PRETREATMENT PROGRAM

ANNUAL REPORT

JANUARY 1, 2015 – DECEMBER 31, 2015

The Narragansett Bay Commission

FIELD'S POINT AND BUCKLIN POINT DISTRICTS

MARCH 15, 2016

The Narragansett Bay Commission
One Service Road
Providence, Rhode Island 02905

401 • 461 • 8848
401 • 461 • 6540 FAX
TTY (RI RELAY OPERATOR) 711

http://www.narrabay.com

Vincent J. Mesolella
Chairman

Raymond J. Marshall, P.E.
Executive Director

March 15, 2016

Dear Friends:

I am pleased to present the 2015 Narragansett Bay Commission (NBC) Pretreatment Program Annual Report for the period from January 1, 2015 through December 31, 2015. This annual report is a detailed summary of the many accomplishments associated with the NBC source reduction and control programs utilized in the two sewage districts.

The educational and regulatory source reduction and control programs of the NBC Pretreatment and Environmental Safety & Technical Assistance Sections, coupled with the monitoring, analytical and enforcement work done by the Environmental Monitoring & Data Analysis, Laboratory, and Legal Sections, have been instrumental at ensuring that toxics are not discharged into the NBC sewer system. The NBC is committed to protecting Rhode Island's greatest resource, Narragansett Bay.

Since the NBC acquired the Field's Point Wastewater Treatment Facility in 1981, the total metal loadings to the Field's Point facility have been reduced by 927,735 pounds, which equates to 97.2%. In addition, the cyanide loadings were reduced by 79,223 pounds, a 98.5% reduction from 1981 levels.

The NBC takes its responsibility to protect the receiving waters of Narragansett Bay very seriously. During 2015, the NBC issued 1,841 Notice of Violation letters and one Administrative Order against a violator assessing $22,000 in administrative penalties for various violations of the NBC Rules and Regulations. Funds collected are deposited in the Environmental Enforcement Fund and used to further protect the environment.

The NBC continues to be a national leader in the field of wastewater treatment and environmental protection. The outstanding work done by the NBC staff members in environmental education, enforcement, monitoring and analysis will ensure a cleaner Narragansett Bay for all to enjoy. I trust you will find this report to be thoroughly detailed and informative.

Sincerely,

Raymond J. Marshall, P.E.
Executive Director

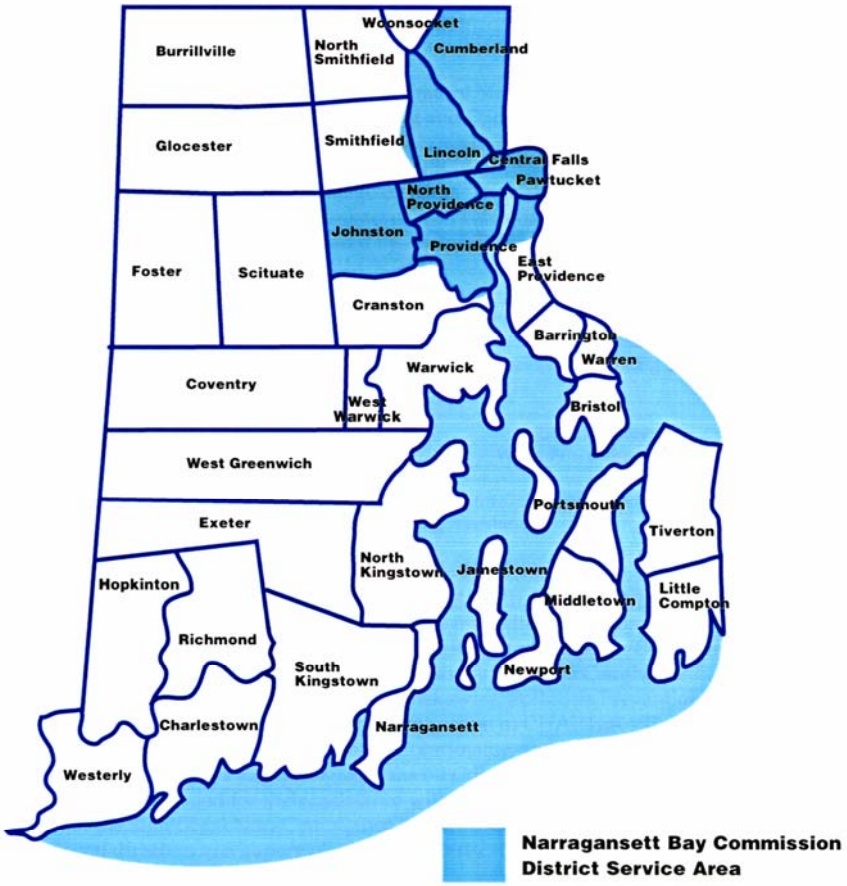
Narragansett Bay Commission
Mission Statement:

To maintain a leadership role in the protection and enhancement of water quality in Narragansett Bay and its tributaries by providing safe and reliable wastewater collection and treatment services to its customers at a reasonable cost.

Narragansett Bay Commission

Service Area

The Narragansett Bay Commission is Rhode Island's largest wastewater authority dedicated to providing reliable, cost-effective wastewater collection and treatment services to over 360,000 residents and 8,000 businesses in ten Rhode Island communities in the metropolitan Providence and Blackstone Valley areas. These communities include: Providence, North Providence, Johnston, Pawtucket, Central Falls, Cumberland, Lincoln, the northern portion of East Providence and small sections of Cranston and Smithfield.



ACKNOWLEDGMENTS

This report was written by Kerry M. Britt, Pretreatment Manager, with the assistance of the staff of the Pretreatment Program:

Nathan J. Dean
Assistant Pretreatment Manager

Abigail K. Bernier
Principal Pretreatment Engineer

Nathan Daggett and Ian Jardin
Pretreatment Engineers

Travis H. Costa
Senior Pretreatment Technician

Kyle Gannon, Brian Steere, Jared Urban, Michael McBurney and Brandi-Lyn Colacone
Pretreatment Technicians

Sulema Martinez, Sandra Brown and Andrea DiCicco
Pretreatment Clerks

A special acknowledgment to Walter Palm, Laboratory Manager, the entire NBC Laboratory Staff and the staff of the Environmental Monitoring & Data Analysis (EMDA) Section. Their hard work allowed the NBC to successfully complete wastewater sampling and analysis of all significant industrial users discharging within the NBC districts and to conduct surveillance manhole monitoring of industrial and sanitary drainage districts. The data analysis presentation provided in CHAPTER V of this report, Impact of the Pretreatment Program on the Control of Toxics and Incompatible Waste, was prepared by John E. Motta, EMDA Manager, and the EMDA Staff:

James H. Kelly III
Assistant EMDA Manager

Christine Comeau and Eliza Moore
Environmental Scientists

Sara Nadeau, Rebecca Songolo and Jeffrey Tortorella
Monitoring Field Supervisors

Kevin Wilcox, Stephen DePasquale, Michael Golenia, David Thacker
Fern Johnson, Michael Giammarco, Joseph Caranci, and Amanda Kezirian
Environmental Monitors

Ashley Petteruto
EMDA Clerk

Laurie Horridge, Esq., Director of Executive Affairs, Jennifer Harrington, Esq., Chief Legal Counsel is to be credited for their effective Enforcement Program and their preparation of the Enforcement section, CHAPTER VI, of this report. The Environmental, Safety & Technical Assistance (ESTA) sections of this report were written by James McCaughey, P.E., ESTA Manager, with the assistance of Barry Wenskowicz, Pollution Prevention Engineer. Sewer Connection Program and Storm Water Mitigation sections of CHAPTER VII of this report were written by John Zuba, Permits & Planning Manager, with the assistance of Stephen Lallo, Permits Coordinator and Kimberly Kirwan, Planning, Policy and Regulation Administrative Assistant. Jamie Samons, the NBC Public Affairs Manager, is to be acknowledged for her assistance with various sections of this report, including development of the Significant Non-Compliance Public Notice. This assignment was completed under the direction and supervision of Thomas P. Uva, Director of Planning, Policy and Regulation.

TABLE OF CONTENTS

TABLE OF CONTENTS (CONTINUED)

TABLE OF CONTENTS (CONTINUED)

TABLE OF CONTENTS (CONTINUED)

TABLE OF CONTENTS (CONTINUED)

LIST OF TABLES

LIST OF TABLES (CONTINUED)

LIST OF FIGURES

LIST OF FIGURES (CONTINUED)

I. EXECUTIVE SUMMARY

The Narragansett Bay Commission

The Narragansett Bay Commission (NBC) was created in 1980 by the R.I. General Assembly. Shortly thereafter voters approved an $87.7 million bond referendum to reduce the amount of pollutants the Field's Point Wastewater Treatment Facility in Providence was discharging into Narragansett Bay and its tributaries. At that time, nearly 45 million gallons of untreated sewage flowed into Rhode Island waterways daily, resulting in temporary and permanent closures of shellfishing beds in Upper Narragansett Bay, violating federal laws, and most importantly, threatening public health and the region's environmental and economic well-being.

The NBC owns and operates the state's two largest wastewater treatment facilities and provides quality wastewater collection and treatment services to about 360,000 people and 8,017 commercial and industrial customers located in Providence, North Providence, Johnston, Pawtucket, Central Falls, Cumberland, Lincoln, the northern portion of East Providence, and small sections of Cranston and Smithfield. The Pretreatment Program is charged with protecting these treatment facilities and Narragansett Bay from the discharge of toxic and nuisance pollutants.

Field's Point Wastewater Treatment Facility

In 1982 the NBC took over the operation of the Field's Point Wastewater Treatment Facility (FP). Prior to the NBC taking over the operation, FP was discharging untreated wastewater to the receiving waters of Rhode Island. At that time, the treatment plant was receiving approximately one million pounds of metals per year in the plant's influent.

Field's Point Wastewater Treatment Facility

Since the NBC took over the ownership and operation, the plant has been transformed into a highly sophisticated, award winning facility. As the largest secondary wastewater treatment facility in Rhode Island and the second largest in New England, the Field's Point Wastewater Treatment Facility provides preliminary and primary treatment for up to 200 million gallons per day (MGD) of wastewater, secondary treatment for up to 91 MGD and in 2015 had an average daily flow to the facility of 38.6 MGD.

Three 1.5 megawatt industrial grade wind turbines were installed on the property in 2012. Each turbine is 365 feet high and combined can generate up to 4.5 megawatts of power. The NBC projected a 40% savings in energy costs per year. In fact, the NBC realized a 45.0**%** energy savings in 2015.

Field's Point Wind Turbine and IFAS Tank

In addition to the wind turbine project, the NBC upgraded the Field's Point plant with Biological Nutrient Removal (BNR) technology to comply with Consent Agreement requirements to meet the new RIPDES nitrogen limitation of 5 ppm. The ten existing secondary treatment aeration tanks were converted to Integrated Fixed Film for Activated Sludge (IFAS) tanks, an advanced treatment technology and this project made Field's Point the largest IFAS treatment plant in the world. These tanks have five zones, both aerobic and anoxic, that wastewater travels through in order to remove nitrogen. Media is added to each IFAS tank to provide a substitute where a film of nitrifying bacteria can grow and be retained in the treatment tank. All of the tanks have been converted and nitrogen concentrations have decreased dramatically in the plant effluent. The 2015 nitrogen load to the Providence River decreased by 77.0% from 2003 loading levels, the year of the Greenwich Bay fish kill. The NBC was required to comply with the seasonal total nitrogen permit limit of 5.0 ppm beginning in May of 2014. Throughout the 2015 permit season, Field's Point met and exceeded the total nitrogen permit limits of 5.0 ppm and 2,711 pounds per day, averaging a seasonal discharge concentration of 4.18 ppm and 1,332 pounds per day. The annual average total nitrogen discharged from Field's Point was 6.23 ppm and 2,102 pounds per day in 2015.

IFAS Media

Bucklin Point Wastewater Treatment Plant

In 1992, the R.I. General Assembly expanded the NBC mission by placing it in charge of the Bucklin Point Wastewater Treatment Facility in East Providence. This facility is designed to provide secondary treatment of 46 million gallons per day, and the average daily flow was 17.8 MGD in 2015. During 1999, supervisory management of this plant was privatized and United Water was the management contractor of the Bucklin Point plant through June 2015. In July 2015, the NBC took over the supervisory management of Bucklin Point.

During 2006 the Bucklin Point plant completed a series of facility upgrades. A wet weather treatment facility was built that significantly reduced weather by-pass events by allowing the plant to process up to 116 MGD during wet weather. The facility upgrades included biological nitrogen removal treatment (BNR) and replaced chlorine disinfection by the use of ultraviolet light (UV). An enhanced BNR treatment system went on-line in 2014. The plant was upgraded to a four stage nitrification/denitrification process from a two stage process. Also, a building on site was converted to hold a carbon source for the BNR process. Bucklin Point was to comply with the seasonal total nitrogen limitation of 5.0 ppm beginning in May 2014. The 2015 seasonal nitrogen loading from this facility to Narragansett Bay was reduced by 81.0% from 2003 loading levels, the year of the Greenwich Bay fish kill.

Bucklin Point Wastewater Treatment

Throughout the 2015 permit season, Bucklin Point met the total nitrogen limits of 5.0 ppm and 1,293 pounds per day. The average total nitrogen discharged from May through October was 4.26 ppm and 566.6 pounds per day. The annual average total nitrogen discharged from Bucklin Point was 4.19 ppm and 596.8 pounds per day in 2015.

Pretreatment Annual Report Overview

CHAPTER I of this report provides an overview of the NBC, its unique and innovative approaches to source reduction and control and provides a summary of each chapter of the annual report. Also contained in this chapter is a section regarding firms that have had their user classification changed during 2015, including a list of new significant industrial users and a section regarding firms that experienced major changes in water usage in 2015. A summary of the work done over the past year by the Pretreatment, Environmental Monitoring, and Enforcement Sections of the NBC is provided at the end of this chapter in TABLES 3, 4, 5, and 6, the Pretreatment Performance Summary Sheets for both districts.

CHAPTER II describes the administration of the NBC Pretreatment Program including the status of Pretreatment, Environmental Monitoring & Data Analysis (EMDA), Environmental, Safety & Technical Assistance (ESTA), Permits & Planning, and Laboratory staff, a summary of the budgets for these sections, staff training, the Pretreatment information management system and public information and education methods used by the NBC.

CHAPTER III details the industrial and commercial user base of the NBC and includes the NBC permit classification system, user inspections and emergency and special investigations. During 2015, Pretreatment staff issued 406 permits to users located in the Field's Point and Bucklin Point Districts, conducted 1,911 facility inspections, held 65 regulatory compliance meetings with users and responded to 19 emergency or special investigations.

CHAPTER IV details the compliance monitoring protocols and provides a review of all types of monitoring results including user self-monitoring, NBC monitoring of users, and surveillance manhole sampling results. During 2015, the NBC conducted 212 sampling inspections, performed 329 manhole sampling events, and reviewed 2,723 analytical reports of users located in the Field's Point and Bucklin Point Districts.

CHAPTER V of this report provides an analysis of the toxic pollutant loadings contained in the wastewater influent, effluent, and sludge for the Field's Point and Bucklin Point Wastewater Treatment Facilities. This analysis shows that the total metals loading to Field’s Point slightly increased during 2015 by 1,298.3 pounds, or 5.2% when compared to 2014. Similarly, the total metals loading to Bucklin Point decreased by 1,116.6 pounds, or 7.7% when compared to 2014. The cyanide loading to Field’s Point increased slightly by 153.0 pounds, or 15.7% in 2015, and the cyanide loading to Bucklin Point increased by 31.3 pounds or 9.8%. Loadings to both facilities were well within the Maximum Allowable Headworks Loadings (MAHL) established for each plant.

CHAPTER VI details the types of enforcement actions used by the NBC and reviews the enforcement actions initiated by the NBC over the past year. During 2015, the NBC issued 1,841 Notice of Violation letters. The NBC issues some type of enforcement action against 100% of the violators of the NBC Rules and Regulations.

CHAPTER VII of this report details projects and programs underway and those already completed by the Planning, Policy & Regulation Division of the Narragansett Bay Commission.

CHAPTER VIII reviews the status of the goals established by the Pretreatment, EMDA, ESTA, Laboratory, and Permits & Planning Sections for 2015 and describes the ambitious goals established by these sections for 2016.

Unique Program Elements, Activities, Awards And Accomplishments

The NBC uses innovative and unique activities, projects, and programs to control and reduce the discharge of toxic and nuisance pollutants into the sewer system. The following is a short summary of these innovations and unique programmatic elements, along with a summary of NBC awards and accomplishments for the past year. Details about each of these innovations, accomplishments, and awards can be found within the chapters of this report.

User Education, Training and Outreach

- Workshops and public presentations regarding Pollution Prevention, Pretreatment, Storm Water Management, Sewer Connection, Water Quality, and Monitoring topics
- Periodic informational mailings to permitted users
- Press releases and public notices
- Development and distribution of fact sheets, Best Management Practice (BMP) documents, and case studies summary sheets
- NBC informational websites (http://www.narrabay.com and http://snapshot.narrabay.com)
- Phase III CSO Stakeholders Process
- Citizens Advisory Committee

Special Projects, Programs, and Studies

- Environmental Merit Award Programs, include:
  - ~ Pollution Prevention Award
  - ~ Perfect Compliance Award
  - ~ Storm Water Management Award
- Grease Control Program, which has greatly reduced sewage backups and overflows attributable to grease accumulations in sewer lines
- Silver and Mercury loading reduction and evaluation program
- River Water Quality Monitoring Program
- Residential Septage Hauler Discharge Control Permitting Program
- Wet Weather CSO Monitoring Program
- Regional Ocean Modeling Systems Hydrodynamic Model Development Project
- Evaluation of bacteria sources to receiving waters

- Fixed Site Monitoring Network Project to monitor Narragansett Bay water quality and provide on-line monitoring data to the public
- Computerization of Sewer System Mapping
- Woon River Environmental Education Program
- River Restoration Initiative
- Energy Management Program including alternative energy evaluations
- Sustainable Energy Management of Wastewater Treatment Facilities Program

Permitting

- Prompt and standardized user plan reviews through weekly internal plan review meetings
- Permitting of all users with process wastewater discharges to the sewer system
- Unique and equitable rate structure with varying rates dependent upon hydraulic/pollutant loadings, which covers the cost to operate the Pretreatment Program
- Permitting of facilities recycling and/or disposing process wastewater off site as they have the potential to discharge to the sewer system via sanitary connections
- Aggressive program of permitting all users that greatly exceeds EPA permitting requirements
- Sewer connection permitting referral program with cities and towns

NBC Monitoring Program

- Aggressive program of sampling permitted users
- NBC internal goal to sample every Significant Industrial User (SIU) twice per twelve month period, exceeding EPA requirements
- Clean sampling programs utilized by the EMDA Section
- Extensive use and documentation of all standard operating procedures to ensure quality assurance and quality control that greatly exceeds EPA requirements
- Extensive receiving water and POTW sampling programs
- Sanitary and industrial surveillance manhole monitoring conducted weekly to monitor compliance and loadings to the treatment facilities
- Septage monitoring program to scan for toxic, industrial and non-residential quality waste

NBC Inspection Program

- NBC internal goal to inspect every SIU at least twice per twelve month period, exceeding EPA requirements
- Development and use of SIU annual inspection form ensures thorough and standardized inspections of each SIU
- Zero discharge firms are inspected at least twice per year to ensure compliance with permit requirements
- Extensive inspections of non-significant industrial and commercial users performed annually

- Monthly inspections of industrial areas/mill complexes are conducted to ensure all sources of non-sanitary wastewater are permitted in accordance with the NBC Rules and Regulations
- Intensive restaurant inspection program to verify grease trap maintenance
- All NBC inspections stress user education regarding EPA Significant Non-Compliance (SNC) criteria, NBC mission statement, and available compliance programs, in addition to addressing regulatory compliance issues. This has contributed to the decreased rates of SIU Significant Non-Compliance
- Response to 100% of reports regarding chemical spills, unusual influents, odors, etc.

User Self-Monitoring

- Permitted users are required to conduct regularly scheduled self-monitoring of their final effluent as well as batch discharges. The frequency of self-monitoring ranges from bi-annually to monthly and is dependent on the category and hydraulic loading from the facility
- Four consecutive weeks of resampling indicating full compliance is required for any effluent violation recorded. Benefits include: users are brought back into compliance quickly, SNC is reduced due to increased monitoring, reduced loadings to sewer, escalated enforcement due to additional evidence, etc.
- SIU permit required monitoring greatly exceeds that required by EPA regulations

Computerized Compliance and Data Tracking System

- Networked computer database consisting of all company, permit and compliance information which is available via desktop and tablet connections to all Pretreatment, ESTA, EMDA, and Enforcement staff
- Pretreatment system software has been upgraded to increase functionality and is expandable
- System automatically generates violation letters for any non-compliance event and tracks all user requirements
- System calculates SNC and enables flagging of any user approaching SNC, allowing staff to implement corrective actions

Pollution Prevention Program

- Free technical compliance assistance program
- On site consultations and pilot testing
- Routine referrals for pollution prevention assistance by regulatory staff in all Notices of Violation (NOV) and other user correspondence and communications
- Solicitations for pollution prevention assistance by ESTA staff directly to industries
- Extensive educational efforts
- Free water audits conducted of businesses, large residential buildings and industries

Staff Training

- NBC provides extensive training to its employees, including safety and procedural training
- Pretreatment, EMDA and ESTA staff receive 40-hour HAZWOPER and annual 8-hour HAZWOPER refresher training
- NBC has a tuition reimbursement program to assist employees to further their education and enhance their performance
- Intrasectional Training
- Interagency Training

Enforcement

- Some type of enforcement action issued against 100% of violators
- Cost of SNC Public Notice billed to firms published
- Use of innovative settlement agreements, which may include:
  - ~ Community based environmental projects
  - ~ Development of public service announcements
  - ~ Purchase of Pollution Prevention and Monitoring Equipment
  - ~ Use of Supplemental Environmental Projects
- Environmental Enforcement Fund - Penalties assessed are deposited into this NBC fund, from which special environmental projects and/or enforcement equipment and resources are funded. NBC received EPA Environmental Merit Award in 1995 and AMSA Public Service Award in 1995 and 2000 for this fund
- In-house legal staff available for quick enforcement response
- Work with state and federal criminal investigators regarding criminal pollution violations

2015 Accomplishments

~ ***Permitting:***

- 406 Permits issued
- 140 New permits issued to previously unpermitted firms
- 266 Revised permits issued

~ ***Inspections and Sampling:***

- 1,911 Non-sampling inspections conducted
- 294 Non-sampling inspections of SIUs
- 200 Non-sampling inspections of categorical users
- 94 Non-sampling inspections of significant non-categorical users
- 1,617 Non-sampling inspections of non-significant users
- 65 Regulatory Compliance meetings held with users
- Pretreatment staff reviewed 2,723 User Monitoring Reports
- 19 Emergency/Special Investigations Conducted
- 224 User Monitoring Reports generated by NBC
- 212 NBC Sampling Inspections of Industry

- 76 Different Facilities Sampled by NBC
- 217 Monitoring Reports of SIUs generated
- 110 Monitoring Reports of Categorical Users generated
- 97 Monitoring Reports of significant non-categorical users generated
- 7 Monitoring Reports of non-significant users generated
- 329 Manhole Sampling Events conducted
- 273 Industrial Surveillance Manhole Sampling Events conducted
- 43 Sanitary Manhole Sampling Events conducted

~ ***Enforcement:***

- 1,841 NOV Letters Issued
- 13 Firms listed in the February 23, 2016 Public Notice in the Providence Journal as being in Significant Non-Compliance (SNC)
- All but one of the 13 firms listed in SNC achieved full compliance with cited violations prior to publication of the Public Notice

~ ***User Compliance:***

- 5.1% Rate of SIU Significant Non-Compliance (SNC) in Field's Point District for 2015, a reduction from 39% in 1992
- Rate of SIU SNC reduced in Bucklin Point from 44.8% in 1994 to 11.8% for 2015
- Overall rate of SIU SNC is 8.2% in 2015
- 93.0% Overall Rate of Compliance for All Significant Users
- 94.5% Overall Rate of Compliance for All Categorical Users
- 94.3% Overall Rate of Compliance for All Non-Significant Users
- 93.7% Overall Rate of Compliance for All Users
- 60.7% of EPA categorically regulated users had perfect effluent compliance records with all effluent parameters excluding pH
- 65.8% of Significant Users AND 88.3% of all users had perfect effluent compliance records with effluent pollutants excluding pH
- Rate of SNC has been significantly reduced in both sewage districts over the past decade through Pretreatment's User Education Methods

Notification of Changes in User Status

During 2015, four users were reclassified from significant to non-significant. Two of the four users that were reclassified were categorical users. The remaining two users were non-categorical. One of the four users was reclassified to non-significant because it went out of business. One of the four users relocated out of the NBC district. The final two users reclassified to non-significant ceased discharging process wastewater. Three of the four users were located in the Field's Point district and eliminated 203,708 gallons per day of industrial flow to the Field's Point facility. One company Northeast Remsco Construction, Inc. is responsible for eliminating 90.6%, or 184,550 gallons per day of this industrial flow to Field's Point. This company conducted dewatering operations from a

construction project associated with Phase II of the NBC Combined Sewer Overflow project which was completed in 2014. The remaining user that was reclassified was located in the Bucklin Point district and eliminated 144 gallons per day of industrial flow to the Bucklin Point facility.

In 2015, there was one new SIU, which is located in the Bucklin Point district and contributes 5,094 gallons per day of industrial flow to the plant. The new Bucklin Point SIU conducts wire and cable manufacturing operations.

A review of the baseline monitoring reports submitted by the newly classified SIUs indicates that the discharge from these facilities had no adverse effect on the quantity or quality of effluent discharged from either the Field's Point or Bucklin Point Wastewater Treatment Facilities. The SIUs which were reclassified during 2015 and the reason for each reclassification are detailed in TABLE 1.

TABLE 1

2015 Significant Industrial Users Classification Changes

Firms Reclassified to Non-Significant

Field's Point Firms	*Reason for Reclassification*
AG&G Plating Company	Firm ceased discharges.
JRB Associates, Inc.	Firm moved out of district.
Northeast Remsco Construction, Inc.	Firm ceased discharges.

Bucklin Point Firms	*Reason for Reclassification*
Osram Sylvania, Inc.	Firm is out of business.

Newly Classified Significant Users

Bucklin Point Firms	*Reason for Reclassification*
The Okonite Company	Firm discharges greater than 5,000 gallons per day.

There were no SIUs with name changes in 2015.

During 2015, 20 Field's Point SIUs had changes in water usage that is noted in this section. Twelve of the 20 firms increased their water usage by a combined total of 22,482 gallons per day. The remaining eight of the 20 firms decreased their water usage by a combined total of 35,297 gallons per day. The net change to the Field's Point facility is insignificant, a decrease of 12,815 gallons per day of industrial flow. This decrease in industrial flow did not have an adverse effect on the quality of wastewater discharged from the Field's Point treatment facility.

Twenty-one Bucklin Point SIUs experienced notable changes in water usage during 2015. Nine of the 21 SIUs increased their water usage by a combined total of 37,887 gallons per day. Twelve of the 21 SIUs decreased their water usage by a combined total of 61,578 gallons per day. The net change in flow to Bucklin Point is a decrease of 23,691 gallons per day of industrial flow. This decrease in industrial flow did not have an adverse effect on the quality of wastewater discharged from the Bucklin Point treatment facility.

The SIUs with significant changes in water usage during 2015 are detailed in TABLE 2.

TABLE 2

2015 Significant Industrial User Changes in Water Usage

Firms with Increased Flow

Field's Point

Company	*Change in Flow (gpd)*	*% Change*
A. Harrison & Company Inc.	86	20.4%
Alloy Holdings, LLC	1,809	11.4%
DFI-EP, LLC	2,346	32.4%
DiFruscia Industries, Inc.	5,512	37.0%
Dominion Energy Manchester Street, Inc.	2,647	11.2%
E&M Enterprises, Ltd.	2,038	29.2%
International Insignia Corp.	869	18.9%
Metallurgical Solutions, Inc.	253	68.2%
Providence Specialty Products	4,682	23.4%
Surface Coatings Division MFB LLC	1310	27.1%
Unique Plating Company	756	26.1%
Universal Plating Company, Inc.	174	32.9%

Bucklin Point

Company	*Change in Flow (gpd)*	*% Change*
Aspen Aerogels Rhode Island, LLC	13,960	30.0%
Chemart Company	1,884	10.1%
Godfrey & Wing, Inc.	486	19.3%
John H. Collins & Sons Company	444	29.6%
Murdock Webbing Co., Inc.	3,562	48.4%
Pawtucket Power Associates	2,746	31.1%
Providence Metallizing Company, Inc.	13,000	79.2%
Summit Manufacturing Corporation	1,175	8.0%
Tedor Pharma, Inc.	630	65.1%

TABLE 2
(continued)

2015 Significant Industrial User Changes in Water Usage

Firms with Decreased Flow

Field's Point

Company	*Change in Flow (gpd)*	*% Change*
A & F Plating Company	-1,582	-57.9%
Eastern Color & Chemical Company	-355	-21.9%
International Etching, Inc.	-803	-16.1%
Monarch Metal Finishing Co., Inc.	-2,117	-60.6%
Monarch Metal Finishing, Inc. (Georgia Ave.)	-20,160	-47.8%
Technodic, Inc.	-3,486	-50.9%
Umicore USA, Inc.	-3,170	-13.0%
Univar USA Inc.	-3,644	-36.8%

Bucklin Point

Company	*Change in Flow (gpd)*	*% Change*
Accent Plating Company	-830	-34.2%
Bliss Manufacturing Co., Inc.	-281	-23.4%
Darlene Group	-286	-61.1%
Eaton Corporation	-12,130	-76.2%
General Cable Industries, LLC	-439	-11.1%
Interplex Engineered Products, Inc.	-30,356	-34.5%
Lincoln Manufacturing Inc.	-925	-51.0%
Liquid Blue	-6,359	-37.5%
Materion Technical Materials, Inc.	-3,430	-7.1%
Stackbin Corporation	-303	-53.8%
Tanury Industries PVD, Inc.	-5,390	-76.9%
Tiffany & Company	-849	-41.5%

Pretreatment Program Performance Evaluation

Nationally, the EPA assesses the effectiveness of a pretreatment program by reviewing specific data submitted by each program. This data is reported on a standard EPA form entitled the Pretreatment Performance Summary Sheet. The Pretreatment Performance Summary Sheet contains general information about the sewage agency, the permitting and compliance status of significant industrial users, and the enforcement actions issued.

The NBC believes that the Pretreatment Program has achieved its stated goals and has been quite effective at reducing and controlling the discharge of toxics into the sewage system. This is evidenced by the fact that user compliance rates are excellent, no incidents of pass through or interference occurred, and treatment plant influent loading goals are being met. As a result, the NBC Pretreatment Program has been recognized twice by the U.S. EPA as being the *"Best Pretreatment Program in the Nation"*, receiving these awards in 1990 and 1998. In addition to the two national awards, the NBC Pretreatment Program received the 2009 EPA Region 1 Excellence Award.

Various factors are reviewed to properly evaluate and measure the effectiveness of a Pretreatment Program. These factors include the following:

- Industrial User Rate of Significant Non-Compliance;
- Effectiveness of Enforcement Response Program;
- Sufficiency of Program Funding and Staffing Levels;
- Application of Local Limits;
- Sufficiency of Statutory Authority and Rules and Regulations;
- Evaluation of recent and proposed program modifications;
- Pretreatment Performance Summary Sheet "Bean Counts".

The NBC routinely reviews all the aforementioned criteria to ensure that the Pretreatment Program satisfies and exceeds all EPA and DEM Pretreatment Program requirements. The following paragraphs detail the NBC efforts with regard to each criteria, as required by RIPDES permit requirements C(7)(i) and C(7)(j).

~ Evaluation of Significant Non-Compliance

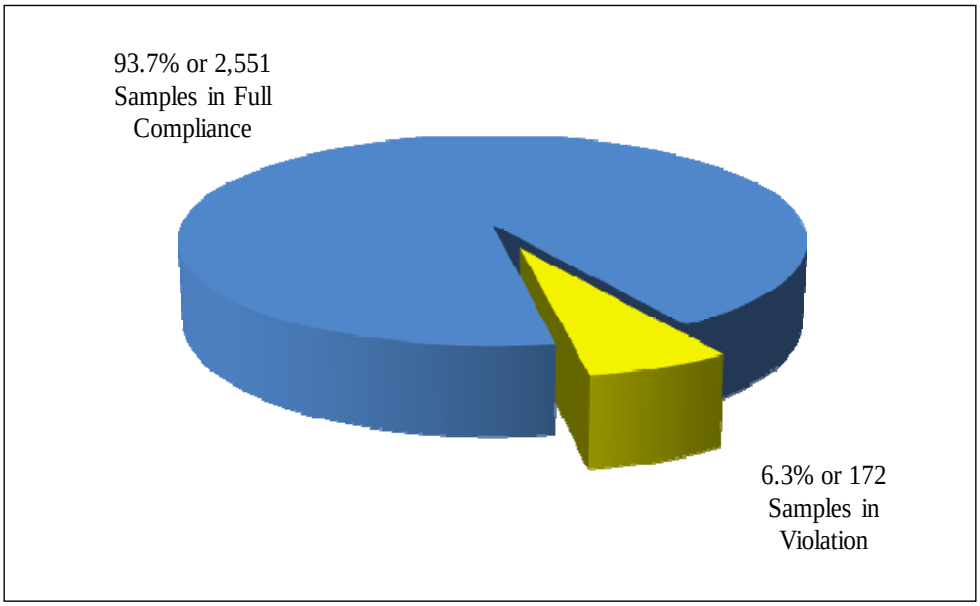
Through extensive user education efforts, quick enforcement response to user violations and regular monthly reminder telephone calls to users, the Pretreatment Section has over the years reduced its SIU rate of significant non-compliance substantially in both districts. The combined rate of SNC for significant industrial users located in the two NBC sewage districts for 2015 was 8.2%, an increase from the SNC rate of 4.8% observed in 2014.

The SIU rate of SNC was dramatically reduced in Field's Point from a high of 39.0% in 1992 to 5.1% for 2015, while the SIU rate of SNC for Bucklin Point was reduced from a high of 44.8% in 1994 to 11.8% in 2015. These impressive reductions in the rate of SIU SNC are directly attributed to increased user education efforts made by the Pretreatment staff and by stringent regulatory requirements to promptly identify and correct user violations.

These Pretreatment educational efforts include informing users about the EPA SNC violation criteria during all inspections and by sending annual informational letters to remind users about permit requirements and SNC ramifications. Regulatory efforts to reduce SNC include imposing stringent resampling requirements over four consecutive weeks for any effluent monitoring violation, and by the implementation of a procedure to call users prior to a monitoring report being thirty (30) days late past the due date. In addition, Pretreatment runs monthly reports to identify companies with the potential to be in SNC. Staff contacts these companies and informs them of the steps necessary to avoid SNC.

As a result of these efforts, the NBC has been able to maintain overall SIU rates of SNC to 10% or below. As can be seen from FIGURE 1, 93.7% of the 2,723 analytical reports reviewed by the Pretreatment staff during 2015 were in full compliance with effluent discharge limitations, standards which are more stringent than EPA categorical standards.

FIGURE 1
USER COMPLIANCE RATE
FOR ALL EFFLUENT ANALYSES



2,723 Total Analyses Reviewed

In addition, as shown in CHAPTER IV of this report, the 2015 rate of compliance of categorical users in the two districts was 94.5%, while the compliance rate for significant users was 93.08%. These excellent rates of user compliance with effluent limits are reflected in the long term reductions in toxic loadings to the Field's Point and Bucklin Point treatment facilities, as shown in CHAPTER V of this report.

Thirteen firms located in the Field's Point and Bucklin Point districts were listed in a Public Notice in the Providence Journal on February 23, 2016 as being in SNC for the period from October 1, 2014 through December 31, 2015. Of the thirteen firms published for being in SNC, five users are located in Field's Point and eight users are located in Bucklin Point.

The names of four categorical and one non-categorical significant users were published for SNC, two are located in Field’s Point and three are located in Bucklin Point. Eight non-categorical industrial users were listed in the Public Notice, five from Field’s Point and eight from Bucklin Point. Eight of the thirteen firms, or 61.5%, were listed as being in SNC solely for administrative violations such as submitting a report late. Five firms listed in the notice were cited as being in SNC solely due to violations of effluent limitations. At the time of publication of this report, all but one of the facilities cited as being in SNC were back in full compliance with NBC regulations.

~ Effectiveness of NBC Enforcement Response Program

The NBC has a very aggressive and effective enforcement program. The Pretreatment Program issues some type of enforcement action for 100% of all violations observed, in accordance with the NBC approved Enforcement Response Plan (ERP). Pretreatment staff works very closely with the Legal Section and has the capability to issue an Administrative Order or Cease and Desist Order immediately, if necessary, to halt illicit discharges as detailed in the approved ERP.

During 2015, the NBC issued 1,841 Notice of Violation letters and one Administrative Order. The NBC Enforcement Program is efficient and clearly effective at ensuring users comply with NBC regulations and requirements. Additional information regarding the Enforcement Program is provided in CHAPTER VI.

~ Sufficiency of Program Funding and Staffing Levels

The NBC has provided continual support and funding to the Pretreatment, EMDA, ESTA, Permits & Planning, and Laboratory Sections, the teams responsible for controlling and reducing toxic loadings to the NBC treatment facilities and Narragansett Bay. This funding commitment has ensured adequate staffing levels necessary to get the job done in an exemplary manner. Additional information regarding the budgets and staffing of these sections is provided in CHAPTER II.

~ Application of Local Limits

The two NBC Wastewater Treatment Facilities have separate and distinct local limits designed to protect each wastewater treatment facility from pass-through and interference, ensuring the proper operation of the facility, to protect the receiving waters of the state, to protect the sludge quality and to protect the health and safety of NBC workers and the general public. The local limits are rigidly enforced by the NBC Pretreatment staff. The NBC routinely reviews influent, effluent, sludge, and receiving water analytical data to ensure that the NBC local limits are appropriate for each treatment facility. Based upon this review and on-going studies being conducted by the NBC, the existing local limits are appropriate and enforceable. A review of the local limits and loading evaluations for each NBC plant is provided in CHAPTER V of this report.

During 2004, the NBC was required to submit a final metals compliance report as required by a Consent Agreement with the DEM (RIA-330). This report included a re-evaluation of local limits for both Field's Point and Bucklin Point using the July 2004 EPA Local Limits Development Guidance. Plant data, background loadings, and site-specific metal translators were developed for both facilities to determine local limits that protect plant operations and infrastructure, human health, and the NBC receiving waters, while allowing for the safe disposal of solids extracted from the collection system. The findings of this

report indicate that the current local limits are both appropriate and enforceable. In addition, this report details analytical data indicating that the NBC receiving waters are meeting EPA Water Quality Criteria for toxic pollutants, clearly proving that the local limits are adequate for protecting the receiving waters of Narragansett Bay.

~ Sufficiency of Statutory Authority and Rules and Regulations

The NBC has statutory authority detailed in the State of Rhode Island General Laws, Title 46, Chapter 25 et seq. This legislation permits the NBC to develop, adopt, and enforce Rules and Regulations for use of the sewage system. In 2006, the NBC petitioned the DEM to revise the Rules and Regulations. The NBC requested revisions to the Significant Non-Compliance definitions as required by the EPA Pretreatment Streamlining rules as well as voluntary changes outlined by the Streamlining rules. These Revisions can be found in Article 2 of the Rules and Regulations. Other revisions concerning the Pretreatment Program were made to clarify existing regulations. In addition, the NBC made minor revisions to the Rules and Regulations regarding sewer connections. The revised Rules and Regulations were approved by the DEM and became effective on December 20, 2006. The NBC Rules and Regulations satisfy all EPA and DEM requirements and are fully enforceable. The NBC Rules and Regulations are available on-line at www.narrabay.com.

~ Evaluation of Recent and Proposed Program Modifications

The NBC has an approved Enforcement Response Plan (ERP). The initial ERP was approved by the DEM and adopted by the NBC in 1994. This ERP outlined the actions the NBC would take to escalate enforcement against companies violating the NBC Rules and Regulations and the terms of their Wastewater Discharge Permits. Escalated enforcement actions may include the issuance of Administrative Orders, Compliance Orders or Cease and Desist Orders.

The NBC re-evaluated its approach to user compliance after the ERP was originally adopted in 1994. The revised approach is proactive and educational in nature. Many educational programs have been developed and implemented. These programs educate users on the NBC Rules and Regulations, their permit requirements, and assist them to achieve and maintain compliance. Pretreatment and ESTA staff work together with the implementation of these programs. These programs have been very successful at bringing non-compliant users into compliance and have contributed to the reduction in the number of users in significant non-compliance with NBC and EPA regulations.

Even with the implementation of these proactive, educational programs, the NBC takes non-compliance with its Rules and Regulations very seriously. Therefore, Notices of Violation (NOV) are issued for every violation of the NBC Rules and Regulations and permit requirements. The issuance of escalated enforcement action in the form of an Administrative Order may be necessary to protect the NBC's treatment facilities and

subsequently Narragansett Bay. In cases where there is not imminent endangerment to NBC facilities or the health of Narragansett Bay, there may be a deferment in the time before the issuance of an Administrative Order to allow ESTA staff the opportunity to work with industry to address compliance issues. The NBC revised the ERP to accurately reflect the proactive, educational approach. The revision was required by the RIPDES permits issued by the DEM to the NBC in December 2001. The NBC revised the ERP in 2002 to accurately reflect the enforcement protocols followed by the NBC. The final ERP was approved by the DEM in September 2003.

In 2004, the NBC implemented a non-substantial change in the allowable pH limitations for both treatment facilities. The change standardized the pH limitations at both treatment facilities to 5.0 standard units (s.u.) - 11.0 s.u. at all times. Previously the pH limitations were 5.0 s.u. - 10.0 s.u. in Field's Point and 5.5 s.u. - 9.5 s.u. in Bucklin Point. The NBC requested this modification in a request to revise the Rules and Regulations. The DEM determined the modification to be a non-substantial program modification and these changes became effective on December 13, 2004. There were no Pretreatment Program modifications in 2015.

~ Pretreatment Performance Summary Sheets

The U.S. EPA measures the effectiveness of a Pretreatment Program by tracking routine activities performed by the program. These include the number of users of each type, number of violations cited, number of inspections conducted, number of permits issued, number of sampling events conducted, amount of penalties assessed, etc. This information is provided in the Pretreatment Performance Summary Sheets. The Pretreatment Performance Summary Sheets, one for each NBC sewage district, are provided in TABLES 3 and 5 and detail the 2015 accomplishments of the NBC Pretreatment, Environmental Monitoring, and Enforcement Programs. In early 2008, the EPA revised the Pretreatment Performance Summary Sheet. The revised summary sheets can be found in TABLES 4
and 6.

TABLE 3

NARRAGANSETT BAY COMMISSION

FIELD'S POINT DISTRICT

PRETREATMENT PERFORMANCE SUMMARY SHEET

1. General Information

Control Authority Name	Narragansett Bay Commission
Address (treatment facility)	2 Ernest Street, Providence, RI 02905
(main office)	1 Service Road, Providence, RI 02905
(pretreatment office)	2 Ernest Street, Providence, RI 02905
Contact Persons	Raymond Marshall, P.E. , Executive Director
	Thomas P. Uva, PP&R Director
	Kerry M. Britt, Pretreatment Manager
Contact Telephone	(401) 461-8848
RIPDES Number	RI 0100315
Reporting Period	January 1, 2015 - December 31, 2015
Total Categorical Industrial Users as of the date of this report (throughout the reporting period)	26 (28) (See Note 1)
Total Significant Non-Categorical IUs as of the date of this report (throughout the reporting period)	10 (11)
Total # Significant Industrial Users (SIUs)	36 (39) (See Note 1)

2. Significant Industrial User (SIU) Compliance

	Significant Industrial Users	
	Categorical	**Non-Categorical**
1. # Of SIUs Submitting BMRs/# Required	3/3	3/3
2. # Of SIUs Submitting 90-Day Compliance Reports/# Required	0/0	0/0
3. # Of SIUs in SNC with Pretreatment Compliance Schedule/ # Required To Meet Schedule	0/0	0/0
4. # Of SIUs In Significant Noncompliance With Self Monitoring Reporting Requirements and have not returned to compliance	0	0
5. # Of SIUs in SNC for Violating Effluent or Reporting Requirements and have Not had Adequate Enforcement Action by POTW	0	0
6. # Of SIUs in SNC with Reporting Requirements At End of Report Period	0	0
7. # Of SIUs in SNC With Effluent Requirements At End of Report Period	0	0

TABLE 3

(continued)

NARRAGANSETT BAY COMMISSION

FIELD'S POINT DISTRICT

PRETREATMENT PERFORMANCE SUMMARY SHEET

3. Compliance Monitoring Program

	Significant Industrial Users	
	Categorical	**Non-Categorical**
1. # Of Control Documents Issued/# Required	3/3	3/3
2. # Of SIUs Without Active (Expired) Permits	0	0
3. # Of SIUs With Permits Expired For 180 Days Or More	0	0
4. # Of Non-Sampling Inspections Conducted	119	37
5. # Of Sampling Visits Conducted	63	67
6. # Of Facilities Inspected (Nonsampling)	28	11
7. # Of Facilities Sampled	28	10 (See Note 2)
8. # Of SIUs (Both) Not Inspected And Not Sampled By POTW In Past 12 Months	0	0
9. # Of SIUs Not Sampled/Not Inspected By POTW In Past 12 Months	0/0	1/0 (See Note 2)
10. # Of SIUs in SNC with Self Monitoring and Not Inspected and Not Sampled in the Past 12 Months	0	0

TABLE 3
(continued)
NARRAGANSETT BAY COMMISSION

FIELD'S POINT DISTRICT

PRETREATMENT PERFORMANCE SUMMARY SHEET

4. Enforcement Actions

	Significant Users			
	Categorical	**Non-Categorical**	**Non-Significant**	**Total All Users**
1. Compliance Schedules Issued	0	0	0	0
2. Notices Of Violation Issued	151	40	1,068	1,259
3. Admin. Orders Issued	0	0	0	0
4. Combined Total Of Administrative Orders and Notices of Violation	151	40	1,068	1,259
5. Civil Suits Filed	0	0	0	0
6. Criminal Suits Filed	0	0	0	0
7. Combined Total of Civil and Criminal Suits	0	0	0	0
8a. Published IUs in SNC (See Newspaper Notice in Enforcement Chapter)	2	0	3	5
8b. Rate of IUs in SNC	2/28 = 7.1%	0/11 = 0%	N/A	N/A
9a. Amount Of Penalties Collected (Total Dollars/IUs Assessed)	$0/0	$0/0	$0/0	$0/0
9b. Amount Of Penalties Assessed (Total Dollars/IUs Assessed)	$0/0	$0/0	$0/0	$0/0
10. # of IUs Subject to Any Enforcement Action	23	7	443	473
11. Other Actions (Permit Suspensions, Sewer Bans, Etc.)	0	0	0	0

I certify that the information contained in the Pretreatment Performance Summary Sheet is complete and accurate to the best of my knowledge.

[signature]
AUTHORIZED REPRESENTATIVE

March 15, 2016
DATE

TABLE 3
(continued)
NARRAGANSETT BAY COMMISSION

FIELD'S POINT DISTRICT

PRETREATMENT PERFORMANCE SUMMARY SHEET

Notes Regarding the Pretreatment Performance Summary Sheets

Note 1: Numbers in parentheses () reflect totals for users classified as significant for some time during the reporting period. Some of these companies are no longer classified as SIUs since they may have changed process operations eliminating discharges to the sewer.

Note 2: The non-categorical SIU not sampled by the NBC in 2015 ceased process operations and discharging wastewater in late 2014.

TABLE 4

NARRAGANSETT BAY COMMISSION

FIELD'S POINT DISTRICT

REVISED PRETREATMENT REPORT SUMMARY SHEET

January 1, 2015 through December 31, 2015

POTW Name:	Narragansett Bay Commission (NBC)
NPDES Permit #:	RI0100315
Pretreatment Report Period Start Date:	January 1, 2015
Pretreatment Report Period End Date:	December 31, 2015
# of Significant Industrial Users (SIUs):	36 (39) (See Note 1)
# of SIUs Without Control Mechanisms:	0
# of SIUs not Inspected:	0
# of SIUs not Sampled:	1 (See Note 2)
# of SIUs in Significant Noncompliance (SNC) with Pretreatment Standards:	2
# of SIUs in SNC with Reporting Requirements:	0
# of SIUs in SNC with Pretreatment Compliance Schedule:	0
# of SIUs in SNC Published in Newspaper:	2
# of SIUs with Compliance Schedules:	0
# of Violation Notices Issued to SIUs:	191
# of Administrative Orders Issued to SIUs:	0
# of Civil Suits Filed Against SIUs:	0
# of Criminal Suits Filed Against SIUs:	0
# of Categorical Industrial Users (CIUs):	26 (28) (See Note 1)
# of CIUs in SNC:	2
Penalties Total Dollar Amount of Penalties Collected:	0
# of IUs from which Penalties have been collected:	0

TABLE 4
(continued)
NARRAGANSETT BAY COMMISSION

FIELD'S POINT DISTRICT

REVISED PRETREATMENT REPORT SUMMARY SHEET

January 1, 2015 through December 31, 2015

Local Limits Date of Most Recent Technical Evaluation of Local Limits:	September 30, 2004
Date of Most Recent Adoption of Technically Based Local Limits:	1987

Pollutant	**Limit (mg/l)**	**MAHL (lb/day)** (See Note 3)
Cadmium	0.11	6.1
Chromium	2.77	102.2
Copper	1.20	46.3
Lead	0.60	23.4
Mercury	0.005	0.5
Nickel	1.62	57.9
Silver	0.43	10.8
Zinc	2.61	137.0
Cyanide	0.58	2.4
Selenium	-	436.5
Arsenic	-	2.5

Note 1: Numbers in parentheses () reflect totals for users classified as significant for some time during the reporting period. Some of these companies are no longer classified as SIUs since they may have changed process operations eliminating discharges to the sewer.

Note 2: The non-categorical SIU not sampled by the NBC in 2015 ceased process operations and discharging wastewater in late 2014.

Note 3: MAHL values were recalculated as a part of the Local Limits Re-evaluation that was submitted to the Rhode Island Department of Environmental Management in September 2004.

TABLE 5

NARRAGANSETT BAY COMMISSION

BUCKLIN POINT DISTRICT

PRETREATMENT PERFORMANCE SUMMARY SHEET

1. General Information

Control Authority Name	Narragansett Bay Commission
Address (treatment facility)	102 Campbell Avenue, East Providence, RI 02916
(main office)	1 Service Road, Providence, RI 02905
(pretreatment office)	2 Ernest Street, Providence, RI 02905
Contact Persons	Raymond Marshall, P.E. , Executive Director
	Thomas P. Uva, PP&R Director
	Kerry M. Britt, Pretreatment Manager
Contact Telephone	(401) 461-8848
RIPDES Number	RI 0100072
Reporting Period	January 1, 2015 - December 31, 2015
Total Categorical Industrial Users as of the date of this report (throughout the reporting period)	20
Total Significant Non-Categorical IUs as of the date of this report (throughout the reporting period)	13 (14)
Total # Significant Industrial Users (**SIUs**)	33 (34) (See Note 1)

2. Significant Industrial User (SIU) Compliance

	Significant Industrial Users	
	Categorical	**Non-Categorical**
1. # Of SIUs Submitting BMRs/# Required	2/2	3/3
2. # Of SIUs Submitting 90-Day Compliance Reports/# Required	0/0	1/1
3. # Of SIUs in SNC with Pretreatment Compliance Schedule/ # Required To Meet Schedule	0/0	0/0
4. # Of SIUs In Significant Noncompliance With Self Monitoring Reporting Requirements and have not returned to compliance	0	0
5. # Of SIUs in SNC for Violating Effluent or Reporting Requirements and have Not had Adequate Enforcement Action by POTW	0	0
6. # Of SIUs in SNC with Reporting Requirements At End of Report Period	0	0
7. # Of SIUs in SNC With Effluent Requirements At End of Report Period	0	0

TABLE 5
(continued)

NARRAGANSETT BAY COMMISSION

BUCKLIN POINT DISTRICT

PRETREATMENT PERFORMANCE SUMMARY SHEET

3. Compliance Monitoring Program

	Significant Industrial Users	
	Categorical	**Non-Categorical**
1. # Of Control Documents Issued/# Required	2/2	3/3
2. # Of SIUs Without Active (Expired) Permits	0	0
3. # Of SIUs With Permits Expired For 180 Days Or More	0	0
4. # Of Non-Sampling Inspections Conducted	89	53
5. # Of Sampling Visits Conducted	46	30
6. # Of Facilities Inspected (Nonsampling)	20	14
7. # Of Facilities Sampled	20	13 (See Note 2)
8. # Of SIUs (Both) Not Inspected And Not Sampled By POTW In Past 12 Months	0	0
9. # Of SIUs Not Sampled/Not Inspected By POTW In Past 12 Months	0/0	1/0 (See Note 2)
10. # Of SIUs in SNC with Self Monitoring and Not Inspected and Not Sampled in the Past 12 Months	0	0

TABLE 5
(continued)

NARRAGANSETT BAY COMMISSION

BUCKLIN POINT DISTRICT

PRETREATMENT PERFORMANCE SUMMARY SHEET

4. Enforcement Actions

	Significant Users			
	Categorical	Non-Categorical	Non-Significant	Total All Users
1. Compliance Schedules Issued	0	0	0	0
2. Notices Of Violation Issued	76	82	424	582
3. Admin. Orders Issued	0	1	0	1
4. Combined Total Of Administrative Orders and Notices of Violation	76	83	424	583
5. Civil Suits Filed	0	0	0	0
6. Criminal Suits Filed	0	0	0	0
7. Combined Total of Civil and Criminal Suits	0	0	0	0
8a. Published IUs in SNC (See Newspaper Notice in Enforcement Chapter)	2	2	4	8
8b. Rate of IUs in SNC	2/20 = 10.0%	2/14 = 14.3%	N/A	N/A
9a. Amount Of Penalties Collected (Total Dollars/IUs Assessed)	$0/0	$0/0	$0/0	$0/0
9b. Amount of Penalties Assessed (Total Dollars/IUs Assessed)	$0/0	$22,000/1	$0/0	$22,000/1
10. # of IUs Subject to Any Enforcement Action	11	11	198	220
11. Other Actions (Sewer Bans, Etc.)	0	0	0	0

I certify that the information contained in the Pretreatment Performance Summary Sheet is complete and accurate to the best of my knowledge.

AUTHORIZED REPRESENTATIVE

March 15, 2016
DATE

TABLE 5
(continued)

NARRAGANSETT BAY COMMISSION

BUCKLIN POINT DISTRICT

PRETREATMENT PERFORMANCE SUMMARY SHEET

Notes Regarding the Pretreatment Performance Summary Sheets

Note 1: Numbers in parentheses () reflect totals for users classified as significant for some time during the reporting period. Some of these companies are no longer classified as SIUs since they may have changed process operations eliminating discharges to the sewer.

Note 2: The non-categorical SIU that was not sampled by the NBC in 2015 ceased process operations in 2014. The company conducted facility clean-up operations through February 2015. Wastewater was not discharged to the sewer system.

TABLE 6

NARRAGANSETT BAY COMMISSION

BUCKLIN POINT DISTRICT

REVISED PRETREATMENT REPORT SUMMARY SHEET

January 1, 2015 through December 31, 2015

POTW Name:	Narragansett Bay Commission (NBC)
NPDES Permit #:	RI0100072
Pretreatment Report Period Start Date:	January 1, 2015
Pretreatment Report Period End Date:	December 31, 2015
# of Significant Industrial Users (SIUs):	33 (34) (See Note 1)
# of SIUs Without Control Mechanisms:	0
# of SIUs not Inspected:	0
# of SIUs not Sampled:	1 (See Note 2)
# of SIUs in Significant Noncompliance (SNC) with Pretreatment Standards:	3
# of SIUs in SNC with Reporting Requirements:	1
# of SIUs in SNC with Pretreatment Compliance Schedule:	0
# of SIUs in SNC Published in Newspaper:	4
# of SIUs with Compliance Schedules:	0
# of Violation Notices Issued to SIUs:	158
# of Administrative Orders Issued to SIUs:	0
# of Civil Suits Filed Against SIUs:	0
# of Criminal Suits Filed Against SIUs:	0
# of Categorical Industrial Users (CIUs):	20
# of CIUs in SNC:	2
Penalties Total Dollar Amount of Penalties Collected:	$0
# of IUs from which Penalties have been collected:	0

TABLE 6
(continued)
NARRAGANSETT BAY COMMISSION

BUCKLIN POINT DISTRICT

REVISED PRETREATMENT REPORT SUMMARY SHEET

January 1, 2015 through December 31, 2015

Local Limits Date of Most Recent Technical Evaluation of Local Limits:	September 30, 2007
Date of Most Recent Adoption of Technically Based Local Limits:	1991

Pollutant	**Limit (mg/l)**	**MAHL (lb/day)** (See Note 3)
Cadmium	0.11	1.4
Chromium	2.77	28.6
Hexavalent Chromium	-	51.3
Copper	1.20	8.0
Lead	0.69	7.5
Mercury	0.06	0.03
Nickel	1.62	3.6
Silver	0.40	1.1
Zinc	1.67	45.2
Cyanide	0.50	0.3
Selenium	0.40	1.7
Arsenic	0.20	0.68

Note 1: Numbers in parentheses () reflect totals for users classified as significant for some time during the reporting period. Some of these companies are no longer classified as SIUs since they may have changed process operations eliminating discharges to the sewer.

Note 2: The non-categorical SIU that was not sampled by the NBC in 2015 ceased process operations in 2014. The company conducted facility clean-up operations through February 2015. Wastewater was not discharged to the sewer system.

Note 3: MAHL values were recalculated as a part of the Local Limits Re-evaluation that was submitted to the Rhode Island Department of Environmental Management in September 2004.

II. PROGRAM ADMINISTRATION

RIPDES Permit Numbers

On December 31, 2001, the Rhode Island Department of Environmental Management, (DEM) Office of Water Resources issued new RIPDES permits to the Narragansett Bay Commission's two wastewater treatment facilities. The RIPDES permit number for the Field's Point Wastewater Treatment Facility is RI 0100315 and the RIPDES permit number for the Bucklin Point Wastewater Treatment Facility is RI 0100072. These RIPDES permits required nitrogen removal for the first time for the NBC plants, and due to this newly imposed requirement and several other issues, NBC appealed these permits. The NBC then worked with the DEM to resolve the issues of concern. A Consent Agreement, RIA-330, resolving the appealed conditions was signed by both parties and became effective in January 2004. The CA imposed more stringent nutrient limitations for both the Field's Point and Bucklin Point wastewater treatment facilities, but provided NBC time to install treatment and achieve compliance. The CA detailed requirements which the NBC need to satisfy to achieve compliance with the new limitations and require full compliance with interim limitations until such requirements are implemented. The RIPDES permits for both facilities have expired, however these permits remain in full effect until the DEM issues new permits to the NBC.

Personnel

The control and reduction of toxic and nuisance discharges to the sewer falls under the Division of Planning, Policy & Regulation (PP&R) which works closely with and relies upon the resources of many other NBC sections to achieve its goal of protecting the two NBC treatment facilities and ultimately Narragansett Bay. From the wastewater operators that report unusual influents to the legal staff that issues escalated enforcement actions against violators, environmental protection is a team effort at the NBC. The organizational plan of the NBC is provided in FIGURE 2, while the organizational plan of the PP&R Division is provided in FIGURE 3.

The PP&R Division consists of five sections, the Pretreatment, Environmental, Safety & Technical Assistance (ESTA), Permits & Planning, Environmental Monitoring & Data Analysis (EMDA), and the Laboratory sections. PP&R is responsible for developing, implementing, and performing source reduction and control activities and programs for the NBC. The Pretreatment Section works to control the discharge of toxics through regulatory and user educational mechanisms, while the ESTA Section achieves pollutant reductions through user education efforts and by providing free technical assistance. Both sections rely upon the services and expertise of the EMDA and Laboratory Sections. The EMDA Section conducts user, river, treatment facility, and manhole monitoring activities and is responsible for logging and reviewing data reported on samples analyzed by the Laboratory Section.

FIGURE 2
Narragansett Bay Commission

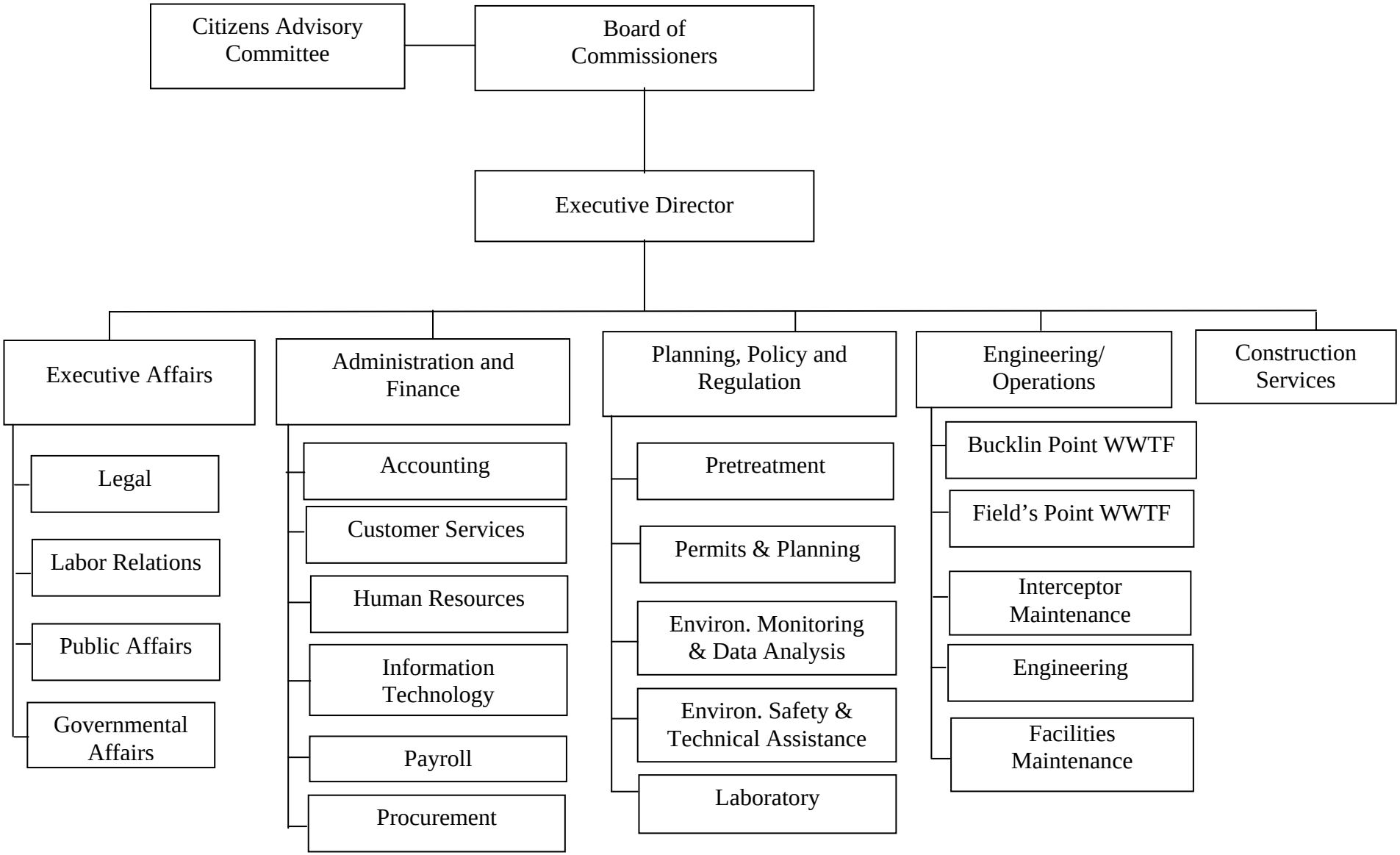
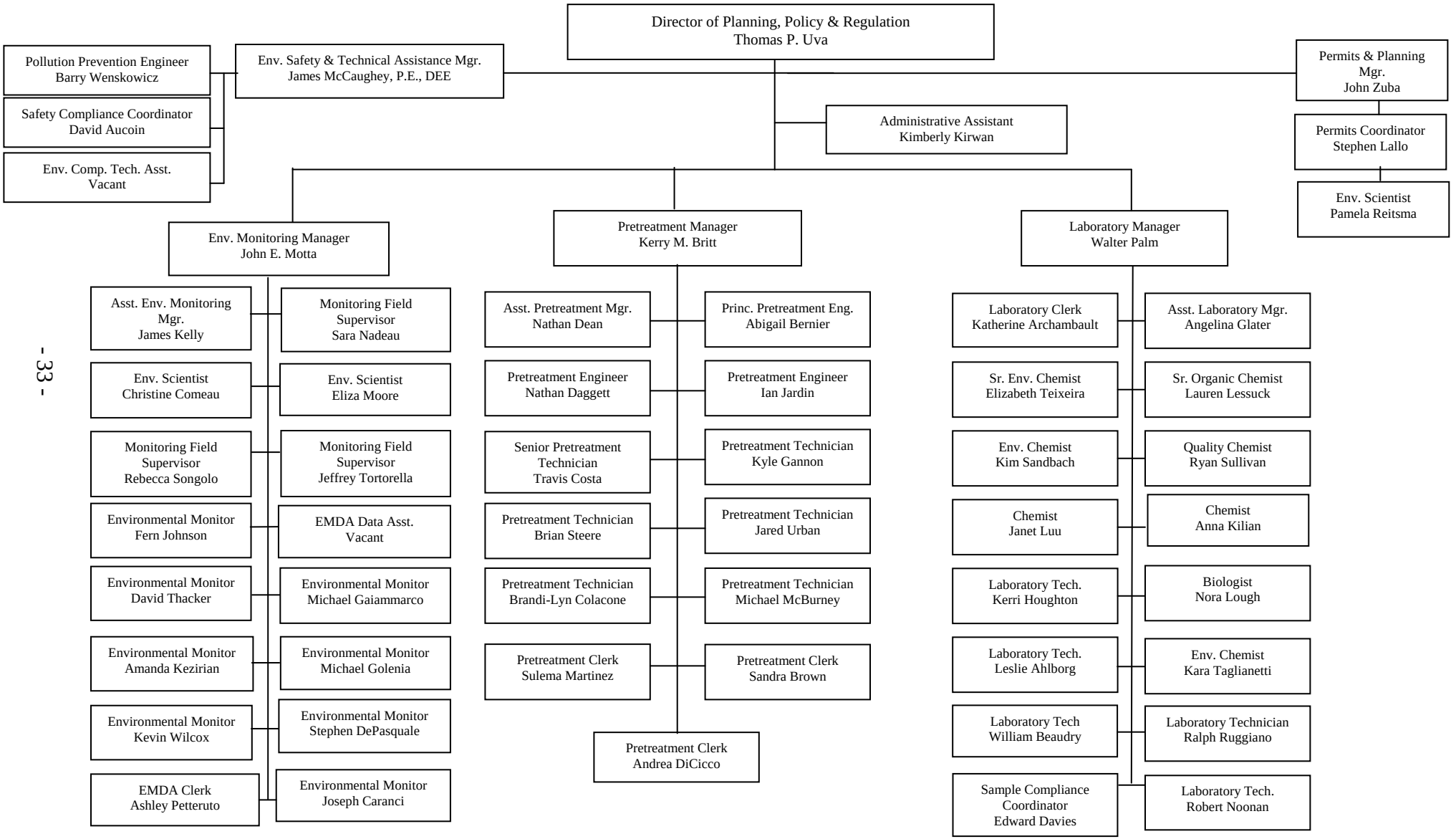


FIGURE 3
Narragansett Bay Commission
Division of Planning, Policy & Regulation
March 15, 2016



During 2015 there were two personnel changes in the Pretreatment Section. The first change occurred in October when Ryan Grasso vacated his Pretreatment Technician position for a position in the private sector. This vacant position was filled in January 2016 by Brandi-Lyn Colacone. The second change occurred in December when Blair Lynch vacated her Pretreatment Clerk position for a position in another agency. This vacant position will be filled in early 2016.

