2017 Annual Discharge Monitoring Report

Scotia Wastewater Treatment Facility
NPDES Permit No. CA0006017
WDR Order No. R1-2012-0065
Facility ID No. 1B83104OHUM

Prepared for:

Scotia Community Services District

SHN
Engineers & Geologists

February 2018

017138

CONSULTING ENGINEERS & GEOLOGISTS, INC.
812 W. Wabash • Eureka, CA 95501-2138 • 707-441-8855 • FAX: 707-441-8877 •shninfo@shn-engr.com

Reference: 017138

February 28, 2018

Mr. Justin McSmith
North Coast Regional Water Quality Control Board
5550 Skylane Boulevard, Suite A
Santa Rosa, CA 95403

Subject: **2017 Annual Discharge Monitoring Report, Scotia Wastewater Treatment Facility; NPDES Permit No. CA0006017; WDR Order No. R1-2012-0065; Facility ID No. 1B83104OHUM**

Dear Mr. McSmith:

This 2017 annual discharge monitoring report was prepared on behalf of the Scotia Community Services District, by SHN Engineers & Geologists. This annual report summarizes the results of the monitoring conducted at the Scotia wastewater treatment facility over the past year, and includes descriptions of facility modifications and upgrades made during the 2017 monitoring period. Monthly monitoring and reporting was conducted by the Town of Scotia (TOS) from January through May 2017, while Scotia CSD assumed responsibility from June through December 2017.

If you have any questions, please call me at 707-441-8855.

Sincerely,

SHN Engineers & Geologists

Mike Foget, PE
Project Manager

MKF/DMW:lms

Enclosure: 2017 Annual Discharge Monitoring Report
c. w/Encl: Leslie Marshall, Scotia Community Services District
Frank Bacik, Town of Scotia Company, LLC
Suzanne McClurkin-Nelson, Humboldt Redwood Company

Reference: 017138

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Scotia Wastewater Treatment Facility

NPDES Permit No. CA0006017

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Facility ID No. 1B83104OHUM

Prepared for:

Scotia Community Services District
P.O. Box 104
Scotia, California

Prepared by:

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812 W. Wabash Ave.
Eureka, CA 95501-2138
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February 2018

QA/QC: MKF___

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Abbreviations and Acronyms

---	not analyzed/not analyzed
<	"less than" the stated method reporting limit
gpm	gallons per minute
lb/day	pounds per day
MGD	millions gallons per day
mg/L	milligrams per liter
ml	milliliter
ml/L	milliliters per liter
ml/L/hr	milliliter per liter per hour
MPN/100 ml	most probable number per 100 milliliters
SU	standard units

Avg	average
BOD	biochemical oxygen demand
$CaCO_3$	calcium carbonate
CCTV	closed circuit television
CDO	cease and desist order
CFR	Code of Federal Regulations
CSD	community services district
DO	dissolved oxygen
EIR	environmental impact report
EPA	Environmental Protection Agency
H_2SO_4	sulfuric acid
HNO_3	nitric acid
HRC	Humboldt Redwood Company
LAFCo	Local Area Formation Commission
M-#	monitoring location-number
Max	maximum
Min	minimum
M-INF	influent monitoring location
NOEC	no observed effect concentration
NPDES	National Pollutant Discharge Elimination System
NR	no reference
PALCO	Pacific Lumber Company
PUC	Public Utilities Commission
R-#	Eel River surface water monitoring location-number
RWQCB	North Coast Regional Water Quality Control Board
SHN	SHN Engineers & Geologists
SS	settleable solids
SSO	sanitary sewer overflow
TDS	total dissolved solids
TOS	Town of Scotia Company, LLC
TRE	Toxicity Reduction Evaluation
TSS	total suspended solids
TUc	chronic toxicity unit
USGS	United States Geological Survey
WDR	waste discharge requirements
WET	whole effluent toxicity
WWTF	wastewater treatment facility

1.0 Introduction

SHN Engineers & Geologists has prepared this 2017 annual discharge monitoring report for the Scotia Community Services District (CSD) wastewater treatment facility (WWTF). This annual report also addresses the annual reporting requirements for the log pond discharge location and the Eel River receiving water sample locations. A site location map for Scotia, California is presented as Figure 1, and the site plan is shown as Figure 2. Monthly monitoring and reporting was conducted by the Town of Scotia (TOS) from January through May 2017, while Scotia CSD assumed responsibility from June through December 2017.

This annual report has been prepared in accordance with the requirements set forth in the National Pollutant Discharge Elimination System (NPDES) Permit No. CA0006017, for the Scotia, California facilities (Waste Discharge ID No. 1B83104OHUM). New Waste Discharge Requirements (WDR Order No. R1-2012-0065) became effective for the designated Scotia facilities on July 1, 2012, and rescinded the previous WDR Order No. R1-2006-0020.

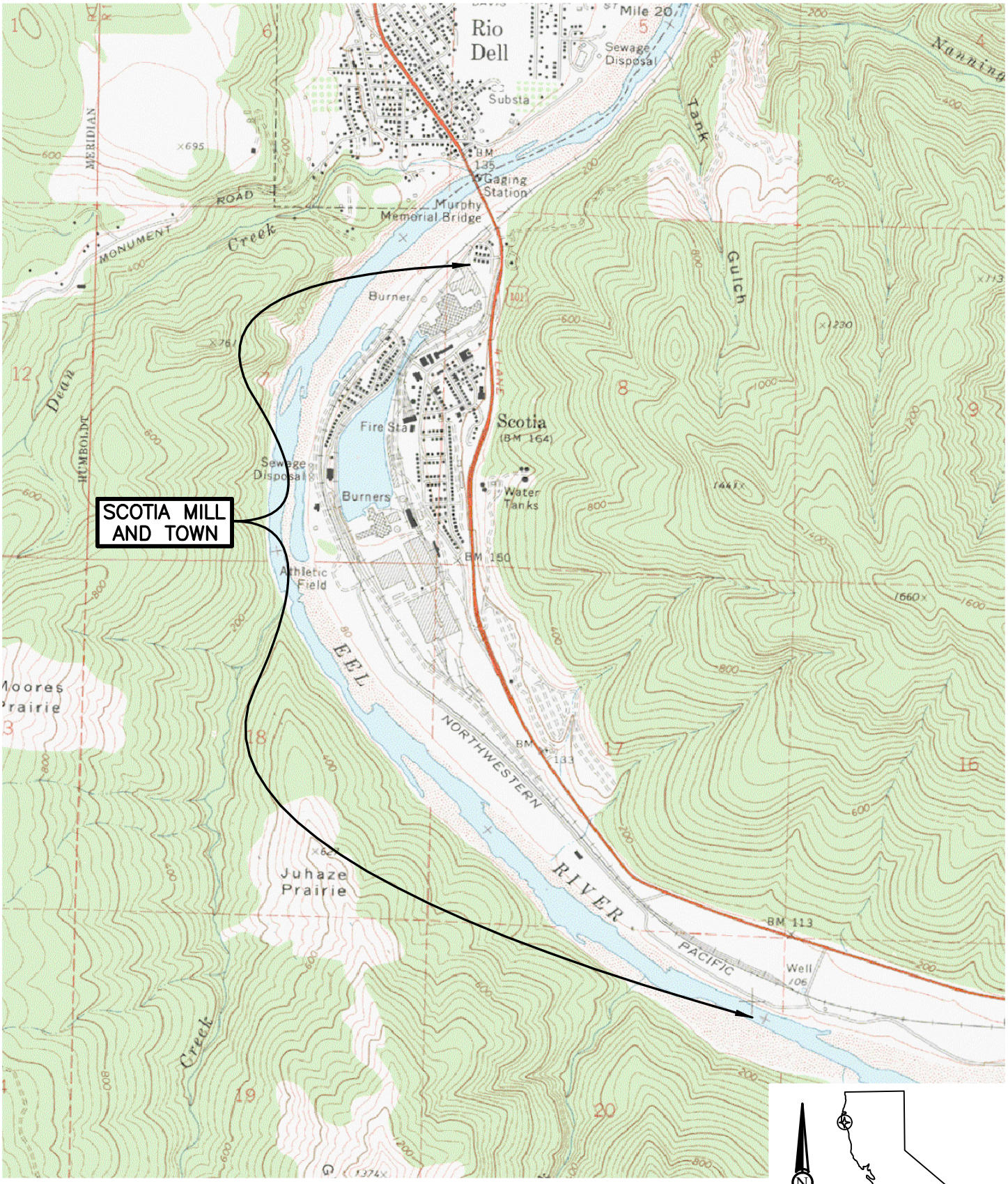
This annual report includes the following information:

- Tabular and graphical summaries of the monitoring data and disposal records from the past year, including results from any pollutant that was monitored more frequently than required by the NPDES permit
- Descriptions of source control activities including, as applicable, a copy of the source control standards, a description of the waste hauler permit system, a summary of compliance and enforcement activities during the past year, and a summary of any public participant activities to involve and inform the public
- Descriptions of collection system activities including, as applicable, a description of any change in the local legal authorities enacted to implement the sanitary sewer overflow (SSO) program, a summary of the SSOs that occurred during the past year, a summary of compliance and enforcement activities during the past year, and documentation of any steps taken to stop and mitigate impacts of sanitary sewer overflows
- A comprehensive discussion of the facility's compliance with all effluent limitations and other WDRs and the corrective actions taken or planned to bring the discharge into full compliance with the NPDES permit requirements

1.1 Overview of Facility Changes

This section provides an overview of the WWTF changes that have occurred at the designated facilities since September 2012, as well as a description of the source control activities and collection system activities undertaken from 2012 through 2017.

In September 2012, a new overflow pump system was installed at the WWTF headworks. The overflow pump system upgrade included installation of a new back-up pump designed to handle and route flows that are in excess of the facility's hydraulic capacity. Additional facility upgrades in 2012 included modifications to the primary clarifier. A new v-notch weir was installed and the clarifier was leveled in February 2012; the clarifier gear box and gears were replaced in April 2012.



