COMBINED SEWER OVERFLOW POLICY

Rhode Island Department
of Environmental Management
Division of Water Resources
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1FCA2

RIDEM COMBINED SEWER OVERFLOW POLICY

Introduction - According to the U.S. Environmental Protection Agency's (EPA) Interim Final National Control Strategy for Combined Sewer Overflows, January, 1989, CSOs are point sources subject to NPDES permit requirements, including both technology-based and water quality-based requirements of the Clean Water Act (CWA). CSOs are not subject to secondary treatment regulations applicable to publicly owned treatment works (Montgomery Environmental Coalition vs Costle, 646 F. 2d 568(D.C. Cir. 1980)). Moreover, the EPA states in its strategy that technology-based permit limits should be established for best practicable control technology currently available (BPT), best conventional pollutant control technology (BCT), and best available technology economically achievable (BAT) based on best professional judgement (BPJ) when permitting CSOs. The CWA of 1977 mandates compliance with BPT on or before July 1, 1977. The Water Quality Act Amendments of 1987 (WQA) mandates compliance with BCT/BAT on or before March 31, 1989. In addition, Section 301(b)(1)(c) of the CWA mandates compliance with water quality standards by July 1, 1977.

However, since the US EPA has not defined BCT/BAT, RIDEM set a treatment technology standard to fill this void. Moreover, RIDEM sets forth requirements in the goal of the policy to ensure that compliance with water quality standards will be achieved. The policy also outlines how the goal is to be attained as well as implemented. Appendix A provides information on each permittee (Blackstone Valley District Commission, Narragansett Bay commission, and the City of Newport), their completed CSO studies, compliance status, and RIDEM's activities to ensure compliance.

Sections 6.32 and 6.33 of the Rhode Island Water Quality Regulations for Water Pollution Control , as amended, define the class-specific criteria for fresh and salt waters. All combined sewer overflows in Rhode Island discharge to Class SC or C waters. The Department, in order to satisfy sections 6.32.2 and 6.33.2 of the RI Water Quality Regulations, selected the largest storm that would both protect water quality and the socio-economic health of the Combined Sewer Overflow (CSO) communities. Based upon the statistical listing of storm events in Rhode Island between the years 1949 and 1982, the average storm duration was six (6) hours. The Department decided that the target storm frequency should be the one year storm. When compared to all storm events from the 1949-1982 period, the 1 year - 6 hour storm was surpassed by only 1.2 percent of all storms in terms of total rainfall. This storm equates to 2.46 inches of rain with a peak intensity of 0.91 inches per hour.

Goal - Combined sewer overflows (CSOs) are responsible for the discharge of untreated combined sanitary sewage, industrial wastewater, and storm runoff which impair or impact the water quality, uses, and public health concerns of the receiving waterbody. It is the Department of Environmental Management's goal to reduce or eliminate the input of floatables, and organic, inorganic and microbial contaminants which are a result of discharges from combined sewer overflows.

In keeping with Sections 6.32 and 6.33 of the Rhode Island Water Quality Regulations for Water Pollution Control, the Department is hereby requiring that each CSO discharge receive equivalent primary treatment. The Department defines equivalent primary treatment as the use of or combined uses of storage, screening, settling, or other technologies such that the treated effluent results in removal rates of 50% of the Total Suspended Solids (TSS) and 35% of the Biochemical Oxygen Demand (BOD) loadings or 100% of all settleable solids, whichever is demonstrated to have the greatest water quality impact. All flows created by the one year - six hour storm, and more frequently occurring storms shall be subject to this requirement. Should the water quality impacts from a particular CSO discharge necessitate treatment greater than the above defined equivalent primary treatment, the Department reserves the right to require more extensive treatment for the discharge. This will occur solely on a case by case basis. Likewise, should significant beneficial water quality improvements be demonstrated to occur incorporating a level of treatment less than the above defined equivalent primary treatment (i.e. "crest of the knee" on the cost/benefit economic analysis), the CSO community/sewer authority may petition the Department for relief from compliance with this requirement.

Attainment of the Goal - The removal rates associated with equivalent primary treatment from CSO discharges up to the one year - six hour storm are based upon calculated mass loadings (BOD and TSS) or concentration (settleable solids) to the receiving water. Compliance with the goal's removal rates does not necessarily mean that communities/sewer districts must construct facilities to treat up to the one year - six hour storm. The intent of this CSO policy is to provide flexibility for each community/sewer district in its efforts to comply with the State's goal for CSO discharges. A community/sewer district shall be allowed to select the most cost effective means of treatment for its CSO discharges to comply with this policy.

Implementation - In keeping with the national policy on CSOs as developed by the Environmental Protection Agency, the Department will implement its CSO Policy in accordance with the following:

1. **Identification and Permitting**
   All CSOs in Rhode Island currently are catalogued and permitted within the RIPDES permit of the municipality or sewer district in which the CSO lies. (See Appendix A.) All CSOs will continue to be covered by RIPDES permits and the appropriate permit holder will have its permit modified or rewritten to incorporate this policy.