There were three personnel changes in the EMDA Section in 2015. In April Olga Shirzadi vacated her EMDA Clerk position. This vacant position was filled by Ashley Petteruto in July. Joanne Parker retired in June vacating her EMDA Data Assistant Position. This vacant position was filled by Brandi-Lyn Colacone in July who vacated her Environmental Monitor position and shortly thereafter she accepted a position to become a Pretreatment Technician. The vacant Environmental Monitor position was filled by Joseph Caranci in July.

There was one personnel change in the ESTA Section in 2015. Brendan Cunha vacated his Environmental Compliance Technical Assistant position in November. This position will be filled in early 2016.

There were no personnel changes in the Laboratory and Permits & Planning Sections.

Staff Training

The NBC provides extensive training to its employees and has a tuition reimbursement program to assist employees in furthering their education. During 2015, staff received training by attending seminars, workshops and classes in many areas including safety, technical and office productivity.

The NBC places a high value on the safety of its employees. Therefore safety training is provided to all personnel and in many cases this training is mandatory for certain positions. The following lists the safety trainings provided in 2015:

- CPR/AED
- Environmental Health & Safety Awareness
- HazCom/Right-to-Know Training
- New Employee Safety Training
- Personal Protective Equipment
- Healthy Back, Slips, Trips and Falls
- Occupational Hearing Safety
- Permit Required Confined Space
- First Aid Training
- Man Overboard Training
- Work Zone Safety
- Emergency Preparedness Plans
- Air Monitor Equipment Training
- Voluntary Respirator Training

To ensure that staff can adequately perform their job functions, specialized technical training is provided. Staff often suggests topics for training. The following is a list of the technical trainings provided to Pretreatment, EMDA, ESTA and Laboratory personnel during 2015:

- 40 Hour HAZWOPER Training
- Enforcement Response Plan Training
- 8-Hour HAZWOPER Refresher Training
- Telog Storm Water Module Training
- Grease Guardian Grease Removal Equipment Training
- Pipet Training
- Good Laboratory Practices
- Process Control Training
- Basic Laboratory Training
- Process Sampling for Process and Reporting
- Nutrient Analyzer Training

Boom Deployment Training at Bucklin Point

PP&R staff is encouraged to attend conferences and workshops to educate themselves on current and emerging issues in the wastewater and environmental fields. The technical conferences and workshops that were attended in 2015 are as follows:

- 2015 New England Regional Pretreatment Coordinators Conference
- 2015 National Association of Clean Water Agencies Pretreatment & Pollution Prevention Conference
- 2015 NEWEA Conference
- Hospital Hazard Vulnerability Assessment Workshop
- Ebola Virus Disease Multiagency Tabletop Exercise/Workshop for Concept of Operations
- Anterior Quest Workshop
- RI Commerce – Statewide Action Team Training
- State of New Hampshire Fats Oils & Grease Programs for Success Workshop
- Providence Emergency Management Agency/US Coast Guard Oil Spill Exercise
- NEWEA Spring Conference
- Long Island Sound Study Water Quality Workshop
- EPA Tier II Workshop
- CO_2 From Waste to Worth Seminar
- Energy Benchmarking Seminar
- Critical Infrastructure/Key Resources Awareness Workshop
- OSHA Evacuation & Emergency Planning
- OSHA Permit Confined Space Entry Course
- Reducing Carbon Emissions from Concrete & Asphalt Webinar
- Superior Environmental Performance Program Webinar
- EBC-Hydropower Seminar
- National Grid Renewable Energy Growth Program Seminar
- RI Energy Management Agency-Preparedness Conference
- Machinery & Machine Guarding Standards
- Development of Ambient Water Quality Criteria for Coliphage- A Viral Indicator
- NEBRA Bio-Solids Conference
- Pumping System Efficiency Webinar

- OSHA Electrical Safety Standards Course
- NPDES Permit Limitations & Laboratory Parameters
- RI Bays Rivers & Watershed Coordination Team Workshop
- Net DMR Training
- Basic Microbiology of the Activated Sludge System in Wastewater Treatment
- 2015 PITTCON Conference

The NBC provides 40 Hour HAZWOPER training to all new Pretreatment, ESTA and EMDA personnel. The 40 hour training program is required by OSHA of all emergency response personnel that may be first responders to chemical spills or who may work at hazardous waste sites. This training includes hands-on use of Self-Contained Breathing Apparatus (SCBA) equipment, respirators, personal protective equipment, air and water monitoring equipment, etc. Staff members were instructed in First Aid, CPR, confined space entry, hazardous waste handling, toxicology and spill and hazardous waste site control and coordination.

An eight hour HAZWOPER recertification training session is provided annually to Pretreatment, EMDA, ESTA and Laboratory personnel that have previously completed the 40 hour HAZWOPER training program. The eight hour recertification training session is required by OSHA annually as a refresher class. The recertification program covers many topics, such as incident command, confined space entry, spill tracking, boom deployment, personal protective equipment, use of air monitoring equipment, CPR/AED and first aid.

In order to ensure productivity remains efficient and of high quality, staff participate in many administrative trainings. The trainings that staff participated in during 2015 are as follows:

- Excel
- Word
- Windows 7
- Managing Multiple Projects, Objectives & Deadlines
- Sexual Harassment
- Supervisory Training
- Infotech-Training Central
- Communicating with Tact, Diplomacy & Professionalism

The NBC provides a tuition reimbursement program to encourage its employees to further their education. The college courses that staff attended during 2015 are as follows:

- Biochemistry
- Inorganic Chemistry
- Physical Chemistry II
- Methods of Instrumentation
- Financial Accounting
- Information Technology Management

- Accounting for Decision Making
- Finance for Decision Making
- Philosophy
- Italian II
- Development of Learning Outcomes
- Human response to Coastal Disasters & Hazards

In addition to attending trainings, workshops and seminars, PP&R staff also provide technical training for other sections of the NBC as well as assist other agencies with developing and training on inspection skills. The following trainings were conducted by PP&R staff in 2015:

- Kerry Britt, Pretreatment Manager, and John Zuba, Permits & Planning Manager conducted the required annual Spill Prevention, Control & Countermeasures/Storm Water Management Plan training in May and December respectively to Bucklin Point and Field's Point treatment plant personnel.

Throughout 2015, PP&R staff mentored high school students from across the state. They were educated on the responsibilities of each section and were also assisted with science fair projects.

NBC Toxics Reduction, Control and Monitoring Program Budgets

The NBC is committed to protecting the two wastewater treatment facilities and Narragansett Bay from toxic discharges. This pledge to protect the environment is evidenced by NBC continued commitment to ensure adequate staffing and funding levels for the PP&R Division as necessary to ensure environmental protection. The PP&R Division budget for fiscal year 2016 (FY16) was $5,805,137. The FY16 PP&R Division budget allocated $4,783,491 or 82.4% to personnel costs.

The approved FY16 Pretreatment budget was $1,116,861, a decrease of 6.1% from the FY15 budget of $1,189,889. The FY16 Pretreatment budget allocated 94.8%, or $1,058,741, to personnel costs.

The budget for the EMDA Section in FY16 was $1,703,053 of which 78.9% or $1,343,663 was attributed to personnel expenses. The FY16 EMDA budget increased by 4.6% from the previous year.

The ESTA budget for FY16 was $391,530, an increase of $23,560 from the FY15 budget of $367,970. The approved FY16 Laboratory budget was $2,219,373 an increase of 7.0% or $146,131 from the previous year. The approved FY16 Permits & Planning budget was $558,389. Personnel costs associated with the ESTA, Laboratory and Permits & Planning Sections budgets were 90.6%, 67.2% and 95.7% respectively.

In 1983, the R.I. General Assembly passed Public Law 1983, Chapter 235 which required that the NBC begin direct billing of sewer users effective July 1, 1985 and that all sewer use rates be subject to review and approval by the RI Public Utilities Commission (PUC). On July 1, 1995, a new permit fee rate structure approved by the PUC became effective to ensure recovery of Pretreatment costs. These rates were increased in 2003 in accordance with a PUC Rate hearing. This permit fee rate structure is provided in CHAPTER III.

Pretreatment Information Management Computer System

The Pretreatment software system is a Graphical User Interface (GUI) System that was completely developed in-house by the NBC Information Technology (IT) Section and was put on line during 2004. User Wastewater Discharge Permits and Zero Process-Sanitary Discharge Permits are now uploaded to the Pretreatment System and can be viewed on all desktop computers. The software also allows entry of photographs of users sampling locations, pretreatment systems and surveillance manholes to be uploaded to the system. The Laboratory purchased and implemented a new Laboratory Information Management system (LIMS) in 2012. IT staff wrote a program to ensure LIMS would interface with the Pretreatment system to ensure there was no loss in data transfer. The Pretreatment System also currently interfaces with the Customer Service software which was also developed by NBC IT Staff. The Pretreatment software will eventually be able to interface with a graphically mapping system.

The Pretreatment software system was developed to track the requirements specified by the DEM in the RIPDES permits issued to the NBC. The Pretreatment software package has the following capabilities:

- Ability to track users in multiple drainage districts with different local limits and analyze the user data either separately or collectively.

- Ability to create a file for each user containing information pertinent to the user such as company name, address, permit number, company contacts, compliance status, solvents and chemicals used, user classification, user category, water usage, permit history, inspection history, the key manhole that the user discharges to, sample locations, monitoring requirements, reporting requirements, etc.

- Automatically generate form letters, based on data entered into the system, to notify users that are not meeting standards or have failed to submit monitoring results.

- Subroutines that summarize compliance monitoring and other user requirements and print the data in a format suitable for inclusion in the annual report.

- Maintain a user requirements file for tracking of user compliance with administrative orders, compliance schedules, submittal due dates, and other requirements that are issued to users to ensure that user requirements are met on time. Notices of Violation are generated automatically to notify the user of noncompliance with specified deadlines.

- Ability to maintain files of NBC and EPA pretreatment standards and compare monitoring results with these standards to automatically generate a Notice of Violation form letter notifying user of Failure to Meet Standards.

- Subroutines to review monitoring data to determine a user's compliance with standards for any time period specified. These subroutines are used to determine the "List of Firms in Significant Non-Compliance" for exceeding discharge standards 66% of the time or the EPA TRC value of 1.2 times the standard for metals and cyanide and 1.4 times the standard for oil and grease 33% of the time.

- Ability to send out mailings to specific users or various categories or classifications of users to notify them of changes in standards, requirements, etc.

- Subroutines that allow input, output, tracking and maintenance of a list of all inspections performed and the type of the inspection conducted for any specified reporting period.

- Ability to run an "EPA Counts" program that will review and analyze all user data for any specified time period and print out pertinent data that must be routinely reported to the EPA and the local control authority.

- Subroutines that track worker performance, such as number of inspections and meetings conducted, permits written, number of active assigned users, and the number of days required by the worker to process user submittals.

- Ability to enter industrial and sanitary manhole monitoring data and create reports based upon this data.

- Ability to track and print out any changes in user classification from significant to non-significant status or vice versa, the date of the change, and the engineer that made the change.

- Ability to print out a report of all companies with the number of batch, non-batch, and pH violations for any specified reporting period.

- Ability to print out a list of all companies indicating the number of months since the last sampling or non-sampling inspection.

- Subroutines that track the number of user parameter violations and analyze and track pollutant loadings for various classes of users.

Throughout 2015 NBC IT staff continued to work on upgrading the Pretreatment software. The upgraded software will incorporate Google Maps functionality that will identify permitted users and surveillance manholes on city maps. It will also incorporate pages for the Grease Control Program, Manhole Sampling Program and Industrial Areas.

In 2013 iPads were purchased for Pretreatment technical staff. The purpose of using this technology is to improve efficiency throughout the inspection process. Pretreatment staff continued to create and use these inspection checklists during 2015. These checklists are completed in the field and downloaded to SharePoint so that the documents can be efficiently processed at the office for inclusion in the user file. With the use of the iPad, staff can now take pictures in the field and email them to supervisors back in the office as well as being readily attached to the inspection reports. Ultimately the Pretreatment system software will be able to be accessed through the iPads by staff in the field.

Public Information and Education Methods

One of the most effective means of ensuring user compliance is through continued user education regarding environmental problems, NBC programs and ever-changing regulations. The NBC is committed to user education and public information. The NBC Public Affairs Office, in conjunction with the staffs of the ESTA and Pretreatment Sections continually inform users of various NBC activities. The NBC uses several means for providing public education about the goals, requirements, and accomplishments of the NBC source reduction and control programs. These include the following:

- Mailings to users informing them of pretreatment requirements;
- Newspaper and Magazine Articles, Public Notices, and various NBC newsletters;
- Development and distribution of educational fact sheets and technical bulletins;
- Public Meetings, Workshops, and Hearings;
- Displays at Public Events;
- Social Media outlets, such as Facebook, Twitter and YouTube;
- The NBC Citizens Advisory Committee.

During the past twelve months, the NBC used all of these means to keep users and the community informed of the requirements, activities and accomplishments of the NBC source reduction and control program. Activities in each of the above-listed categories are described in the following paragraphs.

Mailings

During 2015, the NBC sent eight informational letters to various categories of regulated users located in the two districts. TABLE 7 below describes each of these informational letters.

TABLE 7
2015 Informational Letters

Issue Date	Description
February 27, 2015	This letter was sent to all permitted users announcing the 20th annual Environment Merit Awards and invited them to nominate themselves for an award.
March 3, 2015	This letter was issued to all SIUs congratulating the 16 companies that achieved perfect compliance for the 2014 review period.
March 6, 2015	This letter was issued to all SIUs notifying them they were classified as SIUs during 2014. This letter reminded these companies of the reporting requirements outlined in 40CFR§403.12.
April 27, 2015	This letter was issued to all industrial users and notified them of EPA SNC criteria used by the NBC and outlined permitting and reporting requirements.
June 2, 2015	This letter was sent to all industrial users notifying them prohibited substances should not be discharged to the sewer system during summer shut down and clean-up operations. The letter warned users that civil and criminal penalties would be strictly enforced against violators caught illegally dumping.
June 21, 2015	This letter was issued to all users who were published in the Providence Journal on February 25, 2015 for being in Significant Non-Compliance (SNC) for the reporting period of October 1, 2013 through December 31, 2014. An invoice for their portion of the cost to publish the notice was included with the letter.
November 12, 2015	This letter was issued to facilities utilizing #4, #5, or #6 fuel oil. The letter recommended the companies to inspect their heating systems prior two seasonal start-up of their heating systems to prevent accidental releases of fuel oil to the sewer.
November 24, 2015	This letter was sent to all industrial users notifying them prohibited substances should not be discharged to the sewer system during the holiday shut down and clean-up operations. The letter warned users that civil and criminal penalties would be strictly enforced against violators caught illegally dumping.

Newspaper and Magazine Articles, and Public Notices and the NBC Newsletter

The NBC routinely issues press releases on its activities and discusses events relating to pretreatment and other environmental matters with reporters. Articles pertaining to the NBC have appeared in newspapers and magazines over the past year relating to:

- Educational workshops, meetings and articles by the ESTA and Pretreatment Programs;
- Articles regarding NBC personnel;
- NBC Progress on Combined Sewer Overflow (CSO) project;
- Public and community outreach projects;
- Capital Improvements for NBC facilities;
- Water Quality;
- Permitting Issues;
- NBC Energy Projects.

Copies of each of the aforementioned newspaper and magazine articles are provided in ATTACHMENT VOLUME I, SECTION 1. The NBC also published numerous Public Notices regarding the following topics:

- Public Notice listing the names of firms in Significant Non-Compliance;
- Public Notice listing the names of Significant Industrial Users in Perfect Compliance;
- Public Notice announcing the NBC Environmental Merit and Regulatory Compliance Award winners;
- Public Notices of Rate Filing and Public Hearings regarding various NBC projects and informational meetings.

In addition to public notices, newspaper and magazine articles, the NBC also publishes notices requesting proposals and qualifications, issues press releases, publishes bill inserts which are sent to all permitted users, and develops educational brochures and fact sheets. The NBC bill inserts inform the users of various NBC activities including: improvements at the treatment facilities, billing activities, reductions in toxic loadings, water conservation, and pollution prevention. Copies of the 2015 public notices and NBC newsletters are included in ATTACHMENT VOLUME I, SECTION 1.

Public Relations & Outreach Events

Public participation and outreach has played an essential part of fulfilling the challenging goal of increasing public awareness and understanding of wastewater treatment. A summary of this year's highlights include:

- *Facility Tours* - In 2015, over 2,100 visitors took complimentary tours of the NBC wastewater treatment facilities. These visitors ranged from school children to university students to engineers. To make the tours even more accessible to area students, the NBC offered school bus scholarships to help defray transportation costs for schools in the NBC service district.

- *Maintaining a Presence on the World Wide Web (**www.narrabay.com**)* - To further improve communications with our customers, the NBC continued to enhance its website. Performance Statistics relating to the NBC Combined Sewer Overflow (CSO) and wind turbine projects are regularly updated on the site. Full documentation of the re-evaluation stakeholders process for Phase III of the CSO Project was published on the website as well. The NBC continued weekly updates of its award-winning water quality website "Snapshot of Upper Narragansett Bay". This website contains fact sheets, monitoring and data reports regarding water quality. The public is able to easily download all NBC receiving water monitoring data. The NBC also continued populating its Facebook page and Twitter feed in 2015 and began posting on Instagram as well.

- *Advocacy for Clean Water* - In 2015, the NBC worked with over 1,600 wastewater treatment facilities nationwide to advocate for federal funding for clean water infrastructure. The NBC Executive Director communicated directly with the Rhode Island Congressional delegation, presenting the municipal perspective on infrastructure needs for the next two decades and the importance of an affordable and sustainable solution to our clean water requirements.

- *Teaching Children About Water Conservation and Wastewater Treatment* - During 2015, the NBC continued to work with area schools to educate children about the impacts of pollution on water quality. During the year the NBC worked with ten schools and 500 students. The program named Woon Watershed Explorers Program, involved monthly classroom visits, journal writing and awarding student achievement badges. The program was re-branded as the NBC Watershed Explorers for the 2015-2016, reflecting its broadening reach. In 2007, the program won a national public education award from the National Association of Clean Water Agencies (NACWA).

- *Celebrating the Importance of Narragansett Bay* - For the twenty-first year, the NBC sponsored its annual poster contest for elementary school students in kindergarten through sixth grade. Over 600 students enthusiastically illustrated clean water themes with colorful, original depictions of the importance of our water resources. Winners received a prize and had their artwork showcased in a 2016 calendar. In addition, the winning posters were exhibited at the Fields Point WWTF Education Center.

- *Recognizing Students for Environmental Awareness* - For the twenty-third consecutive year, the NBC has participated in the Rhode Island State Science and Technology Fair and presented prizes to those junior and senior high school students who best demonstrate how to achieve a cleaner Narragansett Bay.

- *Student Internships* - The NBC continued its tradition of opening its doors to provide experiential education opportunities for local high school and college students. This year, students gained practical hands-on experience in areas as diverse as wastewater treatment operations, planning, and environmental monitoring and data analysis.

- *Career Opportunities Outreach* - Through the efforts of the NBC Affirmative Action Committee, the NBC delivered career day presentations to students in Pawtucket and Providence.

- *Supporting Community Programs* - Each year, the NBC solicits funding ideas from employees and the public for the monies collected from environmental violators. This year, 16 community organizations were awarded Earth Day clean-up grant funds to support local efforts.

- *Honoring Industrial and Commercial Users for Environmental Performance* - This year, the NBC recognized eighteen companies in the service district with Environmental Merit Awards for Storm Water Management and Perfect Compliance Awards with regulatory requirements. In 2015, the NBC continued its program to recognize firms that implement storm water management plans and minimize storm flow to the sewer. The environmental strides made by these companies were honored at a special breakfast. Additional information regarding this program is provided in CHAPTER VII.

- *Keeping Our Stakeholders Informed* - The NBC Facebook page, Twitter feed and Instagram continue to offer up-to-the-minute information on construction, water quality monitoring, and public events. In addition, the NBC continued to make available its 22-minute DVD about the CSO Project, entitled *The Biggest Project You'll Never See* and the 30-minute DVD about the NBC *Environmentalism at Work.* The DVDs are available free to the public.

- *Celebrating the Connection Between Clean Water and Green Energy* – In 2015, the three NBC 1.5 megawatt wind turbines produced 45% of the power needed to operate the Field's Point Wastewater Treatment Facility. The 365-foot tall turbines serve as a visual reminder to all Rhode Islanders of the NBC leadership in sustainable energy and clean water.

- *Bi-lingual Information* – During 2015, the NBC continued distributing Spanish language versions of its billing and collections information.

- *Casual Days* - Throughout the year, the NBC continued to participate in a casual day program. The proceeds benefited various local and state organizations, such as the Multiple Myeloma Research Foundation and A Wish Come True.

- *State Employee Charitable Appeal* - NBC employees participated in the 2015 State Employees Charitable Appeal (SECA) and raised over $15,000 for a host of worthwhile, appreciative charitable organizations.

NBC Speakers Bureau

The NBC has a well-established Speakers Bureau to address the many requests received to speak at schools, workshops and meetings, both locally and nationally. During 2015, NBC personnel gave many presentations to educate public and professional organizations about the NBC and its many programs and accomplishments. The following paragraphs detail these activities:

Pretreatment Presentations

~New England Interstate Water Pollution Control Commission (NEIWPCC) – Laboratory Practices Class

On April 30, 2015 Kerry Britt, Pretreatment Manager, gave a presentation on the NBC Pretreatment Program during a session of the NEIWPCC Laboratory Practices Class

~National Association of Clean Water Agencies (NACWA) Pretreatment Pollution Prevention Conference

The 2015 NACWA Pretreatment & Pollution Prevention Conference was held in Greenville, SC on May 12, 2015 through May 15, 2015. During the conference Kerry Britt, Pretreatment Manager, acted as a moderator for the panel presentation entitled "Pretreatment of Ebola Patient Waste: The Knows and the Unknows". She also served as a facilitator for roundtable discussions on Pollution Prevention and Source Reduction as well as the regional breakout session.

~New Hampshire Department of Environmental Services (NHDES) Fasts, Oils & Grease (FOG) Programs for Success Workshop

On May 19, 2015 Kerry Britt, Pretreatment Manager, gave a presentation on the Enforcement of the NBC Grease Control Program at the NHDES FOG Programs for Success Workshop.

~Tanury Industries

On May 21, 2015 Kerry Britt, Pretreatment Manager, gave a presentation to the employees of Tanury Industries in Lincoln on the impacts of pollutants generated from metal finishing operations on the sewer system.

~Rhode Island Plumbing & Mechanical Inspectors

On February 19, 2015 Kerry Britt, Pretreatment Manager and John Zuba, Permits & Planning Manager, gave a presentation on the NBC Pretreatment Grease Control, Sewer Connection and Storm Water Manager programs at the RI Plumbing & Mechanical Inspectors monthly meeting.

~New England Regional Pretreatment Coordinators Association (NERPCA) Conference

The 17th Annual NERPCA Conference was held on October 28 and 29, 2015 in Chelmsford, MA. During the conference Kerry Britt Pretreatment Manager, gave a presentation on the NBC Enforcement Response Plan. In addition, she facilitated roundtable discussions on how to deal with illegal dumping and led the NERPCA business meeting.

~CommerceRI

On December 1, 2015, Kerry Britt, Pretreatment Manager, John Zuba, Permits & Planning Manager and Tom Uva, Director of PP&R, gave a presentation on the NBC, Pretreatment and Sewer Connection Programs to representatives of the CommerceRI.

Water Quality Presentations

~2015 NEWEA Conference

The 2015 Annual NEWEA conference was held on January 26 through 28, 2015. During the conference Pamela Reitsma and Christine Comeau, Environmental Scientists and Cynthia Morrisette, Education Coordinator, gave a presentation on the NBC water quality website and the NBC Watershed Explorers program. Also, during the conference the NBC was presented with the WEF Water Quality Improvement Award.

~University of Connecticut (UCONN)

On February 13, 2015 Tom Uva, Director of PP&R, gave a presentation to UCONN environmental engineering students and professors on NBC construction projects and improvements in bay water quality.

~City of Providence Harbor Management Commission

On August 25, 2015 Tom Uva Director of PP&R gave a presentation to the City of Providence Harbor Management Commission on water quality.

~NBC Water Quality Workshop

On August 5, 2015 the NBC hosted a water quality workshop tilled "Just Another Day on the Upper-Upper Bay" NBC staff gave presentations on NBC construction, monitoring programs and data results.

~Rhode Island Chapter of the Environmental Business Council

On November 4, 2015 Pamela Reitsma and Christine Comeau, Environmental Scientists, gave a presentation on the NBC Storm Water Management, CSO Abatement and water quality monitoring programs at a meeting of the RI Chapter of the EBC.

Energy Presentations

~URI Energy Fellowship

On June 24, 2015, Barry Wenskowicz, Pollution Prevention Engineer, gave a presentation on variable frequency drives, combined heat and power, and an update on the Field's Point wind turbines to students in the URI Energy Fellowship Program.

~Brown University Summer Pre-College Program

On July 17, 2015 Barry Wenskowicz, Pollution Prevention Engineer, gave a presentation on the NBC treatment plants to students enrolled in the Brown University Summer Pre College Program.

~WEF Specialty Conference

On June 8, 2015 James McCaughey, Environmental Safety & Technical Assistance Manager, gave a presentation the NBC Energy Focused Environmental Management System at a WEF specialty conference.

~Water Conservation Education Programs

The NBC makes great efforts to educate its users about water conservation. The NBC has a Non-Regulatory Water Audit and Technical Assistance Program, which is available free to its commercial and industrial sewer users. Additional information about this program is provided in CHAPTER VII.

Due to the success of the pilot program, the NBC expanded the What's in Your River program in the fall of 2003 to accommodate the overwhelming school response. The NBC improves the program each year. In 2005, What's In Your River became the Woon Watershed Explorers Program, and an expanded version of the program continued throughout 2014. The program was re-branded in 2015 as the NBC Watershed Explorers and includes several new components including classroom visits once a month, student achievement badges and journal writing. Over fifteen schools and 5,000 students have participated. The most impressive characteristic of the program is the extreme diversity represented in each school. Some students have never taken a field trip to their local river, while others live adjacent to one.

The program encourages each school to take ownership of their local rivers and to pass on messages about clean water to their fellow students, families and neighbors. The Narragansett Bay Commission considers this program to be imperative to its success in its relentless pursuit of public outreach and education. Ten schools and over 500 students participated in the program in 2015.

Citizen's Advisory Committee

The NBC has a permanent Citizens Advisory Committee (CAC) established as part of its organizational structure. The CAC meets monthly and is routinely informed of NBC activities by staff. The CAC serves to advise and assist the NBC in its dealings with the public. Its members consist of representatives of the industrial community, environmental advocacy groups, and concerned citizens. Pretreatment staff made the annual presentation to the Citizens Advisory Committee on May 20, 2015 to review the progress and achievements of the Pretreatment Program during the prior year.

Professional Affiliations

The NBC has affiliated itself with many professional groups and organizations, both locally and nationally, to learn from these groups and to educate them about the NBC. The NBC is a member of the Providence Chamber of Commerce, the Northern Rhode Island Private Industry Council, the National Association of Clean Water Agencies (NACWA), New England Water Environment Association (NEWEA), the Water Environment Federation, American Electroplaters & Surface Finishers Society, and the American Academy of Environmental Engineers, to name a few. Various NBC staff routinely attends association meetings and conferences and often are speakers at such events.

III. INDUSTRIAL AND COMMERCIAL USERS, PERMITS, AND INSPECTIONS

User Classification System

Since the inception of the Pretreatment Program, the NBC has identified and inspected 8,017 different industrial and commercial users located within the two NBC sewer districts. During 2015 the Pretreatment staff identified and entered information on 140 previously unknown users into the NBC Pretreatment database. Pretreatment users are categorized according to the classification system shown in TABLE 8. This classification system categorizes users in nine general categories. Each class of users is subdivided into more specific classes of users. Firms classified by the Pretreatment Section as industrial facilities may be listed in Categories 1 through 7, while commercial facilities can be classified in Categories 5 through 9. Users in Categories 1, 2 and 3 are of primary concern to the NBC Pretreatment Section as their discharges contain toxic and conventional pollutants that can have an impact on NBC facilities. Category 4 consists of users with the potential to discharge toxics. Category 5 users may have non-toxic discharges such as cooling water. Category 6 users have no discharges or potential for discharge to the sewer and Category 7 users have gone out of business or moved out of the district. Commercial users with the potential to discharge conventional pollutants are classified in Category 8, while commercial users with the potential to discharge toxic or prohibited pollutants are listed in Category 9.

Significant Industrial Users

In 1995, the NBC standardized its definition of Significant Industrial User (SIU) in both districts by modifying the NBC Rules and Regulations. This definition was essentially an adoption of the Field's Point SIU definition, and classifies a SIU as any industrial user that satisfies any one of the following criteria:

- Firm is subject to Federal EPA categorical standards;
- Firm discharges an average of 5,000 or more gallons per day of process waste water;
- Firm contributes a process waste stream which makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the NBC's Treatment Plant;
- Firm is designated as significant by the NBC on the basis that the user has reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement.

TABLE 8
NBC User Classification System
Industrial User Categories

Category 1: Industries subject to Federal EPA Categorical Standards.

10. Other Categorical Users
11. Electroplaters, Metal Finishers
12. Metal Molding and Casting
13. Organic/Inorganic Chemical Manufacturers
14. Pharmaceutical Manufacturers
15. Metal Formers
16. Steam Electric Power Generators
17. For Future Use
18. Centralized Waste Treatment Facilities
19. Transportation Equipment Cleaning

Category 2: Industries discharging toxic and/or prohibited pollutants, but who are not subject to Federal EPA Categorical Standards.

20. For Future Use
21. Tubbing/Vibratory/Mass Finishing
22. Chemical Transporters, Refiners, Recyclers, Manufacturers
23. Textile Firms
24. Printers
25. Industrial Laundries
26. Machine Shops/Machinery Rebuilding
27. Other Facilities discharging toxic and/or prohibited pollutants
28. Central Treatment Facilities - Hazardous Waste
29. Central Treatment Facilities - Non-Hazardous Waste

Category 3: Industries discharging or having the potential to discharge conventional pollutant (BOD, TSS, pH, oil and grease, fecal coliforms) loads in sufficient quantities to cause violation of RIPDES permit or local discharge limitations.

30. For Future Use
31. For Future Use
32. For Future Use
33. For Future Use
34. Manufacturers with high BOD/TSS waste
35. Other Facilities Discharging Conventional Pollutants
36. For Future Use
37. Automotive Maintenance/Service Facilities
38. For Future Use
39. For Future Use

TABLE 8
(Continued)
NBC User Classification System
Industrial User Categories

Category 4: Industries with sanitary or non-toxic discharges using solvents, toxic and/or hazardous chemicals that could potentially be discharged to the sewer.

40. Groundwater Remediation/Excavation Projects
41. Recycled or Disconnected Electroplating or Chemical Processes
42. Other Process Operations that are Disconnected or Recycled
43. Recycle Electroplating or Chemical Processes with Non-contact Cooling Water or Boiler Discharges
44. Other Recycled or Disconnected Processes with Cooling Water, Boiler, or other Discharges
45. For Future Use
46. Cooling Water Discharges with Solvents, Toxic and/or Hazardous Chemicals on site
47. For Future Use
48. For Future Use
49. Other Discharges with Solvents, Toxic and/or Hazardous Chemicals on site

Category 5: Industries discharging only sanitary wastes and/or non-toxic discharges.

50. For Future Use
51. Cooling Water
52. Boiler Blowdown/Condensate Discharges
53. Cooling Tower Discharges
54. For Future Use
55. For Future Use
56. For Future Use
57. For Future Use
58. For Future Use
59. Other Non-Toxic Industrial Discharges

Category 6: Dry industries with no wastewater discharges to the sewer using solvents, toxics and/or hazardous chemicals.

60. All users

TABLE 8
(Continued)
NBC User Classification System
Commercial User Categories

Category 7: Industries with no waste discharges to the sewer.

70. Septic System Discharger
71. Out of Business
72. Moved out of the District
73. Permit Expired/Not Renewed or Reissued
74. Proposed Discharges - Permit Not Issued
75. Accidental Discharges/Spills/Non-Permitted Discharge

Category 8: Commercial Users with the potential to discharge conventional pollutants (BOD, TSS, pH, oil and grease, fecal coliforms) loads in sufficient quantities to cause violation of RIPDES permit or local discharge limits.

80. Septage Haulers/Dischargers
81. Food/Fish/Meat Produce Processing (Wholesale)
82. Supermarkets (Retail Food Processing)
83. Parking Garages/Lots
84. Cooling Water/Groundwater/Boiler Discharges
85. Restaurants/Food Preparation Facilities
86. Commercial Buildings with Cafeteria and/or Laundry Operations
87. For Future Use
88. For Future Use
89. Other Commercial Facilities with Potential to Discharge Conventional Pollutants

Category 9: Commercial Users with the potential to discharge toxic substances, prohibited pollutants and/or conventional pollutants.

90. Hospitals
91. Cooling Water/Groundwater/Boiler Discharges
92. Laundromats/Dry Cleaners
93. Photo Processing
94. X-Ray Processing
95. Clinical, Medical, and Analytical Laboratories
96. Funeral Homes/Embalming
97. Motor Vehicle Service/Washing
98. For Future Use
99. Other Commercial Users with Potential to Discharge Toxic, Prohibited and/or Conventional Pollutants.

A list of the industrial and commercial users, separated by district, is provided in ATTACHMENT VOLUME II, SECTION 1. The users' category and designation as significant or non-significant is also provided in this listing. As of the date of submission of this report 8,017 industrial and commercial users have been identified through user surveys, 5,416 are still conducting business in the NBC service areas and 73 were classified as SIUs sometime during 2015. Of the 73 SIUs reported for 2015, there were 48 classified as categorical industries which are subject to both NBC and EPA regulations, and 25 significant non-categorical industrial users of the NBC sewer system. During this reporting period, four SIUs were reclassified to non-significant due to operational changes implemented within their facilities. These operational changes may range from installation of a wastewater recycle pretreatment system to the firm going out of business or moving out of the NBC district. One firm was newly classified as significant during 2015. A listing of these firms, detailing the specific reason for reclassification, is provided in CHAPTER I.

Wastewater Discharge Permits

As of the date of this submission, the NBC has 1,700 Wastewater Discharge Permits in effect, which were issued to facilities located in the Field's Point and Bucklin Point drainage districts. Presently, 1,142 permits are in effect for users in the Field's Point district, while 558 permits are in effect in the Bucklin Point district. Discharge permits which are no longer in effect may have been terminated for one of the following reasons:

- The permit expired, was revised, and reissued.
- The firm has gone out of business (Category 71).
- The firm has moved out of the NBC District (Category 72).
- The firm's Wastewater Discharge Permit was terminated and reissued in a new classification to reflect operational changes.
- The firm has ceased process discharge to the sewer system (Categories 41, 42, 43, 44, 60 or 73).

TABLE 8 provides a summary of the number of permits issued and presently in effect by category of user for each district. Permits have been issued and are in effect for industries classified in 41 of the 77 categories listed in TABLE 8. During this reporting period, Pretreatment staff issued 406 permits to users located in the two districts. Of the 406 permits issued during 2015, there were 140 new permits issued to new commercial and industrial users and 266 permits were reissued to existing users because the old permit expired or the firm changed process operations. A listing of the permits issued in 2015 is provided in ATTACHMENT VOLUME II, SECTION 2.

TABLE 9
Narragansett Bay Commission
Summary of Wastewater Discharge Permits in Effect

Category	Company	Field's Point District	Bucklin Point District	Total Permits In Effect
11	Electroplaters, Metal Finishers	26	16	42
12	Metal Molding And Casting	0	0	0
13	Organic Chemical Manufacturer	0	0	0
14	Pharmaceuticals	0	2	2
15	Metal Formers	0	1	1
16	Steam Electric Power Generating	0	1	1
18	Centralized Waste Treatment Facilities	0	0	0
19	Transportation Equipment Cleaning	0	0	0
21	Tubbing/Vibratory/Mass Finishing	4	5	9
22	Chemical Transporters, Refiners, Recyclers, Manufacturers	4	2	6
23	Textile Firms	2	10	12
24	Printers	7	8	15
25	Industrial Laundries	1	3	4
26	Machine Shops/Machinery Rebuilding	2	2	4
27	Other Firms Discharging Toxics	9	11	20
28	Central Treatment Facilities, Hazardous	0	0	0
29	Central Treatment Facility, Non-Hazardous	0	0	0
34	Manufacturers With High BOD/TSS	2	1	3
35	Firms Discharging Conventional Pollutants	2	3	5
37	Automotive Maintenance/Service Facilities	14	4	18
40	Groundwater Remediation/Excavation Projects	1	2	3
41	Regulated Electroplating Or Chemical Processes Disconnected Or Recycled	11	4	15
42	Other Regulated Processes That Are Disconnected Or Recycled	21	22	43
43	Recycle Electroplating Or Chemical Processes With Cooling Water Or Boiler Discharges	9	0	9
44	Other Recycle Processes With Non-contact Cooling Water Or Boiler Discharges	3	5	8
46	Cooling Water With Solvents/Toxics On Site	5	2	7
49	Firms With Solvents, Toxics, Etc. On Site	1	2	3
51	Cooling Water	3	0	3
52	Boiler Blowdown/Condensate Discharges	9	2	11
53	Cooling Tower Discharges	6	6	12
59	Other Nontoxic Discharges	2	7	9
80	Septage Haulers/Dischargers	1	12	13
81	Food/Meat/Fish Produce Processing (Wholesale)	45	30	75
82	Supermarkets (Retail Food Processing)	22	10	32
83	Parking Garages/Lots	1	0	1

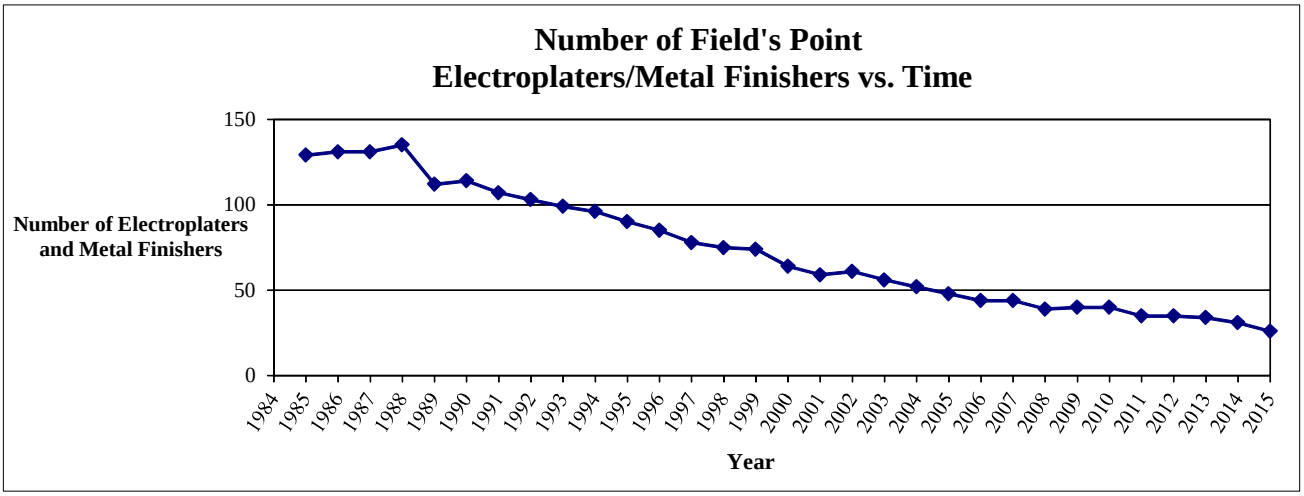
TABLE 9
(Continued)
Narragansett Bay Commission
Summary of Wastewater Discharge Permits in Effect

Category	Company	Field's Point District	Bucklin Point District	Total Permits In Effect
84	Cooling Water/Groundwater/Boiler Discharges	10	0	10
85	Restaurants/Food Preparation Facilities	525	225	750
86	Comm. Buildings With Cafeteria/Laundry	157	43	200
89	Other Commercial Users With Potential to Discharge - Conventional Pollutants	13	8	21
90	Hospitals	11	1	12
91	Cooling Water/Ground Water/Boiler Discharges	0	0	0
92	Laundromats/Dry Cleaners	48	23	71
93	Photo Processing	3	1	4
94	X-Ray Processing	56	36	92
95	Clinical, Medical, And Analytical Laboratories	30	4	34
96	Funeral Homes/Embalming	13	10	23
97	Motor Vehicle Service/Washing	38	17	55
99	Other Commercial Users With Potential To Discharge Toxic Or Conventional Pollutants	25	16	41
	Total Permits in Effect	**1,142**	**558**	**1,700**

There were 10 permits revised and reissued to SIUs in the two districts during 2015, while one new permit was issued to this class of users. Five of the 10 revised permits were issued to categorical users during 2015, while the five remaining revised permits were issued to significant non-categorical users.

As can be seen from TABLE 9, the largest number of permits in effect are issued to the commercial restaurant and food preparation facilities classified in Category 85, followed by Category 86 permits which are issued to commercial buildings with cafeterias and/or laundry facilities. The next largest category of permitted users are the x-ray processing facilities in Category 94. Facilities classified in Category 11 are the industrial users that contribute the majority of the toxic metal and cyanide loadings to the NBC treatment facilities due to the nature of the electroplating operations they conduct. The dramatic decline of electroplaters and metal finishers in the Field's Point district since 1984 is clearly detailed in FIGURE 4. A similar decline in the number of electroplating and metal finishing firms has been observed in the Bucklin Point district. During 2015 the number of electroplaters and metal finishers in both districts decreased by 10.6%, a reduction of five firms from 2014.

FIGURE 4



The NBC issues Wastewater Discharge Permits to all sewer users that discharge non-domestic wastewater into the NBC system and is presently in the process of permitting the remaining non-significant commercial users located throughout the two NBC drainage districts. Copies of the various typical Wastewater Discharge Permits issued by the NBC are provided in ATTACHMENT VOLUME I, SECTION 2.

Permits issued by the NBC typically include the following conditions and requirements:

- A requirement that the user meet local and federal discharge standards at all times.

- Maintenance of a logbook requiring record keeping regarding the operation and maintenance of the pretreatment system, quantity of sludge generated, completed manifest forms, a list of all batch discharges, quantity of chemicals used to provide pretreatment, etc.

- Self-monitoring requirements regarding monitoring and reporting of effluent characteristics and concentrations.

- Reporting requirements for accidental discharges to the sewer system. The user is required to immediately notify the NBC of a spill into the sewer system and is required to file a written report within five (5) days of the incident.

- Submission of a Spill and Slug Prevention Control Plan and a Toxic Organic/Solvent Management Plan. The user is required to contain all spills within the facility as part of the Spill and Slug Control Plan. The Toxic Organic/Solvent Management Plan requires the user to detail process

operations, perform a mass balance on the quantity of solvents used in the facility, to sample the waste stream to verify that no solvents are being discharged to the sewer system, and to provide containment of all solvents in case of a spill. Copies of these documents are provided in ATTACHMENT VOLUME I, SECTION 3.

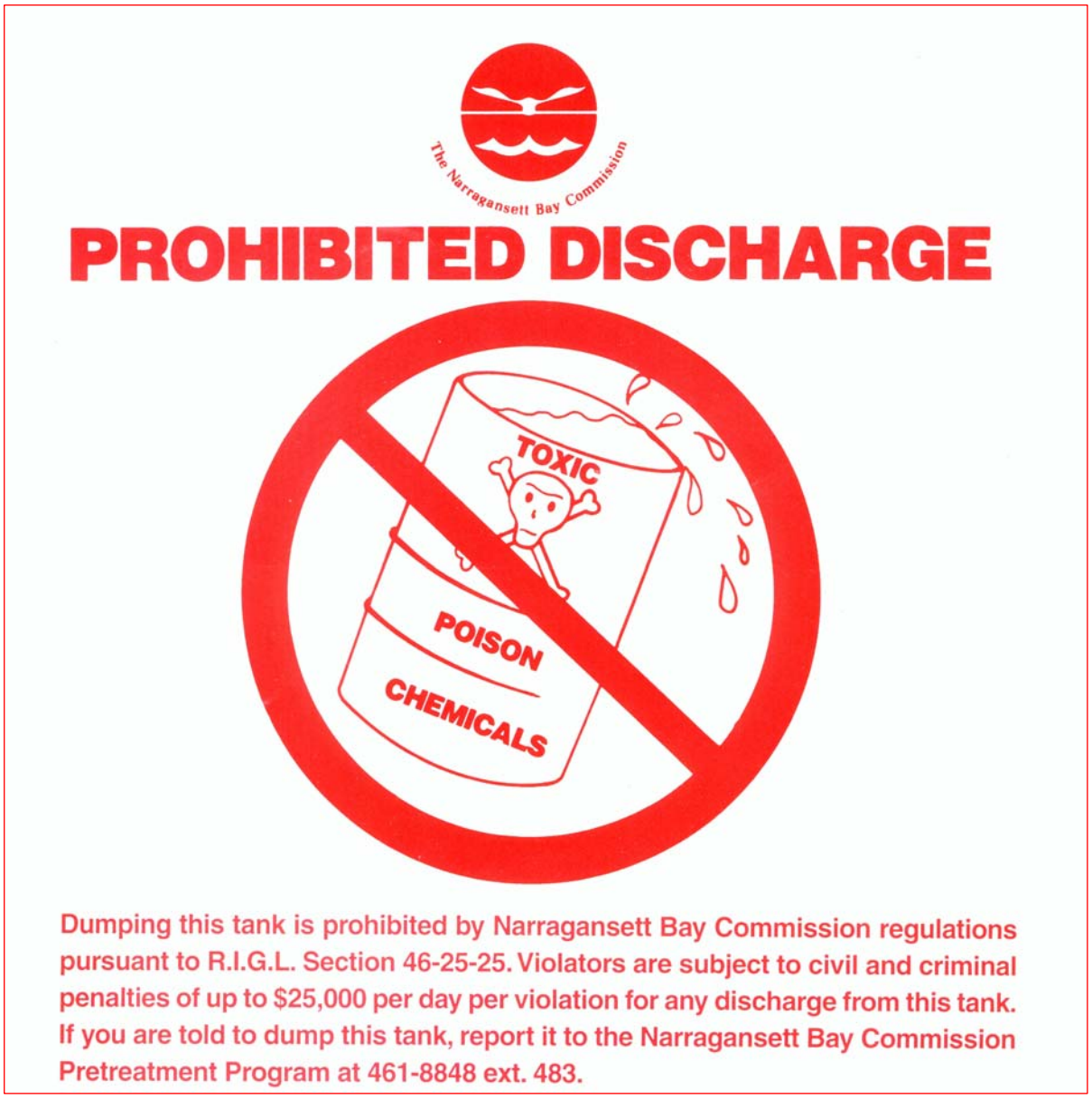
- A prohibition against batch discharges without prior written approval from the NBC to prevent the discharge of concentrated solutions to the sewer system. The NBC developed the prohibited discharge sticker shown in FIGURE 5. This sticker is affixed to all tanks which the industrial user is prohibited from discharging.

- Administrative provisions regarding inspection powers, retention of records, civil and criminal liability and associated penalties, selling the facility, revocation and transferability of the permit, etc.

Tanks at a shutdown plating shop are stickered "PROHIBITED DISCHARGE"

FIGURE 5

PROHIBITED DISCHARGE STICKER



Most permits are issued for a five-year period, but may be issued for shorter periods of time. Permits may be revoked, after notice and hearing, for violations of the NBC Rules and Regulations. On June 30, 2003, the Public Utilities Commission approved a rate structure for NBC wastewater discharge permit fees. Permit fees range from $217 to $14,492 per year. Rates are standardized in both NBC districts and many categories are also flow dependent to encourage water conservation. The existing NBC wastewater discharge permit fee rate structure is provided in TABLE 10.

TABLE 10
Narragansett Bay Commission
Pretreatment Permit Fee Rate Structure

User Category Number	User Classification	Permit Fee
10	**Other Categorical Users**	$1,087.00
11	**Electroplater/Metal Finisher**	
	Flow < 2,500 GPD	$1,811.00
	2,500 ≤ Flow < 10,000 GPD	$3,623.00
	10,000 ≤ Flow < 50,000 GPD	$7,246.00
	50,000 ≤ Flow < 100,000 GPD	$10,144.00
	Flow ≥ 100,000 GPD	$10,869.00
12	**Metal Molding and Casting**	$1,087.00
13	**Organic Chemical Manufacturers**	$7,246.00
14	**Pharmaceuticals**	$1,087.00
15	**Metal Formers**	$5,797.00
16	**Steam Electric Power Generating**	$1,087.00
18	**Centralized Waste Treatment Facilities**	
19	**Transportation Equipment Cleaning**	$1,087.00
21	**Tubbing/Vibratory/Mass Finishing**	
	Flow < 5,000 GPD	$725.00
	Flow ≥ 5,000 GPD	$1,449.00
22	**Chemical Transporters, Refiners, Recyclers, Manufacturers**	$2,898.00
23	**Textile Processing Firms**	
	Flow < 2,500 GPD	$1,449.00
	2,500 ≤ Flow < 10,000 GPD	$3,768.00
	10,000 ≤ Flow < 50,000 GPD	$5,072.00
	Flow ≥ 50,000 GPD	$7,246.00
24	**Printers**	
	Gravure	$3,623.00
	Other Flow ≥ 2,500 GPD	$1,087.00
	Other Flow < 2,500 GPD	$725.00

TABLE 10
(Continued)
Narragansett Bay Commission
Pretreatment Permit Fee Rate Structure

User Category Number	User Classification	Permit Fee
25	**Industrial Laundries**	$3,623.00
26	**Machine Shops/Machinery Rebuilders**	$1,449.00
27	**Other firms discharging toxics and/or prohibited pollutants**	
	Flow ≥ 10,000 GPD	$2,898.00
	2,500 ≤ Flow < 10,000 GPD	$1,449.00
	Flow < 2,500 GPD	$725.00
28	**Central Treatment Facilities - Hazardous Waste**	$14,492.00
29	**Central Treatment Facilities - Non-Hazardous Waste**	$4,348.00
34	**Manufacturers with high BOD/TSS wastestreams**	
	Flow ≥ 100,000 GPD	$5,797.00
	50,000 GPD ≤ Flow < 100,000 GPD	$3,623.00
	10,000 GPD ≤ Flow < 50,000 GPD	$1,811.00
	Flow < 10,000 GPD	$1,087.00
35	**Other facilities discharging conventional pollutants**	
	Flow ≥ 10,000 GPD	$1,449.00
	Flow < 10,000 GPD	$725.00
37	**Automotive Maintenance/Service Facilities**	
	Small ≤ 2 Bays	$435.00
	Large ≥ 3 Bays	$1,449.00
40	**Groundwater Remediation/Excavation Projects**	
	Flow ≥ 10,000 GPD	$1,449.00
	Flow < 10,000 GPD	$725.00
41	**Recycle or Disconnected Electroplating or Chemical Processes**	$725.00
42	**Other Process Operations Disconnected or Recycled**	$290.00
43	**Recycle or Disconnected Electroplating or Chemical Processes with Cooling Water or Boiler Discharges**	$870.00
44	**Other Recycled or Disconnected Process Operations with Cooling Water or Boiler Discharges**	$362.00
46	**Cooling Water with Solvent, Toxic and/or Hazardous Chemicals on Site**	$362.00
49	**Other Discharges with Solvents, Toxics and/or Hazardous Chemicals on Site**	
	Flow ≥ 10,000 GPD	$1,087.00
	Flow < 10,000 GPD	$725.00

TABLE 10
(Continued)
Narragansett Bay Commission
Pretreatment Permit Fee Rate Structure

User Category Number	User Classification	Permit Fee
51	**Cooling Water with No Solvents, Toxic or Hazardous Chemicals on Site**	$362.00
52	**Boiler Blowdown/Condensate Discharges**	$362.00
53	**Cooling Tower Discharges**	$362.00
59	**Other Non-Toxic Industrial Discharges**	
	Flow ≥ 5,000 GPD	$725.00
	Flow < 5,000 GPD	$362.00
80	**Septage Haulers/Dischargers**	$435.00
81	**Food/Fish/Meat/Produce Processing (wholesale)**	
	Flow < 1,000 GPD	$362.00
	1,000 GPD ≤ Flow < 10,000 GPD	$725.00
	Flow ≥ 10,000 GPD	$1,449.00
82	**Supermarkets (Retail Food Processing)**	$725.00
83	**Parking Garages/Lots**	$725.00
84	**Cooling Water/Groundwater/Boiler Discharges with Potential to Discharge Conventional Pollutants**	$362.00
85	**Restaurants**	
	< 50 seats	$217.00
	≥ 50 seats < 100 seats	$435.00
	≥ 100 seats of fast food (2 or more fryolators and/or drive through window)	$580.00
86	**Commercial Buildings with Cafeteria and/or laundry operations**	$725.00
89	**Other Commercial Facilities with Potential to Discharge Conventional Pollutants**	
	Flow < 2,500 GPD	$362.00
	Flow ≥ 2,500 GPD	$725.00
90	**Hospitals**	$3,623.00
91	**Cooling Water/Groundwater/ Boiler Discharges with Potential to Discharge Toxic, Prohibited and/or Conventional Pollutants**	$362.00
92	**Laundries/Dry Cleaners**	
	Laundromats	$725.00
	Dry Cleaners with 1 washer or less	$362.00
	Dry Cleaners with ≥ 2 washers	$725.00
93	**Photo Processing**	
	Flow < 1,000 GPD	$362.00
	1,000 GPD ≤ Flow < 2,500 GPD	$725.00
	2,500 GPD ≤ Flow < 5,000 GPD	$1,087.00
	Flow ≥ 5,000 GPD	$1,449.00

TABLE 10
(Continued)
Narragansett Bay Commission
Pretreatment Permit Fee Rate Structure

User Category Number	User Classification	Permit Fee
94	**X-Ray Processing**	
	≤ 2 processors	$362.00
	3 - 4 processors	$725.00
	5 - 9 processors	$1,087.00
	≥ 10 processors	$1449.00
95	**Clinical, Medical and Analytical Laboratories**	$725.00
96	**Funeral Homes/Embalming Operations**	$362.00
97	**Motor Vehicle Service/Washing Operations**	
	rate per tunnel	$725.00
	rate per bay	$217.00
	maximum rate per facility	$1,449.00
99	**Other Commercial Users with Potential to Discharge Toxic, Prohibited and/or Conventional Pollutants**	
	Flow < 2,500 GPD	$362.00
	Flow ≥ 2,500 GPD	$725.00

Zero Process Discharge Wastewater Systems

During 2015, there were 75 users in the two NBC districts operating facilities which have eliminated or significantly reduced their process discharges to the sewer system through the installation of closed loop or zero discharge systems. Although still conducting operations which generate wastewater containing toxic materials, this wastewater is treated and reused in the process operation, resulting in no discharge of industrial process wastewater, or in some cases, insignificant discharges to the sewer system consisting primarily of boiler condensate or non-contact cooling wastestreams. Once Pretreatment staff has verified that the process wastewater discharge has been eliminated or significantly reduced, the user is reclassified into Category 41 through 44 depending upon the type of recycle process operations conducted.

Part of an Ion Exchange System at a Permitted Zero Discharge Facility

Although an industrial user may cease discharging process wastewater into the sewer system by installing a wastewater recycle system, the firm will still be permitted and inspected by Pretreatment staff. Since the facility has sanitary sewer connections, it could still be a potential source of pollutant discharges into the NBC sewer system which could potentially contribute to a plant upset or a pass-through situation. For this reason, the Pretreatment Section routinely issues Zero Process Wastewater-Sanitary Discharge Permits to category 41 and 42 industries. Fifty-eight facilities are presently classified in categories 41 and 42 and do not discharge process wastewater to the sewer system. Users with recycle process operations but still discharge condensate, boiler or cooling water wastestreams are issued discharge permits. There are 17 of these users which are classified in categories 43 and 44. Of the 75 users classified in categories 41 through 44, 44 facilities are permitted to operate zero process discharge wastewater recycle systems in the Field's Point district, while 31 users in the Bucklin Point district are permitted to perform zero discharge recycle operations. Prior to the issuance of a Zero Process Wastewater-Sanitary Discharge Permit, the NBC thoroughly notifies the industrial users of all DEM and RCRA requirements and the user must satisfy the following NBC requirements:

- Submit a Zero Discharge Permit Application.
- Submit a Facility Sewer Access Site Plan showing all sewer connections.
- Submit Process Operation Plans.
- Submit Pretreatment System Plans.

- Submit a Spill and Slug Prevention Control Plan.

- Seal all floor drains and cap off all process sewer access locations.

- Install prohibited dumping signs at all sanitary sewer connections.

Once all the aforementioned tasks have been completed by the user, the facility is inspected, and the Zero Process Wastewater-Sanitary Discharge Permit is issued. The Zero Discharge Permit requires the user to submit a written certification either monthly or biannually, depending upon facility process operations, listing water meter readings and certifying that no process discharges have occurred. Pretreatment staff use this water meter data to routinely calculate daily water usage. Deviations from the expected zero discharge water usage are promptly investigated by pretreatment staff. In addition, unannounced inspections of every zero discharge firm are conducted at least twice annually. A copy of the Zero Process Wastewater-Sanitary Discharge Permit can be found in ATTACHMENT VOLUME I, SECTION 2.

User Survey Methods

The Pretreatment Program utilizes many methods to identify and locate new and previously unknown users of the sewer system. These NBC methods have been very successful at maintaining an accurate inventory of non-domestic regulated users and at ensuring that modifications to existing user facilities are quickly discovered. The following is a summary of the survey methods:

- *Newspaper Reviews* - The local newspapers are routinely reviewed to identify and locate new or previously unknown and unpermitted users. Review of the classified, business and new corporation sections of the local newspapers have allowed the NBC to successfully identify many new sewer users over the years. Form letters are issued to new corporations to alert them to NBC Rules and Regulations and permitting requirements. Routine reviews of the bankruptcy and auction sections of the newspaper alert Pretreatment staff to firms which may be in financial trouble or ceasing operations. This allows Pretreatment staff to be proactive at preventing illegal discharges from financially troubled firms. Such firms are promptly inspected, inventoried and required to comply with a rigid facility shutdown procedure. The NBC will often seal the sewer connections at these firms once operations have ceased to ensure that hazardous waste and chemicals are not illegally discharged into the sewer system.

- *Business Listing Website Reviews* - Pretreatment staff reviews business listing websites such as www.whitepages.com and www.yellowpages.com to identify new industrial and commercial users that may require regulation. Particular attention is given to reviewing categorically regulated user categories such as electroplaters, metal finishers, metal formers, etc.

- *Social Media Reviews* – Pretreatment staff routinely reviews social media websites such as Facebook to identify any previously unknown industrial and commercial users. This survey method is particularly useful in identifying new food service establishments.

- *Intra-Governmental Agency, Building and Sewer Connection Permit Referrals* - The Pretreatment Section becomes aware of many new facilities through the building permit issuance process. New facilities under construction in the NBC districts must obtain a sewer connection permit and a discharge permit, if necessary, prior to beginning construction and/or process operations. Firms performing construction modifications to their buildings are referred to the NBC by the local building inspectors and must obtain NBC approval in order to obtain the necessary city or town building permit or certificate of occupancy. Local building inspectors, plumbing inspectors and inspectors from the Department of Health, DEM and EPA New England refer information to the Pretreatment staff regarding new or unpermitted users. This cooperative work effort has resulted in the permitting of many users over the years.

- *Mill Complex and Industrial Park Inspection Program* - Regular inspections of industrial mill complexes within the NBC service district are performed to identify new and possibly transient users of the NBC facilities. Each staff member is assigned several mill complexes and industrial areas located throughout the NBC districts. Staff members are required to inspect at least one mill complex or industrial area per month to identify potential new nondomestic users of the NBC sewer system. During the mill complex and industrial area inspections, staff members compile a listing of all unpermitted facilities located within the mill or area, and systematically inspect each unpermitted facility to determine whether a wastewater discharge permit is necessary based upon the operations performed, wastewater generated and discharged to the sewer system. A listing of each facility, the type of operations performed, and whether or not a wastewater discharge permit is necessary is maintained for each mill complex and industrial area and filed by the mill complex street address or by the streets forming the boundaries of the industrial area. This procedure enables the NBC to track changes within individual mills and prevents duplication of efforts by ensuring that this information is continually updated. Industrial areas are routinely driven through and all industrial facilities in the area are cross-checked against the NBC Pretreatment database. Unknown or unpermitted users are promptly inspected and permitted, if necessary.

- *Public Information Programs* - Over the years, the NBC has routinely published public notices to alert NBC users of the need to obtain a wastewater discharge permit if specific operations are conducted. The NBC has participated in the annual "We Mean Business" Expo sponsored by the RI Secretary of State to assist prospective business owners understand the NBC Rules and Regulations. The NBC has also met with various user groups and held workshops that focused on educating any new class of users required to obtain a discharge permit. These public education programs have been very effective at identifying new and previously unknown users of the sewer systems.

NBC User Inspection Programs

One of the main objectives of the Pretreatment Program is to protect the NBC wastewater treatment plants from toxic discharges which could result in pass through to the receiving waters or interference with their proper operation, as outlined in 40CFR§403.5. In addition, Pretreatment staff ensure that federal, state and local pretreatment regulations pertaining to the Clean Water Act are met. The strategy the NBC adopted and implemented to satisfy these objectives includes developing local discharge limitations to protect the treatment facilities and public health, permitting of industrial and commercial facilities to control the discharge of toxics, inspecting and sampling nondomestic facilities to ensure user compliance, and the development and implementation of extensive user education programs. The extensive user education efforts implemented by the NBC as part of routine inspections have been very effective at improving user compliance rates. ESTA staff educates users of the many pollution prevention alternatives available instead of discharging toxics into the sewer system, while Pretreatment staff incorporates user education into every regulatory inspection.