SOURCE: SCOTIA USGS 7.5 MINUTE QUADRANGLE

1"=2000'±

SHN Consulting Engineers & Geologists, Inc.	Scotia CSD Wastewater Treatment Facility Scotia, California	Site Location Map SHN 017138
	February 2018	017138-LOCATION	Figure 1

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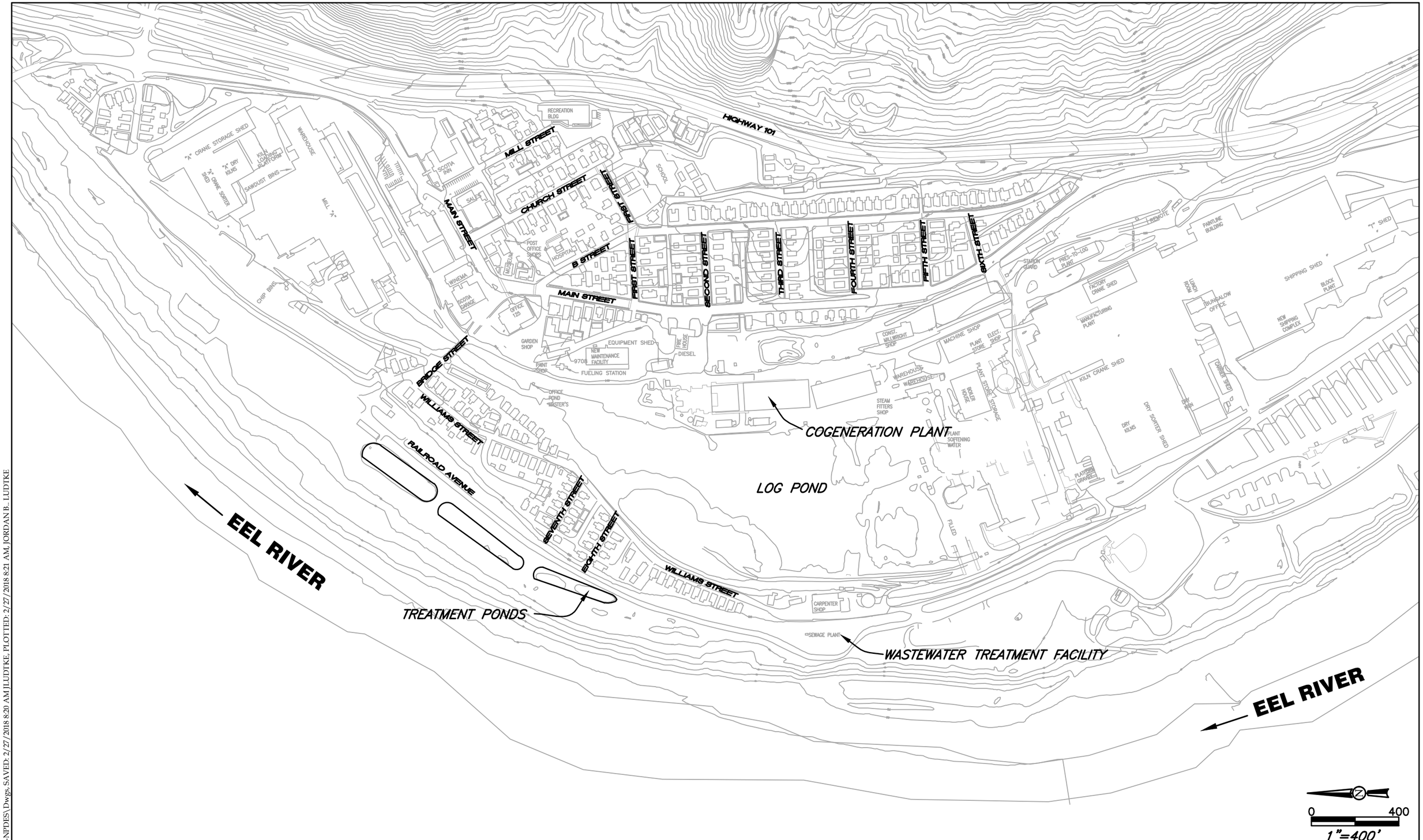

SHN Consulting Engineers & Geologists, Inc.	Scotia CSD Wastewater Treatment Facility Scotia, California	Site Plan SHN 017138
	February 2018	017138-SITE-PLAN-WWTF	Figure 2

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No significant upgrade to the WWTF occurred in 2013.

Upgrades to the WWTF during 2014 included the installation of two new 4-inch check valves, 4-inch 90s, and gate valves in the deep well. Part of the wire screen on the secondary clarifier was replaced and a new screen was purchased for the 8-inch pump in the chlorine contact chamber. A new acid pump was also installed at the log-pond clarifier location in December 2014.

Upgrades to the WWTF during 2015 included replacement of the chlorine ejector and rotometer, replacement of the circuit board and installation of a trickle charger at the back-up generator, installation of a new Vaughn shallow well pump, installation of a new chlorine detector and self testing equipment, set up of an auto dialer system from the chlorine alarm to notify the operators, and purchase of a new chlorine colorimeter for chlorine residual testing.

In August 2016, a new shallow well pump was installed at the WWTF.

In 2017, the headworks grinder was replaced; lighting was added to the facility; the WWTF fence was replaced; two valve keys were installed in the main room of the facility to allow operational staff to open/close valves without having to enter confined spaces; along with other general maintenance upgrades and replacements.

1.2 Description of Source Control Activities

In August 2007, the former owners of the Scotia, California (Pacific Lumber Company [PALCO]) leased space to the Eel River Brewery in the former Mill A complex. In September 2007, the brewery started production in Scotia.

The brewery is required to provide pre-treatment to minimize the impact of its discharge on the WWTF. Minimum pre-treatment currently consists of a septic tank, which is intended to prevent shock loading of the treatment facility due to inconsistent organic loading. The septic tank is expected to remove 50% to 75% of the total suspended solids (TSS) from the waste stream. Based on previous sampling conducted at the Eel River Brewery in Fortuna, effluent discharged from the septic tank is also expected to have an average biochemical oxygen demand (BOD) concentration of 2,000 milligrams per liter (mg/L).

Under the terms of the current brewery lease agreement, any damage, overload, or corrosion to the sanitary sewer system is prohibited. In addition to the lease agreement requirements, it is recommended that the brewery be required to monitor all flows discharged to the sewer and that a sampling program be put in place to verify the organic load contributed by the brewery. TOS transitioned into the Scotia CSD, which provides civic governance, utilities, and services. The Scotia CSD will develop additional source control standards and ordinances for the brewery discharges projected for fiscal year 2018/2019. The source control standards will include, at a minimum, monitoring and reporting requirements for the brewery discharges, as well as effluent limitations for discharges to the Scotia sanitary sewer collection system. Once completed, a copy of the source control standards will be forwarded to the North Coast Regional Water Quality Control Board (RWQCB).

Existing non-wastewater discharges to the sanitary sewer collection system include overflow discharges from various oil/water separators (at the Humboldt Redwood Company [HRC] company garage), back flush discharges from the fish rearing facility, and log pond sludge discharges from the log pond clarifier. During the 2016 monitoring period, existing oil/water separators were maintained on a regular basis. For the 2017 monitoring period, the oil/water separators should have been maintained by HRC. The Scotia CSD has no record of maintenance.

The transfer of responsibility for Scotia services to the CSD occurred in June 2017. New source control standards and ordinances will continue to be developed, as necessary, to ensure the Scotia WWTF can adequately treat anticipated wastewater loadings.

1.3 Description of Collection System Activities

1.3.1 System Activities

As discussed further in Section 1.5, TOS is required to complete significant improvements to the wastewater collection infrastructure throughout the town prior to transferring the Scotia, California facilities to the Scotia CSD. As part of this work, approximately 75% of the existing collection system is scheduled for replacement. Replacement of the collection system in the main commercial district and portions of the residential areas in town began in 2015. As of December 2017, approximately 40% of the collection system replacement work has been completed. This includes the commercial center, and residences along Mill, Church, 1st, 2nd, and 3rd Streets (Sheet F-1, Town of Scotia, LLC).

1.3.2 Summary of Sanitary Sewer Overflows

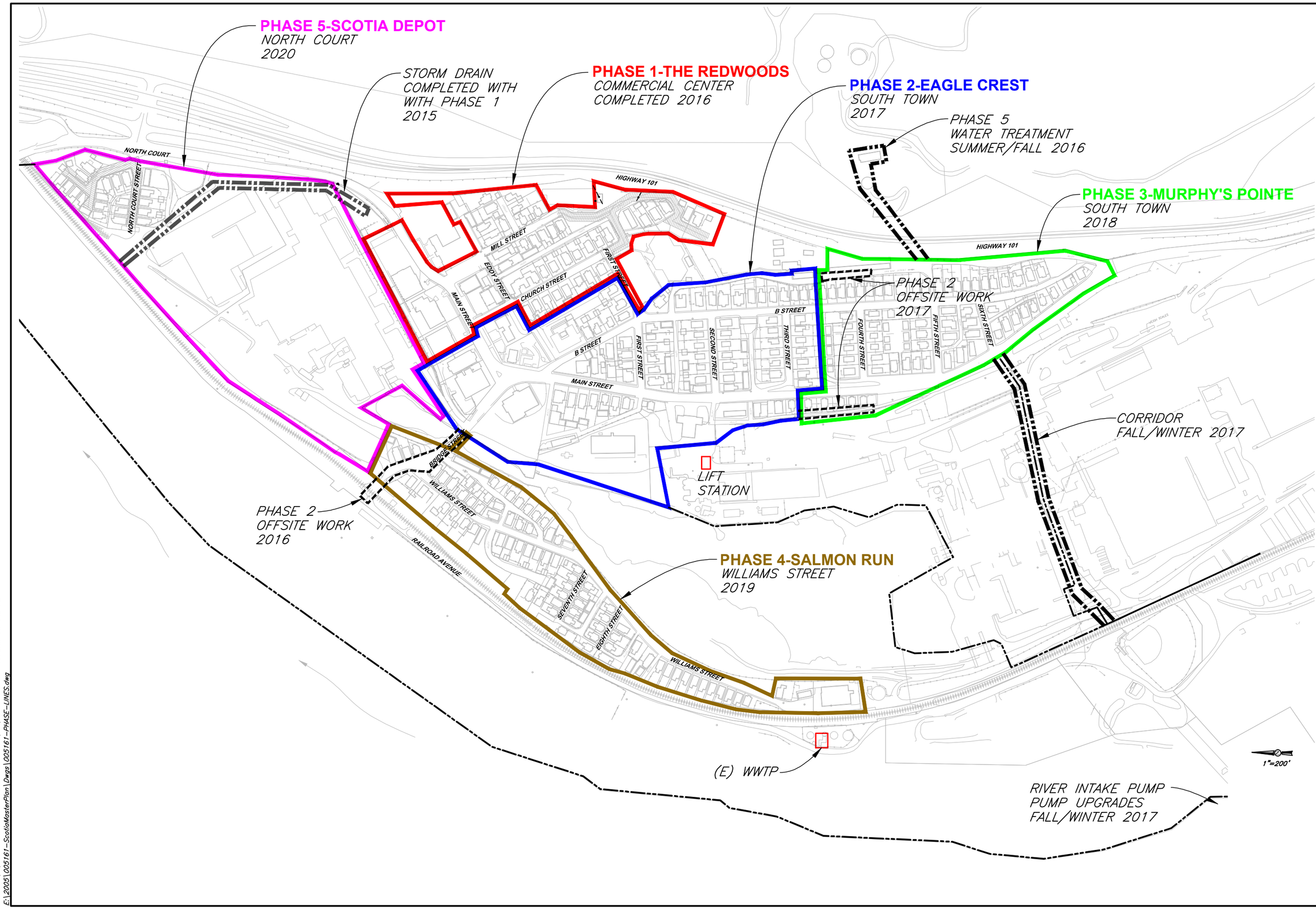
One SSO occurred on March 24, 2017, prior to the infrastructure transfer, and reported by TOS. Approximately 5,000 gallons, at 10 gallons per minute (gpm) overflowed overnight from the primary clarifier due to a faulty float level and overflow pump. The overflow ceased at 9:40 a.m. The pump was repaired and turned on, to lower the level of the clarifier. There was no threat to public health, discharge to storm drains, surface water body, or any structure.

1.4 Description of Sludge Handling Activities

From January to October 2017, Steve's Septic Service collected untreated sludge from the Scotia WWTF and took it to their facility in McKinleyville, California. The sludge material is mixed with other sewage sludge streams before polymer is added; solids are then placed in dewatering bins. The dewatered biosolids are shipped to a landfill in Anderson, California and the leachate from the dewatering bins is discharged into the McKinleyville CSD sewer system. According to Steve's Septic Service staff, biosolids are Class B when they leave their facility.

As of November 2017, Steve's Septic Service collects untreated sludge from the Scotia WWTF and trucks it to the Ferndale, California WWTF on Port Kenyon Road, where it is treated at Ferndale's facility.

The primary and secondary sludge generated at the Scotia WWTF is currently stored in a non-operational anaerobic digester from which it is collected by Steve's Septic Service. The WWTF was estimated to generate approximately 2,000 gallons of sludge per month containing approximately 3% solids, for a total of approximately 3 tons of dry solids per year. Additional testing of solids will be conducted by staff in 2018.



