GOVERNMENT OF THE DISTRICT OF COLUMBIA
WASHINGTON, DC

Municipal Separate Storm Sewer System
NPDES Permit No. DC0000221

DISCHARGE MONITORING REPORT

August 17, 2007

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NPDES Permit No. DC 0000221
2007 Discharge Monitoring Report

I. INTRODUCTION

The National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) – Permit No. DC 0000221 (the Permit) requires monitoring of storm event discharges to characterize the quality of storm water discharges, monitoring of dry weather flows to detect illicit connections and improper discharges, and wet weather screening to further investigate excessive levels of pollutants.

This report describes the monitoring sites, sample collection, record keeping, monitoring results, and estimates of loadings from the 10 sites (six permitted and four non-permitted) in the Rock Creek watershed that have occurred since December 2006.

The District's current MS4 Permit was issued by U.S. Environmental Protection Agency (EPA) on August 19, 2004. Section IV.A.1, states that the Rock Creek stations are to be sampled within calendar year 2006 and reported in the Discharge Monitoring Report (DMR) report the following year on the permit date (August 19). The field activities and analytical results of samples collected at ten Rock Creek stations are the focus of this report. The completion of this sampling effort for the six permitted sites and four non-permitted sites in Rock Creek marks the end of the second cycle of sampling in this watershed (the first rotation was completed in 2005), and calculated trends of selected water quality data from 2005 and 2007 are presented in Section 8.0.

II. MONITORING STATIONS

The permit specifies representative sampling locations for each of the three subwatersheds designated within the MS4 area of the District: Anacostia River, Potomac River, and Rock Creek. One subwatershed is monitored in each calendar year (cy) on a rotating basis (Section IV.A.1) (Table 1).

Each of the watershed stations is to be monitored for at least three wet weather events per year. At sites with dry weather flows, dry weather screening samples are collected two times per year as part of the District's dry weather screening program. Samples are collected, in accordance with the Permit and monitoring requirements at 40 CFR 122.26 (d)(2)(iii).

TABLE 1. DISTRICT OF COLUMBIA'S MONITORING SCHEDULE FOR SELECTED STATIONS IN THE MS4

Watershed	Monitoring Years (cy)	No. of Stations
Potomac River	2004 and 2007	7
Anacostia River	2005 and 2008	9
Rock Creek	2006	10 (6 permitted; 4 non-permitted)

Environmental Design and Construction and EA Engineering, Science, and Technology, Inc. (EA) were contracted by the District Department of the Environment (DDOE) and the District of Columbia Water and Sewer Authority (WASA) to conduct this work. The Rock Creek sampling stations are described in the following paragraphs.

Six stations from the Rock Creek watershed are included in the Permit under Section IV.A.1. Four additional sites were added by DDOE to better characterize discharges from MS4 to Rock Creek. A listing of these ten sampling stations and their associated drainage area is provided in Table 2. Rock Creek sampling stations and large-scale location maps of the ten monitoring stations are provided in Figure 1 and Appendix A. The land use types associated with each Rock Creek MS4 monitoring site are provided in Appendix B.

TABLE 2. ROCK CREEK MONITORING STATIONS

Site Number	Sampling Location	Estimated Drainage Area (acres)
1	**Walter Reed** – Ft. Stevens Dr.[a]	25
2	**Military Rd and Beach Dr.** [b]	37
3	**Soapstone Creek** – Connecticut Ave. and Ablemarle St.	330
4	**Melvin Hazen Valley Branch** – Klingle Rd. and Porter St. [c]	88 [e]
5	**Klingle Valley Creek** – Devonshire Place and 30th St.	52
6	**Normanstone Creek** – Normanstone Dr. and Normanstone Pkwy.	10 [e]
7	**Portal and 16th Streets** [d]	6
8	**Broad Branch**- Broad Branch and 30th St., NW near the Ivory Coast Embassy [d]	540
9	**Oregon and Pinehurst** [d]	84
10	**Archbold Parkway** – Intersection of New Mexico Ave. and Garfield St., NW [d]	49

[a] Station still located on Ft. Stevens Drive, but outfall moved ~500 feet "upstream" in the pipe for safety reasons. EPA approved moving this station in Feb 2007.
[b] Station still located at Military and Beach intersection, but moved ~500 feet "upstream" in pipe from the outfall to a manhole due to backwater flow conditions, which negatively affected flow sensors on automated sampler. EPA approved moving this station in Feb 2007.
[c] Station moved to the outfall located at Klingle Rd. and Porter Street for safety reasons. EPA approved moving this station in Feb 2007.
[d] Non-permitted sampling stations
[e] Drainage area was revised since the 2004 DMR report and is based on map and field surveys of the sewershed
N/A: No acreage of drainage area has been estimated because much of the drainage area is in MD.
---Unknown drainage area

Table 3 summarizes the sampling locations, number of samples collected, dates, and weather types for both wet and dry weather monitoring activities in Rock Creek since 2006.

In late 2006 and the first half of 2007, three wet weather events were sampled from four monitoring stations and two wet weather events were sampled from the remaining six monitoring stations. This report includes a summary of the data collected since December 2006, and results from three stations (Military Rd., Soapstone, and Klingle Valley) are reported in the DMR forms (Appendix D)[1]. Detailed results that include the raw data from all ten stations are summarized in Appendix E.

[1] EPA NPDES Branch did not send the District DMR forms for three permitted stations (Ft. Stevens, Melvin Hazen, and Normanstone). In a call to Nancy Ford, EPA Region III - Asst. PCS/ICIS Manager Office of Standards, Assessment and Information Management in July 2007, she said the DMR forms for these three stations are scheduled for printing in October of 2007 and the District could submit data for these stations by January 2008.

TABLE 3. SUMMARY OF WET AND DRY WEATHER SAMPLING FOR TEN ROCK CREEK STATIONS

Site No.	Location	Wet Weather	Dry Weather
1	Ft. Stevens Dr.	3-15-07 5-16-07 6-28-07	---
2	Military Rd. and Beach Dr.	3-15-07 5-16-07 6-28-07	---
3	Soapstone Creek	3-15-07 5-16-07 6-28-07	---
4	Melvin Hazen Valley Branch	3-1-07 5-16-07 6-28-07	---
5	Klingle Valley Creek	3-15-07 6-3-07	---
6	Normanstone Creek	12-22-06 4-27-07	12-20-06 4-4-07
7	Portal and 16th Streets[a]	12-22-06 4-27-07	12-20-06 4-4-07
8	Broad Branch[a]	12-22-06 4-27-07	12-20-06 4-4-07
9	Oregon and Pinehurst[a]	12-22-06 4-27-07	12-20-06 4-4-07
10	Archbold Parkway[a]	12-22-06 4-27-07	12-20-06 4-4-07

[a]Non-permitted sampling stations
---no sampling at this station

III. WEATHER INFORMATION

Table 4 lists the actual and average precipitation for Washington, D.C. for the period of December 2006 through June 2007. The weather gauge at Ronald Reagan National Airport was used to represent rainfall at the Rock Creek stations.

TABLE 4. PRECIPITATION RECORD FOR WASHINGTON, DC

Precipitation[a]			
Month	**Actual (in.)**	**No. Days in Month with Storms >0.10 in.[c]**	**Monthly Average (in.)**
2006			
September	6.31	4	3.79
October	5.06	6	3.22
November	5.16	5	3.03
December	1.56[b]	3	3.05
2007			
January	2.46[b]	3	3.21
February	2.22[b]	3	2.63
March	3.19[b]	3	3.92
April	4.17	4	2.77
May	1.75	3	3.82
June	1.38	2	3.13
July	2.40	3	3.66
August	3.44 (est)	1	3.44

[a] Precipitation data from Ronald Reagan National Airport; Source: NOAA National Data Center (https://ols.nndc.noaa.gov)
[b] During months with rainfall and snowfall, a conversion factor (10 in. snow = 1 in. rain) was used to calculate total precipitation amount.
[c] Note: only those days that did not conflict with the 72-hr requirement between events are reported here.

Drought conditions persisted throughout the spring and summer months with May through July rainfall being 5.08 inches below normal and consisting of only 9 eligible storm events that were mostly unpredictable thunderstorms. This severely impaired efforts to complete the monitoring of all 3 required wet weather prior to the 19 August 2007 submission deadline.

A summary of the rain events and their narrative descriptions for all wet and dry weather events sampled for the Rock Creek monitoring stations are provided below (Table 5).

III.A Rock Creek Wet Weather Monitoring

December 22, 2006: Samples were collected at Site #6 (Normanstone), Site #7 (Portal Road), Site #8 (Broad Branch), Site #9 (Oregon), and Site #10 (Archbold) during this storm event. Rain began to fall at about 3:00 PM on December 22 and concluded around 5:30 PM, this rain event lasted approximately 1.5 hours. A total of 0.07 inches of rain fell during the sampling of this event. The last measurable (>0.10 inches) rainfall occurred approximately eight days prior to this event.

March 1, 2007: A sample was collected at Site #4 (Melvin Hazen) during this storm event. Rain began to fall at about 6:45 PM on March 1st and continued to about 1:40 AM on March 2nd, this rain event lasted approximately seven hours. A total of 0.19 inches of rain fell during this event. The last measurable rainfall occurred approximately four days prior to this event.