- **Innovative and Effective Inspection Techniques** - Pretreatment staff employs many effective and innovative inspection techniques to aid in achieving the objectives of the NBC to control and reduce pollutant loadings to the treatment plants and hence Narragansett Bay. These techniques range from implementing simple internal procedures to standardize inspection activities to forming partnerships with the regulated industrial community. The following is a summary of these highly effective and innovative techniques and programs:

    ~ *Standardization of User Inspection Activities and Documents* - The Pretreatment Section has made great efforts to thoroughly standardize all aspects of the inspection process from inspection scheduling to writing the inspection report and letter. Annual inspection checklists have been standardized and customized for various classes of users, including for SIUs, non-significant industrial users, restaurants, dental facilities, septage haulers, etc. Pretreatment has also developed form letters to schedule the annual SIU inspection and to summarize and transmit the results of facility inspections for various user classes. The various inspection checklists ensure Pretreatment staff inspect and review all items of importance at a particular type of facility in a uniform, clear, and concise manner consistent with NBC and EPA protocols. The annual inspection checklist for SIUs has been developed to ensure full NBC compliance with all EPA regulations and to ensure uniform inspections of all SIUs, irrespective of the inspector conducting the facility inspection. The inspection summary form letters may be a Notice of Violation (NOV) or a "Job Well Done" letter. The NOV has all routine deficiencies clearly listed. The inspector can then quickly check off the violations observed, add any special facility requirements and the letter can be promptly prepared and issued. In addition to citing the deficiency, the letter explains in an educational manner the reason for the regulation and the importance for ensuring compliance. The standardization of inspection documents has resulted in speedy completion and issuance of uniform

inspection reports and summary letters to the user. An inspection report and summary letter are issued for each and every user inspection, typically within fourteen (14) days from the site visit.

In 2015, additional inspection checklists were developed to be used on iPads. These checklists allow staff to begin filling in checklists electronically in the office, complete it in the field, then download and print it back in the office. The iPads also allow staff to take pictures in the field and attach them directly to the inspection memo.

~ *Specialized and Innovative Inspector Training Programs* – The NBC provides extensive training to new employees and continued training to existing staff. Pretreatment, EMDA, and ESTA staff receive training in all aspects of their positions. On an annual basis, the NBC conducts its own training or contracts outside vendors for the training in the following areas:

- Confined Space Entry Training
- 40 Hour OSHA HAZWOPER Training
- 8 Hour OSHA HAZWOPER Recertification Training
- OSHA Right to Know Training
- CPR/AED Training
- First Aid Training
- Spill Tracking Training
- Emergency Response Training
- Boom Deployment

The NBC stresses consistency to Pretreatment staff in regulating industrial and commercial users. Pretreatment staff are continually being trained to be consistent. The following is a list of the methods used to ensure consistency:

- In-box reviews of staff
- Weekly Plan Review Meetings consisting of all technical staff
- Supervisors accompany staff members on inspections
- Supervisors review staff letters, memos, and permits

In addition to the forementioned methods used to ensure consistency, Senior Pretreatment staff conduct training sessions on Pretreatment procedures. The training includes the following topics:

- Rules & Regulations
- Permit Writing
- Letter and Memo Writing
- Process Operations
- Pretreatment Technologies
- Spill Response and Tracking
- Map Reading
- Permitted User Flow Data

Pretreatment staff also routinely attend technical seminars to further their knowledge and productivity. The Pretreatment Section has developed several innovative employee-training programs which resulted in more efficient inspection procedures. Supervisory staff work very closely with the engineers and technicians charged with performing the daily user inspections. New staff members are closely supervised by senior staff members to ensure that they properly learn the standard operating procedures.

In-box reviews are conducted of staff to ensure that they understand user requests and what response is required and monthly in-box reviews are conducted of all staff members to ensure standardization of methods and conformance with work schedules. Senior staff members accompany new staff members on their inspections to help them become familiar with NBC user education presentations, process operations, pretreatment systems, and permit requirements. In addition, senior staff routinely conduct inspections with veteran inspectors to ensure continued conformity with NBC inspection policies and protocols.

Pretreatment staff participate in the annual Spill Response and Tracking Drill

Feedback, detailing what aspects of the inspection were done well and what aspects need improvement, is provided to the inspector verbally as well as in writing. The Pretreatment Inspector Feedback Form was developed for this purpose. The feedback form consists of several sections which cover all aspects of the facility inspection process, including pre-inspection preparation, inspection interaction with the user, user education, facility inspection observational abilities, inspection documentation, professionalism, self-confidence, etc. New employees are not permitted to conduct inspections alone until all aspects of a good inspection, as noted on the feedback form, are satisfactory.

Another innovative training program implemented the annual Spill Response and Tracking Drill. Staff participate in a classroom presentation which includes tabletop exercises simulating unusual discharges to the treatment plant and spills occurring in the sewer system. In addition, staff participate in training exercises in the field. Senior staff establish a source of "illegal discharge" and identify key manholes for the staff to follow. Senior staff assign a team leader to head the mock investigation to track the "illegal discharge" to the source. For the training drill, a newer employee is typically chosen to be the team leader.

The mock spill is tracked through the sewer system in an attempt to identify the source, where a thorough facility inspection is conducted. Inspectors are trained to collect evidentiary samples necessary for a good enforcement action. This annual tracking, evidence gathering and inspection drill has greatly improved the awareness and inspection abilities of all NBC Pretreatment staff.

~ *Pollution Prevention Referral Program* – During all Pretreatment regulatory inspections, Pretreatment staff routinely refer the user to the ESTA Section for free technical assistance. All NOVs also advise users to obtain the free expertise of the ESTA Section. These referrals have resulted in improved compliance rates and non-compliant users achieving compliance more quickly.

~ *Inspection Educational Efforts* – User education is by far the single most important aspect of any user inspection. During the annual inspection, industrial users are educated regarding all aspects of the NBC including the NBC Mission Statement, the purpose and types of all NBC inspections, and SNC criteria. The inspector clearly explains what constitutes SNC, the importance of maintaining full compliance and all permit requirements are explained to the user in detail. NBC inspection summary letters are also very educational in nature. Instead of simply requiring a user to perform a task, the letter educates the user regarding the reason for the imposed requirement. This often results in quick user compliance with the imposed requirements. These extensive user education efforts have been very effective at encouraging user compliance. The SIU rate of SNC was impressively reduced in the Field's Point District from a high of 39.0% in 1992 to 5.1% in 2015, while the SIU Rate of SNC for Bucklin Point was reduced from a high of 44.8% in 1994 to 11.8% in 2015. The overall rate of SNC for all NBC SIUs for 2015 was 8.2%, an increase from 4.8% observed in 2014. This is well within the EPA level of 10% recommended for EPA Pretreatment Program Excellence recognition. These impressive reductions in the Rate of SIU SNC are clearly attributable to improved user education, prompt resampling requirements for any effluent violation and proactive communication with users to encourage correcting the violation before being in SNC.

- **Types of Pretreatment Inspections -** The NBC conducts six types of inspections of industrial and commercial users. The following is a summary of the inspection types utilized by the NBC:

  ~ *Initial Inspection* – The initial inspection can be an announced or unannounced inspection and is performed to determine if the user is regulated under pretreatment regulations and to inform the user of pretreatment requirements.

  ~ *Annual Inspection* – An annual inspection is a thorough, announced inspection of the facility and the user's records to determine if the firm is complying with all NBC and permit requirements. This inspection is done once per 12 month period for SIUs and covers all the items shown in the Annual Inspection Checklist which is provided in ATTACHMENT VOLUME I, SECTION 3. The annual inspection consists of an extensive review of paperwork, processes, pretreatment systems, treatment procedures, sampling procedures, spill containment measures, and chemical/waste storage areas.

  ~ *Follow-up Inspection* – This inspection may be an announced or unannounced inspection to determine if specific items noted in an annual inspection were completed as required. Follow-up inspections may be conducted to view work in progress, work completed, or discuss problems that the firm may be having in complying with or understanding NBC or Pretreatment Program requirements.

  ~ *Sampling Inspection* – The sampling inspection is an unannounced inspection which must be conducted of every SIU at least once every 12 months, as required by EPA regulations. The NBC typically conducts sampling of each SIU twice every 12 months.

  ~ *Emergency Response or Special Investigation Inspection* – This is an immediate unannounced inspection initiated in response to a complaint or spill to determine the source of problems occurring in the sewer system. These problems or complaints are typically reported by NBC employees, local authorities or by district residents.

  ~ *Facility Shutdown Inspection* – This is typically an announced inspection to conduct an inventory of all chemicals and solutions on-site, to observe facility decontamination procedures, to seal sewer connections to prevent illegal discharges to the sewer, and to install prohibited discharge stickers on all tanks.

Facility Shutdown Inspection of an electroplating facility that is no longer in operation.

Follow-up inspection of the same facility to verify that the firm has disposed of all solutions and complied with NBC Shutdown Procedures.

From January 1, 2015 through December 31, 2015, Pretreatment staff conducted 1,911 inspections of users, not including sampling visits. Of the 1,911 non-sampling inspections conducted by the Pretreatment staff, 294 were inspections of SIUs and 1,617 were inspections of non-significant users. Pretreatment staff conducted 200 facility inspections of categorical users and 94 inspections of significant non-categorical industrial users in both districts, excluding sampling visits. Pretreatment staff conducted 65 regulatory compliance meetings with users during 2015.

Pretreatment staff inspected all companies but one classified as SIUs at least twice during the 12 month review period. The one SIU that was only inspected once, Northeast Remsco Construction, Inc., discharged treated ground water that was generated during Phase II of the NBC CSO Abatement Project. The company ceased process operations and generating ground water in late 2014. The company was inspected in early January 2015. The Pretreatment section satisfied and exceeded EPA requirements to inspect every SIU at least once every twelve month period.

During 2015, EMDA staff conducted 213 industrial user sampling inspections of 76 industrial user facilities resulting in the collection of 2,086 composite and grab samples. These 2,086 samples translated to 224 user monitoring reports. Of the 224 monitoring reports, 217 were issued to significant users and 7 were issued to non-significant users. There were 109 sampling inspections of 49 categorical industries and 97 sampling inspections of 23 significant non-categorical users.

All facilities classified as SIUs were sampled by EDMA at least twice during 2015 with the exception of two companies. Both of these companies, Northeast Remsco Construction, Inc., and Osram Sylvania, Inc., ceased discharging in late 2014. As stated above Northeast Remsco completed its portion of Phase II of the NBC CSO Abatement Project and ceased discharging groundwater in late 2014. Osram Sylvania Inc., ceased process operations in September 2014. The company performed facility clean-up activities until February 2015. All wastewater generated during the clean-up activities was shipped off-site for disposal. Samples were not able to be collected at either facility.

TABLE 11 summarizes the status of each company that was inspected or sampled by the NBC at least twice in 2015.

TABLE 11
Summary of SIUs Inspected or Sampled Less than Twice in 2015

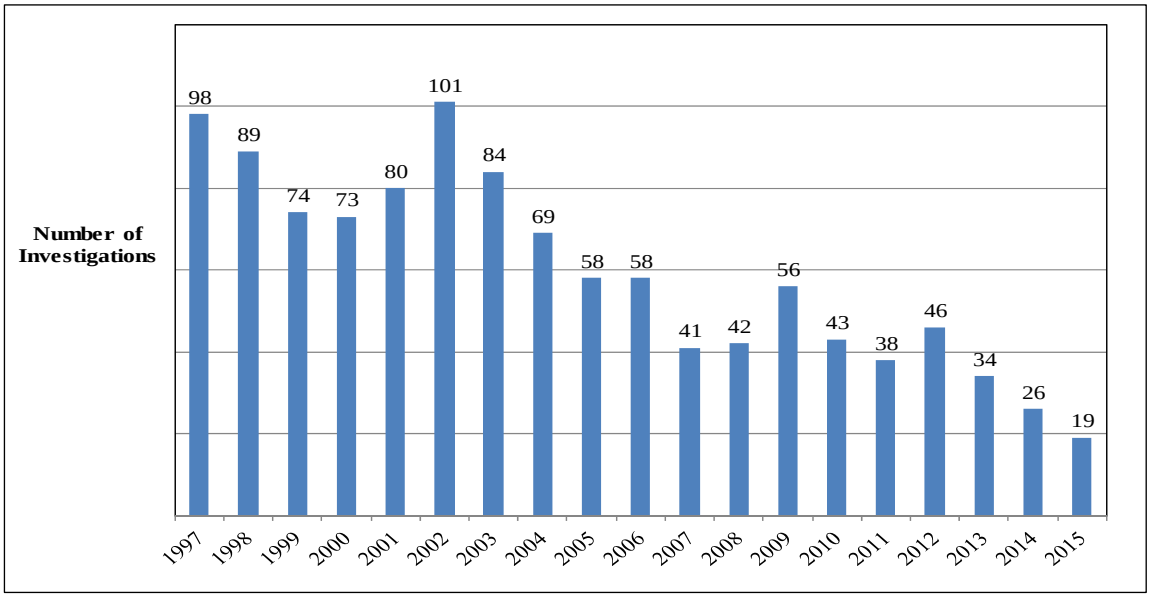
Company Name	2015 Inspection SampleSummary	Explanation
	Field's Point	
Northeast Remsco Construction, Inc.	1 Inspection only No Samples	Firm ceased operations in late 2014
	Bucklin Point	
Osram Sylvania, Inc	No Samples	Firm did not discharge in 2015

A summary of the number of types of inspections performed by the NBC this reporting period is provided in TABLES 3 and 5, the Pretreatment Performance Summary Sheets, which are contained in CHAPTER I of this report. A list of each NBC sampling and nonsampling user inspection and the inspection date is provided in ATTACHMENT VOLUME II, SECTION 2.

Emergency or Special Investigations

During 2015, Pretreatment staff investigated 19 reports of spills, odors, blockages, unusual plant influents, and illegal discharges to the sewer system within the Field's Point and Bucklin Point service areas. A listing of 2015 emergency or special investigations is provided in ATTACHMENT VOLUME II, SECTION 4. FIGURE 6 is a graphical trend analysis detailing the number of pretreatment investigations conducted annually since 1995.

FIGURE 6
Number of Special Investigations per Year

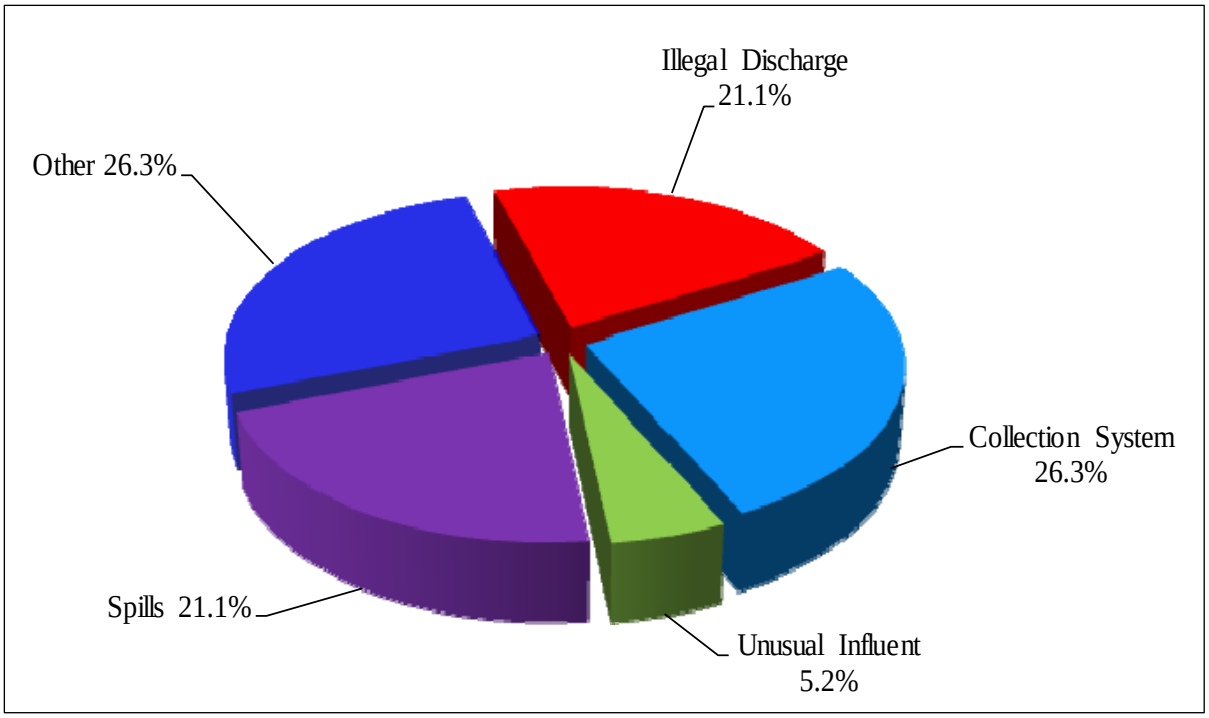


As can be seen from FIGURE 6, the number of investigations and spill response activities fluctuates from year to year, but has been significantly reduced from the number of investigations conducted in the late 1990s. The number of emergency and special investigations conducted in 2015, 19, is the lowest number on record. This is attributed to better education of users regarding spill prevention practices, overall environmental awareness by industry and the decline of SIU manufacturing facilities in the district.

FIGURE 7 graphically depicts the breakdown of the types of investigations that occurred in 2015. As can be seen from the chart, the majority of the investigations resulted from three types of investigations. Reports of problems in the collection system accounted for five investigations, reports of color accounted for six investigations, spills accounted for four investigations, and illegal discharges accounted for four investigations responded to by staff.

These investigations often require frequent follow-up activities, subsequent inspections and clean-up activities, and may result in the initiation of enforcement actions by the NBC. Numerous follow-up inspections were required as a result of these initial 19 investigations. Those NBC investigations of major concern and interest to the NBC over the past year are described in the following paragraphs.

FIGURE 7
Breakdown of 2015 Investigations



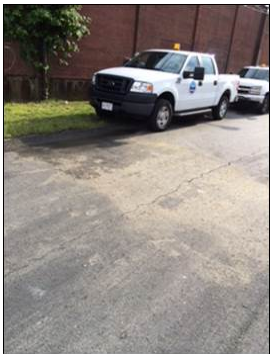
Spills

During 2015, Pretreatment staff conducted four investigations in response to reports of spills. Three of the spills occurred in the Field's Point service area and the fourth occurred in Bucklin Point district.

The first report of a spill in Field's Point was from Rhode Island Resource Recovery Corporation (RIRRC) stating that one of the sequencing batch reactors overflowed causing leachate to discharge to the ground. Most of the spilled material was contained in a retention pond on the property. However, a small amount of the material reached Shun Pike and was contained in a catch basin. RIRRC placed absorbent material on the street and cleaned out the catch basin. The material from the retention pond and the catch basin was pumped back to treatment. The NBC sewer system was not impacted.

Cleanup of spill at RIRRC

The remaiming two spills occurred at the Field's Point plant. The first of these spills occurred when material removed from the bottom of the S-1 shaft of the CSO tunnel was being transported to the plant for treatment. The driver applied the breaks quickly causing the load to shift in the truck and spill over the side. Approximately three gallons of solid and liquid material spilled on Ernest Street. Field's Point Operations staff collected the solid material and applied sodium hypochlorite to the roadway and cleaned up. There are no catch basins in the area and the treatment plant was not adversely impacted. The final spill occurred when Field's Point staff was performing preventative maintenance on a transformer. An o-ring failed and non-PCB transformer oil was released. Staff placed absorbent pads under the leak. The spilled material was contained inside the transformer. The absorbent pads and spill oil were collected and disposed. The plant was not impacted.



Spill on Ernest Street

The Bucklin Point district report of a spill came from Pawtucket Power Associates. Ther company reported that approximately 25 gallons of oil entered a floor drain from a leaking valve. The floor drain discharged into an oil/water separator. The company had the separator pumped out. The spilled oil did not discharge to the sewer system.

Illegal Dumping & Unpermitted Discharge Investigations

Pretreatment staff investigates all reports of illegal dumping and unpermitted discharges to the sewer system, storm drains, and/or NBC receiving waters. In 2015, Pretreatment staff investigated four reports of illegal dumping or unpermitted discharges. Two reports occurred in Field's Point and two occurred in Bucklin Point.

The first Field's Point investigation occurred when Pretreatment staff received a report that Ocean State Peeled Potatoes, located in Johnston was dumping wash water and a white colored waste stream out of the back of the facility. An inspection of the facility and surrounding area was conducted. There was no evidence of any material on the ground. The second Field's Point investigation was in response to a report that a contractor working on a meter installed in the sewer line on Park Street in Providence stated the flow appeared to become thick and had a strong odor over the course of a half hour. The area upstream of the meter was investigated. There was a hotel located upstream of the impacted manhole, which was inspected by Pretreatment staff. An inspection of the kitchen and laundry area revealed the discharges do not flow to Park Street. The source of the unusual flow was not located.

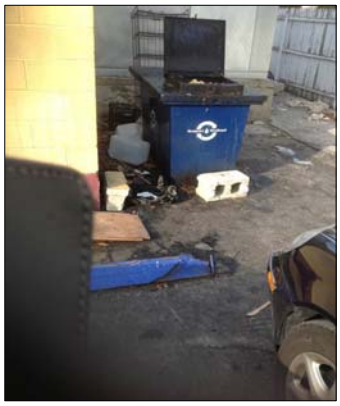
The first investigation in the Bucklin Point district occurred when Pretreatment staff responded to a report there was an illegal car washing operation at a facility located in Cumberland. An inspection of the facility revealed no evidence of car washing being conducted at the site. The owner of the facility stated all vehicles are sent off-site to be cleaned. The second investigation in this district was conducted in response to a report stating an automotive repair facility was pumping oily material to a catch basin located at the corner of Roosevelt Avenue and Jackson Street in Pawtucket. Upon arrival at the scene it was stated that the trench inside the facility was backing up and the owner hired someone to clean out a holding tank located in the parking lot. The person used a portable pump and hose to pump out viscous oily material to the catch basin. Apparently, when the pump could not handle the material, the person wet vaccumed the material and dumped it on the ground on the property across the street. The material in the catch basin did not impact the Bucklin Point treatment plant. The matter was refered to the DEM Criminal Division. In early January, 2016 Pretreatment staff worked with DEM Criminal staff to conduct a dye test of the facility. It was determined the holding tank does not discharge to the sewer system.



Indpendent Auto Sales Investigation

<u>Food Preparation Related Grease Investigations</u>

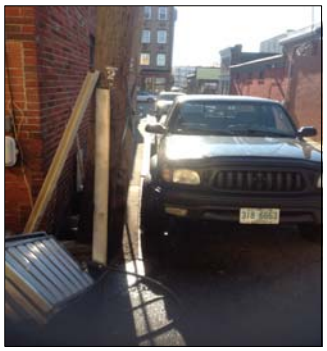
During 2015, Pretreatment staff conducted five grease related investigations. Four occurred in the Field's Point district and one occurred in the Bucklin Point district. All five of the investigations were associated with food preparation operations. All four of the Field's Point investigations were downstream of food service establishments. The first investigation was in response to a report that grease laden wastewater from a foodtruck was being discharged to a sewer drain on Elmwood Avenue in Providence. Upon arrival it was noted there was solidified grease around the drain. The owner of the food truck stated that waste grease is put in a 55 gallon drum for disposal. The owner was instructed that wastewater generated from the food truck is prohibited from being discharged to the NBC sewer system. The second investigation in this district was conducted in response to a report from the City of Providence Department of Public Works (DPW) stating there was a build-up of grease in the line on Public Street in front of Apsara Asian Restaurant. It was also stated that the restaurant was experiencing a back-up in its basement. The DPW had removed grease from the line prior to Pretreatment staff arriving at the scene. An inspection of the surrounding area revealed that Aspara was the only facility that had the potential to impact the sewer line with grease. The restaurant was inspected and it was determined that



Dumpster Behind Aspara Asian Restaurant

the exhaust hoods had been cleaned just prior to the restaurant having issues with discharging. The restaurant contracted a company to flush it's lateral sewer connection which resulted in the back-up. The restaurant was issued a Notice of Violation for not discharging grease laden wastewater through the grease removal unit.

The third Field's Point investigation was conducted in response to a report from the Providence DPW stating there was a grease blockage at the intersection of Hope Street and Glendale Avenue. The surrounding area was inspected and it was determined there were eleven facilities in the area that had the potential to impact the sewer system with grease laden wastewater. All eleven facilities were previously permitted and were inspected to determine compliance. Eight of the facilities were in compliance with their permits and the grease removal equipment was operating properly. Two of the facilities had disconnected their grease removal units. One of these facilities had also experienced a backup inside the facility. Both restaurants were issued Notices of Violation and required to immediately reinstall the grease removal equipment. The final restaurant had recently had its grease removal unit serviced. However, it was not operational at the time of the inspection. The restaurant owner contacted the company to reservice the unit and it was repaired within 24 hours. The fourth and final Field's Point district grease investigation was conducted in response to a report from Providence DPW stating grease was being dumped in a catch basin on Crout Street. The surroundings were inspected. It was observed that a permitted facility, Providence Oyster Bar, was washing kitchen hoods in an alley way and the resultant wash water was flowing towards a catch basin. The restaurant was instructed to immediately cease washing kitchen equipment in the alley. Providence Oyster Bar was issued a Notice of Violation requiring all grease laden wastewater discharge to the sewer via the approved grease removal unit.



Hood Washing At Providence Oyster Bar

The Bucklin Point district grease investigation was conducted in response to a report of oil and grease being dumped in a catch basin at 339 Weedon Street in Pawtucket. Upon arrival it was noted there was grease around the catch basin and there was food material on the grate. A supermarket, Dominican Supermarket, is located at this address. Food is prepared and sold at this facility. A representative of the facility stated food waste is placed in drums and shipped offsite for disposal. The company was informed that food waste and grease laden wastewater is prohibited from being discharged to the catch basin. The company was required to apply for a Wastewater Discharge Permit.

Pass-through and Interference

During 2016 the Pretreatment Section conducted 19 special or emergency investigations within the Field's Point and Bucklin Point districts. All reports of spills, dumping activities, unusual influents, and other related incidents during 2015 were thoroughly investigated. It is not known at the onset of an unusual influent report if the influent pollutant will cause interference with either mechanical equipment or with the microbial organisms utilized at the treatment facilities to break down the sanitary waste. Nonetheless, each report must be investigated to ensure that the unusual influent does not cause interference with NBC operations, pass through the facility into the receiving waters, or cause a discoloration of the receiving body of water, all of which would result in NBC being in violation of its RIPDES permits. None of the unusual influent incidents, dumping reports or spills investigated during 2015 resulted in interference or pass-through situations at either of the NBC wastewater treatment facilities. This is a testament to the excellent job done daily by the NBC to control the discharge of toxic and nuisance pollutants.

IV. COMPLIANCE MONITORING

Compliance Monitoring

The Narragansett Bay Commission utilizes two types of industrial and commercial user monitoring to determine compliance with effluent discharge limitations. These are:

- User Self-Monitoring;
- Compliance monitoring conducted by NBC personnel.

A description of both types of monitoring is provided in the following sections.

User Self-Monitoring

User self-monitoring is sampling conducted by an industrial or commercial user in accordance with the terms of their permit. The frequency of self-monitoring required by the permit may vary from once every twelve months (one time per year) to once per month (twelve times per year) depending on the nature and volume of the wastewater discharges. In some cases, permits may require compliance monitoring of each facility discharge. The frequency of self-monitoring is automatically increased to weekly when a user fails to meet discharge limitations by self-monitoring or by NBC sampling results. Once the user has demonstrated full compliance during four consecutive sampling events, the user is returned to the monitoring frequency specified in the permit.

User self-monitoring must be conducted in accordance with federal pretreatment requirements as specified in 40CFR§403 and analytical techniques specified in 40CFR§136. A Certification of Analysis (COA) detailing the results must be submitted with a properly completed Self-Monitoring Compliance Report (SMCR) form and Chain of Custody (COC) documentation. The SMCR requires the user to review the analytical results prior to submittal, to notify the NBC of any violation within twenty-four (24) hours of becoming aware of the violation and to enter the analytical report identification number on the SMCR. The SMCR notifies the users of the NBC requirement to resample their wastewater for any parameters violating standards. This resampling must be done and results submitted within thirty (30) days of becoming aware of the violation. The SMCR also requires the user to notify the NBC of the reasons for the violation and the steps and time frame necessary to correct the violations. This form must be signed by an authorized agent of the company. A sample SMCR is provided in ATTACHMENT VOLUME I, SECTION 3.

In 1993, Pretreatment staff developed the 24 Hour Violation Notification Fax form so that the user could quickly report an effluent violation to the NBC. This form also provides a good file record that the proper NBC violation notification requirement was satisfied by the user. A sample 24 Hour Violation Notification Fax form is provided in ATTACHMENT VOLUME I, SECTION 3.

Samples collected by industrial and commercial users can be either composite samples or grab samples. Composite samples consist of a number of samples taken over a period of time that are combined. Most permit sampling consists of composite samples.

Grab samples consist of a single sample taken at one point in time. This type of sample is typically used to monitor the pollutant concentrations of batch discharges from facilities and to ensure that wastewater discharged on a batch basis is receiving proper pretreatment. A batch discharge usually occurs from one tank over a short period of time.

Many users are required to perform both composite and grab sampling of their discharges. Composite samples are collected from the continuous final effluent and grab samples are collected from batch treatment tanks and/or small process tanks that are batch discharged to the final discharge point. Composite sample results are evaluated for compliance with the NBC discharge limitations shown in TABLE 12. This table indicates the discharge standards that must be maintained by users located in the Field's Point and Bucklin Point districts. Batch discharges are evaluated for compliance by means of a concentrated discharge formula. This formula is based on the allowable mass loading from a facility and is essentially equivalent to the EPA combined wastestream formula.

In addition to regular wastewater sampling, many industrial users, including all electroplaters and metal finishers, are required to continuously record the pH of the effluent discharged from their firm. These users are required to submit a monthly pH Monitoring Report summarizing the maximum, minimum, and average pH values for each day of operation. The pH Monitoring Report form requires the user to certify that the data reported to the NBC was taken directly from the pH recording chart and is reported to an accuracy of 0.1 standard units. Firms that discharge wastewater on a batch basis must record the final pH of the batch prior to discharge. This data must also be reported monthly. The NBC Batch and Continuous pH Monitoring Report forms are provided in ATTACHMENT VOLUME I, SECTION 3.

NBC Industrial User Sampling Program

EMDA staff conducts compliance monitoring of industrial and commercial facilities to assess users compliance status and to verify the validity of user self-monitoring results. Sampling is conducted inside the facility and is random and unannounced. A chain of custody procedure is used which includes completion of a chain of custody document. Sample bottles are sealed with bottle sealing tape to prevent tampering after sampling and preservation has been completed. A sample submission sheet is completed by EMDA staff conducting the sampling and specifies the exact sampling procedure to be implemented, the laboratory analysis requested to be conducted, facility water consumption data, sample preservation documentation and a certification of split sample acceptance or refusal signed by the user. Copies of these sampling and chain of custody documents are provided in ATTACHMENT VOLUME I, SECTION 3.

TABLE 12

NBC FIELD'S POINT EFFLUENT DISCHARGE LIMITATIONS*
(Providence, North Providence, Johnston, small sections of Lincoln and Cranston)

Parameter	Maximum Daily (Composite daily for 1 day)	Average (10 day)
Cadmium (Total)	0.11	0.07
Chromium (Total)	2.77	1.71
Copper (Total)	1.20	1.20
Cyanide (Total)	0.58	0.58
Lead (Total)	0.60	0.40
Mercury (Total)	0.005	0.005
Nickel (Total)	1.62	1.62
Silver (Total)	0.43	0.24
Zinc (Total)	2.61	1.48

Parameter	Limitation (Max.)
Total Toxic Organics (TTO)	2.13
Biochemical Oxygen Demand (BOD)	300.00**
Total Suspended Solids (TSS)	300.00**
Total Oil and Grease (Fats, Oil and Grease)	125.00
Oil and Grease (Mineral Origin)	25.00
Oil and Grease (Animal/Vegetable Origin)	100.00
pH range (at all times)	5.0 - 11.0 standard units

NBC BUCKLIN POINT EFFLUENT DISCHARGE LIMITATIONS*
(Pawtucket, Central Falls, Lincoln, Cumberland, Rumford Section of East Providence, and the Eastern Section of Smithfield)

Parameter	Maximum Daily (Concentration Limit mg/l)	Monthly Average (Concentration mg/l)
Arsenic (Total)	0.20	0.10
Cadmium(Total)	0.11	0.07
Chromium (Total)	2.77	1.63
Copper (Total)	1.20	1.20
Cyanide (Total)	0.50	0.50
Lead (Total)	0.69	0.29
Mercury (Total)	0.06	0.03
Nickel (Total)	1.62	1.62
Selenium (Total)	0.40	0.20
Silver (Total)	0.40	0.20
Tin (Total)	4.00	2.00
Zinc (Total)	1.67	1.39

Parameter	Limitation (Max.)
Total Toxic Organics (TTO)	2.13
Biochemical Oxygen Demand (BOD)	300.00**
Total Suspended Solids (TSS)	300.00**
Total Oil and Grease (Fats, Oil and Grease)	125.00
Oil and Grease (Mineral Origin)	25.00
Oil and Grease (Animal/Vegetable Origin)	100.00
pH range (at all times)	5.0 - 11.0 standard units

***** **All limitations are in units of mg/l unless otherwise specified.**

****** **Exceeding these limitations may be permitted but exceedance may be subject to surcharge in accordance with rates approved by the Public Utilities Commission and R.I.G.L. §39-1-1-1 et seq.**

EMDA utilizes many controls to insure the legal integrity of the samples collected for compliance and enforcement monitoring. Quality Assurance and Quality Control (QA/QC) begins with the purchase of materials. The sample bottles purchased are high quality and pre-cleaned. New bottles are purchased and utilized for each sampling event and all old bottles are discarded. Only the bottles used in automatic samplers and cyanide sample bottles are washed and reused by NBC staff. Preservatives purchased are reagent grade with ultra low levels of impurities.

Standard Operating Procedures (SOP) have been established for glassware and equipment cleaning. These were developed in accordance with EPA established protocols. A copy of the SOP Manual is kept in each EMDA field laboratory at all times for reference. The procedures include specific information relative to the types of chemicals used, such as phosphate free detergents, deionized water, types and strengths of acids, and solvents. EMDA sampling equipment and protocols were modified to satisfy EPA Clean Sampling requirements.

A logbook is maintained for each automatic sampler to document all usage, cleaning and repairs, as well as all preventive maintenance. All sample lines are prepared in the same manner as sample containers. Acids used in this process are also periodically analyzed for contaminants. A blank water sample of the sampler hose and pump lines is collected and preserved upon completion of the cleaning process. This blank is submitted to the laboratory with the samples that are collected with that sampler. In addition, the deionized water system used by EMDA is checked each week at the ppb level to ensure the integrity of the final deionized water rinse.

Whenever the NBC conducts user sampling, the user is offered a replicate sample that they may have analyzed by an independent laboratory for comparison with the NBC results. The user is notified of the NBC results as soon as they are reported by the NBC Laboratory.

In addition to compliance monitoring inside the industrial and commercial user facilities, the NBC also monitors manholes strategically located throughout the sewer system on a regular basis. The purpose of this manhole monitoring is to track spills, concentrated or non-compliant discharges, and to monitor users without them being aware that sampling is being conducted.

NBC Laboratory Building

The majority of samples collected in 2015 by EMDA were analyzed at the NBC Laboratory located at Field's Point. This laboratory is a state of the art wastewater laboratory that is able to comply with the most stringent EPA and RI Department of Health (DOH) regulations that call for sensitive detection of various materials contained in wastewater.

The EPA has outlined several analyses that require ultra low level detection. These analyses are for trace metals utilizing an inductively coupled plasma/mass spectrometer (ICP/MS), mercury using a cold vapor atomic fluorescence spectrometer, and cyanide. To achieve these ultra low levels, the instruments must be kept in an environment free of contaminants. The major contaminant of concern is metals. An area of the lab is classified as approaching Class 1000 Clean Room Criteria. This means that there is very minimal exposed metal in this area. Everything in this area from the light fixtures to the door jambs are coated or made of a non-metallic material.

There are separate areas of the laboratory designated for digestion of metals, metals analysis on the ICP and metals analysis on the mercury analyzer. The mercury analyzer uses EPA Method 245.7 and currently has a detection limit of 2.0 parts per trillion (ppt). This detection limit is expected to improve as protocols for this equipment are further refined. The ultimate goal is to use EPA Method 1631 for the measurement of total mercury, with an estimated method detection limit of 0.05 ppt and minimum reporting limit (ML) of 0.2 ppt. The ICP/MS is used for ultra-trace multi-elemental analysis. The method used is EPA Method 200.8 for trace metals at EPA Water Quality Criteria levels.

ICP used at the NBC Laboratory

Amoeba

The Laboratory has a microbiology department dedicated to fecal coliform and various other bacterial analysis. A microscope, camera, and monitor are some of the tools used in the "Micro" room. There is also a room specifically used for making media, which is the material used to promote bacteria growth. The use of a separate room for media preparation is important to control contamination. To accommodate the projects conducted by NBC and to satisfy EPA regulations, it is vital to properly maintain and continuously improve the NBC Laboratory.

Between the period of January 1, 2015 through December 31, 2015, NBC personnel conducted 212 sampling inspections of industries located within the NBC Field's Point and Bucklin Point districts, resulting in the collection of 2,086 composite and grab samples. These 2,086 samples translated to 224 monitoring reports. Of these 224 monitoring reports, 198 were in full compliance with the NBC standards and 26 were not in compliance, resulting in a user compliance rate of 88.4% based upon NBC analyses, an increase from the 82.9% rate of compliance reported for 2014 NBC monitoring results.

The NBC conducted sampling of 71 SIUs and five non-significant user facilities in the two NBC districts during 2015. Of the 76 facilities sampled by the NBC, 48 facilities were classified as categorical industries at the time of the sampling event. There were 23 firms classified as significant non-categorical facilities when sampled by the NBC during 2015.

Computer printouts of the 2015 sampling results for significant and non-significant users, separated by district, are provided in ATTACHMENT VOLUME II, SECTIONS 5 and 6 respectively. NBC analyses are indicated by a "Y" in the printout. These printouts list cadmium, chromium, copper, lead, nickel, silver, zinc, cyanide, BOD, TSS, Oil and Grease, and other categorical parameters specific to the user. The compliance status of each result is also indicated.

Analysis of Monitoring Results

NBC permits required industrial and commercial users to submit 1,924 wastewater monitoring reports for the period from January 1, 2015 through December 31, 2015. For this period, the industrial and commercial users actually submitted 2,499 sample results, 2,353 of which were in full compliance with NBC and EPA standards. This is a user self monitoring report rate of compliance of 94.2%. The users submitted 29.9% more analyses than required by permits due to the NBC requirement to conduct weekly sampling once non-compliance has occurred.

TABLE 13 provides a summary of the batch and non-batch compliance monitoring results for categorical and non-categorical industries located in both NBC districts for the period from January 1, 2015 through December 31, 2015. TABLE 14 provides a summary of the batch and non-batch compliance monitoring results for the significant and non-significant industrial users. The data reported in TABLES 13 and 14 is shown graphically in FIGURES 8 and 9. TABLE 15 is a comparison of the percent compliance for both self-monitoring and NBC sampling results for the aforementioned period. This table indicates that there may be inconsistencies between NBC and user sampling results. While user self-monitoring compliance reports submitted by significant users indicate a compliance rate of 94.0%, NBC results indicate a compliance rate of 88.0% for this class of users.

TABLE 13

Narragansett Bay Commission
Field's Point and Bucklin Point Districts

Summary of All Compliance Monitoring Results for Categorical and Non-Categorical Users

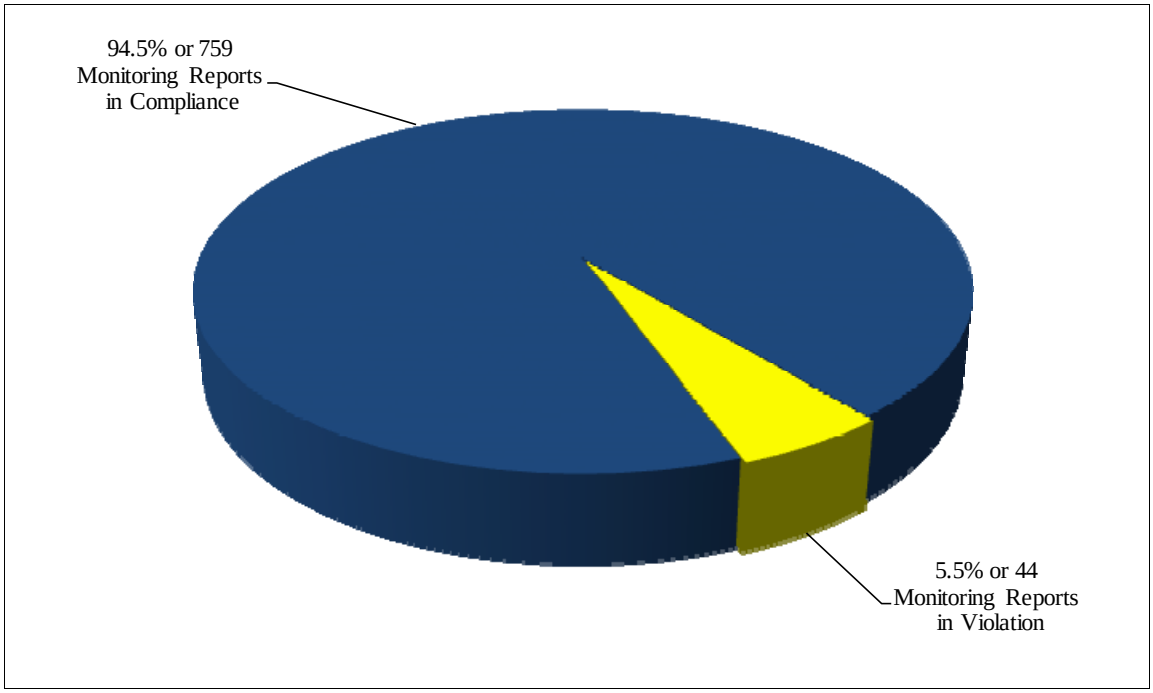
January 1, 2015 - December 31, 2015

User Self-Monitoring Results	**Categorical**	**Non-Categorical**	**Totals**
Total Monitoring Reports Required	**578**	**1,346**	**1,924**
Total Monitoring Reports Submitted	**693**	**1,806**	**2,499**
Total Monitoring Reports In Compliance	**665**	**1,688**	**2,353**
Total Monitoring Reports Not In Compliance	**28**	**118**	**146**
NBC Monitoring Results			
Total Monitoring Reports Collected	**110**	**114**	**224**
Total Monitoring Reports In Compliance	**94**	**104**	**198**
Total Monitoring Reports Not In Compliance	**16**	**10**	**26**
All Results			
Total Monitoring Reports Reviewed	**803**	**1,920**	**2,723**
Total Monitoring Reports With Violations	**44**	**128**	**172**
Total Monitoring Reports In Compliance	**759**	**1,792**	**2,551**
Total Users Sampled	**48**	**501**	**549**
Total Users With Violations	**16**	**48**	**64**
Total Users Without Violations	**32**	**453**	**485**

FIGURE 8

2015 Rates of Compliance for Categorical and Non-Categorical Users
Field's Point & Bucklin Point Districts

Categorical User Analyses
Total Number of Monitoring Reports = 803



Non-Categorical User Analyses
Total Number of Monitoring Reports = 1,920

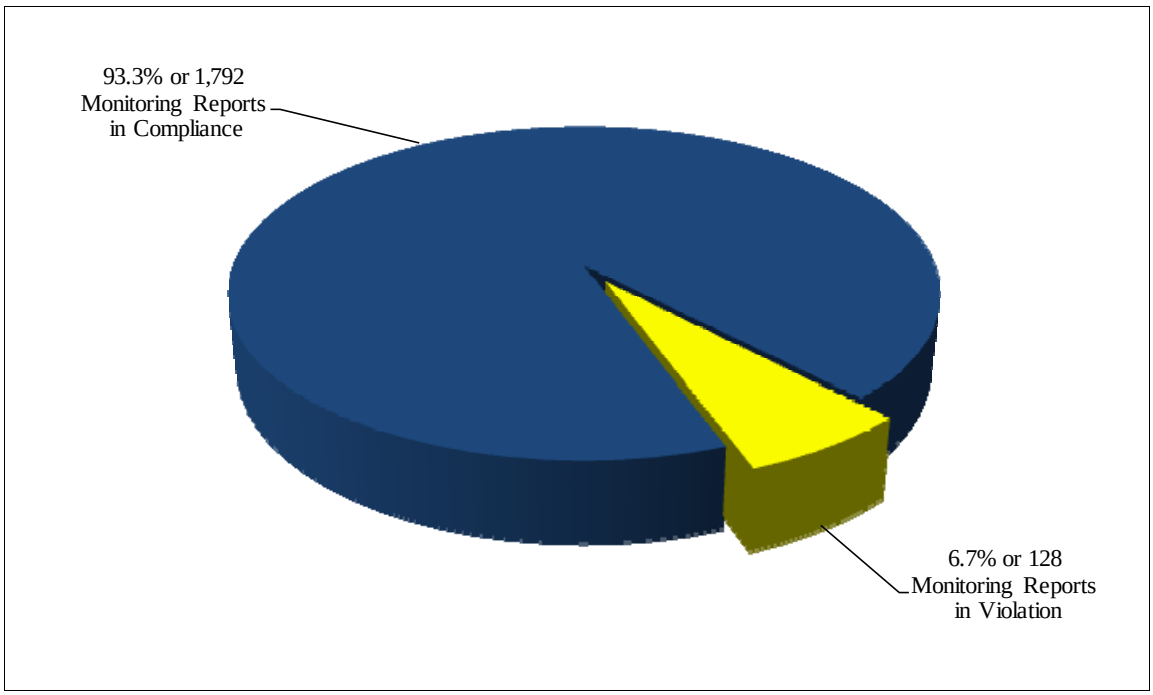


TABLE 14

Narragansett Bay Commission
Field's Point and Bucklin Point Districts

Summary of All Compliance Monitoring Results for Significant and Non-Significant Users

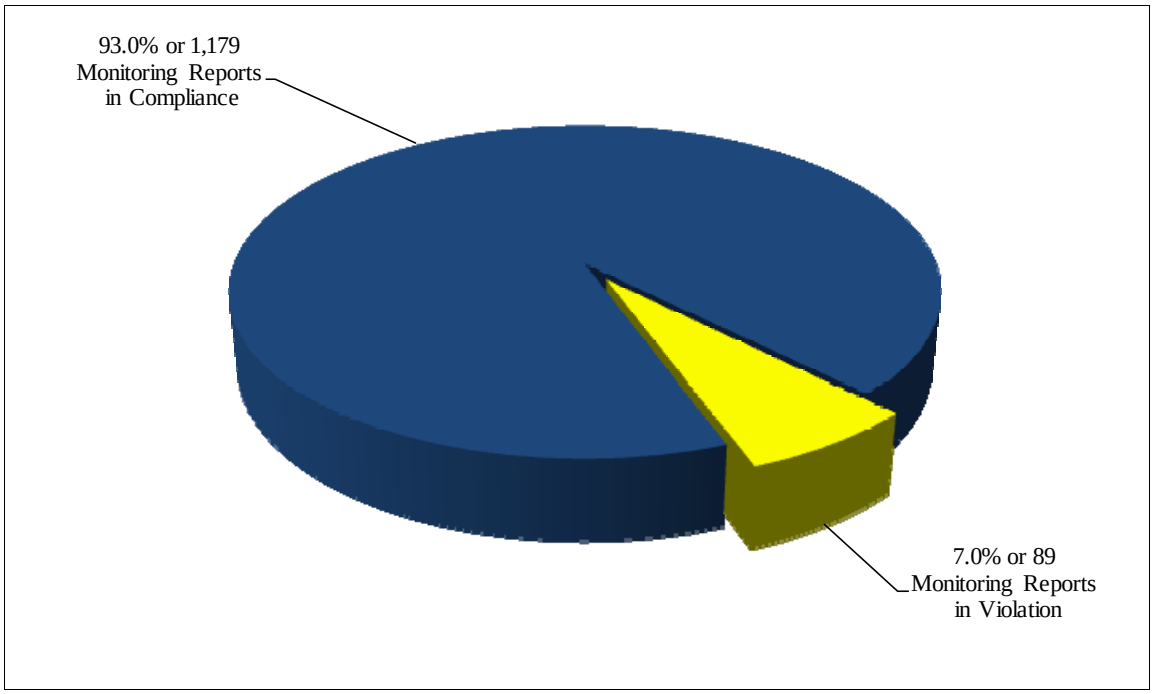
January 1, 2015 - December 31, 2015

User Self-Monitoring Results	Significant Users	Non-Significant Users	Totals
Total Monitoring Reports Required	**754**	**1,170**	**1,924**
Total Monitoring Reports Submitted	**1,051**	**1,448**	**2,499**
Total Monitoring Reports In Compliance	**988**	**1,365**	**2,353**
Total Monitoring Reports Not In Compliance	**63**	**83**	**146**
NBC Monitoring Results			
Total Monitoring Reports Collected	**217**	**7**	**224**
Total Monitoring Reports In Compliance	**191**	**7**	**198**
Total Monitoring Reports Not In Compliance	**26**	**0**	**26**
All Results			
Total Monitoring Reports Reviewed	**1,268**	**1,455**	**2,723**
Total Monitoring Reports With Violations	**89**	**83**	**172**
Total Monitoring Reports In Compliance	**1,179**	**1,372**	**2,551**
Total Users Sampled	**73**	**476**	**549**
Total Users With Violations	**25**	**39**	**64**
Total Users Without Violations	**48**	**437**	**485**

FIGURE 9

2015 Rates of Compliance for Significant and Non-Significant Users
Field's Point & Bucklin Point Districts

Significant User Analyses
Total Number of Monitoring Reports = 1,268



Non-Significant User Analyses
Total Number of Monitoring Reports = 1,455

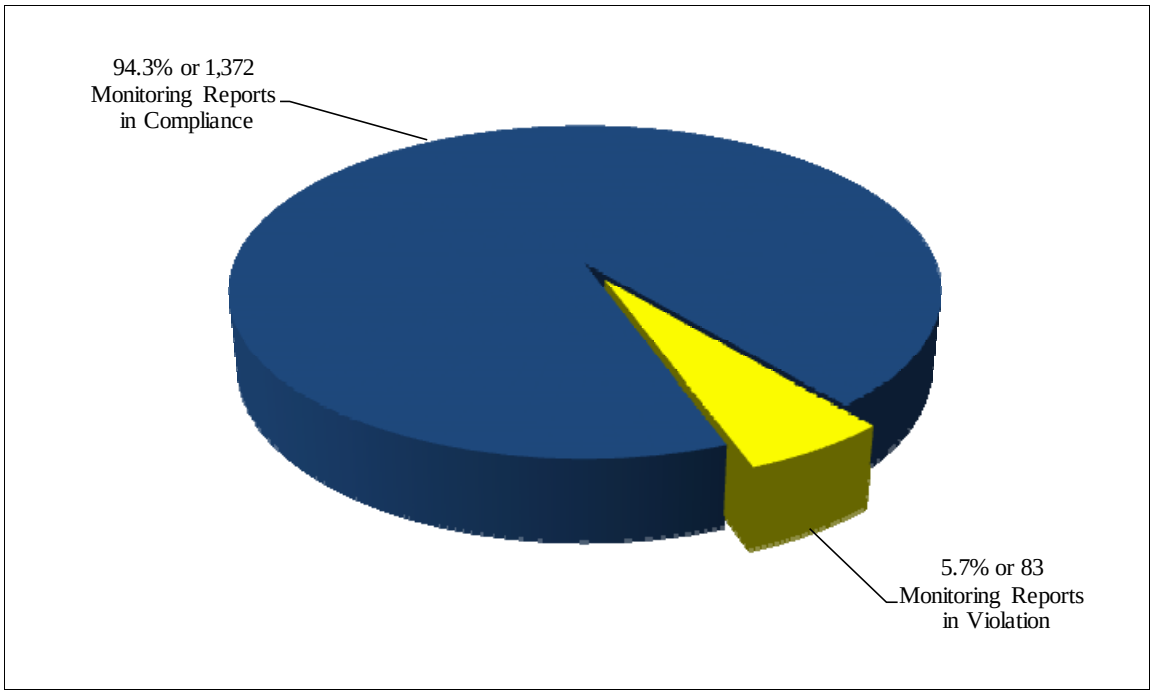


TABLE 15

Narragansett Bay Commission
Field's Point and Bucklin Point Districts

Comparison of Compliance Rates for
Self-Monitoring and NBC Monitoring Reports

January 1, 2015 - December 31, 2015

	User Self-Monitoring	NBC Monitoring	All Results
Significant Users			
Compliance Rate	**94.0%**	**88.0%**	**93.0%**
Non-Compliance Rate	**6.0%**	**12.0%**	**7.0%**
Non-Significant Users			
Compliance Rate	**94.3%**	**100%**	**94.3%**
Non-Compliance Rate	**5.7%**	**0%**	**5.7%**
Categorical Users			
Compliance Rate	**96.0%**	**85.5%**	**94.5%**
Non-Compliance Rate	**4.0%**	**14.5%**	**5.5%**
Non-Categorical Users			
Compliance Rate	**93.5%**	**91.2%**	**93.3%**
Non-Compliance Rate	**6.5%**	**8.8%**	**6.7%**
All Users			
Compliance Rate	**94.2%**	**88.4%**	**93.7%**
Non-Compliance Rate	**5.8%**	**11.6%**	**6.3%**

This data review indicates the overall SIU compliance rate remained virtually unchanged based upon user monitoring and NBC results when compared to the previous reporting year, as the overall SIU rate of compliance was 94.8% in 2014 and 93.0% in 2015. There was only a 6.0% difference in significant industrial user compliance rates observed between user and NBC sampling results. The difference in compliance rates observed for categorical users for these two types of effluent monitoring was greater at 10.5%.

User self monitoring reports submitted by categorical users indicated full compliance 96.0% of the time, while NBC monitoring found categorical users to be in compliance for only 85.5% of NBC sampling events. These differences in NBC and user monitoring compliance rates indicate that some users may not be properly collecting samples or reporting results that are truly representative of the quality of their effluent discharge and may even indicate that some firms may be falsifying monitoring reports. The NBC aggressively investigates these discrepancies through its industry and manhole sampling programs. It is important to note, however, that the rate of compliance for both monitoring methods is quite high. The comparison of compliance rates of the different classes of users for user self-monitoring and NBC monitoring reports is presented in FIGURE 10.

FIGURE 10
2015 Comparison of Compliance Rates for
Self-Monitoring and NBC Monitoring Reports

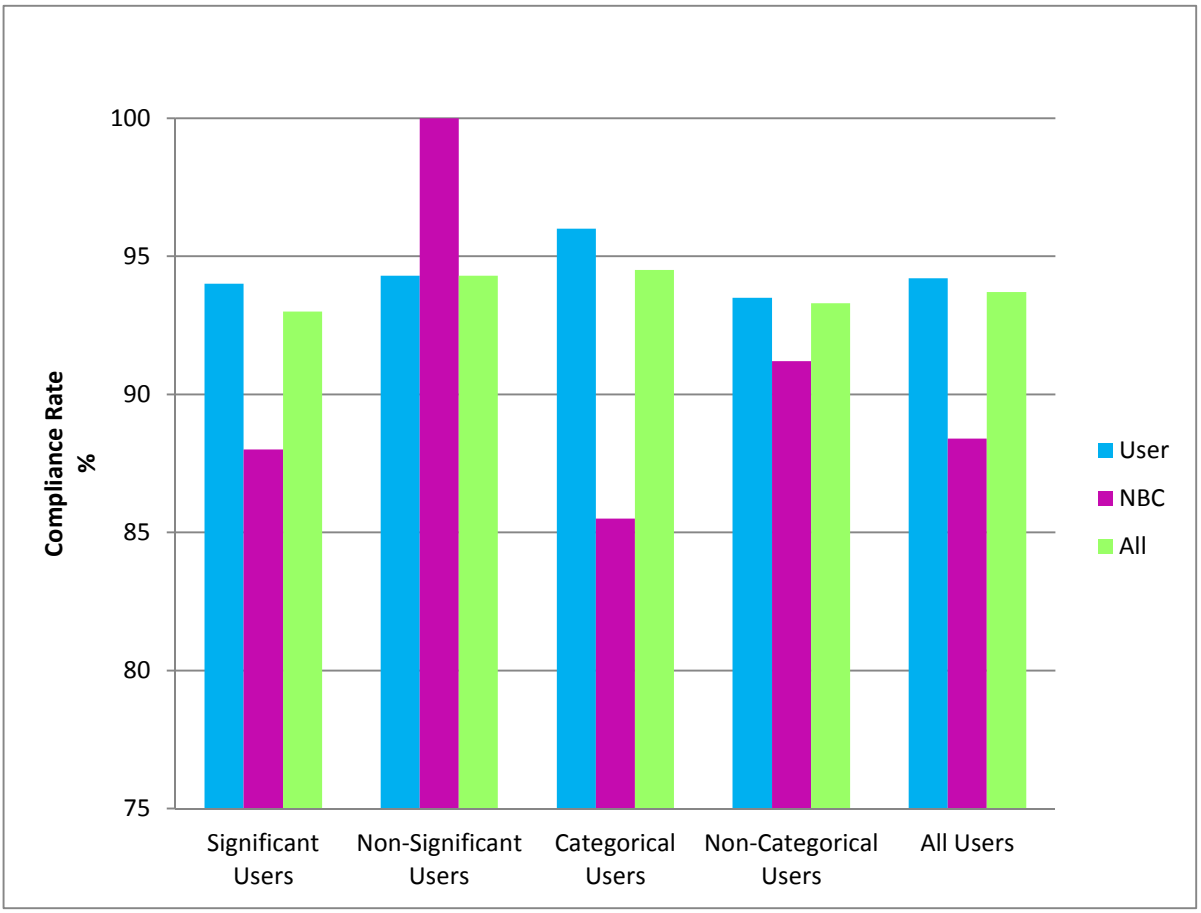


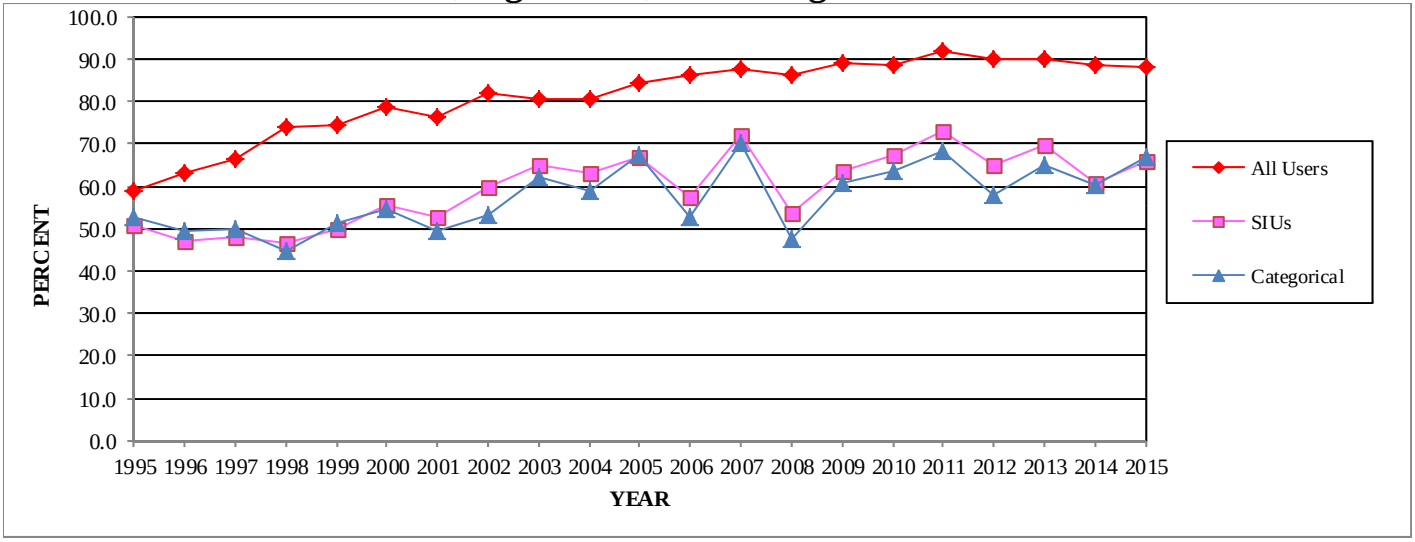
TABLE 16 provides a comparison of the compliance rates for different classes of users located in the Field's Point and Bucklin Point districts. The compliance rates for each class of users in both districts were similar. The overall rate of compliance for Field's Point users was 94.9%, while it was 91.8% in Bucklin Point.

The Field's Point categorical users were in full compliance for 95.5% of the sampling events at their facilities in 2015. This compliance rate is virtually the same as the 95.9% compliance rate in 2014. The Bucklin Point categorical users were in full compliance for 93.2% of the sampling event at their facilities in 2015. This compliance rate is an increase from the 91.6% in 2014. SIUs in the Field's Point district had a rate of compliance of 96.3%, higher than the 89.0% SIU compliance rate observed in the Bucklin Point district.

As can be seen from TABLE 16, significant users in Field's Point had the highest rate of compliance, 96.3%, while significant users located in the Bucklin Point district had the highest rates of non-compliance, 11.0%. The rate of user compliance for all users in both districts slightly decreased to 93.7% in 2015 when compared to 2014, at 94.9%.

TABLE 17 provides an analysis of the percentage of firms in each user class with perfect compliance records for effluent monitoring occurring during 2015. This analysis indicates that 66.7% of categorical users and 65.8% of significant users had perfect compliance records for all effluent parameters and sampling events. The compliance rates for both of these user classes increased when compared to 2014, 60.4% and 60.7% respectively. Non-significant users had the highest percentage of firms with perfect compliance records, 91.8%. During 2015, of the 549 firms that sampled their waste stream, 485 firms or 88.3% of users were in full compliance with NBC and EPA discharge standards. This analysis excludes the pH parameter and only reviews compliance with toxic pollutant discharge parameters. The perfect compliance rate for each year since 1995 is presented in FIGURE 11. The rate of all users with perfect compliance for effluent monitoring has shown marked improvement over the years. In 1995 the overall rate of compliance for all users was 58.7% compared with 88.3% in 2015.

FIGURE 11
Rate of Perfect Compliance with Effluent Parameters for All Users, Significant, and Categorical Users



The increase in user compliance rates from 1995 through 2015 can be attributed to NBC resampling requirements, open and prompt communications with users and to educational efforts by the Pretreatment and ESTA staff regarding EPA and NBC requirements. In addition to educating users, ESTA staff offer free assistance to companies to resolve compliance issues. The NBC user education and technical assistance programs have resulted in significantly improved rates of compliance by NBC users.

TABLE 16
Narragansett Bay Commission

Comparison of Compliance Rates
Between Field's Point and Bucklin Point Districts
for All Monitoring Results

January 1, 2015 - December 31, 2015

	Field's Point District	Bucklin Point District	Both Districts
Significant Users			
Compliance Rate	**96.3%**	**89.0%**	**93.0%**
Non-Compliance Rate	**3.7%**	**11.0%**	**7.0%**
Non-Significant Users			
Compliance Rate	**93.9%**	**95.0%**	**94.3%**
Non-Compliance Rate	**6.1%**	**5.0%**	**5.7%**
Categorical Users			
Compliance Rate	**95.5%**	**93.2%**	**94.5%**
Non-Compliance Rate	**4.5%**	**6.8%**	**5.6%**
Non-Categorical Users			
Compliance Rate	**94.7%**	**91.1%**	**95.3%**
Non-Compliance Rate	**5.3%**	**8.9%**	**6.7%**
All Users			
Compliance Rate	**94.9%**	**91.8%**	**93.7%**
Non-Compliance Rate	**5.1%**	**8.2%**	**6.3%**

TABLE 17

Narragansett Bay Commission

Analysis of Percentage of Firms With and Without Effluent Violations* for Various User Classes Field's Point and Bucklin Point Districts

January 1, 2015 - December 31, 2015

	% Firms Without Effluent Violations*	% Firms With Effluent Violations
Categorical Users	**66.7%**	**33.3%**
Non-Categorical Users	**90.4%**	**9.6%**
Significant Users	**65.8%**	**34.2%**
Non-Significant Users	**91.8%**	**8.2%**
All Users	**88.3%**	**11.7%**

***Excludes pH Parameter Violations.**

Of the 2,076 analytical reports reviewed during 2015, there were 172 reports that indicated non-compliance with one or more of the NBC or EPA effluent parameters (excluding pH). Of these 172 non-compliant sample reports, 89 were of samples collected from 25 SIU facilities and 83 non-compliant samples were collected from 39 non-significant facilities.

Five of the 25 SIUs that had effluent violations during 2015 had five or more effluent parameter violations during the report period. In fact, of the 5,043 various pollutant parameters tested for by SIUs, these five firms were responsible for 73 parameter violations out of a total of 105 parameter violations reported by all significant users during 2015. These five firms accounted for 69.5% of all SIU parameter violations over the past year. As required by the EPA and DEM, the NBC has initiated some type of enforcement action against each of these firms. A listing of these five firms and the current status of each of these users is provided in TABLE 18.