2. **Prioritization**
   Each community/sewer district which utilizes CSOs must perform a CSO abatement study which determines the pollutant contribution to the receiving waterbody from each CSO, the water quality impacts from said discharge by itself and in combination with other CSO discharges, and the means by which the discharge will be brought into compliance with this policy. Each study will develop a priority ranking list of the CSOs to receive control measures based upon water quality impacts.

   As part of its CSO abatement study, each community/sewer district shall model the fecal coliform die off rate in the receiving water from each overflow and in conjunction with all other overflows. For those overflows which seriously impact receiving water standards for fecal coliform, the Department reserves the right to dictate the means of treatment by which the overflow will comply with the goal of this policy.

3. **Control Measures**
   Upon receipt of Department approval of the completed abatement study and priority ranking, each community/sewer district shall commence with the construction of the recommended CSO control measures based on the priority ranking. If for any reason the community/sewer district wishes to vary from the priority ranking, said community/sewer district shall first receive Department approval. The lack of funding shall not be an excuse by any community/sewer district for deviation upon its CSO priority ranking list.

4. **Best Management Practices**
   In addition to CSO discharge treatment, the Department will require those communities/sewer districts which are serviced by CSOs to adopt and implement a schedule

of effective best management practices which shall include but not be limited to:

1. A regular schedule of street sweeping and catch basin maintenance where applicable.
2. Maximization of sewerage system capacity for storage of combined sewage.
3. Maintenance of the collection system to ensure that capacity is not being utilized by accumulated grit, rags or other refuse.
4. A regular schedule of inspection and maintenance of all CSO structures, regulators and tidegates.

5. Monitoring
Regular monitoring of CSOs shall be done in compliance with the community/sewer district's RIPDES permit. Computer modeling of a CSO discharge may be used to assist in a permittee's monitoring.

6. Funding
CSO treatment and abatement projects are eligible for Federal and State Revolving Funds and the State Aqua Fund. All projects must be ranked using the state priority determination system and projects will be funded based upon priority and readiness to proceed.

Related Policies

Dry Weather Discharges - Dry weather discharges from CSOs are violations of State law and Department regulations. Any discharge from a CSO during dry weather conditions (excluding times of heavy snow melt) shall be subject to penalty.

Holding Tank Wastes and Septage - The direct discharge of holding tank wastes and septage to a CSO is prohibited. Discharges of holding tank wastes and septage into the sewer system must be at locations which minimize the likelihood of concentrated wastes being discharged from CSOs.

Timetable - Implementation of this policy shall be governed by the RIPDES permit for each community/sewer district which uses CSOs. The implementation of the policy's best management practices shall begin upon receipt of this policy.

Severability - This policy is intended to be and recognized by the Department as a dynamic policy. The Department shall revise and update this policy as treatment technologies improve and research contributes to the greater understanding of the impacts from CSO discharges. This present policy shall serve as the base line from which all future CSO policies shall be developed.

APPENDIX A

Community	RIPDES No.	No. of CSOs	Status
Blackstone Valley District Commission*	RI0100072	29	New RIPDES permit order shall contain CSO study and abatement requirements.
Narragansett Bay Commission	RI0100315	61	Currently working on a system wide study of its CSOs.
Newport WWTF	RI0100293	3	Currently repairing one CSO treatment unit and constructing a second CSO treatment unit.

*Rhode Island General Laws Section 46-21-52 approved on July 10, 1989 transferred ownership of the CSOs in Pawtucket, RI and Central Falls, RI to the Blackstone Valley District Commission.

APPENDIX B

Blackstone Valley District Commission

The report entitled Combined Sewer Overflow/Emergency Bypass Abatement, July, 1985, commissioned by the Blackstone Valley District Commission (BVDC), investigated outfalls 001A, 002, and 003. Samples of the outflow wastewater were collected at each overflow location, and simultaneously from the Seekonk River, both upstream and downstream of the wastewater treatment facility (WWTF) at Bucklin Point. Each sample was analyzed for conventional wastewater parameters and metals including total suspended solids (TSS), volatile suspended solids (VSS), fecal coliform, biochemical oxygen demand (BOD_5), total cadmium, total chromium, total copper, total lead, total nickel, and total zinc. Samples were collected during three separate storm events: May 31, 1984; November 11, 1984; and March 12, 1985. One additional set of river samples was obtained during dry weather on October 18, 1984 to serve as a baseline. Metal results downstream of the WWTF exceeded the acute copper water quality criteria on all three (3) wet weather sampling dates; violations of copper criteria were also observed upstream of the outfalls during wet weather as well as during dry weather. Zinc exceeded criteria upstream and downstream on November 11, 1984. The report did not include any water quality modeling so no definitive conclusions regarding compliance with water quality criteria can be made for individual outfalls. In addition, it should be noted that outfall 003 has since been sealed and abandoned; it no longer functions as a combined sewer overflow.

Rhode Island General Law section 46-21-52, approved on July 10, 1989, transferred ownership of the CSOs in Pawtucket (outfalls 201-220 as defined by proposed BVDC permit) and Central Falls (Outfalls 100-107) to the BVDC. A compliance order will be issued with their RIPDES permit which will require BVDC to study all CSOs as delineated in Table 1. The order will require monitoring, mathematical water quality modeling, recommendations' formulation and assessment to address the abatement, control and/or elimination of the overflows. Within one month of receipt of the order, BVDC will submit a scope of work for the study. Upon Division of Water Resources approval, the BVDC will have four months to select a consultant and to initiate the study. The study must be completed within eighteen (18) months of the notice of proceed. The design/implementation of the study recommendations will be addressed through incorporation in an appropriate legal mechanism following final report approval. RIDEM anticipates public notice of the permit and order that will initiate this process in the spring of 1990.

