Technical Memorandum

Phase 1 Part 2 CSO Control Plan
Wellington Avenue CSO Facility

Smoke Testing

Prepared for:

City of Newport
Public Works Department
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October 6, 2006

J.N. 82372

INTRODUCTION

This Smoke Testing Technical Memorandum (TM) has been prepared to describe the investigation procedure used, results of the investigation, and recommendations for rehabilitation of observed defects. Figure 1 presents a schematic of the smoke testing procedure.

DESCRIPTION OF SMOKE TESTING

Smoke testing was performed to investigate and identify potential inflow sources in the three sewer catchment areas designated as priority inflow areas in the Phase 1 Part 1 CSO Control Plan report. Sewer Catchment Areas 1, 3 and 4, were smoke tested by ADS Environmental Services (formerly Severn Trent Pipeline Services) between July 14 and July 28, 2006 generally between the hours of 8 AM and 5 PM.

SMOKE TESTING PROCEDURES

Smoke testing is performed to identify sources of inflow that can be described as being either a direct or an indirect source. A direct connection, as implied, is a drainage source that is directly tied into the sanitary collection system. Direct sources of inflow most often include cross connections between the drainage and sanitary sewer systems, or catch basins, roof leaders, driveway or yard drains, etc that are connected directly to the sewer system. Indirect connections are most often sewers with leaking joints or cracked segments, which allow drainage to enter the sewer system when sewerage and drainage facilities are in close proximity to one another. Once the sources are observed as direct or indirect, they can be classified by their location, or by party responsible for correcting the defect. Public sources are sources located on public property or are part of the collection systems, sanitary or storm, maintained by the city. Public connections would include catch basins connected to the sanitary sewer, cross connections between the storm drain and sanitary sewer, within city right of ways and yard drains, rain leaders and roof drains on city property. Private connections would include yard or driveway drains, rain leaders and roof drains on privately owned property.

As shown in Figure 1, the smoke testing procedure used in Newport consists of a blower and a non-toxic smoke candle used to emit large quantities of smoke. A smoke blower was placed at strategic manholes and smoke, produced by non-toxic smoke candles or liquid smoke, was introduced into the sewer lines. Each smoke test setup was generally two to three manhole reaches in length. Additional smoke candles or liquid smoke were activated, as necessary, to assure sufficient smoke concentration within the smoke test setup. The lines in the upstream and downstream manholes were restricted, as necessary, to

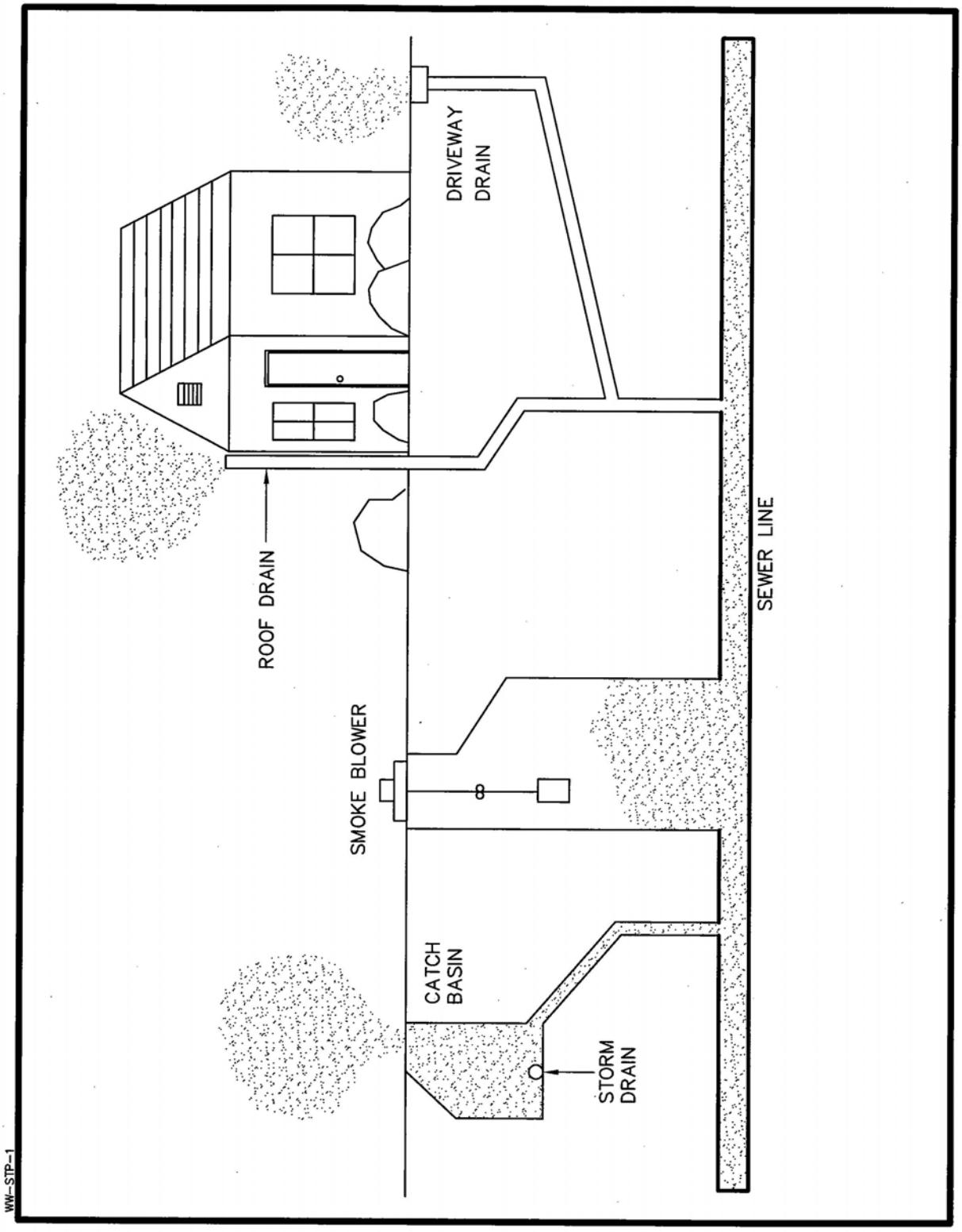

FIGURE 1
SMOKE TESTING PROCEDURE
NOT TO SCALE

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concentrate the smoke within the tested sections. The smoke then flowed through the least restrictive path. Observers above ground then searched for smoke flowing up through roof leaders, catch basins, yard drains and any other appurtenances.