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SHN CONSULTING ENGINEERS & GEOLOGISTS, INC.
812 W. WABASH AVE. EUREKA, CA. 95501
WWW.SHN-ENGR.COM 707-441-8855

NO.	DATE	REVISION	BY

DSGN GNH
DR GNH/CDN
CHK MEL
APVD

TOWN OF SCOTIA, LLC
SCOTIA INFRASTRUCTURE IMPROVEMENTS
SCOTIA, CALIFORNIA

CONSTRUCTION PHASE LINES

SHEET F-1
SEQ –
DATE 05/2016
PROJ. NO. 005161.410

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1.5 Facilities Planning and CSD Formation Update

SHN prepared a wastewater facilities plan administrative draft for the Town of Scotia (SHN, January 2010) in accordance with Task C of Cease and Desist Order (CDO) No. R1-2006-0073. The facilities plan is a comprehensive document that examines the existing wastewater system from collection to discharge. The goal of the plan was to identify, evaluate, and select the most favorable wastewater treatment and disposal options to address not only the immediate permit requirements but also provide for the long-term needs of the community. The administrative draft of the facilities plan was submitted to the RWQCB concurrently with the 2009 annual discharge monitoring report.

The Scotia CSD formation was approved by the Humboldt Local Area Formation Commission (LAFCo) in April 2014. LAFCo issued and recorded its Certificate of Completion, reflecting conditions of approval required of TOS. The Scotia CSD assumed responsibility for the utilities and WWTF in June 2017.

The Scotia CSD operates at 122 Main Street, Scotia, California and contracts with professional consultants for various services (independent engineer, accountants, lawyers, and staffing, etc.). The District expects to recruit and hire its own staff in April 2018.

The LAFCo and County subdivision conditions of approval require TOS to complete specified improvements to the lineal infrastructure (lines and pipes, etc.) throughout Scotia, a project valued at the time of approval at approximately $17 million. The phase-coordinated subdivision and CSD formation were evaluated in a program environmental impact report (EIR). The Program EIR was certified and approved by both the Humboldt County Board of Supervisors and LAFCo. Lineal infrastructure improvements include upgrades to the Scotia wastewater collection system (sewer lines) throughout Scotia.

Lineal infrastructure improvements are to be accomplished in a phased project of improvements, coordinated with a multi-phase, final map subdivision, to be transferred after improvements are completed, and a final phase subdivision map for that area is recorded. Phase I of the infrastructure improvement project is complete, and Phase II is near completion.

TOS was not required to undertake or complete improvements to the WWTF plant serving Scotia prior to its transfer to the CSD. Consequently, the CSD has been specifically authorized by LAFCo to engage up to an initial debt load of $5 million to address improvements to the WWTF and water treatment plants. In the project review record, TOS provided a detailed engineering analysis, which identified various, comparatively minor improvements that the CSD may undertake, and agreed to provide the engineering design services to facilitate that District effort.

Pursuant to the project review record and the conditions of approval by LAFCo and the County, the CSD has an easement or license to access, and full right and title to operate and generate revenues from, use of the plant and linear facilities to deliver utility services throughout Scotia. However, the required improvements to the wastewater linear infrastructure pipes and lines are to be completed by TOS in phases as designed before they are transferred in fee title to the CSD. Until the linear infrastructure is improved and accepted by the Scotia CSD Engineer, TOS remains responsible for its maintenance and repair. Once inspected and accepted by the CSD engineer, the improved linear infrastructure shall be transferred to the CSD, phase by phase.

Effective on or about November 1, 2015, the Scotia Cogeneration Power Plant and all related facilities were acquired from Eel River Power by HRC. The Scotia CSD assumed responsibility for the utilities and WWTF in June 2017. Scotia CSD is operating on TOS and HRC's co-permit under Order No. R1-2012-0065. The CSD has discussed changes to the permit configuration throughout the current permit renewal process.

Initial meetings have begun with RCAC for the process for an income survey, along with initial meetings with the USDA about financing a new plant. The initial CSD rates are set to help the CSD accrue reserves to fund a new plant within the first 5 fiscal years of operations, projected for FY 21/22. The CSD has also been in discussions with the RWQCB-North Coast Region regulator, Justin McSmith, about permitting a new facility.

2.0 Monitoring Program

2.1 WWTF, Log Pond, and Receiving Water Monitoring

The following sections describe the monitoring locations, monitoring schedules, and analytical methods and parameters for samples collected at the WWTF and log pond discharge locations, and the Eel River receiving water sample locations.

2.1.1 Monitoring Locations

Monitoring locations for the WWTF and the log pond are listed below and shown on the WWTF flow diagram included as Figure 3.

M-INF: **Influent Monitoring Location.** Influent monitoring is conducted using a composite sampler set up at the WWTF headworks. The composite sampler is located at a point in the facility headworks that precedes any treatment and receives all waste from the collection system. Samples collected using the composite sampler consist of 24-hour flow-weighted composite samples, based on recorded influent flows at the WWTF.

M-012A: **Disinfection System Monitoring Location**. Disinfection system monitoring is conducted at the chlorine contact chamber effluent weir.

M-012B: **Treatment System Effluent Monitoring Location.** Monitoring at the end of the treatment system is conducted using a composite sampler set up in the pump house at the third treatment pond. The composite sampler is located at the point of discharge at the end of the treatment train prior to discharge into the log pond.

M-003: **Storage Pond Effluent Discharge Monitoring Location.** Monitoring of the storage pond effluent is conducted at the log pond clarifier discharge location.

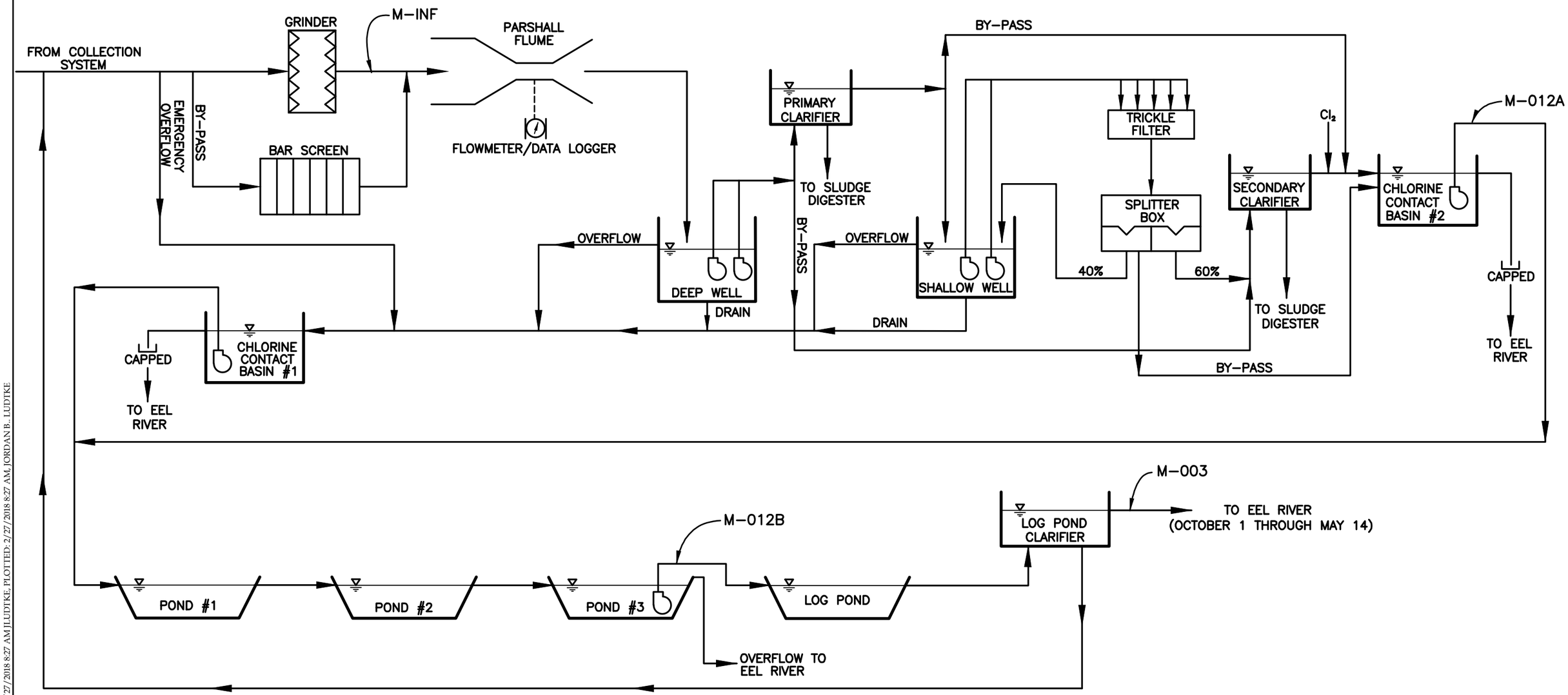
Monitoring locations for receiving water sampling in the Eel River are listed below.

R-017: Eel River surface water upstream beyond influence of the discharge.

R-018: Eel River surface water at the point of discharge from the log pond discharge location.

2.1.2 WWTF Monitoring Schedule, Analytical Parameters, and Methods

Table 1 presents an overview of the monitoring schedule and analytical parameters and methods for monitoring conducted at the WWTF.



NOTE:

1. SLUDGE HANDLING PROCESS PIPING & EQUIPMENT IS NOT INCLUDED.

SHN Consulting Engineers & Geologists, Inc.	Scotia CSD Wastewater Treatment Facility Scotia, California	Wastewater Treatment Facility Flow Diagram SHN 017138
	February 2018 / 017138-WWTF-FLOW-DIAG	Figure 3

2.2 Sample Collection and Analysis

Monthly samples were collected by TOS or SCSD personnel for the WWTF. All samples were collected using laboratory-prepared sample containers. Samples were labeled with sample location, time and date of collection, requested analysis, and sampler's initials. Samples were stored in an ice-filled cooler and submitted to the analytical laboratory under appropriate chain-of-custody documentation. Analytical methods used are listed in Table 1.

North Coast Laboratories, Ltd., a state-certified analytical laboratory located in Arcata, California, performed all analyses, with the exception of the acute and chronic toxicity analyses. All acute and chronic toxicity analyses were performed by Pacific EcoRisk Environmental Consulting and Testing, a state-certified laboratory located in Fairfield, California.

Copies of all laboratory analytical reports are included with the monthly monitoring reports submitted directly by TOS or SCSD to the RWQCB. Appendix 1 presents the summary tables and graphs for data collected in 2017 at the WWTF.

3.0 Discussion of Results

This section includes a discussion of the WWTF, log pond, and Eel River monitoring results for samples collected from January through December 2017 and compliance with effluent limitations and other waste discharge requirements.

3.1 WWTF Monitoring Results

Monitoring requirements at the WWTF discharge monitoring locations are summarized in Table 1. WWTF data summary tables and graphs are included as Appendix 1.