Table I
Blackstone Valley District Commission
Permit No. RI0100072

Serial No.	Discharge Location	Compliance Status	Receiving Water
001A	[illegible]ary Bypass ([illegible]in Point)	June, 1985 report	Seekonk River
002	North Diversion Structure (Bucklin Point)	June, 1985 report	Seekonk River
003	South Diversion Structure (Bucklin Point)	terminated	Seekonk River

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Table I (Cont.)
Blackstone Valley District Commission

Serial No.	Discharge Location	Compliance Status	Receiving Water
101	River Street at Samoset Street, Central Falls, RI	Unknown	Blackstone River
102	[illegible]ven Ave. at Samoset [illegible], Central Falls, RI		Blackstone River
103	Aigan Street at High Street, Central Falls, RI		Blackstone River
104	Charles Street at Sacred Heart Avenue, Central Falls, RI		Blackstone River
105	Cross Street at Roosevelt Avenue, Central Falls, RI		Blackstone River
106	Higginsen Ave. (2 pipes) Central Falls, RI		Moshassuck River
107	Dexter Street (107A) Hunt Street (107B) (combine into CSO in Richmond Street - 107) Central Falls, RI		Blackstone River
201	East Street west of Branch Street, Pawtucket, RI		Blackstone River
202	Beneath Roosevelt Ave. Bridge west of Japonica Street, Pawtucket, RI		Blackstone River

1FCA2-010

Narragansett Bay Commission

Table II lists the combined sewer overflows (CSOs) of the Narragansett Bay Commission (NBC). Figure 1 illustrates both the original CSO study areas developed by the City of Providence and the Narragansett Bay Commission's revised CSO study areas. The revised CSO areas are named A, B, C, D, 2, and 9. Studies for areas 2 and 9 were initiated prior to NBC assuming responsibility for these studies. Studies for CSO areas 2 and 9 were completed in 1983 and 1984, respectively. CSO Study Area A was completed in August 1986, B was completed in January, 1988, and C was completed in January, 1989. The final report for CSO Area D is scheduled to be completed in August, 1990. SWMM modelling was done in Areas A, B, and C as is also planned for D.

CSO study area No. 2 evaluated and studied 14 combined sewer overflows, namely outfalls 040, 041, 042, 043, 044, 057, 045, 058, 046, 065, 048, 047, 059, and 049. All overflows discharge to the Woonasquatucket River between its confluence with the Moshassuck River at the Providence River and the Rising Sun Dam in Olneyville. The sewer system serves an area of approximately 1710 acres, and is comprised of sanitary, combined and storm sewers. Approximately 70 percent of the sewered area is actually separated. The NBC implemented many of the study's recommendations, including repair of the Pleasant Valley Interceptor and installation of 4 stop/block divides (masonry dams equipped with Hydro-Brake flow regulators) to store flows until capacity is available in the interceptor. This work was expected to achieve equivalent primary treatment for overflow 045.

The CSO area No. 9 drainage district encompasses approximately 2,050 acres, or one-fifth of the City of Providence. The "CSO No. 9" sewer system had only one overflow outfall (002) which discharged into the Providence River. In addition, there are approximately three and one-half miles of interceptor piping in the study area. For purposes of historical discussion, this system consisted of two pipes, one a dry weather flow (DWF) interceptor, and the other a large diameter combined sewer overflow pipe. The CSO No. 9 pipeline, referred to as the North Channel at the treatment plant, where the pipe becomes an open culvert, conveyed wet weather flow (WWF) to the Providence River. The DWF interceptor also known as the "rider pipe" is parallel to the CSO pipeline through most of the drainage district leading to the Ernest Street pumping station.

During the course of the study, the engineering consultants found that between 3 to 12 million gallons of untreated dry weather sanitary sewage was being discharged to the Providence River, through this dry weather interceptor. NBC rectified this situation in 1985 with the construction of the dry weather diversion structure. At this time, wet weather flow in the North channel discharges through the Diversion Structure Overflow, outfall 067. Outfall 002 (south channel) now discharges primary treated and chlorinated wet weather flow. This capability was achieved through the construction upgrades of the 1980's. The study also recommended construction of a 75 MGD treatment facility for the wet weather flows. The proposed location for

Table I (Cont.)
Blackstone Valley District Commission

Serial No	Discharge Location	Compliance Status	Receiving Water
203	Carnation Street west of Front Street, Pawtucket, RI	unknown	Blackstone River
204	North Side of Central Ave. northwest of its intersection with Front Street, Pawtucket, RI		Blackstone River
205	Central Avenue west of its intersection with Front Street Pawtucket, RI		Blackstone River
206	Blacktone Avenue east of Roosevelt Avenue, Pawtucket, RI		Blackstone River
207	Blackstone Avenue west of Front Street, Pawtucket, RI		Blackstone River
208	Exchange Street east of Roosevelt Avenue, Pawtucket, RI		Blackstone River
209	Exchange Street west of Fountain Street, Pawtucket, RI		Blackstone River
210	Main Street between East Ave. and the west abutment of the Main Street Bridge, Pawtucket, RI		Blackstone River
211	Main St. btw. East Ave. & west abutment of the Main St. Bridge, Pawtucket, RI		Blackstone River
212	Main St. btw. diversion structure on Broadway & east abutment of the Main St. Bridge, Pawtucket, RI		Blackstone River