March 15, 2007: Samples were collected at Site #1 (Ft. Stevens), Site #2 (Military and Beach), Site #3 (Soapstone), and Site #5 (Klingle Valley) during this storm event. Rain began to fall at about 3:30 PM on March 15 and continued to about 4:30 PM on March 16, lasting approximately 23 hours. A total of 2.15 inches of rain fell during this event. The last measurable rainfall occurred approximately seven days prior to this event.

April 27, 2007: Samples were collected at Site #6 (Normanstone), Site #7 (Portal Rd), Site #8 (Broad Branch), Site #9 (Oregon), and Site #10 (Archbold) during this storm event. Rain began to fall at about 11:30 PM on April 26 and concluded around 8:00 AM on April 27, this rain event lasted approximately 8 hours. A total of 0.21 inches of rain fell during the sampling of this event. The last measurable rainfall occurred approximately 12 days prior to this event.

May 16, 2007: Samples were collected at Site #1 (Ft. Stevens), Site #2 (Military and Beach), Site #3 (Soapstone), and Site #4 (Melvin Hazen) during this storm event. Rainfall began at 4:30 PM on May 16 and continued to about 9:00 PM on May 16, this rain event lasted approximately 4.5 hours. A total of 0.48 inches of rain fell during this event. The last measurable rainfall occurred approximately 4 days prior to this event.

June 3, 2007: A sample was collected at Site #5 (Klingle Valley) during this storm event. The area was impacted by light to moderate rainfall from the remnants of

Hurricane Barry. Rain began at 9:30 AM on June 3 and continued to 9:00 AM June 4, this rain event lasted approximately 23 hours. A total of 0.88 inches of rain fell during this event. The last measurable rainfall occurred 28 May 2007, 5 days prior to this event.

June 28, 2007: Samples were collected at Site #1 (Ft. Stevens), Site #2 (Military Rd), Site #3 (Soapstone Valley) and Site #4 (Melvin Hazen) during this storm event. Rainfall began at 7:06 PM on June 28 and continued to about 10:00 PM on June 28 this rain event lasted approximately 3 hours. A total of 0.10 inches of rain fell during this event. The last measurable rainfall occurred 12 June 2007, 16 days prior to this event.

TABLE 5. STORM SAMPLING CHARACTERISTICS FOR ROCK CREEK WET WEATHER EVENTS

Date	Precipitation (in.)	Duration (hr)	Time to Previous (hr)	Sites Sampled
12-22-06	0.07	1.5	192	6, 7, 8, 9, 10
3-1-07	0.19	7	96	4
3-16-07	0.36	23	168	1, 2, 3, 5
4-27-07	0.21	8	282	6, 7, 8, 9, 10
5-16-07	0.48	4.5	96	1, 2, 3, 4
6-3-07	0.88	23	120	5
6-28-07	0.10	3	384	1, 2, 3, 4

III.B Rock Creek Dry Weather Monitoring

As part of the dry weather program requirement, five Rock Creek stations were sampled during the year. The first dry-weather monitoring event occurred on December 20, 2006 at five stations and the second event occurred on April 4, 2007 at the same stations. A narrative description for these sampling events is provided below:

December 20, 2006: Samples were collected at Site #6 (Normanstone), Site #7 (Portal), Site #8 (Broad Branch), Site #9 (Oregon), and Site #10 (Archbold). The last measurable rainfall ($\geq$0.1 inches) occurred approximately seven days prior to this dry weather monitoring event. Dry weather samples were collected beginning at 12:00 PM and concluded around 4:00 PM.

April 4, 2007: Samples were collected at Site #6 (Normanstone), Site #7 (Portal), Site #8 (Broad Branch), Site #9 (Oregon), and Site #10 (Archbold). The last measurable rainfall occurred approximately 3.5 days prior to this dry weather monitoring event. Dry weather samples were collected beginning at 10:00 AM and concluded around 12:30 PM.

IV. SAMPLE COLLECTION

The list of sampled parameters, the detection limits, and Environmental Protection Agency (EPA)-approved methods utilized for monitoring activities are included in Table 6. A Quality Assurance Project Plan (QAPP) for the wet and dry weather monitoring is provided in Appendix C.

TABLE 6. SAMPLE ANALYSIS REQUIREMENTS FOR WET AND DRY WEATHER SAMPLING

Bottle Type	Sample Type	Parameter	Method	Units	MDL
1-L Plastic Unpreserved	Composite	Biochemical Oxygen Demand (5d) Total Dissolved Solids Total Suspended Solids	SM5210B SM2540C SM2540D	mg/L mg/L mg/L	<5.0 <1.0 <1.0
500 mL Plastic H_2SO_4	Composite	Ammonia Nitrogen Phosphorus, Total Nitrite + Nitrate Chemical Oxygen Demand Total Kjeldahl Nitrogen	SM4500-NH3-E EPA 365.3 EPA 353.2 EPA 410.4 EPA 351.3	mg/L mg/L mg/L mg/L mg/L	<1.0 <0.05 <0.05 <10.0 <0.5
250 mL Plastic, Filtered, H_2SO_4	Composite	Phosphorus, Dissolved	EPA 365.3	mg/L	<0.5
1000 mL Plastic HNO_3	Composite	Hardness, Total Antimony, Total Arsenic, Total Beryllium, Total Cadmium, Total Chromium, Total Copper, Total Lead, Total Mercury, Total (by cold vapor) Nickel, Total Selenium, Total Silver, Total Thallium, Total Zinc, Total	EPA 130.2 EPA 200.8 EPA 200.8 EPA 200.8 EPA 200.8 EPA 200.8 EPA 200.8 EPA 200.8 EPA 245.1 EPA 200.8 EPA 200.8 EPA 200.8 EPA 200.8 EPA 200.8	mg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L	 0.21 0.25 0.22 0.22 0.18 1.52 0.23 0.20 0.46 0.31 0.35 0.21 1.52
(2) 1-L Glass Amber	Grab	Dioxin (2,3,7,8) TCDD	EPA 1613	pg/L	4.4
1000 mL Plastic, Sterile	Grab	Fecal Coliform Fecal Streptococcus	SM9221E SM9230B	MPN MPN	
250 mL Plastic, NaOH	Grab	Cyanide, Total	EPA 335.2	mg/L	<0.01
(2) 1-L Glass Amber Unpreserved	Composite	BNA Compounds	EPA 625	µg/L	Various

Bottle Type	Sample Type	Parameter	Method	Units	MDL
(2) 40 mL Glass Vials Teflon Lids	Grab	Volatile Organic Compound	EPA 624	µg/L	0.5
1-L Glass Amber H_2SO_4 Teflon Lids	Grab	Phenols, Total	EPA 420.2	mg/L	1.9
1-L Glass Amber H_2SO_4 Teflon Lids	Composite	PCBs / Pesticides	EPA 608	µg/L	0.01-1.7
1-L Glass Amber Teflon Lids	Composite	PCBs	EPA 8082 modified	ng/L	0.25-5.0
1-L Glass Amber 1:1 HCl	Grab	Fats (oil and grease)	EPA 1664	mg/L	1.6
100 mL Plastic	Composite	Chlorophyll-a	SM 10020H2	mg/m^3	2
500 mL Plastic H_2SO_4	Composite	Total Ammonia + Organic Nitrogen (TKN)	EPA 351.3	mg/L	0.2
	Field Test	Dissolved Oxygen	EPA 360.1	mg/L	N/A
500 mL Plastic H_2SO_4	Composite	Organic Nitrogen	TKN – NH3	mg/L	N/A
500 mL Plastic H_2SO_4	Composite	Total Nitrogen	NO2 + NO3 + TKN	mg/L	N/A

V. RECORDKEEPING

DDOE maintains the records of monitoring information including:

- Description of Sampling
  - Location/Collection Time
  - Sampling Collection
  - Field Tests
  - Environmental Design and Construction and EA personnel who collected samples
- Storm Event Data
  - Date and duration of the storm events samples
  - Rainfall measurements
  - Duration between storm event sampled and the end of the previous measurable storm event
  - Estimate of the flow for the total volume of the discharge sampled
- Sampling Field Notes
- QA/QC Review and Clarification
  - Field Test Results
  - Laboratory Results Tables

VI. MONITORING RESULTS

Monitoring results for the wet weather sampling events at three Rock Creek stations are reported on DMR forms. Copies of the completed DMR forms for the monitoring results are provided in Appendix D. Ambient water quality data collected during the wet and dry weather sampling events are summarized in Table 7.