All property owners in the areas smoke tested were notified 24 to 72 hours prior to the smoke testing. A sample of a typical smoke testing notification is attached to the TM. Smoke testing was conducted during periods of low groundwater and after sufficient time had elapsed from any rain event, thereby ensuring optimum conditions. Prior to initiating smoke testing, the City of Newport police and fire officials were notified daily in the event that residents called with any concerns.

Smoke testing of the sewer system was performed in all line sections within each of the 3 priority sewer catchment areas, totaling approximately 80,500 linear feet of sanitary sewer. The smoke testing results indicate that there are two classes of sources, those that are ***direct*** connections to the sanitary sewer and those that are ***indirect*** connections to the sanitary sewers. Sources are believed to be direct connections to the sewer when smoke (possibly heavy) is observed quickly emanating from a storm drain appurtenance or roof leader. Indirect sources are inflow placed in the suspected category if storm drain appurtenances cannot be ruled out from being connected to the sanitary sewer, including light smoke or catch basins or other structure with standing water that can prevent smoke from passing into the structure. The findings presented below list sources that are believed to be connected to the sewer system, or allow inflow in the system by some means.

Smoke Testing Results

- A total of 91 sources of inflow were identified and are estimated to contribute approximately 2,500,000 gpd of inflow.
- Of those 91 sources, 65 sources are private sources such as roof drains and yard drains. These 65 sources are estimated to contribute approximately 615,000 gpd of inflow.
- The remaining 26 sources are on public property and include catch basins connected to the sewer, manholes below grade, and other collection system issues. These 26 sources are estimated to contribute approximately 1,885,000 gpd of inflow.

The basis for these inflow estimates are described on the following pages.

Methodology to Estimate Inflow Calculations Contributing to the System from the Inflow Source

The Rational Equation was used to determine peak discharge entering into the sewer system as identified during smoke testing. The Rational Equation is Q = ciA, where:

Q = Peak Inflow Rate (gpd)

c = Rational method runoff coefficient

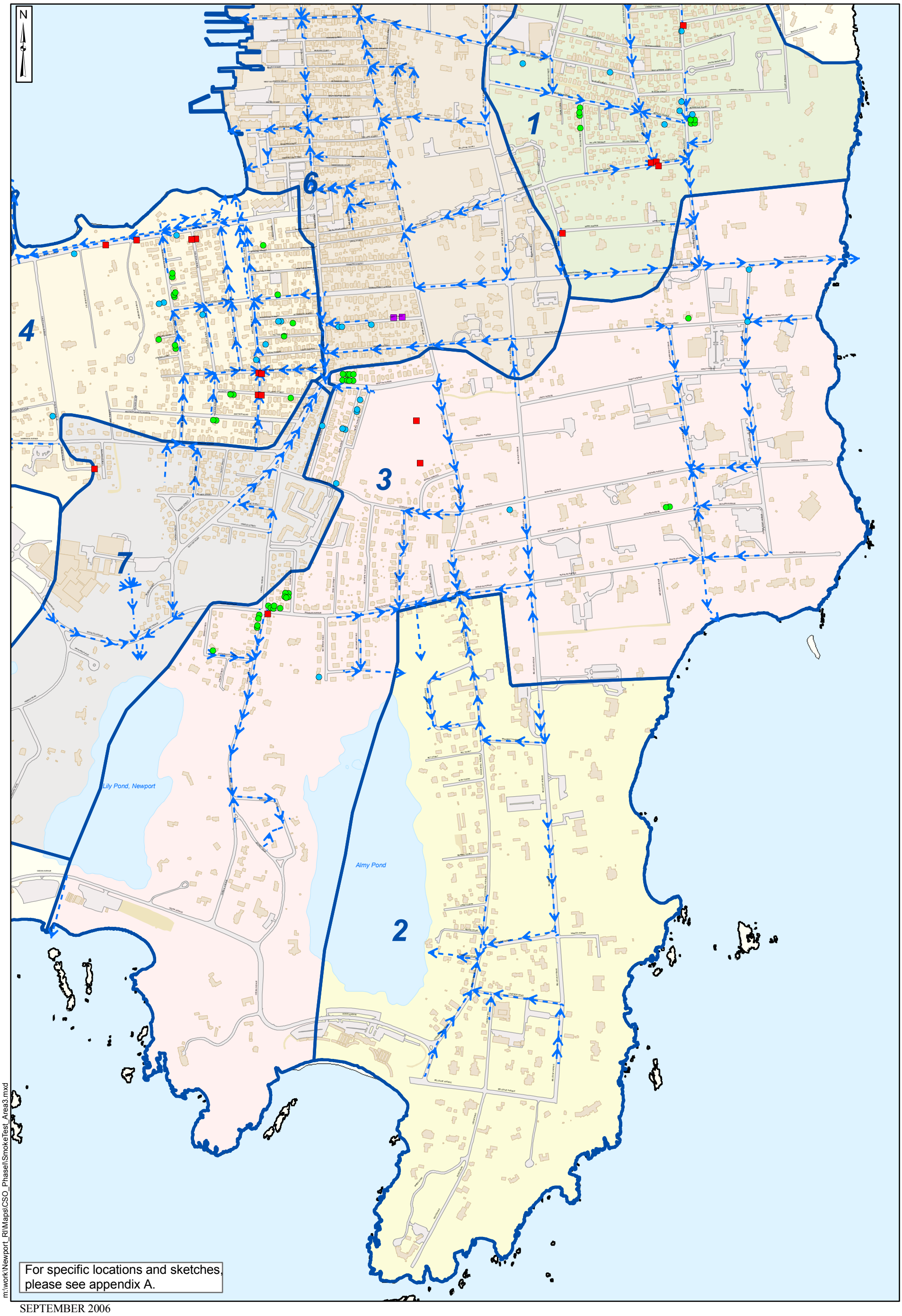
i = Rainfall intensity (inches/hr)

