ft*  *7.9 ac-ft* | *44 ac*  *25 lb/yr* | *20%*  *20%* |

## Site Description

Subwatershed Description

* The subwatershed is located in Town names(s).
* The subwatershed is X acres and X% impervious.
* The general land uses within the subwatershed are List general land uses.

RIDOT Discharging Area

* RIDOT maintained property is X total acres and X impervious acres.
* No “Other RIDOT roadways” exist in this subwatershed OR Note any road ownership discrepancies within the subwatershed.
* No changes to the RIDEM-provided subwatershed boundary were identified. OR The subwatershed area decreased / increased from approximately X acres to X acres (X percent) due to changes identified during desktop review and site visits.
* There are #/no High Priority outfalls (Appendix 6).
* There are #/no Priority outfalls (Paragraph 20.b).
* There are #/no TMDL Priority outfalls.
* There are #/no RIDOT MS4 discharge points for which RIDOT must provide a schedule for initiating IDDE inspections (Appendix 8).
* There are #/no MS4 outfalls for which RIDOT shall identify upgradient interconnections (Appendix 9).
* There are #/no incoming MS4 interconnections and #/no private incoming interconnections.
* There are #/no outgoing interconnections.

Non-Discharge Areas

* RIDOT did not identify any non-discharge areas OR List/describe areas.

Sewered/Combined Sewer Areas

* There are no areas in the subwatershed that are sewered. OR A portion of the subwatershed has been identified as a sewered area.
* There are no areas that discharge to a combined sewer system. OR A portion of the subwatershed has been identified as discharging to a combined sewer system.

## Reduction Target Development

* RIDOT’s pollutant reduction target is X lb/yr AND / OR RIDOT’s IC reduction target is X acres.
* Impairment is covered by TMDL: list all approved TMDLs and list requirements specific to RIDOT (including priority outfalls owned by another MS4 to which RIDOT is interconnected) OR There are no TMDLs relevant to this subwatershed.

## Existing Stormwater Controls

* No STUs currently exist within the subwatershed. OR X STUs currently exist within the subwatershed and have a total pollutant treatment credit of X lb/yr AND / OR IC reduction credit of X acres.

## Potential Enhanced Non-Structural Stormwater Controls

* RIDOT identified removal of pet waste as a potential opportunity to reduce effective IC and Pollutant loading by XX acres and/or lb/year. AND/OR
* RIDOT will perform enhanced street sweeping within the Consent Decree designated Area of Interest (AOI).
* Describe any specific non-structural stormwater controls required by TMDL and how addressed.

## Potential Structural Stormwater Controls

* RIDOT identified X opportunities for potential STUs within the subwatershed (**Table 2-A**) with a total pollutant treatment credit of X lb/yr AND / OR IC reduction credit of X acres.
* No TIP projects (as of Month Year) are scheduled for the next 5 years within the subwatershed OR This SCP includes areas that will be modified as part of a TIP projects (as of Month Year) scheduled for the next 5 years within the subwatershed with an assumed 50% treatment level for a total pollutant treatment credit of X lb/yr AND / OR IC reduction credit of X acres.

**Table 2-A: STU Stormwater Controls Summary**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| STU Name | Stormwater Control Type | Catchment Area  (ac) | Impervious Cover  (ac) | Treatment Depth  (in)  (Depth of Runoff Treated) | Runoff Reduction  (ac-ft) | Pollutant Treatment Credit  (lb/yr / %) | Equivalent IC Reduction Credit  (ac) | Estimated Cost | Cost per IC Reduction Acre ($/ac) | Cost per lb P Removed ($/lb P) | Retrofit Priority\* |
| *STU-118* | Infiltration Basin | 1.0 | 0.8 | 0.8 | 0.5 | 0.9 / 50% | 0.5 | NA | NA | *NA* | *Existing* |
| *STU-452* | Detention Basin | 1.5 | 1.4 | 2.0 | 1.0 | 1.2 / 60% | 0.8 | $215,000 | $179,200 | $268,750 | *1\** |
| *STU-001* | Street Sweeping | *45.5* | *45.5* | *N/A* | *N/A* | *0.2 / 0.2%* | *0.1* | $25,000 | $125,000 | *$250,000* | *1* |
| *Percent RIDOT Reduction Target Reached 50%* | | | | | | | | | | | |
|  | | | | | | | | | | | |
| *STU-002* | Infiltration Basin | 1.0 | 0.8 | 0.8 | 0.5 | 0.9 / 50% | 0.5 | $198,900 | $396,600 | *$221,000* | *2* |
| *Percent RIDOT Reduction Target Reached 75%* | | | | | | | | | | | |
|  | | | | | | | | | | | |
| *STU-003* | Detention Basin | 1.5 | 1.4 | 2.0 | 1.0 | 0.4 / 60% | 0.8 | $30,000 | $75,000 | *$37,500* | *3* |
| *Percent RIDOT Reduction Target Reached 100%* | | | | | | | | | | | |
|  | | | | | | | | | | | |
| Total |  | 50.5 | 49.9 |  | 3.0 | 1.8 / 40% | 1.4 | $443,900 |  |  |  |
| \*Indicates this STU addresses an outfall identified as priority for retrofit in a TMDL. | | | | | | | | | | | |