TABLE 7. AMBIENT WATER QUALITY DATA FOR ROCK CREEK STATIONS DURING WET AND DRY WEATHER EVENTS

Station	Date	pH (s.u.)	Temp (^{o}F)	TRC (mg/L)	DO (mg/L)
WET					
Ft. Stevens	3-15-07	7.80	54.7	0.00	8.29
	5-16-07	7.28	72.6	0.00	7.94
	6-28-07	7.50	84.0	0.05	6.96
Military and Beach	3-15-07	6.20	50.1	0.00	---[b]
	5-16-07	7.58	65.3	0.03	8.59
	6-28-07	7.50	84.2	0.10	5.10
Soapstone	3-15-07	7.60	54.1	0.02	9.41
	5-16-07	6.95	78.1	0.00	8.50
	6-28-07	7.18	80.6	0.03	7.60
Melvin Hazen	3-1-07	7.90	50.5	0.00	9.93
	5-16-07	6.83	74.1	0.21	7.30
	6-28-07	7.50	80.2	0.00	7.64
Klingle Valley	3-15-07	7.20	52.5	0.00	11.2
	6-3-07	7.50	70.9	0.00	7.01
Normanstone	12-22-06	7.80	54.0	---	---
	4-27-07	7.72	55.7	---	---
Portal and 16th [a]	12-22-06	7.62	53.6	---	---
	4-27-07	8.27	56.0	---	---
Broad Branch[a]	12-22-06	7.28	51.9	---	---
	4-27-07	7.96	56.0	---	---
Oregon and Pinehurst[a]	12-22-06	7.26	49.8	---	---
	4-27-07	7.45	53.8	---	---
Archbold Pky.[a]	12-22-06	7.80	56.7	---	---
	4-27-07	7.38	57.1	---	---
DRY					
Normanstone	12-20-06	7.49	50.6	---	---
	4-4-07	7.90	60.5	---	---
Portal and 16th [a]	12-20-06	7.70	56.0	---	---
	4-4-07	7.68	56.4	---	---
Broad Branch [a]	12-20-06	7.74	52.5	---	---
	4-4-07	7.40	54.5	---	---
Oregon & Pinehurst [a]	12-20-06	7.42	51.6	---	---
	4-4-07	7.07	52.5	---	---
Archbold Pky. [a]	12-20-06	7.80	52.6	---	---
	4-4-07	7.81	54.6	---	---

[a]non-permitted sampling stations

[b]DO meter would not calibrate correctly – no data collected for this site

TRC: Total Residual Chlorine

---No data collected.

VII. ESTIMATES OF CUMULATIVE LOADINGS

The annual pollutant loads for each sewershed sampled for wet and dry weather events were calculated by the Simple Method (EPA 1992) utilizing the event mean concentrations from the sample analysis results and the total area and land use distribution within each sewershed.

The Simple Method can estimate pollutant loads without extensive rainfall-runoff volume data using the sample analysis results available. Generally, the Simple Method is expected to overestimate pollutant loads as compared to more dynamic models that incorporate pollutant concentration and runoff coefficients as functions of initial conditions and rainfall intensity and duration in estimating total pollutant loads.

The Simple Method is given by the following equation:

$$L = \sum_{i=1}^{\text{No. of landuse types}} \left(\frac{P}{12} \times CF \times Rv_i \times C \times A_i \times UC \right) \qquad \textbf{(Equation 1)}$$

where

L = pollutant loading (lb/year for chemical constituents, MPN/yr for bacteria)

P = average annual rainfall (inches)

CF = Correction factor (0.9) to adjust for storms where no runoff occurs (dimensionless) (EPA 1992)

Rv_i = runoff coefficient for the land use type (dimensionless)

C = average event mean concentration (EMC) (mg/L for chemical constituents)

A_i = land use area (acres)

UC = unit conversion factor: 2.72 for chemical constituents in concentration units of mg/L; 12,334,885 for bacteria in units of #/100 mL.

The average EMC (C) for each monitoring station was calculated as the geomean of the measured EMCs in accordance with EPA's *Urban Stormwater BMP Performance Monitoring: Guidance Manual* (ASCE/EPA, 2002).

$$\text{C} = \text{Geomean of EMCs} = \left[\prod_{j=1}^{m} \text{EMC}_j \right]^{\frac{1}{m}}$$

where:

EMC_j = Event Mean Concentration of storm *j*

m = Number of storms at monitoring location

Annual precipitation within the District of Columbia for the September 2006 through August 2007 monitoring period 39.10 inches as reported by the National Weather Service (NWS) weather station at Ronald Reagan Washington National Airport (COOP ID: 448906) (Table 3-1). The sewershed area was obtained from the sewershed coverage provided by DC WASA. A key parameter in Equation 1 is the runoff coefficient (Rvi), which is directly related to imperviousness and land use. Land use categories, impervious surfaces, and runoff coefficients were based on zoning information for each sewershed, and are presented in Appendix F.

For EMCs calculated in this report, the geometric mean of each parameter was calculated as an estimate of the average EMC for each station. These data are presented in the following paragraphs for Rock Creek.

Wet Weather

Rock Creek stations 1 through 10 were sampled during wet weather flows from December 2006 to July 2007. EMCs for stations 6-10 were based on a single grab sample, whereas flow-weighted composite samples were used to calculate EMCs for Stations 1-5. The geometric mean of the wet weather analysis for each station is presented in Table 8. The highest mean concentration of TSS was reported at Oregon and Pinehurst (90.2 mg/L) and the lowest was reported at Archbold (9.9 mg/L). All other stations had TSS concentrations that ranged from 10.3 to 63.5 mg/L. Soapstone had the highest biochemical oxygen demand (BOD) concentrations among all stations (22.5 mg/L), while all other stations ranged from 3.3 (Archbold) to 10.7 mg/L (Ft. Stevens). Total nitrogen (TN) concentrations from Rock Creek stations ranged from 1.14 mg/L (Klingle Valley) to 5.89 mg/L (Melvin Hazen) and total phosphorus (TP) concentrations ranged from 0.17 mg/L (Military) to 0.48 mg/L (Melvin Hazen). Five Rock Creek stations had relatively high fecal coliform concentrations including Ft. Stevens (24,000 CFU/100 mls), Melvin Hazen (16,900 CFU/100 mls), Soapstone (9,860 CFU/100 mls), Broad Branch (9,000 CFU/100 mls), and Klingle Valley (8,000 CFU/100 mls). The five remaining Rock Creek stations were much lower, with concentrations ranging from 492 to 4,650 CFU/100 mls. Oil and grease concentrations ranged from 3.2 (Soapstone) to 6.2 mg/L (Ft. Stevens) at six of the monitoring stations. All other stations (Normanstone, Broad Branch, Oregon and Pinehurst, and Archbold) had non-detectable concentrations of oil and grease. Relatively low concentrations of arsenic (ND to 2.41 ug/L) were measured from all Rock Creek stations, while higher concentrations of copper (10.1 to 83.9 ug/L), lead (3.9

to 208 ug/L), and zinc (23.2 to 142 ug/L) were measured from these same stations. None of the stations had detectable concentrations for PAHs, chlordane, heptachlor, dieldrin, DDT, DDE, DDD, or PCBs. Complete analytical results are included in Appendix E.

Dry Weather

Rock Creek stations 6 through 10 were sampled for dry weather flows in December 2006 and again in April 2007. Grab samples were used to calculate the concentrations of 20 pollutants for these five stations, and the geometric mean of the dry weather analysis for each station is presented in Table 9. TSS concentrations ranged from 3.3 mg/L (Broad Branch) to 18 mg/L (Archbold). Portal had the highest BOD concentration (5.5 mg/L) measured during dry weather, and Normanstone and Broad Branch had the lowest concentrations (2.3 and 2.4 mg/L, respectively). These BOD concentrations measured during dry weather were comparable to concentrations measured during wet weather events (Table 8) at five stations (Normanstone, Portal, Broad Branch, Oregon and Pinehurst, and Archbold), which ranged from 3.3 to 6.0 mg/L. Total nitrogen concentrations ranged from 2.1 (Broad Branch) to 5.6 mg/L (Portal), and total phosphorus concentrations ranged from 0.08 (Oregon and Pinehurst) to 0.27 mg/L (Archbold). Neither total nitrogen nor total phosphorus was noticeably different between wet and dry weather events for these stations. Fecal coliform bacteria concentrations were highest at Normanstone and Portal (693 and 492 CFU/100 mls, respectively) and lowest at Archbold (42 CFU/100 mls). Fecal coliform concentrations were similar for Portal station during both wet (492 CFU/100 ml) and dry monitoring events, while all other stations were noticeably higher during wet weather events. Portal was the only station that had detectable concentrations of oil and grease during the two sample collections. The concentration of zinc was highest at Portal (90.1 ug/L), while all other stations had zinc concentrations below 24.7 ug/L. Lead concentrations ranged from 2.3 (Oregon and Pinehurst) to 3.9 ug/L (Portal) during dry weather events. These concentrations ranged from 27 to 58 percent lower than those measured from the same monitoring stations during wet weather. Other metal concentrations ranged from 6.4 to 23.9 ug/L for copper and from 1.6 to 2.5 ug/L for arsenic. None of the stations had detectable concentrations for PAHs, chlordane, heptachlor, dieldrin, DDT, DDE, DDD, or PCBs. Complete analytical results for dry weather data are included in Appendix E.

TABLE 8. SUMMARY DATA OF WET WEATHER EVENTS (2006-2007) FROM TEN ROCK CREEK MONITORING STATIONS.
VALUES REPRESENT GEOMETRIC MEAN FOR EACH STATION.