TABLE 18

Narragansett Bay Commission

Status of Significant Users With 5 or More Parameter Violations

January 1, 2015 - December 31, 2015

Company Name	Number of Parameter Violations	User Status
Bliss Manufacturing Co., Inc.	9	This Bucklin Point metal finishing firm has experienced five cyanide violations and four silver violations. One cyanide violation and silver violation occurred during a NBC sampling event. The firm attributed the violations to a malfunctioning chemical feed pump in the cyanide destruct tank. The pump has been repaired. The firm has been inspected numerous times to address these violations. The firm completed the required sampling and is now in compliance.
Denison Acquisition Company, LLC d/b/a Denison Pharmaceuticals LLC	13	This Bucklin Point pharmaceutical firm experienced thirteen Total Toxic Organics (TTO) violations due to elevated concentrations of acetone which is used in the laboratory. Two TTO violations occurred during NBC sampling events. The company attributed the high concentration to poor glass ware washing practices. The firm completed the required resampling and is now in compliance.

DFI-EP, LLC.	21	This Field's Point metal finishing firm experienced two cadmium violations, two copper violations, seven cyanide violations, eight nickel violations and two zinc violations. Two cadmium violations, two copper violations, three cyanide violations, four nickel violations and two zinc violations occurred during NBC sampling events. The firm attributed the violations to poor house keeping practices and the condition of steam lines on the plating lines. The firm repaired the steam lines. The firm was issued an Administrative Order (AO) on January 14, 2016 in response to these metals violations. The AO requires the company to return to compliance and pay an administrative penalty of $23,500. Negotiating to resolve this matter are ongoing.
Ecological Fibers, Inc.	23	This Bucklin Point printing firm has experienced twenty-three zinc violations. In addition there were several violations of the zinc monthly average limitation. Four violations occurred during NBC sampling events. The firm completed the required resampling for the violations. The firm was issued an Administrative Order (AO) on October 6, 2015 and a Status Conference was held on December 9, 2015. The company stated one of its coatings contains high concentrations of zinc. Tray wash water from the coating process is discharged to the sewer via the pretreatment system. It was further stated production and flow had increased which contributed to the high concentration of zinc. The company has investigated alternative coatings, additional treatment and house keeping improvements. Further discussion of the AO can be found in Chapter VI.

The Okonite Company	7	This Bucklin Point cable and wire manufacturing firm experienced seven zinc violations. All of the zinc violations were attributed to zinc leaching off galvanized steel elevators in wet test tanks. The firm was not in full operation when the samples were collected. The firm completed the required resampling and is now in compliance.

2015 Industrial User Compliance Status Summary

During 2015, the NBC continued to monitor and track the compliance status of all industrial users in both the Field's Point and Bucklin Point districts. Notices of Violation (NOV) were issued for all instances of non-compliance. A total of 1,841 NOV were issued in 2015. A table detailing each type of NOV issued to each firm can be found in ATTACHMENT VOLUME II, SECTION 8. A summary of the monthly compliance status for Significant Industrial Users can be found in ATTACHMENT VOLUME II, SECTION 5. A summary of NBC Enforcement Actions, including the penalties assessed, is also provided in CHAPTER VI.

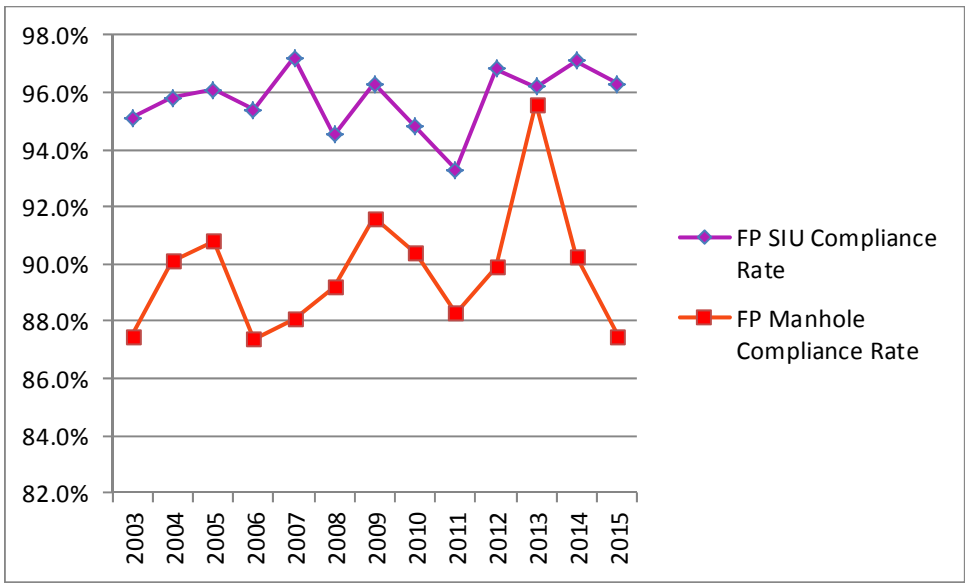
Industrial Surveillance Manhole Monitoring Program

During 2015, EMDA staff conducted sampling of an average of six manholes each week. The automatic samplers for manholes are typically programmed to take a grab sample every 15 minutes over an approximately 32 hour period and utilize either one large bottle to obtain a single composite sample or a 24 bottle carrousel to obtain 24 discrete samples. For carrousel installations, 24 composite samples consisting of five grab samples per bottle are obtained over the 32 hour sampling period. EMDA staff analyzes each of the 24 sample bottles for pH and any unusual wastewater characteristics. Should any unusual conditions be observed, one or possibly all of the 24 samples would be analyzed separately. If no unusual characteristics are observed, an equal volume aliquot of each of the 24 samples is composited into two separate samples for laboratory analyses for metals and cyanide. After obtaining results indicating noncompliance, Pretreatment staff attempts to determine the potential source of these noncompliant discharges. Manhole monitoring results continue to indicate declines in the quantities of toxics discharged into the sewer system.

During 2015, the NBC conducted a total of 273 industrial manhole sampling events at manholes located throughout the two districts. In addition to collecting industrial manhole samples, 43 sampling events were conducted at residential manholes. In addition, thirteen additional manholes were attempted to be monitored in both Field's Point and Bucklin Point. However, due to flow conditions or mechanical problems, effluent could not be collected by the automatic samplers at these sites. A total of 329 monitoring events were conducted at manholes in 2015. This is a decrease from the 382 monitoring events conducted at manholes in 2014.

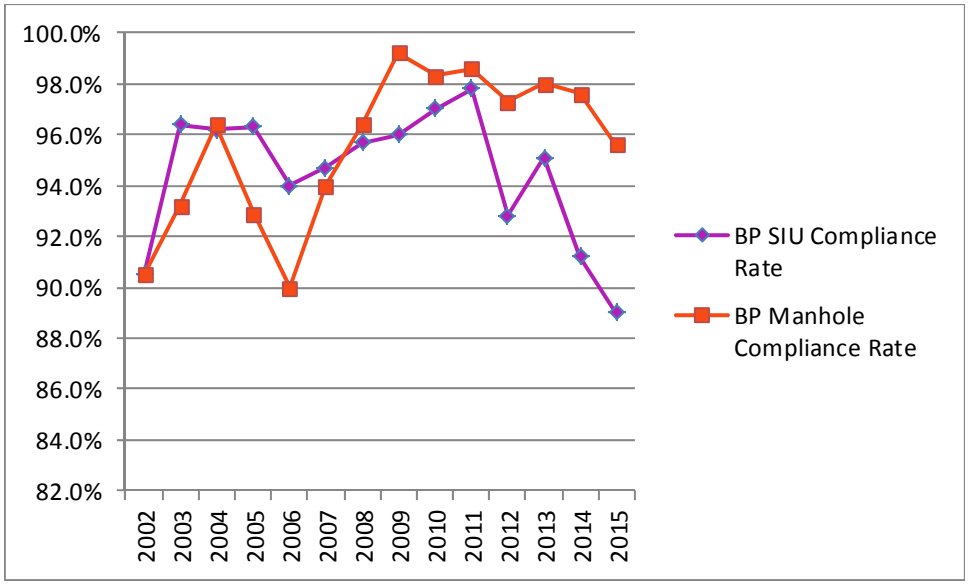
EMDA staff conducted 160 manhole monitoring events from industrial surveillance manholes in Field's Point during 2015. Of the 160 manhole monitoring events, 140 or 87.5% were in compliance with NBC discharge limitations. As can be seen in FIGURE 12 this compliance rate is slightly less than the compliance rate for sampling within Field's Point SIU facilities in 2015, which was 96.3%. Although there is a difference in compliance rates, the two are comparable. The lower compliance rate in manhole monitoring may be due to multiple industrial inputs into manholes as well as the contributions from background inputs such as inflow and infiltration and residential sources.

FIGURE 12
Field's Point SIU vs Manhole Compliance Rates 2002 - 2015



EMDA staff conducted 113 monitoring events from industrial surveillance manholes in Bucklin Point during 2015. Of the 113 manhole monitoring events, 108 or 95.6% of the events were in compliance with NBC discharge limitations. As can be seen in FIGURE 13 this compliance rate is higher than the compliance rate for samples collected within Bucklin Point SIU facilities in 2015, which was 89.0%.

FIGURE 13
Bucklin Point SIU vs Manhole Compliance Rates 2002 – 2015



A discussion of the results of sanitary monitoring is provided in CHAPTER V of this report and a discussion of the manholes with elevated concentrations of toxics is provided in the following paragraphs. Industrial surveillance and sanitary manhole monitoring results for 2015 are provided in ATTACHMENT VOLUME II, SECTION 7.

INDUSTRIAL SURVEILLANCE MANHOLE VIOLATIONS

FIELD'S POINT DISTRICT

Industrial Surveillance Manholes 08A & 08B

Industrial Surveillance Manholes 08A and 08B are located on Toronto Street in Providence downstream and upstream of Ira Green, Inc., which conducts metal finishing operations. On November 24, 2015 the concentration of copper in Industrial Surveillance Manhole 08A was in excess of the NBC discharge limitation of 1.2 ppm. The firm was issued a Notice of Violation which required a report detailing the cause of the high copper concentration to be submitted in early 2016. Continued industrial manhole monitoring will be conducted by NBC personnel in 2016 to monitor the compliance status of this company.

Industrial Surveillance Manholes 11A, 11B & 11C

Industrial Surveillance Manholes 11A is located on Virginia Avenue in Providence downstream of Monarch Metal Finishing Inc., which conducts metal finishing operations. On November 5, 2015 and November 24, 2015 the concentrations of copper and cyanide in Industrial Surveillance Manhole 11A was in excess of the NBC discharge limitation of 1.2 ppm and 0.58 ppm respectively. The firm was inspected and nothing unusual was noted. Manholes 11B and 11C, located on Toronto Street, were created to better isolate the company. Continued industrial manhole monitoring will be conducted by NBC personnel of these new manholes in 2016 to monitor the compliance status of this company.

Industrial Surveillance Manhole 20A

Industrial Surveillance Manhole 20A is located on Seymour Street in Providence downstream of R.E. Sturdy Company, Inc., which conducts metal finishing operations. On July 16, 2015 the concentration of silver in Industrial Surveillance Manhole 20A was in excess of the NBC discharge limitation of 0.43 ppm. On November 11, 2015 the concentration of copper was in excess of the NBC discharge limitation of 1.20 ppm and on December 10, 2015 the concentration of cyanide was in excess of the NBC discharge limitation of 0.58 ppm in the manhole. The firm was issued Notices of Violation. The firm indicated they were on vacation during the July sampling event. The reports for the November and December violations are due in early 2016. Continued industrial manhole monitoring will be conducted by NBC personnel in 2016 to monitor the compliance status of this company.

Industrial Surveillance Manholes 70A, 70B & 70C

Industrial Surveillance Manholes 70A and 70B are located on River Avenue in Providence downstream and upstream of both A & F Plating Company and Universal Plating Company, Inc., both of which conduct metal finishing operations. There were numerous exceedances of NBC discharge limitations for various parameters including copper, lead, nickel, silver, zinc and cyanide. These violations occurred throughout the months of May, June, and July. Each firm was issued Notices of Violation requiring reports detailing the cause of the high metals concentrations be submitted. In addition, each facility was thoroughly inspected. However, it could not be determined which company was the source of the high concentrations. Dye tests were conducted of each company and manhole 70C was found to be upstream of Universal Plating Company, Inc. and downstream of A&F Plating Company which better isolates each company during sampling events. The manholes were resampled in September and the results were found to be in compliance with NBC discharge limitations. Continued industrial manhole monitoring and more frequent inspections will be conducted by NBC personnel in 2016 to monitor the compliance status of these companies.

Industrial Surveillance Manholes 111A & 111B

Industrial Surveillance Manholes 111A and 111B are located on Railroad Avenue in Johnston downstream and upstream of G. Tanury Plating Company, which conducts metal finishing operations. On April 30, 2015 the concentration of copper in Industrial Surveillance Manhole 111A was in excess of the NBC discharge limitation of 1.20 ppm. On December 16, 2015 the concentrations of copper, nickel, and cyanide were in excess of the NBC discharge limitations of 1.20 ppm, 1.62 ppm, and 0.58 ppm respectively. The firm was issued Notices of Violation which required reports detailing the cause of the high metals and cyanide concentrations to be submitted. The firm attributed the violations to poor rinsing techniques and indicated that employees would be retrained. Continued industrial manhole monitoring will be conducted by NBC personnel in 2016 to monitor the compliance status of this company.

Industrial Surveillance Manholes 125A & 124B

Industrial Surveillance Manholes 125A and 124B are located on Industrial Lane in Johnston downstream and upstream of Tri-Jay Company, which conducts metal finishing operations. On August 27, 2015 the concentration of silver in Industrial Surveillance Manhole 124A was in excess of the NBC discharge limitation of 0.43 ppm. The firm was issued a Notice of Violation. The firm reported that it had a problem with its ultrafiltration system. The ultrafiltration system has been repaired. Additional sampling of these manholes in November indicated the concentrations of all parameters were in compliance with the NBC discharge limitations. Continued industrial manhole monitoring will be conducted by NBC personnel in 2016 to monitor the compliance status of this company.

Industrial Surveillance Manholes 153B

Industrial Surveillance Manhole 153B is located on Waterman Avenue in North Providence. On March 26, 2015 and December 17, 2015 the concentration of zinc was in excess of the NBC discharge limitation of 2.61 ppm. The area upstream of the manhole was investigated and Greystone Auto Center, which conducts auto body operations, was found to be operating without a permit. The firm was inspected and required to apply for a permit and install pretreatment equipment. The firm was permitted and is in the process of installing an oil and solids/grit separating tank. Continued industrial manhole monitoring will be conducted by NBC personnel in 2016 to monitor the compliance status of this area and company.

Industrial Surveillance Manholes 204A & 204B

Industrial Surveillance Manholes 204A and 204B are located on Aldrich Street in Providence downstream and upstream of Metallurgical Solutions Inc., which conducts metal finishing operations, and American Tin and Solder which conducts zero discharge metal casting operations. On October 22, 2015 the concentration of zinc in Industrial Surveillance Manhole 204A was in excess of the NBC discharge limitation of 2.61 ppm. Each firm was required to submit report detailing the cause of the high zinc concentration. Metallurgical Solutions Inc. indicated that they did not discharge wastewater on the day in question. American Tin and Solder reported that they do not use zinc in their operations nor do they store it at the facility. Continued industrial manhole monitoring will be conducted by NBC personnel in 2016 to monitor the compliance status of these companies.

BUCKLIN POINT DISTRICT

Industrial Surveillance Manholes 14A & 14B

Industrial Surveillance Manholes 14A and 14B are located on Dexter Street in East Providence, upstream and downstream of Aspen Aerogels Rhode Island, LLC, which manufactures aerogel insulation. On July 30, 2015 the concentration of copper in Industrial Surveillance Manhole 14B was in excess of the NBC discharge limitation of 1.20 ppm. The firm was issued a Notice of Violation. The firm does not use copper in its manufacturing process. Continued industrial manhole monitoring will be conducted by NBC personnel in 2016 to monitor the compliance status of this company.

Industrial Surveillance Manholes 92A & 92B

Industrial Surveillance Manholes 92A and 92B are located on New England Way in Lincoln upstream and downstream of Tanury Industries and Tanury Industries PVD, Inc. Both of these companies conduct metal finishing operations. On November 19, 2015 the concentrations of copper and cyanide in Industrial Surveillance Manhole 92B were in excess of the NBC discharge limitations of 1.20 ppm and 0.58 ppm respectively. Tanury Industries was issued a Notice of Violation which required a report detailing the cause of the high cyanide concentration to be submitted. The firm attributed the violation to employees using the incorrect rinse tanks to rinse cyanide bearing pieces and the employees have since been retrained. Tanury Industries PVD, Inc. did not discharge process wastewater at that time. Continued industrial manhole monitoring will be conducted by NBC personnel in 2016 to monitor the compliance status of this company.

SURVEILLANCE MANHOLE MONITORING CONCLUSIONS

The NBC conducts surveillance manhole monitoring throughout the sewer districts on a routine basis. These manholes are located up and down stream of significant industrial users, zero discharge facilities as well as in residential areas. Pretreatment staff reviews the analytical data from all manhole monitoring events. Pretreatment and EMDA staff work together to find the source when the results indicate non-compliance with NBC discharge limitations. In 2015, Pretreatment staff investigated all incidents of non-compliant manhole results. Companies which discharge to the manhole were inspected and Notices of Violation letters were issued to companies found to be the source of the noncompliant wastewater. This aggressive manhole monitoring program will continue in 2016.

V. NBC IMPACT OF PRETREATMENT PROGRAM ON CONTROL OF TOXICS AND INCOMPATIBLE WASTE

NBC Impact on the Control of Toxics and Incompatible Wastes

The continuing goal of the NBC is to improve receiving water quality by meeting and exceeding compliance with RIPDES discharge standards thereby limiting the impact wastewater treatment facility effluent has on Narragansett Bay. To this end, influent and effluent metals and cyanide loading data are evaluated to provide a measure of the amount of industrial waste being discharged to the sewer system, as well as a means of quantifying the NBC effectiveness at controlling and reducing the discharge of toxic pollutants into the collection system. The NBC has analyzed and tracked the toxic pollutant loading trends at its treatment facilities since the creation of the agency.

The data and analyses presented in this chapter summarize the 2015 monitoring initiatives performed by EMDA, including monitoring of the treatment facilities, the collection system, industrial and commercial users, and the receiving waters of Narragansett Bay. The Pretreatment section works in conjunction with the EMDA, Laboratory, Operations, and Engineering sections to control toxics from entering and impacting the sewer system. EMDA conducts sampling of wastewater from all discharge sources into the NBC system, throughout the collection and treatment systems, and ultimately to its final fate as either sludge or as treated effluent discharged into Narragansett Bay.

NBC RIPDES Permit Requirements

On December 31, 2001, both NBC wastewater treatment facilities were issued updated RIPDES discharge permits. Of significant interest was the removal of several pollutants from the permits due to five years of data that had revealed discharge levels well below the detection limits or aquatic life water quality criteria as they are applied to the NBC receiving waters.

At Field's Point, the following parameters were removed from the permit:

- Cadmium
- Hexavalent chromium
- Lead
- Tetrachloroethylene
- 1,1,1-trichloroethane
- Trichloroethylene
- 1,2-dichloroethylene
- Methylene chloride
- Bis(2-ethylhexyl) phthalate

At Bucklin Point, pollutants were also removed from frequent monitoring due to historically low concentrations. The following parameters were removed from the Bucklin Point permit:

- Cadmium
- Tetrachloroethylene
- 1,1,1-trichloroethane
- Trichloroethylene
- Dichloromethane

Monitoring of these pollutants continues through routine sampling and semi-annual priority pollutant scans. Data from these scans indicate that concentrations are either well below saltwater water quality criteria or not detectable in plant effluent.

The removal of a parameter from a RIPDES permit, or a downgrade to "monitor only" status, can be directly attributed to effective efforts by Pretreatment, ESTA, Laboratory, Operations, and EMDA staff. The timely collection of samples by EMDA, low-level trace analysis by the Laboratory, effective regulation of industry by Pretreatment, technical assistance provided to industry by ESTA, and effective treatment performed by Operations are the key components of an efficient wastewater treatment organization.

The NBC appealed several conditions within RIPDES permits RI100072 and RI10100315, which were issued on December 31, 2001 to the Bucklin Point and Field's Point treatment facilities, respectively. These appeals were resolved by Consent Agreement RIA-330 between the NBC and DEM, which was fully executed and took effect on January 1, 2004. As a result of this consent agreement, interim permit limits at Bucklin Point for copper, mercury, nickel, silver, and zinc were developed based on historical effluent concentrations rather than water quality criteria. Similarly, the consent decree specified interim permit limits for copper at Field's Point. At both plants, cyanide permit limits were agreed upon that recognize the EPA quantitation limit of this parameter. Additional changes in the consent agreement included the addition of a second daily fecal coliform bacteria grab sample at the final effluent to improve the testing of this important water quality indicator. Seasonal limits were also set at Bucklin Point for ammonia in the final effluent based on ammonia toxicity criteria. As a result of these updated interim limits, NBC facilities are better able to remain in compliance.

Permit requirements were further modified by the Rhode Island Department of Environmental Management (DEM) during 2005 to satisfy a Rhode Island Legislative mandate to reduce the amount of nitrogen discharged to Narragansett Bay. The updated permit requirements imposed new total nitrogen discharge limits and mandated monitoring for nitrate, nitrite, and Total Kjeldahl Nitrogen (TKN) three times per week. TKN analyses determine both ammonia nitrogen and organic nitrogen in samples. The organic nitrogen component is necessary to determine and monitor total nitrogen in the treatment plant effluent. Permit monitoring requirements for ammonia remained at twice weekly, but the NBC has sampled all nutrient parameters three times per week since August 1, 2005. In 2006, a consent agreement was reached with both NBC facilities setting interim limits for total nitrogen as the facilities constructed the necessary infrastructure to achieve 5.0 mg/L. The consent agreement required that the 5.0 mg/L limits be put into effect for the May through October season once construction was complete. These permit limits for total effluent nitrogen went into effect on May 1, 2014 at Field's Point. At Bucklin Point the permit limits went into effect on July 14, 2014.

Consent Agreement RIA-330 was modified on February 27, 2007, to address compliance with biochemical oxygen demand (BOD) and total suspended solids (TSS) percent removal from the wet weather facilities at Bucklin Point, outfall 003A. The consent

agreement includes an equation to be used to calculate percent removal based upon wet weather influent concentration, wet weather influent flow, wet weather effluent concentration, wet weather effluent flow, and monthly average percent removal from Bucklin Point.

Sample Collection at the Wastewater Treatment Facilities

All sample collections, preservations, and storage at the NBC treatment facilities are performed with strict adherence to EPA protocols. As detailed in the current NBC RIPDES permits, the Field's Point and Bucklin Point treatment facilities are required to sample the influent and effluent for toxic and conventional pollutants on a regular basis.

Toxic pollutant monitoring requirements include 24-hour composite sample collections for the analysis of copper, lead, mercury, nickel, silver, chromium, and zinc in the influent and effluent. Metals and cyanide measurements are required twice-weekly at both plants. During 2015, EMDA staff collected all permit-required 24-hour composite samples of the waste streams at the two treatment facilities.

Field’s Point influent samples are collected at the single interceptor that feeds the facility, after bar screening and prior to the grit removal tanks. At Bucklin Point, influent composite samples are collected from the Blackstone Valley (BVI) and East Providence (EPI) interceptors that bring wastewater to the plant. Previously, collections from BVI and EPI were made on a flow-paced schedule and analyzed independently, with the independent analytical results combined based on the flow percentages for the sample collection period after chemical analysis. EMDA conducted a study in 2005 to determine whether combining these separate collections prior to analysis would improve accuracy of the analytical results. A substantial number of metals samples collected from EPI are below the detection limits of the NBC Laboratory instrumentation. This is due to both low flow and the small number of industrial users in this portion of the Bucklin Point service district. The flow proportioned combination of the samples prior to analysis was investigated to determine whether the resultant sample would provide a more accurate influent concentration. Results from this study indicated that, for samples that were routinely below the method detection limits, the combination of the samples improved the accuracy of analytical results. For samples above the detection limits, there was no significant difference between the two methods. By providing more representative influent data, evaluation of plant performance at the Bucklin Point facility is more accurate, and the improved results can, in turn, be used to fine tune processes within the wastewater treatment facility.

Twice-weekly influent cyanide samples are collected from the two Bucklin Point interceptor locations and are composites of nine separate grab samples at each location. These samples are combined flow proportionally in the same way as the metals and conventional pollutant composite collections.

Final effluent sample collections at both facilities are downstream of all treatment processes. Composite effluent samples are analyzed by the Laboratory for conventional pollutants and metals including copper, lead, mercury, nickel, silver, and zinc, as well as nutrients. The nutrients analyzed include nitrite, nitrate, ammonia, and total phosphorus. Nitrate is determined by difference from a combined nitrite+nitrate measurement and a nitrite measurement. The Laboratory has two state-of-the-art nutrient auto-analyzers, one to process treatment plant samples and one to process saltwater samples. These instruments have improved analysis efficiency for nutrient measurements, and analytical results from this equipment continue to produce better precision and accuracy than previous analyses.

Other required sample collections for plant monitoring include daily fecal coliform bacteria, BOD, TSS, oil and grease, pH, and total residual chlorine (TRC). Effluent samples are collected and analyzed for dissolved metals at both facilities on a monthly basis. Whole effluent bioassay toxicity tests are also conducted quarterly at both facilities.

As previously noted, on August 1, 2005 nutrient monitoring was increased from two to three times per week. A consent agreement was signed on June 16, 2006 which imposed interim seasonal total nitrogen limits of 10 mg/L and 18.2 mg/L for Bucklin Point and Field's Point, respectively. As required by the consent agreement, the Biological Nutrient Removal (BNR) facility performance at Bucklin Point was closely observed through the end of the summer 2007 so that an engineering analysis could be performed. The engineering analysis determined that the facility could not achieve the seasonal total nitrogen limit of 5.0 mg/L and would require additional major facility upgrades and renovations to implement additional BNR technology. As of July 2014, construction upgrades were completed for both plants and they are now operating under a seasonal (May – October) nitrogen limit of 5.0 mg/L.

Clean Sampling Implementation

As of January 1, 2000, all treatment facility sampling is performed with methods outlined in *US-EPA Method 1669 – Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels*. As laboratory detection limits continue to be lowered, EMDA is constantly evaluating its sample collection and handling procedures to ensure that contamination will not significantly affect the data results. EMDA adopted and is adhering to ultra-clean sampling methodology developed by Hampton Roads Sanitation District of Virginia via participation in a National Association of Clean Water Agencies (NACWA) mercury study. This methodology uses sample bottles, tubing, and pumps that allow sample collection and transfer without opening bottle tops, eliminating many potential sources of contamination. The experience gained in this study assisted EMDA in determining the best ways to improve the performance-based clean sampling methods.

EMDA has implemented a plant sampling quality assurance program to evaluate the success of its current clean sampling program in limiting contamination in nutrient and metals composite sampling of the influent and effluent at the two treatment facilities. The program defines a strict protocol for cleaning the 10 and 15 liter HDPE composite carboys used in the sampling. In short, this procedure involves dishwasher cleaning with laboratory-grade soap, followed by acid-cleaning with nitric acid. Carboys are then acid-cleaned using hydrochloric acid and rinsed with distilled, de-ionized (DI) water that has been treated with a Barnstead Nano Pure four cartridge filtration system to a purity minimum of 15 mega ohms per centimeter resistivity. Another key element of the plant sampling quality assurance program is the regular cleaning of the suction pump tubing used in drawing the wastestream sample into the composite carboy container. This cleaning follows the same steps as the carboy cleaning. The success of the carboy and tubing cleaning is evaluated with the collection of blank samples. For these blank samples, DI water is added to cleaned carboys and held for a minimum of 12 hours to simulate normal sample holding times. This water is then analyzed for the same parameters as the wastewater sample. Tube cleaning is evaluated by drawing DI water through the tubing into pre-cleaned containers. Results from these samples have helped EMDA, in conjunction with the Laboratory, determine the steps needed to continue to improve the clean sampling protocols as analytical detection limits continue to be reduced through improved laboratory procedures and instrumentation.

Field's Point Special Sampling Activities

The following summarizes the special sampling activities conducted at Field's Point during 2015:

- EMDA staff continued to check the agreement between the continuous, in-situ influent and effluent pH probes with discrete pH grab samples analyzed by the Laboratory. A report showing the results from the two systems was generated and sent to both Laboratory and the Operations staff responsible for maintaining the plant equipment. Working with the Laboratory on this calibration effort helped to improve data quality and comparability. Prior to the automated system, the results of this comparison were documented in a daily log sheet.

- EMDA staff performed daily checks of the influent and effluent wastestream channels for the presence of total residual chlorine and sulfides which may interfere with cyanide sample analyses. EMDA staff used standard potassium iodide, starch, and lead acetate indicator papers for this testing. In 2015, all tests for these constituents yielded non-detectable results. If either of these constituents was detected, the cyanide sampling, if in progress, would have been suspended and re-started the following day to ensure that these chemicals did not interfere with the cyanide analysis.

- In an effort to learn more about the concentrations of bacteria in the treated effluent, the NBC instituted monitoring of the effluent for enterococcus bacteria. The monitoring began in May 2010 and continued throughout 2015. The data has not shown a strong correlation between fecal coliform concentrations and enterococcus concentrations. Disinfection of enterococcus bacteria appears to be highly dependent on contact time. Work will continue on this project in anticipation of RIPDES permit changes requiring compliance with a limit for enterococcus.

- EMDA staff assisted ESTA and URI staff with collecting samples for a study of greenhouse gas emissions from the treatment plant. Samples were collected from various unit operations and analyzed by the NBC Laboratory for various nutrient parameters. URI scientists were monitoring the emissions for greenhouse gases. Monitoring was performed approximately monthly during the first half of 2015.

- In anticipation of future limitations on arsenic discharges at Field's Point, monthly monitoring was conducted of the arsenic species discharged from an industrial user, the plant influent and effluent as well as the effluent from Bucklin Point.

Bucklin Point Special Sampling Activities

The following activities summarize special sampling activities conducted at Bucklin Point during 2015:

- EMDA staff picked up septage samples weekly at the Lincoln Septage Receiving Station and delivered them to the Laboratory for analysis. Three daily composite samples of septage loads discharged at the station were analyzed for trace metals and cyanide each week. Interceptor Maintenance staff sampled and screened each septage truck delivery for quality by measuring pH during the pump-out at the septage facility.

- EMDA staff performed daily laboratory analyses of both permit and process samples collected daily for effluent pH and temperature. EMDA staff also performed regular daily pH checks of the influent. The influent grab sample was collected at the Grit and Screening Building, in the channel prior to the bar screens. Results were communicated to the Laboratory and Operations staff for permit compliance and process control applications. Abnormal pH measurements would have triggered additional grab samples being collected and an investigation by Pretreatment. The QA/QC program requires calibration, checks, and documentation that the pH meter and colorimeter used for these tests are operating properly.

- EMDA staff performed daily checks of the influent and effluent wastestream channels for the presence of total residual chlorine and sulfides which may interfere with cyanide sample analyses. EMDA staff used standard potassium iodide, starch, and lead acetate indicator papers for this testing. In 2015, all tests for these constituents were non-detected at Bucklin Point. If either of these constituents was detected, the cyanide sampling, if in progress, would be suspended and re-started the following day to ensure that these chemicals did not interfere with the cyanide analysis.

- In an effort to learn more about the concentrations of bacteria in the treated effluent, the NBC instituted monitoring of the effluent for enterococcus bacteria. This evaluation began in June 2010 and continued throughout 2015. The data has not shown a strong correlation between fecal coliform concentrations and enterococcus concentrations. Work will continue on this project in anticipation of RIPDES permit changes requiring compliance with a limit for enterococcus.

- As a plant maintenance activity anaerobic digester #2 was dewatered. In order to minimize impacts to the treatment plant the contents of the digester were treated to remove solids with a filter press. Daily sampling of the feed to this treatment process, the return stream, and the final filter cake was performed to ensure the treatment provided was adequate and was not adversely affecting the plant.

Analysis of Influent Loading Data

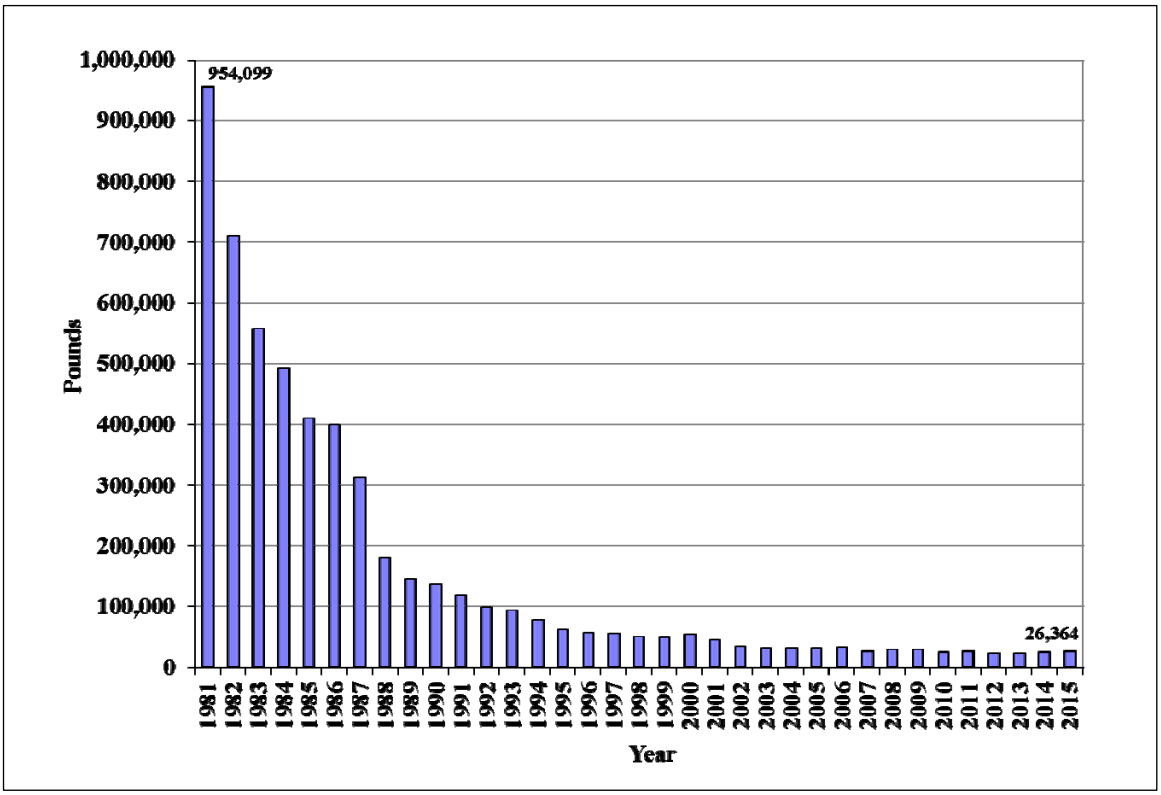
Comparing recent and historical influent loading data is useful for evaluating the success of the Pretreatment Program in controlling the quality of industrial wastewater discharged to the collection system. Analysis of historical toxic pollutant loadings to the two NBC wastewater treatment facilities has indicated a downward trend.

Records of data for metals and cyanide in the Field's Point collection system have been collected and analyzed since 1981. Significantly less historical loading data are available for Bucklin Point, which was acquired by the NBC in 1992. The historical Bucklin Point data presented in this chapter cover the period from 1994 to present for metals, and 1991 to present for cyanide.

Field's Point District - Influent Loading Analysis

FIGURES 14 and 15 depict the reduction in metals and cyanide loadings to Field's Point between 1981, the year before the NBC assumed the ownership and operation of the Field's Point treatment facility and portions of the metropolitan Providence sewer system, and the present.

FIGURE 14
Field's Point Total Metals Influent Loading Trend Analysis



Over the past 34 years, there has been a significant downward trend in the total loadings of metals as can be seen in FIGURE 14. Total metals loadings is defined as the sum of cadmium, copper, chromium, lead, mercury, nickel, silver, and zinc loadings. These loadings showed a decrease of 97.2% since 1981. In fact the total metals loadings to Field's Point have been below the Maximum Allowable Headworks Loadings (MAHL) of 140,233 pounds since the early 1990s. Since 2002 the total metals loading has been consistent with minor fluctuations during this time period. Influent metals loadings in 2015 increased slightly by 1,298.3 pounds, or 5.2%, from 2014.

Cyanide loading data for the same time period indicates a similar overall downward trend, as can be seen in FIGURE 15, with a dramatic 98.6% decrease in loadings between 1981 and 2015. Between 2014 and 2015 there was a 153.0 pound, or 15.7% increase, in cyanide influent loading into Field's Point. Though this was an increase from last year, it is still the second lowest influent cyanide loading measured since 1981, when monitoring began. The success in reducing the metal and cyanide inputs to the treatment facilities is largely due to the efforts and success of the Pretreatment and ESTA programs.

FIGURE 15
Field's Point Cyanide Influent Loading Trend Analysis

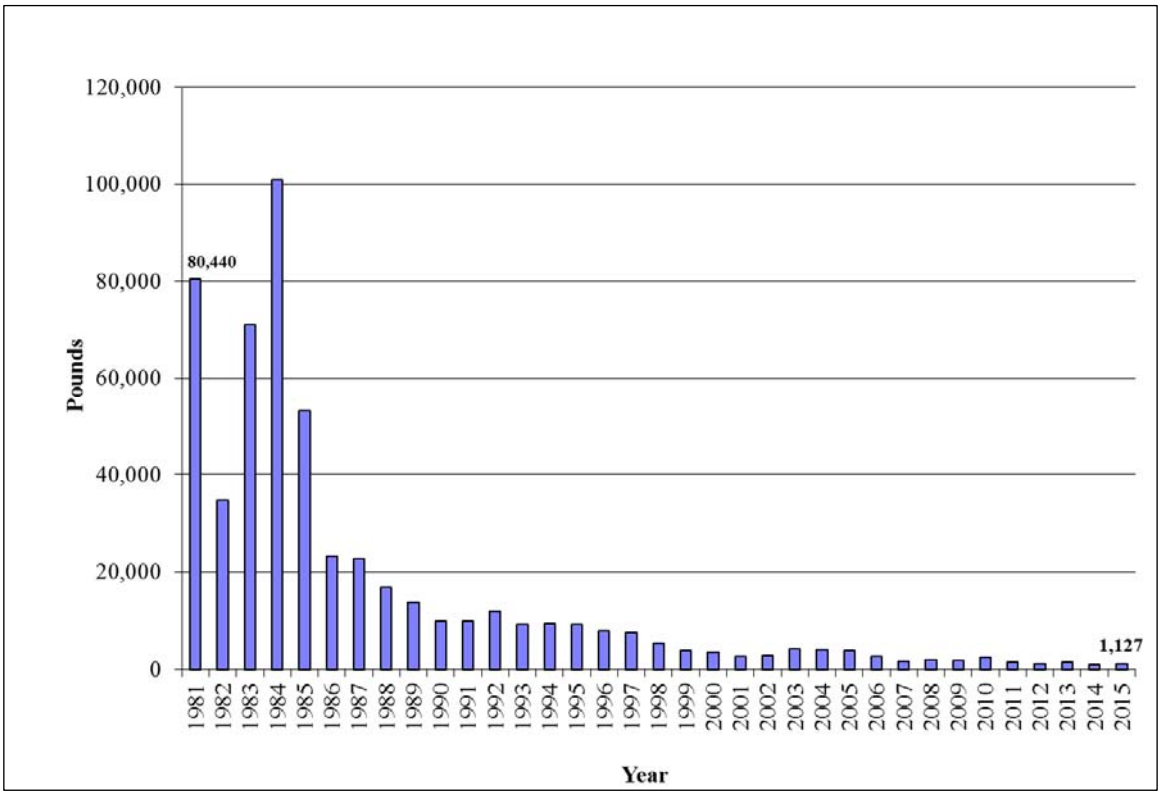


TABLE 19 provides a comparison of the 2014 and 2015 metals and cyanide loadings to Field's Point. Loading figures were calculated based on monthly averages of concentration and flow. As illustrated in TABLE 19, the annual influent loading for all metals showed an increase of 5.2% in 2015 when compared to 2014. However, there were only two metals that increased in 2015 as compared to 2014. The other six metals used to calculate influent loading all decreased in 2015. The largest decrease was seen in silver which decreased by 10.5%, followed by copper with an 8.1% decrease. Lead and zinc were the only two metals to exhibit an increase with increases of 3.1% and 15.3% respectively. Cyanide also had an increase of 15.7% or 153.0 pounds from 2014 to 2015. Overall, loading of metals remains low due to strict regulation by Pretreatment and the NBC educational efforts and the proactive approach to pollution prevention. The decreases since the NBC has taken over the operation of Field's Point demonstrate the continued commitment to vigilant enforcement and continued encouragement to users to implement pollution prevention measures**.** Influent flow into Field's Point was on average about 4.1 MG a day lower in 2015 than it was in 2014 with an average daily influent flow of 38.6 MGD in 2015 versus 42.7 MGD in 2014. There was also a decrease of 203,708 gallons per day in industrial flow to Field's Point in 2015.

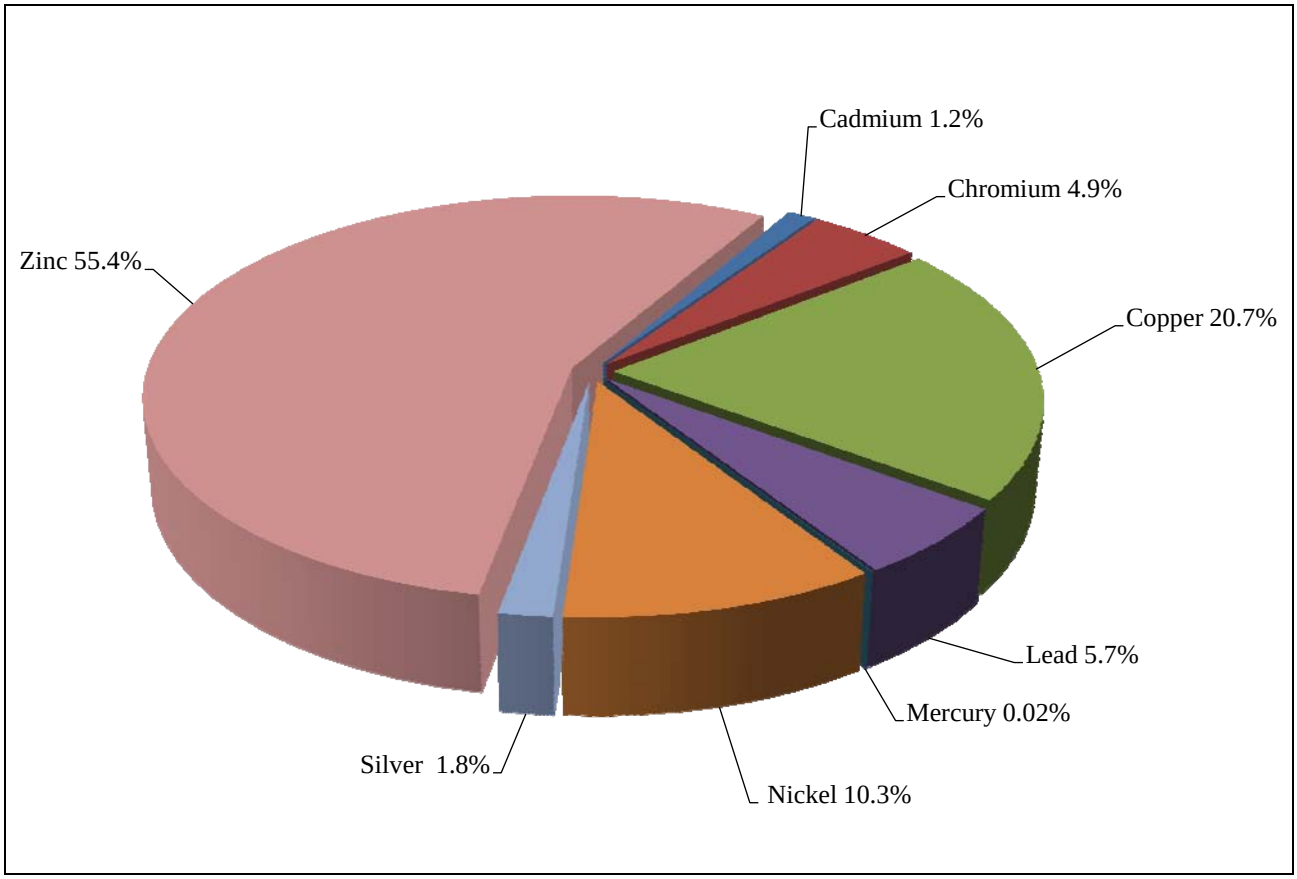
TABLE 19
Comparison of 2014-2015 Annual Loadings to Field's Point

Pollutant	2014 (Pounds)	2015 (Pounds)	Total Pound change	% Change
Total Cadmium	329.6	310.2	-19.4	-5.9%
Total Chromium	1,364.9	1,290.2	-74.7	-5.5%
Total Copper	5,940.9	5,458.2	-482.7	-8.1%
Total Lead	1,447.6	1,492.8	45.2	3.1%
Total Mercury	4.99	4.96	-0.03	-0.6%
Total Nickel	2,783.6	2,728.5	-55.1	-2.0%
Total Silver	525.4	470.0	-55.4	-10.5%
Total Zinc	12,668.3	14,608.7	1,940.4	15.3%
Total Metals	25,065.3	26,363.6	1,298.3	5.2%
Total Cyanide	974.1	1,127.1	153.0	15.7%

In 2015, the Field's Point facility provided secondary treatment to an additional 689.3 million gallons of flow that was captured in the CSO Tunnel, approximately 63.4 million gallons less than in 2014. Past sampling has shown that the metals loading received into Field's Point from the tunnel is not a significant portion of the total metals loading to the plant. Sampling of the tunnel effluent in 2015 has shown that the metals in the tunnel effluent make up less than 2% of the total plant influent metals loading for most metals, ranging from approximately 0.19% to 5.8% of the total plant influent metals loading depending upon the metal. The net effect on influent loading from the tunnel is difficult to determine, given the uncertainties of identifying and quantifying the new flow that reaches the plant, but is not a significant source of influent metals loading.

A percentage breakdown of the various metals discharged to Field's Point is provided in FIGURE 16. The majority of metal loadings to Field's Point are from zinc, copper, and nickel. These metals account for 86.4% of the total metal loadings to Field's Point, roughly equivalent to the relative contribution observed during 2014. The loading of total zinc in 2015 was 14,608.7 pounds, or 55.4%, the highest of any toxic pollutant impacting the Field's Point facility. As will be shown later in this chapter, the majority of zinc loadings are attributed to residential sources. Copper was the next highest pollutant load to Field's Point at 5,458.2 pounds or 20.7%, followed by nickel at 2,728.5 pounds or 10.3%. The loadings levels of toxic pollutants to Field's Point in 2015 were all well within the Maximum Allowable Headworks Loading (MAHL) levels for each pollutant of concern. This is a testament to the success of the NBC toxic reduction and control programs.

FIGURE 16
Breakdown of Total Metals – Field's Point 2015 Influent Loading



Oil and Grease Inputs to Field's Point

Monthly sampling of oil and grease inputs to Field's Point revealed low and consistent concentrations. Influent concentrations ranged from 8.26 ppm to 30.4 ppm during 2015. Effluent concentrations were significantly lower than influent with results of <4.0 ppm or not detectable, for all samples. Low inputs are the direct result of Pretreatment efforts to permit, inspect, and monitor industrial and commercial establishments, including food service establishments, with the potential to impact the NBC with fats, oils, and grease. The NBC RIPDES permit requires monthly sampling, with three grab samples collected over the course of a 24-hour period, one grab per shift. The grab samples are analyzed separately and the maximum is reported. The RIPDES permit does not set a discharge limit for oil and grease. The 2015 oil and grease data is listed in ATTACHMENT VOLUME II SECTION 10.

Field's Point Influent and Effluent Organics

Volatile organic compounds (VOC) were monitored monthly in the influent and effluent at the Field's Point facility in 2015. These samples were collected as composite and grab samples. The analysis of 33 organic compounds using EPA method 624 is routinely performed to ensure that the amount of organics introduced to the facility is being adequately regulated by the Pretreatment Section. High levels of organics can be dangerous to the health and safety of NBC employees and can potentially pose a significant hazard to the microbial population that is responsible for the removal of organic carbon in the influent wastewater. Of the 396 analytical results for influent and effluent samples obtained during 2015, 86.6% of all influent samples had non-detectable concentration levels of volatile organic compounds and 91.2% of the effluent VOC samples had non-detectable VOC concentration levels. The low levels of VOCs observed demonstrates the effectiveness of Pretreatment efforts to reduce the amount of organic pollutants introduced to the NBC facilities, thereby dramatically reducing the potential for adverse impacts on NBC receiving waters.

Field's Point Influent and Effluent Nitrogen

In May 2014, a new seasonal May through October permit limit for effluent total nitrogen went into effect for the Field's Point plant with monthly average limits of 5.0 mg/l for total nitrogen concentration and 2,711 pounds loading per day. Construction of biological nutrient removal (BNR) processes to meet these permit limits was completed in 2013. BNR processes ran extremely well in 2015 and monthly average permit limits were met in each month of the season under this permit limit. The May through October total effluent nitrogen concentration average was 4.2 mg/l with an average loading of 1,332 pounds/day. Field's Point had an average daily flow to the facility of 36.2 MGD in the May through October season, with an influent total nitrogen concentration average of 27.9 mg/l for May through October, resulting in an 85.0% removal rate of total nitrogen.

In late 2014, the Field's Point plant began receiving leachate from Rhode Island Resource Recovery Corporation (RIRRC). Leachate contains high centrations of nitrogen compounds. Therefore, RIRRC was required to install a pretreatment system with BNR capabilities. The pretreatment system was put online in April 2015, prior to the NBC permit season. As expected, even with this additional nitrogen loading, the Field's Point plant was able to meet the permit limits each month.

pH Variability at Field's Point: Influent and Effluent

The pH of the Field's Point influent is measured once per day by Laboratory staff on a high-precision Orion pH meter. Grab samples are collected by EMDA and immediately transferred to the lab for analysis. EMDA collected 365 influent pH samples during 2015. The pH range of the influent sample measurements was between 6.54 and 7.68 standard units (s.u.). The influent wastestream is also monitored with a continuous pH probe. This record shows a clear diurnal pattern with differences of approximately 1 s.u. No NBC

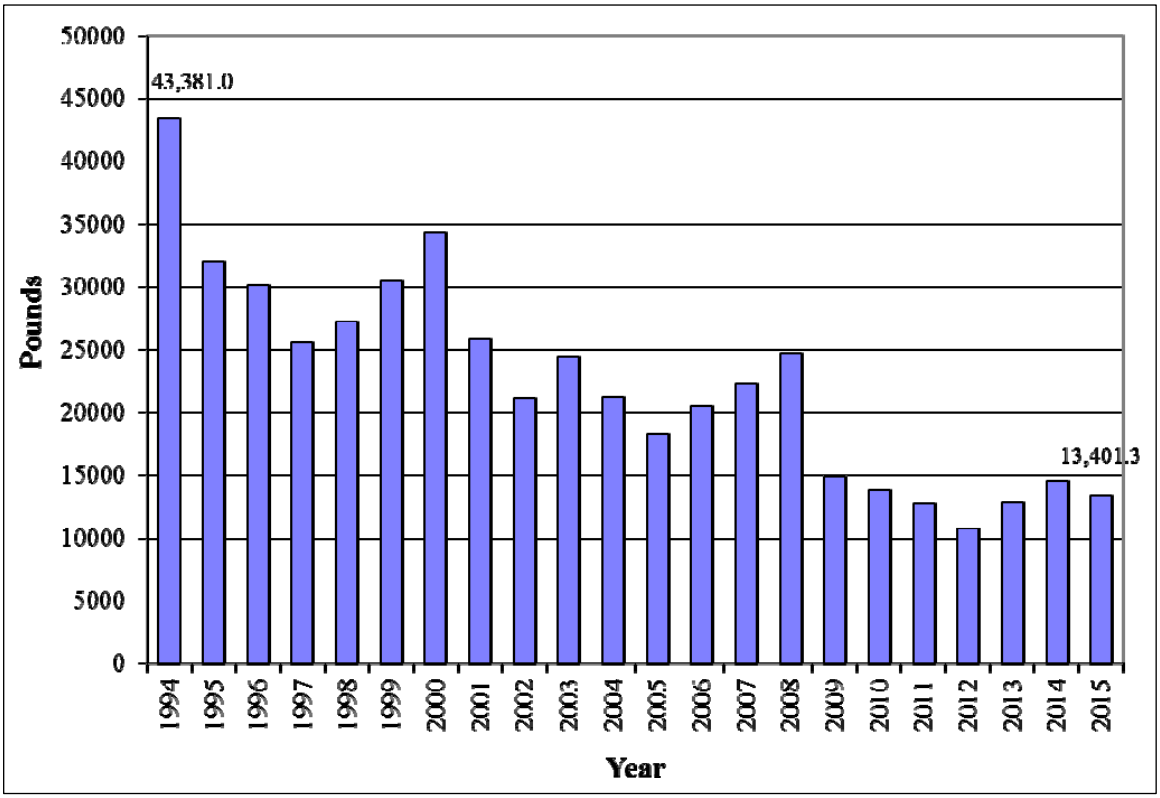
wastewater treatment facility process was knowingly negatively impacted by influent pH fluctuations during the year. There were also no persistent excursions in influent pH during 2015 and no negative effect on normal plant operation process controls was noted. Effluent grab samples were collected twice daily, resulting in 730 samples collected in 2015. Over the year, the effluent pH ranged from 6.14 to 7.20 s.u. There were no effluent pH permit violations during 2015.

Bucklin Point District - Influent Loading Analysis

The Bucklin Point influent data demonstrated a downward trend in total metals loading between 1994 and 1997, followed by an upward trend between 1997 and 2000 as can be seen in FIGURE 17. Data from 2001 and 2002 showed reductions in influent metals loadings, while data from 2003 showed another increase, the majority coming from short-lived high chromium inputs that occurred from January 28, 2003 through June 3, 2003.

The 2006 through 2008 data indicated another increase in metals loading to Bucklin Point. Once again this increase was primarily due to an increase in chromium loading. Influent metals loadings had been decreasing since 2009, however in 2013 and 2014, loadings again increased. In 2015, influent metals loading decreased by 7.7% to 13,401.3 pounds as compared to 14,518.0 pounds in 2014. The 2015 total metals loading to Bucklin Point was well below the MAHL of 35,928 pounds and has been since 1995.

FIGURE 17
Bucklin Point Total Metals Influent Loading Trend



Cyanide loadings at Bucklin Point have also exhibited a dramatic historical decrease as can be seen in FIGURE 18. Since 1991, cyanide loading has decreased by 87.9%. In 2015, influent cyanide loading increased by 9.8% to 351.0 lbs as compared to 319.7 lbs. in 2014. Loadings have been below 500 pounds per year since 2007 and are well below the MAHL level established to protect the treatment facility and the environment.

FIGURE 18
Bucklin Point Cyanide Influent Loading Trend

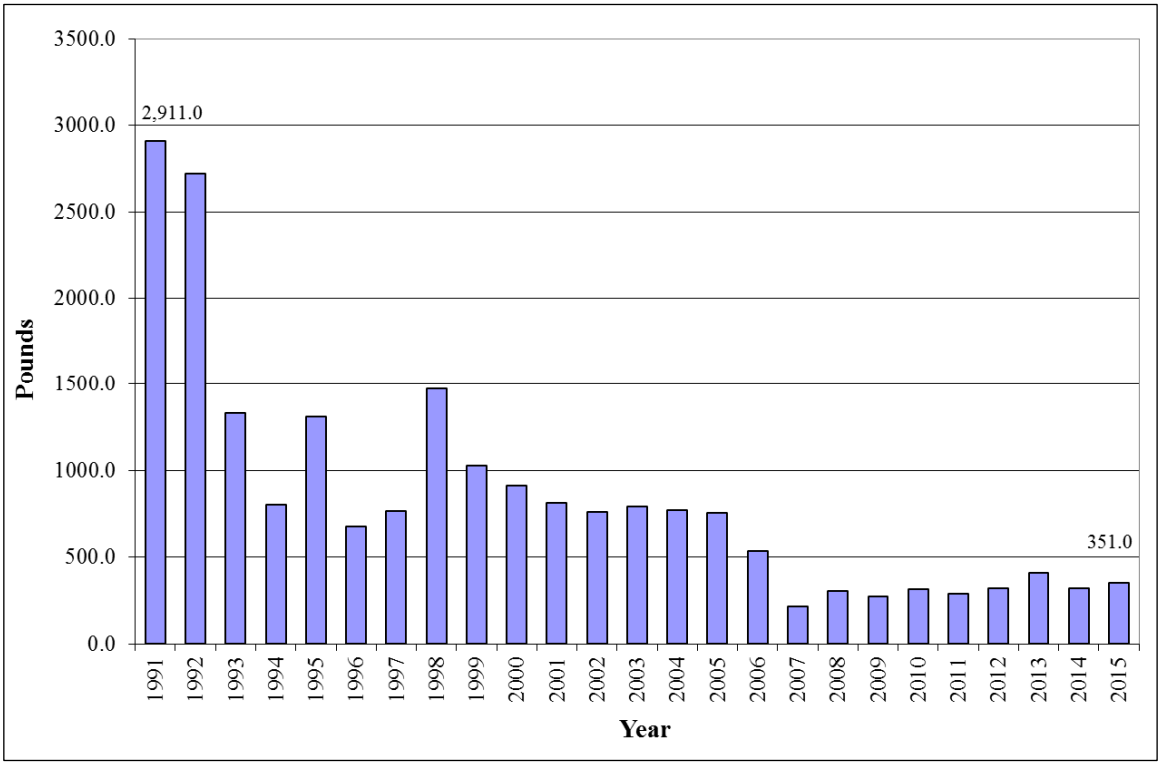


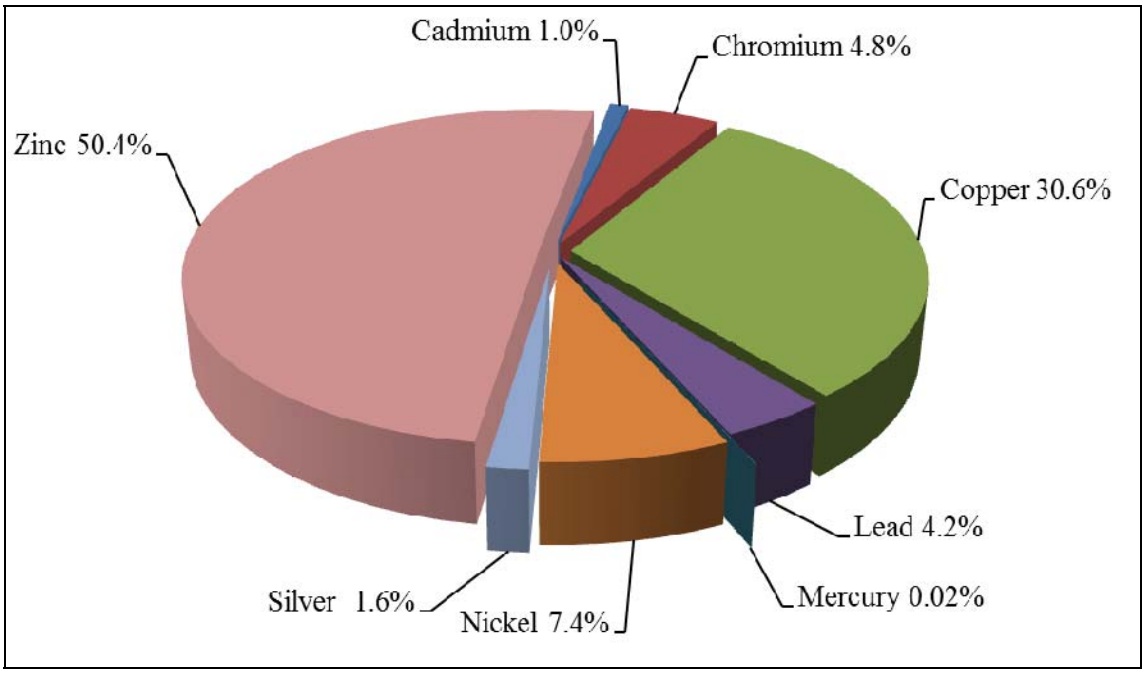
TABLE 20 shows the comparison of Bucklin Point metals and cyanide loadings for 2014 and 2015. In 2015, all influent metals showed a decrease in loading as compared to 2014. The largest percent decrease was seen in mercury, which decreased by 0.7 pounds, or 22.3%. The largest decrease in pounds was seen in copper, which decreased by 517.8 pounds, or 11.2% of the 2014 load. The metal with the lowest percent decrease was nickel, which decreased by only 0.6% or 5.8 pounds. Overall, total metals loading to the Bucklin Point facility has decreased 69.1% between 1994 and 2015.

TABLE 20
Comparison of 2014 - 2015 Annual Loadings to Bucklin Point

Pollutant	2014 Pounds	2015 Pounds	Total Pound Change	% Change
Total Cadmium	161.5	135.2	-26.3	-16.3%
Total Chromium	654.1	644.9	-9.2	-1.4%
Total Copper	4,614.4	4,096.6	-517.8	-11.2%
Total Lead	656.8	560.7	-96.1	-14.6%
Total Mercury	3.3	2.6	-0.7	-21.2%
Total Nickel	993.1	987.3	-5.8	-0.6%
Total Silver	258.6	217.2	-41.4	-16.0%
Total Zinc	7,176.1	6,756.8	-419.3	-5.8%
Total Metals	14,517.9	13,401.3	-1,116.6	-7.7%
Total Cyanide	319.7	351.0	31.3	9.8%

FIGURE 19 provides a breakdown of the relative contribution of various metals discharged to Bucklin Point. As in previous years, zinc and copper were the largest contributors to total metals loading to Bucklin Point, accounting for 81% of the total. Total zinc decreased by 419.3 pounds in 2015 and made up 50.4% of the total metals loading to the facility. Copper accounted for 30.6% of the total metals loading to the facility. Chromium, nickel, and lead account for another 16.4% of the total percentage of metals loading.

FIGURE 19
Breakdown of Total Metals – Bucklin Point 2015 Influent Loadings



Oil and Grease Inputs to Bucklin Point

Monthly sampling of oil and grease inputs to Bucklin Point revealed mostly low and consistent concentrations. During 2015, average influent concentrations ranged from 11.07 ppm to 41.39 ppm. Effluent concentrations were significantly lower than influent concentrations, with results of <4.0 ppm, or not detectable, for all samples. Low inputs are the direct result of Pretreatment efforts to permit, inspect, and monitor industrial and commercial establishments, including food service establishments, with the potential to impact NBC operations with fats, oils, and grease. The NBC RIPDES permit requires monthly effluent sampling of oil and grease, with three grab samples collected over the course of a 24-hour period, one grab per shift. The grab samples are analyzed separately and the maximum is reported. The RIPDES permit does not set a discharge limit for oil and grease. The 2015 oil and grease data are listed in ATTACHMENT VOLUME II SECTION 10.

Bucklin Point Influent and Effluent Organics

Volatile organic compounds (VOCs) were monitored monthly in both the influent and effluent at the Bucklin Point facility in 2015. The analysis of 33 organic compounds using EPA method 624 is routinely performed to ensure that the amount of organics introduced to the facility is being adequately regulated by the Pretreatment section. High levels of organics can be dangerous to the health and safety of NBC employees, and can potentially pose a significant hazard to the microbial population that is responsible for the removal of organic carbon in the influent wastewater. Of the 396 analytical results for influent samples obtained during 2015, 91% of these were at non-detectable concentration levels. Of the 396 analytical results for effluent samples obtained in 2015, 99.7% of the results (all but one) were at non-detectable concentration levels. The low concentrations of VOCs observed in both the influent and effluent demonstrates the effectiveness of Pretreatment efforts to reduce the amounts of organic pollutants introduced to the Bucklin Point facility, which are also therefore prevented from entering the receiving waters of the Bay.