A = Drainage area (square feet)

The runoff coefficient (c) and the drainage area (A) were determined in the field upon conducting the smoke testing. The runoff coefficient is typically a function of the soil type and slope of the drainage area surrounding the inflow source. For this analysis, a runoff coefficient of 0.9 was used for impervious surfaces (asphalt and rooftops) and a coefficient of 0.3 was used for previous surfaces (grass and native soils). All inflow estimates are based upon a storm with a maximum hourly intensity of 1.00 inches per hour. This intensity is approximately the peak intensity of a 1-year, 6-hour storm event. Tables 1 and 2 present a summary of inflow sources by sub-system. Tables 3, 4 and 5 provide a more detailed summary table identifying the specific sources within each sub-system and the estimated amount of inflow associated with each source. Figures 2, 3, and 4 show the approximate locations of each of the catch basins and rain leaders organized by sewer catchment area. The detailed smoke testing reports can be found in Appendix A with photos, sketches, and detailed reports for each inflow source.

Table 1 – Summary of Inflow Sources in Priority Sewer Catchment Areas

Sewer Catchment Area	Total Connections	Public Connections		Private Connections	
		Direct	Indirect	Direct	Indirect
1	30	8	2	19	1
3	28	2	1	25	0
4	33	3	10	20	0
Total	91	13	13	64	1



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SEPTEMBER 2006

SCALE 1" = 800'

0 400 800 Feet

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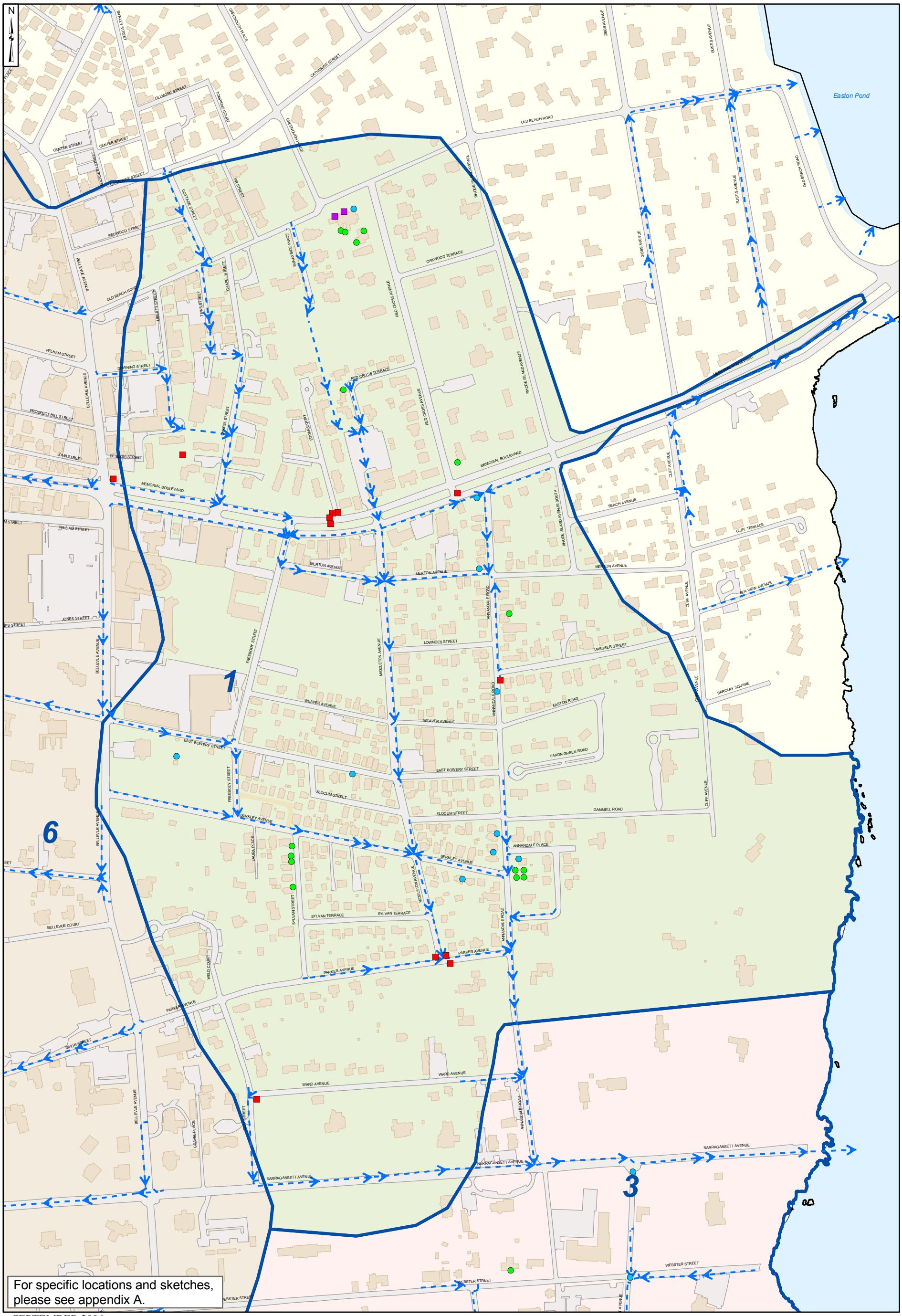
LEGEND:

- Sewer District Boundary
- Buildings
- Docks
- Paved Roads and Parking
- Unpaved Roads and Parking
- Catch Basin (Public)
- Catch Basin (Private)
- Cleanout / Other
- Rain Leader
- Drainage Pipes

FIGURE 3
CATCHMENT AREA 3
SMOKE TESTING RESULTS
PHASE I PART 2 CSO CONTROL PLAN



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SEPTEMBER 2006

SCALE 1" = 400'

0 400 800

Feet

EarthTech

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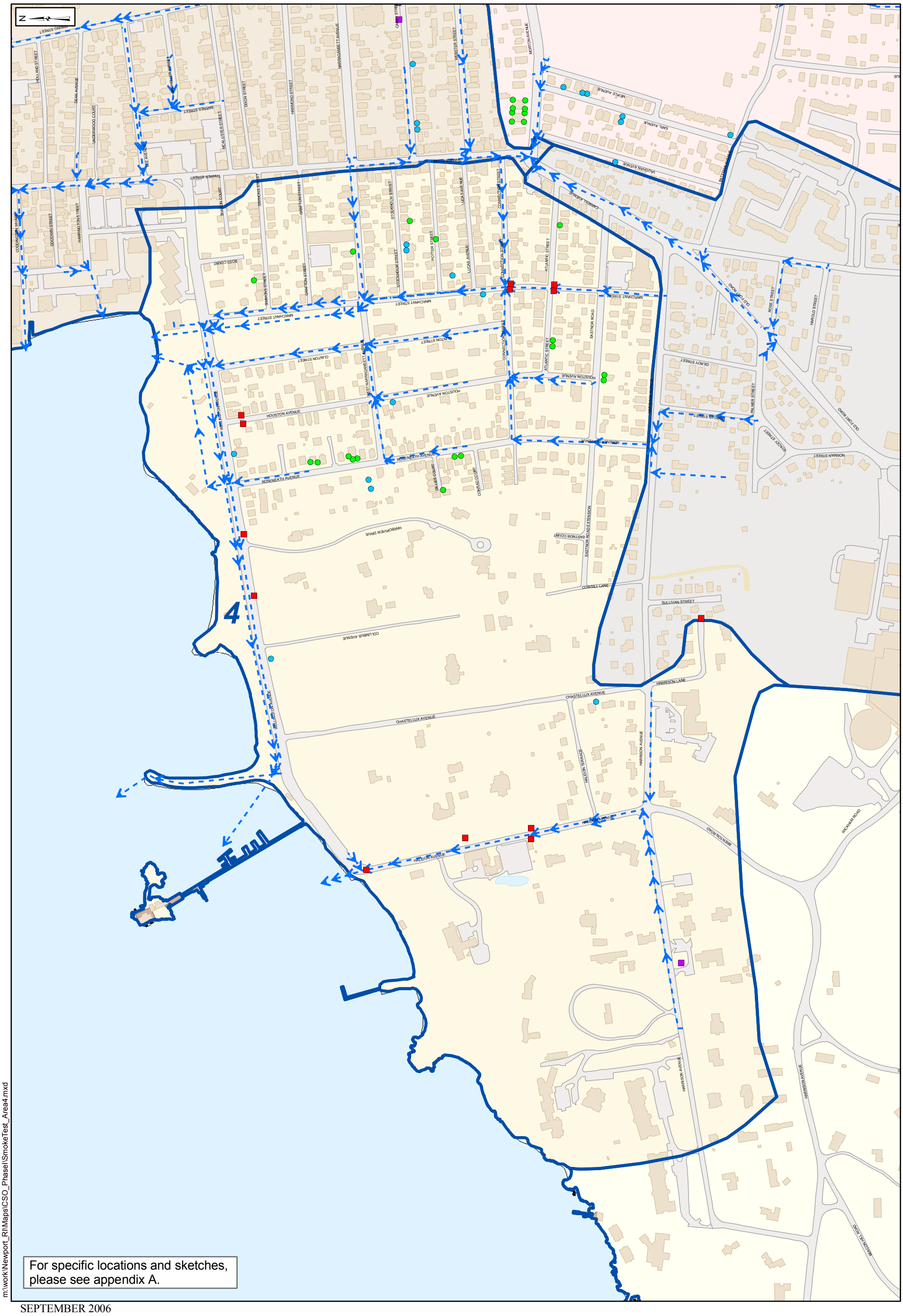
LEGEND:

- Sewer District Boundary
- Buildings
- Docks
- Paved Roads and Parking
- Unpaved Roads and Parking
- Catch Basin (Public)
- Catch Basin (Private)
- Cleanout / Other
- Rain Leader
- Drainage Pipes

FIGURE 2
CATCHMENT AREA 1
SMOKE TESTING RESULTS
PHASE I PART 2 CSO CONTROL PLAN



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SEPTEMBER 2006

SCALE 1" = 400'

0 200 400

Feet

EarthTech

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LEGEND:

- Sewer District Boundary
- Buildings
- Docks
- Paved Roads and Parking
- Unpaved Roads and Parking
- Catch Basin (Public)
- Catch Basin (Private)
- Cleanout / Other
- Rain Leader
- Drainage Pipes

FIGURE 4
CATCHMENT AREA 4
SMOKE TESTING RESULTS
PHASE I PART 2 CSO CONTROL PLAN

Table 2 – Summary of Inflow Estimates in Priority Sewer Catchment Areas

Sewer Catchment Area	Direct Inflow		Indirect Inflow		Total Inflow
	Public	Private	Public	Private	
1	899,829	222,007	See Note 1	See Note 1	1,121,836
3	4,874	229,721	See Note 1	None	234,595
4	661,140	162,906	320,488	None	1,144,534
Total	1,565,843	614,634	320,488	See Note 1	2,500,965

Note1: Amount of inflow to be determined after further investigation, not currently included in the scope of this project, to determine the type of indirect connection and the effective drainage area.