	Parameters (mg/L, unless otherwise noted)																			
Station	**TSS**	**BOD**	**TN**	**TP**	**FC[b]**	**O&G**	**Zn[cd]**	**Pb[cd]**	**Cu[cd]**	**As[cd]**	**PAH 1[d]**	**PAH 2[d]**	**PAH 3[d]**	**Chlordane[d]**	**Heptachlor[d]**	**Dieldrin[d]**	**DDT[d]**	**DDE[d]**	**DDD[d]**	**PCBs[e]**
Walter Reed (Ft. Stevens)	21.1 (n=3)	10.7 (n=3)	2.24 (n=3)	0.253 (n=3)	24,000 (n=3)	6.21 (n=3)	52.3 (n=3)	9.40 (n=3)	12.9 (n=2)	1.56 (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)
Military Rd.	63.5 (n=3)	10.6 (n=3)	1.06 (n=3)	0.174 (n=3)	2,000 (n=3)	5.43 (n=3)	37.1 (n=3)	5.75 (n=3)	31.5 (n=3)	1.75 (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)
Soapstone	34 (n=3)	22.5 (n=3)	2.96 (n=3)	0.279 (n=3)	9,860 (n=3)	3.15 (n=3)	62.7 (n=3)	7.66 (n=3)	24.7 (n=3)	1.69 (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)
Melvin Hazen	60.8 (n=3)	9.62 (n=3)	5.89 (n=3)	0.476 (n=3)	16,900 (n=3)	3.52 (n=3)	142 (n=3)	27.3 (n=3)	80.4 (n=3)	1.69 (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)
Klingle Valley	36.1 (n=2)	16 (n=2)	1.14 (n=2)	0.315 (n=2)	8,000 (n=2)	4.74 (n=2)	53.3 (n=2)	208 (n=2)	83.9 (n=2)	1.73 (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)
Normanstone	10.3 (n=2)	6 (n=2)	4.92 (n=2)	0.215 (n=2)	2,900 (n=2)	ND (n=2)	44.7 (n=2)	7.07 (n=2)	11.4 (n=2)	2.41 (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)
Portal and 16th [e]	10.5 (n=2)	5.48 (n=2)	5.61 (n=2)	0.224 (n=2)	492 (n=2)	4.47 (n=2)	90.1 (n=2)	3.87 (n=2)	23.9 (n=2)	1.58 (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)
Broad Branch[e]	26.7 (n=2)	4.58 (n=2)	3 (n=2)	0.251 (n=2)	9,000 (n=2)	ND (n=2)	30.2 (n=2)	4.12 (n=2)	10.1 (n=2)	1.67 (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)
Oregon and Pinehurst[e]	90.2 (n=2)	5.39 (n=2)	3.17 (n=2)	0.18 (n=2)	4,650 (n=2)	ND (n=2)	23.2 (n=2)	5.43 (n=2)	15.7 (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)
Archbold[e]	9.9 (n=2)	3.32 (n=2)	2.94 (n=2)	0.335 (n=2)	2,120 (n=2)	ND (n=2)	33.5 (n=2)	6.00 (n=2)	23.7 (n=2)	1.45 (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)

TSS: total suspended solids; BOD: biological oxygen demand; TN: total nitrogen; TP: total phosphorus; FC: fecal coliform bacteria; O&G: oil and grease; PCB: total PCBs
ND: non-detect
[b]Units are in CFU/ 100 mls
[c]Total recoverable metals
[d]Units are in ug/L
[e]Units are in ng/L
[e] Non-permitted monitoring stations

TABLE 9. SUMMARY DATA OF ALL DRY WEATHER EVENTS (2006-2007) FROM TEN ROCK CREEK MONITORING STATIONS.

VALUES REPRESENT GEOMETRIC MEAN FOR EACH STATION.

	Parameters (mg/L, unless otherwise noted)																			
Station	**TSS**	**BOD**	**TN**	**TP**	**FC[a]**	**O&G**	**Zn[bc]**	**Pb[bc]**	**Cu[bc]**	**As[bc]**	**PAH 1[c]**	**PAH 2[c]**	**PAH 3[c]**	**Chlordane[c]**	**Heptachlor[c]**	**Dieldrin[c]**	**DDT[c]**	**DDE[c]**	**DDD[c]**	**PCBs[d]**
Walter Reed (Ft. Stevens)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Military Rd.	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Soapstone	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Melvin Hazen	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Klingle Valley	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Normanstone	3.46 (n=2)	2.28 (n=2)	4.7 (n=2)	0.199 (n=2)	693 (n=2)	ND (n=2)	22.4 (n=2)	3.02 (n=2)	13.64 (n=2)	2.1 (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)
Portal and 16th [e]	10.5 (n=2)	5.48 (n=2)	5.61 (n=2)	0.224 (n=2)	492 (n=2)	4.47 (n=2)	90.1 (n=2)	3.87 (n=2)	23.9 (n=2)	1.58 (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)
Broad Branch[e]	3.32 (n=2)	2.37 (n=2)	2.1 (n=2)	0.0927 (n=2)	56.6 (n=2)	ND (n=2)	24.7 (n=2)	2.98 (n=2)	6.4 (n=2)	1.9 (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)
Oregon and Pinehurst[e]	4.62 (n=2)	3.32 (n=2)	2.8 (n=2)	0.0881 (n=2)	56.6 (n=2)	ND (n=2)	18.2 (n=2)	2.26 (n=2)	6.48 (n=2)	2.1 (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)
Archbold[e]	18 (n=2)	4.42 (n=2)	2.69 (n=2)	0.273 (n=2)	42.4 (n=2)	ND (n=2)	17.6 (n=2)	3.08 (n=2)	19.8 (n=2)	2.5 (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)

TSS: total suspended solids; BOD: biological oxygen demand; TN: total nitrogen; TP: total phosphorus; FC: fecal coliform bacteria; O&G: oil and grease; PCB: total PCBs
ND: non-detect
[a]Units are in CFU/ 100 mls
[b]Total recoverable metals
[c]Units are in ug/L
[d]Units are in ng/L
[e]Non-permitted monitoring stations
--- No data available due to no dry weather flow

VII.A Pollutant Loads

Calculated loads for 20 pollutants at ten Rock Creek monitoring stations during wet weather events are presented in Table 10. Broad Branch and Soapstone had the highest overall loads for the 20 selected parameters, and Portal had the lowest overall loads among the ten monitoring stations. Total suspended solids were contributed in low to moderate amounts (225 to 8,670 lbs/yr) from six stations, and in relatively higher amounts (23,700 to 57,800 lbs/yr) from four stations that included Soapstone, Melvin Hazen, Broad Branch, and Oregon. Portal and Normanstone stations had the lowest calculated BOD loadings (117 and 236 lbs/yr, respectively), while all other stations ranged from 808 (Archbold) to 31,800 lbs/yr (Soapstone). Half of the Rock Creek stations had moderate to high loads (716 to 6,490 lbs/yr) of total nitrogen, while all other stations (Ft. Stevens, Military, Klingle Valley, Normanstone, and Portal) were noticeably lower and ranged from 91 to 274 lbs/yr. Three stations had comparably higher loads of TP than all other stations and included Melvin Hazen (185 lbs/yr), Soapstone (393 lbs/yr), and Broad Branch (543 lbs/yr). All other stations had TP loads below 82 lbs/yr. Fecal coliform loads were contributed in high amounts for all ten stations, which ranged from 4.8e+10 (Portal) to 8.8e+13 lbs/yr (Broad Branch). Sources of this pollutant are currently unknown, but could include a combination of domestic animals, wildlife, birds, and humans. Calculated loadings for oil and grease was highest at Soapstone, which contributed 4,440 lbs/yr. Normanstone had the lowest detectable concentration of oil and grease (96 lbs/yr), while four stations (Klingle Valley, Broad Branch, Oregon, and Archbold) had no detectable loads contributing to the Rock Creek watershed. Relatively low concentrations (ND to 3.62 lbs/yr) of arsenic were contributed from all Rock Creek stations, while higher loads of copper (0.45 to 35 lbs/yr), lead (0.08 to 50.1 lbs/yr), and zinc (1.76 to 88.5 lbs/yr) were contributed from these same stations. None of the stations had detectable loads for PAHs, chlordane, heptachlor, dieldrin, DDT, DDE, DDD, or PCBs.

TABLE 10. CALCULATED LOADINGS OF 20 POLLUTANTS FROM WET WEATHER EVENTS (2006-2007) FROM TEN ROCK CREEK MONITORING STATIONS.