1FCA2-012

Table I (Cont.)
Blackstone Valley District Commission

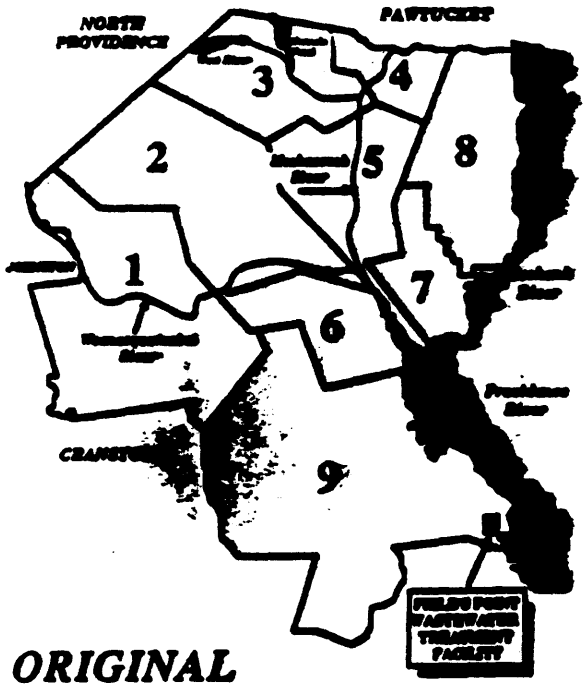
Serial No.	Discharge Location	Compliance Status	Receiving Water
213	Easement area extending east of the intersection of East Ave. & Pleasant St., Pawtucket, RI	Unknown	Seekonk River
214	Roosevelt Ave. Extension east of Pleasant St., Pawtucket, RI		Seekonk River
215	Division Street btw. east bridge abutment & diversion structure (#18), Pawtucket, RI		Seekonk River
216	Between intersection of School Street and Woodlawn Avenue, Pawtucket, RI		Seekonk River
217	Overflow from diversion structures at Taft (#10) & Merry (#11) Sts. through an easement to the west bank of the river, Pawtucket, RI		Seekonk River
218	Bucklin Brook overflow Pawtucket, RI		Seekonk River
219	Esten Street, Pawtucket, RI		Moshassuck River
220	Moshassuck Street, Pawtucket, RI		Moshassuck River

1FCA2-013

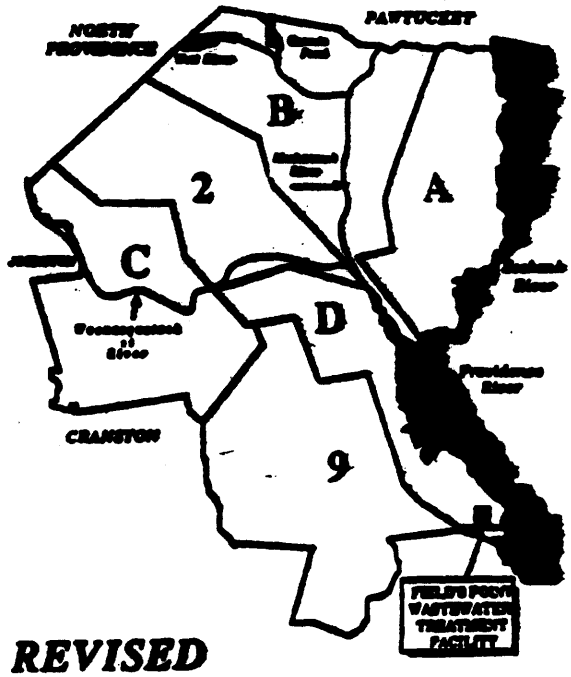
FIGURE 1

SEWER SYSTEM IMPROVEMENTS & MAINTENANCE PROJECTS

The City of Providence initially approved site-specific studies to be conducted in nine areas in the City to determine the best approach to the city's combined sewer overflow (CSO) problems. When the Narragansett Bay Commission (NBC) assumed responsibility for the City of Providence CSO studies on May 2, 1982, the study areas were eventually condensed into four areas, CSO Areas A, B, C & D. Studies for areas 2 and 9, initially determined to be the highest priority, had already been initiated.



ORIGINAL CSO STUDY AREAS



REVISED CSO STUDY

Source: Narragansett Bay Commission FY 1989/90 - FY 1993/94 Capital Improvement Program, June 12, 1989, p. 32.