Bucklin Point Influent and Effluent Nitrogen

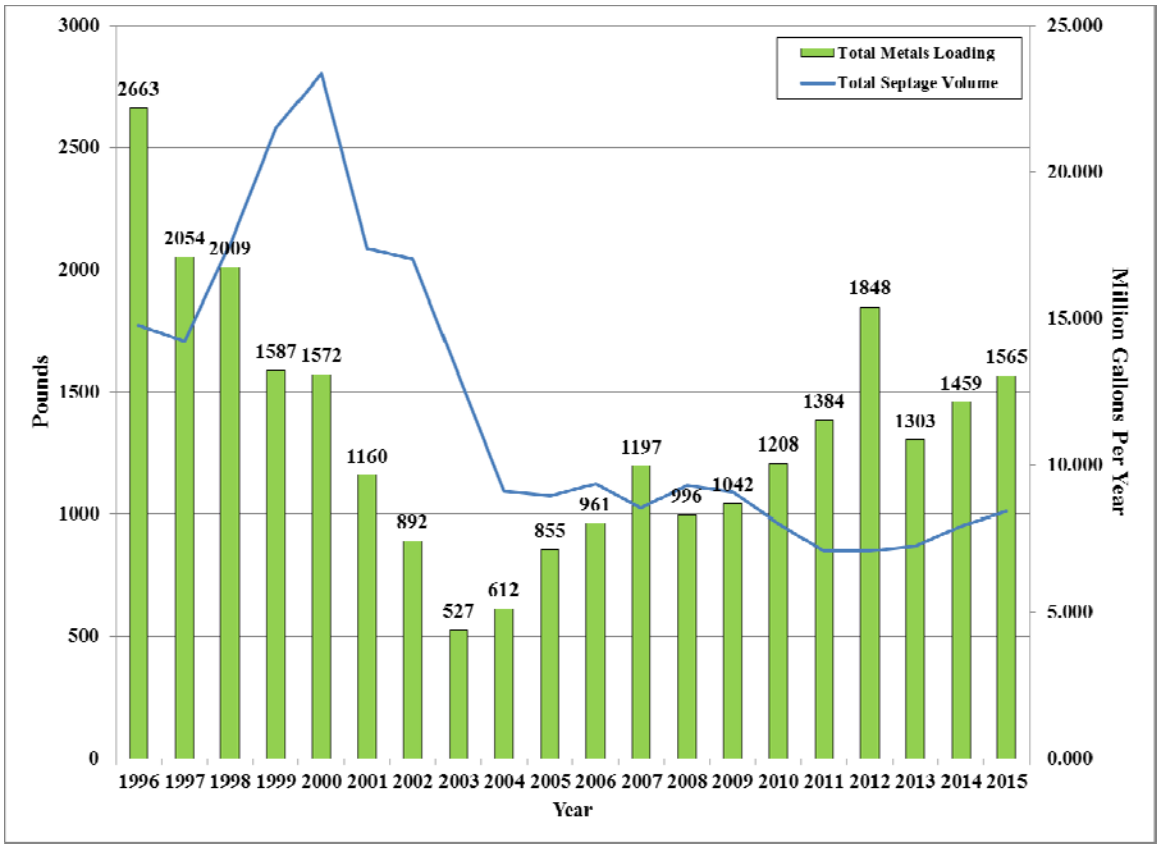
In July 2014, biological nutrient removal upgrades were completed at Bucklin Point in order to meet a new seasonal May through October permit concentration limit of 5.0 mg/L and loading limit of 1,293 pounds/day for total nitrogen in the effluent. These new permit limits went into effect at Bucklin Point on July 14, 2014. May through October of 2015 represents the first full season for Bucklin Point under these permit limits. Over the 2015 permit season, daily flow to the facility averaged 16.07 MGD, with an average influent nitrogen concentration of 30.9 mg/L. BNR processes ran smoothly throughout the season under the new permit limits, and the seasonal total effluent nitrogen concentration average was 4.26 mg/L with an average loading of 566.6 pounds/day. These effluent values represent a removal rate of 86.2% of the nitrogen entering the plant in the influent.

Septage Loading to Bucklin Point

The NBC accepts residential-quality septage only in the Bucklin Point district. Septage haulers discharge their loads at the Lincoln Septage Receiving Station, where solids are removed prior to the wastestream entering the collection system for final transport to the Bucklin Point plant for processing. A sample from each load is collected after the sample port is flushed thoroughly, usually after the load has discharged for approximately one minute. The sample from an individual truck is screened for pH, odor, and other unusual characteristics. If any anomaly is observed, the load may be rejected or the sample may be targeted for individual analysis. Otherwise each grab sample is combined with the delivery for the day and sent to the laboratory for analysis. This sampling protocol has helped to more quickly locate potential non-residential inputs to the collection system from septage haulers. Grit removal at the septage facility removes a portion of the metals loading prior to its introduction to the sewer system and the treatment plant.

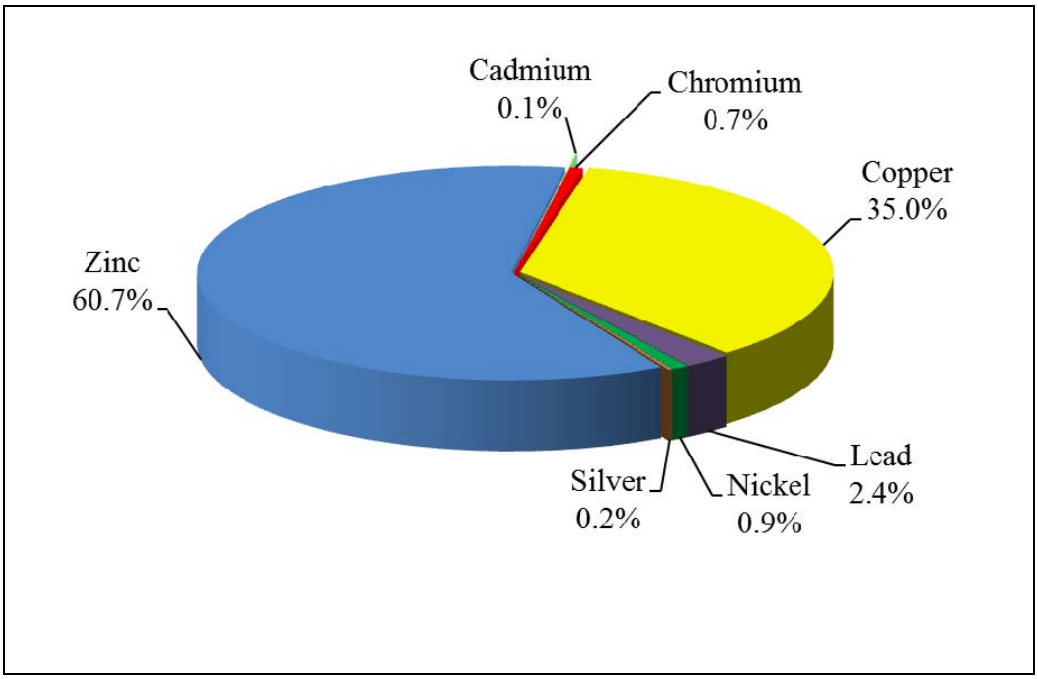
Septage haulers discharged 7.92 million gallons in 2014, while the NBC received 8.42 million gallons in 2015, an increase of 6.3%. Overall, the volume discharged in 2015 was approximately 41.2% lower than the volume discharged in 1996. From 2014 to 2015 there was a 7.3% increase in total metals loading from septage, or 106 pounds. FIGURE 20 details the change in septage flow and metals loadings from 1996 to 2015. The graph shows septage flow peaked in 2000 at approximately 23 million gallons. As the economy took a downturn, septic tank pump out frequency has declined, allowing solids, and the metals contained in the solids, to increase proportionally. Despite the fact that discharges to the septage facility increased from 1997 to 2000, total metals loading consistently decreased over the same time period. The overall reduction in total metals from septage since 1996 is 41%, similar to the reduction in overall volume stated above. Given the small overall flow from septage to Bucklin Point, the metals loadings from septage is somewhat significant. The septage contribution to total influent metals at Bucklin Point was 11.7% in 2015, slightly higher than the contribution of 10.0% in 2014. Since only residential quality septage is accepted at the Lincoln Septage Station, it is further demonstrated the affect of the residential contribution of copper and zinc has on loadings at Bucklin Point.

FIGURE 20
Trend Analysis of Total Metals Loadings in Septage



Copper and zinc continue to be the major metals contributing to the septage load, with 548 pounds and 950 pounds, respectively, in 2015. These two metals make up 95.7% of the total metals observed in the septage. Zinc loading from septage represented 14.1% of the total influent zinc loading to Bucklin Point during 2015. Copper from septage amounted to 13.4% of the total copper loading to Bucklin Point for 2015. FIGURE 21 illustrates the average relative composition of metals in the septage received at the NBC facility in 2015. The septage monitoring data generated during 2015 are provided in ATTACHMENT VOLUME II, SECTION 10.

FIGURE 21
2015 Breakdown of Total Metals in Septage



Background Sources of Metals to the Influent Load

Sewer Collections for Determining Non-Industrial Background Contributions to Influent Metals Loading

The NBC has continued to study possible background sources contributing to the total metal influent loadings to the Bucklin Point and Field's Point facilities. Sample collection from sanitary and combined sewers in residential neighborhoods began in 1993. Sewers in residential neighborhoods have shown significant levels of trace metals and other toxic pollutants. In May 2000, EMDA began sample collections using EPA approved guidance on clean sampling techniques to quantify background, non-industrial metals inputs to the Bucklin Point and Field's Point facilities. During 2015, EMDA staff collected 43 samples in residential sanitary and combined sewers. Samples were collected as 24-hour composites in wet and dry weather conditions.

TABLE 21 summarizes the results for the background, non-industrial sewer collections for 2015 and compares them to influent concentrations and loading estimates at the facilities. Industrial and commercial sources account for only 5.9% of total flow into Bucklin Point and 3.8% of the total flow at Field's Point. This direct comparison of concentrations and loading estimates gives some approximation of the contributions of these pollutants from background

sources. Detection limit values were entered for samples with concentrations at or below the laboratory detection limits. Average influent concentration values were determined, while geometric means were calculated for the background data in order to reduce the impact of highly variable data on the comparison. Results of samples taken from both collection districts were used to determine the background concentrations; loadings were calculated using the average background concentrations and average daily non-industrial flow rates to each facility.

TABLE 21
Results from 2015 Background Metals and Cyanide Contribution Study

Concentration (ppb)													
	Cd	Cr	Cu	Pb	Hg	Ni	Ag	Zn	CN	As	Se	Sn	Mo
Background	0.21	1.31	25.87	5.14	0.02	2.82	0.18	101.86	6.27	0.69	1.17	5.22	0.86
FP Influent	2.64	10.96	47.06	12.56	0.04	23.41	4.00	126.51	9.20	2.41	3.25	NM	5.03
% of Influent at FP	*	*	55.0%	*	38.6%	12.1%	*	80.5%	68.2%	28.5%	*	NM	17.2%
BP Influent	2.50	11.53	78.27	10.41	0.05	18.16	4.02	128.13	6.44	1.18	1.00	5.00	3.86
% of Influent at BP	*	*	33.1%	*	33.8%	15.5%	*	79.5%	97.4%	58.4%	*	*	22.4%
Loading (lbs/day)													
	Cd	Cr	Cu	Pb	Hg	Ni	Ag	Zn	CN	As	Se	Sn	Mo
Background (FP District)	22.67	140.76	2773.88	550.53	1.80	302.43	18.81	10920.81	672.43	73.61	125.56	559.71	92.58
FP Influent	310.20	1290.20	5458.20	1492.80	5.00	2728.50	470.00	14608.70	1127.10	277.40	375.00	NM	566.20
% of Influent at FP	*	*	50.8%	*	36.1%	11.1%	*	74.8%	59.7%	26.5%	*	NM	16.4%
Background (BP District)	10.77	66.84	1317.11	261.40	0.86	143.60	8.93	5185.47	319.29	34.95	59.62	265.77	43.96
BP Influent	135.25	644.93	4096.62	560.72	2.60	987.33	217.21	6756.76	351.05	62.28	54.22	270.49	200.81
% of Influent at BP	*	*	32.2%	*	33.0%	14.5%	*	76.7%	91.0%	56.1%	*	*	21.9%

*These pollutants are regularly measured at or below the detection limit making it impracticable to accurately determine the POTW loading percentage.

Several pollutants are regularly measured at or below the detection limit in the plant influent as well as in the background sampling, which makes it impossible to determine an accurate POTW loading percentage. In 2015 these pollutants included cadmium, chromium, lead, and silver at both facilities as well as tin and selenium at Bucklin Point and selenium in the background source samples. These percentages are therefore not calculated in TABLE 20. Percentages for two additional metals, nickel and arsenic, should also be interpreted conservatively due to a high proportion of sample results being below the detection limit. In addition it should be noted that since a large proportion of arsenic and cyanide (53% and 64%, respectively) results in background source samples were below the detection limits; substitution of the detection limit value in these samples may overestimate the concentration, load, and thus percent contribution of the background sources of these parameters to each facility.

From TABLE 21 it is evident that the majority of the influent copper, mercury, and zinc loadings observed at both facilities are from background sources. The sources of these background loading contributions are likely discharges from domestic users, street runoff, leaching from residential plumbing piping, and contaminated soils. In particular, it is

apparent that most of the zinc (i.e., the trace metal with the highest concentration at the treatment plants and septage loads) is coming from non-industrial sources, as over 75% of the loading and concentrations from each plant can be accounted for in the background sampling. Lower contributions from domestic sources are observed for nickel, arsenic, and molybdenum at each facility (although, note the data caveat for arsenic and cyanide in the paragraph above).

TABLE 22 below shows the geometric mean concentration of all background metals and cyanide samples collected since 2002 in both NBC drainage areas. The lowest total metals concentration occurred in 2008, while the highest occurred in 2007. The total metals concentration of 137.41 ppb observed in 2015 was considerably lower than the 173.03 concentration in 2014.

TABLE 22
Historical Background Metals and Cyanide Results 2002-2015 (ppb)

	Cd	Cr	Cu	Pb	Hg	Ni	Ag	Zn	CN	As	Se	Sn	Mo	Total Metals*
2002	0.40	5.93	32.18	11.22		6.66	0.85	99.52	4.59					156.76
2003	0.45	6.31	29.48	8.77		8.13	0.89	105.04	6.49					159.07
2004	0.68	2.99	36.49	10.79	0.07	6.21	1.79	102.49	6.58	1.01	0.76	6.31		161.50
2005	0.17	3.61	23.55	7.87	0.07	5.39	0.36	84.22	6.75	0.64	0.65	1.75	0.75	125.24
2006	0.14	4.49	24.80	6.65	0.03	5.76	0.28	90.05	4.81	0.99	0.65	0.95	0.68	132.20
2007	0.14	9.70	38.13	8.86	0.04	11.67	0.22	121.35	2.36	0.61	0.64	1.63	0.80	190.11
2008	0.12	4.07	19.88	6.77	0.04	5.11	0.13	64.17	3.82	0.80	0.99	1.45	0.80	100.30
2009	0.14	2.43	35.04	10.09	0.04	6.16	0.20	91.93	4.16	0.91	1.58	1.85	0.76	146.04
2010	0.13	1.78	22.68	7.11	0.04	4.05	0.14	85.54	3.84	0.66	1.36	2.55	0.74	121.48
2011	0.15	1.62	23.73	7.20	0.04	3.02	0.22	104.84	4.23	0.66	0.68	2.45	0.89	140.82
2012	0.15	1.32	25.86	5.92	0.03	2.65	0.26	100.60	4.55	0.55	0.60	5.37	0.81	136.79
2013	0.20	1.07	26.38	7.21	0.04	2.65	0.23	94.43	4.73	0.56	0.70	5.26	0.76	132.21
2014	0.21	1.27	39.78	6.98	0.04	2.43	0.23	122.09	5.14	0.59	1.02	5.00	0.93	173.03
2015	0.21	1.31	25.87	5.14	0.02	2.82	0.18	101.86	6.27	0.69	1.17	5.22	0.86	137.41

*Total Metals= Cd+Cr+Cu+Pb+Hg+Ni+Ag+Zn

EMDA continues to improve and update studies of pollutant loads throughout the collection system. Understanding non-industrial sources is important to permit development and planning to reduce loading to the treatment facilities and to Narragansett Bay. EMDA is working to use flow measurements and manhole monitoring data to choose study sites that will accurately describe mass loading from domestic, storm runoff, and major drainage basins as well as at metering stations on NBC interceptors. From this analysis, it is apparent that large percentages of the toxic pollutant loads to the Field's Point and Bucklin Point plants are from residential and other background sources that are beyond the control of the NBC regulatory program.

Influent Loading Conclusions

The development of the National Pretreatment Program was a direct result of the Federal Water Pollution Control Act (Act) of 1972. The program was established at that time to monitor and regulate the introduction of pollutants from non-domestic sources into Publicly Owned Treatment Works (POTW). Section 307 of the Act required the Environmental Protection Agency to develop standards designed to:

- Prevent the discharge of pollutants which would interfere with POTW operation;
- Prevent the discharge of pollutants which would pass through the treatment works;
- Prevent the discharge of pollutants which would accumulate in POTW sludge thereby reducing the potential for beneficial reuse or reduce the opportunities for safe disposal or which would be otherwise incompatible with POTW operations.

In 1977 the Act was amended to include additional pretreatment requirements which made POTWs responsible for the establishment of local pretreatment programs to ensure compliance with EPA categorical pretreatment standards. Categorical standards have been developed to achieve a nationally uniform system of water pollution control for selected industries and pollutants. Local limits are intended to protect the wastewater treatment facility, the receiving waters, sludge quality, the health of the public and prevent environmental problems as a result of discharges from any non-domestic user.

The development of local limits is not a one-time event. Local limits are required to be periodically reviewed and revised to respond to changes in Federal or State regulations, environmental protection criteria, treatment facility design and operational criteria, and the nature of industrial contributions to POTW influent. The initial local limits for the Bucklin Point facility became effective in the late 1980s. Local limits for Field's Point were first developed in 1982 as part of the NBC original pretreatment program and were subsequently revised by the Pretreatment staff in 1987.

In 2004, NBC re-evaluated local limits for both facilities. The re-evaluation of these limits resulted in revised permit limits for several metals based on new EPA data handling methods and criteria in its updated Local Limits Development Guidance issued in July 2004, as well as a special study of metals in NBC receiving waters. Between July 2001 and May 2002 a study was conducted by NBC, University of Rhode Island - Graduate School of Oceanography (URI-GSO), and MicroInorganics, Inc. to better understand metal partitioning in the Seekonk and Providence Rivers. Multiple transects during seasonal surveys were performed over complete tidal cycles to capture the in-situ metal partitioning between dissolved and particulate phases in these estuarine waters. Dissolved and particulate cadmium, copper, lead, nickel, and silver concentrations were analyzed and used to develop site specific metal translator values for each POTW. The metal translator is used to convert dissolved water quality criteria concentrations into total metal concentrations in order to calculate the effective total metals concentration, combined with dilution factors within the receiving waters, that correspond to a given water quality criterion.

As a result of an extensive review of the data from the metals study and facility data collected between January 2000 and June 2004, new MAHL values were calculated. The MAHL values represent the loadings that the treatment facilities can effectively treat without upset to plant operations or pass-through of toxins that could adversely affect water quality and aquatic life, while also allowing for the safe disposal of solids removed from incoming wastewater. The recommendations from this evaluation were documented in a Metal Compliance Plan that was submitted to DEM in September 2004.

TABLE 23 provides a comparison of the calculated MAHL goals with the total metal influent loadings for 2015. In the case of cyanide, loading goals for both plants were calculated using the EPA 20 ppb quantitation-based effluent permit limit. For Bucklin Point, copper loading goals were computed using the RIPDES effluent permit limits in the consent agreement. In most cases, it is clear that NBC is meeting the calculated loading goals at both wastewater treatment facilities with a considerable margin of safety. In 2015, copper at Bucklin Point was over the MAHL by 81.6 lbs. Copper in NBC influent primarily comes from uncontrollable background inputs; the concentration of background copper decreased by 35% in 2015, as measured in samples taken from non-industrial sanitary manholes. Despite this exceedance, effluent copper concentrations at Bucklin Point met all RIPDES permit consent agreement interim limits in 2015. Meeting these goals attests to the overall effectiveness of NBC initiatives and measures to control pollutant input and effective removal during plant operations.

TABLE 23
Comparison of 2015 Influent Loadings to Maximum Allowable Headworks Loadings (MAHL)

	Field's Point			Bucklin Point		
Parameter	**MAHL lbs/yr**	**2015 Loading lbs/yr**	**Below MAHL?**	**MAHL lbs/yr**	**2015 Loading lbs/yr**	**Below MAHL?**
Cadmium	2,227	310.2	Yes	511	135.2	Yes
Chromium	37,303	1,290.2	Yes	10,439	644.9	Yes
Copper	16,900	5,458.2	Yes	4,015	4,096.6	No
Lead	8,541	1,492.8	Yes	2,738	560.7	Yes
Mercury	183	5.0	Yes	11	2.6	Yes
Nickel	21,134	2,728.5	Yes	1,314	987.3	Yes
Silver	3,942	470.0	Yes	402	217.2	Yes
Zinc	50,005	14,608.7	Yes	16,498	6,756.8	Yes
Total Metals	140,235	26,363.6	Yes	35,928	13,401.3	Yes
Cyanide	4,453	1,127.1	Yes	2,446	351.0	Yes

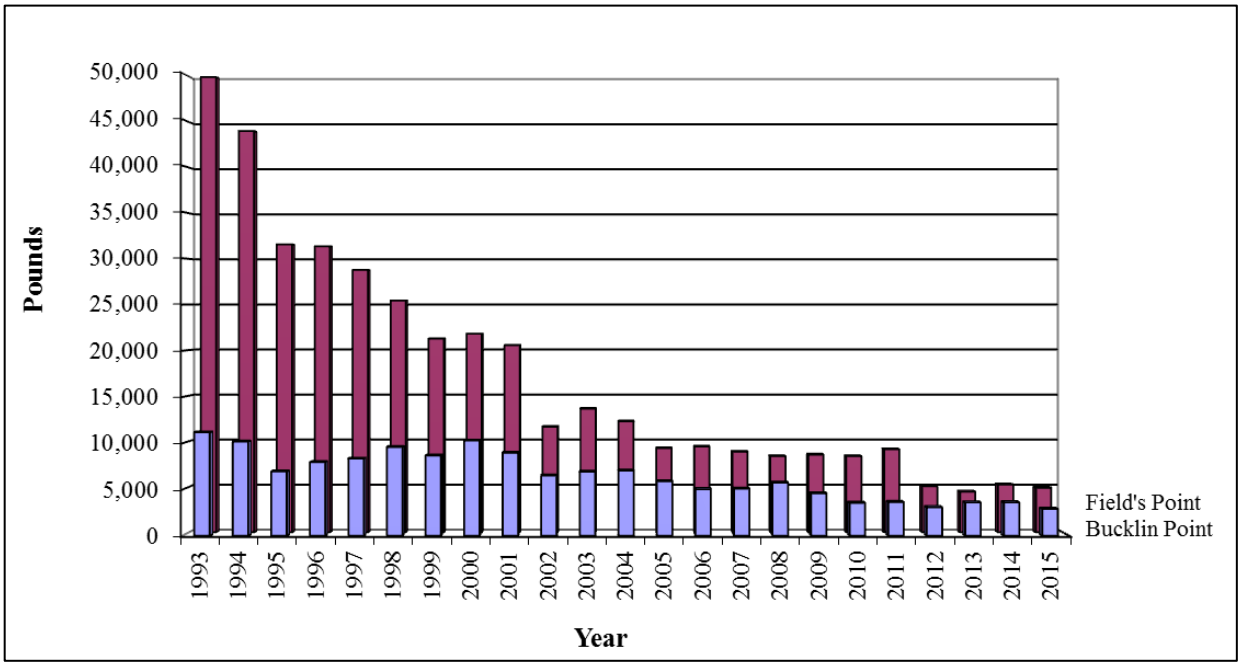
The annual loading goals presented in TABLE 23 should only be used as an initial evaluation of a facility's ability to meet discharge compliance. Discharge permits enforce daily maximum and monthly average limits based on acute and chronic water quality

criteria. While the annual means used to calculate the loadings and goals are instructive when evaluating facility function over longer time periods, meeting annual mean goals does not always translate to compliance with daily or monthly limits.

Analysis of Effluent Loading Data

This chapter attempts to quantitatively measure the results of the work of Pretreatment and ESTA by analyzing the loadings of toxics in the influent of the NBC facilities. It is also important to consider the discharge loadings into the receiving waters after wastewater treatment has been provided. Issues pertaining to these impacts are included later in this chapter and in CHAPTER VII. To maintain continuity with influent data, current and historical effluent data for both NBC facilities for the period from 1993 to 2015 were compiled and analyzed. The overall effluent trends are similar to those for the influent data, as concentrations and loadings have been decreasing over time at Field's Point and Bucklin Point.

FIGURE 22
NBC Total Metals Effluent Loadings Trend Analysis

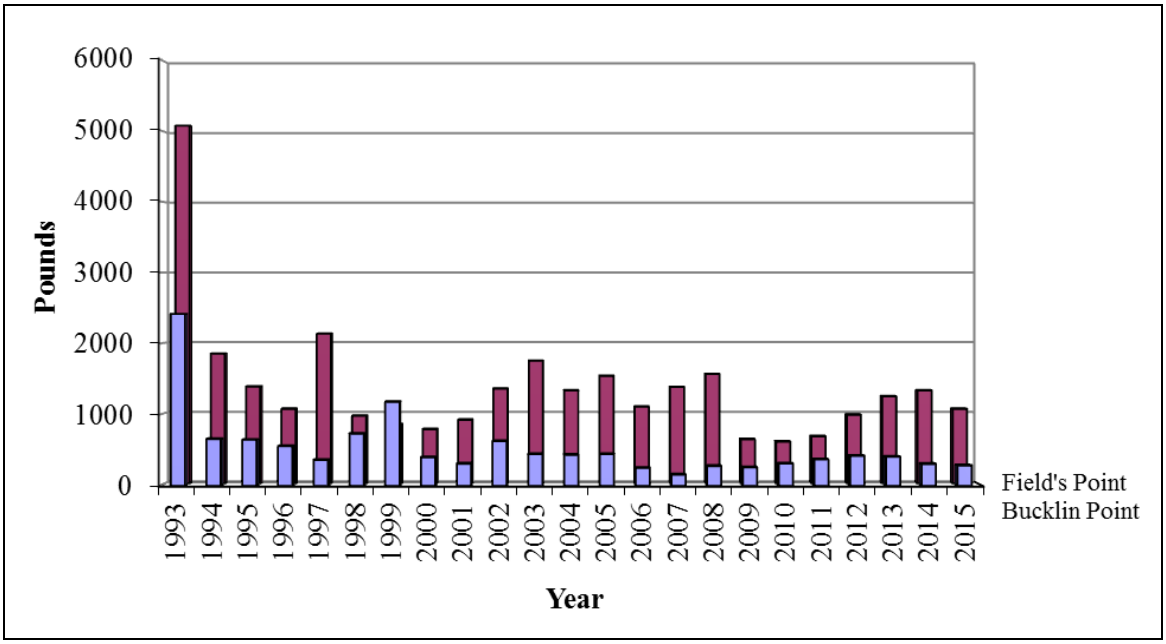


Historical total metals discharges from both NBC facilities are shown in FIGURE 22. Note that the Field's Point facility handles approximately twice the flow volume of Bucklin Point. Total metals effluent loadings have been steadily decreasing at Field's Point since 1993. In 2015, total metals in the Field's Point effluent decreased by 6.5%, or 337.1 pounds compared to 2014, while loadings in Bucklin Point effluent decreased 19.3% or 695.1 pounds. Since 2011, effluent metals loadings have been reduced by nearly half at Field's Point. This dramatic decrease may be attributable to new Biological Nutrient Removal (BNR) treatment technologies that began to go on-line at that plant in 2012. At Bucklin Point, effluent loading has been below 6,000 pounds since 2005, whereas prior to

2005 the average effluent loading was 8,554 pounds. As mentioned previously, throughout 2005 advanced treatment processes were brought online at the Bucklin Point facility contributing to improved total metals removal. Overall since 1993, effluent metals from Bucklin Point have decreased by 74.0% and effluent metals at Field's Point have decreased by 89.4%.

As seen in FIGURE 23, effluent cyanide loadings also decreased in 2015, by 6.8% at Bucklin Point and by 19.8% at Field's Point. While this chapter presents the annual loadings of total cyanide, the NBC reports only available cyanide on Discharge Monitoring Reports (DMRs) submitted monthly to the DEM. At Bucklin Point, available cyanide made up the majority of loadings, 82% in 2015, or 233.5 pounds compared to total cyanide annual loadings of 286.0 pounds. At Field's Point, available cyanide represented a smaller proportion, 46% of the total, or 481.5 pounds compared to total cyanide loadings of 1,057.9 pounds. These percentages are consistent with 2014 total versus available cyanide breakdowns.

FIGURE 23
NBC Cyanide Effluent Loadings Trend Analysis



Breakdown Analysis of POTW Effluents

The portioning of total metals loading in the effluent of each plant can be seen in FIGURES 24 and 25. The relative contributions show that zinc, copper, and nickel are the largest contributors in the effluent at both Field's Point and Bucklin Point. In 2015, these three metals accounted for 94.6% of the total metals effluent loading from Field's Point and 97.28% of total metals effluent loading for Bucklin Point. At both plants, nickel represents a higher percentage of the total metals in the effluent than in the influent due to its lower removal efficiency compared to the other metals. For example, at Field's Point nickel comprised 30.8% of the effluent totals versus only 10.3% of the influent. At Bucklin Point, nickel comprised 12.7% of the effluent versus only 7.4% of the influent.

FIGURE 24
Breakdown of Total Metals – Field's Point 2015 Effluent Loading

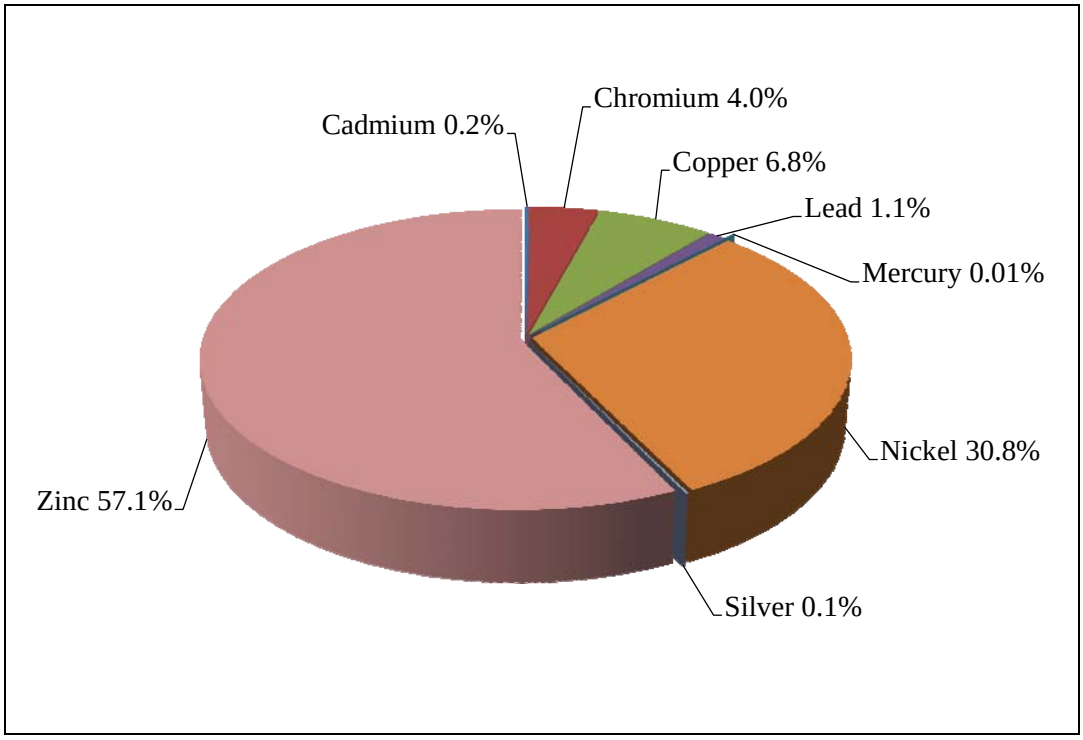
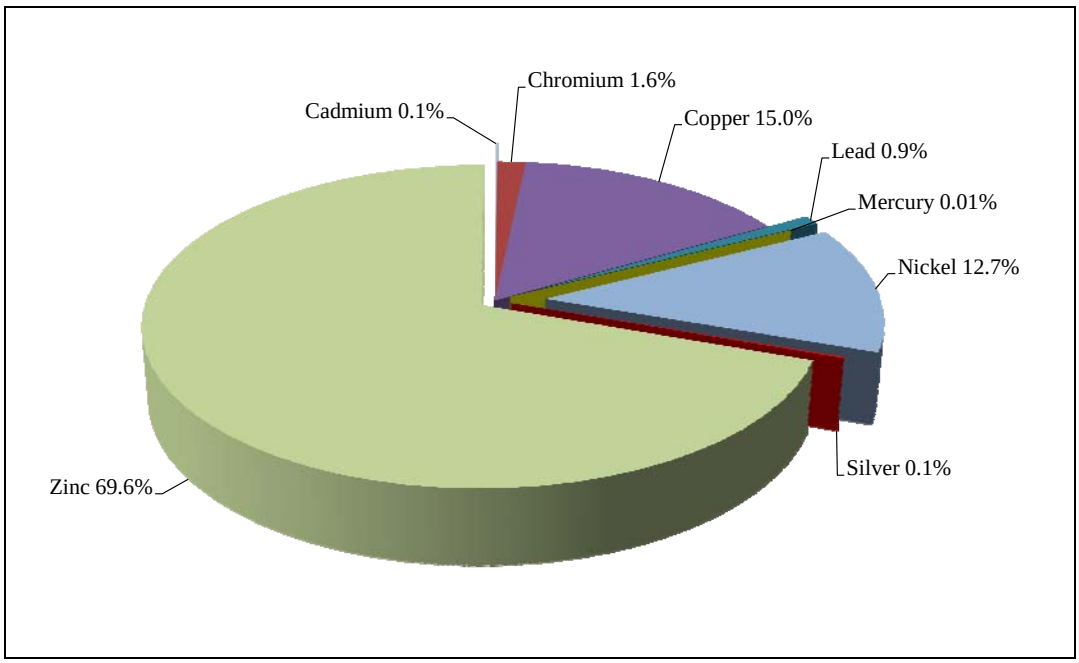


FIGURE 25
Breakdown of Total Metals – Bucklin Point 2015 Effluent Loading



Bioassay Data

The two NBC POTWs are required to conduct quarterly bioassay studies to determine effluent toxicity to various test organisms. NBC conducts chemical analysis and aquatic toxicity testing, using the response of organisms to detect and measure the effect that substances, wastes, or environmental factors, have on these organisms. NBC met the quarterly bioassay sampling frequency requirements during 2015 for both facilities. Effluent from each facility is tested for acute toxicity to the mysid shrimp *Americamysis bahia* and chronic toxicity to the sea urchin *Arbacia punctulata*. Effluent samples are collected only in dry weather, defined as no rain 48 hours prior to or during sampling.

Analysis of the acute toxicity data provided determination of the LC_{50} and the A-NOEC. The LC_{50} result is defined as the concentration of wastewater that causes mortality to 50% of the test organisms, *A. bahia*. A-NOEC or Acute-No Observable Effect Concentration is defined as the highest concentration of the effluent in which 90% or more of the test animals survive. The LC_{50} permit limit requirement of 100% or greater is defined as a sample which is composed of 100% effluent; there are no monitoring requirements nor permit limits for A-NOEC for either POTW. The chronic toxicity test performed on *A. punctulata* examines the sublethal effects of effluent on the fertilization of eggs. The C-NOEC or Chronic-No Observed Effect is reported. The C-NOEC permit limit for Bucklin Point is 50% or greater for this parameter while at Field's Point the permit requires monitoring only.

At Field's Point, all quarterly acute toxicity test results were 100% for both the LC_{50} and A-NOEC, except for the fourth quarter where the A-NOEC was not calculated, indicating no observable effect of undiluted effluent on the study organism.

At Bucklin Point, all four acute toxicity tests for *A. bahia* also gave LC_{50} results of 100%. Similarly, A-NOEC results for the first, second, and third quarters were all 100%; this statistic was not calculated in the fourth quarter. These results indicate no observable effects of undiluted effluent on *A. bahia* survival. In the chronic test, the C-NOEC was 100% for the first, second, and third quarters, and 50% for the fourth quarter indicating no observable or adverse effect on the fertilization rates of *A. punctulata*. The permit limit for the chronic test on *A. punctulata* is 50%, so the fourth quarter result was in compliance. Results of the quarterly bioassay tests for 2015 are included in ATTACHMENT VOLUME II, SECTION 10.

RIPDES Compliance

Analysis of Toxic Pollutant Loadings for Discharge Monitoring Reports

The Laboratory strives to use analytical methods that are sufficiently sensitive in order to measure the concentrations of pollutants that are in the influent and effluent of each facility as accurately as possible. Oftentimes, some pollutants are present in such minute quantities that they cannot be detected by the analytical method that is appropriate for the

sample matrix. There are various means of dealing with those results that are below a detection limit. In this report, all calculations have dealt with non-detectable results by replacing them with one that is equal to the detection limit. This is the method that had been specified in RIPDES permits prior to 2010. Calculations have also been performed in this manner and reported in all previous Pretreatment Annual Reports. This method results in over-estimation of loading whenever there are results that are below the detection limit and will no longer necessarily correlate with the data that is reported to the DEM in our DMRs. This is a result of DEM changing the below detection limit reporting requirements beginning in September 2010. NBC is now required to replace non-detected results with a zero for the purposes of most DMR calculations. For fecal coliform, reporting methods were changed as of July 1, 2015. Prior to this date, any result that was reported at the detection limit of <2.0 MPN/100 mL was replaced with a 2 when calculating geometric means; after July 1st, any fecal coliform result that was reported as <2.0 MPN/100 mL was replaced with a result of 1 MPN/100 mL. For consistency with the reporting of data on the DMR, data in the following section for RIPDES permit compliance have been analyzed according to the current DMR methods.

Field's Point Facility

In September 1992, the DEM issued a RIPDES Permit for the Field's Point Wastewater Treatment Facility. The permit contained effluent limitations for priority pollutants for the first time in the history of the facility. In recognition that the Field's Point facility might not be able to immediately comply with all limitations, the DEM issued a Consent Agreement (RIA-029) in December 1992 that included adjusted effluent discharge limits. On December 31, 2001, Field's Point was issued a new permit. DEM and NBC resolved differences over the contested items in January 2004 and agreed to a new Consent Agreement, RIA-330, which went into effect on January 1, 2004. TABLE 24 lists the current permit limits for metals and cyanide and the Consent Agreement values, or interim limits, for the contested parameters. TABLE 24 also presents the measured maximum daily values and maximum monthly averages for the Field's Point facility for parameters of interest. It should be noted that available cyanide is reported in the table below as this is what the NBC reports on the DMR.

TABLE 24
Comparison of Field's Point RIPDES & Consent Agreement Limits With 2015 Wastewater Treatment Facility Results

	RIPDES Permit Limits		Consent Agreement Limits		2015 Results	
Parameter	Maximum Daily (ppb)	Average Monthly (ppb)	Maximum Daily (ppb)	Average Monthly (ppb)	Maximum Daily* (ppb)	Average Monthly* (ppb)
Copper	23	23	86.2	35.9	38.82	7.58
Mercury**	8.5	0.4	-	-	0.0131	0.0052
Nickel	332	127	-	-	21.81	17.02
Silver	10	-	-	-	0.13	0.102
Zinc	380	380	-	-	39.44	33.34
Available Cyanide**	4	4	49.6	20.0	6.43	1.88
BOD Percent Removal***	-	≥85%	-	-	-	96.9%
TSS Percent Removal***	-	≥85%	-	-	-	95.0%
Fecal Coliform	400 MPN/100 ml	200 MPN/100 ml	-	-	19.7MPN/ 100 mL	3.0 MPN/100 mL
Americamysis bahia (LC_{50})***	100% or greater	-	-	-	>100%	
Arbacia punctulata (C-NOEC)***	---%	-	-	-	100%	

*For comparison to the RIPDES permits, the highest maximum daily value and the highest average monthly value reported for 2015 is listed in the table.

**Note that the limits for compliance/noncompliance determinations are based on the quantitation limit, which is defined as 0.2 micrograms per liter for mercury and 20.0 micrograms per liter for cyanide.

***Permit limits for percent removals and bioassays are set for the minimum, not maximum. The percent removal 2015 results represent the minimum average monthly percent removals. The bioassay 2015 results represent the minimum quarterly results.

TABLE 25 details the compliance status of the Field's Point facility with the limits established by the RIPDES permit and Consent Agreement in effect during 2015.

TABLE 25
2015 Compliance Status with RIPDES & Consent Agreement Limits For Field's Point Facility

Parameter	2015 Compliance with RIPDES Permit Limits?		2015 Compliance with Consent Agreement Limits?	
	Maximum Daily	Average Monthly	Maximum Daily	Average Monthly
Copper	Yes	Yes	Yes	Yes
Mercury	Yes	Yes	N/A	N/A
Nickel	Yes	Yes	N/A	N/A
Silver	Yes	Yes	N/A	N/A
Zinc	Yes	Yes	N/A	N/A
Available Cyanide	**No**	Yes	Yes	Yes
BOD Percent Removal	N/A	Yes	N/A	N/A
TSS Percent Removal	N/A	Yes	N/A	N/A
Fecal Coliform	Yes	Yes	N/A	N/A
Americamysis bahia (LC_{50})	Yes	N/A	N/A	N/A
Arbacia punctulata (C-NOEC)	N/A	N/A	N/A	N/A

TABLE 25 shows that in 2015, Field's Point was in compliance with the daily and monthly discharge limitations specified in the Consent Agreement for all toxic pollutant parameters listed in TABLE 25. However, additional work will be necessary to ensure NBC compliance with toxic pollutant discharge limits specified in the RIPDES permit for cyanide. All 2015 cyanide results were reported as "available cyanide" and no results exceeded the consent agreement limits. In 2015, 88% of effluent cyanide samples were reported below the detection limit of 4 ppb for available cyanide. Twelve samples exceeded the maximum daily permit limit of 4.0 ppb, though no samples exceeded the interim limit of 20.0 ppb.

The NBC met BOD and TSS percent removals in all months of 2015, as well as fecal coliform daily maximums and monthly averages. All bioassay result also met the permit limits in 2015.

The NBC is actively working to ensure full compliance with all the toxic and conventional pollutants specified in its RIPDES permit. In 2004, at the request of DEM, the NBC recalculated toxic pollutant permit limits based on the metal translator study conducted by NBC in years 2001 and 2002. The results of the metal translator studies performed by NBC found the Providence and Seekonk Rivers met water quality criteria for the trace metals analyzed: cadmium, copper, lead, nickel, and silver. This data resulted in both rivers being removed from the EPA 303(d) list of impaired waterbodies for metals.

Bucklin Point Facility

When the NBC acquired the Bucklin Point facility, the RIPDES permit in effect had been issued to the Blackstone Valley District Commission in December 1990, and was then transferred to the NBC in 1991. This permit listed several discharge limitations for metals, organic compounds and nutrients, but was modified to reflect alternative effluent limitations when the NBC stressed that permitted discharge levels for some pollutants were not attainable. A new permit was issued to the facility on December 31, 2001.

NBC contested the new permit limits for copper, mercury, nickel, silver, zinc, cyanide, and nutrients, and for TSS and BOD during rain events when primary effluent would be diverted to the chlorine contact tank. NBC contested the above parameters due to the inability to meet limits that were set as low as saltwater primary contact water quality criteria in certain cases. Consent Agreement RI-330 was issued, which imposed interim limits effective as of January 2004, which are currently being used to measure compliance. As mentioned in the previous section, NBC has presented to DEM new information from water quality monitoring on the Seekonk River, the receiving waters for the Bucklin Point facility, and is awaiting approval of new permit limits. The study data show that the Seekonk River meets water quality criteria for metals outside of the mixing zones assigned to the outfall.

TABLE 26 outlines the RIPDES permit limits, current Consent Agreement limits, and the 2015 effluent results. TABLE 27 indicates that the facility was unable to meet the originally issued Maximum Daily and Average Monthly permit limits for copper and cyanide; in contrast, the facility was able to meet the limits detailed in the Consent Agreement for each of these parameters.

TABLE 26
Comparison of Bucklin Point RIPDES & Interim Effluent Limits with 2015 Wastewater Treatment Facility Results

	RIPDES Permit Limits		**Consent Agreement Limits**		**2015 Results**	
Parameter	Maximum Daily (ppb)	Average Monthly (ppb)	Maximum Daily (ppb)	Average Monthly (ppb)	Maximum Daily (ppb)	Average Monthly* (ppb)
Hexavalent Chromium	997	60	-	-	75.00	14.56
Copper	5.2	5.2	86.1	29.8	17.08	12.73
Lead	199	10.3	-	-	1.95	0.71
Mercury**	1.7	0.04	1.7	0.2	0.02	0.01
Nickel	67	13.7	67	53.3	35.87	13.45
Silver	-	2	4.5	-	0.29	0.09
Zinc	76	76	88	76	52.80	42.34
Available Cyanide**	0.8	0.8	69.3	20	48.90	5.43
BOD Percent Removal***	-	$\geq$85%	-	-	-	97.8%
TSS Percent Removal***	-	$\geq$85%	-	-	-	94.5%
Fecal Coliform	400 MPN/100 ml	200 MPN/100 ml	-	-	382.70	8.20
Americamysis bahia (LC_{50})***	100% or greater	-	-	-	>100%	-
Arbacia punctulata (C-NOEC)***	50%	-	-	-	50%	-

*The highest average monthly value reported for the year is listed in this table for comparison against the RIPDES permit.

** Note that the limit for compliance /noncompliance determinations is based on the quantitation limit, which is defined as 0.2 micrograms per liter for mercury and 20.0 micrograms per liter for cyanide.

***Permit limits for percent removals and bioassays are set for the minimum, not maximum. The percent removal 2015 results represent the minimum average monthly percent removals. The bioassay 2015 results represent the minimum quarterly results.

TABLE 27
2015 Compliance Status with RIPDES & Consent Agreement Limits for Bucklin Point Facility

	2015 Compliance with RIPDES Permit Limits?		2015 Compliance with Consent Agreement Limits?	
Parameter	Maximum Daily	Average Monthly	Maximum Daily	Average Monthly
Hexavalent Chromium	Yes	Yes	N/A	N/A
Copper	**No**	**No**	Yes	Yes
Lead	Yes	Yes	N/A	N/A
Mercury	Yes	Yes	Yes	Yes
Nickel	Yes	Yes	Yes	Yes
Silver	N/A	Yes	Yes	N/A
Zinc	Yes	Yes	Yes	Yes
Available Cyanide	**No**	**No**	Yes	Yes
BOD Percent Removal	N/A	Yes	N/A	N/A
TSS Percent Removal	N/A	Yes	N/A	N/A
Fecal Coliform	Yes	Yes	N/A	N/A
Americamysis bahia (LC_{50})	Yes	N/A	N/A	N/A
Arbacia punctulata (C-NOEC)	Yes	N/A	N/A	N/A

Bucklin Point did not have any permit violations of the Consent Agreement Limits in 2015, a testament to the diligence and accomplishments of NBC staff in all departments. In addition, bioassay results met limits for both acute (LC_{50}) and chronic (C-NOEC) RIPDES permit requirements throughout 2015, further confirming the successful control of toxic contaminants entering the Bucklin Point facility.

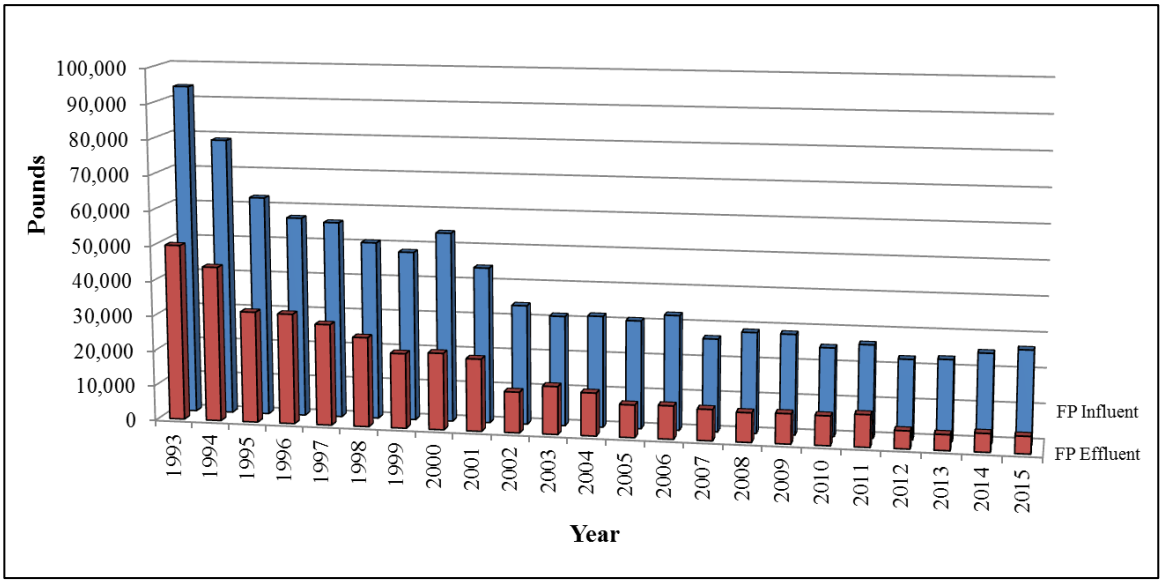
Bucklin Point Final Effluent pH Variability and Permit Compliance

The pH of the Bucklin Point effluent is measured daily by EMDA staff with the use of a high precision Orion pH meter. This analytical program is under the supervision of the NBC Laboratory. The addition of soda ash (sodium bicarbonate) to the process at Bucklin Point enables more effective biological nutrient reduction and typically maintains the effluent pH within the desired permit range. The range of values measured for 2015 was between 6.00 and 7.29 s.u. However, a single exception occurred on December 25, 2015 where one sample had a pH of 5.90 s.u., outside of the acceptable permit range of 6.0 to 9.0 s.u. Because this pH depression was attributed to heavy rainfall (i.e., 1.41 inches) in the days leading up to the low result, it was not considered a violation of the permit. The lack of pH permit violations over the course of 2015 is a testament to the fine job done by the NBC Bucklin Point Operations staff, and to the Pretreatment program that prevented the discharge of low pH wastewater by industry.

Comparison of Influent and Effluent Loadings

FIGURE 26 provides a comparison of historic Field's Point influent and effluent loadings for total metals. At the Field's Point facility, a major portion of each pollutant observed in the plant influent is removed in grit and sludge during the treatment process.

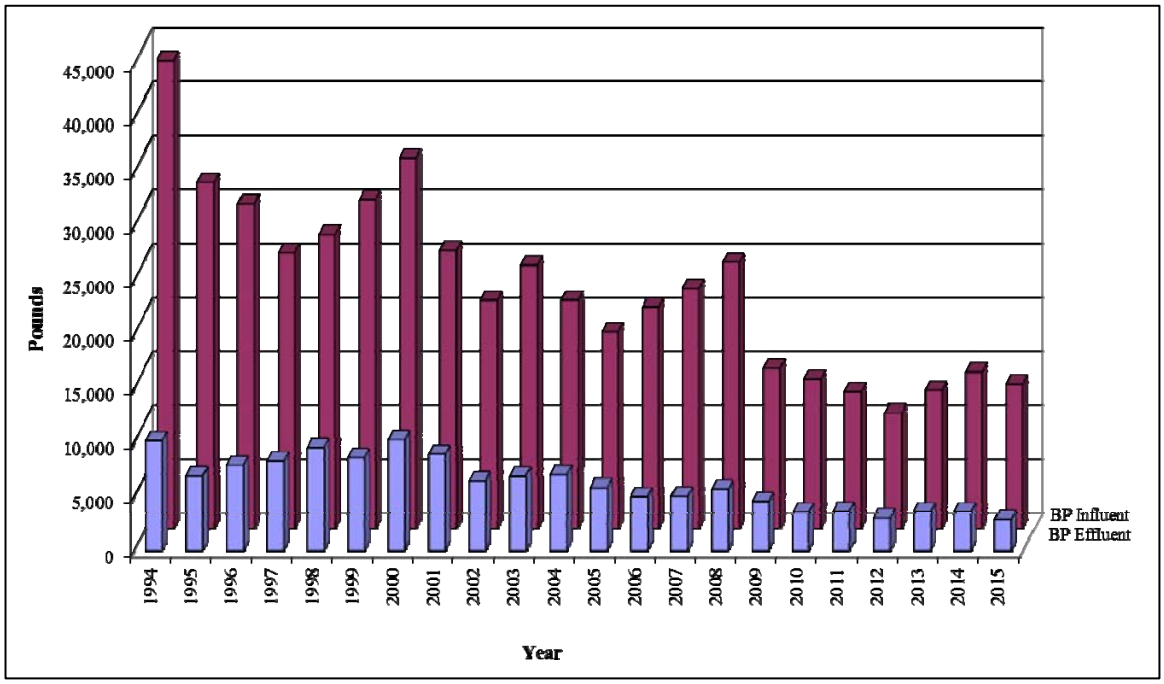
FIGURE 26
Field's Point Influent and Effluent Total Metals Loadings Trend Analysis



The removal rate of metals entering the Field's Point facility varied from 45.7% to 99.0% in 2015. Influent loadings had a slight increase of 5.2%, or 1,298.3 pounds in 2015 as compared to 2014. Effluent loadings decreased by 337.1 lbs, or 16.9% in 2015. Since the plant upgrades associated with the nitrogen removal process went into operation at Field's Point, removal efficiencies for metals have increased significantly.

FIGURE 27 provides a comparison between the historic influent and effluent total metal loadings for Bucklin Point. As noted for the Field's Point facility, a major portion of each pollutant observed in the plant influent is removed in grit and sludge during the treatment process. In 2015 there was a 1,116.6 pound, or 7.7% decrease in influent metals, while effluent metals decreased by 695.1 pounds, or 19.3% over 2014 loadings. Percent removal of the various metals at Bucklin Point ranged between 61.40% and 98.51%.

FIGURE 27
Bucklin Point Influent and Effluent
Total Metals Loadings Trend Analysis



The term “removal” here means the reduction of pollutants in the wastewater through their incorporation into settleable solids, which are then concentrated into sludge material. Municipal wastewater treatment plants are not designed to treat and remove industrial waste such as heavy metals. Those metals that are strongly associated with the dissolved phase (e.g., nickel) will be discharged to the receiving waters with less removal than those with higher particulate phase partitioning (e.g., copper or lead) which are particle reactive and settle into the sludge.

TABLE 28 details removal rates for each of the heavy metals and cyanide at both NBC wastewater treatment facilities. Several influent and effluent metals measured at the plants are often non-detectable by the appropriate Laboratory method applied. The metals shown with asterisks in the table below are frequently non-detectable and therefore are statistically analyzed at their detection limits, resulting in overestimation of these concentrations. From TABLE 28 it is easy to see that a major portion of all toxic pollutants are removed from the wastestream at the NBC plants prior to effluent discharge to the receiving waters of Narragansett Bay. The Field's Point facility was able to remove 84% or more of the cadmium, chromium, copper, lead, mercury, and silver discharged in the Field's Point district, while 89% or more of the cadmium, chromium, copper, lead, mercury, and silver loadings were removed at Bucklin Point. Nickel had the lowest percent removal rates of the heavy metals with removal rates of 45.7% and 61.4% for the Field's Point and Bucklin Point facilities respectively.

TABLE 28
Percent Removal of Metals and Cyanide for NBC Facilities

	Field's Point Concentrations			Bucklin Point Concentrations		
	Influent (ppb)	Effluent (ppb)	% Removal	Influent (ppb)	Effluent (ppb)	% Removal
Cadmium	2.64*	0.09*	96.6%	2.50*	0.06	97.6%
Chromium	10.96*	1.67	84.8%	11.53*	0.84	92.7%
Hex.Chromium	NM	NM		38.50	11.08*	71.2%
Copper	47.06	2.71	94.2%	78.27	8.46	89.2%
Lead	12.56*	0.44	96.5%	10.41*	0.50	95.2%
Mercury	0.044	0.004	90.9%	0.050	0.004	92.0%
Nickel	23.41	12.71	45.7%	18.16*	7.01	61.4%
Silver	4.00*	0.04	99.0%	4.02*	0.06	98.5%
Zinc	126.51	23.18	81.7%	128.13	38.16	70.2%
Total Cyanide	9.20	9.07	1.4%	6.44	5.39*	16.3%
Total Metals	227.18	40.84	82.0%	291.57	66.17	77.3%

*25% or more sample results were non-detectable and were analyzed at the detection limit.

POTW Effluent Dissolved Metals Study

In 2000, the NBC began a study to monitor the dissolved metals fraction of the effluent discharged to the receiving waters of the Providence and Seekonk Rivers. Dissolved metals were typically analyzed once per week at each POTW. Total metals were measured twice weekly. In 2015, Field's Point and Bucklin Point effluent dissolved metals samples were analyzed monthly. The NBC and DEM use these data to better understand the fate, effect, and physical phase partitioning of metals discharged from the POTWs.

Understanding the partitioning between dissolved and particulate phases is important for the calculations of permit discharge limits. POTWs are permitted for total metals; however the limits are derived from receiving water quality criteria set for dissolved metals concentrations, the phase that is more readily absorbed by marine life. Therefore, when determining permit limits for a wastewater treatment plant, the DEM must use a "metal translator conversion factor" to estimate the fraction of the POTWs' total metals load that will be in the dissolved phase in the effluent. By sampling for total and dissolved metals, the NBC is able to better assess the ratio of dissolved to total metals in POTW effluent and in the receiving waters and inform such permit limit calculations.

TABLE 29 summarizes the data from 2015 as dissolved-to-total metals ratios. The values were calculated for each date there was a dissolved metals result (i.e., once per month), using the dissolved metals concentration and the total metals concentration for that day. Annual averages were then calculated from these monthly data. The dissolved phase is operationally defined as that portion which passes through a 0.45 micron filter. At Field's Point, some of the dissolved cadmium, lead, and silver samples were reported at less than the detection limit (between 58-92% of all samples). Similarly, at Bucklin Point some dissolved cadmium, lead and silver samples were reported at less than the detection limit (25-50% of all samples). Also, some effluent total cadmium samples at both plants were reported at less than the detection limit. Note that averages were calculated for these metals using substitution of the detection limit value, therefore overestimating the true concentrations.

TABLE 29
2015 Final Effluent Phase Partitioning Study Results

Dissolved/Total Shown as a Fraction		
	Field's Point Mean	**Bucklin Point Mean**
Cadmium	0.97	0.87
Chromium	0.94	0.91
Copper	0.88	0.83
Lead	0.72	0.77
Nickel	1.00	0.97
Silver	0.58	0.49
Zinc	1.10	1.11
Aluminum	0.86	0.83
Iron	0.56	0.64

At Field's Point the results of this study show cadmium, nickel, and zinc to be the elements with the highest fraction in the dissolved phase, followed by chromium, copper, and aluminum in the final effluent. At Bucklin Point, nickel and zinc were shown to be the elements with the highest fraction in the dissolved phase, followed by cadmium, chromium, copper, and aluminum. Silver and iron were more strongly associated with particles, and thus the fraction of the metal in the dissolved phase is lower.

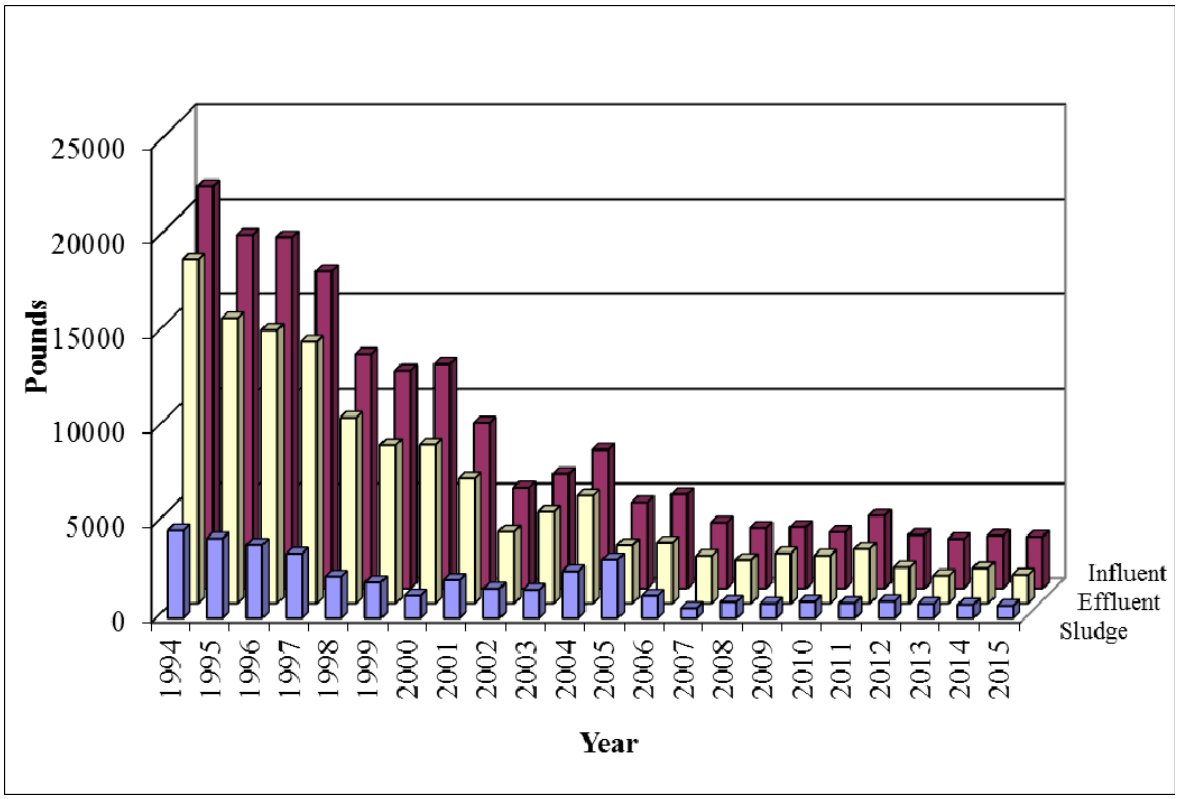
Mean proportions of zinc at both Bucklin and Field's Point were above 1.0, indicating a higher concentration in the dissolved phase than was detected in the analysis of the total metal. The low removal efficiency of this metal supports that the majority is likely in the dissolved phase. In addition, there are occasionally instances in which the dissolved metals portion is higher than the effluent portion due to equipment precision. Data for 2015 total and dissolved metals analysis results are included in ATTACHMENT VOLUME II, SECTION 10.

Sludge Analysis

To provide further insight into influent trends and POTW removal efficiency for metals, sludge loading trends for three metals have been compared to influent and effluent loads since 1994 at each facility. Nickel was chosen for this comparison due to its high incidence in the dissolved phase, since nearly 100% of nickel in the final POTW effluent is in the dissolved form. Nickel is also a metal commonly associated with industrial sources. Copper was also chosen due to its relatively high abundance and similar dissolved partitioning. Zinc was selected because of its relative abundance and significant influent loadings. In the following figures, please note that the final sludge loading is an approximation since there is insufficient data for loading attributed to grit. During 2015, sludge metals measurements were conducted bimonthly as opposed to weekly for the years prior to 2006. The mass balance agreement of these metals is calculated by subtracting the effluent and sludge loadings from the influent loading. Historical and 2015 sludge data are included in ATTACHMENT VOLUME II, SECTION 10.

As can be seen in FIGURE 28, the Field's Point sludge loading results for nickel show general agreement with declining nickel inputs to Field's Point influent. Note that the center row of columns on the figure represents final effluent loading. The discrepancy between influent nickel loading compared to sludge and effluent nickel loadings was 27% during 2015. This 27% discrepancy is attributed to loading in grit.

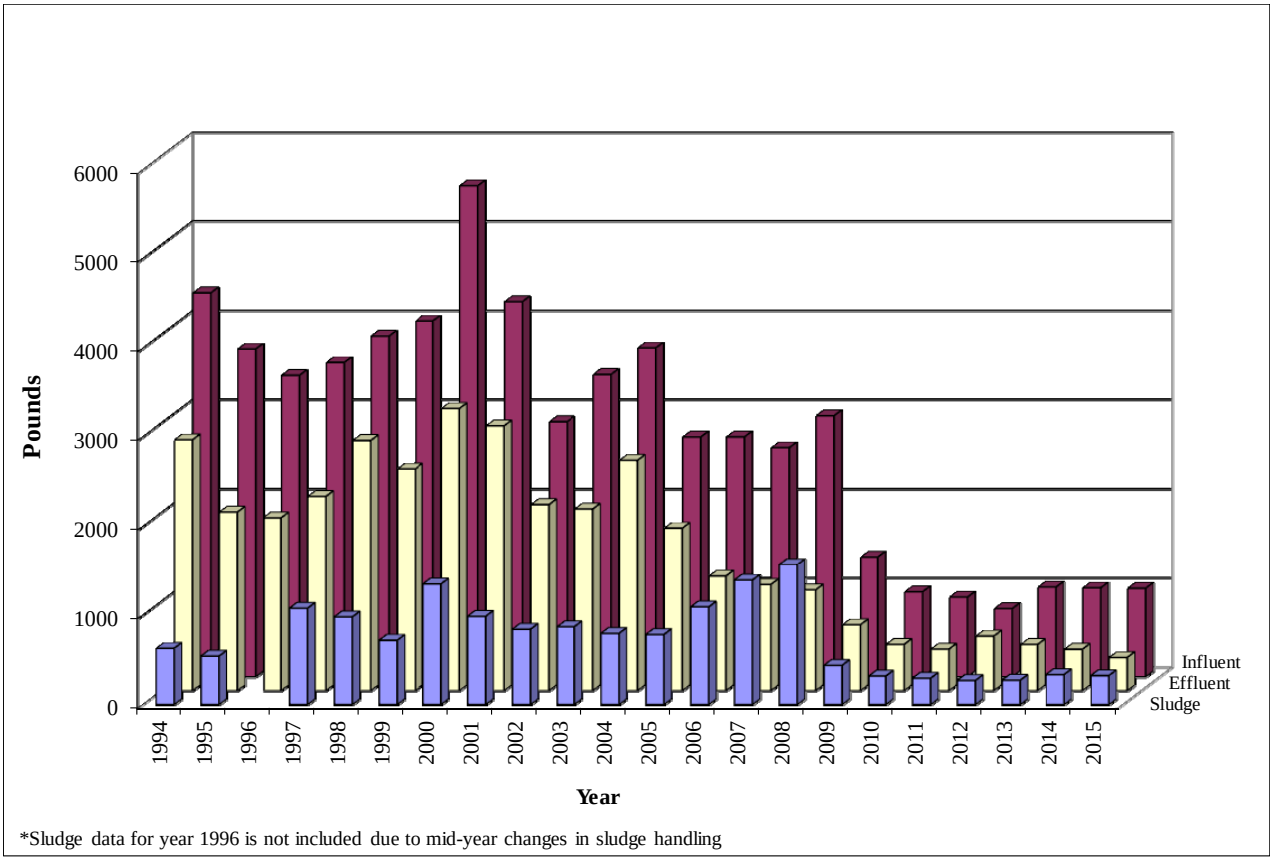
FIGURE 28
Nickel Loading Trend Analysis in Field's Point
Sludge, Influent and Effluent



At Field's Point, nickel loading has decreased slightly in the influent and effluent as well as in the sludge during 2015 as compared to 2014. Nickel in the sludge has remained below 1,000 pounds since 2007. The combined loading of nickel in the effluent and sludge in 2015 was the lowest loading amount since 1994, a testament to the success of the Pretreatment program at controlling this industrial pollutant.