## Site Description

### Subwatershed Description

Segment Name (RIXXXXXXX-XX) is located within the Subwatershed Name(s) (**Figure 1-A**). The subwatershed is located in Town names(s). Describe the location, overall watershed, headwaters, and flow path of the Impaired Water Body. Include in the description a reference to the **ArcGIS Online** **SCP Map Viewer** and references to locations of major RIDOT roadways.Describe the stream/river corridor and surrounding land use(s). The Rhode Island Department of Environmental Management (RIDEM) water quality classification for the Segment Name is Class X. Describe use goals associated with water quality classification. According to RIDEM’s Clean Water Act (CWA) Integrated List of Waterbodies – Appendix A 2016 Index of Waterbodies and Category Listing,[[1]](#footnote-2) the impairment/impairments affecting this waterbody segment is/are pollutant(s). Summarize highlights from RIDEM’s 2012, 2014 and/or 2016 Integrated Water Quality Monitoring and Assessment Report. List relevant TMDLs, impairments addressed, and describe TMDL likely sources(s) of impairment(s) as well as other possible sources of impairment(s). Note any draft or future TMDLs.

RIDOT maintained property in the subwatershed is X acres; X acres of which is impervious. According to 2011 land use data obtained from the Rhode Island Geographic Information System (RIGIS),[[2]](#footnote-3) describe land use for the subwatershed and areas surrounding the waterbody. Describe any anticipated change in land use surrounding the waterbody.

### RIDOT Discharging Area Description

The **ArcGIS Online SCP Map Viewer** shows the subwatershed with the impaired waterbody segments, RIDOT maintained roadways and catchment areas, outfalls, catch basins, and interconnections, as discussed below.

Subwatershed Boundary Delineation

The RIDEM-provided subwatershed boundary was reviewed through desktop analysis and site visits. No changes to the subwatershed boundary were identified. OR As a result of this review, the subwatershed area decreased / increased from approximately X acres to X acres (X percent). A subwatershed boundary modification memo was sent to RIDEM on Date and approved on Date.

Summarize relevant findings and actions taken resulting from the desktop analysis. Summarize any site visits conducted by RIDOT and note relevant findings and actions taken, based on these visits.

Other RIDOT Roadways

Preliminary evaluation of this subwatershed determined RIDOT roads are properly identified and no “Other RIDOT roadways” exist in this subwatershed. OR Note any road ownership discrepancies within the subwatershed.

RIDOT Roadways

RIDOT maintained roadways in the subwatershed include: list roads shown in table below. Add description of non-road RIDOT properties too (e.g., parking lots). RIDOT maintains XX acres of property (impervious and pervious) within the subwatershed, of which, XX acres are directly or indirectly discharging to Segment Namewith XX acres of impervious cover. The RIDOT direct and indirect discharging areas include the following:

Table 3-A: Direct and Indirect Discharging Areas

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| RIDOT Roadway | Roadway Type | ROW Description | Adjacent Land Use | Drainage System |
| Smith Street | two lane roadway with sidewalks on both sides | right-of-way (ROW) width ranging from 40- to 50- feet | high density residential and commercial | closed drainage systems with direct discharge to Woonasquatucket River |
| High Service Avenue | two lane roadway with sidewalks on both sides | ROW width ranging from 40- to 50- feet | high density residential and commercial | closed drainage systems with direct discharge to Woonasquatucket River |
| Hartford Avenue (RIDOT potentially owned roadway) | two lane roadway with sidewalks on both sides | ROW width ranging from 40- to 50- feet | high density residential and commercial | closed drainage systems with direct discharge to Woonasquatucket River |

Outfall Catchment Delineation

RIDOT catchment areas by discharge location within the subwatershed are summarized in **Appendix A-A**. Describe relevant findings and actions taken resulting from the desktop analysis. Describe any site visits conducted by consultant/RIDOT and note relevant findings and actions taken, based on these visits.

Illicit Discharge Detection and Elimination

There are X mapped RIDOT outfalls within the Segment Name, of which X outfalls are exempt from IDDE requirements. An IDDE Exemption Request Memo was sent to EPA on Date.