	POLLUTANTS (lbs/year, unless otherwise noted)																			
Station	**TSS**	**BOD**	**TN**	**TP**	**FC[a]**	**O&G**	**Zn[b]**	**Pb[b]**	**Cu[b]**	**As[b]**	**PAH 1**	**PAH 2**	**PAH 3**	**Chlordane**	**Heptachlor**	**Dieldrin**	**DDT**	**DDE**	**DDD**	**PCBs**
Walter Reed (Ft. Stevens)	1,990 (n=3)	1,010 (n=3)	211 (n=3)	23.8 (n=3)	1.02E+13 (n=3)	585 (n=3)	4.92 (n=3)	0.89 (n=3)	1.22 (n=2)	0.15 (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)
Military Rd.	5,430 (n=3)	907 (n=3)	91 (n=3)	14.9 (n=3)	7.76E+11 (n=3)	465 (n=3)	3.18 (n=3)	0.49 (n=3)	2.70 (n=3)	0.15 (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)
Soapstone	47,900 (n=3)	31,800 (n=3)	4,180 (n=3)	393 (n=3)	6.31E+13 (n=3)	4,440 (n=3)	88.50 (n=3)	10.80 (n=3)	34.90 (n=3)	2.38 (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)
Melvin Hazen	23,700 (n=3)	3,740 (n=3)	2,290 (n=3)	185 (n=3)	2.98E+13 (n=3)	1,370 (n=3)	55.20 (n=3)	10.60 (n=3)	31.30 (n=3)	0.66 (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)	ND (n=3)
Klingle Valley	8,670 (n=2)	3,840 (n=2)	274 (n=2)	75.7 (n=2)	8.73E+12 (n=2)	1,140 (n=2)	12.80 (n=2)	50.10 (n=2)	20.20 (n=2)	0.42 (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)
Normanstone	405 (n=2)	236 (n=2)	194 (n=2)	8.5 (n=2)	5.18E+11 (n=2)	ND (n=2)	1.76 (n=2)	0.28 (n=2)	0.45 (n=2)	0.10 (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)
Portal and 16th [c]	225 (n=2)	117 (n=2)	120 (n=2)	4.8 (n=2)	4.78E+10 (n=2)	96 (n=2)	1.93 (n=2)	0.08 (n=2)	0.51 (n=2)	0.03 (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)
Broad Branch [c]	57,800 (n=2)	9,910 (n=2)	6,490 (n=2)	543 (n=2)	8.83E+13 (n=2)	ND (n=2)	65.20 (n=2)	8.92 (n=2)	21.80 (n=2)	3.62 (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)
Oregon and Pinehurst [c]	31,900 (n=2)	1,900 (n=2)	1,120 (n=2)	63.5 (n=2)	7.45E+12 (n=2)	ND (n=2)	8.22 (n=2)	1.92 (n=2)	5.56 (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)
Archbold [c]	2,410 (n=2)	808 (n=2)	716 (n=2)	81.5 (n=2)	2.34E+12 (n=2)	ND (n=2)	8.16 (n=2)	1.46 (n=2)	5.77 (n=2)	0.35 (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)	ND (n=2)

TSS: total suspended solids; BOD: biological oxygen demand; TN: total nitrogen; TP: total phosphorus; FC: fecal coliform bacteria; O&G: oil and grease; PCB: total PCBs
ND: non-detect
[a]Fecal coliform is in CFU/ year
[b]Total recoverable metals
[c]Non-permitted monitoring stations

VIII. ROCK CREEK WATER QUALITY TRENDS ANALYSIS

The permit requires that watersheds be sampled on a four-year rotational basis. The Rock Creek and Anacostia River monitoring stations are the only two watersheds that have been sampled for two complete rotations since the permit inception. Results from the Anacostia River were provided in the DMR report submitted to EPA on August 19, 2006. Results from ten Rock Creek stations for wet weather samples collected in 2003 and again in 2006 are presented in Table 11. The second rotation does not have a complete set of water quality data (e.g. at least three wet weather events sampled) for all ten monitoring stations. Selected water quality data (i.e. parameters in the permit and the Rock Creek TMDL for load reductions) from each rotation are tabled and all stations are combined for each rotation for comparison between Rotation 1 (2003-2005) and Rotation 2 (2006-2007). The data indicate that there were declines in EMCs between Rotation 1 and Rotation 2 from most of the measured parameters. Concentrations of TSS, BOD, fecal coliform, zinc, and copper in Rotation 2 had decreased by as much as 86 percent when compared to Rotation 1, while other parameters (e.g. nitrogen, phosphorus, oil and grease) only decreased slightly. Organic compounds (PAHs, chlordane, dieldrin, DDT, DDD, DDE) measured from Rotation 1 had declined to non-detectable concentrations during Rotation 2. Only two parameters (lead and arsenic) had increased in concentration since 2003, with lead increasing by 9 percent and arsenic increasing nearly 40 percent. Heptachlor and total PCBs were non-detectable during both rotations of monitoring.

Careful consideration is necessary when interpreting these results, primarily because changes in analytical techniques and detection limits make it difficult to compare datasets. In addition, calculated EMCs for Rotation 1 and Rotation 2 can be misleading when the sample sizes are currently very small ($n \leq 3$ for each). As monitoring continues, the dataset will increase and provide not only a more precise evaluation of the historic and current trends for these parameters, but also indicate how effective the strategies for reducing storm water pollutants in the District waterways have been.

TABLE 11. COMPARISON OF EVENT MEAN CONCENTRATIONS FROM TWO ROTATIONS OF WET WEATHER EVENTS FROM ROCK CREEK MONITORING STATIONS

Parameter	Rotation 1 (2003-2005)	Rotation 2 (2006-2007)	% Change
Total Suspended Solids (mg/L)	57.5	36.3	-58.4
BOD (mg/L)	17.2	9.42	-82.9
Nitrogen, total (mg/L)	3.33	3.29	-0.01
Phosphorus, total (mg/L)	0.323	0.27	-0.20
Fecal coliform (mpn)	12,800	7,990	-0.60
Oil & Grease (mg/L)	3.81	3.75	-0.02
Zinc (ug/L)	106	56.9	-0.86
Lead (ug/L)	26.1	28.5	+0.09
Copper (ug/L)	56.9	31.8	-0.79
Arsenic (ug/L)	1.19	1.65	+0.39
PAH 1 (ug/L)	2.28	ND	
PAH 2 (ug/L)	1.33	ND	
PAH 3 (ug/L)	1.97	ND	
Chlordane (ug/L)	0.189	ND	
Heptachlor epoxide (ug/L)	ND	ND	no change
Dieldrin (ug/L)	0.000599	ND	
DDT (ug/L)	0.000723	ND	
DDE (ug/L)	0.00062	ND	
DDD (ug/L)	0.00112	ND	
PCBs, total (ng/L)	ND	ND	no change

ND: non-detect

IX. REFERENCES

American Society of Civil Engineers (ASCE)/US Environmental Protection Agency (EPA). 2002. *Urban Stormwater BMP Performance Monitoring: Guidance Manual*. Office of Water. EPA 821/B/02-001.

US Environmental Protection Agency (EPA). 1992. *Guidance Manual for the Preparation of Part 2 of the NPDES Permit Applications for Discharges from Municipal Separate Storm Sewer System*. Office of Water. EPA 833/B/92-002.