Table 2

Narragansett Bay Commission
Permit No. RI0100315

Serial No.	Discharge Location	Compliance Status	Receiving Water
002	Fields Point WWTF (Treated Wet Weather Overflow)	See Narrative	Providence River
003	Public Street	↓	↓
004	Blackstone St. Extension	↓	↓
005	Henderson Street	↓	↓
006	Point Street Bridge	↓	↓
007	Elm St. & Eddy St.	↓	↓
008	Ship Street	↓	↓
009	Dorrance Street	↓	↓
010	Dorrance Street	↓	↓
011	Westminster Street	↓	↓
012	Market Square	↓	↓
013	College Street	↓	↓
015	Crawford Street	↓	↓
016	Pike Street	↓	↓
017	South Water Street	↓	↓
018	India St. & South Main St.	↓	↓
019	Brook St. & India St.	↓	↓

Table 2 (Cont.)

Narragansett Bay Commission

Serial No.	Discharge Location	Compliance Status	Receiving Water
020	India St. & Ives St.	See narrative	Providence River
028	South of Fields Pt. WWTF		" "
061	Dudley Street		" "
062	Thurber Avenue		" "
063	Harbourside Blvd.		" "
066	Canal St. & Waterman St.		" "
067	Diversion Structure Overflow		" "

1FCA2-016

Table 2 (Cont.)

Narragansett Bay Commission

Serial No.	Discharge Location	Compliance Status	Receiving Water
022	North of Intersection of India St. & Gano St.	See narrative	Seekonk River
023	Bitmer Street	"	"
024	Apgalli St. & Parkside Rd.	"	"
025	River Drive at York Pond	"	"
026	Irving Avenue	"	"
027	Butler Hospital	"	"

1FCA2-017

Table 2 (Cont.)

Narragansett Bay Commission

Serial No.	Discharge Location	Compliance Status	Receiving Water
029	Smith Street	See Narrative	Moshassuck River
030	Canal Street		" "
031	Charles Street at [illegible] Street [illegible]		" "
032	Charles Street near Stevens Street		" "
033	Stevens Street		" "
034	Printery Street		" "
035	Livingston Street		
036	At Rte. 95 from Northup St. & Silver Spring St.		" "
037	Cemetery Street		" "
038	Charles Street near Silver Spring Street		West River
039	Hawkins Street		West River
056	Vandewater Street near Branch Avenue		West River

1FCA2-018

Table 2 (Cont.)
Narragansett Bay Commission

Serial No.	Discharge Location	Compliance Status	Receiving Water	
041	Park Street	See narrative	Woonasquatucket	River
042	Holden Street		"	"
043	Leland [illegible]		"	"
044	Bath Street		"	"
045	Rathbone Street		"	"
046	Eagle Street - north side of the river		"	"
047	Eagle Street - south side of the river		"	"
048	Atwells Avenue		"	"
049	Valley St. near Tippicanoe St.		"	"
050	Delaine Street		"	"
051	Plainfield Ave. & Manton Ave.		"	"
052	Manton Avenue		"	"
053	Off Hartford Avenue		"	"
054	Sheridan Street		"	"
055	Glenbridge Avenue		"	"

1FCA2-019

Table 2 (Cont.)

Narragansett Bay Commission

Serial No.	Discharge Location	Compliance Status	Receiving Water
057	Rathbone Street at Promenade Street	See narrative	Woonasquatucket River
058	Wolcott Street	"	"
059	[illegible] Avenue	"	"
065	[illegible] Street & Valley St.	"	"

Note: All CSOs delineated in Table 2 are permitted through RIPDES permit #RI0100315, held by the Narragansett Bay Water Quality District Commission (NBC).

1FCA2-020

this facility is currently an unavailable site adjacent to the Fields Point WWTF. This option will be reevaluated under the facility systemwide CSO study when water quality impacts associated with discharges can be fully defined.

The study area of CSO area A is approximately 1890 acres, with a drainage district of about 1385 acres. Much of the collection system is very old; some of the combined sewers were constructed during the mid-1800's. Ten (10) CSOs were studied, namely outfalls 018 through 027. The study revealed that the Seekonk River interceptor was structurally weak, partially clogged with sediments and debris, and cracked or silted along segments of the sewer. In addition, various tidegates, outfalls, manholes, and other accessory structures were identified as needing repair. Presently, two projects are under design, namely 1) the replacement of the interceptor near Butler Hospital and CSO 023/025 repair and 2) replacement of the sewer in the Gano Street ball field area. The NBC will commence construction after design is completed later this year. To address wet weather problems, the study recommended 3 underground CSO control facilities (with appropriate parallel interceptors to consolidate and convey overflows to the facilities) be constructed along the Seekonk River interceptor. A treatment facility is recommended to serve overflow 027 (near Butler Hospital) and storage facilities are recommended to serve overflows outfalls 023-026 and 018-022. These recommendations will be re-evaluated under the systemwide CSO study.