There are no/# High Priority outfalls (as defined in Appendix 6) or Priority outfalls (as defined by paragraph 20.b) located in the subwatershed. There are also no/# RIDOT MS4 discharge points for which RIDOT must provide a schedule for initiating IDDE inspections (per Appendix 8). There are no/# MS4 outfalls for which RIDOT shall identify upgradient interconnections (per Appendix 9). If there are Priority Outfalls, describe the location both in text and reference the **ArcGIS Online SCP Map Viewer.**

In accordance with the Consent Decree, RIDOT will perform dry weather inspections and sampling, if appropriate, within six months of the submission of this SCP report and wet weather inspections and sampling, if appropriate, within one year of the submission of this SCP report. Describe recent IDDE activities in the subwatershed, including IDDE surveys or sampling of specific outfalls. Reference the **ArcGIS Online SCP Map Viewer** to show locations of outfalls.

Summarize actions taken by Consultant/RIDOT concerning field investigations, methodology, findings, and results. Note any findings and follow up work needed from IDDE inspections of the outfalls and drainage systems.

TMDL Priority Outfalls

There are no TMDL priority outfalls located in the subwatershed. OR Note if there are specific or priority outfalls identified in a TMDL, including RIDOT owned outfalls as well as outfalls owned by other MS4 systems if RIDOT and other MS4 systems are interconnected. Describe the location both in text and reference the **ArcGIS Online SCP Map Viewer.**

Interconnections

Interconnections are shown in the **ArcGIS Online SCP Map Viewer**. Describe any data sets used to identify interconnections (i.e., town data). Include description of how RIDOT has worked, or will work, cooperatively with the operators of all stormwater systems that are interconnected with the RIDOT drainage system and discharge to the Impaired Water Body Segment.

Describe any non-RIDOT stormwater systems that contribute flow to the RIDOT Outfalls and an estimate of the non-RIDOT catchment area. If the discharge is a connection to another system, identify the owner/operator of the receiving system.

MS4: RIDOT identified #/no locations where municipal separate storm sewer systems (MS4s) tie into the RIDOT drainage system (incoming interconnections) and #/no locations where RIDOT drainage ties into a municipal drainage system adjacent to their property (outgoing interconnections).If RIDOT discharges to an MS4 that ultimately drains to a priority outfall identified in a TMDL, discuss the results of this review and the proper RIDOT course of action.

Private: The desktop review, drainage system mapping, and field visits identified #/no potential private interconnections. Discuss who the private interconnection is from or if this is unknown. RIDOT will add these private interconnections to its IDDE program to verify that only stormwater flows are being discharged and will have the owners file for a PAPA.

Describe the results of the PAPA database review and the proper RIDOT course of action.

For this subwatershed, describe any outfalls, areas/reaches of waterbody identified in TMDL and/or Appendix 9 of the Consent Decree as priority for stormwater retrofits, but where outfalls have not been specifically identified. This analysis must also include priority outfalls owned/managed by another MS4 operator if the RIDOT drainage system contributes stormwater to this priority outfall via system interconnections.

### Non-Discharge Areas

RIDOT did not identify any non-discharge areas in the subwatershed. OR List/describe areas and reference the **ArcGIS Online SCP Map Viewer** showing non-discharge areas.

### Sewered/Combined Sewer Areas

There are no areas in the subwatershed that are sewered. OR A portion of the subwatershed has been identified as a sewered area. List/describe areas, owners of the system, data sets reviewed, and reference the **ArcGIS Online SCP Map Viewer** showing areas discharging to sewered areas.

There are no areas in the subwatershed that discharge to a combined sewer system. OR A portion of the subwatershed has been identified as discharging to a combined sewer system. List/describe areas, owners of system (e.g. Narraganset Bay Commission), data sets reviewed, and reference the **ArcGIS Online SCP Map Viewer** showing areas discharging to combined sewer systems.

### Flow and Water Quality Monitoring Data

Give a brief description of data sources reviewed and what relevant data was provided by the source. Reference the **ArcGIS Online SCP Map Viewer** or include additional figures as necessary as attachments to this report to visualize data. Note data source URLs in footnotes.

## Reduction Target Development

The impairment(s) affecting Segment Name(RIXXXXXXXX-XX) is/are pollutant(s). Describe what pollutants the final TMDL (if applicable) does not address or bacteria impairments. Explain which TMDLs cover the remaining impairments

### TMDL Method

The Woonasquatucket River Fecal Coliform Bacteria and Dissolved Metals Total Maximum Daily Loads TMDL includes pollutant reduction target(s) for each of the pollutant(s) of concern. **Table 4-A-1** provides a summary of the TMDL pollutant reduction target information for the subwatershed of Segment Name (RIXXXXXXXX-XX) and the RIDOT pollutant reduction target for RIDOT discharge areas.