A breakdown of the estimated flows presented in Table 2 is presented on the following pages.

OBSERVATIONS AND EVALUATIONS

The following tables present the locations, type and estimated inflow of the inflow sources in the catchment areas where smoke testing was performed:

Catchment Area 1

Table 3.1 - Sewer Catchment Area 1
Direct Private Connections to the Sanitary Sewer

Type	Address/Location	Estimated Inflow (gpd)
Catch Basins (2)	1 Red Cross Avenue	88,134
Clean Out	1 Red Cross Avenue	40
Roof Leader	1 Red Cross Avenue	1,923
Roof Leader	1 Red Cross Avenue	36,856
Roof Leader	1A/1B Red Cross Avenue	9,935
Roof Leader	40 Red Cross Avenue	8,012
Roof Leader	22 Annandale Road	13,834
Disconnected Roof Leader	13 Annandale Road	-
Sidewalk Drain	340 Bellevue Avenue	6,009
Area Drain	340 Bellevue Avenue	1,335
Clean Out	37 East Bowery Street	40
Roof Leader	3 Sylvan Street	16,024
Roof Leader	7 Sylvan Street	3,605
Roof Leader	1 Annandale Terrace	6,143
Roof Leader	63 Annandale Road	8,012
Roof Leader	72 Annandale Road	12,820
Roof Leader	49 Berkley Avenue	3,205
Roof Leader	75 Annandale Road	6,009
Clean Out	Annandale Road/Memorial Blvd	71
	Total	**222,007**

Indirect connections are typically drainage structures that appear to be connected to the sanitary system, but must be confirmed before remediation is deemed necessary. Indirect connections encountered in the inflow priority areas typically consist of foundation drains, catch basins, clean outs, roof drains or rain leaders exhibiting light smoke or smoke in yards or roadways where no structure is present. Catch basins with standing water over the catch basin outlet where smoke cannot exit at the catch basin are also considered indirect connections. Additional investigation generally includes dye testing to confirm a connection; however, CCTV inspection or excavation may be required to confirm if a connection to the sanitary system exists. This additional investigation is not currently included in the scope of this project.

Table 3.2 - Sewer Catchment Area 1
Indirect Private Connections to the Sanitary Sewer

Type	Address/Location	Estimated Inflow (gpd)
Foundation Drain	6 Red Cross Avenue	See Note 1
	Total	**-**

Note 1: Source requires additional investigation not currently included in the scope of this project.

Table 3.3 - Sewer Catchment Area 1
Direct Public Connections to the Sanitary Sewer

Type	Address/Location	Estimated Inflow (gpd)
Catch Basin	27/29 Chapel Street	1,068
Catch Basin	Edgar Ct/Memorial Blvd	360,549
Catch Basin	Clay Street/Ward Avenue	32,049
Catch Basin	Parker Avenue	134,605
Catch Basin	Middleton Avenue/Parker Avenue	124,515
Cross Connection	Middleton Avenue/Parker Avenue	See Note1
Catch Basin	Memorial Blvd/Red Cross Avenue	46,738
Catch Basin	Bellevue Avenue/Memorial Blvd	200,305
	Total	**899,829**

Note 1: Evaluation of the drainage system in this area is currently being completed by Earth Tech Operations. The results of this evaluation will be reviewed when available.

Table 3.4 - Sewer Catchment Area 1
Indirect Public Connections to the Sanitary Sewer

Type	Address/Location	Estimated Inflow (gpd)
Catch Basin	Annandale Road/Dresser Street	See Note 1
Drain Manhole	35 Annandale Road	See Note 2
	Total	**-**

Note 1: Potential source requires additional investigation not currently included in the scope of this project.
Note 2: Estimate minimal inflow from this source.

Based on the results of the smoke testing in Sewer Catchment Area 1, approximately 1,122,000 gallons per day (gpd) potentially enters the system through direct connections to the sanitary system. Further investigation not currently included in the scope of this project, such as dye testing, will be required to confirm the inflow source and how much flow, if any, is being introduced to the sanitary sewer through the indirect connections.

Catchment Area 3

Table 4.1 - Sewer Catchment Area 3
Direct Private Connections to the Sanitary Sewer

Type	Address/Location	Estimated Inflow (gpd)
Roof Leader	160 Webster Avenue	5,134
Roof Leader	74 Victoria Avenue	6,736
Clean Out	489 Bellevue Avenue	40
Roof Leader	1 Stevenson Place	10,683
Roof Leader	3 Stevenson Place	5,341
Driveway Drain	4 Stevenson Place	4,095
Roof Leader	8 Florence Avenue	8,974
Driveway Drain	8 Florence Avenue	427
Roof Leader	15 Gooseberry Road	7,211
Disconnected Roof Leader	109 Carroll Avenue	89
Roof Leader	115 Carroll Avenue	22,434
Roof Leader	94 Ruggles Avenue	15,557
Roof Leader	96 Ruggles Avenue	3,205
Roof Leader	10 Morton Avenue	26,040
Roof Leader	12 Morton Avenue	26,040
Roof Leader	14 Vaughan Avenue	12,820
Roof Leader	16 Vaughan Avenue	5,341
Roof Leader	24 Vaughan Avenue	4,006
Roof Leader	34 Vaughan Avenue	14,021
Roof Leader	25 Vaughan Avenue	5,341
Roof Leader	27 Vaughan Avenue	20,030
Clean Out	Unit 40 Earl Avenue/Bateman Avenue	27
Roof Leader	15 Earl Avenue	7,137
Roof Leader	6 Earl Avenue	12,018
Roof Leader	2 Earl Avenue	6,974
	Total	**229,721**

Table 4.2 - Sewer Catchment Area 3
Direct Public Connections to the Sanitary Sewer

Type	Address/Location	Estimated Inflow (gpd)
Cross Connection /Over flow	Narragansett Avenue/Ochre Point Avenue	See Note 1
Unknown	19 McCormick Road	4,874
Sewer Manhole Open Grate	Morton Park	See Note 2
Sewer Manhole Open Grate	Morton Park	See Note 2
	Total	**4,874**

Note 1: Evaluation of the drainage system in this area is currently being completed by Earth Tech Operations. The results of this evaluation will be reviewed when available.
Note 2: Known inflow source not included in smoke testing. No inflow amount estimated.