At Bucklin Point, nickel loading has decreased in the sludge, influent and effluent during 2015 as compared to 2014. As can be seen in FIGURE 29, influent Nickel decreased by a 5.8 pounds in 2015, effluent nickel decreased by 91.8 lbs., and nickel in the sludge decreased by 11.8 pounds. The combined loading of nickel in the effluent and sludge in 2015 was the lowest loading amount since 1994. In 2015, there was a 42% discrepancy between measured influent loading and loading in the effluent and sludge. This discrepancy is attributed to loading in the grit.

FIGURE 29
Nickel Loading Trend Analysis in Bucklin Point Sludge, Influent and Effluent



Nickel has the lowest removal efficiency of all of the metals measured in the influent and effluent at either plant, due to its high incidence in the dissolved phase. As a dissolved metal, very little particulate nickel is available to settle out in the grit or sludge as other metals do. For example, the discrepancy between influent loading inputs and effluent/sludge loading outputs is relatively low for this metal, suggesting very little nickel settled out in the grit. This results in relatively low loading of nickel to the sludge at either plant.

FIGURES 30 and 31 show the loading trends for zinc at the Field's Point and Bucklin Point facilities, respectively. Zinc loading at Field's Point increased in the sludge and in the influent, but decreased in the effluent in 2015. The discrepancy between Field's Point influent zinc loading and the combined sludge and effluent zinc is 33% for 2015. At Bucklin Point, zinc loading decreased in the sludge, effluent, and influent in 2015. The discrepancy at Bucklin Point was 27% for 2015.

FIGURE 30
Zinc Loading Trend Analysis in Field's Point Sludge, Influent and Effluent

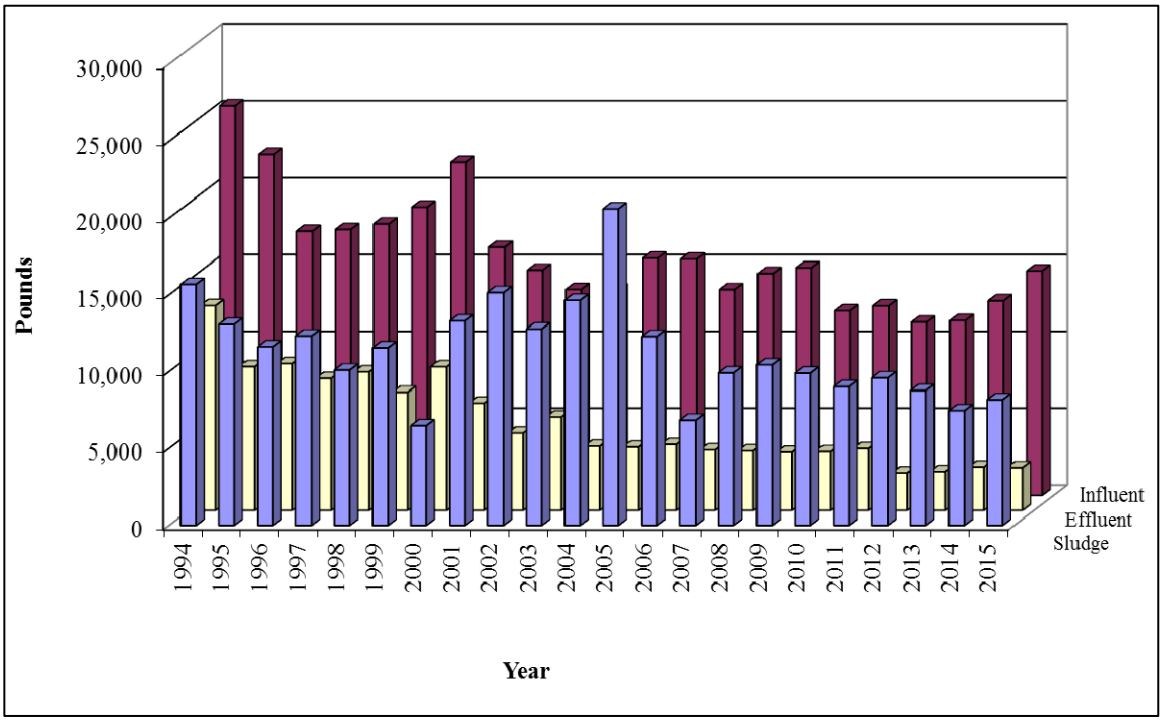
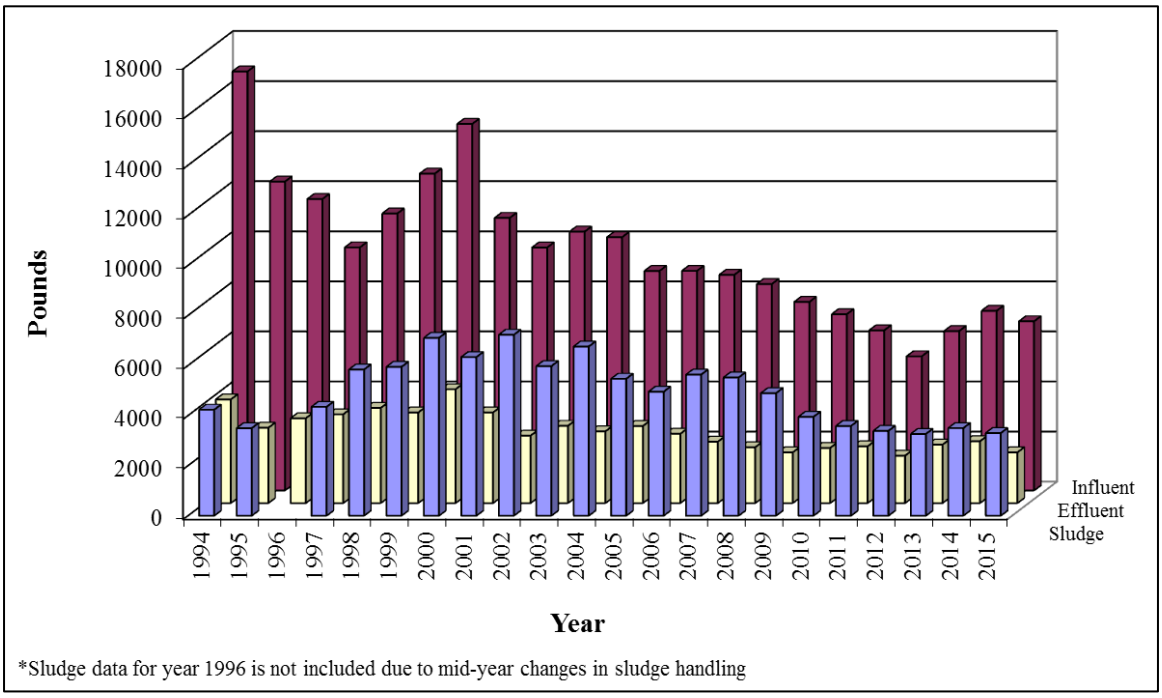


FIGURE 31
Zinc Loading Trend Analysis in Bucklin Point
Sludge, Influent and Effluent



FIGURES 32 and 33 present the copper loading trend analyses. At Field's Point, copper loading increased in the effluent, but decreased in the influent and the sludge in 2015 when compared to 2014. The discrepancy between the influent and the combined effluent and sludge loading was 5%. At Bucklin Point, copper loadings decreased in the influent, effluent and the sludge. The discrepancy between the influent and combined effluent and sludge loading was 25%. These discrepancies can be attributed to loading in the grit.

FIGURE 32
Copper Loading Trend Analysis in Field's Point
Sludge, Influent and Effluent

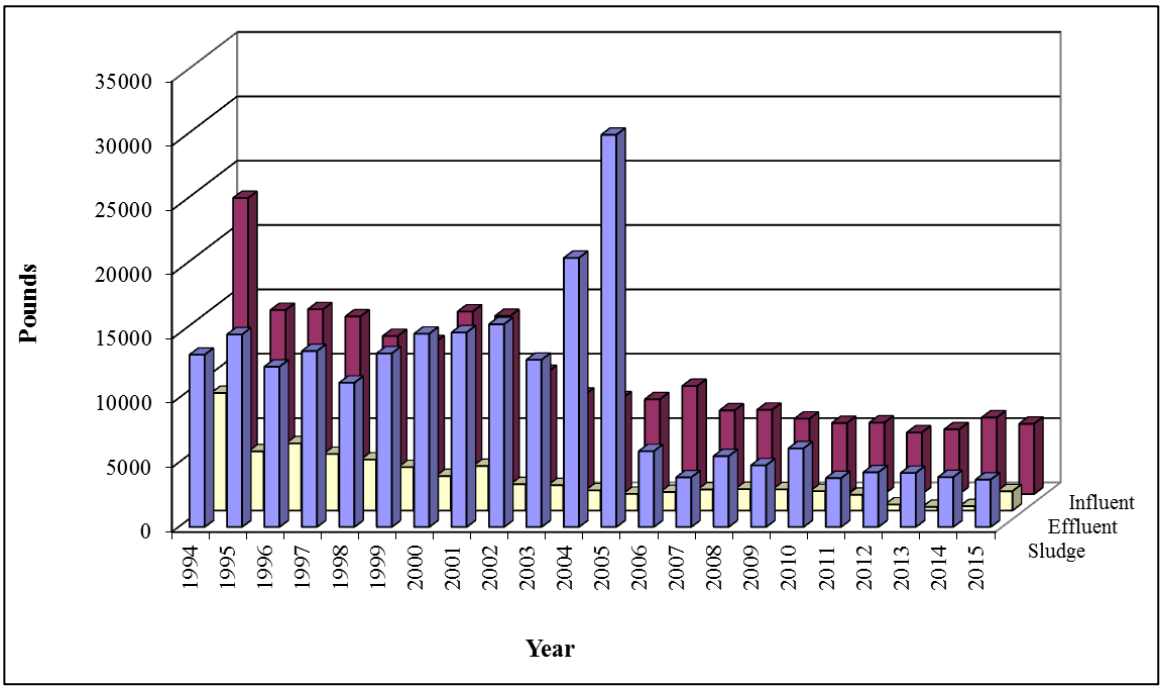
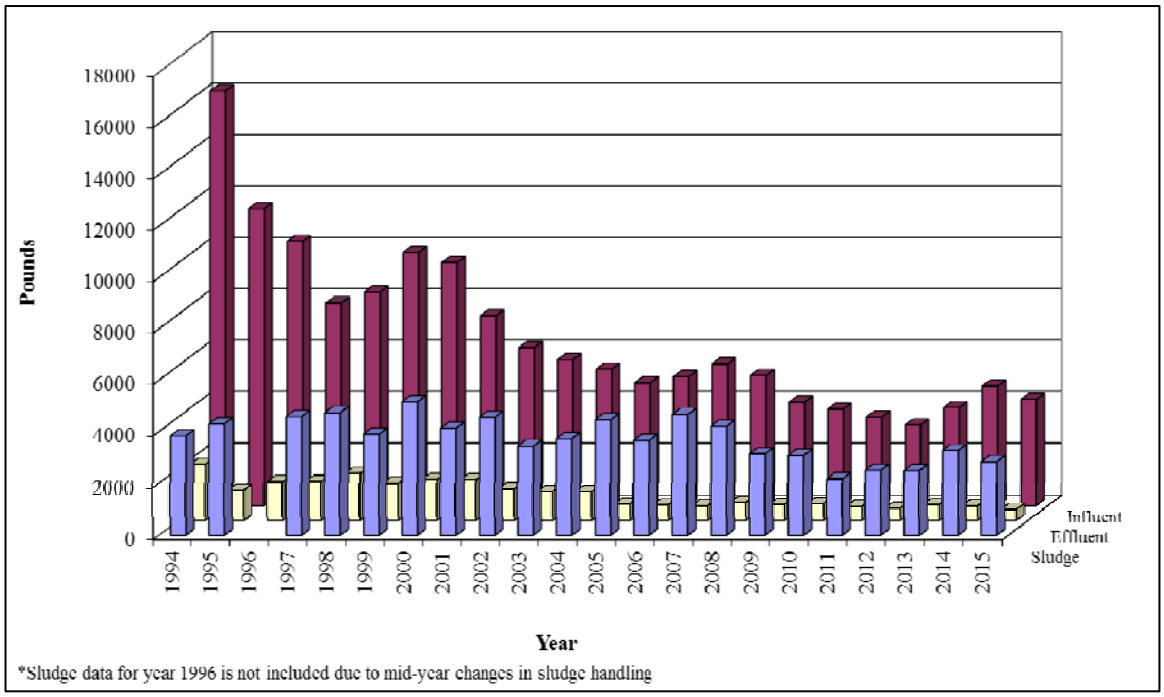


FIGURE 33
Copper Loading Trend Analysis in Bucklin Point
Sludge, Influent and Effluent



BOD and TSS Loadings

BOD and TSS loading historical trend analysis provides an interesting means of determining the ability of the individual facility to handle variability in influent loadings without disruption of plant operations. For Bucklin Point, FIGURES 34 and 35 show the 30-day averaged trend for influent and effluent BOD and TSS, respectively. Effluent BOD and TSS show a decline beginning in 2005 through 2015 at Bucklin Point which is largely attributable to improved treatment processes as a result of comprehensive facility upgrades which began to go online in 2005.

FIGURE 34
BOD Loading Trend Analysis for Bucklin Point Influent and Effluent

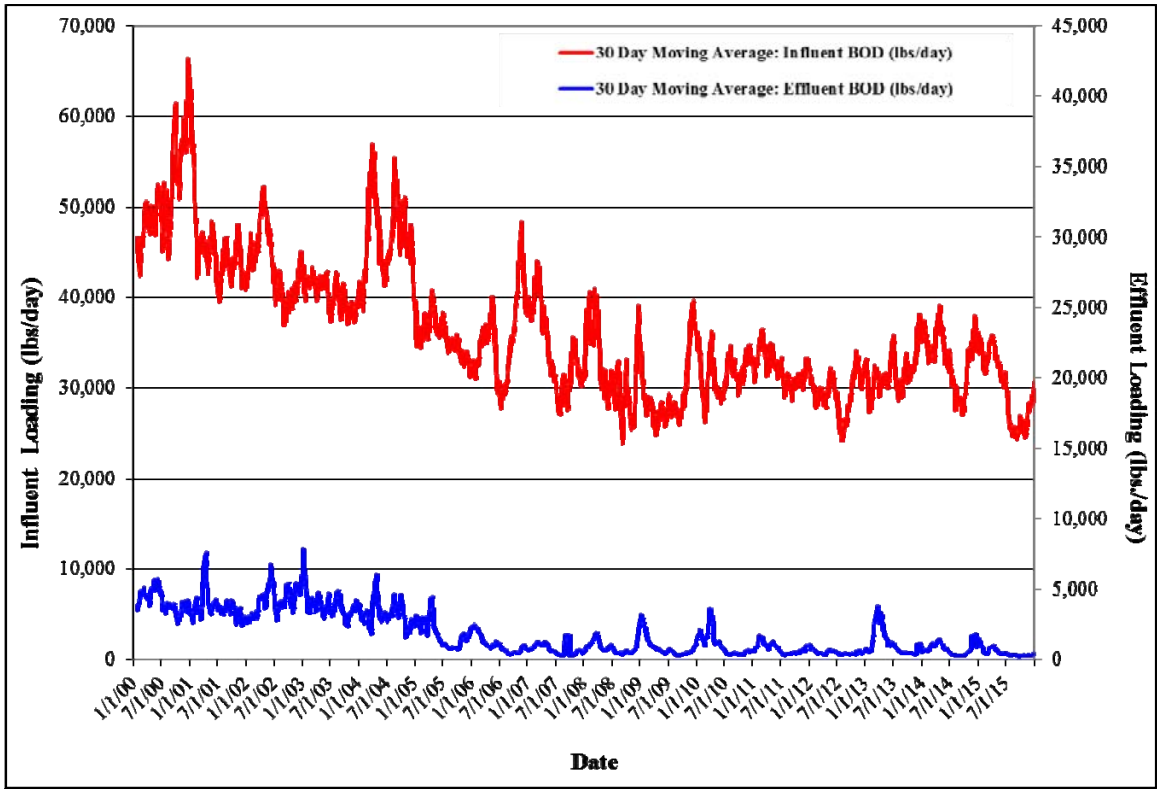
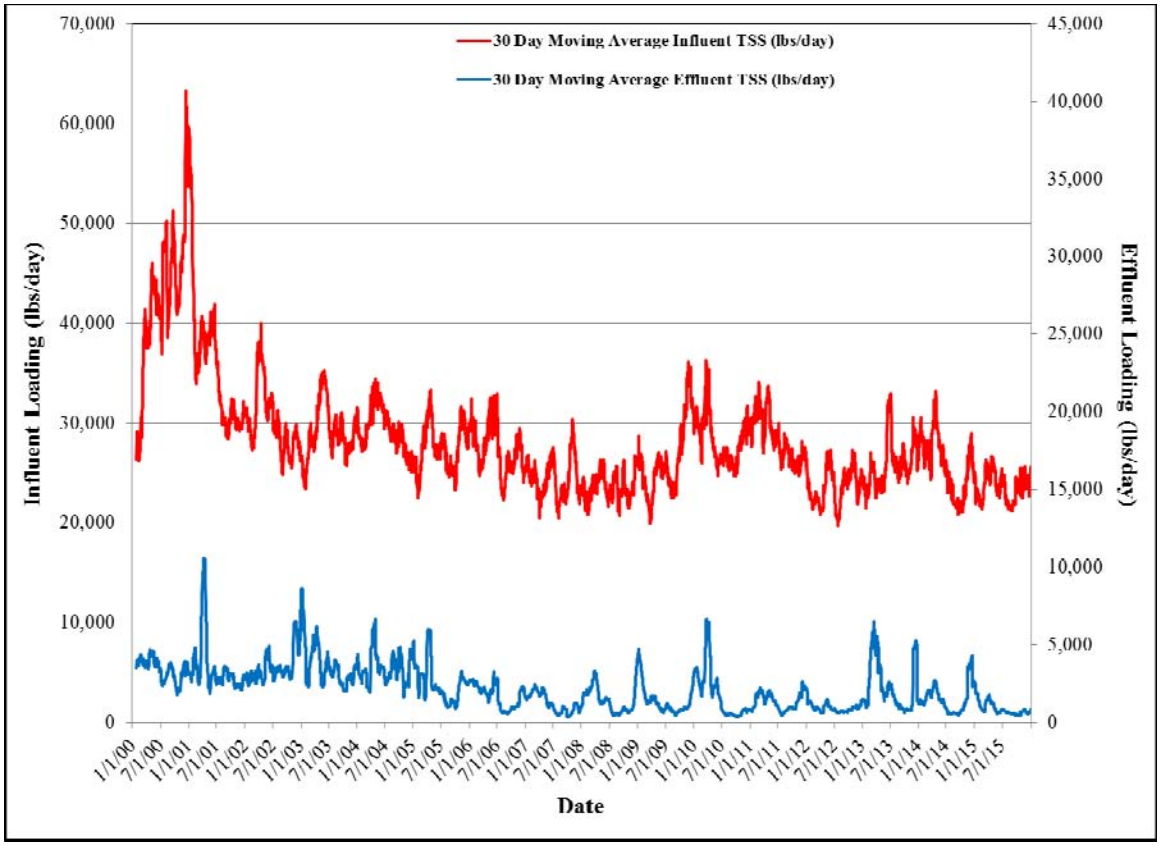


FIGURE 35
TSS Loading Trend Analysis in Bucklin Point Influent and Effluent



FIGURES 36 and 37 show the 30-day averaged BOD and TSS data for Field's Point. Periods of high influent loading are possibly attributable to maintenance within the collection system, or wet weather events. It is estimated that at Field's Point flow coming from the CSO tunnel accounts for about 0.3% of the influent BOD and about 0.6% of the influent TSS loading. It is interesting to note that, despite these transient increases in the influent loading rates, effluent loadings show very little variability. This demonstrates the buffering capacity of both facilities, the ability of Operations to effectively adjust conditions to treat incoming pollutants, and an overall improvement in the removal of these conventional pollutants. FIGURES 36 and 37 below show less variable effluent BOD and TSS and a decline in effluent BOD and TSS beginning in 2012 at Field's Point, which is most likely attributable to plant upgrades associated with the new BNR treatment process, parts of which became operational in 2012.

FIGURE 36
BOD Loading Trend Analysis in Field's Point Influent and Effluent

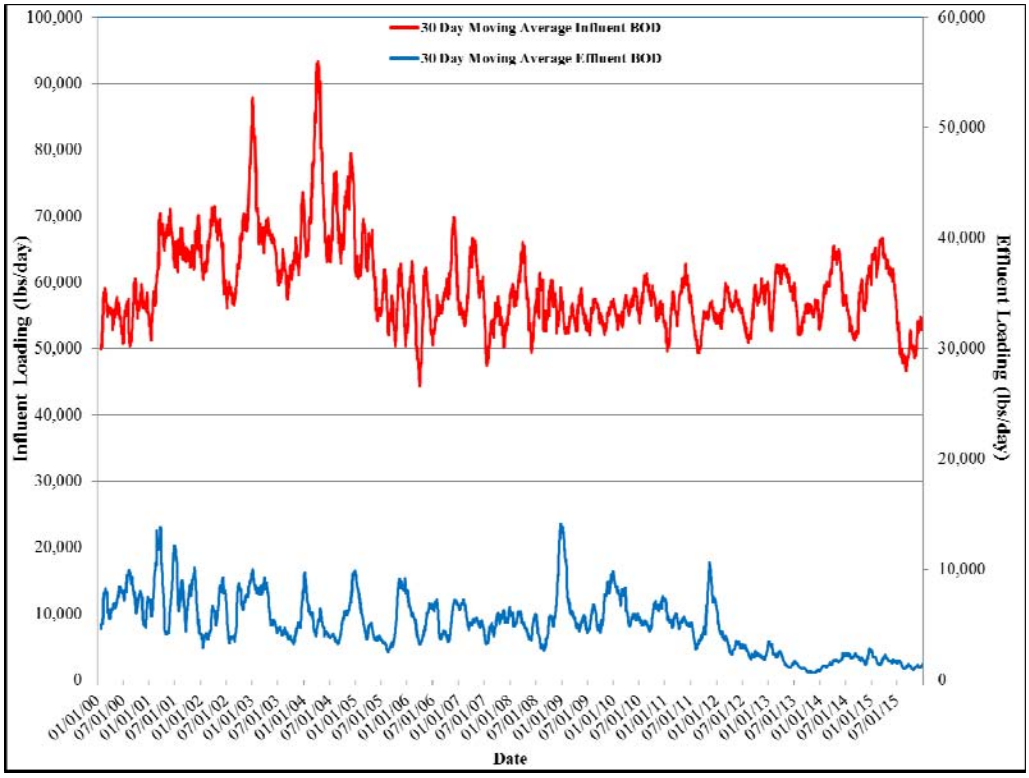
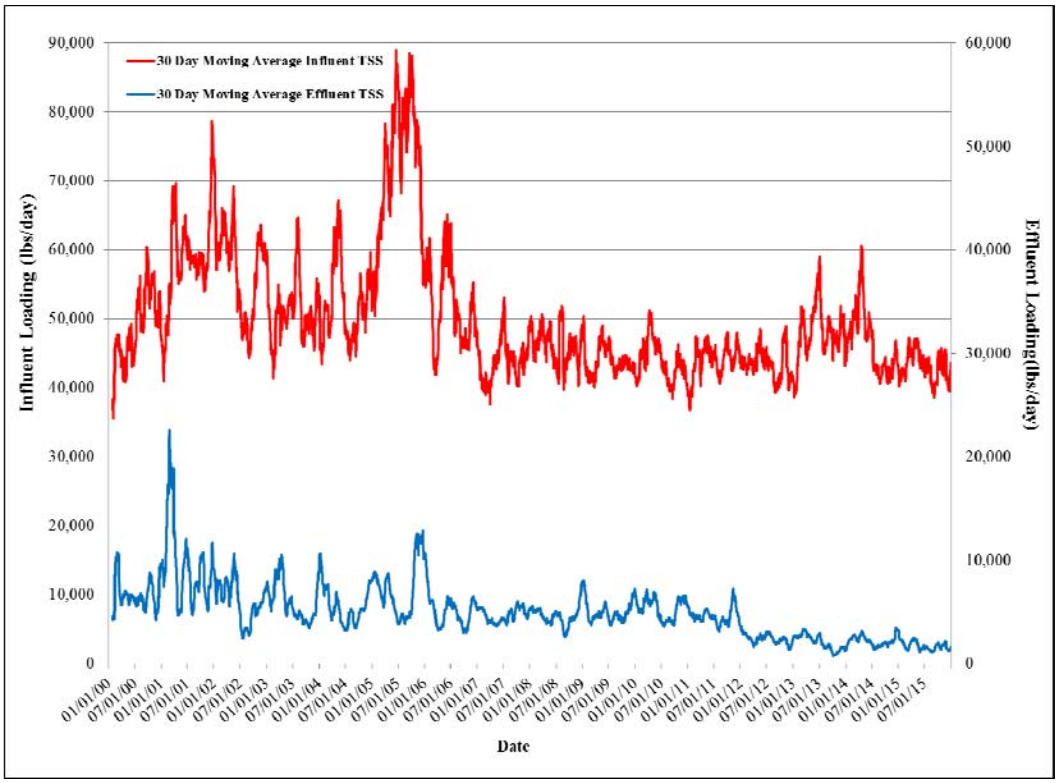


FIGURE 37
TSS Loading Trend Analysis in Field's Point Influent and Effluent



Comparison of Final Effluent Concentrations in 2015 and Saltwater Water Quality Criteria for Receiving Waters

A comparison of final effluent concentrations of permitted parameters and water quality criteria is useful to evaluate potential impact of the treatment plants on the receiving waters. TABLE 30 lists measured dissolved and total metal concentrations in the effluent, as well as cyanide, pH, and fecal coliform bacteria compared to saltwater water quality criteria determined by DEM. Comparisons are made between annual averages and chronic criteria that protect long-term exposure, and between annual maxima and acute criteria that are established to protect marine life and waters from short-term exposures to pollutants. Effluent concentrations bolded in TABLE 30 exceeded those water quality standards. Dissolved metals are measured monthly at the two plants and total metals are measured twice weekly. Saltwater water quality criteria are set for dissolved metals, based on a metal translator conversion factor, converting from total to dissolved phase. Default EPA conversion factors range from 0.83 to 1.0, a ratio without units. Dissolved concentrations in the effluent can be compared to the water quality criteria with the understanding that dilution occurring in the established mixing zones at the outfalls quickly lowers the concentrations in the Bay waters. This was demonstrated in the 2001 and 2002 trace metal study of the Bay waters by NBC, URI, and MicroInorganics, Inc.

The trace metal study conducted by NBC and URI in 2001 and 2002 found both the Seekonk and Providence River reaches of Narragansett Bay meeting EPA water quality criteria for metals. These findings were presented to DEM, and as a result of this work, the Seekonk and Providence Rivers have been removed from the state's EPA 303(d) list of impaired water bodies for metals.

TABLE 30
Comparison of 2015 Final Effluent Concentrations and Water Quality Criteria of Receiving Waters

Pollutant	Phase and Statistical Category	Bucklin Point Effluent Results in ppb	Field's Point Effluent Results in ppb	Chronic WQC in ppb	Acute WQC in ppb
Copper	Dissolved phase effluent annual average	**7.35**	2.10	3.1	
	Dissolved phase effluent annual maximum	**12.32**	2.92		4.8
	Total effluent annual average	8.46	2.71		
	Total effluent annual maximum	17.08	38.82		
Lead	Dissolved phase effluent annual average	0.34	0.30	8.1	
	Dissolved phase effluent annual maximum	0.45	0.34		210
	Total effluent annual average	0.50	0.44		
	Total effluent annual maximum	1.95	0.81		
Nickel	Dissolved phase effluent annual average	7.34	**13.27**	8.2	
	Dissolved phase effluent annual maximum	27.83	19.08		74
	Total effluent annual average	7.01	12.71		
	Total effluent annual maximum	35.87	21.81		
Silver	Dissolved phase effluent annual average	0.03	0.03		
	Dissolved phase effluent annual maximum	0.06	0.04		1.9
	Total effluent annual average	0.06	0.04		
	Total effluent annual maximum	0.29	0.13		
Zinc	Dissolved phase effluent annual average	41.10	24.84	81	
	Dissolved phase effluent annual maximum	49.29	34.37		90
	Total effluent annual average	38.16	23.18		
	Total effluent annual maximum	52.80	39.44		
Mercury	Dissolved effluent annual average	NM	NM	0.94	
	Dissolved effluent annual maximum	NM	NM		1.8
	Total effluent annual average	0.0044	0.0036		
	Total effluent annual maximum	0.0192	0.0131		
Total Cyanide	Total effluent annual average	**5.39**	**9.07**	1.0	
	Total effluent annual maximum	**54.30**	**13.70**		1.0
pH	Total effluent annual minimum (s.u.)	**5.9**	**6.1**	> 6.5 < 8.5	
	Total effluent annual maximum (s.u.)	7.3	7.2		> 6.5 < 8.5
Fecal Coliform Bacteria	Total effluent annual geomean (MPN/100 mL)	4.1	2.4	50	
	% > 400 MPN/100 mL	0.20	0.00		< 10%

*NM – not measured

From TABLE 30, the following conclusions can be made regarding the various pollutant parameters:

- Dissolved copper concentrations at Field's Point met both the chronic water quality criterion and the acute water quality criterion for annual average and annual maximum, though dissolved copper concentrations at Bucklin Point did not meet either criteria. However, effluent concentrations are rapidly diluted as the effluent enters the receiving waters. It is often difficult for wastewater effluent to meet the receiving water quality criteria for copper since the limit in drinking water is over 400 times higher than the limit in the receiving waters.

- Lead continues to show annual average and maximum dissolved concentrations substantially lower than the chronic and acute water quality criteria at both facilities. The annual maxima for total lead at both Field's Point and Bucklin Point are nearly two orders of magnitude lower than the acute dissolved lead criterion.

- The dissolved nickel annual maximum concentrations at both facilities were below the acute saltwater quality criterion. However, the dissolved nickel annual average effluent concentration did not meet the chronic water quality criterion at Field's Point. As noted above for copper, effluent concentrations are rapidly diluted as the effluent enters the mixing zone of the receiving waters, reducing the effective concentration of these metals in the environment.

- The dissolved silver annual maximum and average concentrations as well as total silver annual average and maximum were all below the acute water quality criterion. There is no chronic saltwater water quality criterion established for silver.

- Maximum and average values for both total and dissolved zinc at both facilities are less than the chronic and acute criteria.

- Total mercury, at both facilities, had annual averages roughly ten times lower than the chronic and acute water quality criteria.

- The average annual effluent total cyanide concentration and annual maximum were above the chronic and acute water quality criteria at both Field's Point and Bucklin Point. Though the effluent did not meet these criteria, effluent concentrations are rapidly diluted as the effluent enters the mixing zone of the receiving waters. Cyanide loadings at both facilities have generally decreased over time.

- Hydronium ion concentration, or pH, annual effluent minima were below the 6.5 minimum water quality criteria though maxima are within water quality criteria at both plants. Though effluent pH was sometimes below the minimum criterion, such low pH results are often associated with heavy rainfall events, and are thus out of the control of treatment processes and not recorded as RIPDES permit violations.

- The annual geometric mean of all fecal coliform bacteria sample results was used to determine whether the facilities met the chronic water quality criterion for fecal coliform, while a count of the number of samples that exceeded 400 MPN/100 mL was used to establish whether the acute water quality criterion was met. Both facilities remained well below the 50 MPN/100 mL chronic water quality criterion and the acute criterion of no more than 10% of samples exceeding the 400 MPN/100 mL threshold. At Bucklin Point only 0.20% of all 2015 fecal coliform samples were above 400 MPN/100 mL, and there were no samples above this threshold at Field's Point.

Summary

In general, the two POTWs continue to show significant improvements in operations and effluent quality since NBC took over operations and with the implementation of the NBC Pretreatment Program and Pollution Prevention initiatives of the ESTA Section. The Pretreatment and ESTA Sections have implemented educational programs to assist firms in achieving and maintaining compliance. The NBC has also significantly improved sampling methods over the past several years, and improved sampling of septage and sludge have shown clear results. The aim of the EMDA sampling program is to collect representative samples at every stage, reduce contamination, and provide valuable information to POTW and regulatory staff in order to protect the environment and serve the public interest. The Laboratory Section continues to improve analytical procedures and research new technologies to improve the accuracy of all analytical results of this sampling. The Field's Point and Bucklin Point treatment plant upgrades have clearly demonstrated not only reduced nutrients but improved effluent quality for a multitude other parameters as well.

While NBC studies show that substantial portions of influent toxic metal pollutants originate from residential sources, the overall toxic pollutant loadings to the two NBC wastewater treatment plants have decreased over time. This is a clear reflection of the fine work done by the NBC toxic reduction and control programs. The influent metals loading from 2014 to 2015 decreased at Bucklin Point by 7.7%, while a slight increase in metals loading of 5.2% occurred at Field's Point. These changes in loading appear to have been insignificant to plant processes. The levels of toxics in the effluent discharged from the NBC plants decreased slightly this year, remaining far below historical loadings. In 2015, effluent total metals loadings decreased at Field's Point by 6.5%, or 337.1 pounds, and at Bucklin Point by 19.3%, or 695.1 pounds. Overall, 2015 effluent loadings continue to support the 2002 removal of NBC receiving waters from the EPA 303(d) List of Impaired Waters by the DEM. This is a clear testament to the effectiveness of the NBC toxic reduction and control programs.

VI. ENFORCEMENT

NBC Enforcement Actions

The NBC will initiate some type of enforcement action against 100% of those persons and companies who violate the NBC Rules and Regulations. A wide range of enforcement actions are used to bring industrial and commercial users into compliance with NBC requirements and effluent limitations. The action can be as routine as a telephone call or as serious as an administrative order and assessment of penalty. Hundreds of phone calls were made during 2015 and 1,841 Notices of Violation (NOV) were issued for various violations of NBC Rules and Regulations. The following is a description of the most common types of enforcement actions utilized by the NBC and a brief summary of the number of each type initiated by the NBC over the past year:

- *Telephone calls* to users are made daily to discuss violations and problems. These calls are often sufficient to bring the user into compliance. A telephone log sheet documenting the conversation is prepared and placed in the user file or in some cases a letter may be sent to the user summarizing the discussion.

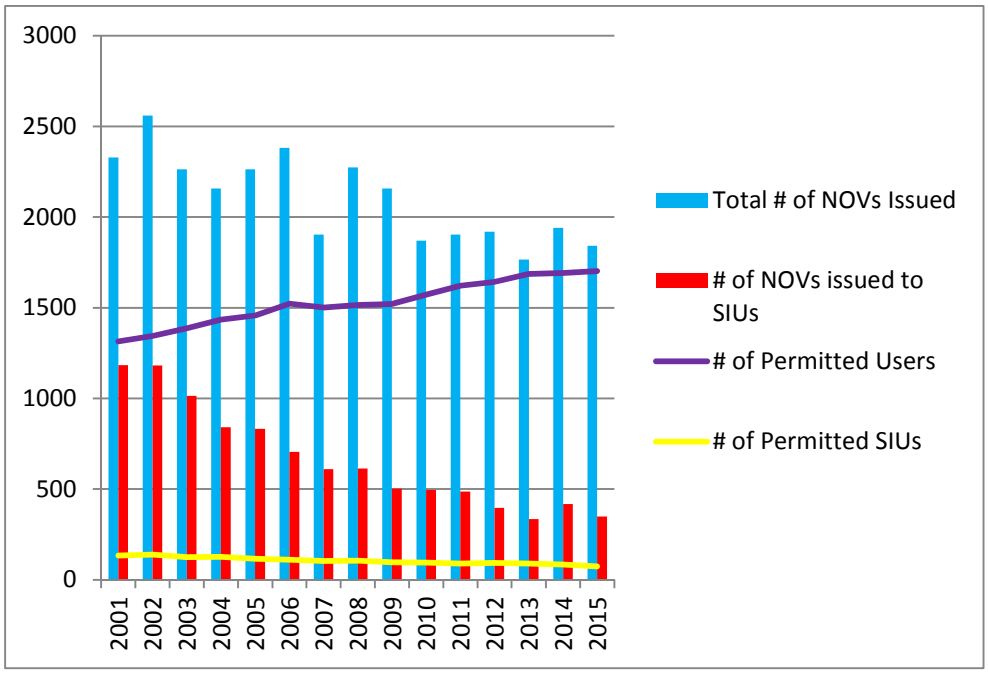
- *Notices of Violation* are issued by the NBC to inform a user of its noncompliance with NBC Rules and Regulations and warn the user that escalated enforcement action may result for continued noncompliance. These letters can be computer generated or may be tailored by the Pretreatment staff. An NOV specifically states that its issuance does not prohibit additional enforcement action. It also informs the violator that the non-compliance may result in publication of the firm's name in The Providence Journal and explains that inclusion on that list will subject the violator to liability for payment of the publication. In addition, NOVs refer the user to free technical and compliance assistance from the ESTA Section. The most typical NOVs are described below. TABLE 31 describes each type of NOV that is issued and the number of each issued in 2015. Examples may be viewed in ATTACHMENT VOLUME I, SECTION 4.

TABLE 31
2015 Notices of Violation

NOTICE OF VIOLATION	DESCRIPTION	NUMBER ISSUED IN 2015
Letter of Deficiency	• Issued by certified mail • Notifies users of deficiencies identified during inspections • Requires corrective actions with specific due dates	139
Failure to Meet Standards	• Issued when NBC or user self-monitoring results indicate a violation of NBC or EPA discharge limitations including monthly average limits • Requires an increase in sampling frequency	189
Notice of pH Violations	• Issued each time a user violates the high or low pH limit as indicated on the user monthly pH report	114
Failure to Submit Monitoring Reports	• Issued monthly to users that fail to submit a Self-Monitoring Compliance (SMCR), pH Monitoring, Zero Discharge Certification or Best Managing Practices (BMP) reports on time	660
Failure to Complete or Sign Required Reports	• Issued to users that do not complete or sign SMCRs or pH Monitoring Reports	6
Failure to Sample and/or Analyze for All Parameters	• Issued to users that did not sample for and/or analyze all required parameters required by their permits	7
Failure to Immediately Report Violations	• Issued to users that fail to notify the NBC within 24 hours of becoming aware of violations of NBC discharge limits in accordance with 40CFR403.12(g)(2)	34
Failure to Satisfy NBC Requirements	• Issued to users that fail to submit required documents or exceeding required completion dates	463
Failure to Pay Permit Fees	• Issued to users greater than 90 days late in paying permit fees	229
Total Notice of Violation Letters Issued		**1,841**

FIGURE 38 graphically shows the number of NOVs issued to all users, the number of NOVs issued to SIUs and the number of permitted users for the period of 2000 through 2015. As can be seen, the total number of NOVs issued is relatively consistent from year to year. There was a 5.1% decrease in the number of NOVs issued to SIUs in 2015 when compared to 2014. However, the number of NOVs issued to SIUs has steadily declined from 2000 to 2015. In fact the number of SIU NOVs decreased by 75.2% since 2000. The number of permitted users increased steadily since 2000. For the period of 2000 to 2015 there has been an overall increase of 31.2% in the number of permitted users. This drastic decrease in the number of NOVs issued to SIUs and the declining trend observed in NOVs issued to all users since 2000, considering the increase in the number of permitted users, can be attributed to the educational efforts of the Pretreatment and ESTA Sections.

FIGURE 38
NOVs ISSUED TO ALL USERS AND SIUs 2000 – 2015



- *Letters of Wastewater Discharge Permit Suspension* are typically issued to SIUs who have not discharged process wastewater to the NBC sewer system for at least 30 days. These letters are issued by the Executive Director. During 2015, the NBC did not issue any letters of suspension. These letters require the user to permanently disconnect the final process discharge line from the NBC sewer line due to their potential to adversely impact the NBC should illegal or unpermitted discharges occur. The suspension of a user permit relieves the user from having to submit monthly monitoring reports. Inspections of these users by Pretreatment staff are still conducted since they still have the potential to impact the NBC sewer system.

- *Annual publication* of user names in the state's largest daily paper will result if a violator meets the criteria for Significant Non-Compliance as defined in 40CFR 403.8(f)(2)(vii). All NOV letters issued during the preceding year contained language warning the industrial user that the name of their firm would be published if their outstanding violation was not quickly corrected. Despite these warnings, the names of eight firms found to be in SNC with NBC regulations were listed in an advertisement in the PROVIDENCE JOURNAL on **February 23, 2016** for violations occurring between October 1, 2014 and December 31, 2015. A copy of this public notice is provided later in this chapter in FIGURE 10.

- *Meetings with users* are held to discuss problems or violations the firm may be experiencing and often produce good results. Before initiating an administrative action and/or assessing an administrative penalty, the parties may reach a resolution of the issues without further enforcement action. At these meetings, the user is informed of its potential financial liability should its non-compliance status continue, often resulting in compliance.

- *Administrative Orders* (AO) are Orders issued by the NBC to address repeated or serious instances of noncompliance. AOs are classified into one of four general types; Compliance Orders, Cease and Desist Orders, Consent Orders/Settlement Agreements and Termination/Suspension of Permit/Service Orders. The AO may or may not assess an administrative penalty. Depending on the type of AO issued, the user may be required to immediately cease discharging or achieve compliance with NBC Rules and Regulations within a specified time frame. AOs are considered the harshest control vehicle for ensuring compliance with NBC regulations. All AOs entitle the alleged violator the right to request a hearing before an independent hearing officer with regard to both the issue of compliance and penalties. AOs are issued by the NBC Chief Legal Counsel.

- *Civil Suits* are filed against users for nonpayment of pretreatment fees or to enforce the terms of an Administrative Order, Consent Order or Final Decision and Order. Depending on the amount outstanding, the suits are filed either in District or Superior Court. These suits are filed only after all other collection avenues have been attempted and were unsuccessful. Firms may pay in full, establish a payment schedule or negotiate a settlement as a result of these suits. During 2015, no civil suits were filed.

2015 Administrative Orders

During 2015, the NBC issued one Administrative Order (AO) for violations of NBC Rules and Regulations and/or permit requirements. A sample AO is provided in ATTACHMENT VOLUME I, SECTION 4. Furthermore, a history of all enforcement actions taken by the NBC as of December 31, 2015 is found at the end of this chapter in TABLE 33. The table provides a history of the penalties assessed, the penalties paid and the present status of each enforcement action. A brief summary to update the status of pending Administrative Orders is provided later in this chapter.

Bucklin Point District

- AO # BP-01-15 was issued against Ecological Fibers, Inc., a paper coating and printing company, on October 6, 2015. The AO cited this company for thirty (30) exceedances of the daily maximum concentration discharge limitation for zinc since August 1, 2013. The AO stated that Ecological Fibers must submit a proposal to the NBC to reduce zinc concentrations in order to comply with the NBC daily maximum concentration discharge limitations for zinc, implement said plan after review and approval by the Pretreatment Section, and pay an Administrative Penalty of $22,000.00. On December 9, 2015, NBC held a status conference with representatives from Ecological Fibers. Steps to mitigate the consistent zinc exceedances were discussed during the meeting. As of December 31, 2015 this matter was not resolved. The NBC will continue to work with Ecological Fibers in 2016 to settle this matter.

In addition to AO # BP-01-15, the Pretreatment Section prepared information for three escalated enforcement actions. The first was to Foremost Baking Company, a Field's Point bakery, for not submitting required Self-Monitoring Compliance Reports. Before the AO could be issued the company went out of business without notifying the NBC. The principals of the company could not be located. The second escalated action was issued to Hope Street Pizza, a restaurant located in Field's Point. This company disconnected its grease removal unit during a renovation and failed to reinstall the grease removal unit. The company complied with the requirement to reinstall the unit. The NBC legal section issued a letter to the company reiterating the consequences of removing pretreatment equipment. In November 2015, an Administrative Order Prep form was prepared and forwarded to the Legal Section by Pretreatment staff for DFI-EP, LLC, a Field's Point metal finishing company, for exceeding metals maximum discharge limitations. The AO was issued to the company in January 2016. The matter will be negotiated in 2016.

2015 Civil Suits

During 2015 the NBC did not issue any civil suits against a permitted company for violations of the Rules and Regulations and the terms of its Wastewater Discharge Permit. Below is an update of the civil action (CA) that was issued in 2012.

- CA #12-2600 was issued against Providence Specialty Products, Inc. (Providence Specialty), a SIU conducting cheese manufacturing operations. Providence Specialty accrued an outstanding balance due to non-payment of permit fees and BOD/TSS surcharges. Letters from the Legal Section were issued to the company on February 15, 2012 and March 20, 2012. The company did not respond to these letters and a complaint was filed with the Superior Court on April 17, 2012 for the recovery of $87,873.73. The complaint was amended for the balance of $99,735.66. The company was served with the complaint on July 5, 2012. The parties met on September 13, 2012 to discuss the issues. During the discussion, Providence Specialty stated the BOD/TSS surcharge calculations that were performed by the NBC were not accurate due to the volume of flow used for the calculations was too high. The company provided documentation to demonstrate

more water is used in the process and not discharged to the sewer. The documentation showed the flow credit that should be used in determining the surcharge should be 50% rather than the 25% used by NBC. At the end of the meeting the parties agreed that Providence Specialty had until January 25, 2013 to respond to the complaint. A site visit of the facility was also agreed on. The site visit was conducted on October 2, 2012. The purpose of the visit was to verify the increased flow credit was warranted and determine the most accurate way of monitoring the wastewater discharged from the facility. The company was provided options to accurately measure wastewater flow from the facility. Both parties met again on December 13, 2012. At this meeting Providence Specialty outlined a proposal for payment of the outstanding balance which included BOD/TSS surcharges, permit and consumption fees. A CO was issued and signed by Providence Specialty and NBC on January 31, 2013. Providence Specialty agreed to pay $90,527.11 in monthly installments. During 2015, Providence Specialty continued to pay these installments. As of December 31, 2015, Providence Specialty has paid a total of $34,000.00.

Permit Suspensions

As stated in Article 8.14 of the NBC Rules and Regulations, the Executive Director may suspend the Wastewater Discharge Permit of any user who ceases operations for any period exceeding one month. The suspension does not act as a revocation of the permit, but rather as a temporary suspension of the users' rights under the permit while operations have ceased. During 2015, no Letters of Wastewater Discharge Permit Suspension were issued.

Supplemental Environmental Projects

Supplemental Environmental Projects (SEP) are additional requirements and/or extra activities that may be undertaken by a violator of environmental laws or regulations against whom enforcement action has been taken. In settlement negotiations, the violator or the regulating authority may propose that an environmental project be undertaken in consideration of a reduced penalty.

In no case should the cost of the project to the violator be less than the offset amount of the penalty. A SEP may only be considered for inclusion in a settlement if the total settlement agreement ensures future compliance through corrective measures, a substantial monetary payment is made in addition to the SEP and if an appropriate nexus is demonstrated between the violation and the environmental benefits to be derived from the SEP.

The EPA recognizes five categories of acceptable supplemental environmental projects. The first four categories: pollution prevention projects, pollution reduction projects, Environmental restoration projects and environmental auditing projects require that the Project demonstrates an appropriate nexus between the nature of the violation and the environmental benefits to be derived. For example, if the violator was cited for repeated pH reporting violations, the purchase and installation of digital or computerized pH monitoring

and recording equipment would provide sufficient nexus between the violation and the anticipated benefit to be derived from use of the equipment. The last category, public awareness projects, is not subject to this strict nexus requirement, but must still be related to the type of violation which is the subject of the underlying violations. Pursuant to EPA regulation, general educational and environmental awareness projects are not acceptable as SEPs. In addition, SEPs are less appropriate for repeat offenders.

Environmental Enforcement Fund

During the 1989 Legislative Session, 89-S-786 was passed into law which established the Narragansett Bay Commission Environmental Enforcement Fund (EEF). This fund consists of sums recovered by administrative or civil enforcement actions brought under the authority of Rhode Island General Laws, Chapter 46-25 (the NBC enabling legislation) and may be used for the following:

- Emergency response activities such as site inspections, investigatory reports, collection, monitoring, and analysis of samples of wastewater, spill response, etc.
- Enforcement activities such as legal activities, to enforce the provisions of this chapter, etc.
- Additional activities such as professional and emergency response training, environmental research, public information and education, etc.
- Bay bond debt retirement (discretionary in the event that funds have not been committed for projects within a three year period following their deposit into the fund).

Miss Rhode Island contestants showing off their river cleanup totes received after cleaning green space in Providence.

Blackstone River Watershed Council/Friends of the Blackstone Earth Day Cleanup along the Blackstone River.

In 2015, two proposals were submitted to the NBC Board of Commissioners for review and were approved, awarding $11,500 collected from environmental violations to projects that enhance the Rhode Island environment and environmental education.

Since the late 1900s, the NBC has successfully sponsored a large Earth Day river cleanup event that focused on beautifying the Woonasquatucket River. In 2013, the NBC initiated a grant program, provided through the EEF, intended to expand the positive impact on multiple rivers throughout the NBC service area rather than focusing solely on the Woonasquatucket River. The NBC continued this grant program in 2015 and was able to assist numerous local organizations, cities and towns by providing 16 small grants that allowed the organizations to purchase the supplies necessary to organize cleanups and river restoration activities with the NBC service area. A complete list of the grant award recipients can be found in CHAPTER VII.

A summary of the grants that were awarded Environmental Enforcement Funds in 2015 are listed below in TABLE 32.

TABLE 32
2015 Approved Environmental Enforcement Fund Proposals

EEF#	Company	Project	Amount Awarded
15-001	NBC Earth Day Clean-Up Grant Program	Grant program designed to offer financial assistance in the form of small grants to qualifying organizations conducting Earth Day Clean-Up events within the NBC service district.	$9,000.00
15-002	The MET School - Leonard Walker Scholarship Fund	Contribution to the Leonard Walker Scholarship Fund to help school children in RI receive a better education at the MET School.	$2,500.00
Total Approved in 2015			**$11,500.00**

Enforcement Response Plan

In accordance with 40CFR§403.8(f)(5), the NBC developed and submitted an Environmental Response Plan (ERP) to the DEM on February 1, 1993. The plan was officially approved by the DEM on January 12, 1995. The purpose of the plan is to clearly establish anticipated reactions of the agency to specific violations of the relevant environmental laws and regulations. The plan explains the enforcement tools and mechanisms available and employed by the NBC and the Pretreatment Program. The plan suggests timetables for the initiation of enforcement actions that would be followed as soon as practicable after NBC staff becomes aware of any non-complying event. These timetables serve two goals. The timetables avoid continued user non-compliance for extended periods of time by requiring quick enforcement response by the NBC. Secondly, the quick enforcement response guarantees that evidence and memories will not become stale by the time delay that can occur when initiating an enforcement action.

The NBC has revised the ERP to comply with DEM requirements imposed during the year 2000 DEM Pretreatment Compliance Inspection and the RIPDES permits issued by the DEM on December 31, 2001. The revised ERP was submitted to the DEM on August 28, 2002 in accordance with DEM requirements. The plan was approved by the DEM on September 26, 2003.

Publication of Firms in Significant Non-Compliance (SNC)

Federal regulation 40CFR§403.8(f)(2)(vii) requires the NBC to publish at least annually the names of all industrial users in Significant Non-Compliance (SNC) with pretreatment standards or other pretreatment requirements during the preceding 15 months. A list of industrial users found to be in SNC with pretreatment standards and/or administrative requirements for the period of October 1, 2014 through December 31, 2015 were published in an advertisement in the PROVIDENCE JOURNAL on **February 23, 2016**. A copy of this advertisement is provided in FIGURE 39, while the Confirmation of Publication is provided in FIGURE 40.

During 2006 the NBC Rules and Regulations were modified to incorporate the revised EPA definition of SNC, detailed in the EPA Pretreatment Streamlining Regulations. The NBC complied with Federal regulations to cite any industrial user as being in SNC for violating any of the following criteria:

(a) Chronic violations of wastewater discharge limitations, defined here as those in which 66% or more of all measurements taken in a six (6) month period exceed (by any magnitude) a numerical Pretreatment Standard of Requirement for the same pollutant parameter;

(b) Technical Review Criteria (TRC) violation, defined here as those in which 33% or more of all the measurements for each pollutant parameter taken during a six (6) month period equal or exceed the product of the numerical Pretreatment Standard or Requirement multiplied by the applicable TRC value. (TRC = 1.4 for BOD, TSS, fats, oil, and grease and 1.2 for all other pollutants except pH);

(c) Any other violation of a pretreatment effluent limit (daily maximum or long-term average) that the Commission determines has caused, either alone or in combination with other discharges, pass through or interference (including endangering the health of Commission personnel or the general public);

(d) Any discharge of a pollutant that has caused imminent endangerment to human health, welfare, or the environment, or causes the POTW to exercise its emergency authority to halt or prevent such discharge;

(e) Failure to meet, within 90 days after the scheduled date, a compliance milestone contained in a permit or enforcement order, for starting construction, completing construction, or attaining final compliance;

(f) Failure to provide within 30 days after the due date, required reports such as Baseline Monitoring Reports, 90-day reports, periodic reports, and compliance schedule milestone reports;

(g) Failure to accurately report non-compliance;

(h) Any violation or group of violations that the NBC determines will adversely affect the operation or implementation of the Pretreatment Program.

Based upon extensive user file reviews, the names of thirteen firms were listed in the **February 23, 2016**, public notice in the Providence Journal. Of the thirteen firms listed in SNC, five users are located in Field's Point and eight are located in Bucklin Point users. There were four firms in SNC subject to EPA categorical standards. Three of these firms are classified as either electroplaters or metal finishers and one is classified as a pharmaceutical manufacturer. Two are located in Field's Point and two are located in Bucklin Point. Two firms are classified as non-categorical significant industrial users and are located in Bucklin Point. One conducts printing operations and the other conducts laundry operations. Seven of the users published are classified as non-significant industrial users. Four of these users perform zero discharge jewelry manufacturing operations. One firm conducts plate making operations. One firm conducts zero discharge printing operations. The final firm conducts zero discharge metals recycling operations. Three of these firms are located in Field's Point and five are located in Bucklin Point.

As noted there were thirteen firms listed in SNC in 2015, an increase from the eight firms listed in SNC in 2014. All but one of the thirteen users listed in the **February 23, 2016**, SNC Public Notice, had achieved full compliance with the EPA and NBC Rules and Regulations for which they were published prior to the date of publication. The one firm that had not returned to full compliance, a zero discharge jewelry manufacturing facility, was listed in SNC for failure to submit a report on time. The report had still not been received as of the date of the Public Notice. Five of the firms, all SIUs, were published in SNC for exceeding NBC discharge limitations. Administrative Orders were issued to two of these SIUs. The remaining eight firms were published in SNC for failure to submit reports on time, which are administrative violations. Additional information regarding the firms listed in SNC is provided in CHAPTERS I and IV. The cost to publish the public notice was billed to the firms listed as being in Significant Non-Compliance.

Publication of Firms in Perfect Compliance

In addition to publishing the annual SNC public notice, the NBC annually publishes the names of firms that achieved perfect compliance during the review period. In 2015, the NBC recognized nineteen SIUs for achieving perfect compliance with the terms of their permits and the NBC Rules and Regulations. These nineteen SIUs will be recognized at awards ceremony in mid-2016. The 2015 Perfect Compliance advertisement can be seen in FIGURE 41. Additional information regarding the Environmental Merit Awards program can be found in CHAPTER VII.

FIGURE 39
2015 SIGNIFICANT NON-COMPLIANCE PUBLIC NOTICE
THE PROVIDENCE JOURNAL

The Narragansett Bay Commission

PUBLIC NOTICE

Firms in Significant Non-Compliance

THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGULATION 40 C.F.R. 403.8(f) (2) (vii) and Article 10 of the Narragansett Bay Commission, Rules and Regulations require the NBC to publish annually the names of all industrial users in Significant Non-Compliance (SNC) with pretreatment standards and other pretreatment requirements during the preceding year. Companies deemed to be in Significant Non-Compliance are those industrial users who have violated any of the Significant Non-Compliance criteria listed, as defined by Article 2 of the NBC Rules and Regulations during the time period from October 1, 2014 through December 31, 2015. The parameter for which a company was not in compliance and/or the specific administrative deficiency are listed after the company name. The number(s) in parentheses correspond to the type of SNC criteria specified below. Some of the firms listed below may have been issued an Administrative Order in which administrative and/or civil penalties may have been assessed. Many of the companies listed have made significant progress toward correcting the violation and may now be in compliance.

Significant Non-Compliance Criteria:

(1) Chronic violations of wastewater discharge limits, defined here as those in which 66% or more of all of the measurements taken during a six-month period exceed (by any magnitude) a numerical Pretreatment Standard or Requirement for the same pollutant parameter;

(2) Technical Review Criteria (TRC) violations, defined here as those in which 33% or more of all the measurements for each pollutant parameter taken during a six-month period equal or exceed the product of a numerical Pretreatment Standard or Requirement multiplied by the applicable TRC value (TRC = 1.4 for BOD, TSS, fats, oil, and grease and 1.2 for all other pollutants except pH);

(3) Any other violation of a pretreatment effluent limit (daily maximum or long-term average) that the Commission determines has caused, alone or in combination with other discharges, interference or pass through (including endangering the health of Commission personnel or the general public);

(4) Any discharges of a pollutant that has caused imminent endangerment to human health, welfare or the environment or has resulted in the Commission's exercise of its emergency authority to halt or prevent such a discharge;

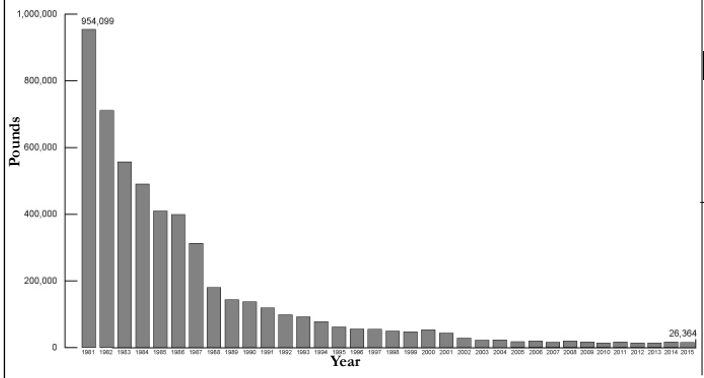
(5) Failure to meet, within 90 days after the scheduled date, a compliance milestone contained in a Commission notification, permit or enforcement order, for starting construction, completing construction or attaining final compliance;

(6) Failure to provide, within 30 days after the due date, required reports such as baseline monitoring reports, 90-day compliance reports, self-monitoring compliance reports and reports on compliance with compliance schedules;

(7) Failure to accurately report noncompliance;

(8) Any other violation or group of violations which the Commission determines has adversely effected the operation or implementation of the Industrial Pretreatment Program. •

Total Metals Influent to Field's Point WWTF, 1981-2015



THE NARRAGANSETT BAY COMMISSION IS COMMITTED TO PROTECTING THE STATE'S TWO LARGEST WASTEWATER TREATMENT FACILITIES AND NARRAGANSETT BAY FROM TOXIC DISCHARGES. This is accomplished by the issuance of discharge permits to commercial and industrial sewer users. These discharge permits specify the level of pollutants that can be discharged in a facility's wastestream and may require a firm to conduct wastewater monitoring to verify compliance with discharge limits, to implement a Spill Control Plan and/or Toxic Organic/Solvent Management Plan, and to install pretreatment equipment. Various reporting and record keeping requirements may also be written into discharge permits. The firms listed in this public notice violated one or more of the significant non-compliance criteria specified above. The Commission is required by the RI DEM and the US EPA to annually publish the names of all firms violating any of these criteria. Therefore, firms must be sure to comply with all the terms specified in their discharge permit to ensure that the name of their firm is not listed in this annual public notice. The NBC offers FREE technical assistance to firms located in the NBC service area through its non-regulatory Office of Environmental, Safety & Technical Assistance. For information on how the NBC Environmental, Safety & Technical Assistance Program can help your firm achieve and maintain compliance, contact the Environmental, Safety & Technical Assistance Program Staff at 461-8848/TDD 461-6549.

Most businesses located in the NBC district are to be commended for the fine job they have done treating their process discharges to remove toxic pollutants. In 1981, local industries discharged 954,099 pounds of heavy metals such as copper, nickel and zinc and 80,440 pounds of cyanide to the Field's Point Wastewater Treatment Facility. Since 1981, the total metals and cyanide loadings to the Field's Point facility have been reduced by 97.2% and 98.6% respectively. Similar toxic loading reductions have been observed at the NBC Bucklin Point facility.

Bucklin Point Service Area

Lincoln

Company Name	Violations Cited	Present Status
Denison Acquistion Company, LLC dba Denison Pharmaceuticals, LLC	TTO (1,2)	Firm is now in compliance.
Putnam Holdings, Inc. dba Terra Pack	Failure to submit reports on time (6)	Reports have been received.

Pawtucket

Bliss Manufacturing Company, Inc.	Ag (2), CN (2)	Firm is now in compliance.
Ecological Fibers, Inc.	Zn (2)	An Administrative Order was was issued assessing an administrative penalty of $22,000. Firm is now in compliance.
Mercury Print & Mail Company, Inc.	Failure to submit report on time (6)	Report has been received.
New England Linen Supply, Inc.	Failure to submit reports on time (6)	Reports have been received.
Providence Wire Creations, Inc.	Failure to submit reports on time (6)	Reports have been received.
R & D Manufacturing, Inc.	Failure to submit report on time (6)	Report has been received.

Field's Point Service Area

Johnston

Company Name	Violations Cited	Present Status
G. Tanury Plating Company	Pb (2)	Firm is now in compliance.

North Providence

DFI-EP, LLC	Ni (2), CN (2)	An Administrative Order was issued assessing an administrative penalty of $23,500. Firm is now in compliance.

Providence

Bella's Jewelry	Failure to submit report on time (6)	Report has not been received.
JC Gorham Co.	Failure to submit reports on time (6)	Reports have been received.
Rhode Island Recycled Metals, LLC	Failure to submit report on time (6)	Report has been received.

The Narragansett Bay Commission will continue to lead in wastewater treatment, environmental protection, and environmental education to ensure a cleaner Narragansett Bay for all to enjoy.

Vincent J. Mesolella, *Chairman* • Raymond J. Marshall, P.E., *Executive Director*
Narragansett Bay Commission • One Service Road • Providence, RI 02905 • 401-461-8848 • TDD 401-461-6549 • FAX 401-461-6540 • http://www.narrabay.com
Twitter: @narrabay • Facebook: www.facebook.com/narrabay

The cost of this public notice will be billed to the firms listed above that were in significant non-compliance.

FIGURE 40
CONFIRMATION OF PUBLICATION OF SNC PUBLIC NOTICE

'HOPE – A SCHOOL, A TEAM, A DREAM' BY BILL REYNOLDS

HOPE

From Page A1

So he had ended up in Catholic schools, and when he began high school at Fatima, in Warren, 15 miles south of Providence, he had needed to wake up at 4:30 in the morning, put on a uniform, and get to the bus stop; he slept the entire ride. Fatima was only about 5 percent African-American, so he was always different. The basketball team was horrible, and it was never easy being there, the long days being just a part of the challenge.

But Fatima was different from the Providence schools; kids didn't talk back to the teachers and act out, and the environment was helping him as a student. He did homework, earned A's and B's and was an honor student. And even though his family could no longer afford to send him there, he knew that in many ways Fatima had served him well.

If nothing else, before transferring to Hope, it made him a serious student, to the point that even though he loved basketball, he knew that his education was far more important, and that his education, not basketball, would take him places in life.