Table 4-A-1: TMDL Method: Pollutant Reduction Target Summary

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Applicable TMDLs: | | Woonasquatucket River Fecal Coliform Bacteria and Dissolved Metals Total Maximum Daily Loads – April 2007 | | |
| Subwatershed Total Area: | | 3,458 acres | | |
| Subwatershed Total IC Area (%): | | 2,327 acres (67%) | | |
| RIDOT Contributing Total Area to Waterbody: | | 202 acres | | |
| RIDOT Contributing Total IC Area to Waterbody: | | 138 acres | | |
| Pollutants of Concern | Required TMDL Pollutant Reduction Target  (%) | Pollutant Load Rate (lb/ac/yr)1 | Current  RIDOT Load (lb/yr) | Required RIDOT Pollutant Reduction Target (lb/yr)2 |
| Zinc | 41% | 1.23 | 170.1 lb/yr | 69.7 lb/yr |
| Copper | 35% | 1.23 | 170.1 lb/yr | 59.5 lb/yr |
| Lead | 43% | 1.23 | 170.1 lb/yr | 73.1 lb/yr |

1  Pollutant loading rate is based upon USGS SELDM Analysis. Zinc used as a surrogate for all metals.

2  Total required RIDOT pollutant reduction target (lb/yr) calculated as the required TMDL pollutant reduction target percentage multiplied by the pollutant loading rate (lb/ac/yr) multiplied by the area of RIDOT impervious cover in the subwatershed that discharges to the impaired water body segment.

Additional TMDL Requirements

The following lists the TMDL information and recommendations applicable to RIDOT for this subwatershed:

* Summarize key findings and results of the TMDL study, including sources of impairments
* Summarize recommendations relevant to RIDOT and this SCP, including ways to meet waste load allocations (BMPs, IDDE activities etc.) and/or mapping and SWMPP requirements.
* Relative to requirements for targeted IDDE and/or stormwater retrofits for specific or priority outfalls identified in TMDL, describe any RIDOT owned outfalls as well as any requirements for outfalls owned by other MS4 systems if RIDOT and other MS4 systems are interconnected.

### Impervious Cover Method

As shown in **Table 4-A-2** the subwatershed’s percent IC is greater than 10%, thereby indicating that stormwater is a likely contributor to the impairment. To meet RIDOT’s apportioned responsibility for achieving the subwatershed IC reduction target, RIDOT’s effective IC within the subwatershed will need to be reduced by the percentage calculated in **Table 4-A-2**. *(Note: The TMDL Method was not performed for this water body, and as a result, there is no Table 4-A-1: TMDL Method: Pollutant Reduction Target Summary)*

OR

RIDOT determined that the subwatershed is less than 10% impervious, indicating that stormwater is likely not a contributor to the impairments.

Table 4-A-2: Impervious Cover Method: IC Reduction Target Summary

|  |  |
| --- | --- |
| Subwatershed Total Area: | 14,320 acres |
| Subwatershed Total IC Area (%): | 2,062 acres (14%) |
| Subwatershed Target IC (10%): | 1,432 acres |
| Subwatershed IC Reduction Target: | 55.0% |
| RIDOT Contributing Total Area to Waterbody: | 100.0 acres |
| RIDOT Contributing Total IC Area to Waterbody: | 90.0 acres |
| RIDOT IC Reduction Target: | 49.5 acres |
| Pollutants of Concern: | Pathogens, Fecal Coliform |

Additional TMDL Requirements

The following lists the TMDL information and recommendations applicable to RIDOT for this subwatershed:

* Summarize key findings and results of the TMDL study, including sources of impairments
* Summarize recommendations relevant to RIDOT and this SCP, including ways to meet waste load allocations (BMPs, IDDE activities etc.) and/or mapping and SWMPP requirements
* Relative to requirements for targeted IDDE and/or stormwater retrofits for specific or priority outfalls identified in TMDL, describe any RIDOT owned outfalls as well as any requirements for outfalls owned by other MS4 systems if RIDOT and other MS4 systems are interconnected.

### Non-Stormwater Related Impairments

The Segment Name (RIXXXXXXXX-XX) is impaired by # non-stormwater related impairments, including list impairments not related to stormwater OR The Segment Name (RIXXXXXXXX-XX) is not impaired by non-stormwater related impairments.

## Existing Stormwater Controls

No stormwater treatment units (STUs) currently exist to treat stormwater from RIDOT’s property directly or indirectly discharging to Segment Name (RIXXXXXXXX-XX).Under existing conditions, RIDOT’s estimated directly contributing annual pollutant load exceeds the RIDOT pollutant reduction target OR RIDOT’s estimated equivalent IC exceeds the RIDOT IC reduction target.