CSO Area B, the Moshassuck River interceptor Basin, encompasses 2600 total acres in the northern sections of Providence, with 1323 acres identified as combined areas, 1080 acres separately sewered, and 197 acres of underdeveloped, unsewered areas. There were 18 CSO outfalls studied; at present, 2 of these overflows are inactive - outfall 017 which operates manually as a relief in conjunction with the Hurricane Barrier operation and outfall 014 which has been abandoned - the remaining 16 outfalls studied include outfalls 012, 013, 015, and 016, 029 through 039 and 056. The study's recommendations can be defined by two phases. Phase One includes rehabilitation of the Branch Avenue interceptor and sewer separation in the outfall 029 drainage area. The design of the Branch Avenue rehabilitation has been completed and construction is scheduled to begin April, 1990. Design of the sewer separation project has been completed and construction is scheduled to begin April, 1990. Design of the sewer separation project has encountered some problems in the South Street area. However, NBC is working with the affected parties as well as the Department of Transportation in their redesign of roads in the area. Completion of the sewer separation project will result in the abandonment of outfalls 029 and 031 as combined sewer outflows. Phase II of the study's recommendations include the following construction projects:

1) A new "West River Interceptor" to provide CSO storage, conveyance and control capacity for the Branch Avenue Drainage Area;
2) A storage/treatment facility near Cemetery Street for controlling CSO in the Upper Moshassuck Area;
3) A treatment facility in the vicinity of Smith Street for controlling CSO in the middle portion of the study area;

4) A new sewer across the Providence River near Crawford Street to convey more combined flow from the study area to the FPWWTF, and;
5) Additional sewers to connect existing overflows to the proposed facilities.

The recommendations will be pursued in detail through the comprehensive Systemwide Study.

The CSO area study C encompasses 1700 acres in the western portion of Providence. Seven outfalls (049, 050, 051, 052, 053, 054, 055) were included in the study. Two storage/treatment facilities, each having a capacity to store and/or treat CSO's generated from a 3-month design storm were recommended. The "West CSO Facility" proposed site is located near the confluence of the Plainfield Street and Woonasquatucket River interceptors. The proposed site of the "East CSO Facility" is located near the downstream end of the study area near Valley Street. Associated conveyance facilities, etc. will be needed as well. Again, these recommended structures will be studied in conjunction with the Systemwide Study.

The study for CSO area D is scheduled for completion in August, 1990. It will investigate CSOs in the Upper Providence River as well as the Allens Avenue Interceptor.

The Narragansett Bay Commission's combined Sewer Overflow studies have recommended various storage/treatment facilities throughout the Providence area. Because of limited funding and the fact that each study is conducted independently of the others, it is prudent to wait until all CSO studies are completed to properly assess the comparative water quality benefits to Narragansett Bay through CSO improvements and to also achieve the most cost-effective overall solutions.

Therefore, in order to compare water quality benefits from the various proposed CSO improvements, a computer modeling study of the entire NBC sewer system in Providence was commissioned by NBC in August of 1989. The project includes systemwide modeling, a cost effective analysis, and recommendations on priority setting. This study will also include flow monitoring and basin modeling in CSO areas 2 and 9 since SWMM (Storm Water Management Model) modelling had not been performed in either study. (Note: Initiation of systemwide modeling is also contingent upon successful completion of modeling in the CSO Area D study.) The project is scheduled to be completed in 1992. Preliminary modelling results are anticipated in December of 1991. At this time, it is not known how the timing of the modelling effort will be affected by the RIDEM's imposition of the treatment/storm standard.

The NBC permit is scheduled for reissuance in FY1990. It is proposed that CSO policy requirements will be incorporated into a modification since it is anticipated that the NBC permit will be public noticed in April. However, all CSOs in Table 2 are contained in the present permit.

THE CITY OF NEWPORT

A report on combined sewer overflows was completed in August, 1986 for the City of Newport. Three combined sewer overflows were identified, namely at Long Wharf, Marsh Street, and the Wellington Avenue Microstraining Facility. The Wellington Avenue Microstraining Facility was placed into operation in February, 1978 and has experienced operational problems since its start-up. The design capacity of the microstrainers is 25 mgd and the treatment scheme consists of trash tracks, microstraining, stormwater pumping, flow measurement and chlorination. Currently, this microstraining facility is being rehabilitated. The work includes replacing the filter media on both the 10 ft. diameter by 20 ft. long microstrainers, replacing the existing chlorination disinfection system with a hypochlorite system that includes a 45 gallon storage tank and associated metering pumps, providing a cleaning solution feed system for the microstrainers, making extensive changes and additions to the existing instrumentation system for improved automatic operation, demolition and appurtenant work. This work is scheduled to be completed in March, 1990. Remaining work includes continuing the installation of the instrumentation and control systems equipment and miscellaneous mechanical and electrical work.

In 1979, the design for the John P. Hammond Microstraining Facility was completed for the Marsh Street and Long Wharf CSOs. This plan was eventually eliminated from further consideration because of its basis of design and inconsistency with present land use plans. Instead, the 1986 CSO study recommended the construction of the Washington Street CSO Facility. Currently under construction and scheduled for completion in March of 1991, the Washington Street CSO Facility contract consists of construction of the CSO facility, influent sewer, effluent conduit, subaqueous outfall, and appurtenant work. The facility will be primarily underground and has been designed to be architecturally compatible with Newport's Transportation and Visitors Center as well as other Gateway projects. The CSO facility (Figure 2) utilizes settling tanks sized to treat flow from the 3 month design storm. Peak design flow is 29 MGD. Hypochlorite will be used for disinfection. The design maximizes flow to the Long Wharf area, as it allows for more efficient utilization of peak pumping capacity at Long Wharf pump station, which effectively reduces overflow volumes.