Table 4.3 - Sewer Catchment Area 3
Indirect Public Connections to the Sanitary Sewer

Type	Address/Location	Estimated Inflow (gpd)
Abandoned Drain Line	Ruggles Avenue/Carroll Avenue	See Note 1
	Total	**-**

Note 1: Potential source requires additional investigation not currently included in the scope of this project.

Based on the results of the smoke testing in Sewer Catchment Area 3, approximately 235,000 gallons per day (gpd) potentially enters the system through direct connections to the sanitary system. Further investigation not currently included in the scope of this project, such as dye testing, will be required to confirm the inflow source and how much flow, if any, is being introduced to the sanitary sewer through the indirect connections.

Catchment Area 4

Table 5.1 - Sewer Catchment Area 4
Direct Private Connections to the Sanitary Sewer

Type	Address/Location	Estimated Inflow (gpd)
Roof Leader	53 Chastellux Avenue	5,208
Yard Drain	109 Wellington Avenue	2,226
Yard Drain	Underwood Elementary School Building C	2,804
Roof Leader	73 Roseneath Avenue	8,012
Roof Leader	44 Roseneath Avenue	7,745
Roof Leader	30 Roseneath Avenue	9,615
Roof Leader	5 Gilles Court	8,012
Roof Leader	63 Houston Avenue	4,006
Roof Leader	40 Eastnor Road	18,027
Roof Leader	63 Marchant Street	9,014
Roof Leader	9 Atlantic Street	6,009
Roof Leader	31 Atlantic Street	1,335
Roof Leader	31 Potter Street	8,546
Disconnected Roof Leader	23 Potter Street	-
Roof Leader	17 Stockholm Street	21,366
Roof Leader	25 Stockholm Street	24,808
Roof Leader	28 West Narragansett Avenue	6,837
Roof Leader	20 Simmons Street	2,671
Clean Out/Roof Leader	23 Carey Street	641
Roof Leader	5 Carey Street	16,024
	Total	**162,906**

Table 5.2 - Sewer Catchment Area 4
Direct Public Connections to the Sanitary Sewer

Type	Address/Location	Estimated Inflow (gpd)
Catch Basin	Houston Avenue/Wellington Avenue	293,246
Catch Basin	Marchant Street/Atlantic Street	234,357
Catch Basin	Henry Carey Elementary School	133,537
	Total	**661,140**

Table 5.3 - Sewer Catchment Area 4
Indirect Public Connections to the Sanitary Sewer

Type	Address/Location	Estimated Inflow (gpd)
Catch Basin	5 Harrison Avenue	See Note 1
Catch Basin	23 Halidon Avenue	See Note 1
Catch Basin	Halidon House	See Note 1
Catch Basin	Halidon Avenue/Wellington Avenue	See Note 1
Unknown	Columbus Avenue/Wellington Avenue	See Note 1
Unknown	Between Harborview Drive and Columbus Avenue/Wellington Avenue	See Note 1
Unknown	Between Harborview Drive and Columbus Avenue/Wellington Avenue	See Note 1
Catch Basin	Rose Hill Cottages	See Note 1
Catch Basin	Marchant Street/Connection Street	320,488, See Note 2
Catch Basin	Henry Carey Elementary School	See Note 1
	Total	**320,488**

Note 1: Light smoke was observed from the indirect connections. Indirect connections require additional dye testing to confirm if a direct connection exists.
Note 2: Due to standing water in the catch basin, dye testing is recommended to confirm connection.

Based on the results of the smoke testing in Sewer Catchment Area 4, approximately 1,144,550 gallons per day (gpd) enters the system through direct and indirect connections to the sanitary system. Further investigation not currently included in the scope of this project, such as dye testing, will be required to confirm the inflow source and how much flow, if any, is being introduced to the sanitary sewer through the indirect connections.

REHABILITATION RECOMMENDATIONS

Based on the results of the smoke testing, the three priority sewer catchments appear to contain inflow sources that contribute inflow to the sewer system. Direct connections may require immediate correction or rehabilitation to prevent inflow from entering the sanitary system. Indirect flows may require additional investigation to determine if a connection between a catch basin, drain, or cleanout and the

sanitary sewer exists and if that connection is active or capped and failing. The following are recommendations to eliminate reduce inflow into the sanitary sewer:

1. Direct Connections to the Sanitary Sewer
    a. Public
        - Disconnecting catch basins from the sanitary sewer and reconnecting to existing storm drainage or installation of new storm drains.
        - Repairing or replacing leaking or damaged caps to prevent inflow from entering the sanitary sewer system.
        - Disconnecting or capping cross connections between the sanitary sewer and the storm drain to prevent flows from either entering the other system.
        - Capping of cleanouts on public property to prevent surface water from entering the sanitary sewer.
    b. Private
        - Develop a program to require private property owners to disconnect roof drains and rain leaders from sanitary sewer and redirecting flow on the ground surface or into existing storm drain (if capacity allows),
        - Develop a program to require private property owners to disconnect yard, driveway, foundation and sidewalk drains from the sanitary sewer and redirecting flow into the storm drain system (if capacity allows) or into infiltration sumps.
2. Indirect Connections to the Sanitary Sewer
    a. Public
        - Dye flooding catch basin and drain manholes with suspected connections to the sanitary sewer to confirm connection or verify leakage of caps.
    b. Private
        - Coordinate with private property owners to dye test or excavate adjacent to the foundation where smoke is observed.