OR

RIDOT identified # existing stormwater treatment units (STUs) in in the Segment Name (RIXXXXXXXX-XX) subwatershed that treat stormwater runoff, as shown in the **ArcGIS Online SCP Map Viewer**. Introduction discussing existing stormwater structural controls and enhanced non-structural STUs within the subwatershed. Include general locations: median, interchange, shoulder, etc. and current conditions: existing ditches or STUs. This/these STU(s) will be visually inspected by RIDOT staff for proper function and issues including sediment accumulation, erosion and damaged drainage features will be noted in the RIDOT asset database and communicated to RIDOT maintenance staff for follow up action.

### Stormwater Controls Description

##### STU-118

Include a description of the type, condition, location, and size of the STU. Identify site constraints for improving/enlarging STU: steep slopes, utilities, other infrastructure (signs, bridge abutments, etc.), resources (wetlands, other critical areas), and soil types. Describe the STU’s catchment area, including pervious and NonRIDOT areas. Document that the STU is functioning properly in accordance with manufacturer design or specifications. Include dimensions and storage volume for all structural controls and the soil type and associated HSG for infiltration controls.

**Photo 1: Photo of STU**

##### STU-4524

See description above.

**Photo 2: Photo of STU**

##### Street Sweeping – Smith Street

For enhanced non-structural measures include a description of the measure including activity frequency, methods, and locations.

### Stormwater Controls Calculations

Calculations showing Pollutant AND/ OR effective IC treatment credit for existing stormwater controls is attached as **Appendix B-A** and summarized in **Table 2-A**.

Under existing conditions, RIDOT’s estimated directly contributing annual pollutant load exceeds the RIDOT pollutant reduction target OR RIDOT’s estimated equivalent IC exceeds the RIDOT IC reduction target.

## Potential Enhanced Non-Structural Stormwater Controls

RIDOT has identified that additional control measures are needed to reduce its effective IC and Pollutant loading within the contributing subwatershed to achieve the required RIDOT IC or pollutant reduction target. Appropriate locations are potentially available for enhanced non-structural control measures, as shown in the **ArcGIS Online SCP Map Viewer.** OR RIDOT did not identify any potential non-structural stormwater controls. Discuss why non-structural stormwater controls were not identified or required for this SCP.

### Stormwater Controls Descriptions

List source controls reviewed including reference to sources identified and discussed in the TMDL (as applicable). Discuss sources of run-on in the subwatershed.

Describe any specific non-structural stormwater controls required by TMDL and how addressed.

Discuss areas identified as having potential for an enhanced non-structural control. Note actions RIDOT plans to take in implementing enhanced non-structural controls.

As part of compliance with the Consent Decree, RIDOT will be performing enhanced street sweeping (estimated two times per year) within the Consent Decree designated Area of Interest (AOI). These roadways include a total of X miles containing X impervious acres within this subwatershed, shown on the **ArcGIS Online SCP Map Viewer.**

##### SCP-LWR-001

Include description of the enhanced non-structural control measure including activity frequency, methods, and locations. Reference the **ArcGIS Online SCP Map Viewer** or include additional figures as necessary as attachments to this report to show enhanced non-structural control project locations.

### Stormwater Controls Calculations

Calculations showing Pollutant AND/ OR effective IC treatment credit for enhanced non-structural controls is attached as **Appendix B-A** and summarized in **Table 2-A**.

## Potential Structural Stormwater Controls

RIDOT has identified that additional control measures in addition to existing STUs and potential enhanced non-structural STUs are needed to reduce its effective IC and Pollutant loading within the contributing subwatershed to achieve the required RIDOT IC or pollutant reduction target. Appropriate locations are potentially available for control measures, as shown in the **ArcGIS Online SCP Map Viewer.**

Specific stormwater controls have been identified that may be considered for implementation, as described in the following section. See sub-section Evaluation of Infeasible Stormwater Controls for more information regarding locations where retrofit STUs are not currently feasible.

### Stormwater Controls Description

RIDOT identified specific locations AND/OR several general locations for potential structural STUs within this subwatershed. The **ArcGIS Online SCP Map Viewer** shows potential STU locationswith catchment areas, including non-RIDOT areas and **Appendix C-A** lists site-specific constraints.

Below are descriptions of the potential STUs including estimated potential dimensions assuming no constraints, hydrologic soil group based on United States Department of Agriculture National Cooperative Soil Survey, and approximate catchment areas.

##### SCP-LWR-003

Include a description of the type, condition, and location (including which side of the road the STU is located on and nearby cross streets). Describe RIDOT road drainage that would be received and how it would be collected (sheet flow or closed drainage). Describe siting and permit requirements, obstacles to implementation, safety considerations, and preliminary engineering requirements. Discuss soils in area and potential for infiltration. Note if potential STU will likely be implemented as part of a TIP project, and list the TIP ID, project name and description. Describe any potential partnership opportunities related to the STU. Group similar STUs that have the same descriptions for brevity.