Table 3 illustrates the present as well as future CSOs in the Newport sewer system. At present, outfalls 003 and 007 are known to be active. A Marsh Street outfall may be active; there are conflicting reports if overflows actually occur. In any event, the Marsh Street structure will be permanently abandoned upon completion of the Washington Street CSO Facility project. A new outfall will designate the discharge from the Washington Street CSO facility through the new 60 inch subaqueous outfall. (See Figure 3.) Outfall 003 will remain; it will serve as a relief for flows in excess of the hydraulic capacity of the Washington

Street CSO Facility. Disinfection will be provided at Outfall 003.

RIDEM will continue to track construction progress on the 2 CSO projects. A permit modification is anticipated by January, 1991 to further delineate the remaining outfalls. The present RIPDES permit covers outfalls 003 and 007 and requires monitoring.

Table 3

City of Newport

Serial No.	Discharge Location	Compliance Status	Receiving Water
010	Washington Street (now 60" diameter outfall)	CSO treatment facility under construction (new outfall under construction also)	Narragansett Bay
007	Wellington Avenue	CSO treatment facility (microstrainers) under rehabilitation	Narragansett Bay
003	Long Wharf	CSO treatment facility	Narragansett Bay
	Marsh Street	Unconfirmed reports that CSO may be active; to be abandoned with completion of Washington Street CSO facility	Narragansett Bay

Note: CSO outfalls 003 and 007 are permitted through RIPDES permit #RI0100293, issued to the City of Newport. Outfall 010 needs to be permitted when CSO Facility is completed. Outfall 002 is not permitted because it will be abandoned in the near future.