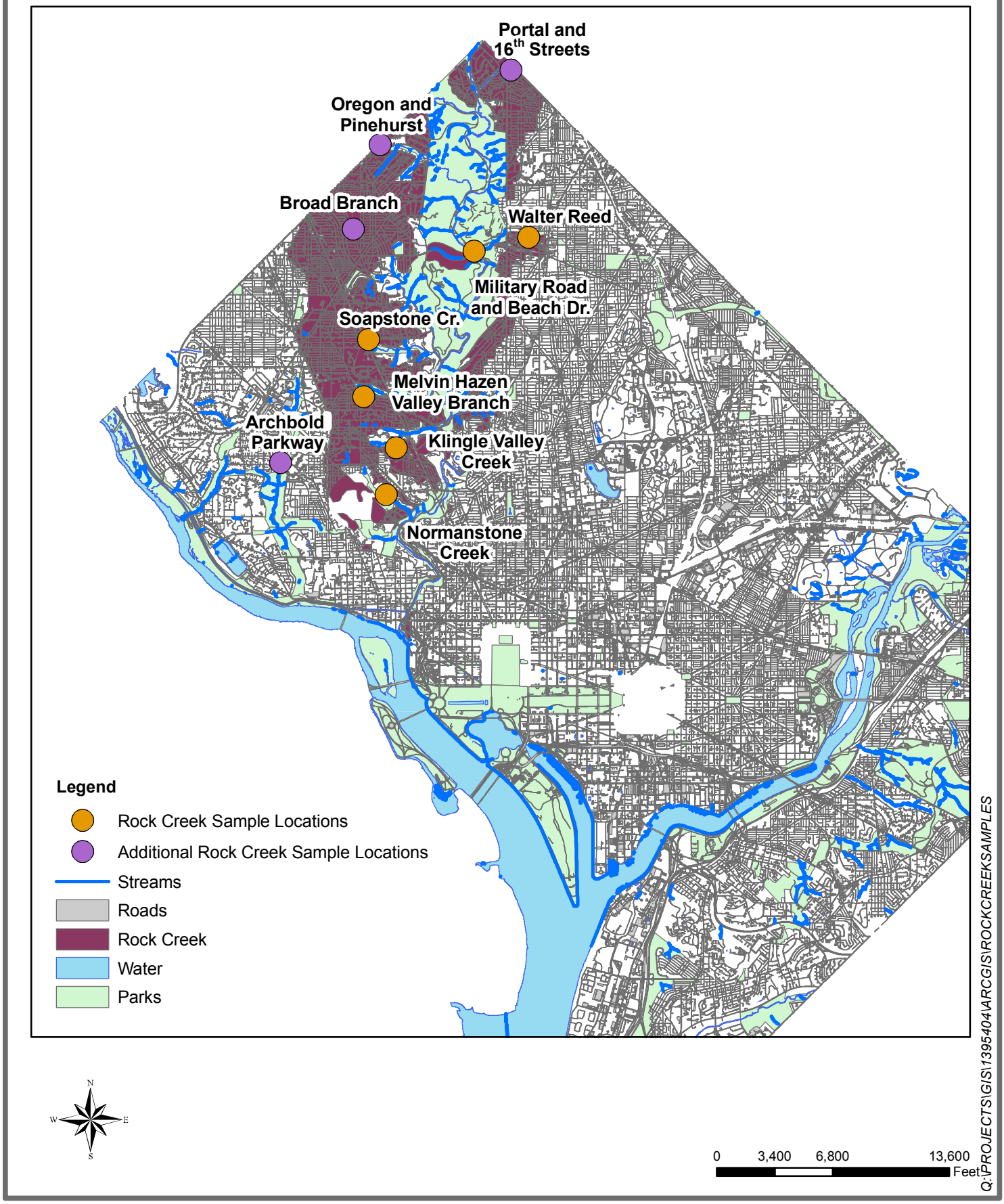
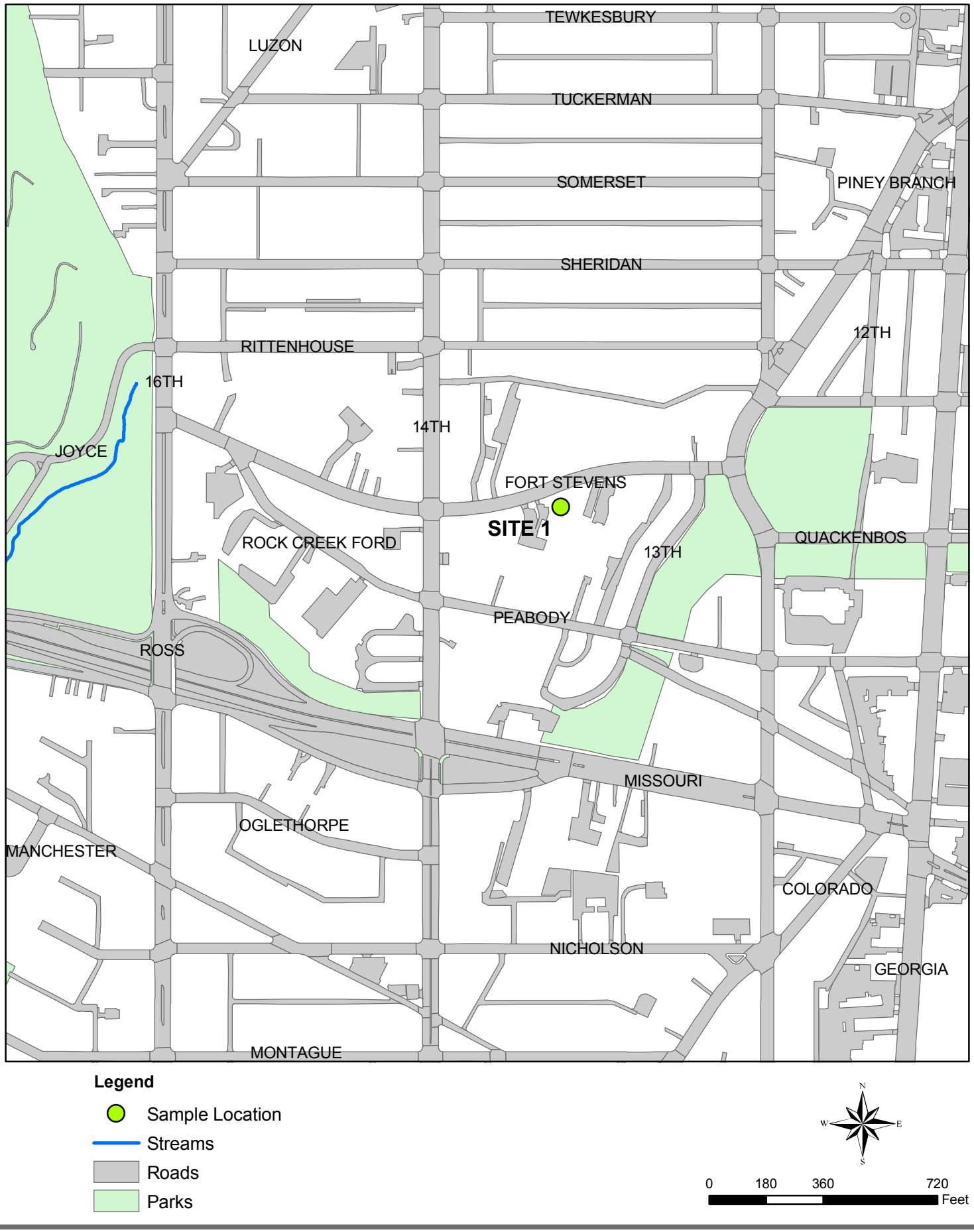


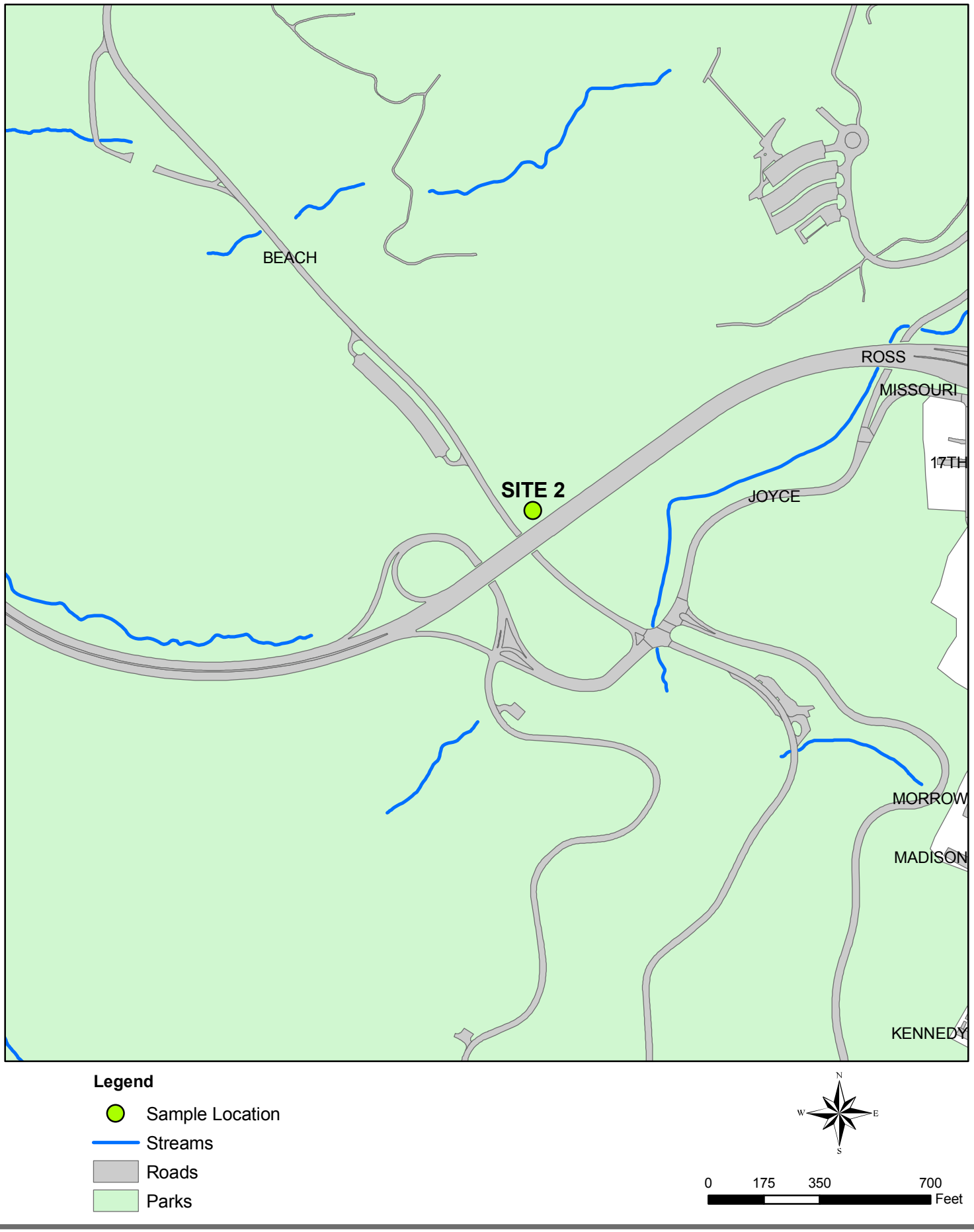
Figure 1. Rock Creek MS4 Monitoring Sites