Table 1. Monitoring Schedule
Scotia WWTF[1] 2017 Annual Discharge Monitoring Report

Analytical Parameter	Analytical Method	Sample Container	Sampling Location
Daily			
Chlorine Residual	EPA[2] 330.5 Modified	250 ml[3] Plastic or Self Test	Log Pond Clarifier (M-003)
Chlorine Residual	EPA 330.5 Modified	250 ml Plastic or Self Test	Chlorine Contact Basin (M-012A)
Weekly[4]			
Biochemical Oxygen Demand (BOD)	SM[5] 20th Ed. 5210B	1/2-gallon Plastic, unpreserved	Influent (M-INF)
Total Suspended Solids (TSS)	SM 20th Ed. 2540D		
Total Coliform Organisms	SM 20th Ed. 9221B	Coliform Container	Chlorine Contact Basin (M-012A)
BOD	SM 20th Ed. 5210B	1/2-gallon Plastic, unpreserved	3rd Treatment Pond (M-012B)
TSS	SM 20th Ed. 2540D		

Table 1. Monitoring Schedule
Scotia WWTF[1] 2017 Annual Discharge Monitoring Report

Analytical Parameter	Analytical Method	Sample Container	Sampling Location
pH	SM 20th Ed. 4500 H+B	250 ml Plastic, unpreserved	
Settleable Solids (SS)	SM 20th Ed. 2540F	1/2-gallon Plastic, unpreserved	Log Pond Clarifier (M-003)
pH	SM 20th Ed. 4500 H+B		
Monthly			
Total Dissolved Solids (TDS)	SM 20th Ed. 2540 C	500 ml Plastic	Log Pond Clarifier (M-003) and Receiving Water (R-017/R-018)
Specific Conductance	SM 20th Ed. 2510 B		
Turbidity	EPA 180.1		
pH	SM 20th Ed. 4500 H+B		
Temperature	Self Test	Meter	
Dissolved Oxygen (DO)	SM 20th Ed. 4500 O+G	300 ml glass BOD bottle, unpreserved	
Hardness (as $CaCO_3$)[6]	SM 20th Ed. 2340 B	250 ml plastic w/HNO_3[7]	Log Pond Clarifier (M-003) and Receiving Water (R-017)
Ammonia Nitrogen[8]	SM 20th Ed. 4500 NH3 D	500 ml Plastic w/H_2SO_4[9]	Log Pond Clarifier (M-003)
Nitrate Nitrogen[8]	EPA 300.0 Rev 2.1	250 ml Plastic	
Nitrite Nitrogen[8]	EPA 300.0 Rev 2.1	250 ml Plastic	
Organic Nitrogen[8]	SM 20th Ed. 4500-Norg A	500 ml Plastic w/H_2SO_4	
Total Nitrogen (as N)[8]	SM 20th Ed. 4500-N	500 ml Plastic w/H_2SO_4	
Total Phosphorous[8]	SM 20th Ed. 4500-P E	500 ml Plastic w/H_2SO_4	
Semi-Annually/Annually/Permit Term			
Acute/Chronic Toxicity	Bioassay	5-gallon Plastic	Log Pond Clarifier (M-003)
Priority Pollutants	Varies	Varies	
Priority Pollutants	Varies	Varies	Receiving Water (R-017)

1. WWTF: wastewater treatment facility
2. EPA: Environmental Protection Agency
3. ml: milliliter
4. Weekly 24-hour composite samples are collected Monday (8 a.m.) through Tuesday (8 a.m.) each week.
5. SM: Standard Methods
6. Monitoring frequency for hardness (as calcium carbonate [$CaCO_3$]) was increased from once per permit term to monthly with the implementation of WDR Order No. R1-2012-0065 effective July 1, 2012.
7. HNO_3: nitric acid
8. Monitoring is required by WDR Order No. R1-2012-0065 effective July 1, 2012.
9. H_2SO_4: sulfuric acid

3.1.1 Influent Flow Rate Limitation

Influent flows at the WWTF are subject to a monthly average influent flow rate limitation of 0.77 million gallons per day (MGD), based on the hydraulic capacity of the WWTF at the time of permit adoption. In October 2006, a new pump was installed at the chlorine contact chamber and is now considered the lead pump at 800 gpm (1.15 MGD). The maximum monthly average influent flow noted during the monitoring period was 0.890 MGD in April 2017.

3.1.2 WWTF Chlorine Contact Basin Results

Discharges from the chlorine contact basin (M-012A) are subject to effluent limitations for total coliform and minimum chlorine residual concentrations. The 30-day median concentration limitation for total coliform is 23 most probable number per 100 milliliters (MPN/100 ml) and the daily maximum for coliform is 230 MPN/100 ml. The minimum chlorine residual concentration limitation is 1.5 mg/L.

Total coliform limits at the chlorine contact basin were exceeded in June, July, and September 2017. In July 2017, coliform exceedances were possibly due to clarifier carryover, unable to pump due to confined space issues. The clarifier's cone is pumped approximately every other day to relieve solids. Corrective actions, included repairing the float, increasing recirculation of the trickling filter, and cleaning out the chlorine contact chambers and the valving area below the trickling filter.

Chlorine residual levels were within the permit limits throughout 2017; except in January, April, and December. Corrective actions included increasing the chlorinator setting to address the low residual reading, due to higher flow rates during a storm event. In December 2017, low chlorine in the contact chamber occurred due to high demand, possibly due to water plant backwash. In December 2017, the chlorine was increased on December 8, 2017. From December 27 through January 1, 2018, chlorine was substituted with sodium hypochlorite to maintain treatment. Low chlorine was also attributed to a faulty one-ton chlorine scale (scale read over 500 pounds), which ran out of gas chlorine.

3.1.3 WWTF Effluent Monitoring Results

Discharges from location M-012B are subject to effluent limitations and percent removal requirements for BOD and TSS. Table 2 summarizes the BOD, TSS, and pH minimum, maximum, average concentrations, and effluent limitations at the WWTF in 2017.

Table 2. BOD[1], TSS[2], and pH Results Summary
Scotia WWTF[3] 2017 Annual Discharge Monitoring Report

Sample Location		Effluent Limitations					January–December 2017		
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous		Min	Max	Average
					Min[4]	Max[5]			
M-INF	BOD (mg/L)[6]	---[7]	---	---	---	---	27	2,000	406
	BOD (lb/day)[8]	---	---	---	---	---	55	1,935	398
M-012B	BOD (mg/L)	30	45	60	---	---	2.10	39	9.10
	BOD (lb/day)	64	96	129	---	---	0.65	270.60	19.03
M-INF	TSS (mg/L)	---	---	---	---	---	19	1,800	299

Table 2. BOD[1], TSS[2], and pH Results Summary
Scotia WWTF[3] 2017 Annual Discharge Monitoring Report

Sample Location		Effluent Limitations					January–December 2017		
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous		Min	Max	Average
					Min[4]	Max[5]			
	TSS (lb/day)	---	---	---	---	---	30	1,201	287
M-012B	TSS (mg/L)	30	45	60	---	---	<1.0[9]	14	4.20
	TSS (lb/day)	64	96	129	---	---	0.32	69.39	8.45
M-012B	pH	---	---	---	6.5	8.5	6.3	7.6	6.7

1. BOD: biochemical oxygen demand
2. TSS: total suspended solids
3. WWTF: wastewater treatment facility
4. Min: minimum
5. Max: maximum
6. mg/L: milligrams per liter
7. ---: not applicable
8. lb/day: pounds per day
9. <: "less than" the stated method reporting limit

Removal percentages were calculated for the WWTF by comparing the average monthly BOD and TSS results from the influent (M-INF) and the effluent monitoring location (M-012B). The results indicate that monthly BOD and TSS removal percentages were greater than 85% for all of 2017, except for BOD in March 2017.

In February and March 2017, BOD daily maximum, and monthly and weekly average (mean) limits were exceeded. The BOD mass limits were exceeded due to high flows at the WWTF; concentration results were in compliance with the concentration limits. The discharger implemented collection system improvements to address infiltration and inflow contributions to the collection system.

On March 21, 2017, the daily minimum limit of 6.5 SU (standard units) for pH was exceeded at M-012(B) (6.4 SU). Low pH values at M-012B could be attributed to the high rainfall amounts received and the corresponding chlorine usage required during the month of March. Corrective actions included modifying the chlorinator settings to adjust for varied rainfall amounts.

In August 2017, the pH instantaneous minimum limit was exceeded at M-012(B). Vegetation is removed regularly from the pond boundary. Additional pH measurements (a.m. and p.m.) were collected to determine if algae was an issue.

3.2 Log Pond Monitoring Results

Log pond analytical parameters for the WWTF at monitoring location M-003 are summarized in Table 1. The results for weekly and monthly parameters collected from this location are summarized in tabular format in Appendix 1. Discharges from location M-003 are subject to effluent limitations for total chlorine, settleable solids (SS), acute toxicity, and pH. Discharges from location M-003 are also subject to a 1% flow rate limitation in comparison to the Eel River flows. During 2017, the 1% flow rate limitation was not exceeded at M-003.

Effluent limitations for total residual chlorine and SS changed with the implementation of WDR Order No. R1-2012-0065, effective July 1, 2012. The effluent limitations for total residual chlorine include a maximum daily

concentration of 0.02 mg/L and an average monthly concentration of 0.01 mg/L. The effluent limitations for SS include a maximum daily concentration of 0.2 milliliters per liter (ml/L) and an average monthly concentration of 0.1 ml/L. Effluent limitations for acute toxicity include a 70% survival minimum for any one bioassay and at least a 90% median for any three or more consecutive bioassays. The effluent limitations for pH include an instantaneous minimum pH limit of 6.5 and instantaneous maximum pH limit of 8.5.

Some constituents required for weekly and monthly sampling at M-003 were inadvertently omitted during the 2017 monitoring period.

On February 5, 2017, the total residual chlorine daily maximum limit of 0.02 mg/L was exceeded at M-003. Additional chlorine testing was conducted at M-012B to determine if there was chlorine present in the last treatment pond prior to discharge to the log pond (M-003). There was no chlorine detected at M-012B.

Acute toxicity monitoring was conducted on samples collected from the log pond discharge location (M-003) on February 6, 2017 and December 12, 2017. The February and December 2017 results indicated a 100% survival rate for vertebrates. Testing for invertebrates was not conducted, because the vertebrates were identified as the most sensitive species based on review of previous acute toxicity testing results. Copies of the laboratory analytical reports for acute toxicity testing events were included with the monthly monitoring reports submitted directly by TOS or SCSD to the RWQCB.

Chronic toxicity sampling was conducted at the Log Pond discharge location (M-003) in February 2017. The February 2017 chronic toxicity test results indicated 100% survival for all test species. Table 3 summarizes these results.

Table 3. Chronic Toxicity Testing Results
Scotia WWTF[1] 2017 Annual Discharge Monitoring Report

TUc[2] Reporting Unit	Sample Dates	Test Species
		Water Flea
100/NOEC[3] (Survival)	February 6, 8, and 10, 2017	1
100/NOEC (Growth)		---[4]
100/NOEC (Reproduction)		1

1. WWTF: wastewater treatment facility
2. TUc: chronic toxicity unit
3. NOEC: no observable effect concentration
4. --- : not analyzed

3.3 Receiving Water Monitoring Results

Receiving water analytical parameters for the Eel River at monitoring locations R-017 and R-018 are summarized in Table 1.

The receiving water samples are subject to receiving water limitations for the Eel River. Analytical results for monitoring locations R-017 and R-018 collected in January through April, November, and December 2017 were in compliance with the receiving water limitations contained in WDR Order No. R1-2012-0065.

Receiving water monitoring was not conducted in May through October 2017, because during this period, the log pond did not discharge directly to the Eel River.

4.0 Training

SHN continues to assist SCSD in the implementation of its discharge monitoring program, which includes the establishment of sampling and testing protocols, sample collection and handling methods, and documentation procedures. SCSD also conducts internal training sessions for the WWTF operators.

5.0 References Cited

SHN Consulting Engineers & Geologists, Inc. (January 2010). Wastewater Facilities Plan Administrative Draft, Scotia Wastewater Treatment facility; NPDES Permit No. CA 0006017; WDR Order No. R1-2006-0020. Eureka, CA:SHN.