So now he was an honor-roll student, wanted to be a civil engineer someday. He had heard so much about Liberia from his mother, how beautiful it was before the war came and changed everything, and he thought he might want to go back there someday and help out. But for now he liked school, and he was doing his homework and taking classes seriously.

"So you're smart?" I asked.

He smiled.

"I'm trying to be," he said.

—From "Hope," by Bill Reynolds. Copyright © 2016 by the author and reprinted by permission of St. Martin's Press, LLC.
—Small edits were made for clarity.

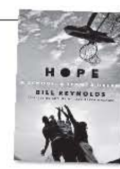
Coach Dave Nyblom talks to the team during a time-out in the state championship game against North Kingstown.
THE PROVIDENCE JOURNAL PHOTOS/BOB BREIDENBACH

Hope coaches wrote memos on locker room mirrors to inspire their players in the game.

Delonce Wright and other players practice at Hope High School during playoffs in the 2012-2013 season.

About this series

In December 2012, Providence Journal sports columnist Bill Reynolds went to Hope High School for the first day of boys basketball practice. For the next four months, he followed the daily lives of the players and their coach. He was there as they endured setbacks on and off the court, then went on a magical playoff run that took them to the brink of a state title. He tells their story in a new book, "HOPE: A School, A Team, A Dream." This is the third of five excerpts from the book that will be published in The Providence Journal and on providencejournal.com through Thursday.



Coming Wednesday

Eli Lewis was quick, left-handed, able to dunk on a break even though he was under six feet tall, a kid with vast potential. Yet he was also the personification of the young, inner-city player — unfocused, hypersensitive to any kind of criticism. His father wasn't part of his life, and that haunted him as he stood at the brink of life as an adult. And he loved basketball so much that "without it," he said, "I just feel empty."

NATIVE AMERICANS

Grant to improve career opportunities

By G. Wayne Miller
Journal Staff Writer

EXETER — The campaign to eliminate economic disparities affecting Rhode Island's native American communities has received a boost with the awarding of a grant to the Tomaquag Museum's Indigenous Empowerment Initiative (IEI), which uses museum resources and other means to boost employment — directly and indirectly.

"The network we are forging will bring together people from many different walks of life — from the arts, culture and museums, to business, education and government," said museum executive director Lorén Spears, who has been seeking financial support for a number of indigenous efforts. "It takes a team to fulfill the dream of equity to erase poverty."

The grant, for $35,714, comes from Third Sector New England, the Boston-based societal-improvement organization that specializes in helping nonprofit groups that share its vision of "a society grounded in and guided by principles of social and economic justice and mutual respect," according to Third Sector's mission statement.

"With Tomaquag as the hub, we will educate tribal members throughout Rhode Island by empowering their cultural and ecological knowledge and weave that into the framework of contemporary careers that museums house," Spears said. Among those careers: marketing, business and finance, education, administration and museum studies.

Rhode Island's Native Americans, including indigenous people of Narragansett and Niantic descent, are at an economic disadvantage to the state's whites, according to the U.S. Census Bureau. Fewer than a third of Native American households own their homes, compared with nearly two-thirds of whites, and Native American household median income is $28,750, compared to $62,188 for whites.

Among the features of the IEI initiative are internships "to expose Native American youth and adults to the various opportunities a museum has to offer"; paid positions; a paid fellowship; and with educational partnerships, the creation of museum studies and Native Studies degree programs.

Spears said the overall effort will also help the larger Rhode Island community.

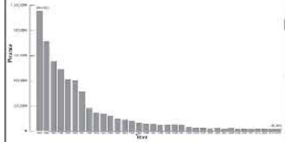
"It is so important for the Native and Rhode Island communities," she said. "When we empower others, we empower ourselves."

The Narragansett Bay Commission

PUBLIC NOTICE

Firms in Significant Non-Compliance

Total Metals Influent to Field's Point WWTF, 1981-2015



Bucklin Point Service Area

Lincoln

Pawtucket

Field's Point Service Area

Johnston

North Providence

Providence

FIGURE 41
2015 PERFECT COMPLIANCE ADVERTISEMENT
THE PROVIDENCE JOURNAL

NARRAGANSETT BAY COMMISSION

Perfect Compliance

in recognition of Significant Industrial User Perfect Compliance in 2015

The Narragansett Bay Commission recognizes these Significant Industrial User companies for perfect regulatory compliance with Pretreatment Program regulations during 2015:

A Harrison & Company, Inc.
Dominion Energy
Manchester Street, Inc.
Godfrey & Wing, Inc.
dba Impco, Inc.
John H. Collins & Sons Company
Narragansett Jewelry
dba C&J Jewelry Company
Stackbin Corporation
Technodic, Inc.
Truex, Inc.
Darlene Group, Inc.
Electrolizing, Inc.
Hord Crystal Corporation
Induplate, LLC
Interplex Engineered Products, Inc.
Metallurgical Solutions, Inc.
Pawtucket Power Associates
Providence Metallizing Company, Inc.
Tanury Industries, PVD, Inc.
Tiffany and Company
Univar USA, Inc.

Has your company demonstrated extraordinary environmental efforts this year?

If so, apply for an NBC Environmental Merit Award! Download an application form at www.narrabay.com.

Vincent J. Mesolella, *Chairman* • **Raymond J. Marshall, P.E.,** *Executive Director*
One Service Road, Providence, RI 02905
401-461-8848 • www.narrabay.com

TABLE 33
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/13
FIELD'S POINT DISTRICT

NFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
NOV #1 F. RONCI CO.	01/31/1986	HEARING AWARDED $219,950.00 COURT REVERSED AWARD	N/A	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
NOV #2 ABATE & URSILLO COMPANY	03/20/1987	CONSENT ORDER 05/01/87 BANKRUPT	N/A	$23,000.00	$2,683.31	$20,316.69	$1,500.00	$1,500.00	$0.00	$750.00	$750.00	$0.00
NOV #3 ASTRO PLATING WORKS	05/13/1987	CONSENT ORDER 08/20/87	N/A	$70,000.00	$70,000.00	$0.00	$4,000.00	$4,000.00	$0.00	$19,500.00	$19,500.00	$0.00
NOV #4 A & J JEWELRY CO.	10/07/1987	CONSENT ORDER 11/13/87	N/A	$7,500.00	$7,500.00	$0.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00
NOV #5 RAU FASTENERS, INC.	10/12/1987	CONSENT ORDER 07/23/90	N/A	$50,000.00	$50,000.00	$0.00	$2,000.00	$2,000.00	$0.00	$117,500.00	$117,500.00	$0.00
NOV #6 H.M. PLATING CO.	12/10/1987	NOV RESCINDED	N/A	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
NOV #7 ANTONELLI PLATING CO.	12/07/1987	NOV RESCINDED	N/A	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
NOV #8 H.M. PLATING CO.	09/14/1988	CONSENT ORDER 01/13/89 BANKRUPT	N/A	$15,000.00	$3,000.00	$12,000.00	$2,000.00	$2,000.00	$0.00	$1,750.00	$1,750.00	$0.00
NOV #9 BIANCO PLATING CO.	10/04/1988	CONSENT ORDER 03/10/89 BANKRUPT	N/A	$23,000.00	$7,800.00	$15,200.00	$8,400.00	$8,400.00	$0.00	$500.00	$500.00	$0.00
NOV #10 PROCRAFT, INC.	02/16/1989	CONSENT ORDER 04/27/90	N/A	$1,500.00	$1,500.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
NOV #11 CONCORDE BUCKLE CO.	08/04/1989	CONSENT ORDER 03/20/90	N/A	$7,500.00	$7,500.00	$0.00	$1,000.00	$1,000.00	$0.00	$0.00	$0.00	$0.00

TABLE 33
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/13
FIELD'S POINT DISTRICT

NFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
NOV #12 GALAXY GOLD, INC.	11/01/1989	CONSENT ORDER 04/27/90 PERMIT REVOKED 10/26/89	N/A	$6,300.00	$6,300.00	$0.00	$2,193.00	$2,193.00	$0.00	$0.00	$0.00	$0.00
NOV #13 SCIENTIFIC METAL FINISHING	11/01/1989	NOV RESCINDED	N/A	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
NOV #14 EASTLAND/ NU-WAY FOOD PRODUCTS	11/01/1989	CONSENT ORDER 03/29/90	N/A	$3,000.00	$3,000.00	$0.00	$12,254.00	$12,254.00	$0.00	$0.00	$0.00	$0.00
NOV #15 GOLD CROWN, INC.	02/15/1990	CONSENT ORDER 09/11/90	N/A	$10,000.00	$10,000.00	$0.00	$2,270.00	$2,270.00	$0.00	$0.00	$0.00	$0.00
NOV #16 SCIENTIFIC METAL FINISHING/S. MARCOS	12/22/1989	CONSENT ORDER 07/25/90 BANKRUPT	N/A	$12,500.00	$5,200.00	$7,300.00	$7,700.00	$2,500.00	$5,200.00	$1,500.00	$500.00	$1,000.00
NOV #17 SCIENTIFIC METAL FINISHING/ J. ROACH	12/22/1989	TERMS INCORPORATED INTO THE ABOVE CONSENT ORDER		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
NOV #18 ELECTRONIC PRECISION	02/15/1990	NOV RESCINDED MERGED W/ NOV #27	N/A	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
NOV #19 AMICARELLI & EASTMAN	05/15/1990	NOV RESCINDED	N/A	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
NOV #20 ARC ENTERPRISE	05/15/1990	HEARING ORDER 08/29/90 DEBTOR INSOLVENT	N/A	$6,000.00	$0.00	$6,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
NOV #21 ELECTROLIZING	06/07/1990	CONSENT ORDER 01/16/91	$68,000.00	$8,000.00	$8,000.00	$0.00	$4,000.00	$4,000.00	$0.00	$0.00	$0.00	$0.00
NOV #22 RHODE ISLAND CLEANERS	06/11/1990	HEARING ORDER 10/02/90 CONSENT ORDER 07/14/92	$15,000.00	$15,000.00 w/ $4,000.00 SUSPENDED	$11,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

TABLE 33
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/13
FIELD'S POINT DISTRICT

NFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
NOV #23 QUALITEX, INC.	07/05/1990	CONSENT ORDER 10/19/90	N/A	$25,000.00	$25,000.00	$0.00	$5,193.92	$5,193.92	$0.00	$5,000.00	$5,000.00	$0.00
NOV #24 PROVIDENCE HOUSING AUTHORITY	08/23/1990	CONSENT ORDER 11/01/90	$4,000.00	$0.00	$0.00	$0.00	$7,614.88	$7,614.88	$0.00	$0.00	$0.00	$0.00
NOV #25 JOHNSTON DRESSED BEEF & VEAL CO.	08/29/1990	HEARING ORDER 11/14/90	N/A	$23,000.00	$23,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
NOV #26 J.V. PLATING CO.	09/04/1990	CONSENT ORDER 04/09/91 BANKRUPT	$22,000.00	$3,000.00	$1,750.00	$1,250.00	$2,260.00	$1,130.00	$1,130.00	$750.00	$0.00	$750.00
NOV #27 ELECTRONIC PRECISION CIRCUITRY	09/24/1990	CONSENT ORDER 01/07/91	N/A	$12,300.00	$12,300.00	$0.00	$7,700.00	$7,700.00	$0.00	$0.00	$0.00	$0.00
NOV #28 WALLACE COMPANY	10/26/1990	BANKRUPT	N/A	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
NOV #29 APAC TOOL, INC.	10/26/1990	CONSENT ORDER 04/23/91	$8,000.00	$2,498.00	$2,498.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
NOV #30 D'AMBRA CONSTRUCTION	12/19/1990	CONSENT ORDER 06/11/92	N/A	$2,000.00	$2,000.00	$0.00	$7,000.00	$7,000.00	$0.00	$0.00	$0.00	$0.00
NOV #31 NEW ENGLAND TELEPHONE & TELEGRAPH CO.	01/10/1991	CONSENT ORDER 06/13/91	$9,910.00	$8,000.00	$8,000.00	$0.00	$1,910.00	$1,910.00	$0.00	$0.00	$0.00	$0.00
NOV #32 ALLENS MANUFACTURIN G CO.	01/10/1991	CONSENT ORDER 09/06/91	$54,000.00	$2,870.00	$2,870.00	$0.00	$2,810.00	$2,810.00	$0.00	$0.00	$0.00	$0.00
NOV #33 PROVIDENCE COLLEGE	02/07/1991	MERGED WITH NOV #34 CONSENT ORDER 07/15/91	$7,200.00	$12,000.00	$12,000.00	$0.00	$2,320.00	$2,320.00	$0.00	$0.00	$0.00	$0.00

TABLE 33
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/13
FIELD'S POINT DISTRICT

NFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
NOV #34 PROVIDENCE COLLEGE	02/15/1991	MERGED WITH NOV #33 SEE ABOVE	N/A	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
NOV #35 VANITY JEWELRY	03/13/1991	CONSENT ORDER 05/10/91	$1,250.00	$1,250.00	$1,250.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #1 QUALITY STAMPING	06/25/1991	CONSENT JUDGMENT 04/26/96	$25,000.00	$5,000.00	$5,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #2 JOHN OLSON & SONS	07/03/1991	CONSENT ORDER 06/09/92	$22,000.00	$4,500.00	$4,500.00	$0.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00
AO #3 D & D PLATING	08/26/1991	CONSENT ORDER 02/11/92	$9,250.00	$3,000.00	$3,000.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #4 DON-LIN JEWELRY CO.	08/26/1991	CONSENT ORDER 01/13/92	$4,218.00	$2,500.00	$2,500.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #5 FEDERAL PRODUCTS	08/26/1991	CONSENT ORDER 12/26/91	$4,250.00	$2,500.00	$2,500.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #6 SMITH JEWELRY SERVICE CO.	08/26/1991	IMMEDIATE COMPLIANCE ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #7 F. RONCI (SMITH ST.)	10/10/1991	BANKRUPT	$171,850.00	$170,850.00	$0.00	$170,850.00	$1,000.00	$0.00	$1,000.00	$0.00	$0.00	$0.00
AO #8 F. RONCI (ATLANTIC BLVD.)	10/10/1991	BANKRUPT	$52,200.00	$51,700.00	$0.00	$51,700.00	$500.00	$0.00	$500.00	$0.00	$0.00	$0.00
AO #9 CH SPRAGUE	10/10/1991	CONSENT ORDER 05/06/92	$15,000.00	$4,000.00	$4,000.00	$0.00	$2,000.00	$2,000.00	$0.00	$0.00	$0.00	$0.00

TABLE 33
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/13
FIELD'S POINT DISTRICT

NFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
AO #10 QUALITY PLATING	12/04/1991	DEBTOR INSOLVENT	$40,135.00	$39,650.00	$0.00	$39,650.00	$485.00	$0.00	$485.00	$0.00	$0.00	$0.00
AO #11 GENERAL ELECTRIC	10/28/1991	COMPLIED WITH ORDER	$6,885.00	$6,885.00	$6,885.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #12 ALLENS MFG. CO.	12/04/1991	PERMIT FEES PAID FINE WAIVED	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #13 ELECTROBRITE COATING CO.	12/14/1991	PERMIT FEES PAID FINE WAIVED	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #14 MERCURY POLISHING & PLATING	12/14/1991	PERMIT FEES PAID FINE WAIVED	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #15 GABRIELE'S, IND.	12/14/1991	COMPLIED WITH ORDER	$250.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #16 DUNC'S PLATING	12/14/1991	COMPLIED WITH ORDER	$250.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #17 SAMSON MFG., LTD.	12/14/1991	AO RESCINDED	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #18 STARBRITE PLATING	12/14/1991	COMPLIED WITH ORDER	$250.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #19 ASTRO PLATING WORKS	12/14/1991	COMPLIED WITH ORDER	$250.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #20 QUALITY PLATING CO.	12/14/1991	AO RESCINDED	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

TABLE 33
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/13
FIELD'S POINT DISTRICT

NFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
AO #21 CLAYTON CO.	01/22/1992	CONSENT ORDER 12/07/92	$9,882.00	$6,000.00	$6,000.00	$0.00	$382.00	$382.00	$0.00	$0.00	$0.00	$0.00
AO #22 JEWELS BY PATRICIA	01/22/1992	CONSENT ORDER 05/18/92	$10,500.00	$2,500.00	$2,500.00	$0.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00
AO #23 J.V. PLATING	01/22/1992	BANKRUPT	$250.00	$250.00	$0.00	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #24 QUAKER PLATING	01/23/1992	CONSENT ORDER 06/19/92	$14,600.00	$5,900.00	$5,900.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #25 GOLD CROWN	01/23/1992	CONSENT ORDER 07/08/93	$19,000.00	$9,000.00	$9,000.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #27 QUEBECOR PRINTING	01/07/1992	CONSENT ORDER 06/29/93	$22,250.00	$10,000.00	$10,000.00	$0.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00
AO # FP-01-92 ANTONELLI PLATING	04/03/1992	MERGED WITH #FP-02-92 CONSENT ORDER 07/23/92	$250.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # FP-02-92 ANTONELLI CASTING	04/03/1992	MERGED WITH #FP-01-92 SEE ABOVE	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # FP-03-92 GOLD CROWN	05/26/1992	IMMEDIATE COMPLIANCE ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # FP-04-92 ALLENS MFG.	06/04/1992	BANKRUPT	$11,250.00	$11,250.00	$0.00	$11,250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # FP-05-92 GENERAL ELECTRIC	09/01/1992	CONSENT ORDER 08/10/93	$9,500.00	$7,500.00	$7,500.00	$0.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00

TABLE 33
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/13
FIELD'S POINT DISTRICT

NFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
AO # FP-06-92 DUNC'S PLATING	11/12/1992	PERMIT FEES PAID FINE WAIVED	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # FP-07-92 BROAD STREET CAR WASH	11/12/1992	CONSENT ORDER 01/06/93	$250.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # FP-08-92 CAFFE PAZZO	12/16/1992	CONSENT ORDER 07/07/93 BUSINESS CHANGED OWNERSHIP	$2,500.00	$500.00	$100.00	$400.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # FP-09-92 AIR CLEANING CONCEPTS	12/23/1992	COMPLIANCE ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-93 FEDERATED METALS	03/29/1993	CONSENT ORDER 06/17/93	$12,250.00	$1,500.00	$1,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-02-93 EASTERN COLOR & CHEMICAL	03/29/1993	CONSENT ORDER 07/08/93	$23,000.00	$10,000.00	$10,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-03-93 B B GREENBERG	03/29/1993	BANKRUPT	$7,500.00	$7,500.00	$0.00	$7,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-04-93 ROCCHIO & SONS	05/05/1993	CONSENT ORDER 05/19/97	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-05-93 RI DEPT OF TRANS.	05/05/1993	SAME CASE AS ABOVE	SAME CASE AS ABOVE	SAME CASE AS ABOVE	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # FP-06-93 GFB/ADMIRAL NORGETOWN	05/18/1993	OUT OF BUSINESS	$1,000.00	$1,000.00	$0.00	$1,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # FP-07-93 NEW RIVERS RESTAURANT	07/14/1993	CONSENT ORDER 12/03/93	$1,500.00	$200.00	$200	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

TABLE 33
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/13
FIELD'S POINT DISTRICT

NFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
AO #FP-08-93 MERCURY POLISHING & PLATING CO.	07/22/1993	BANKRUPT/ TERMINATION OF PERMIT	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # FP-09-93 RAU FASTENER	07/23/1993	CONSENT ORDER 05/06/94	$25,000.00	$7,500.00	$7,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # FP-10-93 ALLENS MFG. CO.	07/26/1993	BANKRUPT	$11,000.00	$11,000.00	$0.00	$11,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # FP-11-93 MERIT PLATING	08/06/1993	CONSENT ORDER 04/28/94 BUSINESS CLOSED	$25,000.00	$5,000.00	$0.00	$5,000.00	$500.00	$0.00	$500.00	$0.00	$0.00	$0.00
AO #FP-12-93 R.E.STURDY COMPANY	12/08/1993	COMPLIED WITH ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-13-93 PROVIDENCE ELECTRO-PLATING	12/30/1993	CONSENT ORDER 10/17/95	$20,000.00	$1,000.00 $5,000.00 (SEP)	$1,000.00 $5,000.00 (SEP)	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #FP-14-93 FBF, INCORPORATED	12/30/93 AMENDED 09/13/95	CONSENT ORDER 10/31/95 BUSINESS CLOSED	$31,000.00	$5,000.00	$0.00	$5,000.00	$250.00	$0.00	$250.00	$0.00	$0.00	$0.00
AO #FP-15-93 GEMCRAFT	12/30/1993	CONSENT ORDER 07/21/94	$16,000.00	SEP ($11,000)	SEP($11,000)	$0.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-94 JOHNSTON DRESSED BEEF	04/08/1994	COMPLIED WITH ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-02-94 QUAKER PLATING	04/19/1994	CONSENT ORDER 06/06/94	$13,000.00	$3,000.00	$3,000.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #FP-03-94 YEA, YEA INC./SGUMBATO & SONS	4/19/94 AMENDED 11/20/95	CONSENT ORDER 09/23/96	$10,000.00	$5,000.00	$5,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

TABLE 33
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/13
FIELD'S POINT DISTRICT

NFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
AO #FP-04-94 SHOOTER'S AT INDIA POINT	04/22/1994	CONSENT ORDER 10/12/94	$2,500.00	$2,500.00	$2,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-05-94 EVANS PLATING	06/24/1994	CONSENT ORDER 08/03/95	$29,000.00	$2,500 $6,000.00 (SEP)	$2,500.00 $6,000.00 (SEP)	$0.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00
AO #FP-06-94 RHODE ISLAND PUBLIC TRANSIT AUTHORITY	07/13/1994	COMPLIED WITH ORDER	$11,000.00 CONDITION ON NON-COMPLIANCE	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-07-94 T & J CONTAINER	07/20/1994	CONSENT ORDER 09/27/94	$4,000.00	$1,000.00	$1,000.00	$0.00	$152.94	$152.94	$0.00	$0.00	$0.00	$0.00
AO #FP-08-94 COLORLAB, LTD.	08/25/1994	CONSENT ORDER 11/09/94	$5,000.00	$500.00	$500.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #FP-09-94 PDQ PHOTO	08/25/1994	CONSENT ORDER 11/09/94	$5,000.00	$500.00	$500.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #FP-11-94 IDEAL PLATING	11/02/1994	CONSENT ORDER 08/07/95	$15,000.00	$2,500.00 $2,500.00 (SEP)	$2,500.00 $2,500.00 (SEP)	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #FP-12-94 BLUE GROTTO RESTAURANT	10/07/1994	CONSENT ORDER 05/30/95 BANKRUPT	$5,000.00	$2,000.00	$700.01	$1,299.99	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-13-94 GOLDEN DRAGON RESTAURANT	10/07/1994	CONSENT ORDER 02/02/95	$5,000.00	$1,000.00	$1,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-14-94 T. SARDELLI & SONS	10/07/1994	CONSENT ORDER 01/03/95	$15,000.00	$5,000.00	$5,000.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #FP-15-94 LINCOLN PARK	10/27/1994	SETTLEMENT	$5,000.00	$5,000.00	$5,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

TABLE 33
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/13
FIELD'S POINT DISTRICT

NFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
AO #FP-16-94 PASTA ETC	11/07/1994	BUSINESS CLOSED	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-17-94 A.A. WRECKING	11/18/1994	SETTLEMENT	$10,000.00	$500.00	$500.00	$0.00	$5,997.44	$5,997.44	$0.00	$0.00	$0.00	$0.00
AO #FP-01-95 EAGLE PLATING CO, INC	05/30/1995	CONSENT ORDER 09/03/96	$50,000.00	$7,500.00	$7,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-02-95 RUMSTICK DINNER	06/08/1995	AO RESCINDED 10/18/95 BUSINESS CLOSED	$5,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-03-95 D'AGOSTINO'S AUTO SALVAGE, INC	07/10/1995	CONSENT ORDER 11/27/95	$11,000.00	$2,750.00	$2,750.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #FP-04-95 CENTURY PLATING INTERNATIONAL INC	07/10/1995	CONSENT ORDER 08/30/95	$33,000.00	$7,500.00	$7,500.00	$0.00	$500.00	$500.00	$0.00	$200.00	$200.00	$0.00
AO #FP-05-95 CARABELLA'S RESTAURANT	09/14/1995	AO RESCINDED	$5,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-06-95 KELLY'S CAR WASH	10/04/1995	CONSENT ORDER 02/29/96	$5,000.00	$2,500.00	$2,500.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #FP-07-95 FINISHING CONCEPTS, INC	10/05/1995	CONSENT ORDER 11/27/95	$20,000.00	$5,000.00	$5,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-08-95 CRC, CORP	11/21/1995	CONSENT ORDER 04/01/96	$1,000.00	PUBLIC AWARENESS AD $519.70	$519.70	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-09-95 THAILAND RESTAURANT	10/10/1995	CONSENT ORDER 11/20/96	$5,000.00	$200.00	$200.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

TABLE 33
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/13
FIELD'S POINT DISTRICT

NFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
AO #FP-10-95 RAU FASTENERS, LLC	12/28/1995	CONSENT ORDER 02/20/96	$13,000.00	$9,900.00	$9,900.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-96 OPTI FINISHING TECHNOLOGIES	04/09/1996 AMENDED 06/13/1996	PERMIT REVOKED	$18,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-02-96 RIBCO MFG. INC	04/09/1996	CONSENT ORDER 05/31/96	$10,000.00	$10,000.00	$10,000.00	$0.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00
AO #FP-03-96 DUNC'S PLATING CO.	04/25/1996	CONSENT ORDER 06/24/96	$5,000.00	$1,200.00	$1,200.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-04-96 NORTH PROVIDENCE MEDICAL SERVICES, INC.	07/02/1996	CONSENT ORDER 09/18/96	$0.00 COMPLIANCE ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-05-96 PRECISION INDUSTRIES	09/04/1996	CONSENT ORDER 11/20/96	$7,000.00	$1,500.00	$1,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-06-96 A&F PLATING CO., INC.	09/25/1996	MERGED WITH # FP-08-96	$25,000.00	MERGED WITH FP-08-96	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-07-96 REGENCY PLAZA ASSOCIATES	09/25/1996	CONSENT ORDER 01/13/97	$10,000.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-08-96 A&F PLATING CO., INC.	12/19/1996	PROSECTUED CRIMINALLY	$160,000.00	$15,000.00	$15,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-97 FOTO FINISH	06/12/1997	PERMIT FEES PAID CONSENT JUDGMENT 10/15/97 BUSINESS CLOSED	$5,000.00	$1,000.00	$751.06	$248.94	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-02-97 BEAUCRAFT, INC.	11/20/1997	CONSENT ORDER 01/15/98	$14,000.00	$5,750.00	$5,750.00	$0.00	$250.00	$250.00	$0.00	$400.00	$400.00	$0.00

TABLE 33
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/13
FIELD'S POINT DISTRICT

NFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
AO #FP-03-97 QUAKER PLATING COMPANY, INC.	12/30/1997	CONSENT ORDER 10/14/99	$52,000.00	$26,500.00	$26,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-98 HAB TOOL, INC.	02/24/1998	CONSENT ORDER 05/21/98	$10,000.00	$2,500.00	$2,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-02-98 AD-TECH, INC.	03/17/1998	HEARING HELD APPEAL PENDING	$40,500.00	$75,000.00 AWARDED AT HEARING	$0.00	$75,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-03-98 ALLENS MFG. CO., INC.	03/25/1998	RESOLUTION THRU BANKRUPTCY	$23,000.00	23,000.00	$23,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-04-98 DIMEO CONTRUCTION	06/18/1998	CONSENT ORDER 12/16/98	$1,500.00	$500.00 PUBLIC NOTICE ($459.60)	$959.60	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-05-98 RAWCLIFF CORPORATION	12/10/1998	CONSENT ORDER 03/30/99	$2,500.00	PUBLIC NOTICE ($597.75)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-06-98 RENCLIF, INC.	12/29/1998	CONSENT ORDER 03/18/99	$5,000.00	$1,000.00	$1,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-99 HAMILTON TOOL, INC.	03/02/1999	CONSENT ORDER 04/06/00 PERMIT FEES PAID	$5,000.00	$2,500.00	$2,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-00 CROWN PLATING, INC.	06/20/2000	SUPERIOR COURT STIPULATION FOR PAYMENT OF $12,000 FOR PERMIT FEES FINE WAIVED	$6,250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-02-00 ULTRA METAL FINISHING, INC.	12/28/2000	INCOPORATED INTO AO#FP-02-01 BANKRUPT	$22,000.00	$22,0000	$0.00	$22,000	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-03-00 EASTERN WIRE PRODUCTS CORP.	12/28/2000	CONSENT ORDER 10/30/01	$105,000.00	$10,000.00	$9,150.00 (per accelerated payment plan)	$0.00	$2,000.00	$1,925.00 (per accelerated payment plan)	$0.00	$0.00	$0.00	$0.00

TABLE 33
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/13
FIELD'S POINT DISTRICT

NFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
AO#FP-01-01 MICHAEL MARSOCCI	10/31/2001	CONSENT ORDER 05/02/02	$5,000.00	$750.00	$750.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO#FP-02-01 ULTRA METAL FINISHING CO., INC.	12/27/2001	PERMIT REVOKED BUSINESS CLOSED BANKRUPT	$5,000.00	$5,000	$0.00	$5,000	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO#FP-01-02 RICHARD FULLER	02/05/2002	CONSENT ORDER 05/16/02	$5,000.00	$750.00	$750.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO#FP-02-02 D&L SALES	04/11/2002	CONSENT ORDER 02/25/03	$10,000.00	$2,500.00	$2,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO#FP-03-02 RI CESSPOOL CLEANERS, INC.	05/14/2002	CONSENT ORDER 06/17/02	$5,000.00	$1,250.00	$1,250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO#FP-04-02 C&J JEWELRY COMPANY, INC.	10/17/2002	CONSENT ORDER 12/11/02	$10,000.00	$5,000.00	$5,000.00	$0.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00
AO#FP-05-02 TOWN OF JOHNSTON	10/24/2002	AO SUSPENDED FOR COMPLIANCE	$25,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-03 TOWN OF JOHNSTON	09/10/2003	AO SUSPENDED FOR COMPLIANCE	$10,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-02-03 VICTORY FINISHING TECHNOLOGIES	09/10/2003	CONSENT ORDER 6/8/05	$55,000.00	$5000.00	$5000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-03-03 NEW ENGLAND INDUSTRIES	09/10/2003	CONSENT ORDER 3/9/04	$35,000.00	$1,500.00	$1,500.00	$0.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-04 ELMHURST EXTENDED CARE	3/5/2004	CONSE4NT ORDER 10/27/04	$20,000.00	$7,500.00	$7,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

TABLE 33
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/13
FIELD'S POINT DISTRICT

NFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
AO #FP-02-04 ROGER WILLIAMS MEDICAL CENTER	03/05/2004	CONSENT ORDER 10/27/04	$30,000.00	$12,500.00	$12,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-05 WAL-MART STORES, INC.	10/17/2005	SETTLEMENT AGREEMENT 09/18/06 $40,000 CONTRIBUTION MADE FOR MAINTENANCE AND RIVER CLEANUPS	$61,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-07 PHILIP McKENDALL D/B/A LA PRIMA CAFFE	09/05/2007	CONSENT ORDER 11/19/07	$7,500	$2,500	$2,500	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-08 JRB ASSOCIATES INC.	08/25/08	CONSENT ORDER 4/15/09	$67,000	$24,000.00	$24,000	$0.00	$0.00	$0.00	$0.00	$575.00	$575.00	$0.00
AO #FP-01-09 AO #FP-02-09 MAZEY'S RESTAURANTS	10/8/2009	SETTLEMENT VIA SUPERIOR COURT STIPULATION FOR PAYMENT OF $640 10/24/13	$18,500	$640.00	$640.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
CIVIL ACTION #12-2600 PROVIDENCE SPECIALTY PRODUCTS, INC.	4/17/2012	CONSENT ORDER 1/31/13	$127,018.60	$90,527.11	$34,000	$56,527.11	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

ENFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
BVDC NOV/ORDER LYNCH PAINT	JAN-87	BANKRUPT	$5,000.00	$1,000.00	$0.00	$1,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
BVDC NOV/ORDER LIBERTY PLATING	12/04/1987	CONSENT AGREEMENT 01/29/88	$85,500.00	$18,000.00 ($85,500.00 W/ $67,500.00 SUSPENDED)	$18,000.00	$0.00	$266.35	$266.35	$0.00	$0.00	$0.00	$0.00
BVDC NOV/ORDER #1 COLFAX, INC.	06/10/1988	SETTLEMENT AGREEMENT 09/08/88	$324,000.00	$60,000.00	$60,000.00	$0.00	$57,793.10	$57,793.10	$0.00	$0.00	$0.00	$0.00
BVDC NOV/ORDER TANYA CREATIONS	02/03/1989	CONSENT AGREEMENT 03/07/89	$54,000.00	$24,000.00 ($54,000 W/ $30,000 SUSPENDED)	$24,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
BVDC CHEMART COMPANY	04/17/1989	CONSENT AGREEMENT 09/29/89	$20,000.00	$5,000.00 ($10,000.00 w/ $5,000.00 SUSPENDED)	$5,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
BVDC NOV/ORDER NULCO MFG CORP	08/21/1989	CONSENT ORDER 05/01/90	$126,000.00	$21,000.00 ($42,000.00 W/ $21,000.00 SUSPENDED)	$21,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
BVDC NOV/ORDER #2 COLFAX, INC.	03/16/1990	SETTLEMENT AGREEMENT 07/11/90	$125,000.00	$12,500.00 ($20,000.00 W/ $7,500 SUSPENDED)	$12,500.00	$0.00	$10,117.98	$10,117.98	$0.00	2,000.00	$2,000.00	$0.00
BVDC NOV/ORDER NEWMAN CROSBY	04/10/1990	CONSENT ORDER 08/20/90	$10,500.00	$6,000.00 ($10,500.00 W/ $4,500.00 DEFERRED)	$6,000.00	$0.00	$4,403.26	$4,403.26	$0.00	$0.00	$0.00	$0.00
BVDC NOV/ORDER #3 COLFAX, INC.	07/06/1990	SETTLEMENT AGREEMENT 09/25/90	$25,000.00	$5,000.00	$5,000.00	$0.00	$6,562.15	$6,562.15	$0.00	$0.00	$0.00	$0.00
BVDC NOV/ORDER #4 COLFAX, INC.	08/08/1990	SETTLEMENT AGREEMENT 10/16/90	$380,000.00	$13,000.00	$13,000.00	$0.00	$42,056.29	$42,056.29	$0.00	$0.00	$0.00	$0.00
BVDC NOV/ORDER #5 COLFAX, INC.	12/13/1990	SETTLEMENT AGREEMENT 02/26/91	$20,000.00	$0.00	$0.00	$0.00	$2,867.65	$2,867.65	$0.00	$0.00	$0.00	$0.00
BVDC NOV/ORDER MICROFIBRES	07/31/1991	COMPLIED WITH CONDITIONAL ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

ENFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
BVDC NOV VITRUS, INC.	09/17/1991	SETTLEMENT AGREEMENT 10/2/91	$0.00	$0.00	$0.00	$0.00	$1,025.54	$1,025.54	$0.00	$0.00	$0.00	$0.00
A0 #BP-01-92 DORETTE, INC.	04/22/1992	PERMIT FEES PAID FINE WAIVED	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-02-92 CELTIC PUB	04/22/1992	PERMIT FEES PAID FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-03-92 PIZZA PALACE	04/22/1992	BUSINESS CLOSED FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # BP-04-92 BILL'S RESTAURANT	04/22/1992	PERMIT FEES PAID FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-05-92 CHRISTINE'S OF CUMBERLAND	04/22/1992	PERMIT FEES PAID FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-06-92 VISTAWALL, INC.	04/22/1992	COMPLIED WITH ORDER	$250.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # BP-07-92 JACY'S SALAD BAR	04/22/1992	BUSINESS CLOSED FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # BP-08-92 KING'S LAUNDRY	04/22/1992	PERMIT FEES PAID FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-09-92 WASHING WELL LAUNDROMAT	04/22/1992	PERMIT FEES PAID FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-10-92 BRAXTON'S, INC.	04/22/1992	BUSINESS CLOSED FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-11-92 WOODLAWN FISH & CHIPS	04/22/1992	PERMIT FEES PAID FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

ENFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
AO #BP-12-92 LITTLE ANTHONY'S RESTAURANT	04/22/1992	CHANGED OWNERSHIP FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # BP-13-92 SMITHFIELD AVENUE LAUNDROMAT	04/22/1992	CHANGED OWNERSHIP FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-14-92 JEHA'S TEXACO	04/22/1992	PERMIT FEES PAID FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-15-92 ESTRELA DO MAR RESTAURANT	04/22/1992	PERMIT FEES PAID FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-16-92 RICOTTI'S SANDWICH SHOP	04/22/1992	COMPLIED WITH ORDER	$100.00	$100.00	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-17-92 UNCLE TONY'S PIZZA	04/22/1992	PERMIT FEES PAID FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-18-92 SERRA DE ESTRELA RESTAURANT	04/22/1992	COMPLIED WITH ORDER	$100.00	$100.00	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-19-92 REGINA MFG.	04/22/1992	COMPLIED WITH ORDER	$100.00	$100.00	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-20-92 WOODLAWN CLEANERS & LAUNDRY	04/30/1992	COMPLIED WITH CEASE AND DESIST ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-21-92 STANDARD UNIFORM SERVICES	06/17/1992	COMPLIED WITH CEASE AND DESIST ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-22-92 METROPOLITAN PLATING	04/22/1992	OUTSTDG FEES RESCINDED SUBJ. TO SHUTDOWN	$5,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-23-92 CHN ANODIZING	06/18/1992	CONSENT ORDER 03/30/93	$17,500.00	$7,000.00	$7,000.00	$0.00	$262.50	$262.50	$0.00	$0.00	$0.00	$0.00

ENFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
AO #BP-24-92 PARAMOUNT CARDS	06/18/1992	CONSENT ORDER 02/09/93	$17,500.00	$2,000.00	$2,000.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #BP-26-92 SLATER SCREEN PRINT	03/10/1992	CONSENT ORDER 01/01/94	$18,000.00	$9,000.00	$9,000.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO # BP-28-92 A.T.CROSS CO.	02/06/1992	CONSENT ORDER 03/31/93	$3,250.00	$1,000.00	$1,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-02-93 SLATER SCREEN PRINT	03/18/1993	CONSENT ORDER 01/01/94	$25,000.00	$5,000.00	$5,000.00	$0.00	$500.00	$500.00	$0.00	$6,500.00	$6,500.00	$0.00
AO #BV-03-93 ELIZABETH WEBBING MILLS	05/04/1993	CONSENT ORDER 10/12/93	$25,000.00	$3,000.00	$3,000.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #BV-04-93 CHN ANODIZING	07/19/1993	CONSENT ORDER 03/08/94	$25,000.00	$5,000.00	$5,000.00	$0.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00
AO #BV-05-93 STANDARD UNIFORM	10/29/1993	CONSENT ORDER 05/03/94	$18,000.00	$11,000.00	$11,000.00	$0.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00
AO #BV-06-93 BILL'S RESTAURANT	10/29/1993	COMPLIED WITH ORDER FINE RESCINDED	$3,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # BV-01-94 AAFCO, INC.	03/17/1994	CONSENT ORDER 09/26/96	$11,000.00	$6000 (SEP)	$6000 (SEP)	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #BV-02-94 UNCLE TONY'S PIZZA & PASTA	07/12/1994	CONSENT ORDER 11/21/94	$12,000.00	PUBLIC AWARENESS PROJECT	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-03-94 MCDONALD'S RESTAURANT	07/19/1994	CONSENT ORDER 11/01/94	$10,000.00	$5,000.00	$5,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-04-94 MCCONNELL & CARPENTER	07/28/1994	COMPLIED WITH ORDER	$0.00 COMPLIANCE ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

ENFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
AO #BV-05-94 COLFAX	10/13/1994	CONSENT ORDER 01/09/95	$5,000.00	$5,000.00	$5,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-07-94 UNCLE BEAN'S DINER	10/07/1994	CONSENT ORDER 12/06/94 BUSINESS CLOSED	$10,000.00	$1,000.00	$183.34	$816.66	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-01-95 LIBERTY PLATING	01/04/1995	CONSENT ORDER 08/03/95	$75,000.00	$6,000.00	$6,000.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #BV-02-95 JOSEPH'S FAMILY RESTAURANT	02/08/1995	COMPLIED WITH ORDER	$0.00 COMPLIANCE ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-03-95 SCOLA ENTERPRISES, INC.	05/30/1995	CONSENT ORDER 10/04/95	$20,000.00	$4,000.00	$4,000.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #BV-04-95 ELIZABETH WEBBING	10/02/1995	CONSENT ORDER 02/26/97	$50,000.00	$35,000.00 (SEP)	$35,000.00 (SEP)	$0.00	$750.00	$750.00	$0.00	$0.00	$0.00	$0.00
AO #BV-05-95 SLATER SCREEN PRINT	10/31/1995	CONSENT ORDER 11/20/97	$150,000.00	$35,000.00 $5,000. (SEP)	$35,000.00 $5,000. (SEP)	$0.00	$0.00	$0.00	$0.00	$5,500.00	$5,500.00	$0.00
AO #BV-06-95 TEKNOR APEX COMPANY	11/02/1995	CONSENT ORDER 06/19/96	$6,000.00	$3000.00 $3,000.00 (SEP)	$3,000.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #BV-01-96 STI, INC.	05/15/1996	CONSENT ORDER 07/31/96	$7,000.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-02-96 MOBIL OIL CORPORATION	05/15/1996	AO RESCINDED	$10,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-03-96 MICROFIBRES, INC.	06/12/1996	CONSENT ORDER 04/10/97	$0.00 COMPLIANCE ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-01-97 EL PANAL RESTAURANT	06/12/1997	AO RESCINDED	$5,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

ENFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
AO #BV-02-97 REGEN CORPORATION	11/20/1997	PERMIT FEES PAID CONSENT ORDER	$5,000.00	$500.00	$500.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #BV-01-98 BOWCAM CONTAINERS	05/19/1998	COMPLIED WITH ORDER	$2,000.00	$2,000.00	$2,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-02-98 NATIONAL RING TRAVELER	05/27/1998	CONSENT ORDER 07/28/99	$33,000.00	$16,000.00	$16,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-03-98 MICROFIBRES, INC.	12/08/1998	CONSENT ORDER 05/17/01	$112,000.00	$25,000.00	$25,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-04-98 ELIZABETH WEBBING MILLS, INC.	12/10/1998	COMPANY BANKRUPT	$134,000.00	$134,000.00	$0.00	$134,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-05-98 CHN ANODIZING	12/10/1998	CONSENT ORDER 03/18/99	$30,000.00	$12,000.00	$12,000.00	$0.00	$0.00	$0.00	$0.00	$175.00	$175.00	$0.00
AO #BV-01-99 TANURY INDUSTRIES	06/08/1999	CONSENT ORDER 08/03/99	$22,000.00	$9,800.00	$9,800.00	$0.00	$0.00	$0.00	$0.00	$900.00 AGREED UPON $600	$600.00	$0.00
AO #BV-02-99 BRISTOL COUNTY SEPTIC, INC.	12/22/1999	CONSENT ORDER 08/09/00	$30,000.00	$1,000.00	$1,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-01-00 ELIZABETH WEBBING MILLS, CO., INC.	06/29/2000	COMPANY IN BANKRUPTCY	$0.00 COMPLIANCE ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-02-00 WOODLAWN LAUNDRY & CLEANERS	12/28/2000	CONSENT ORDER NOT SIGNED COMPANY CLOSED	$2,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO#BV-01-02 CENTRAL SOYA COMPANY, INC.	02/21/2002	AO RESCINDED	$100,000	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO#BV-02-02 D.C.L. d/b/a SEWERMAN	04/22/2002	CONSENT ORDER 06/11/02	$30,000.00	$5,000.00	$5,000..00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

ENFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
AO#BV-03-02 C.H.N. ANODIZING	6/28/2002	CONSENT ORDER 8/20/02	$1,500.00	$500.00	$500.00	$0.00	$250.00	$250.00	$0.00	$50.00	$100.00	$0.00
AO#BV-04-02 INSTANT SEPTIC ENVIRONMENTAL SERVICES	08/08/2002	HEARING HELD DECISION 8/13/04 COMPLAINT FILED COMPANY OUT OF BUSINESS	$20,000.00	$20,000.00 (AWARDED AT HEARING)	$0.00	$20,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO#BV-05-02 ESTRELA DO MAR	09/23/2002	CONSENT JUDGMENT 3/24/03	$5,000.00	$5,000.00	$5,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-01-03 C.H.N. ANODIZING	03/27/2003	CONSENT ORDER 8/6/04	$50,000	$12,000.00	$12,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-01-05 TANURY INDUSTIRES	9/14/2005	CONSENT ORDER 12/31/05	$108,500.00	$24,000.00 ($94,000.00 W/$70,000.00 SUSPENDED)	$24,000.00	$0.00	$0.00	$0.00	$0.00	$200.00	$200.00	$0.00
AO #BV-01-07 KIK CUSTOM PRODUCTS, INC.	9/10/2007	CONSENT ORDER 07/10/08	$109,500	$73,000	$73,000	$0.00	$0.00	$0.00	$0.00	$500.00	$500.00	$0.00
AO #BP-01-09 COASTAL COLLISION & TOWING, INC.	07/22/09	IMMEDIATE COMPLIANCE ORDER	$0	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-01-10 COASTAL COLLISION & TOWING, INC.	06/15/10	CONSENT ORDER 09/17/11	$1,000	$1,000	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-01-15 Ecological Fibers, Inc.	10/06/15	PENDING	$22,000	PENDING	$0.00	$22,000	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

VII. SPECIAL PROJECTS AND PROGRAMS

Introduction

The NBC implements many projects, programs and studies to reduce and control the discharge of toxic and other non-conventional pollutants from industrial, commercial, and residential sewer users. These projects and programs are a collaboration of staff from many sections of the NBC, including the Pretreatment, ESTA, Permits & Planning, Laboratory and EMDA sections.

The Pretreatment Section implements many projects and programs and educates users to reduce and control the release of toxics to the sewerage system. The Pretreatment Program controls, reduces and prevents pollutant discharges by issuing discharge permits to industrial and commercial users. These discharge permits may require installation of pretreatment systems and implementation of Spill and Slug Prevention Control Plans.

In addition to the Pretreatment Section reducing toxic discharges through its permitting and educational programs, the ESTA Section further reduces toxic loadings by providing free technical assistance and educational programs to local industries. Through this program, the NBC educates firms about pollution prevention techniques, such as product substitutions, so that hazardous materials can be eliminated from process operations and toxic byproducts are not generated or discharged.

The EMDA Section routinely samples permitted NBC users, providing monitoring data necessary for the Pretreatment Section to evaluate user compliance with discharge limitations. EMDA conducts water quality studies in the receiving waters of the NBC treatment facilities, contributing to the statewide effort of many agencies, institutions and organizations to understand water quality issues and determine the solutions needed to restore Narragansett Bay. EMDA also performs wastewater sampling at the two treatment facilities every day in accordance with RIPDES permit requirements. The Laboratory Section operates daily to analyze and process the thousands of samples delivered annually by EMDA. This Chapter details the projects, studies, and programs that the Pretreatment, ESTA, Permits & Planning, EMDA and Laboratory Sections have worked on in 2015.

Status of Projects, Programs and Studies

Environmental, Safety and Technical Assistance (ESTA) Program

ESTA Pollution Prevention Activities

Throughout 2015 ESTA continued to assist the industrial community with implementing pollution prevention techniques and technologies that result in less waste generation, smoother running and less costly operations, and improved environmental regulatory compliance. Pollution prevention services are free of charge, non-regulatory and confidential.

The goals and objectives of the ESTA Section pollution prevention efforts are to:

- Promote pollution prevention philosophies and methodologies among the industrial users of the NBC system;

- Identify and address regulatory and non-regulatory barriers and incentives to implementing source reduction and pollution prevention activities;

- Develop a readily available, easily accessible and efficient source of pollution prevention information for use by the industrial community.

ESTA staff performs technical assistance site visits of NBC industrial users, organizes and conducts workshops and seminars, and produces educational fact-sheets. ESTA staff conducted 20 individual site visits during 2015 on a variety of pollution prevention, energy efficiency, and environmental regulatory compliance improvement projects including:

- Auto Salvage Facilities
- Autobody Repair Facilities
- Food Service Establishments
- Metal Finishing Facilities
- Pharmaceuticals Facilities
- Printing Facilities

ESTA Grant Funds

Since the creation of the Pollution Prevention Program in 1991, NBC has been awarded many PPIS grants and several grants from other sources to initiate a variety of industrial user environmental educational and technical assistance programs. TABLE 34 summarizes the project periods and funding amounts for each of these grant awards. To date, the NBC has secured grant funding totaling $1,474,750 for pollution prevention and technical assistance activities.

TABLE 34
Summary of Grant Awards

Program	Grant ID#	Project Period	Original Grant Award
Initial Pollution Prevention	NP818873-01-0	10/01/91 - 09/30/97	$300,000
Training Grant – CCRI Pollution Prevention Course	NP991705-01-1	10/01/95 - 09/30/98	$60,000
Clean P2 – Regulatory Relief Program	NP991756-01-0	10/01/96 - 09/30/00	$85,000
NBC Metal Finishing 2000 Program	NP991195-01-0	10/01/97 - 09/30/00	$35,000
NBC Metal Finishing Seminars	NP991402-01-0	07/01/98 - 09/30/00	$25,000
Environmental Management Systems	NP991679-01-0	10/01/99 - 09/30/01	$32,000
Environmental Best Management Practices	NP98121801-0	10/01/00 - 03/31/03	$35,000
MP&M Pollution Prévention Audits	NP98142601	10/01/01 - 09/30/03	$50,000
Pollution Prevention in RI Hospitals	NP98154501-0	10/01/02 - 09/30/04	$25,000
Auto Salve Yard Pollution Prevention	NP98182201-0	10/01/03 - 09/30/05	$25,000
Stormwater Pollution Prevention	NP97107901-0	10/01/04 - 12/31/07	$35,000
Energy Conservation	NP97126001-0	10/01/05 - 09/30/08	$35,000
Renewable Energy - Wind	RI State Energy Grant	07/01/06 - 09/30/08	$25,000
Renewable Energy - Biogas	RI State Energy Grant	07/01/06 - 09/30/08	$25,000
Energy-EMS Project	EI-97187901	10/01/08-09/30/11	$275,000
Energy Technical Assistance Assessments	3232910	05/16/11-03/31/12	$86,000
Energy Efficiency Projects	3233807	05/16/11-03/31/12	$311,750
Water Utility Energy Efficiency	N/A	01/01/13 – 12/31/14	$10,000
Total Grants Awards To NBC			**$1,474,750**

In addition to grant funded projects, ESTA is involved with many environmental programs and projects that promote the use of pollution prevention and sound environmental management practices among NBC users and the industrial community throughout the State of Rhode Island.

Energy Conservation Program

The NBC has been awarded numerous grants over the years to help develop and implement energy movement programs throughout the State of Rhode Island. Municipal wastewater treatment operations utilize tremendous amounts of energy. With current rising energy costs, safety and environmental impact concerns over the storage and use of conventional fuels such as liquefied natural gas and petroleum derived fuels, it is imperative that wastewater treatment facilities have an in-depth understanding of available energy conservation techniques and alternative energy sources.

As part of the efforts the NBC conducted detailed energy audits of its various facilities and operations in order to identify energy conservation opportunities and continued to research feasibility of utilizing renewable energy on a large scale to reduce its dependency on more conventional non-renewable energy sources.

Renewable energy sources investigated included:

- Low impact hydroelectric energy captured from wastewater flow
- Wind derived energy
- Combined heat and power utilizing biogas
- Fuel Cells utilizing
  - Bio-gas
  - Hydrogen derived from solar electro-dialyses of treated wastewater effluent
  - Energy derived from nitrification/de-nitrification chemical reactions
- Geothermal energy
- Solar energy

Information collected as part of these energy audits and studies was used to develop written energy use and conservation best management practices and fact sheets to help both the NBC and other wastewater treatment plants make informed decisions regarding their energy use and conservation practices. Results of these efforts have been presented to other Rhode Island and regional wastewater treatment facilities as part of energy use workshops.

NBC has invested in the use of wind energy at Field's Point and bio-gas in a Combined Heat and Power Process (CHP) at Bucklin Point. Three 1.5 MW turbines were erected at Field's Point and commissioned in December 2012. The Field's Point wind turbines supplied 45% of the electrical power demand of the plant during 2015. The NBC Biogas CHP project at Bucklin Point continues to be developed and NBC is currently working on developing a 10 MW net metered solar array system.

Additional energy management related activities conducted in 2015 include:

- Coordinated NBC participation in the ISO NE Energy Demand Response Program
- Served on multiple NEWEA Committees including the Safety, Sustainability and the Energy Committee
- Presented the NBC Energy Focused Environmental Management System Project at a WEF Specialty Conference
- Conducted Energy Audits of three Field's Point pump stations
- Followed up on outstanding issues at three Bucklin Point pump station audits
- Reviewed proposals, contracts, legislation and attended meetings related to renewable energy
- Tracked and reported quarterly REC production data
- Submitted wind turbine site data to the RIOER
- Attended meetings on the Biogas Engine Project
- Organized a meeting on the Technical Assessment
- Helped secure grants and incentives
- Collected a biogas sample for analysis of BTU and Siloxane content
- Investigated solar options for the new NBC Regulatory Compliance Building
- Conducted four Energy Management Presentations/Tours of NBC facilities
- Attended USDOE's Better Buildings Summit and participated in monthly teleconferences

Energy Management of Wastewater Treatment Facilities

In October 2008, NBC was awarded a $275,000 grant from the EPA to initiate a program for developing sustainable energy management plans for the 19 wastewater treatment facilities in Rhode Island. The NBC State Innovation Grant Project had two components. The first component was to develop a program for Rhode Island treatment plants on Energy Focused Environmental Management Systems (EF-EMS) using the *plan-do-check-act* (PCDA) approach to continuous process improvement, to reduce energy use and improve energy efficiency for WWTFs. The second component consisted of developing a Fats, Oils & Grease (FOG) Management Environmental Results Program (ERP) for Food Service Establishments (FSE). The ERP will help these businesses improve compliance with the NBC Grease Control Program and create incentives to encourage the use of waste grease as a renewable energy source.

The project goal for the Sustainable Energy Management component of the project was to develop and implement EF-EMS for treatment facilities including:

- Use of the EPA Energy Guidebook to train participating facilities on how to establish and implement a successful EF-EMS;
- Develop energy-use baselines for each participating treatment facilities;
- Conduct energy use assessments for participating facilities;
- Identify potential Energy Conservation and Efficiency Measures;
- Assess renewable energy resource opportunities.

Additionally, the project established a roundtable to assist each participating treatment facilities with implementation of their EF-EMS.

All tasks associated with this grant funded project have been completed. Through a series of workshops, treatment plants were trained on the PDCA approach and the use of EPA Portfolio Manager. Site visits, conducted by NBC staff and the primary state energy provider, National Grid, produced nineteen energy assessments, including renewable energy opportunity assessments and eleven follow up technical assessments identifying more than 100 energy efficiency measures. As part of these efforts an additional $3,000,000 in ARRA grant funding was made available from the Rhode Island Office of Energy Resources (RIOER) to help implement identified energy efficiency measures.

In 2013 the RIOER received a grant from the U.S. Department of Energy (DOE) in part to improve the energy efficiency of local government and public agencies. Due to the NBC success with coordinating and conducting these assessments for the wastewater sector it has been asked to assist with this grant project. RIOER has dedicated $10,000 in grant funds to NBC for assistance with coordinating the renewable energy assessments of publicly owned water utilities in Rhode Island. In 2015 ESTA staff completed 10 renewable energy assessments of RI water supply and wastewater treatment facilities as part of this DOE grant funded project.

NBC Environmental Merit Awards Program

In 1995, the NBC developed the Environmental Merit Awards Program to recognize companies that have demonstrated environmental efforts and commitments that go beyond mandated compliance requirements. As part of this awards program, the NBC also recognizes all SIUs that have achieved full compliance with all NBC requirements during the previous calendar year.

In 2015, the NBC recognized numerous firms for their exemplary environmental activities performed in 2014. NBC recognized sixteen companies with Perfect Compliance Awards for achieving 100% compliance with all NBC regulatory requirements, one company received an Environmental Merit Award, and one company was recognized for its efforts with managing storm water. The award recipients are as follows:

Perfect Compliance Award Winners:

AG&G Incorporated
A. Harrison & Company, Inc.
Armbrust International Ltd
Darlene Group, Inc.
Dominion Energy – Manchester Street, Inc.
Electrolizing, Inc.
General Cable Industries, LLC
Hord Crystal Corporation
Interplex Engineered Products, Inc.
Metallurgical Solutions, Inc.
Providence Journal Company – Production Facility
Providence Metallizing Company, Inc.
Stackbin Corporation
Tanury Industries PVD, Inc.
Technodic Inc.
Truex, Inc.

In addition to the sixteen companies achieving perfect compliance, one company, Interplex Engineered Products, Inc. received a Pollution Prevention Award. One Storm Water Management Excellence Award was presented to Achievement First, Inc. for reducing storm flow from entering NBC facilities.

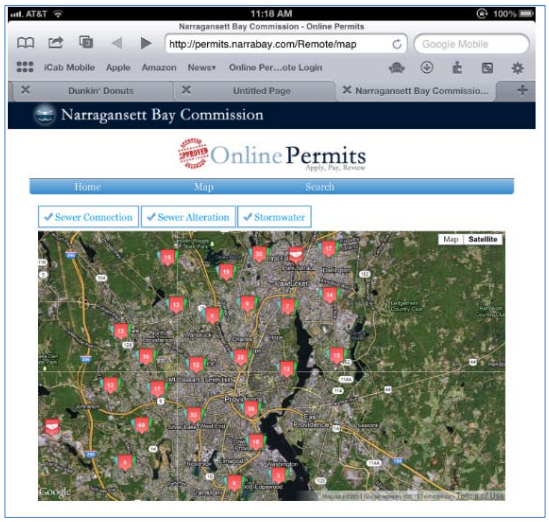
Each award recipient received a plaque and had their company name and environmental accomplishments published in the Providence Journal. Applications for the 2015 NBC Environmental Merit Awards will be available on-line in late February 2016 and the presentation of these awards will take place in early April 2016.

Sewer Connection Permit Program

Since 1982, the NBC has been reviewing all applicants' requests to connect to its sewer system either directly to NBC owned and maintained sewers, or indirectly to City/Town maintained sewer lines. The sewer connection permit process is necessary to ensure that the structural integrity of the sewer line is preserved, to control and monitor wastewater flow capacity, to minimize storm water discharges, to control toxic pollutant discharges, to maintain quality customer service and to ensure accurate billing of new users.

As the Permit & Planning Section receives comments from the various sections, they are compiled and addressed. After all comments have been satisfactorily addressed, a permit is prepared and issued. In 2012, new Permit Section software was developed and put on-line. The software allows additional information to be entered and tracked and the software automated the processing of permits. In addition to the automation of permit processing, the software upgrade automated the application process. Applicants can now complete applications on-line and submit the application and payment electronically. A workstation was installed in the PP&R office area for applicants to use to complete applications.

The software incorporates Google Maps and each sewer connection is displayed on the map once entered by staff. By clicking on the project the viewer will be able to access relevant information such as the location, and type of connection.



In 2015, 228 Sewer Connection Permit applications were processed, the majority of which were for residential connections. Pretreatment reviewed 22 of these sewer connection permit applications to determine if a Wastewater Discharge Permit would be necessary. All of the applications reviewed by Pretreatment were responded to accordingly.

Stormwater Mitigation Program

Permits & Planning staff regularly work with building officials and developers to implement Stormwater Management techniques for new construction projects. As part of the Sewer Connection Permit Application process, a Stormwater Management Plan must be developed. This plan must evaluate storm water mitigation for the site, including the use of Low Impact Development (LID) or Best Management Practices to eliminate or reduce stormwater flows to the treatment facilities as well as the investigation of alternative options to direct discharges into natural waterways. By requiring Stormwater Management plans and firms installing LID, 724,728 gallons of additional stormflow, was eliminated from the Field's Point sewer system in 2015 for each three month storm event. These are stormwater flows that would have impacted the NBC combined sanitary sewer system and CSO tunnel. This program, which was established in 2003, mitigated 6.9 million gallons of storm flow from the Field's Point system based on a three month storm event, the design basis for the CSO tunnel. This provides additional capacity in the CSO tunnel for raw sewage requiring capture and treatment. Annually the NBC issues a Stormwater Management Excellence Award to the firm that implements the best stormwater reductions by utilizing LID technologies. The success of this program has been recognized on both the local and national levels. In 2008, the National Association of Clean Water Agencies (NACWA) presented the NBC with an Environmental Merit Award and the Environmental Business Council, presented the NBC with the Leadership Award for a Non-Profit Organization for this program.

Mercury Loading Reduction Program

The NBC participated in the Rhode Island Mercury Education and Reduction Group. The objective of this group was to identify sources of mercury discharge and pollution in Rhode Island, educate the public regarding mercury issues and eliminate mercury pollution for future generations. Studies indicated that the majority of mercury loadings observed in the sewer system were the result of mercury/silver dental amalgam. As a result, dental operations were evaluated so that the mercury amalgam issue could be addressed and incorporated into wastewater discharge permits issued to dental facilities.

In January 2004, the NBC completed a Best Management Practice (BMP) document for dental facilities to ensure that dental mercury is properly handled, treated and disposed. The NBC worked closely with the Rhode Island Dental Association during the BMP development process to ensure that the BMP addressed both environmental concerns and those of the dentists.

As part of the BMP, dental facilities are given two options to discharge wastewater that may be contaminated with waste dental amalgam. The first option requires the installation of an amalgam separator. The second option does not require the installation of pretreatment equipment but requires the dental facility to sample the waste streams potentially contaminated with mercury and be in compliance with stringent mercury discharge limits. All dental facilities are required to implement other programs regarding training of staff and storage and disposal of amalgam waste. To date all dental facilities in the NBC districts have been permitted and installed amalgam separators.

The NBC was awarded a Citation by the Governor of Rhode Island for the development and implementation of the BMP. The NBC Dental Amalgam BMP Program has been recognized on a national level by NACWA, and was awarded on Environmental Achievement Award for developing the BMP.


State of Rhode Island and Providence Plantations
OFFICE of the GOVERNOR
The Governor
of the
State of Rhode Island
Extends His
Greetings and Best Wishes to the
Narragansett Bay Commission
In Recognition of
implementing Environmental Best Management Practices in its Management of Waste Dental Amalgam program, which addresses a significant source of mercury emissions in Rhode Island. NBC's achievements in this area demonstrate a commitment to the environment and the health and public safety of all Rhode Island residents.
In recognition whereof, I have hereby set my hand and caused the Executive Seal of the State of Rhode Island and Providence Plantations to be hereunto affixed this 24th day of September 2009.
Donald L. Carcieri
Governor

The NBC participated in a NACWA sponsored three year international mercury loading study of treatment plants that have implemented mercury amalgam discharge control programs. From 2003 through July 2006 EMDA has collected influent, effluent, sludge and grit samples monthly at Field's Point using "Clean Sampling" techniques and the samples were analyzed by both the Hampton Roads Sanitation District in Virginia and NBC laboratories. The comparison of these results helped the laboratory achieve low level mercury "clean analysis" of <1.0 ppt. To date the laboratory detection limit for mercury is 2.0 ppt, the lowest levels achievable in the state of Rhode Island. The NBC mercury reduction project has been very successful at reducing mercury loading. Since the inception of the BMP program mercury influent loadings to the NBC wastewater treatment facilities were reduced by 62.7% at Field's Point and 53.6% at Bucklin Point.

In 2011, the EPA began to develop categorical standards for dental facilities. The NBC participated in conference calls with representatives from the EPA, multiple states and other pretreatment programs that have implemented programs to control the discharge of dental amalgam. The EPA used the information obtained during these calls to develop categorical standards. In anticipation of the publication of the EPA Dental Rule, a session on dental/mercury discharges was held at the 2014 NACWA Pretreatment & Pollution Prevention Workshop held in Minneapolis, MN. The development of the NBC Dental BMP program was presented during this session. The proposed rule was published in October 2014. The NBC participated in conference calls with representatives from NACWA and Pretreatment Programs across the country regarding the proposed rule and completed a NACWA Survey. The NBC submitted comments on the proposed rule in early 2015. The status of the proposed rule was discussed with the EPA during the 2015 NACWA Pretreatment Conference. To date the rule has not been finalized.

Throughout 2015, the dental facilities permitted by the NBC continued to comply with their permits and follow the BMPs. Annual certification of adhering to the BMPs continue to be submitted in compliance with permit requirements.

Grease Control Program

In 1990, the NBC instituted a Grease Control Program to control the discharge of grease and animal fats from restaurants and food preparation facilities into the sewer system. At that time, the NBC was experiencing major operational problems within the sewer system and at the wastewater treatment facility, problems directly attributable to grease accumulation. These problems ranged from grease fouling equipment and controls at the wastewater treatment facility to grease completely blocking the flow in sewer lines, resulting in sewage backups into the basements of homes and businesses. The NBC Grease Control Program has essentially resolved these problems.