APPENDIX A

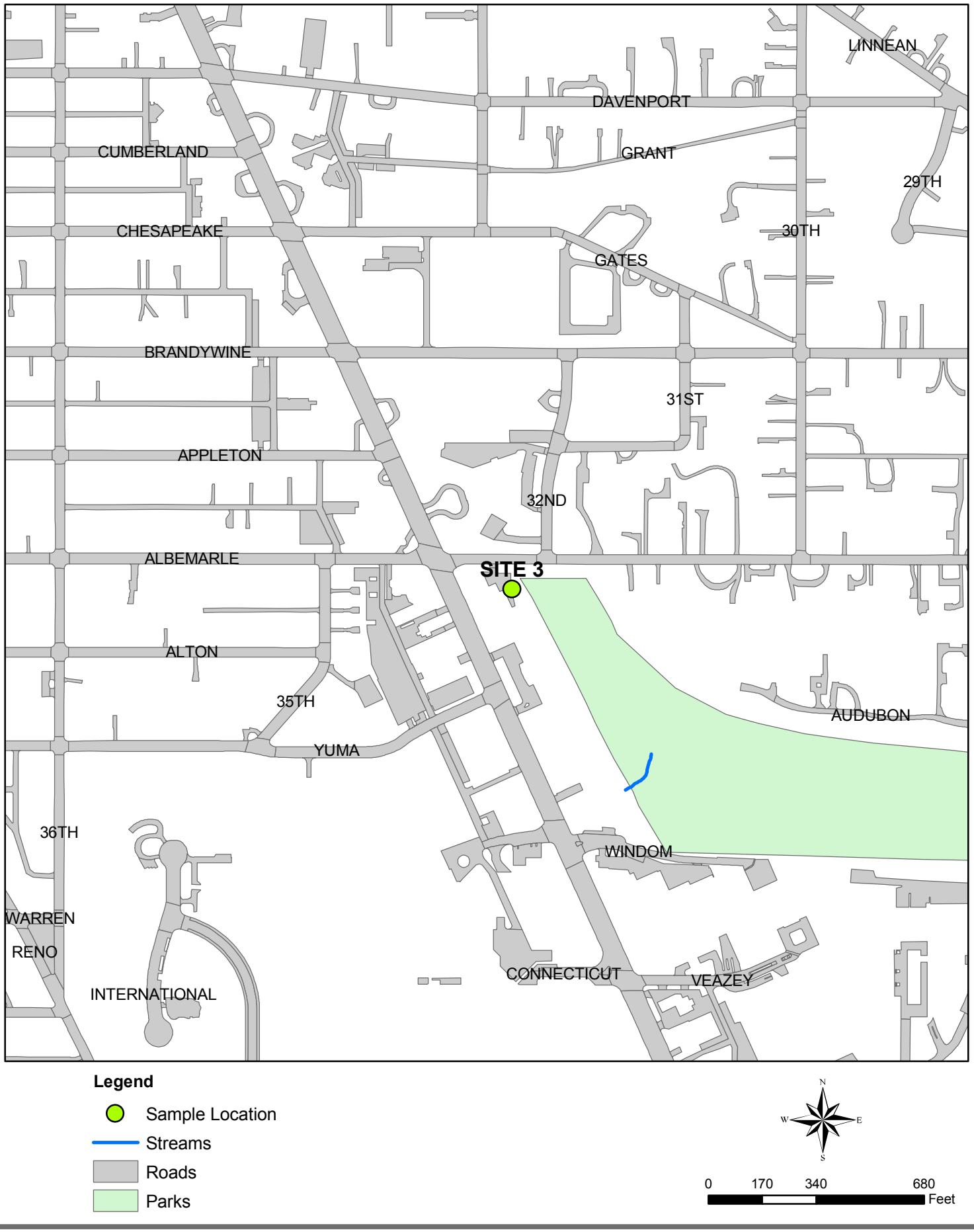
Large Scale Location Maps for Rock Creek Storm Monitoring Stations



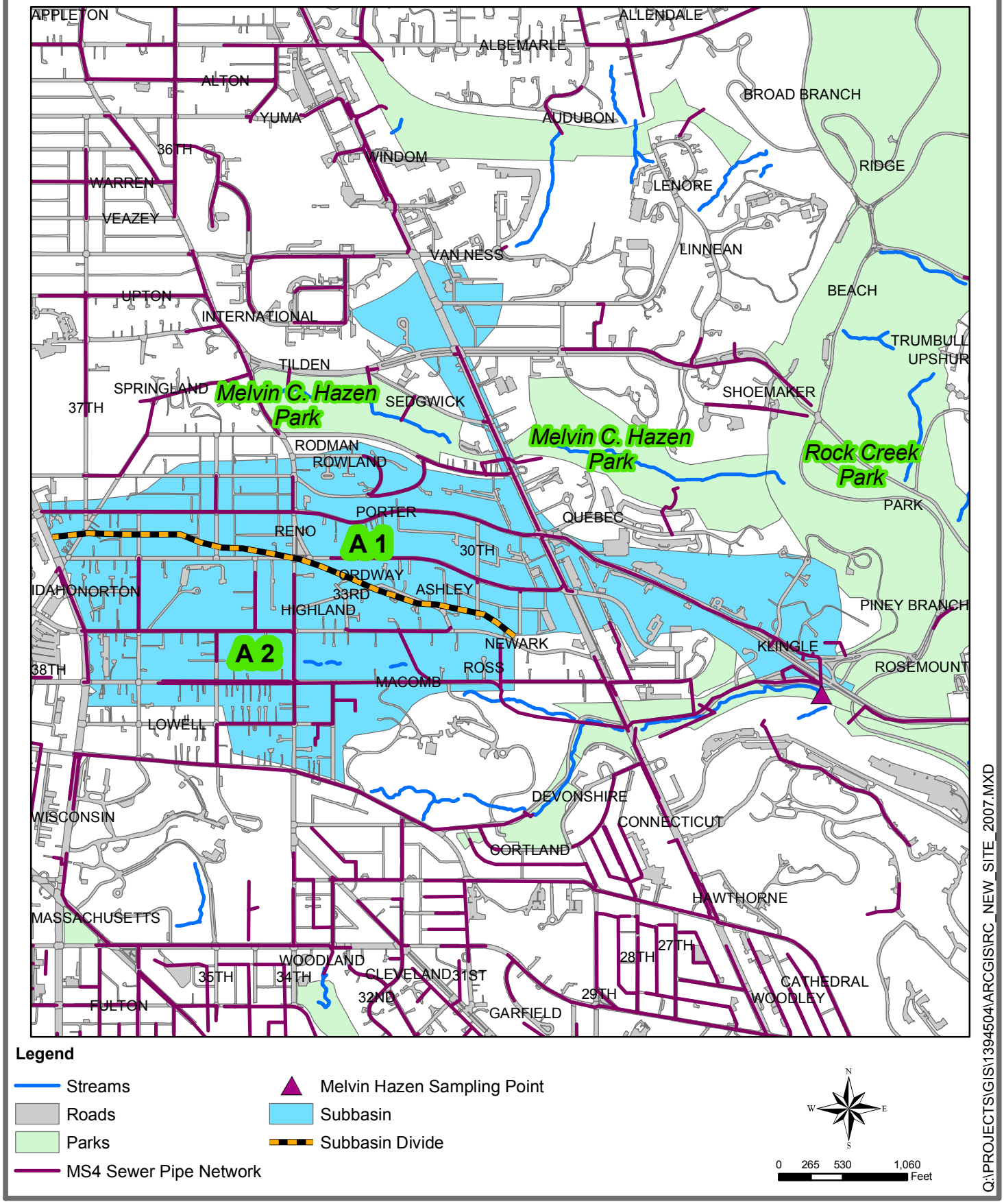
Monitoring Station 1: Walter Reed - Fort Stevens Drive.



Monitoring Station 2: Military Road and Beach Drive.



Monitoring Station 3 (Soapstone Creek): Connecticut Ave. and Albemarle St.



Legend

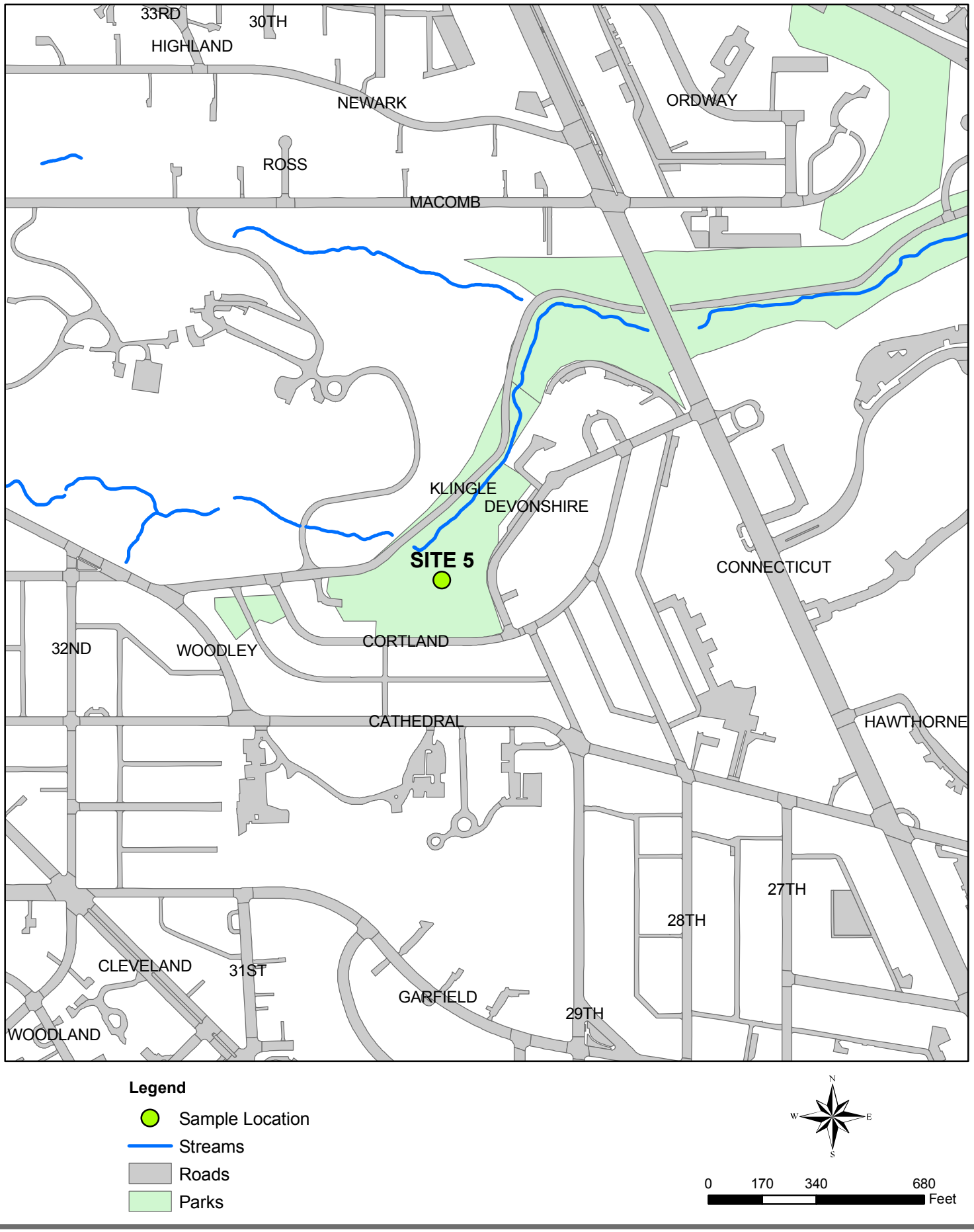
- Streams
- Roads
- Parks
- MS4 Sewer Pipe Network
- Melvin Hazen Sampling Point
- Subbasin
- Subbasin Divide