U.S. Geological Survey. (NR). Scotia 7.5-Minute Topographical Quadrangle. NR:USGS.

6.0 Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. {40 Code of Federal Regulations [CFR] 122.22(d)}

Printed Name: Leslie Marshall

Signature: Les Marshall Date: 3/1/2018

Title: General Manager, Scotia Community Services District

WWTF Data Summary Tables and Graphs

1

Table 1-1
2017 Monitoring Data Summary
Scotia Wastewater Treatment Facility

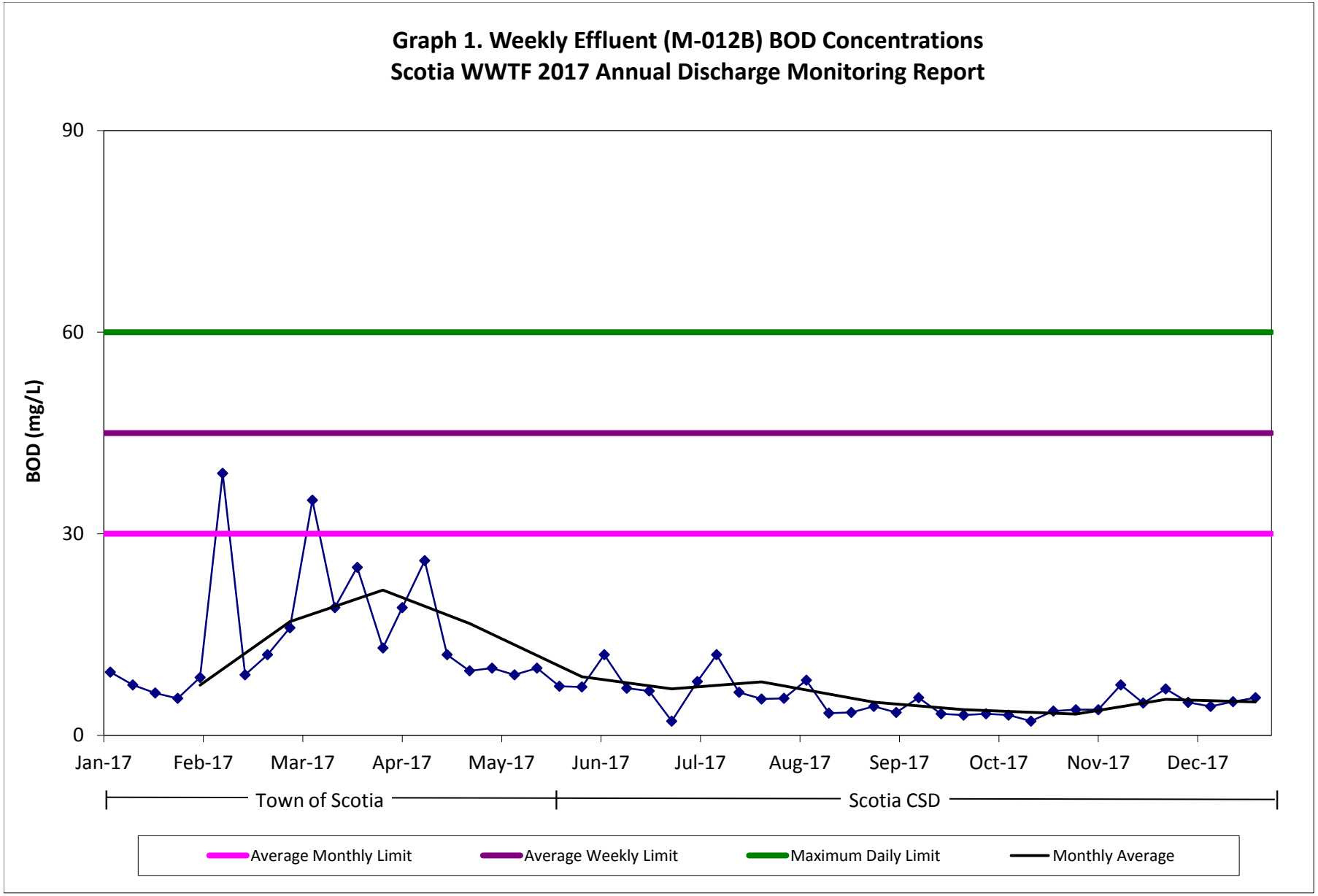
Sample Location	Chlorine Contact M-012A	Influent M-INF					Effluent M-012B						Log Pond Discharge M-003							
Constituents	Total Coliform	Daily Flow	BOD[3]		TSS[6]		Daily Flow	BOD		TSS		pH	SS[7]	pH	Ammonia Nitrogen	Nitrate Nitrogen	Nitrite Nitrogen	Organic Nitrogen	Total Nitrogen (as N)	Total Phosphorous (as P)
	(MPN/100 ml)[1]	(MGD)[2]	(mg/L)[4]	(lbs/day)[5]	(mg/L)	(lbs/day)	(MGD)	(mg/L)	(lbs/day)	(mg/L)	(lbs/day)	(pH units)	(ml/L/hr)[8]	(pH Units)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Effluent Limits																				
Average Monthly	---[9]	---	---	---	---	---	---	**30**	**64**	**30**	**64**	---	**0.1**	---	---	---	---	---	---	---
Monthly Median	**23**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Average Weekly	---	---	---	---	---	---	---	**45**	**96**	**45**	**96**	---	---	---	---	---	---	---	---	---
Maximum Daily	**230**	---	---	---	---	---	---	**60**	**129**	**60**	**129**	---	**0.2**	---	---	---	---	---	---	---
Instantaneous Minimum	---	---	---	---	---	---	---	---	---	---	---	**6.5**	---	**6.5**	---	---	---	---	---	---
Instantaneous Maximum	---	---	---	---	---	---	---	---	---	---	---	**8.5**	---	**8.5**	---	---	---	---	---	---
Sample Date																				
1/3/17	1.8	0.180	280	420	95	143	0.163	9.4	12.8	3.2	4.4	6.7	<0.1[10]	7.7	1.1	0.31	0.1	1.2	2.6	1.1
1/10/17	6.8	0.543	170	770	53	240	0.719	7.5	45.0	7.8	46.8	7.2	<0.1	7.6	---	---	---	---	---	---
1/17/17	1.8	0.118	240	236	110	108	0.096	6.3	5.0	5.8	4.6	6.7	<0.1	7.5	---	---	---	---	---	---
1/24/17	1.8	0.249	48	100	35	73	0.340	5.5	15.6	7.6	21.6	7.1	<0.1	7.4	---	---	---	---	---	---
1/31/17	---	0.123	62	64	79	81	0.091	8.6	6.5	5.6	4.3	6.7	---	7.6	---	---	---	---	---	---
2/7/17	47	0.619	120	619	41	212	0.832	39.0	**270.6**	10.0	69.4	6.6	<0.1	7.7	0.3	0.12	<0.1	<1.0	1.3	0.83
2/14/17	4.5	0.165	59	81	72	99	0.161	9.0	12.1	7.3	9.8	**6.4**	<0.1	7.1	---	---	---	---	---	---
2/21/17	4.5	0.402	65	218	130	436	1.063	12.0	106.4	6.4	56.7	6.7	<0.1	6.6	---	---	---	---	---	---
2/28/17	7.8	0.228	290	551	42	80	0.254	16.0	33.9	11.0	23.3	**6.4**	<0.1	7.2	---	---	---	---	---	---
3/7/17	4.5	0.240	72	144	160	320	0.318	35.0	92.8	7.8	20.7	6.6	<0.1	7.1	0.93	0.35	<0.1	1.2	2.5	1
3/14/17	4.5	0.177	140	207	180	266	0.151	19.0	23.9	10.0	12.6	6.5	<0.1	7.0	---	---	---	---	---	---
3/21/17	**920**	0.246	27	55	19	39	0.566	25.0	118.0	14.0	66.1	**6.4**	<0.1	7.1	---	---	---	---	---	---
3/29/17	1.8	0.161	200	269	48	64	0.208	13.0	22.6	9.4	16.3	6.7	<0.1	7.1	---	---	---	---	---	---
4/4/17	2	0.144	130	156	100	120	0.153	19.0	24.2	5.4	6.9	6.6	<0.1	7.6	---	---	---	---	---	---
4/11/17	4.5	0.890	55	408	64	475	0.224	26.0	48.6	8.8	16.4	6.6	<0.1	7.1	0.53	0.38	<0.1	<1.0	1.9	0.83
4/18/17	1.8	0.213	61	108	47	83	0.266	12.0	26.6	4.6	10.2	6.9	<0.1	7.4	---	---	---	---	---	---
4/25/17	33.0	0.120	660	661	63	63	0.162	9.6	13.0	4.2	5.7	6.7	<0.1	7.4	---	---	---	---	---	---
5/2/17	6.8	0.101	340	286	36	30	0.064	10.0	5.3	4.8	2.6	6.7	0.1	7.5	---	---	---	---	---	---
5/9/17	79	0.111	1,100	1,018	170	157	0.047	9.0	3.5	1.8	0.7	6.8	---	---	---	---	---	---	---	---
5/16/17	2	0.088	400	294	160	117	0.080	10.0	6.7	2.0	1.3	6.6	---	---	---	---	---	---	---	---
5/23/17	2.0	0.068	1,000	567	600	340	0.042	7.3	2.6	4.2	1.5	6.6	---	---	---	---	---	---	---	---
5/30/17	1.8	0.090	640	480	690	518	0.042	7.2	2.5	4.2	1.5	6.6	---	---	---	---	---	---	---	---
6/6/17	2	0.080	1,200	801	1,800	1,201	0.038	12.0	3.8	4.8	1.5	6.8	--	--	--	--	--	--	--	--
6/13/17	**280**	0.116	2,000	1,935	810	784	0.077	7.0	4.5	4.0	2.6	6.8	--	--	--	--	--	--	--	--
6/20/17	1.8	0.115	470	451	120	115	0.040	6.6	2.2	8.0	2.7	7.5	--	--	--	--	--	--	--	--
6/27/17	49.0	0.087	390	283	210	152	0.037	2.1	0.6	1.2	0.4	7.0	--	--	--	--	--	--	--	--
7/5/17	**1,600**	0.208	660	1,145	460	798	0.040	8.0	2.7	3.2	1.1	6.9	--	--	--	--	--	--	--	--
7/11/17	**540**	0.087	320	232	490	356	0.036	12.0	3.6	8.8	2.6	7.6	--	--	--	--	--	--	--	--
7/18/17	1.8	0.071	110	65	140	83	0.040	6.4	2.1	3.4	1.1	6.6	--	--	--	--	--	--	--	--
7/25/17	2.0	0.112	300	280	360	336	0.078	5.4	3.5	1.4	0.9	6.5	--	--	--	--	--	--	--	--
8/1/17	0.087	0.087	300	218	160	116	0.039	5.5	1.8	1.4	0.5	6.6	--	--	--	--	--	--	--	--
8/8/17	0.085	0.085	1,100	780	300	213	0.038	8.2	2.6	3.4	1.1	6.8	--	--	--	--	--	--	--	--
8/15/17	0.081	0.081	300	203	190	128	0.087	3.3	2.4	1.2	0.9	**6.3**	--	--	--	--	--	--	--	--
8/22/17	0.067	0.067	140	78	170	95	0.037	3.4	1.0	3.0	0.9	**6.4**	--	--	--	--	--	--	--	--
8/29/17	0.162	0.162	480	649	440	594	0.039	4.3	1.4	1.0	0.3	**6.3**	--	--	--	--	--	--	--	--
9/5/17	1.8	0.084	560	392	1,000	701	0.041	3.4	1.2	2.2	0.8	6.6	--	--	--	--	--	--	--	--
9/12/17	170	0.094	560	439	1,200	941	0.076	5.6	3.5	3.6	2.3	6.5	--	--	--	--	--	--	--	--
9/19/17	4.5	0.073	210	128	220	134	0.038	3.2	1.0	1.0	0.3	6.5	--	--	--	--	--	--	--	--
9/26/17	**920.0**	0.070	660	385	330	193	0.038	3.0	1.0	1.0	0.3	6.7	--	--	--	--	--	--	--	--
10/3/17	2	0.112	150	140	190	177	0.037	3.2	1.0	2.0	0.6	6.7	--	--	--	--	--	--	--	--