Estimated Cost to Remove Inflow

Costs will need to be determined on a case by case basis. Costs to correct public catch basin connections will vary depending on proximity and capacity of existing storm drain lines, and if there are any potential utility conflicts along any proposed storm drain connection alignment.

Private connections will need to be resolved by developing a program for disconnection by the property owners. As most of the direct connections are rain leaders, the home owner may simply disconnect the down spout from the in ground connection, cap the connection, and direct the water out and away from their house. The City may wish to provide guidance to the homeowners regarding proper disconnection procedures to prevent inflow from continuing to enter the sanitary system through open cleanouts or disconnected rain leader pipes.

Priority of Rehabilitation Recommendations

As noted above, the City should develop a program to have private property owners disconnect private connections from the sanitary sewer, such as roof drains, rain leaders and yard drains. Public connections should be addressed based on the severity of the estimated inflow or the potential inflow. Table 6 shows the priority of public connections to the sanitary sewer. Table 7 shows the conceptual recommendation for remediation at each location. Prior to initiating the rehabilitation, the capacity of the storm drain requires verification before connecting any additional catch basins or storm water sources to assure that the storm drain system has adequate capacity.

Table 6 - Priority Direct Public Sewer Connections
Estimated Inflow Quantities

Catchment Area	Type	Address/Location	Estimated Inflow (gpd)
1	Catch Basin	Edgar Ct/Memorial Blvd	360,549
4	Catch Basin	Houston Avenue/Wellington Avenue	293,246
4	Catch Basin	Marchant Street/Atlantic Street	234,357
1	Catch Basin	Bellevue Avenue/Memorial Blvd	200,305
1	Catch Basin	Parker Avenue	134,605
4	Catch Basin	Henry Carey Elementary School	133,537
1	Catch Basin	Middleton Avenue/Parker Avenue	124,515
1	Catch Basin	Memorial Blvd/Red Cross Avenue	46,738
1	Catch Basin	Clay Street/Ward Avenue	32,049
3	Unknown	19 McCormick Road	4,874
1	Catch Basin	27/29 Chapel Street	1,068
3	Cross Connection /Over flow	Narragansett Avenue/Ochre Point Avenue	See Note 1
1	Cross Connection	Middleton Avenue/Parker Avenue	See Note 1
3	Sewer Manhole Open Grate	Morton Park	See Note 2
3	Sewer Manhole Open Grate	Morton Park	See Note 2
		Total	1,565,843

Note 1: Evaluation of the drainage system in this area is currently being completed by Earth Tech Operations. The results of this evaluation will be reviewed when available.
.Note 2: Additional evaluation is needed to determine hydrologic and hydraulic conditions at Morton Park to determine the most effective corrective action.

Table 7 - Priority Direct Public Sewer Connections
Recommended Remedial Actions

Catchment Area	Type	Address/Location	Potential Remediation
1	Catch Basin	Edgar Ct/Memorial Blvd	Connect to Storm Drain at Memorial Boulevard Eastbound/Edgar Court
4	Catch Basin	Houston Avenue/Wellington Avenue	Connect to Storm Drain in Wellington Avenue
4	Catch Basin	Marchant Street/Atlantic Street	Connect to Storm Drain in Marchant Street
1	Catch Basin	Bellevue Avenue/Memorial Blvd	Connect to Storm Drain in Memorial Boulevard
1	Catch Basin	Parker Avenue	Connect to Storm Drain in Parker Avenue
4	Catch Basin	Henry Carey Elementary School	Connect to Storm Drain
1	Catch Basin	Middleton Avenue/Parker Avenue	Connect to Storm Drain in Parker Avenue
1	Catch Basin	Memorial Blvd/Red Cross Avenue	Connect to Storm Drain in Memorial Boulevard.
1	Catch Basin	Clay Street/Ward Avenue	Connect to Storm Drain in Clay Street
3	Unknown	19 McCormick Road	Additional Investigation Required to Determine Type of Connection. Cleanout shall be Capped
1	Catch Basin	27/29 Chapel Street	Connect to Storm Drain in Chapel Street
3	Cross Connection /Over flow	Narragansett Avenue/Ochre Point Avenue	Brick up Overflow Weir.
1	Cross Connection	Middleton Avenue/Parker Avenue	Disconnect or Brick up Cross Connection

Table 8 shows all of the indirect connections to the sanitary sewer system; however, as the extent of the connection has not been fully determined, no inflow volumes have been estimated. Each of the locations shown in Tables 8 and 9 should be further investigated by dye flooding, internal inspection, or other appropriate methods, which is not currently included in the scope of this project, to determine the full extent of the connection. Indirect connections are typically a result of leaking pipes or leaks in capped connections.

Table 8 - Priority Indirect Public Sewer Connections
Estimated Inflow Quantities

Catchment Area	Type	Address/Location	Estimated Inflow (gpd)
1	Catch Basin	Annandale Road/Dresser Street	See Note 1
1	Drain Manhole	35 Annandale Road	See Note 1
4	Catch Basin	Marchant Street/Connection Street	320,488
3	Abandoned Drain Line	Ruggles Avenue/Carroll Avenue	See Note 1
4	Catch Basin	5 Harrison Avenue	See Note 1
4	Catch Basin	23 Halidon Avenue	See Note 1
4	Catch Basin	Halidon House	See Note 1
4	Catch Basin	Halidon Avenue/Wellington Avenue	See Note 1
4	Unknown	Columbus Avenue/Wellington Avenue	See Note 1
4	Unknown	Between Harborview Drive and Columbus Avenue/Wellington Avenue	See Note 1
4	Unknown	Between Harborview Drive and Columbus Avenue/Wellington Avenue	See Note 1
4	Catch Basin	Rose Hill Cottages	See Note 1
4	Catch Basin	Henry Carey Elementary School	See Note 1
		Total	320,488

Note 1: Light smoke was observed from the indirect connections. Indirect connections require additional dye testing to confirm if a direct connection exists.