##### SCP-LWR-004

See description above.

TIP STUs

The RIDOT Transportation Improvement Plan (TIP) identifies RIDOT projects that are scheduled to be designed and constructed in the near future.

**Appendix D-A** lists the TIP projects (as of Month Year) scheduled for the next 5 years within the subwatershed*.*

OR

No TIP projects (as of Month Year) are scheduled for the next 5 years within the subwatershed.

OR

Areas that will be modified as part of a TIP project (as of Month Year) where potential STU locations were not identified are included within this SCP with an assumed 50% treatment level. Stormwater controls will be included in TIP projects to the maximum extent practicable.

*SCP-LWR-005*

* TIP ID: 6724
* TIP Year: 2022
* TIP Category: Bridge Capital Program
* Project Name: Broadway Overpass, US 6 Olneyville Exp at Broadway
* Municipality: Providence
* Description: Construction of the 6/10 Interchange and associated bridges to bring this section of roadway into a state of good repair.

Limited ROW STUs

RIDOT did not identify any roadways as areas with limited ROW STUs. OR RIDOT identified X roadways as areas with limited ROW STUs. RIDOT limited ROW areas are shown in the **ArcGIS Online SCP Map Viewer** with specific constraints listed in **Appendix C-A**.

Due to the need for additional investigation to be conducted in these areas, RIDOT estimated STU treatment potential by assuming treatment of 10% of the impervious catchment area at 0.25-inch treatment depth with bioretention STUs. RIDOT identified the following roadways as areas with limited ROW.

*SCP-LWR-006: Esmond Street from Putnam Pike to Waterman Ave*

* Roadway type: 2 lane local road
* ROW description: narrow shoulder, bituminous curbing
* Drainage system: open drainage
* Soil type: HSG B
* Constraints: utility poles, underground utilities, constructability

Infeasible Stormwater Controls

No areas were identified as infeasible for stormwater controls within the subwatershed.

OR

Through this evaluation, RIDOT determined that certain areas of the direct and indirect discharging area are not feasible for retrofit stormwater controls. These locations are shown in the **ArcGIS Online SCP Map Viewer** with specific constraints listed in **Appendix C-A**. In general, constraints included proximity to environmental resources and physical constraints limiting the construction and/or function of a potential STU. Although some constraints are manageable via creative design and permitting, other constraints or the combination of multiple constraints make locations prohibitive for retrofit STUs. These locations may be feasible for STUs in the future if conditions change and will be evaluated as transportation designs occur.

### Stormwater Controls Calculations

Calculations showing Pollutant AND/ OR effective IC treatment credit for potential stormwater controls is attached as **Appendix B-A** and summarized in **Table 2-A**.

## Implementation

Existing and potential enhanced non-structural and structural controls are summarized in **Table 5-A** below.

Table 5-A: Stormwater Controls Summary

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| STU Name | Stormwater Control Type | Catchment Area  (ac) | Impervious Cover  (ac) | Treatment Depth  (in)  (Depth of Runoff Treated) | Runoff Reduction  (ac-ft) | Pollutant Treatment Credit  (lb/yr / %) | Equivalent IC Reduction Credit  (ac) | Estimated Cost | Cost per IC Reduction Acre ($/ac) | Cost per lb P Removed ($/lb P) | Retrofit Priority\* |
| *STU-118* | Infiltration Basin | 1.0 | 0.8 | 0.8 | 0.5 | 0.9 / 50% | 0.5 | NA | NA | *NA* | *Existing* |
| *STU-452* | Detention Basin | 1.5 | 1.4 | 2.0 | 1.0 | 1.2 / 60% | 0.8 | $215,000 | $179,200 | $268,750 | *1\** |
| *STU-001* | Street Sweeping | *45.5* | *45.5* | *N/A* | *N/A* | *0.2 / 0.2%* | *0.1* | $25,000 | $125,000 | *$250,000* | *1* |
| *Percent RIDOT Reduction Target Reached 50%* | | | | | | | | | | | |
|  | | | | | | | | | | | |
| *STU-002* | Infiltration Basin | 1.0 | 0.8 | 0.8 | 0.5 | 0.9 / 50% | 0.5 | $198,900 | $396,600 | *$221,000* | *2* |
| *Percent RIDOT Reduction Target Reached 75%* | | | | | | | | | | | |
|  | | | | | | | | | | | |
| *STU-003* | Detention Basin | 1.5 | 1.4 | 2.0 | 1.0 | 0.4 / 60% | 0.8 | $30,000 | $75,000 | *$37,500* | *3* |
| *Percent RIDOT Reduction Target Reached 100%* | | | | | | | | | | | |
|  | | | | | | | | | | | |
| Total |  | 50.5 | 49.9 |  | 3.0 | 1.8 / 40% | 1.4 | $443,900 |  |  |  |
| \*Indicates this STU addresses an outfall identified as priority for retrofit in a TMDL. | | | | | | | | | | | |

RIDOT will implement this SCP through:

1. Non-Constructed Measures
2. RIDOT New Construction and Re-Construction Projects
3. Retrofit Projects

RIDOT constructs STUs as part of either programmed or retrofit projects until the RIDOT IC or pollutant reduction target is met.

