

1.0 INTRODUCTION

This Chapter provides a summary of relevant background information, the regulatory context of the project, the project objectives, and scope of work.

1.1 BACKGROUND

Construction of the City of Newport's wastewater collection system dates back to the late 1800s and early 1900s. The system functioned as a combined sewer system until the 1970s, when the City undertook an extensive sewer separation program to reduce combined sewer overflows discharging to Newport Harbor. Under this program, the majority of the existing catch basins were disconnected from the combined sewer system and reconnected to new separate storm drains. However, roof drains, sump pumps, basement drains, and area drains were not disconnected. Flows from these sources continue to be conveyed by the sanitary sewer system (i.e., new sanitary sewers or converted combined sewers). In addition, in 1978, the City constructed the Wellington Avenue CSO Facility to screen and disinfect combined sewer overflows from the southern portion of the City

Presently, during dry weather, the Wellington Avenue CSO Facility provides screening and pumping of wastewater flows and discharges pumped flows to the Long Wharf Pump Station via the Thames Street Interceptor. The facility was designed to provide screening and pumping of wastewater flows up to 1.44 mgd during dry weather, and 25 mgd of treatment using micro-strainers, and chlorination of CSOs during wet weather events. The microstrainers are presently inoperative. In 2003, the facility was improved to replace the coarse bar screens with fine (0.25-inch clear openings) screens and provide disinfection of screened effluent prior to discharge.

The Thames Street Interceptor is the major interceptor sewer serving Newport. It is a brick, egg shaped, 3-foot by 4-foot sewer that flows from south to north parallel to the Newport Harbor shoreline. At its upstream location, flow enters the Thames Street Interceptor from the eastern portion of the City at Narragansett Avenue. An 84-inch storage conduit is located on Narragansett Avenue to provide approximately 0.55 mg of storage of wastewater flows during wet weather. The upstream end of the interceptor also receives flow from the southern portion of the City at Morton Avenue and the southeastern portion of the City at Wellington Avenue. The Thames Street Interceptor also receives flow from Middletown's Wave Avenue Pump Station at Memorial Boulevard and Bellevue Avenue. The interceptor receives flow from many direct

connections from collector streets between Wellington Avenue and its downstream terminus at Americas Cup Avenue. During wet weather, combined sewage that exceeds the capacity of the interceptor is diverted to the Wellington Avenue Facility via a diversion structure at the intersection of Thames Street and Wellington Avenue. CSOs from the facility are discharged into Newport Harbor, east of Ida Lewis Rock at King's Park Beach.

The project study area comprises the Newport tributary catchments to the Wellington Avenue CSO Facility including the flow discharged to the City's system from Middletown through the Wave Avenue Pump Station. Figure 1.1 depicts the Wellington Avenue CSO Facility study area.

1.2 REGULATORY CONTEXT

The City of Newport is working to develop and implement a combined sewer overflow (CSO) abatement strategy that will comply with the Rhode Island Department of Environmental Management's (RIDEM's) and the Environmental Protection Agency's (EPA's) CSO policies. Presently, the City is working with RIDEM to prepare an amended Consent Agreement and Compliance Schedule. In 1999, the City executed a Consent Agreement with RIDEM associated with permit conditions for the Wellington Avenue and Washington Street CSO facilities. At that time, the City prepared three technical memoranda that included a baseline conditions assessment of the sewer system, and assessments of the Wellington Avenue CSO Facility and the Washington Street CSO Facility.

The Consent Order requires the submittal of a scope of work for a comprehensive citywide facilities planning study for CSO control. The City recommended, and RIDEM agreed, that initial planning studies be conducted first as part of a phased approach. This will allow initial activities and investigations to be performed to develop an understanding of the existing conditions of the system such that more detailed work activities can be developed to provide a focused approach for future CSO control.

1.3 PROJECT OBJECTIVES

This Phase 1, Part 1 Control Plan for Combined Sewer Overflows has been developed to address CSO discharges from the Wellington Avenue CSO Facility. The objectives of the Phase 1, Part 1 investigations included the following:

- Develop an overall understanding of the flow direction/patterns of the dry weather and wet weather flows in the tributary catchments to the Wellington Avenue CSO Facility, Station;
- Develop a program to quantify extraneous infiltration/inflow in each tributary catchment to prioritize which catchments require further more detailed field evaluations to identify sources;
- Perform a preliminary condition assessment of the Thames Street Interceptor and evaluation of its conveyance capacity;
- Evaluate the influence of flows discharging to the City's system from Middletown's Wave Avenue Pump;
- Determine if flows from private pump stations located in the southwest portion of the City are significant;
- Evaluate the influence of the Narragansett Avenue Storage Conduit on flows discharging to the Wellington Avenue CSO Facility;
- Review appropriate Nine Minimum Controls and Best Management Practices applicable to the study area system components; and,
- Evaluate CSO control alternatives and potential CSO reduction.

1.4 SCOPE OF WORK

The overall Scope of Phase 1, Part 1 activities is summarized as follows:

1.4.1 Review of Existing Data

This work activity included review of existing reports and sewer separation plans. This effort is described in more detail in Section 2 of this report.

1.4.2 Field Work

The following field work activities were completed in this Phase 1, Part 1 study:

- Flow monitoring, groundwater, rainfall and tidal monitoring in the tributary catchments to the Wellington Avenue CSO Facility;
- Flow monitoring of discharges from Middletown's Wave Avenue Pump Station to Newport's system

- Physical survey of the Thames Street Interceptor
- Data collection and compilation.

This work is described in more detail in Section 3.

1.4.3 Assessment and Evaluation of Data and Development of Recommendations

Upon completion of the initial field program, the data were assessed and evaluated to determine the following:

- Identify the tributary catchments to the Wellington Avenue CSO Facility that can conclusively be demonstrated as having either excessive or non-excessive infiltration/inflow; and
- Prioritize catchments with excessive infiltration/inflow.

In addition, the following evaluations were included in the analysis:

- Review of Best Management Practices and Nine Minimum Controls;
- Review of historical combined sewer overflow data at the Wellington Avenue CSO Facility to evaluate CSO frequency and volumes and develop preliminary estimates of CSO reductions required to achieve regulatory EPA and RIDEM thresholds;
- Review of conceptual CSO control alternatives such as storage, transportation and treatment at the Newport Water Pollution Control Plant, infiltration/inflow removal, and sewer separation; and,
- Development of the recommended scope, budget, and schedule for the Sewer System Evaluation Survey (SSES) field investigations to identify sources of infiltration and inflow and other elements of the Phase 1, Part 2 Control Plan for Combined Sewer Overflows.

This work is described in Chapters 4 and 5.