Table 9 - Priority Indirect Public Sewer Connections
Recommended Remedial Actions

Catchment Area	Type	Address/Location	Potential Remediation
1	Catch Basin	Annandale Road/Dresser Street	Dye Flood Catch Basins to Confirm Connection to Sanitary Sewer
1	Drain Manhole	35 Annandale Road	Additional Investigation Required
4	Catch Basin	Marchant Street/Connection Street	Dye Flood Catch Basins to Confirm Connection to Sanitary Sewer
3	Abandoned Drain Line	Ruggles Avenue/Carroll Avenue	Dye Flood Catch Basins to Confirm Connection to Sanitary Sewer
4	Catch Basin	5 Harrison Avenue	Dye Flood Catch Basins to Confirm Connection to Sanitary Sewer
4	Catch Basin	23 Halidon Avenue	Dye Flood Catch Basins to Confirm Connection to Sanitary Sewer
4	Catch Basin	Halidon House	Dye Flood Catch Basins to Confirm Connection to Sanitary Sewer
4	Catch Basin	Halidon Avenue/Wellington Avenue	Dye Flood Catch Basins to Confirm Connection to Sanitary Sewer
4	Unknown	Columbus Avenue/Wellington Avenue	Dye Test Unknown Opening to Confirm Connection to Sanitary Sewer
4	Unknown	Between Harborview Drive and Columbus Avenue/Wellington Avenue	Dye Test Unknown Opening to Confirm Connection to Sanitary Sewer
4	Unknown	Between Harborview Drive and Columbus Avenue/Wellington Avenue	Dye Test Unknown Opening to Confirm Connection to Sanitary Sewer
4	Catch Basin	Rose Hill Cottages	Dye Flood Catch Basins to Confirm Connection to Sanitary Sewer
4	Catch Basin	Henry Carey Elementary School	Dye Flood Catch Basins to Confirm Connection to Sanitary Sewer

CONCLUSIONS AND RECOMMENDATIONS

As noted in Table 6, based on the prioritization of redirecting public inflow sources first, we have identified ten (10) catch basin connections and a connection of unknown type contributing in excess of an estimated 1,500,000 gpd of inflow, two (2) sewer manholes with grate type covers and two (2) cross connections between the sanitary sewer and the storm drain.

1. It is recommended that the City prioritize disconnecting and reconnecting the public catch basins with the highest estimated inflow and all cross connections a priority to reduce inflow.
2. The City should determine if the wastewater treatment plant operator or a private contractor should continue investigating the indirect connections to the sanitary sewer system. This further investigation should be considered a lower priority.
3. The City should develop a program requiring private property owners to disconnect rain leaders and yard drains.

CITY OF NEWPORT
Department of Public Works
70 Halsey Street
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SEWER WORK NOTICE –

SMOKE TESTING

NOTICE TO RESIDENTS

July 10, 2006

The City of Newport is conducting a sewer survey to locate sources of groundwater and rainwater entering the sanitary sewer system as part of the Combined Sewer Overflow (CSO) Control Plan Project.

Severn Trent Pipeline Services, Inc. is currently conducting a sewer system study for the purpose of locating sources of storm water inflow to the sanitary sewer. The study will locate direct and indirect connections such as catch basins, area drains, roof drains, broken sewer pipe and deteriorated pipe joints. One of the methods to be utilized is smoke testing of the sanitary sewer.

During testing, non-toxic white smoke is introduced through the sanitary sewer system via a smoke-generating machine. During this procedure, white smoke will be venting from holes in manhole covers located on the street and plumbing vent pipes located on or near your roof surface. **THIS IS NORMAL AND SHOULD NOT BE CAUSE FOR ALARM.**

Smoke should **NOT** enter your premises unless there is a plumbing defect or a dry trap in an unused plumbing fixture. Public Works officials advise pouring water down unused plumbing fixtures to ensure the drain trap will be effective. Smoke could also enter the building through a defect in the plumbing. The owner should note this because if odors were to develop in the sewer system, these odors may possibly enter your building through the defective plumbing.

Should smoke be detected within the building, **DON'T BE ALARMED.** The smoke is **NON-TOXIC AND NON-STAINING.** Report the presence of smoke to the people conducting the test outside in the vicinity of your building. If possible, they will assist you in locating the source that allowed the smoke to enter the building. Any smoke which may enter a building will clear in a few minutes if windows and doors are opened. If you have unattended pets, you may wish to open a window or windows to ventilate the space as a precaution in the event that smoke enters the building .

Although the smoke is non-toxic and non-staining, and it is unlikely to enter your premises, it is capable of causing minor throat and lung irritation, especially to those with long ailments such as asthma or emphysema. Please contact **Severn Trent at 1-800-353-5656** if you have these or other similar health conditions, so that appropriate precautions can be taken.

PLEASE NOTE:

A) You are not required to be home when the testing is being performed on your street.

B) Once you receive this notice, the test will be performed 24 to 72 hours after notification. However, rain, holidays, and weekends may shift test periods beyond the 24 to 72 hour time frame.

If you have any questions regarding the smoke testing or would like to schedule an appointment, please contact **Severn Trent Pipeline Services, Inc. at 1-800-353-5656.** If you have any questions regarding the City's Combined Sewer Overflow (CSO) Control Plan Project, please contact **Julia Forgue, Director of Public Works at (401) 845-5601 or Ken Mason, Deputy Utilities Director- Engineering at (401) 845-5614.**

Your cooperation is appreciated in this effort to provide you with quality sanitary sewer service for the lowest possible cost.