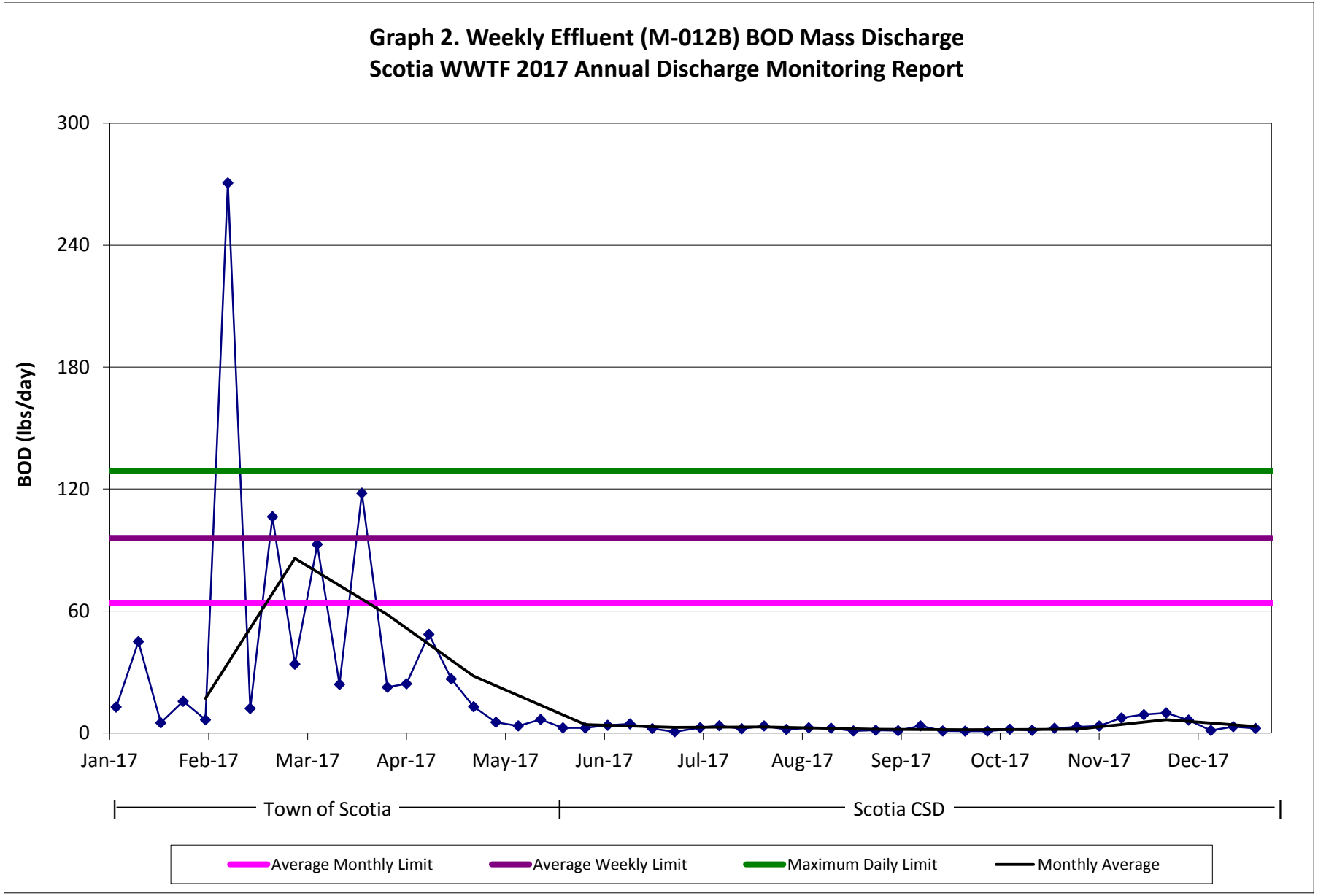
Table 1-1
2017 Monitoring Data Summary
Scotia Wastewater Treatment Facility

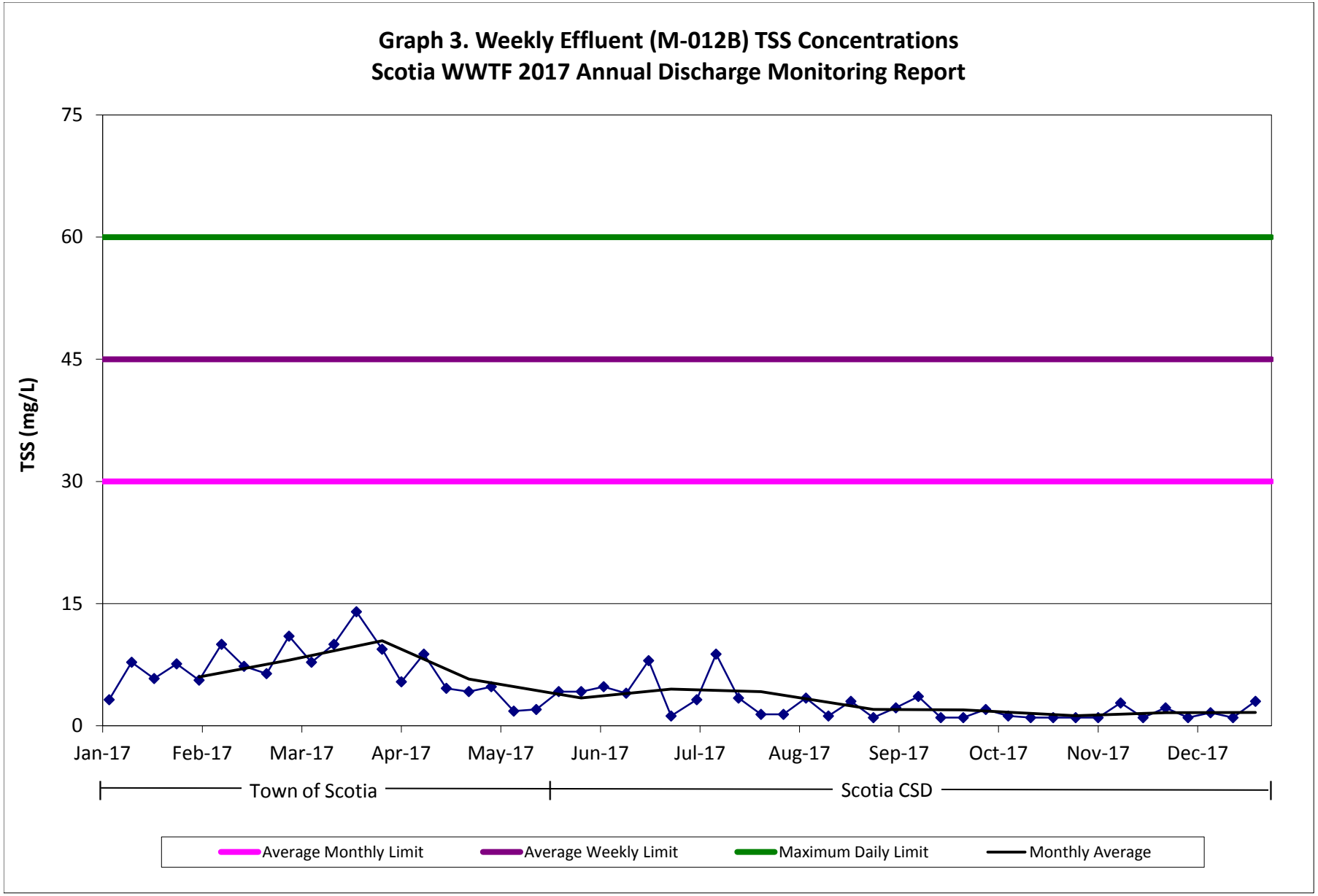
Sample Location	Chlorine Contact M-012A	Influent M-INF					Effluent M-012B						Log Pond Discharge M-003							
Constituents	Total Coliform	Daily Flow	BOD[3]		TSS[6]		Daily Flow	BOD		TSS		pH	SS[7]	pH	Ammonia Nitrogen	Nitrate Nitrogen	Nitrite Nitrogen	Organic Nitrogen	Total Nitrogen (as N)	Total Phosphorous (as P)
	(MPN/100 ml)[1]	(MGD)[2]	(mg/L)[4]	(lbs/day)[5]	(mg/L)	(lbs/day)	(MGD)	(mg/L)	(lbs/day)	(mg/L)	(lbs/day)	(pH units)	(ml/L/hr)[8]	(pH Units)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Effluent Limits																				
Average Monthly	---[9]	---	---	---	---	---	---	**30**	**64**	**30**	**64**	---	**0.1**	---	---	---	---	---	---	---
Monthly Median	**23**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Average Weekly	---	---	---	---	---	---	---	**45**	**96**	**45**	**96**	---	---	---	---	---	---	---	---	---
Maximum Daily	**230**	---	---	---	---	---	---	**60**	**129**	**60**	**129**	---	**0.2**	---	---	---	---	---	---	---
Instantaneous Minimum	---	---	---	---	---	---	---	---	---	---	---	**6.5**	---	**6.5**	---	---	---	---	---	---
Instantaneous Maximum	---	---	---	---	---	---	---	---	---	---	---	**8.5**	---	**8.5**	---	---	---	---	---	---
Sample Date																				
10/10/17	33	0.119	520	516	320	318	0.075	3.0	1.9	1.2	0.8	6.5	--	--	--	--	--	--	--	--
10/17/17	58	0.076	680	431	380	241	0.076	2.1	1.3	1.0	0.6	6.8	--	--	--	--	--	--	--	--
10/24/17	7.8	0.087	420	305	200	145	0.079	3.6	2.4	1.0	0.7	6.8	--	--	--	--	--	--	--	--
10/31/17	2.0	0.119	230	228	240	238	0.095	3.8	3.0	1.0	0.8	6.9	--	--	--	--	--	--	--	--
11/7/17	13	0.075	960	600	540	338	0.110	3.8	3.5	1.0	0.9	6.9	--	--	--	--	--	--	--	--
11/14/17	2	0.117	240	234	290	283	0.119	7.5	7.4	2.8	2.8	7.0	--	--	--	--	--	--	--	--
11/21/17	1.8	0.166	190	263	120	166	0.226	4.8	9.0	1.0	1.9	6.8	--	--	--	--	--	--	--	--
11/28/17	33.0	0.116	120	116	150	145	0.172	6.9	9.9	2.2	3.2	6.6	0.1	7.6	--	<0.10	<0.10	--	--	--
12/5/17	49	0.201	310	520	430	721	0.156	4.9	6.4	1.0	1.3	6.5	0.2	7.6	--	--	--	--	--	--
12/12/17	2	0.112	610	570	720	673	0.036	4.3	1.3	1.6	0.5	6.8	--	7.6	--	--	--	--	--	--
12/19/17	36	0.103	560	481	330	283	0.075	5.0	3.1	1.0	0.6	6.6	--	7.7	--	--	--	--	--	--
12/26/17	13	0.086	190	136	260	186	0.049	5.6	2.3	3.0	1.2	6.7	--	--	0.2	<0.10	<0.10	2.4	2.6	1