The following lists RIDOT’s planned actions to meet TMDL requirements, including controls identified in **Table 5-A**:

* Describe requirements
  + **RIDOT Action:** Explain RIDOT actions in regard to TMDL results, recommendations, and requirements.

### Non-Constructed Measures

Summarize RIDOT actions for non-constructed measures, including:

* Enhanced non-structural controls and implementation timeline
* O&M Procedures
* Partnerships

OR RIDOT is not proposing any non-constructed measures for this SCP.

### RIDOT New Construction and Re-Construction

New and re-construction projects whose scope and limits have been defined at the time of SCP development are included within this SCP with an assumed 50% treatment level. Summarize project(s) scope and area. OR No new or re-construction projects whose scope and limits have been defined at the time of this SCP have been identified.

### Retrofits

Retrofit STUs have been identified as part of this SCP. **Table 5-A** includes estimated costs and implementation priority for these controls. Describe cost estimates for enhanced non-structural controls and for structural controls if cost estimates from EPA’s memo “Methodology for developing cost estimates for Opti-Tool” were not used. For structural controls using EPA’s cost estimates, describe if the estimates include a cost adjustment to reflect costs for the current year. Describe how STU retrofit priorities were determined.

**Table 6-A** shows the implementation schedule for the major milestones for design and construction of the retrofit STUs. Although these target implementation dates have been identified at this time based on the STU prioritization, RIDOT may implement certain STUs on an alternate schedule if cost efficiencies are identified. Examples of potential cost saving opportunities include:

* Constructing STUs along a highway corridor that spans multiple SCP subwatersheds at the completion of all associated SCPs
* Modifications in planned roadway project timelines or scopes
* Identification of partnering opportunities.

Table 6-A: Structural Controls Target Implementation Schedule

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **STU Priority Level** | **Feasibility & Scope Start** | **Recommended Target Dates by** | | |
| **Design Start** | **Construction Advertise** | **Construction Finalized** |
| Priority Level 1 | Month Year | Month Year | Month Year | Month Year |
| Priority Level 2 | Month Year | Month Year | Month Year | Month Year |
| Priority Level 3 | Month Year | As Needed to Fulfill RIDOT Reduction Target | As Needed to Fulfill RIDOT Reduction Target | As Needed to Fulfill RIDOT Reduction Target |

Note: Target dates are based on an assumed EPA approval within six months of SCP submittal. The dates only apply to STU’s that are determined feasible and are needed to fulfill the required RIDOT reduction target.

Municipal and Private Partnerships

Existing partnerships are listed and described in **Appendix E-A**. OR There are no existing or proposed partnerships, therefore **Appendix E-A** is not included. RIDOT will continue to evaluate opportunities for municipal and private partnerships that may allow for construction of stormwater controls on non-RIDOT property.

Describe appropriate RIDOT course of action given the location of potential STUs (contact landowners to discuss possibility of easements or other mechanisms to use these locations for stormwater treatment) if relevant.

### Public Outreach

During development of this SCP, RIDOT met with list municipalities and meeting dates, discussion topics, etc. RIDOT conveyed the Consent Decree requirements and the SCP Plan development schedule and made a request for available stormwater system mapping data. List information or data provided by municipalities. RIDOT will continue coordination with the list municipalities to share data, findings and plans for improvements.

## STU Operations and Maintenance Plan

Existing and newly constructed STUs will be inspected, operated and maintained to ensure functionality and longevity of the STUs. The inspection, operation and maintenance procedures for STUs are consistent with those outlined in RIDEM’s Stormwater Design and Installation Standards Manual, amended in March 2015,[[3]](#footnote-4) and include inspections and maintenance that is customized to the functioning components of the STU.

## Next Steps

In the year following submission of this SCP, RIDOT will develop feasibility studies for all Priority 1 STUs listed in **Table 2-A**. These feasibility studies will further evaluate site characteristics and constraints, including soil infiltration rates, utility conflicts, and catchment areas to each potential STU. In addition, a 30% design, 90% design, PS&E and required Contract Advertising Documents and as-build plans will be developed for each of the Priority 1 STUs.