1FCA2-025

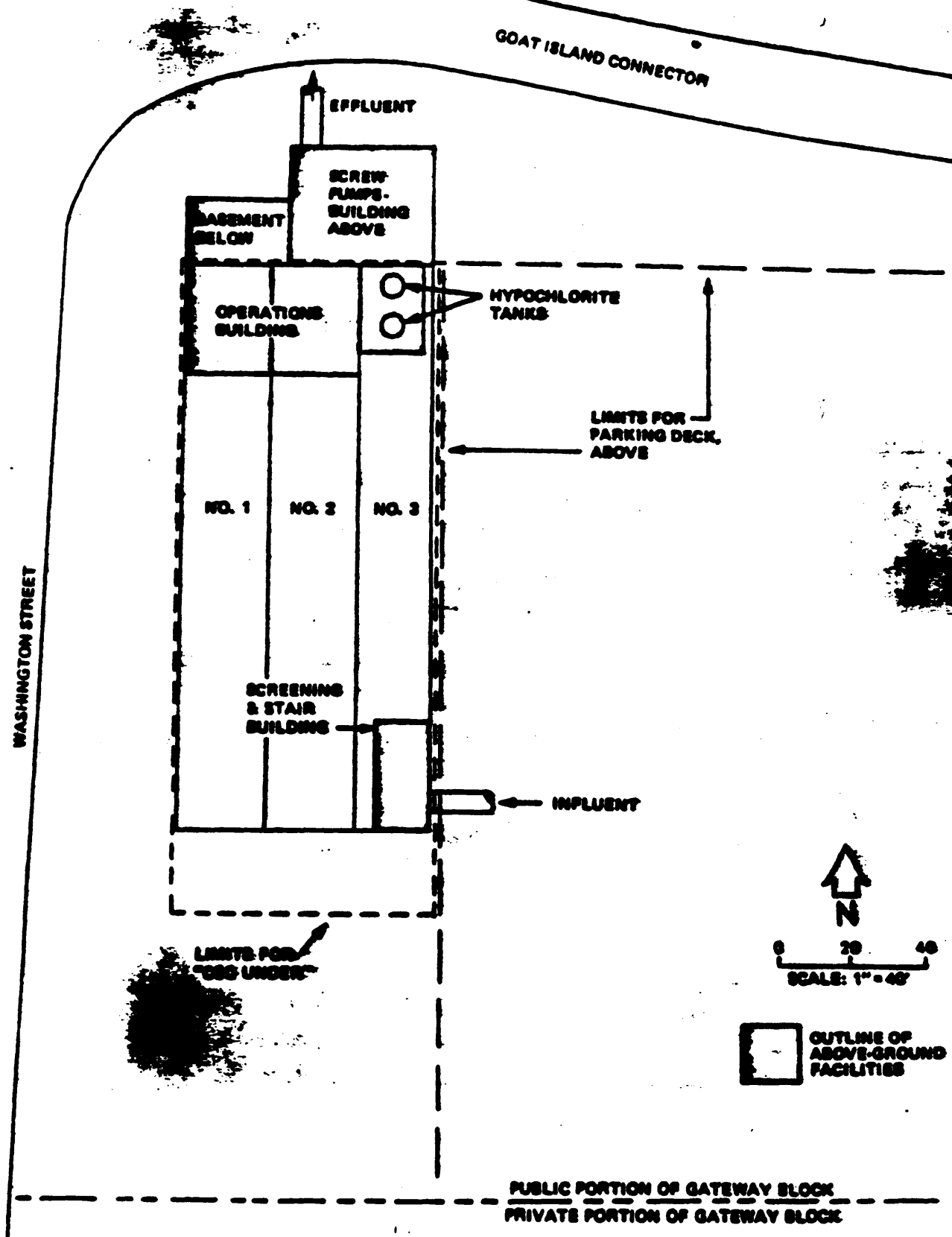
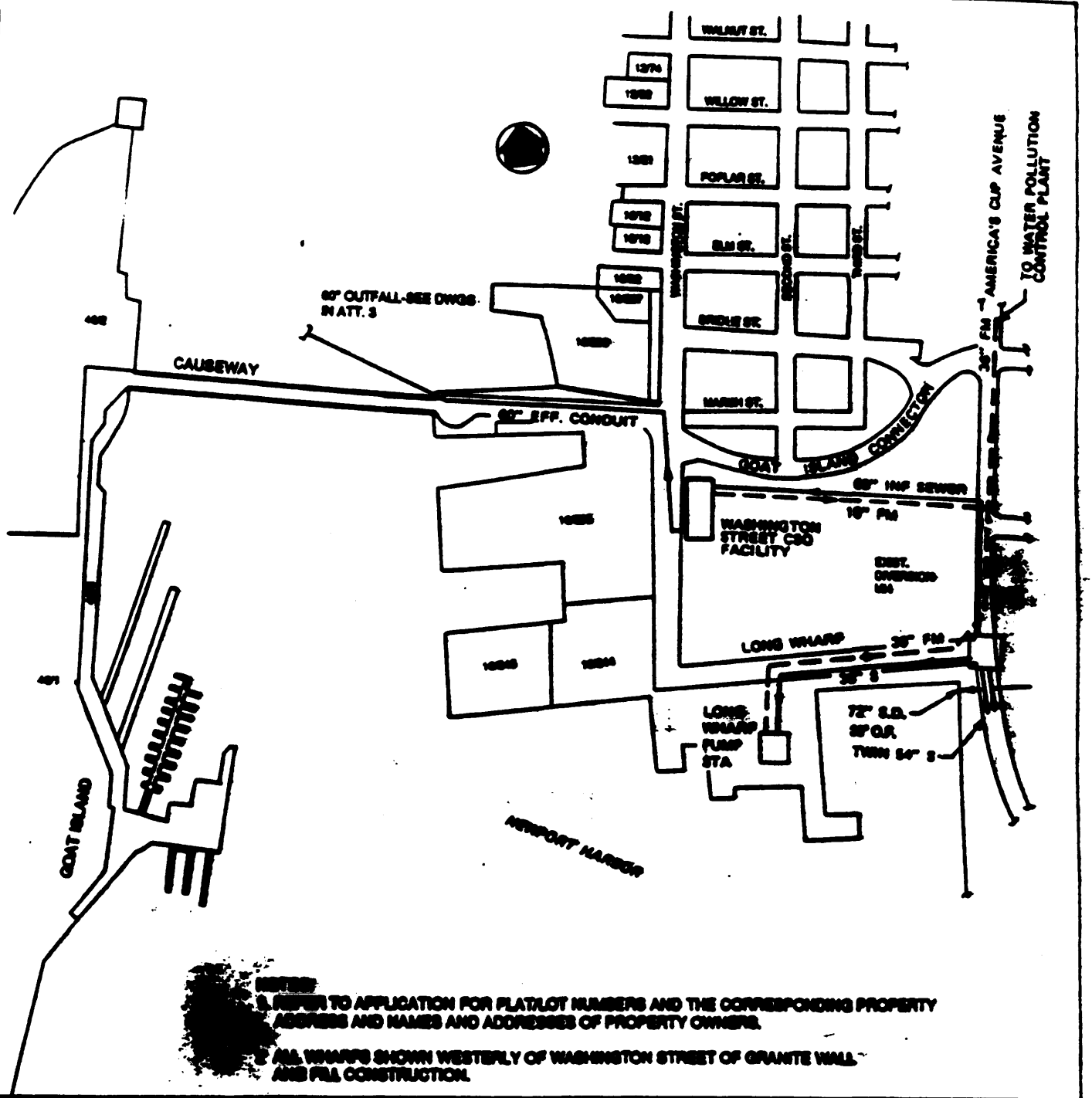


FIGURE 2 SITE LAYOUT FOR RECOMMENDED CSO TREATMENT PROCESS



NOTES:

1. REFER TO APPLICATION FOR FLAT/LOT NUMBERS AND THE CORRESPONDING PROPERTY ADDRESS AND NAMES AND ADDRESSES OF PROPERTY OWNERS.
2. ALL WHARFS SHOWN WESTERLY OF WASHINGTON STREET OF GRANITE WALL AND FILL CONSTRUCTION.

PURPOSE: DISCHARGE OF EFFLUENT FROM WASHINGTON STREET CSO FACILITY DATUM: MEAN SEA LEVEL ADJACENT PROPERTY OWNERS: SEE BLOCK 6 CONTINUED (ATTACHED TO PERMIT)	PROJECT SCHEMATIC NO SCALE	PROPOSED OUTFALL IN: NEWPORT HARBOR AT: CITY OF NEWPORT, RI COUNTY OF: NEWPORT APPLICATION BY: CITY OF NEWPORT, RI SHEET 2 OF 6 8/11/88