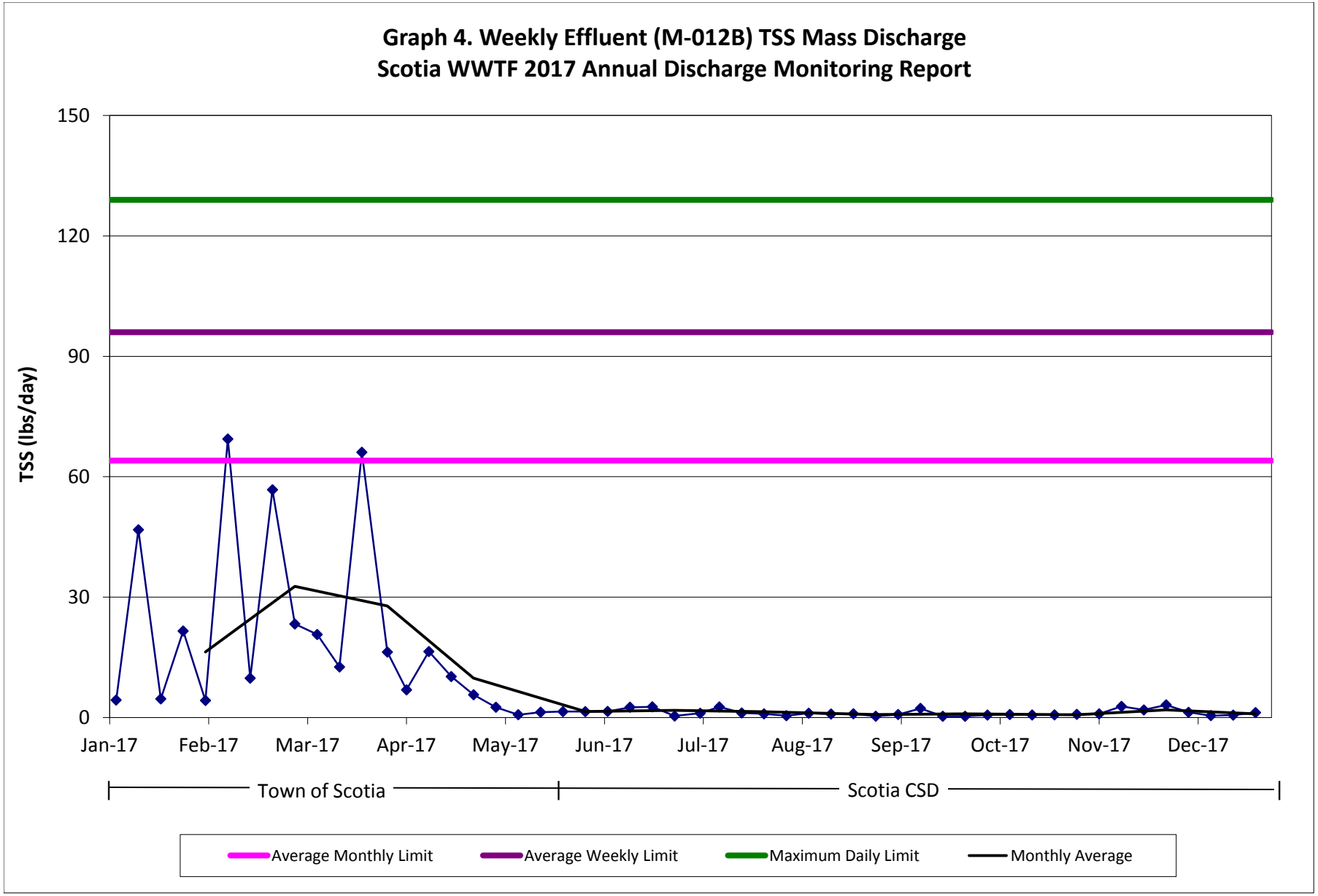
1. MPN/100 ml: most probable number per 100 milliliters
2. MGD: million gallons per day
3. BOD: biochemical oxygen demand
4. mg/L: milligrams per liter
5. lbs/day: pounds per day
6. TSS: total suspended solids
7. ml/L/hr: milliliter per liter per hour
8. SS: settleable solids
9. --- : not analyzed/not applicable
10. <: "less than" the stated method reporting limit

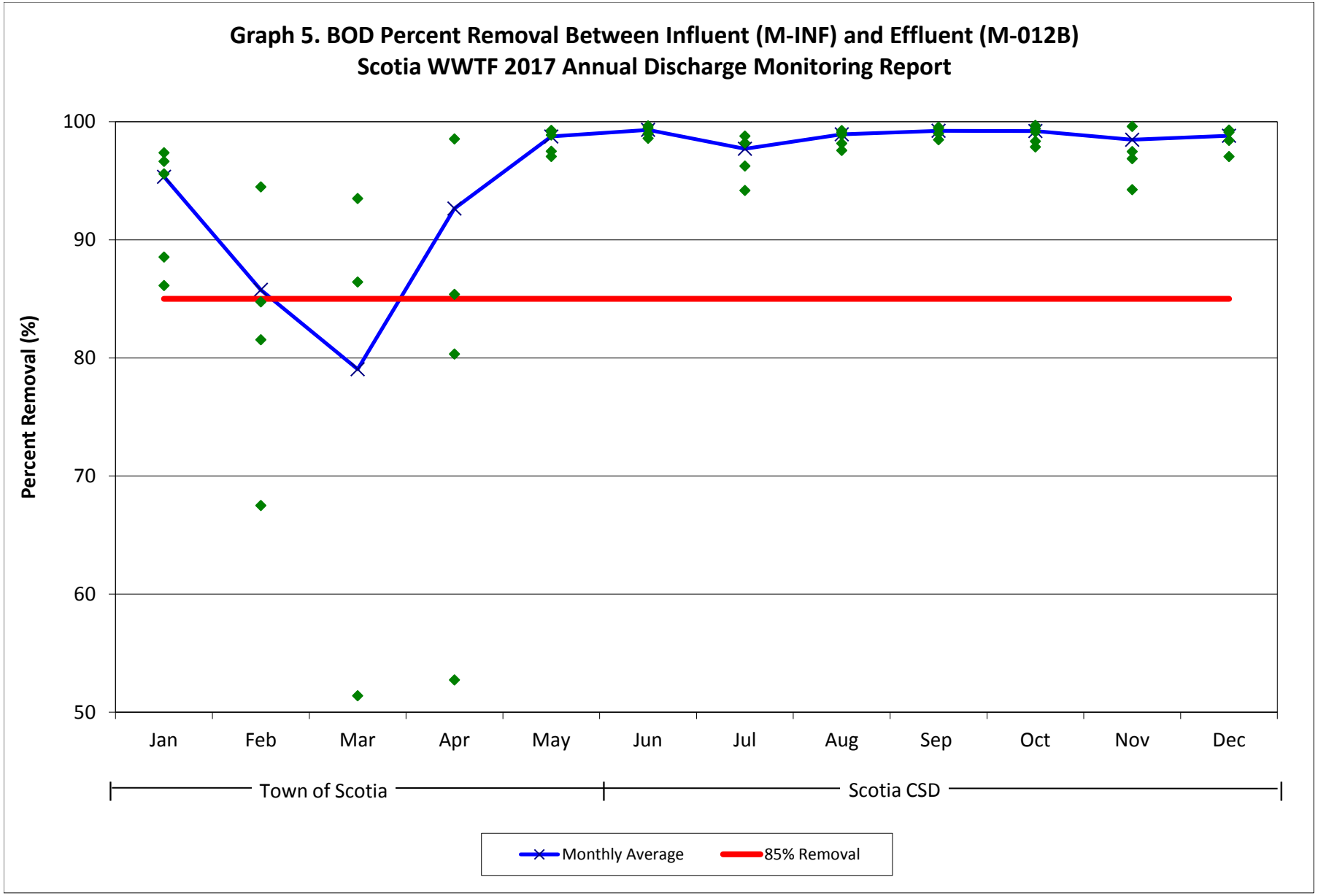
Bold values indicate discharge limit was exceeded.

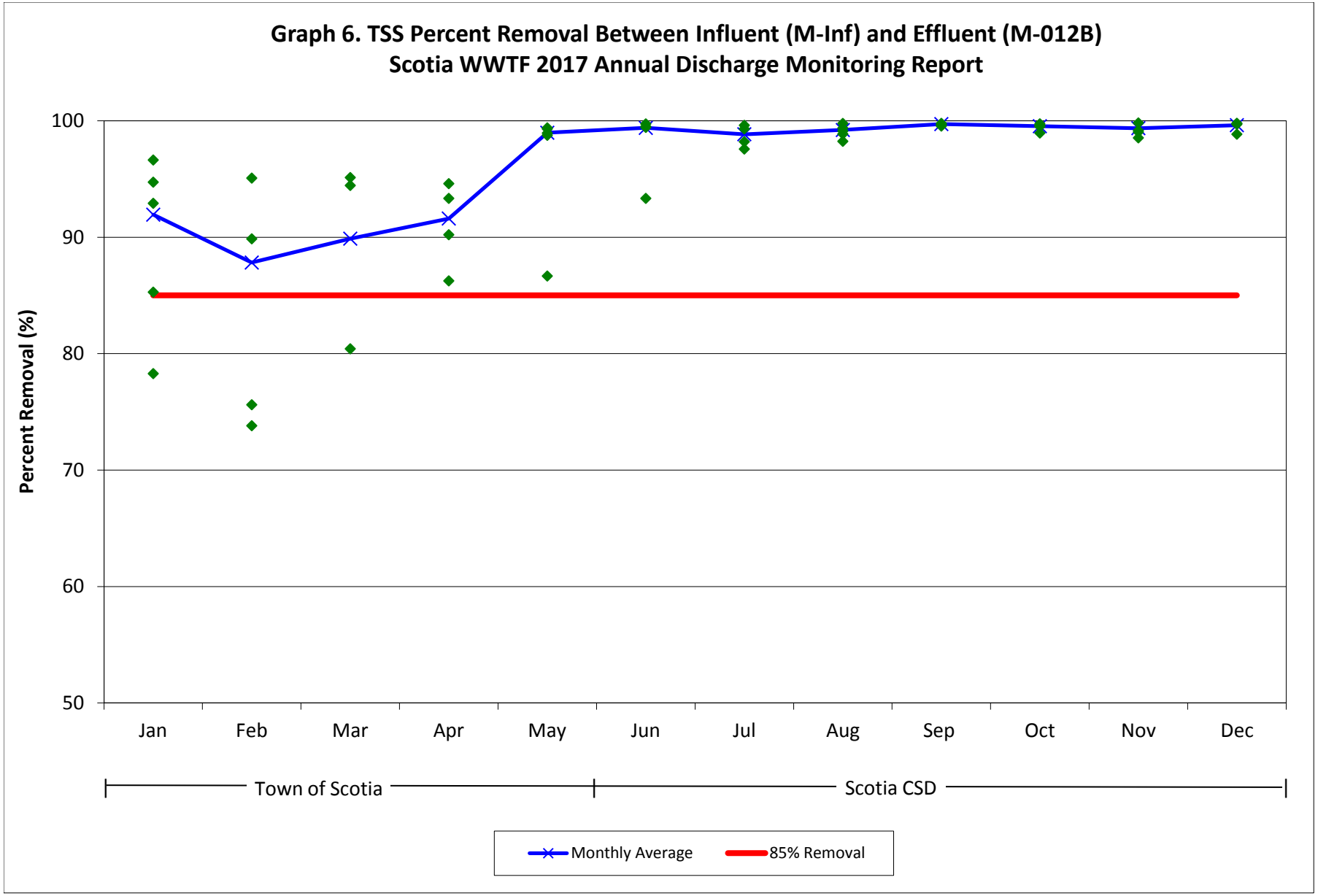

Graph 1. Weekly Effluent (M-012B) BOD Concentrations
Scotia WWTF 2017 Annual Discharge Monitoring Report
BOD (mg/L)
90
60
30
0
Jan-17
Feb-17
Mar-17
Apr-17
May-17
Jun-17
Jul-17
Aug-17
Sep-17
Oct-17
Nov-17
Dec-17
Town of Scotia
Scotia CSD
Average Monthly Limit
Average Weekly Limit
Maximum Daily Limit
Monthly Average