**APPENDIX A-A**

**SEGMENT NAME (RIXXXXXXXX-XX)**

**RIDOT DISCHARGING AREA SUMMARY**

Appendix A-A: RIDOT Discharging Area Summary

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Structure ID | Discharge Location | Description | Total Area (ac) | Impervious Cover (ac) | Pervious Cover (ac) | Pervious Cover Types |
| *OF-001* | *Stream/River* | *24” Concrete Headwall* | *1.5* | *1.1* | *0.4* | *Grass/ Forest* |
| *OF-002* | *Non-wetland* | *24” Concrete Flared End* | *2.9* | *2.5* | *0.4* | *Grass/ Forest* |
| *CB-001* | *MS4* | *Outgoing Interconnection* | *3.4* | *3.0* | *0.4* | *Grass/ Forest* |

**APPENDIX B-A**

**SEGMENT NAME (RIXXXXXXXX-XX)**

**STORMWATER CONTROLS**

**POLLUTANT CALCULATIONS**

**APPENDIX C-A**

**SEGMENT NAME (RIXXXXXXXX-XX)**

**IDENTIFIED CONSTRAINTS**

**FOR STU IMPLEMENTATION**

**Appendix C-A: Identified Site Constraints Limiting STU Implementation**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | **Environmental Constraints** | | | | | | | | | | | | | | | | **Physical Constraints** | | | | | | | | | | | | | **Access**  **Constraints** | | **Other** | | |  |
| **Catchment ID** | FEMA Floodplain (FIRM) | Inundation Surfaces (RIGIS) | Outstanding Resource Waters (RIGIS) | Surface Water Protection Areas (RIGIS) | Freshwater Wetlands (RIGIS) | OWTS Critical Resource Area (RIDEM) | Coastal Features (CRMC) | Endangered Species (RI Natural Heritage Program) | Environmental Justice Area (RIDEM) | Open Space / Conservation Land (RIGIS) | Cultural / Historic Resources (RIGIS) | Underground Storage Tanks (RIDEM) | Leaking Underground Storage Tanks (RIDEM) | CERCLIS/National Priority List (US EPA) | Environmental Land Use Restriction (RIDEM) | Contamination | LUHPPL | Other Resource Area | Non-RIDOT Property / Limited Right-Of-Way | Limited Drainage | Limited Access | Inadequate Setbacks | Tight Soils | Fill | Groundwater Resources | Ledge (Bedrock) | High Water Table | Tree Clearing | Steep Slopes | Elevated Topography | Utilities | Safety | Constructability Issue | Permitting | Residential Impacts | Other | **STUs Recommended** |
| EX-LWR-001 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |  | X |
| PT-LWR-002 |  |  |  |  | X |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |
| PT-LWR-003 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |
| PT-LWR-004 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  |  | X |
| PT-LWR-005 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |
| NF-LWR-006 |  |  |  |  | X |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |
| LR-LWR-007 |  |  |  |  |  |  |  | X | X | X |  |  | X |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  |  |
| LR-LWR-008 |  |  |  |  | X |  |  |  |  |  |  |  | X | X | X |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X |  |  |  |  |  |  |  |
| NF-LWR-009 |  |  |  |  | X |  |  |  |  |  |  |  |  | X | X |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| NF-LWR-010 |  |  |  |  | X |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**APPENDIX D-A**

**SEGMENT NAME (RIXXXXXX-XX)**

**TIP PROJECTS**

**APPENDIX E-A**

**SEGMENT NAME (RIXXXXXX-XX)**

**PARTNERSHIP DOCUMENTATION**

For each partnership within the subwatershed area, provide a description of the project including the following headings (at a minimum). Keep brief (~1-2 pages per project)

**Project Name:**

**Project Location:** include locus map, which impaired subwatershed it is within

**Partnering Agencies:**

**Water Quality Measures Included:** (describe STUs, restoration, source controls, IC removal, etc.)

**Funding:** include specifically how RIDOT is contributing

**Project Timeframe:**

OR

***Note: This appendix is not applicable because***

***no partnerships were identified.***

**FIGURE 1-A**

**SEGMENT NAME (RIXXXXXX-XX)**

**SUBWATERSHED OVERVIEW**

1. RIDEM, March 2018, 2016 Integrated Water Quality Monitoring and Assessment List – Appendix A 2016 Index of Waterbodies and Category Listing. Available at: http://dem.ri.gov/programs/benviron/water/quality/surfwq/pdfs/iwr16.pdf [↑](#footnote-ref-2)
2. Rhode Island Department of Environmental Management, Rhode Island Department of Administration, Statewide Planning Program, Photo Science, Inc. [www.rigis.org](http://www.rigis.org) [↑](#footnote-ref-3)
3. Rhode Island Stormwater Design and Installation Standards Manual, Rhode Island Department of Environmental Management and Coastal Resources Management Council, Amended March 2015. Accessed: http://www.dem.ri.gov/pubs/regs/regs/water/swmanual15.pdf. [↑](#footnote-ref-4)