The NBC Grease Control Program is a permitting program which requires users with the potential to discharge grease laden wastewater from food preparation operations to install one of two acceptable types of grease removal equipment, the automatic electrical mechanical grease removal unit (GRU) or the in-ground passive grease interceptor (GI). The permit requires the user to implement a series of BMPs which are incorporated into the permit to ensure the proper operation of the grease removal unit. Over the years, the NBC has held many workshops regarding grease removal technologies and is presently conducting studies regarding the effectiveness of the various types of grease removal units.

The Grease Control Program is a well established, successful program. Pretreatment Programs from other municipalities often request assistance from the NBC in establishing their programs and resolving grease related issues.

Spill Prevention Control and Countermeasures and Storm Water Pollution Prevention Plans

During 2010, the Field's Point facility was required to develop a Spill Prevention Control and Countermeasures Plan (SPCC) in accordance with 40CFR112. The task to develop the SPCC was assigned to the PP&R Section. Pretreatment, ESTA and Permits & Planning staff reviewed the regulations to determine the best approach. This review revealed that many of the requirements for the SPCC were also the same as the requirements for the Storm Water Management Plan (SWMP) required by the NBC General Storm Water Permit issued by the DEM. These requirements include facility site plans, topographical maps, spill control measures, secondary containment, emergency response procedures, a list of emergency response team members and inspection protocols. Based upon the commonality of the plans it was decided to create an operations manual for Field's Point which incorporated both the SPCC and SWMP. The manual also included standard operating procedures for deliveries of chemicals, waste handling, spill response for oil products and other materials, a list of emergency response contractors, spill/release response forms and checklists to aid in performing required inspections. The SPCC/SWMP Operations Manual for the Field's Point facility was submitted to the EPA on October 26, 2010. PP&R staff evaluated the other NBC properties to determine where SPCCs and SWMPs were required. It was determined that these plans needed to be developed for the Bucklin Point facility and the Ernest Street/CSO Tunnel Pump Station site due to the volume of oil stored at these locations. The operations manuals for the locations were developed during the latter part of 2010 and early 2011. The manual for the Ernest Street/Tunnel Pump Station site was

submitted to EPA on January 7, 2011 and the Bucklin Point manual was submitted on January 31, 2011. In 2013 the upgrades to the Field's Point plant were completed. Throughout 2014, PP&R continued to revise the SPCC/SWMP Operations Manual for Field's Point to comply with the General Storm Water Permit issued in 2013. The revision incorporates the SPCC/SWMP plans for both the plant and the Ernest St./Tunnel Pump Station site. In addition, a section was added for spill control procedures to be used by the Interceptor Maintenance Section.

Both the SPCC and SWMP require annual inspections of the facilities and training on the plans. PP&R staff conducted the inspections at Field's Point, Ernest Street/Tunnel Pump Station Site and Bucklin Point throughout 2015. The training at both facilities was conducted in May and December of 2015.

Nine Minimum Controls Compliance Program for CSOs

Throughout 2015 the Pretreatment, ESTA and EMDA sections continued to ensure compliance with the pretreatment, pollution prevention and monitoring elements of the Nine Minimum Controls Program for CSOs detailed in the NBC RIPDES permits. The Pretreatment and ESTA sections continued to work with industry to ensure compliance with these requirements. Companies are required to install and implement adequate spill control measures to ensure prohibited materials are not incidentally or accidentally discharged to the sewer system or storm drains. Firms are also required to conduct routine self-monitoring to demonstrate compliance with NBC discharge limitations. Firms experiencing compliance problems are encouraged to contact ESTA staff for help to come back into compliance. These programs ensure that industrial wastewater is properly treated to levels acceptable for discharge and ensure that materials cannot be spilled into the sewer system or through a CSO.

The effectiveness of the NBC Nine Minimum CSO Controls Program is routinely evaluated by sampling conducted by EMDA. EMDA staff collect numerous samples to ensure compliance with the Nine Minimum Controls Program. In addition to the industrial and manhole sampling discussed in CHAPTER IV, EMDA collects twice weekly samples for fecal coliform from the Woonasquatucket, Providence, West, Blackstone, Seekonk, and Moshassuck rivers. Sampling of these rivers is conducted during both wet and dry weather events. The results from these sampling events for fecal coliform are promptly reviewed to identify dry weather discharges and CSOs are immediately inspected by Interceptor Maintenance staff to ensure they are properly functioning. EMDA also re-samples sites that show high fecal coliform bacteria concentrations during dry weather periods. Samples greater than 1000 MPN/100 ml are re-sampled under dry weather conditions. EMDA works with the IM Section to analyze the data in order to identify dry weather overflows or other sources of bacteria to the rivers where combined sewer overflows are located. Other extensive monitoring of the Providence and Seekonk Rivers has indicated the rivers are meeting the EPA aquatic life criteria standards for toxics, including dissolved metals and ammonia. This demonstrates the effectiveness of the Pretreatment and ESTA Programs and the effectiveness of the NBC Nine Minimum Controls Program. This data also has been used to remove the Providence and Seekonk Rivers from the EPA 303(d) list of impaired water bodies for dissolved metals impairment.

In 2015, EMDA staff collected samples at CSOs located in the Field's Point and Bucklin Point districts to measure contaminant levels discharged during wet weather overflow events. Samples are collected at various times throughout the storm event, at the first flush, the height of the storm and near the termination of the event. CSO sites located downstream of industrial areas were selected for this sampling.

Grab samples were collected for toxics, including total metals, TSS, BOD, VOCs, Oil & Grease, TPH and cyanide. All analytical results from samples collected during 2015 were compared to the NBC local discharge limitations for the district. All samples met the local limits, indicating the NBC Pretreatment and pollution prevention elements of the NBC Nine Minimum Controls Program are effective.

River Restoration Initiative

In response to the chronic pollution visible on the Woonasquatucket River in downtown Providence, Narragansett Bay Commission Chairman Vincent Mesolella established the Woonasquatucket River Restoration Initiative in 2002. With an aggressive goal to involve NBC employees, local business owners and members of the community in reclaiming the Woonasquatucket as a valuable community resource, and guided by the expertise of the Woonasquatucket River Greenway Association, much progress has been made to clean this river.

In 2015 the NBC continued the grant program intended to diversify the positive impact on multiple rivers in the NBC service area rather than focus solely on the Woonasquatucket River. The grant program assisted numerous local organization, cities and towns by providing 16 small grants to 15 organizations totaling $9,000 that allowed the organizations to purchase supplies to organize clean up events and river restorations activities in the NBC service district. The 2015 grant recipients are listed below:

Blackstone River Watershed Council/Friends of the Blackstone
City of Central Falls
City of East Providence, Department of Public Works
East Providence Police Explorers Post 750
Edgewood Waterfront Preservation Association
Friends of the Moshassuck/Neighborhood Alliance of Pawtucket
Keep Blackstone Valley Beautiful
Neutaconkanut Hill Conservancy, Inc.
Save the Bay
Serve Rhode Island
Smithfield Conservation Commission
Ten Mile River Watershed Council
Town of Smithfield
UPP Arts
Woonasquatucket River Watershed Council

Emergency Situation/Extreme Conditions Sampling

The NBC has established a program to immediately provide monitoring in the event of an extreme weather condition or an emergency that may adversely affect water quality in the receiving waters. The NBC is prepared to immediately undertake any monitoring necessary to evaluate the impacts from this type of event. There were several monitoring activities conducted during 2015 in response to these types of events.

One of the sampling events was in response to a bypass from the Bucklin Point treatment plant that occurred during a significant rain event on August 4, 2015. The bypass was due to a power outage at the plant. Based upon the rainfall and the bypass the DEM closed Conditional Shellfish Area A. In response to the bypass, the NBC initiated sampling on the Bay to determine the impacts and monitor the recovery. Bay bacteria samples were collected on August 4 and 6, 2015 in addition to the normally scheduled sample collection on August 5, 2015. The data showed that water quality recovered quickly in the Bay. The DEM was able to re-open the Conditional Shellfish Area A 3½ days earlier than anticipated.

There were several fish kills in the rivers tributary to the upper Bay during 2015. The NBC assisted the DEM in the investigation of these fish kills to attempt to determine the cause of these events. Fish kills were reported in the Seekonk River on May 25, 2015, July 18, 2015, August 3, 2015, September 2, 2015 and September 16, 2015. The September events also included the mouth of the Pawtuxet River and the Woonasquatucket River. The NBC response included reviewing existing continuous monitoring data, collection of detailed water quality information from the impacted areas, occasional collection of affected specimens, as well as occasional analysis of the makeup of the phytoplankton in the affected areas.

The NBC also conducted special sampling when a dry weather overflow was discovered discharging into the Seekonk River on November 16, 2015 from Outfall 213 in Pawtucket. The line was inspected and it was determined the overflow was as a result of the regulator being blocked. The overflow volume was estimated to be 25,000 gallons. Sampling conducted downstream from the outfall several hours after the overflow was stopped showed non-detectable concentrations of fecal coliform.

Special sampling performed in response to emergency situations or extreme weather conditions is important to evaluate the effect of these events on water quality and provides data that is critical to water quality management decisions.

Regional Ocean Modeling System – ROMS

In 2004, the NBC entered into a contract to fund joint work with the coastal physical oceanography lab led by Dr. Chris Kincaid of the URI - Graduate School of Oceanography to further circulation and hydrodynamic modeling efforts for the Narragansett Bay. The goal of this work is to develop a highly accurate model of Circulation and transport within the Providence and Seekonk Rivers and Narragansett Bay to support sound science management decisions. It is hoped that this model provides an important tool to evaluate and predict water quality in Narragansett Bay as nutrient

loadings are dramatically reduced. This modeling project may ultimately be useful in the development of a nutrient Total Maximum Daily Load (TMDL) for Narragansett Bay.

Throughout the development of this project, the most comprehensive set of field data to date on Narragansett Bay circulation has been acquired using various types of current meters. The NBC supported the deployment of current meters in the Providence and Seekonk Rivers, as well as in the region of Edgewood Shoals. Dr. Kincaid has also received other support to deploy current meters throughout Narragansett Bay proper and collect wind data in specific locations. This data is the basis for the Narragansett Bay ROMS. Through the years, the Narragansett Bay ROMS has been consistently improved to best match and model the data collected. A modeling expert was hired by the NBC to review the work of URI-GSO on the Narragansett Bay ROMS and recommendations were provided to ensure the model will ultimately withstand critical review. After the recommendations were addressed, the NBC moved on to running simulations in the Narragansett Bay ROMS.

The Narragansett Bay ROMS was used to incorporate particles from different sources, which are then monitored as they travel throughout the Bay. In these simulations, the particles represent nitrogen. The nitrogen loading from 16 WWTFs and rivers was tracked as it flushed or accumulated in various areas of Narragansett Bay. The simulations were able to highlight how Narragansett Bay circulation, various wind directions, weather events and river runoff effect nitrogen concentrations throughout the Bay. Simulations also included varying the effluent nitrogen concentrations being discharged from the NBC facilities. Results showed the difference in nitrogen effluent discharge were only distinguishable just downstream from the facility, while further down the Bay the difference was less noticeable. Other simulations varied the weather patterns, including winds and river runoff, which showed that winds and river runoff contribute to where nutrients accumulate in the Bay and how well they are carried down the Bay. One shortcoming of this analysis was that the nitrogen was treated as a conservative pollutant and so its concentration changes were modeled only on physical processes.

To address this shortcoming, the NBC added to the scope of work with Dr. Kincaid to improve the function and accuracy of the model. First, the actual bathymetry, or shape and depth, of the Seekonk River were incorporated into the ROMS. Previously, only the volume of the Seekonk River was represented. With the full bathymetry of the Seekonk River integrated in the Narragansett Bay ROMS, it will allow for more accurate representations of flow and mixing of nutrient fields through this section of the estuary and demonstrate how southern nutrient sources move northward up the Seekonk River channel. Secondly, the Kincaid group was asked to link total nitrogen levels in the water column to the biological production throughout the estuary. The first step in this work was to include a biological model into the Narragansett Bay ROMS and evaluate specific parameters to match Narragansett Bay data. This sensitivity analysis of the biological model is the first step to determining the range of dissolved oxygen levels that can be experienced as Narragansett Bay responds to nutrient reductions. The final report for this work is currently under review. Future work may include further development of the biological model and improvement in the skill of the circulation model in specific regions of the Bay. For a more detailed history on this project and to access the reports produced for this project, visit: http://snapshot.narrabay.com/app/LearnMore/ModelingProject.

Laboratory Information Management System

The NBC purchased a PerkinElmer Laboratory Information Management System (LIMS) in early 2012 to replace a LIMS system that had been in use for over a decade. Throughout 2013, the Laboratory transitioned to the new LIMS. All of the analytical instruments were equipped with drivers to electronically transfer data into the LIMS. Data from the old LIM systems was migrated to the PerkinElmer system. In addition to the data migration, IT staff wrote software to electronically transfer analytical results from NBC industrial user monitoring events from the new system to the Pretreatment Information Management System.

This LIMS allows the NBC to use the latest technology to increase the efficiency of day-to-day tasks. An Electronic Notebook (ELN) application was incorporated into the system to allow the use of iPads for entering information into the LIMS. EMDA developed sample submission templates which include chain of custody documentation for the ELN. Information about the samples to be collected, loads directly from the LIMS system onto the ELNs. This information includes the general information about the facility that will be sampled such as company name, address, information about the specific sample location, and the sample bottles to be collected. Staff input sample preservation information, date and time of sample collection, and the staff member collecting the sample directly on the form in the field. Once the sample is transferred to the laboratory, the electronic sample submission sheet is transferred to LIMS. This electronic information follows the sample throughout the analytical process to the verification of the sample results. Once the sample has been verified the sample submission sheet is electronically signed by Laboratory management staff and forwarded to Pretreatment. A barcode scanning system was implemented to enter, track and receipt samples in the lab which has increase efficiencies. These systems can eliminate time consuming paperwork. In addition to the ELN and barcode applications, the new LIMS will incorporate a global positioning (GPS) component. EMDA and Pretreatment staff will use this technology to locate industrial facilities and surveillance manholes and use a naming mechanism that is consistent with current NBC procedures.

Monitoring Data Management

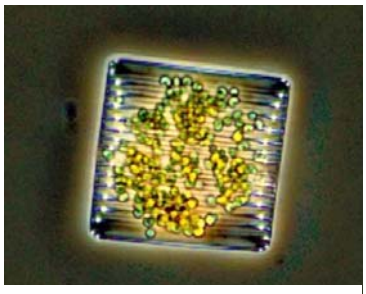
The NBC has been in the process of developing a centralized database for all analytical data generated by the NBC including from industrial, manhole, plant, river and bay sampling events in a electronic format. Staff have been busy locating historical monitoring data in paper format and is working to transfer this data into electronic format.

In 2013 progress was made with the development of this electronic database. As a part of the upgrades to the LIMS a software package, Hachwims, was put online. All data generated by the Perkin Elmer LIMS is electronically transferred to Hachwims. In addition, plant data generated by the plant information system (PI) is electronically transferred to Hachwims. During 2015 the database was made more robust by adding additional data codes and inputting historical data. EMDA staff run reports each month to complete the Discharge Monitoring Report (DMR) from this system.

In 2011, PP&R and IT staff developed and launched a website, "Snapshot of Upper Narragansett Bay" which can be accessed through www.narrabay.com. The website is maintained on a regular basis with information regarding water quality and analytical data from plant effluent samples. Real time data from NBC fixed monitoring sites located Bullocks Reach and Philipsdale Landing is displayed on the site. All of this information is readily available to the public. Ultimately the data in the centralized database will be able to be accessed by the public through Snapshot.

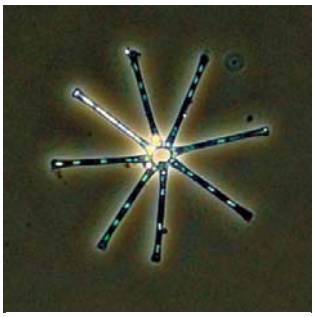
Phytoplankton Monitoring

During 2015, the NBC continued to collect samples one to two times each month for phytoplankton analysis on the Bay, to better understand the complex dynamics of the Bay ecosystem and how it is impacted by nitrogen reductions by the NBC and other inputs. The initial focus of the plankton monitoring initiative was to collect data on the phytoplankton community in the upper Bay. The NBC collected samples from the surface at the Bullock's Reach water quality station. Samples were collected from April through December in 2015. The Bullock's Reach station was selected as the plankton monitoring location because it is the site of on the NBC fixed site near-time water quality monitoring stations. With chlorophyll concentrations constantly monitored at the site, the NBC can collect routine planned samples, and also collect additional samples when chlorophyll concentrations escalate, indicating a phytoplankton bloom is present. Results are posted in a blog format on the NBC website www.snapshot.narrabay.com.



Striatella

Two phytoplankton samples are collected on each sample day. One of the samples is collected using a phytoplankton net, which is deployed at the surface for 30 minutes, while the other water quality samples are being collected. The plankton net captures the plankton floating on the surface and concentrates them in a sample bottle. The other sample is a whole water sample, also collected from the surface. Laboratory staff examines a sub-sample of the plankton net sample under the microscope to identify all of the types of phytoplankton present in the sample. From the whole water sample, a specific volume of water (1 mL) is examined under the microscope to determine the genus and number of each type of phytoplankton present in the sample. Through this complete analysis, the NBC will be able to track changes in the phytoplankton population and community structure as nutrient reductions occur in the upper Bay. Also, the NBC collaborated with the University of Rhode Island – Graduate School of Oceanography (URI-GSO). Through aligning the NBC methods with those of UIR-GSO, who collects data in the lower Bay, comparisons can be made between the phytoplankton variation in the Providence River and upper Bay with that present in the lower Bay.



Thalassionema sp

Benthos Monitoring

During 2015, EMDA continued benthic video monitoring, utilizing an underwater video camera to observe the state of the benthos in the NBC receiving waters. While this monitoring initiative is relatively new to the program, begun in 2014, long-term monitoring of the benthos in this way will allow the NBC to track changes in local benthic conditions as nutrient reductions and other infrastructure improvements occur in the upper Bay. Transects were conducted along three permanent transect paths in the Providence River; surveys were attempted monthly, though unsuccessful due to poor weather conditions on several occasions. Discussions of results and observations made during these video surveys are currently being posted to the NBC webpage in an effort to share these findings with interested members of the public. As the techniques continue to be refined, more quantitative analyses are being conducted, improving the scientific rigor and information potential of this relatively new initiative.

On Going Projects

Over the years the Pretreatment, ESTA and EMDA Sections initiate many projects that have become integral parts of the routine activities of each department. Work continues to be performed on these long established NBC projects. The following is a listing of some of these projects:

Commercial Pesticide Control Program
Copper Sulfate Root Killer Prohibition
Fuel Oil Discharge Control Program
Medical Waste Control Program
Environmental Management Systems Program
Pollution Prevention for Hospitals and Health Care Facilities
Pollution Prevention for Auto Salvage Yards
Septage Permitting Program
Treatment Plant Influent Computer Monitoring Program
Floatables Control Program
Mussel Study
Emerging Pollutants Study
Woonasquatucket River Education Project
Water Audit and Technical Assistance Program
Storm Water Pollution Prevention Program
CSO Tunnel Evaluation
Fixed-Site On-Line Water Quality Monitoring
Computerization of Sewer Maps

The NBC will continue to be a leader, locally and nationally, developing programs, projects and initiatives that will control and reduce the discharge of pollutants to our treatment facilities, and ultimately Narragansett Bay. This work will continue in 2016.

VIII. NBC PRETREATMENT PROGRAM GOALS

Status of 2015 Goals

This chapter outlines the progress made during 2015 toward meeting the goals established in the 2014 Pretreatment Annual Report and defines goals for 2016.

- **2015 Goal:** Publish Pretreatment Program Annual Report

  Accomplishment: The 2014 Pretreatment Program Annual Report was completed and submitted to the DEM on March 13, 2015 in compliance with the NBC RIPDES permits. In order to make the report accessible to the public, it is uploaded to the NBC website, www.narrabay.com annually. The 2014 Pretreatment Annual Report was uploaded to the internet on March 18, 2015. The content of the 2014 Annual Report is also presented to the NBC Citizens Advisory Committee (CAC). The 2014 report was presented to the CAC during their April meeting held on May 20, 2015.

- **2015 Goal:** Satisfy all EPA and DEM Pretreatment Program mandates such as sampling and inspecting each Significant Industrial User (SIU) at least once every twelve (12) months. As an additional goal, the Pretreatment and Environmental Monitoring personnel will attempt to inspect and sample all SIUs at least twice each twelve month period.

  Accomplishment: The Pretreatment satisfied the EPA and DEM mandates for conducting sampling and non-sampling inspections of each SIU at least once every twelve (12) month period. Each SIU was inspected at least once during this report period, and within twelve months of their previous inspection date. The Pretreatment Section performed well toward satisfying its goal to inspect each SIU twice, as all but one SIU, Northeast Remsco Construction, Inc., were inspected two or more times during 2015. The EMDA Section performed well toward satisfying the NBC goal to sample each SIU at least twice. However, two SIUs, Northeast Remsco Construction, Inc. and Osram Slyvania, Inc., were not sampled during 2015. The Wastewater Discharge Permits for both companies were terminated in very early 2015. Northeast Remsco Construction, Inc. discharged treated groundwater from Phase II of the NBC CSO abatement project. The company ceased process operations at the end of December 2014 and the permit was terminated on January 15, 2015. An inspection was conducted prior to terminating the permit. Samples could not be collected because groundwater was not generated. Osram Slyvania, Inc. was a glass manufacturing company located in Central Falls. This company ceased process operation in September 2014. From October 2014 through February 2015 the company performed facility cleanup operations. All wastewater generated during these operations was shipped off site for disposal along with any chemicals and solutions that were on site. Therefore, samples were unable to be collected. Many SIUs were sampled more than twice due to the implementation of the monitoring procedure to resample any user once a violation is observed as a result of a NBC sampling event. Additional information regarding the NBC sampling and inspection programs is provided in CHAPTER III.

2015 Goal: The Pretreatment staff will attempt to conduct an annual inspection of each non-significant industrial user, annual inspections of 75% of restaurants and food processing facilities to ensure compliance with grease removal regulations, and 50% of all other permitted commercial users.

Accomplishment: In 2015, the Pretreatment staff conducted 1,911 inspections of commercial and industrial users. Pretreatment staff performed thorough inspections of 96.3% of permitted non-significant industrial users, performing 426 inspections of this classification of user. During 2015, Pretreatment staff inspected 60.7% of the permitted restaurants and commercial buildings with cafeterias, conducting 663 inspections of facilities in these two categories. Pretreatment staff inspected 76.8% of all other commercial users, meeting the self-imposed goal. There were 308 inspections conducted of commercial users during 2015. Additional information regarding the NBC inspection program is provided in CHAPTER III.

- **2015 Goal:** Perform prompt reviews of user permit applications and plan submittals to ensure that permits are issued in an expeditious manner.

  Accomplishment: All new users located in either district are expeditiously permitted prior to discharging into the NBC sewer system. Formal plan review meetings are conducted weekly by Pretreatment staff to ensure prompt response to user plan submittals and to expedite the permitting process. Permitting of various classes of non-significant users located in both districts was ongoing in 2015, as 406 Wastewater Discharge Permits were issued in various industrial and commercial categories. During the year, permits were issued to metal finishers, chemical manufacturers, restaurants, supermarkets, automotive repair shops, printers, photo processors, dental offices, doctor offices, and other medical facilities using x-ray equipment. Permitting of new users also continued during 2015, as 140 of the 406 permits were issued to new users. The majority of the new permits were issued to non-significant industrial and commercial users.

  The Pretreatment and Permits & Planning sections routinely perform expeditious reviews of discharge and sewer connection permit applications and work closely to ensure that contractors and users needs are promptly addressed. During 2015 the Pretreatment Section performed expeditious reviews of 217 process and pretreatment system plan submittals. Of these 217 plan submittals 146 were promptly approved, 36 were approved with conditions to be met, 14 were rejected since NBC requirements were not satisfied and no action was taken initially on 21 plans since additional information was required for approval.

  The Permits & Planning Section continued to meet its goal of responding to incomplete Sewer Connection Permit Applications within two business days and issuing permits within ten business days. During 2015, 228 Sewer Connection Permits were issued. Additional information regarding this program is provided in CHAPTER VII.

The Pretreatment and Permits & Planning sections track the number of business days from the time the application package is complete to issuance of the permit. In 2015 the average time for a new Wastewater Discharge Permit to be issued by the Pretreatment Section was 17 business days and the Permits Section issued new Sewer Connection Permits within two business days.

- **2015 Goal:** Identify new and previously unknown sewer users to ensure compliance with regulations. To achieve this goal, conduct spot inspections of industrial users located in 75% of the mill complexes/industrial areas situated within the two sewer districts to identify new and previously unknown sewer users.

  Accomplishment: The NBC instituted a program of performing unannounced inspections of mill complexes and industrial areas to identify facilities discharging without a permit. This program has been quite successful. In 2015, 43 of the 63 or 68.3% industrial areas and mill complexes were inspected at least once in 2015. This program of conducting unannounced inspections of industrial areas and mill complexes to locate new and previously operating unpermitted users has been quite successful at locating unpermitted users. In addition to performing mill complex inspections, Pretreatment staff routinely reviews newspapers, social media and directories to locate new and previously unknown sewer users. All of these methods were utilized during 2015.

- **2015 Goal:** Ensure the protection of the two NBC POTWs and Narragansett Bay to minimize incidents of pass through and interference.

  Accomplishment: Pretreatment staff promptly responds to all reports of unusual influent at each treatment plant, illegal dumping, spills, odors, and blockages. The reports can come from other NBC Sections, NBC computer monitoring systems, environmental agencies, fire departments and/or the general public. The purpose of these investigations is to find the source and protect the plants and infrastructure from upset. In 2015, Pretreatment staff conducted 19 investigations. To assist NBC staff in conducting these investigations, Spill Response and Tracking training is provided annually.

  Pretreatment and EMDA staff also respond to notifications from the NBC Laboratory Information Management System (LIMS) of incidents of non-compliance from NBC monitoring events. When notified by LIMS that a sample collected at an industry is out of compliance with NBC discharge limitations, EMDA staff immediately conducts resampling at the facility and Pretreatment staff contacts the facility to immediately begin resampling its effluent. When alerted by LIMS that the concentrations of pollutants in the influent or effluent of the treatment plants have exceeded preset concentrations, EMDA and Pretreatment staff work together to find the source. The activities that staff conducts include installing manhole samplers in key locations and inspecting all facilities in the district with the potential to impact the plant with the pollutant in question.

- **2015 Goal:** Continue regulatory inspections of Septage Haulers as part of the NBC Septage Discharge Control Program.

  Accomplishment: During 2015, Pretreatment staff verified the authenticity of 20 septic system pump-outs reported on manifest forms. In addition, Pretreatment staff conducted 13 inspections at the Septage Receiving Station during 2015. Additional information regarding the NBC Septage Discharge Control Program is provided in CHAPTER VII.

- **2015 Goal:** Improve Data Management.

  Accomplishment: During 2015, Permits & Planning staff continued to use a database which incorporates Google Maps. This database better tracks sewer connection permits. The database contains information including the name, address and type of connection (residential or commercial) and whether the connection is direct or indirect. Throughout 2015, Permits & Planning staff continued to use a new online application process which allows sewer connection permit applications to be completed, submitted and paid for online. A workstation was installed in the office where applicants can complete and submit applications electronically.

  All receiving water monitoring stations are now located in the NBC GIS system. The data from a monitoring period can be displayed in a map format with the results graphically displayed as colored dots that increase in size and color intensity as the fecal coliform concentrations increase. During 2015, EMDA continued to update monitoring locations on the GIS maps as necessary. All bay and river nutrients and bacteria monitoring sites have been entered and remain accurate. Throughout 2015 EMDA staff continued to maintain the "Snapshot of Upper Narragansett Bay" website which gives NBC staff and other interested parties immediate online access to NBC data.

  During 2015, the Laboratory continued to work with IT staff to optimize and improve the functionality of the LIMS. A web based program to track the location and status of samples in route to the laboratory was implemented. A touch screen monitor was integrated into the sample tracking and receipting protocols. An electronic bench sheet was implemented in the Microbiology lab. Information regarding the sample preparation information is recorded on the bench sheet and allows the biologist to view the history of the sample.

  In 2015, IT staff continued to work on upgrading the Pretreatment software. Pretreatment staff regularly met with IT to discuss enhancements to the system. As upgrades were completed, IT staff forwarded them to Pretreatment for comment and testing. The upgraded software should be online in early 2016.

  Throughout 2015, PP&R staff continued to investigate the use of iPads. In mid-2013 iPads were purchased for all Pretreatment technical staff. Apps were downloaded on these iPads that allow staff to use Microsoft Office software and upload documents to the NBC SharePoint system. During 2015 Pretreatment staff continued to use inspection checklists in the field. Permits & Planning staff

continued to use iPads to upload permit information and pictures to the data base. Throughout 2015, Laboratory and EMDA staff worked with IT staff to integrate iPads with the new PerkinElmer LIMS system. Electronic Sample Submission Sheets (SSS) were developed for all EMDA sampling activities. During 2015 refinements to the SSSs and their operation were made based upon feedback received from field monitoring staff, in conjunction with other general troubleshooting activities.

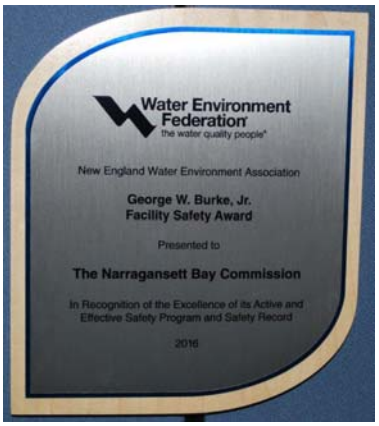
- **2015 Goal:** Provide training for OSHA and Safety Awareness. Provide all new applicable employees with 40-hr HAZWOPER training, conduct continuous in-house hazardous awareness training, and provide Infectious Materials Exposure Control training to pertinent NBC personnel.

  Accomplishment: All new employees hired in the Pretreatment, ESTA and EMDA Sections were given initial 40 hour HAZWOPER training. All NBC staff certified in 40 hour HAZWOPER training were given annual 8 hour refresher training which consisted of in-house training to satisfy the 8 hour refresher requirement.

  OSHA related training is given on Confined Space Entry, Hazard Communication, and Hazardous Waste Management. NBC continued to train employees on CPR/AED and First Aid and Hearing Conservation. Audiograms are given annually to NBC employees that have the potential to work in environments where hearing protection is needed. During 2015 NBC staff participated in OSHA classroom and hands-on sessions and had access to NBC University on-line safety training program.

  In 2015 an online safety training tracking program was initiated. This software will alert staff when required training is to be completed. Section managers will be able to generate reports detailing what training each staff member has taken and when the staff needs to be retrained.

  The NBC Employee Safety Program was recognized for excellence and received the 2015 Burke Safety Award from NEWEA.



- **2015 Goal:** Continue to document Pretreatment, EMDA and Laboratory Standard Operating Procedures and NBC Policies and Protocols manuals and update QA/QC programs. The purpose of these manuals is to clearly detail all standard operating procedures in the three sections. These manuals make invaluable reference tools for Pretreatment, EMDA and Laboratory staff and will provide a great resource for NBC employees working outside of these sections.

  Accomplishment: The Pretreatment Section has a Standard Operating Procedures (SOP) manual which consists of all existing SOPs. As existing procedures are reviewed and revised or new procedures are developed, they are documented in this manual. During 2015, Pretreatment staff continued to review SOPs and update them accordingly.

  During 2015, EMDA staff continued to detail all standard operating procedures and procedural changes for its section. Staff reviewed current literature to ensure any mandated changes in sampling protocols and/or methods were promptly adopted in NBC protocols and methods. All such changes are incorporated into the EMDA SOP manual. During 2015, SOPs were developed for wet weather, influent, and effluent sampling at both plants. In addition, SOPs were developed for return activated sludge, cyanide and mercury blank sample collections.

  In 2015, the Laboratory SOP manual and QA/QC programs were updated. All new techniques and EPA methods were incorporated into the laboratory control documents.

  During 2015, agency policies continued to be updated. All new policies are distributed to management and supervisory staff to be included in NBC Policy Manuals located throughout the agency. New policies are communicated to all NBC staff.

- **2015 Goal**: Provide free technical assistance.

  Accomplishment: Throughout 2015 ESTA staff continued to work with the industrial community to help reduce pollution at the source of generation. Activities include on-site pollution prevention and regulatory compliance technical assistance, measuring and monitoring water usage, providing assistance with water conservation projects, and collection and reporting of water use data elements. During 2015, 20 pollution prevention technical assistance site visits were conducted.

- **2015 Goal**: Water Conservation and Reuse.

  Accomplishment: ESTA staff continued to investigate opportunities for the reuse of treated wastewater from the two treatment plants. Throughout 2015 ESTA staff continued to research U.S. water reuse regulations and requirements, met with representatives from DEM to discuss on-site water reuse opportunities and initiated a plant water sample collection and analysis program.

- **2015 Goal:** Environmental Merit Awards Program - Solicit nominations from companies and staff, evaluate all Significant Industrial User performance data, and hold Awards Ceremony.

  Accomplishment: In 2015, the NBC recognized one company for environmental achievements with regards to pollution prevention, and sixteen SIUs for achieving 100% compliance with all NBC regulatory requirements. The awards were presented to the organizations at a breakfast meeting held on April 9, 2015. Additional information regarding this program is provided in CHAPTER VII.

- **2015 Goal**: Workshops – Participate in workshops and conferences to educate the public on NBC programs and initiatives.

  Accomplishment: During 2015, PP&R staff made numerous presentations at workshops, meetings and/or conferences. These conferences include the 2015 National Association of Clean Water Agencies Pretreatment & Pollution Prevention Workshop, 2015 EPA New England Region Pretreatment Conference, 2015 NEWEA Conference, and 2015 WEF Conference. Further discussions on the workshops and other NBC educational efforts can be found in CHAPTER II.

- **2015 Goal:** Energy Management– Continue to investigate energy conservation and alternative energy opportunities, Monitor measure and report NBC renewable energy generation, participate in the USDOE Better Plants Program and seek grant funding for energy projects.

  Accomplishment: Throughout 2015 ESTA staff continued to track annual energy use measurements from various NBC metered accounts and assessed performance data using EPA Portfolio Manager. NBC continued with efforts to measure the output of three 1.5 MW wind turbines at Field's Point and assisted with the development a 600 kW biogas combined heat and power system at Bucklin Point and a 10 MW net metered solar energy project. ESTA staff participated in the USDOE Better Plants Program and will report results in an annual report scheduled for completion on March 31, 2016. ESTA actively researched grant opportunities through the RIOER and various Nation Grid rebate programs.

- **2015 Goal**: Assess NBC Greenhouse Gas Emissions – research regulations and guidance documents, refine GHG inventory and assess process emissions.

  Accomplishment: Throughout 2015, NBC continued to collect and analyze electrical, natural gas, biogas and vehicle fuel use to support operations and to help quantify GHG emissions for Field's Point and Bucklin Point. NBC site specific and overall GHG emissions remain below current reporting requirements for both State of Rhode Island and EPA. During 2015, NBC conducted a study, in cooperation with the University of Rhode Island to quantify nitrous oxide, carbon dioxide and methane emissions from the Field's Point treatment processes. NBC staff participated in a state-wide Climate Control Commission and initiated the development of an annual Sustainability Report that will quantify NBC current GHG inventory.

- **2015 Goal:** Evaluate environmental sustainability opportunities at the treatment facilities.

  Accomplishment: Throughout 2015, ESTA staff continued to review and analyze data collected from past glycerin pilot studies and coordinated efforts with a local biodiesel manufacturer to investigate using grease collected at Field's Point to produce biodiesel fuel. ESTA continued to assess and quantify biogas production at Bucklin Point.

- **2015 Goal:** Conduct weekly manhole monitoring in both districts to ensure user compliance with NBC discharge limitations and to determine the location of previously unknown and unpermitted users. Attempt to sample 6 to 10 manholes per week.

  *Accomplishment**:*** EMDA staff conducted weekly manhole monitoring throughout both NBC drainage districts. This monitoring program consists of installing ISCO automatic samplers in surveillance manholes located upstream and downstream of users on a weekly basis to verify users' compliance status. EMDA staff successfully sampled 273 industrial surveillance manholes during 2015, 113 in the Bucklin Point district and 160 in the Field's Point district. In addition to the 273 industrial manholes, EMDA collected samples from 43 sanitary manholes. The EMDA Section also attempted to collect samples from 13 additional manholes. However, samples could not be collected due to no flow in the sewer line at the time manhole sampling was conducted or due to sampling equipment malfunction. This is an average of approximately six manholes per week, meeting the goal of 6 to 10 manholes per week. The total number of manholes sampled in 2015 decreased by 13.9% or 53 when compared to the 382 manholes sampled in 2014. During 2015 surveillance manhole monitoring was conducted up and down stream of 77.0% of the SIUs.

- **2015 Goal:** Define the sewer system sampling program to assess loadings from key drainage areas to locate potential areas of concern and drainage area loadings.

  Accomplishment: The NBC performed well towards satisfying this goal, as it defined strategic manholes throughout both sampling districts, formulated a sampling schedule and conducted routine monitoring of these manholes to evaluate loadings. Flow proportioned sampling of drainage basins as well as analysis of stormwater inputs, water supply inputs and sanitary sewers were used to budget inputs and improve the NBC manhole sampling program. A layer on the GIS maps was created in 2013 and used throughout 2015 to graphically depict results of drainage district sampling results in order to make interpretation of the data easier. EMDA continued background monitoring of residential areas to better define loadings to the treatment plants. An additional goal to monitor residential sources of pollutants to determine background loading was also satisfied, as 44 sampling events of residential manholes were conducted during 2015.

During 2015 NBC designed a potable water study to determine background sources of contaminants originating from drinking water supply systems. The study performed in 2000 was evaluated and used as a basis to design an improved study. Sampling is scheduled to begin in early 2016.

- **2015 Goal:** Sample at the two NBC POTWs daily for all RIPDES permitted parameters. Research and test new sampling equipment and procedures to continually improve monitoring activities.

  Accomplishment: In July 1999, the responsibility of sampling the Field's Point and Bucklin Point treatment facilities was transferred to the EMDA Section from the Operations Division. On January 1, 2000 clean sampling techniques were implemented for all permit samples. This required the purchase of new all-weather refrigerated automatic samplers, the changing of sample collection hose from PVC to Teflon, as well as the use of acid washed, double bagged sample jugs and pre-cleaned certified sample bottles. EMDA staff used clean sampling techniques for all industrial monitoring and treatment plant sampling for metals, cyanide and nutrients conducted in 2015. Throughout 2015, EMDA staff continued to use QA/QC sample collection practices to ensure the highest quality samples were being collected. During 2015, the NBC complied with the RIPDES permit requirements to sample at the two treatment plants every day of the year and all mandated reporting requirements. EMDA staff continued to sample all process operations at both plants to acquire the data needed to optimize plant performance. At Bucklin Point an upgraded sampler was installed at the final effluent. An ISCO 5800 sampler replaced an ISCO model 3700.

- **2015 Goal:** To review, evaluate and log all analytical data obtained from EMDA monitoring efforts, to provide interpretation of this information to appropriate NBC staff in a timely manner and to ensure that quality assurance and quality control procedures are maintained.

  Accomplishment: During 2015, EMDA continued to evaluate all monitoring data. Both in monthly interdepartmental data meetings and in comprehensive monthly reports, short and long term trends and alerts to high levels were provided. Data was posted on the NBC webpage "Snapshot of Upper Narragansett Bay" along with blogs interpreting the most recent data. During 2015, EMDA published the data collected from the 2014 monitoring season. During 2015, EMDA continued to work closely with the Laboratory staff regarding LIMS issues, as well as with IT personnel to review existing databases to identify areas of improvement. EMDA maintained a log in which any information impacting analytical results was entered. This allows successors to determine what occurred when analytical trends or data differ from historical values.

EMDA staff analyzes the data on a regular basis to establish trends and notify Operations, Interceptor Maintenance and/or Pretreatment staff of any anomalies. EMDA staff conducts monthly meetings to report the data trends. Pretreatment, Laboratory, ESTA and Operations staff from both facilities routinely attend these meetings. During 2015, the Snapshot webpage was maintained in an up-to-date fashion with regular data analysis blogs and the latest bay monitoring data so it can be quickly available on-line to NBC staff and the general public.

Throughout 2015, Pretreatment staff continued to work with IT staff on the PT-LIMS interface to download data directly from the new PerkinElmer LIMS to the PT system.

- **2015 Goal**: Design and implement an on-line centralized database.

  Accomplishment: Progress on Data Central, a centralized database website in which all data can be uploaded, was made during 2015. The database is accessible through www.narrabay.com and allows immediate access to selected data for use by NBC staff and stakeholders. All Discharge Monitoring Reports (DMR) from 2015 have been scanned and are available on the NBC Intranet. During 2010, paper copies of DMRs dating back to the early 1980s were discovered in the NBC archives. New LIMS software was acquired and implemented during 2012, and improvements to this software continued to be made throughout 2015. This software, in conjunction with Water Information Management Solution (WIMS), also acquired for data management and report generation purposes, will greatly aid NBC in implementing the central database.

- **2015 Goal**: Monitor the receiving waters of both the Field's Point and Bucklin Point treatment facilities with the fixed site monitoring program previously funded through an EPA grant.

  Accomplishment: In 2015, the NBC continued to monitor the receiving waters of both the Field's Point and Bucklin Point treatment facilities at two fixed sites within the Providence and Seekonk Rivers. In addition, in 2014 a new temporary site was established within the Edgewood Shoals area to better understand this low flushing, low dissolved oxygen area, and to further the development of the Regional Ocean Modeling System (ROMS) model. The monitoring at this temporary site continued during the 2015 monitoring season. Continuous online monitoring is conducted for dissolved oxygen, conductivity, temperature, salinity, pH, chlorophyll, pressure (depth) and tidal amplitude. In addition, bi-weekly samples at these and other upper bay stations were collected for fecal coliform, nutrient analyses, chlorophyll-a and turbidity. EMDA staff maintained the sites at Bullocks Reach and Edgewood Shoals, buoy sites, and Phillipsdale Landing, a dock site. Quality assurance practices continued to be coordinated with the Narragansett Bay Fixed Site Water Quality Monitoring Network that has adopted common methods for this baseline assessment. This data is made available to the scientific and general community on a real time basis on the NBC "Snapshot of Upper Narragansett Bay" webpage.

- **2015 Goal:** Conduct tributary river sampling for fecal coliform analysis.

  Accomplishment: In 2015 EMDA continued to sample twenty locations along five rivers in the Providence metropolitan area: the Woonasquatucket, Providence, West, Blackstone and Moshassuck Rivers. Weekly sampling of these sites has allowed EMDA to promptly notify Interceptor Maintenance (IM) of both dry and wet weather discharges based on the analytical results, and has been a key technique for pinpointing overflow and interceptor malfunctions. Many fewer wet weather discharges are expected now that Phase I of the CSO Abatement Project has been completed. Dry weather overflows occur periodically and are the result of blockages in sewer regulators. EMDA scientists analyze the data to determine trends in fecal coliform bacteria inputs to these waterways. The results of the tributary river monitoring for fecal coliform bacteria is provided to IM staff twice-weekly and is used to locate possible maintenance problems. Trend analyses are conducted and reported to NBC staff on a monthly basis through monthly reports and periodic meetings. River sampling data routinely assist IM in identifying and quickly stopping dry weather overflows. This data has provided a baseline to measure the success of the CSO remediation project, and data collected throughout 2015 in conjunction with data collected in future years will be used to evaluate Phase II of the NBC CSO projects success in reducing adverse impacts to area tributary rivers and Narragansett Bay.

- **2015 Goal:** Continue to evaluate the effect of the NBC effluent on water quality of the receiving waters.

  Accomplishment: During 2015 EMDA continued water quality evaluations of the receiving waters of the Bucklin Point and Field's Point wastewater treatment facilities. The purpose of this monitoring initiative is to determine the distribution and concentration of contaminants of concern to the health of the environment in both the Seekonk and Providence Rivers. EMDA continued its fecal coliform and nutrients monitoring by boat at multiple stations in the Providence and Seekonk Rivers, as well as continuing bacteria monitoring weekly at multiple stations in four freshwater rivers that are affected by combined sewer overflows. In 2005 EMDA began initial tests for Enterococci bacteria. This testing was expanded in 2006 in river, bay and treatment plant effluent samples in order to assess water quality with the new primary contact standard for fresh and saltwater. This testing continued during 2015. Also during 2015, EMDA utilized an underwater video camera to determine the state of the benthos in NBC receiving waters. Long-term monitoring of the benthos will document how BNR impacts the local benthos.

- **2015 Goal:** Conduct Toxics Compliance Monitoring of two CSO wet weather event discharges as a part of the NBC Nine Minimum Controls Program.

  Accomplishment: To evaluate the effectiveness of the Pretreatment and Pollution Prevention programs at reducing toxic pollutant discharges through CSOs, EMDA monitors several CSOs annually as an element of the NBC Nine Minimum Controls Program. The aim of wet weather sampling events is to characterize the impact of CSO discharges and the efficacy of NBC's current controls when wastewater overflows the collection system during wet weather events. The sampling plan was designed so that three samples are to be collected at the outfall throughout the overflow event. The first sample is to be collected during the initial overflow, or first flush, stage and typically contains wastewater with the least degree of rain water dilution and the highest concentrations of pollutants washed from street and land surfaces into the combined sewer system.

  A second sample is to be collected during the stage of highest overflow rate and a third sample collected near the conclusion of the event. During 2015, CSO sampling was conducted at two Providence CSO locations one located on San Souci Drive, and one located at India Park, and the North Diversion structure at Bucklin Point.

- **2015 Goal:** Conduct border river sampling for nutrient analysis to determine loadings to Upper Narragansett Bay that originate from outside of Rhode Island.

  Accomplishment: This monitoring initiative was begun in 2007 and continued in 2015. This monitoring consists of monthly sampling from the mouths of the Ten Mile, Runnins, Palmer, Warren Reservoir, Cole, and Taunton rivers, as well as from multiple sites on the Blackstone River. In addition, a sample is collected monthly from the mouth of the Pawtuxet River to provide more accurate data on all sources of nutrient loadings to Upper Narragansett Bay. The data shows NBC contributions are not as large a percent loading as first thought. This monitoring has revealed that nutrients loadings to the Bay dramatically increase during rain events. In 2013, a second sample location on the Ten Mile River was selected to further evaluate the loading from this river.

- **2015 Goal:** Evaluate water quality inside the Providence River Hurricane Barrier to generate a long term data set necessary to measure the success of the CSO abatement project.

  Accomplishment: In 2007, as part of its monitoring plan EMDA began an initiative to sample tributary rivers and/or the upper bay in response to extreme situations or weather conditions that have the potential to adversely affect plant operations and/or receiving water quality. During the latter portion of 2007, EMDA began monitoring within the hurricane barrier for Total Dissolved Oxygen (DO) on a monthly basis. Since this is a low flush area due to being partially blocked by the hurricane barrier it is expected CSO discharges will have a magnified impact on DO levels compared to higher flush areas. Conversely, it is expected that the CSO tunnel will result in fewer oxygen depleting CSOs and

have a positive impact on DO levels. EMDA continued to sample multiple locations in the urban rivers and Bay for bacteria and dissolved oxygen before and after rain events. This data has provided a baseline to measure the success of the CSO remediation project. This monitoring continued in 2015. Data collected from these locations is used to evaluate the tunnel's success in reducing adverse impacts to area tributary rivers.

- **2015 Goal:** Continually improve NBC monitoring and analytical capabilities.

  Accomplishment: In 2007, EMDA began replacing antiquated plant refrigerated automatic samplers with sophisticated state-of-the-art samplers requiring much less human intervention. The samplers hold up to four carboys, eliminating the need for off-hour jug change-outs. During 2015, an upgraded sampler was installed at the Bucklin Point final effluent. An ISCO 5800 sampler replaced an ISCO model 3700. The new sampler is equipped with back-up battery power which will allow the samplers to operate in the event of a power interruption. The Laboratory ensured all analyses were performed in conformance with EPA and Department of Health standards. In 2015 the Laboratory attained 100% accuracy on all annual EPA Proficiency Testing and all its licensing certifications are up-to-date. To ensure analytical results are accurate, all laboratory equipment was calibrated in February 2015.

- **2015 Goal:** Participate in community based environmental and educational projects.

  Accomplishment: In 2015, the NBC continued the Earth Day environmental grant program intended to diversify positive impact on multiple rivers in the NBC service area rather than focusing solely on the Woonasquatucket River. The grant program assisted numerous local organizations, cities and towns by providing 16 small grants totaling $9,000 that allowed these organizations to purchase supplies to organize clean up events and river restoration activities in their communities.

  On August 5, 2015, NBC hosted a workshop entitled, "Just Another Day on the Upper-Upper Bay" held at Johnson & Wales Harbor View building. NBC staff did a wonderful job educating stakeholders on NBC's monitoring programs and data results.

  During 2015, PP&R staff participated in the NBC Watershed Explorers Program.

- **2015 Goal:** Conduct studies during extreme weather or emergency events.

  Accomplishment: In 2007, as part of its monitoring plan EMDA began an initiative to sample tributary rivers and/or the upper bay in response to extreme situations or weather conditions that have the potential to adversely affect plant operations and/or receiving water quality. The NBC is prepared to immediately undertake any monitoring necessary to evaluate the impacts from this type of event.

  On May 29, 2015 the DEM notified NBC of a moderate fish kill of Atlantic menhaden in the upper reaches of the Seekonk River, which appears to have begun on or around May 25, 2015. The NBC responded by evaluating water quality data from the fixed-site monitoring station at Phillipsdale, as well as collecting additional water quality profiles throughout the area.
  Water quality profiles collected on June 1 and 2, 2015 confirmed hypoxic conditions in the bottom waters from Phillipsdale north, and improved DO levels in bottom waters by June 3, 2015. Overall, the hypoxic conditions observed were not extensive, and it was difficult to conclude whether hypoxic conditions caused the recent fish kill or whether an overabundance of menhaden in the narrow northern Seekonk River contributed to the hypoxia themselves.

  Another fish kill in the Seekonk River began on July 18, 2015 which was extensively monitored by EMDA staff. EMDA provided valuable data to the DEM so that they may conduct a thorough investigation as to the cause.
  Another fish kill in the Seekonk River began on August 3, 2015, which was monitored by EMDA staff. EMDA provided valuable data to the DEM so that they may conduct a thorough investigation as to the cause.

  Due to a significant rainstorm which occurred on August 4, 2015 as well as a bypass from the Bucklin Point treatment plant resulting from a power outage, the DEM closed Conditional Areas A and B along with the Conimicut Triangle to shellfishing. As a result of increased NBC Bay bacteria sampling on August 4 and 6, 2015, in addition to normally scheduled sampling on August 5, 2015 showing low bacteria levels, DEM reopened the shellfishing areas at sunrise on August 8, 2015 3 ½ days earlier than scheduled.

  EMDA assisted RI DEM Fish and Wildlife, with fish kill investigations on September 2 and 16, 2015 by conducting vertical profiles of water quality data at several locations affected by the fish kills including the Seekonk River, Woonasquatucket River, and the mouth of the Pawtuxet River. Both of these events involved relatively small numbers of fish. The data that was collected was shared with the DEM.

  The NBC discovered a Dry Weather Overflow on November 16, 2015 from Outfall 213-2 in Pawtucket into the Seekonk River. The overflow volume was estimated to be 25,600 gallons. Sampling conducted downstream from the outfall several hours after the overflow was corrected showed non-detectable concentrations of fecal coliform.

- **2015 Goal:** Improve process operations at the two treatment plants.

  Accomplishment: During 2015, at Field's Point EMDA continued the process control sampling to support the BNR process to ensure the upgraded treatment facility would be able to achieve the required level of performance. EMDA also continued the activated sludge sampling program to better understand the distribution in the treatment facility. This monitoring consisted of grab sample collections from each of the aeration tanks twice per week in order to ensure an even distribution of biosolids in the reactors.

  During 2015, EMDA assisted to optimize the treatment process at Bucklin Point by continuing a program to evaluate characteristics of the new side stream equalization process. This process collects various side stream flows from the plant, equalizes them and allows them to be fed back to the treatment process in a controlled manner. This sampling is performed three times per week. The data is compared to other process control sampling and is used to optimize the treatment process.

  During 2015, EMDA conducted extensive monitoring of Rhode Island Resource Recovery Corporation, a significant industrial user discharging treated landfill leachate, during the start-up of its BNR treatment system to provide information regarding the loading from that facility to Field's Point. This information assisted to optimize the treatment process at the plant.

- **2015 Goal:** Provide access to all NBC monitoring data.

  Accomplishment: EMDA staff analyzes the data on a regular basis to establish trends and notify Operations, Interceptor Maintenance and/or Pretreatment staff of any anomalies. EMDA staff conducts monthly meetings to report the data trends. Pretreatment, Laboratory, ESTA and Operations staff from both facilities routinely attend these meetings. EMDA completed and posted its annual data report to www.narrabay.com during 2015. This data is invaluable to all stakeholders involved with Narragansett Bay. Data summary reports were also posted to the NBC "Snapshot of Upper Narragansett Bay" webpage on a weekly or biweekly basis, presenting current data trends and water quality conditions on the bay.

- **2015 Goal:** Implement flow monitoring of rivers not presently on the USGS Streams Gauge Network.

  Accomplishment: On December 9, 2015, EMDA staff conducted flow monitoring activities on the Runnins River in East Providence RI. A Global Flow probe model FP101 was used to acquire velocity measurements for each of 10 cross-sectional segments. The depth was also recorded at each segment. Using the data gathered, flow was calculated to be 0.2781 m^3/s. Flow measurements allow NBC to calculate loadings using analytical data.

- **2015 Goal**: Participate in a study to evaluate emerging pollutants in the NBC receiving waters.

  Accomplishment: In 2014, the NBC worked with the EPA Atlantic Ecology Lab collecting treatment plant effluent samples for emerging pollutant analysis. An informational meeting was planned for 2015 to discuss further collaboration, but did not occur. The NBC anticipates this meeting will take place sometime during 2016 and plans to collaborate further with the EPA at that time.

Major Program Goals for 2016

Goal Category	Goal Outline	Goal Description
Inspections	Inspect industries to ensure compliance with regulations.	▪ Inspect each SIU twice (EPA/RIDEM requires one inspection) ▪ Inspect each non-significant industrial user once ▪ Inspect 75% of permitted restaurant and food processing facilities ▪ Biannual inspections of all other permitted commercial users
	Identify new and previously unknown sewer users to ensure compliance with regulations.	▪ Conduct unannounced inspections of 75% of the mill complexes/industrial areas
	Continue regulatory inspections of septage haulers.	▪ Inspect septage vehicles at the receiving station one day per month ▪ Staff will verify at least 12 septage manifest forms per year
Emergency Response Actions	Ensure protection of the two POTWs and Narragansett Bay to minimize incidents of pass through and interference.	▪ Respond to 100% of unusual influent reports ▪ Respond to 100% of reports of illegal dumping, spills and blockages ▪ Investigate all automatic notifications from LIMS of incidents of non-compliance ▪ Investigate all reports of unusual influent as indicated through the PI computer monitoring systems ▪ Conduct annual Spill Response and Tracking training
Pollution Prevention and Technical Assistance Initiatives	Provide free technical assistance.	▪ Reply to all request to 100% of all requests for technical assistance ▪ Seek grant funds to support technical assistance programs
Monitoring and Analytical Initiatives	Sample industrial discharges to sewer system to ensure compliance with regulations.	▪ Conduct sampling of each SIU twice (EPA/DEM requires one sampling) ▪ Resample any SIU found out of compliance
	Conduct sampling to assess loadings from key drainage areas and determine background loadings of pollutants.	▪ Conduct routine residential manhole monitoring ▪ Continue monitoring of residential sources of pollutants to better define background loading ▪ Replicate previously performed potable water study
	Conduct surveillance monitoring in the sewer system to ensure compliance with regulations.	▪ Sample 6-10 manholes per week (including surveillance and routine monitoring) ▪ Sample up and down stream of 70% SIU and Zero Discharge Company at least once
	Monitor Field's Point and Bucklin Point facilities as necessary to ensure and improve compliance with all RIPDES permit requirements.	▪ Sample both facilities daily ▪ Collect process control samples to provide critical plant operational data to allow Operations staff to optimize plant performance ▪ Research and test new sampling, data scanning and recording equipment and procedures to continually improve monitoring activities ▪ Collect samples to test functionality and optimize BNR facilities

Goal Category	Goal Outline	Goal Description
Monitoring and Analytical Initiatives (continued)	Maintain the two NBC fixed site monitoring systems to evaluate NBC receiving water quality	▪ Maintain the two fixed site stations to continue monitoring downstream of each plant ▪ Deploy a special buoy to evaluate water quality conditions in a dissolved oxygen impaired area of the upper bay ▪ Monitor continuously for temperature, salinity, dissolved oxygen, conductivity, pH, chlorophyll and pressure (depth) ▪ Collect bi-weekly samples at these monitoring stations for fecal coliform, nutrients, chlorophyll-a, and turbidity analysis ▪ Provide data and data interpretation to the scientific and general community on a real time basis. ▪ Continue participation in the Bay Wide Fixed Site Network monitoring collaborative using approved QA/QC protocols
	Continue to monitor NBC receiving waters to evaluate water quality improvements, areas with impairments and causes.	▪ Continue routine monitoring program of the Providence and Seekonk Rivers for nutrients, bacteria, dissolved oxygen and other parameters ▪ Perform additional monitoring in response to extreme situations or weather conditions that could adversely affect plant operations and receiving water quality ▪ Continue to participate in an EPA study to evaluate emerging pollutants in the NBC receiving waters ▪ Perform benthos monitoring to determine how nitrogen loading reductions impact local benthos
	Conduct tributary river sampling for fecal coliform analysis to ensure compliance with EPA Nine Minimum CSO Control Program	▪ Conduct weekly sampling at multiple sites on the West, Woonasquatucket, Moshassuck and Blackstone Rivers and one site on the Providence River ▪ Provide data to IM staff to allow for timely maintenance activities of the CSOs ▪ Conduct monitoring of CSO events by collecting samples of the first flush, maximum flow and late flow to characterize the CSO discharge impact and efficiency of CSO controls in place ▪ Conduct toxics compliance monitoring at three locations, two CSOs and the North Diversion Structure at Bucklin Point, during wet weather event discharges
	Border river sampling for nutrient analysis to determine loadings to Upper Narragansett Bay that originate from outside of Rhode Island	▪ Conduct monthly sampling from the mouths of the Ten Mile, Runnins, Palmer, Warren Reservoir, Cole, and Taunton rivers as well as from the Blackstone River where they cross the State line
	Conduct sampling to measure the success of Phases II of the NBC CSO Abatement program	▪ Conduct sampling at multiple locations in the rivers and bay for bacteria before and after rain events to evaluate the success of the CSO abatement tunnel project.
	Continually improve NBC monitoring and analytical capabilities	▪ Upgrade existing plant samplers as needed to improve monitoring capabilities ▪ Implement periodic flow monitoring of rivers not presently on the USGS Streams Gauge Network ▪ Attain 100% accuracy on all annual Proficiency Testing ▪ Ensure all laboratory equipment is calibrated annually ▪ Maintain all Laboratory licensing certifications

Goal Category	Goal Outline	Goal Description
Permitting	Expeditious review and issuance of permits	▪ Respond to all incomplete discharge permit applications and renewals within fourteen business days ▪ Review submitted Pretreatment facility plans on a weekly basis ▪ Respond to all incomplete Sewer Connection Permit applications within two business days. ▪ Issue Sewer Connection Permit permits within 10 business days
Data Logging Analysis and Reporting	Continue to expand and improve electronic data systems	▪ Improve and expand existing databases ▪ Document all treatment facility process and laboratory changes in meta-data files ▪ Continue to create LIMS reports to migrate data automatically into spreadsheets ▪ Upload river and bay data weekly to Snapshot, the NBC water quality website, for immediate staff and stakeholder access ▪ Continue to computerize past analytical data ▪ Continue to scan DMRs into electronic format
	Provide internal and external access to appropriate NBC monitoring data	▪ Upload annual data report to the internet by April 30th ▪ Promptly prepare updates detailing activities and historical trends to Snapshot ▪ Prepare draft press releases on findings ▪ Provide external access to appropriate data via Snapshot ▪ Provide access to NBC staff to all data via LIMS ▪ Provide NBC data in response to specific requests
	Review, evaluate, report and present NBC data to internal and external stakeholders	▪ Prompt data logging and evaluation ▪ Analyze data and report projected short and long term trends via monthly reports and meetings ▪ Timely response on data excursions and alerts to Laboratory, Operations and Pretreatment staff, allowing opportunity for prompt corrective action ▪ Provide trend analysis to NBC and Stakeholders ▪ Publish technical papers, abstracts and present posters
Special Studies and Projects	Improve functionality of NBC computer systems	▪ Continue to locate sewer connections, LID projects, industrial and commercial users, and private pump stations in the NBC Permits software system ▪ Continue to locate and update users and surveillance manholes on the computerized maps ▪ Continue to locate and update all monitoring locations on the NBC GIS system ▪ Begin to use GIS/LIMS tools to incorporate sample locations into LIMS ▪ Improve the information on the NBC internet sites ▪ Update safety training tracking software
	Energy Management	▪ Continue to investigate energy conservation and alternative energy opportunities ▪ Monitor, measure and report NBC renewable energy generation ▪ Continue to participate in US Department of Energy Better Plant Program ▪ Seek grant funding for energy projects
	Water Conservation and Reuse Projects	▪ Continue to investigate WWTF reuse of wastewater and bio solids ▪ Seek grant funds to support water conservation and reuse programs

Goal Category	Goal Outline	Goal Description
Special Studies and Projects (continued)	Evaluate environmental sustainability opportunities at the treatment facilities	▪ Continue to assess the use of biodiesel glycerin as a BNR carbon source ▪ Coordinate research to increase bio-gas production at Bucklin Point
	Participate in community based environmental and educational projects	▪ Continue Earth Day Grant Program ▪ Participate in the NBC Watershed Explores Program ▪ Participate in statewide environmental stakeholder groups, such as Watershed Counts, Bays, Rivers & Watersheds Coordination Team, RI Monitoring Collaborative, etc.
	Assess NBC Greenhouse Gas Emissions (GHG)	▪ Continue to review and document applicable state and federal GHG regulations ▪ Continue to review and document applicable GHG guidance documents ▪ Continue to refine inventory of NBC GHG sources ▪ Assess actual NBC GHG process emissions
	Monitor river flow	▪ Assess river flow in a NBC sampled rivers for which there is no tributary USGS gage so loadings may be determined
	Storm Water Mitigation Projects	▪ Continue to update and maintain the Storm Water Management Plans (SWMP) for both treatment plants ▪ Conduct site inspections of both plants in accordance with the SWMPs ▪ Conduct sampling in accordance with the SWMPs ▪ Provide annual training on the SWMP to plant employees ▪ Assess internal and external construction projects to ensure compliance with NBC Storm Water Management Plan requirements
Internal Procedures	Document all Standard Operating Procedures and Protocols	▪ Continue to detail all Pretreatment, EMDA, and Laboratory standard operating procedures and procedural changes for the three sections. ▪ Document all NBC policies in the Agency's Policy Manual ▪ Review and update all Section NBC Policy Manuals for completeness and accuracy
Education, Training and Public Awareness	Publish Annual Pretreatment Report	▪ Prepare and submit the Annual Pretreatment Report to DEM by March 15th ▪ Upload the Annual Report to the internet by April 15th ▪ Present the findings of the annual Pretreatment report to the Citizen's Advisory Committee
	Environmental Merit Awards Program	▪ Solicit nominations from companies and staff ▪ Evaluate all nominations and issue Pollution Prevention Awards if appropriate ▪ Evaluate all SIU performance data for perfect compliance ▪ Evaluate sewer connection projects using LID storm water mitigation technologies and issue an award for Excellence in Storm Water Management
	Workshops	▪ Participate in at least two public workshops ▪ Present an update on the NBC environmental initiatives, water quality improvements, and the health of upper Narragansett Bay at a workshop ▪ Conduct one workshop explaining NBC permitting requirements to public officials

Goal Category	Goal Outline	Goal Description
Education, Training and Public Awareness (continued)	Provide training programs necessary to ensure employee Health and Safety.	▪ Provide all new applicable Pretreatment and EMDA employees with 40-hr HAZWOPER training ▪ Provide 8 hr. HAZWOPER Refresher training annually for all applicable employees ▪ Conduct continuous in-house hazardous awareness training ▪ Provide safety training to all new employees ▪ Provide OSHA required training programs necessary to protect employees such as hearing conservation, confined space entry, safety awareness, etc.
	Improve information on www.narrabay.com, the NBC internet site	▪ Ensure all documents from the older version of narrabay.com have been uploaded to the upgraded site. ▪ Update all information on the site to ensure its accuracy. ▪ Create informational fact sheets to be uploaded to the website. ▪ Continue to promptly update, improve and expand Snapshot, the NBC water quality website. ▪ Publish NBC initiatives and water quality improvements through a public education project