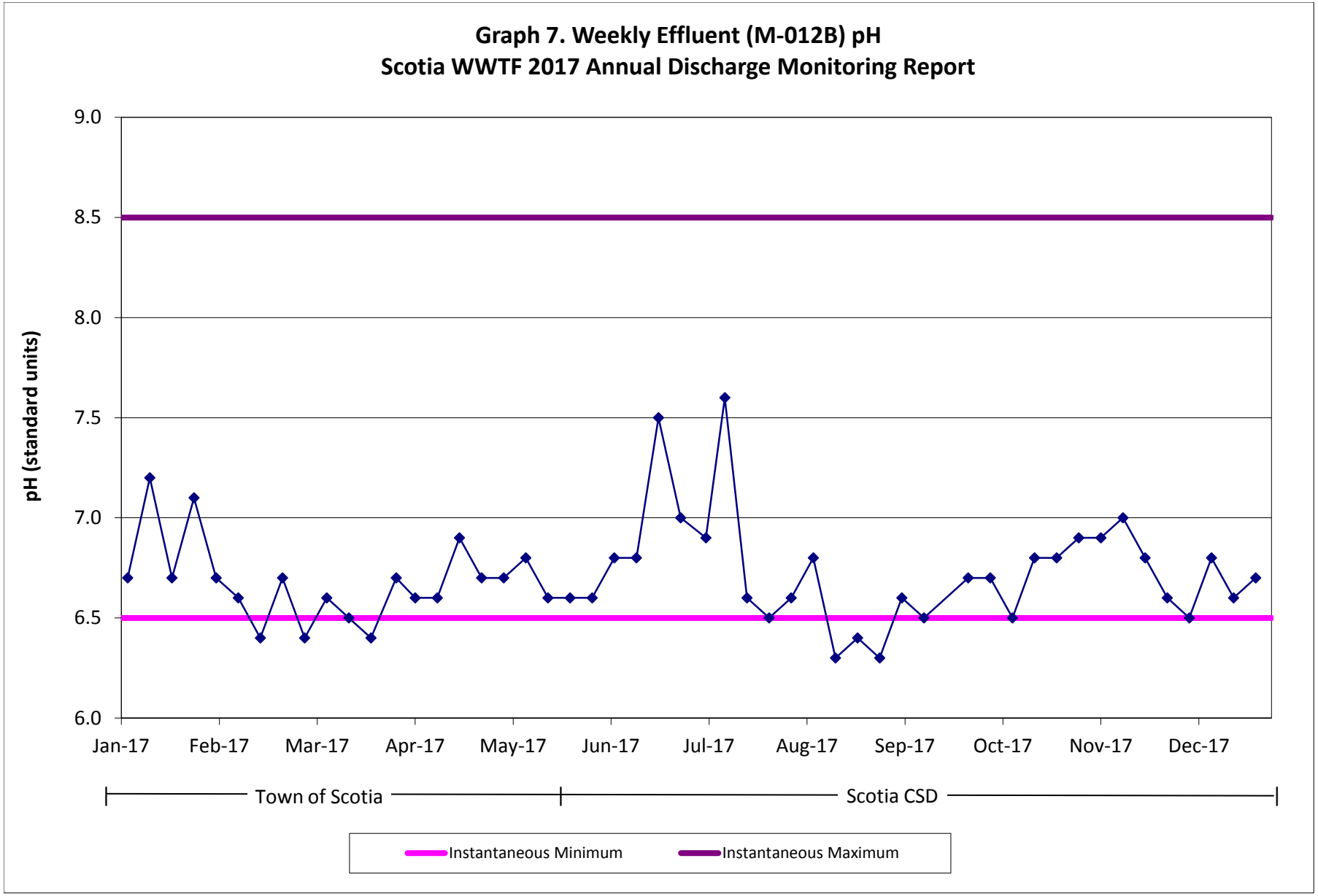

Graph 2. Weekly Effluent (M-012B) BOD Mass Discharge
Scotia WWTF 2017 Annual Discharge Monitoring Report
BOD (lbs/day)
300
240
180
120
60
0
Jan-17
Feb-17
Mar-17
Apr-17
May-17
Jun-17
Jul-17
Aug-17
Sep-17
Oct-17
Nov-17
Dec-17
Town of Scotia
Scotia CSD
Average Monthly Limit
Average Weekly Limit
Maximum Daily Limit
Monthly Average

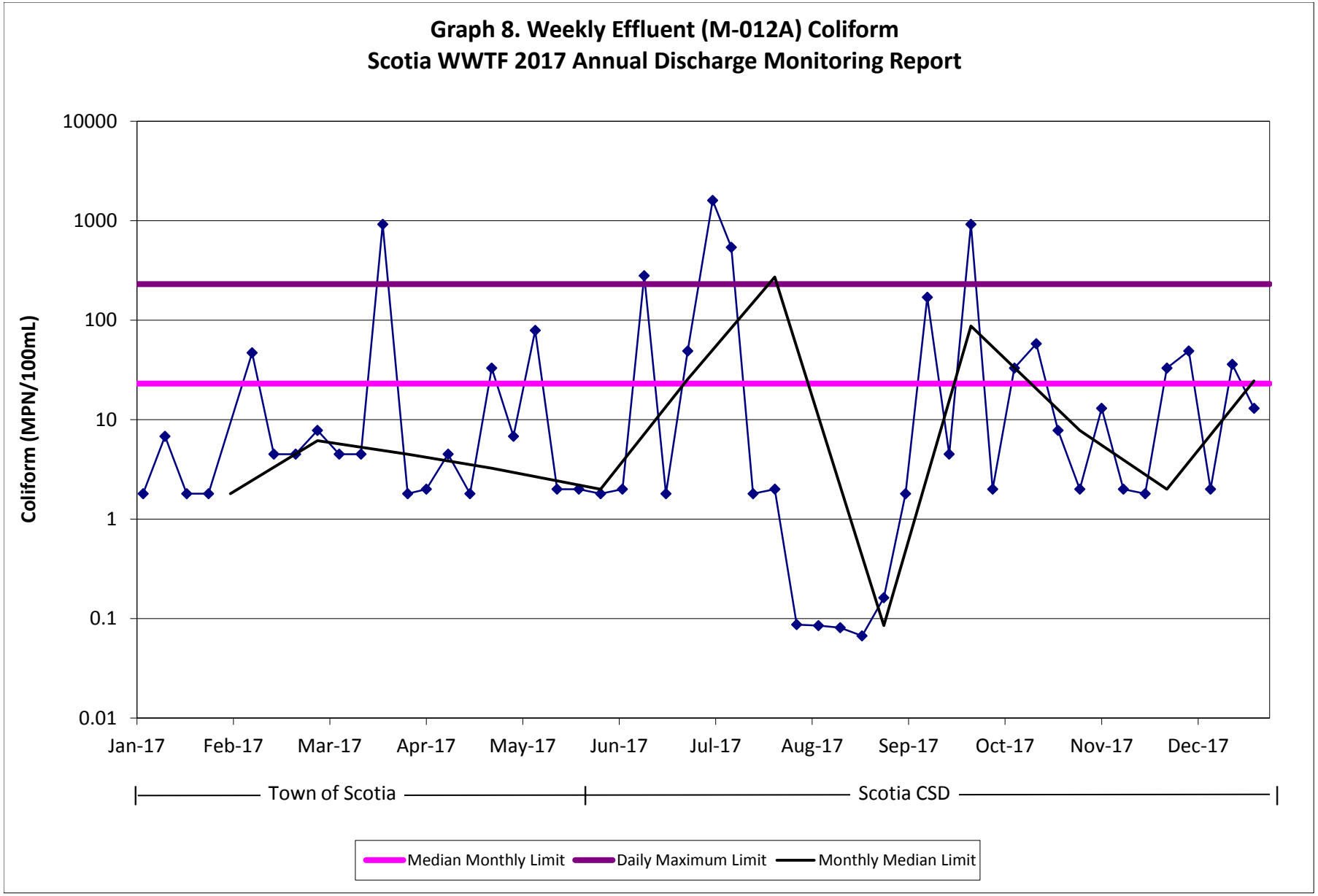

Graph 3. Weekly Effluent (M-012B) TSS Concentrations
Scotia WWTF 2017 Annual Discharge Monitoring Report
TSS (mg/L)
75
60
45
30
15
0
Jan-17
Feb-17
Mar-17
Apr-17
May-17
Jun-17
Jul-17
Aug-17
Sep-17
Oct-17
Nov-17
Dec-17
Town of Scotia
Scotia CSD
Average Monthly Limit
Average Weekly Limit
Maximum Daily Limit
Monthly Average


Graph 4. Weekly Effluent (M-012B) TSS Mass Discharge
Scotia WWTF 2017 Annual Discharge Monitoring Report
TSS (lbs/day)
150
120
90
60
30
0
Jan-17
Feb-17
Mar-17
Apr-17
May-17
Jun-17
Jul-17
Aug-17
Sep-17
Oct-17
Nov-17
Dec-17
Town of Scotia
Scotia CSD
Average Monthly Limit
Average Weekly Limit
Maximum Daily Limit
Monthly Average


Graph 5. BOD Percent Removal Between Influent (M-INF) and Effluent (M-012B)
Scotia WWTF 2017 Annual Discharge Monitoring Report
Percent Removal (%)
100
90
80
70
60
50
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Town of Scotia
Scotia CSD
Monthly Average
85% Removal


Graph 6. TSS Percent Removal Between Influent (M-Inf) and Effluent (M-012B)
Scotia WWTF 2017 Annual Discharge Monitoring Report
Percent Removal (%)
100
90
80
70
60
50
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Town of Scotia
Scotia CSD
Monthly Average
85% Removal


Graph 7. Weekly Effluent (M-012B) pH
Scotia WWTF 2017 Annual Discharge Monitoring Report
pH (standard units)
9.0
8.5
8.0
7.5
7.0
6.5
6.0
Jan-17
Feb-17
Mar-17
Apr-17
May-17
Jun-17
Jul-17
Aug-17
Sep-17
Oct-17
Nov-17
Dec-17
Town of Scotia
Scotia CSD
Instantaneous Minimum
Instantaneous Maximum


Graph 8. Weekly Effluent (M-012A) Coliform
Scotia WWTF 2017 Annual Discharge Monitoring Report
Coliform (MPN/100mL)
10000
1000
100
10
1
0.1
0.01
Jan-17
Feb-17
Mar-17
Apr-17
May-17
Jun-17
Jul-17
Aug-17
Sep-17
Oct-17
Nov-17
Dec-17
Town of Scotia
Scotia CSD
Median Monthly Limit
Daily Maximum Limit
Monthly Median Limit

Eureka, CA | Arcata, CA | Redding, CA | Willits, CA | Coos Bay, OR | Klamath Falls, OR

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