N W E S

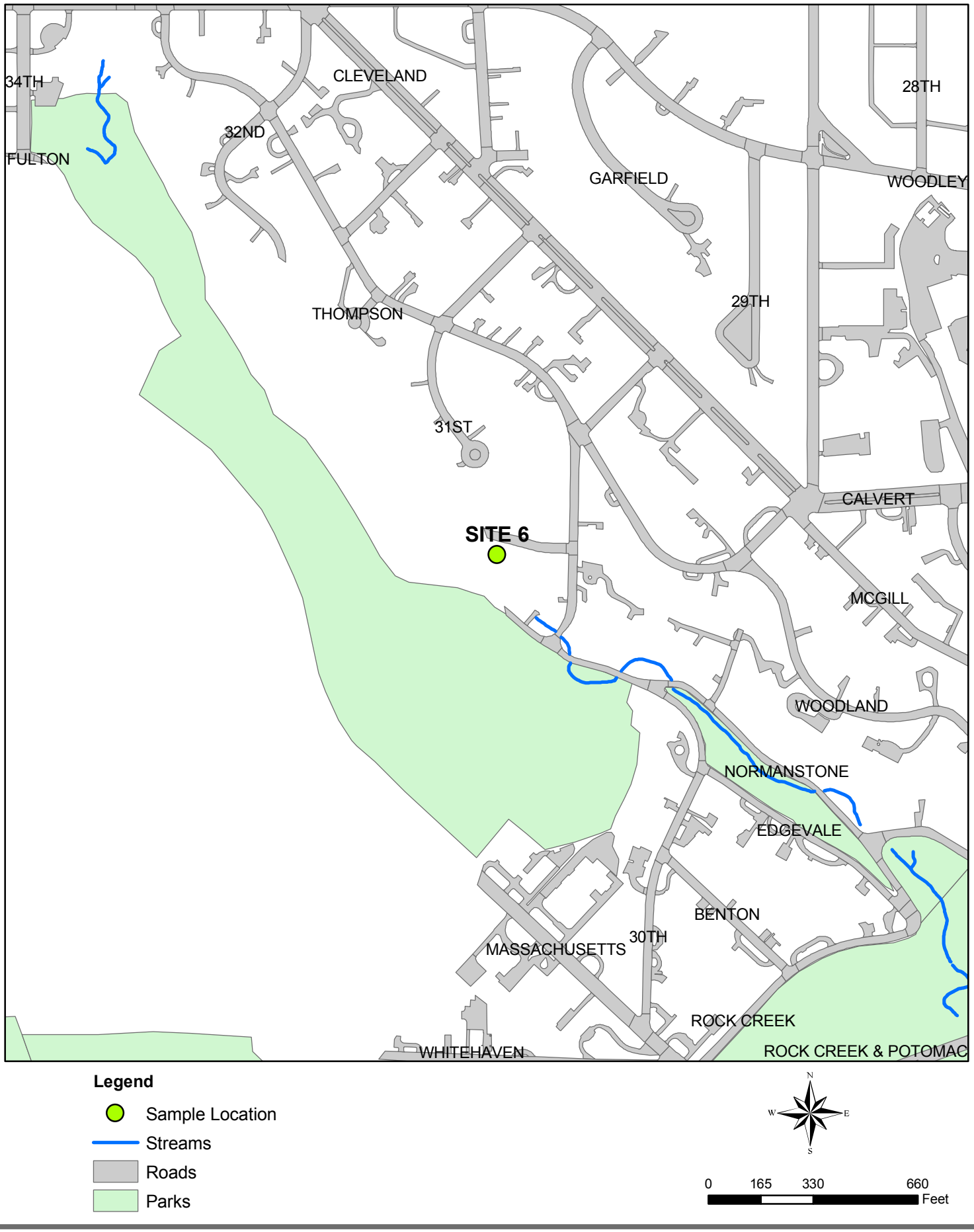
0 265 530 1,060 Feet

Q:\PROJECTS\GIS\1394504\ARCGIS\RC_NEW_SITE_2007.MXD

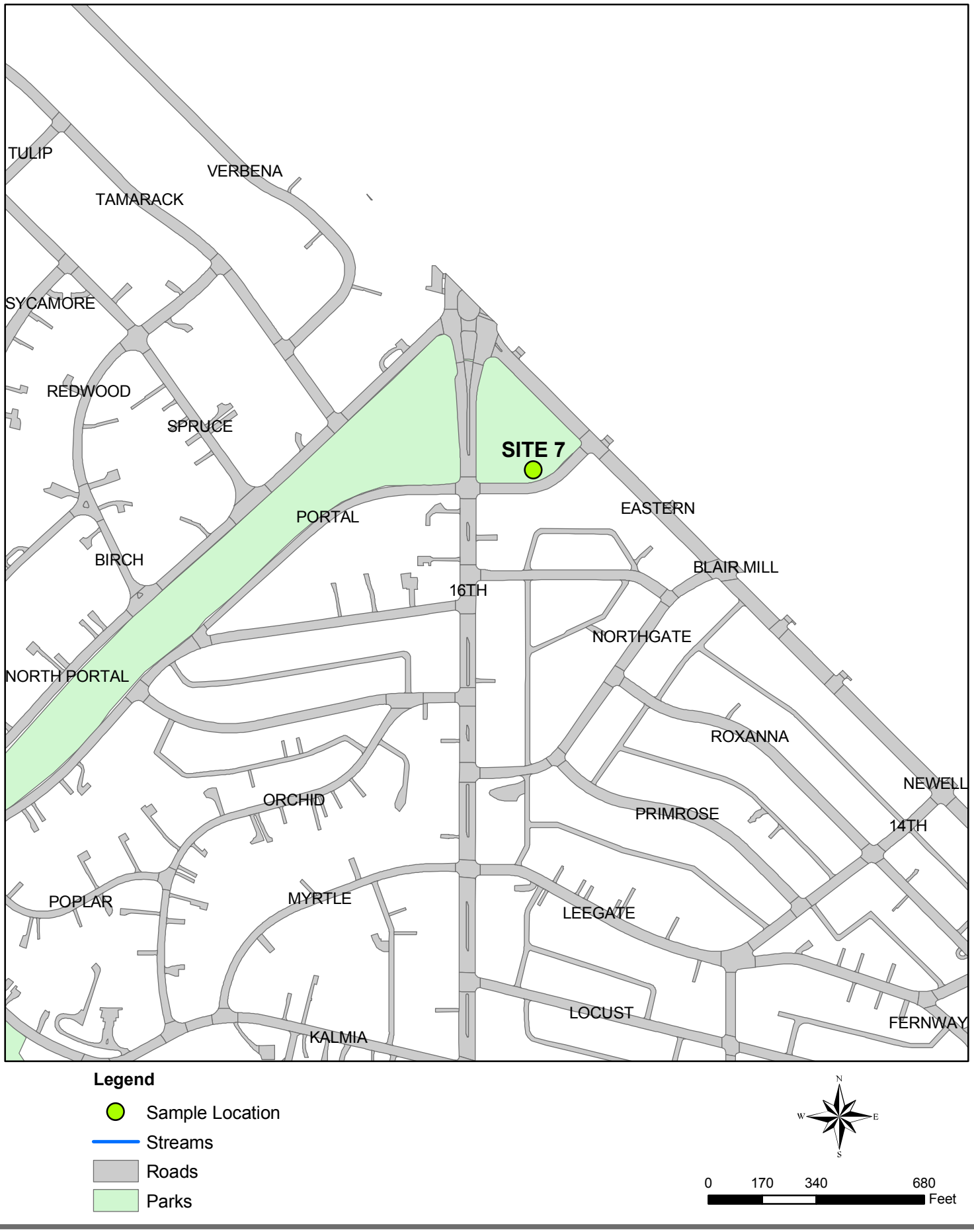
Monitoring Station 4 (Melvin Hazen) Drainage Areas Contributing to Sampling Locations Map



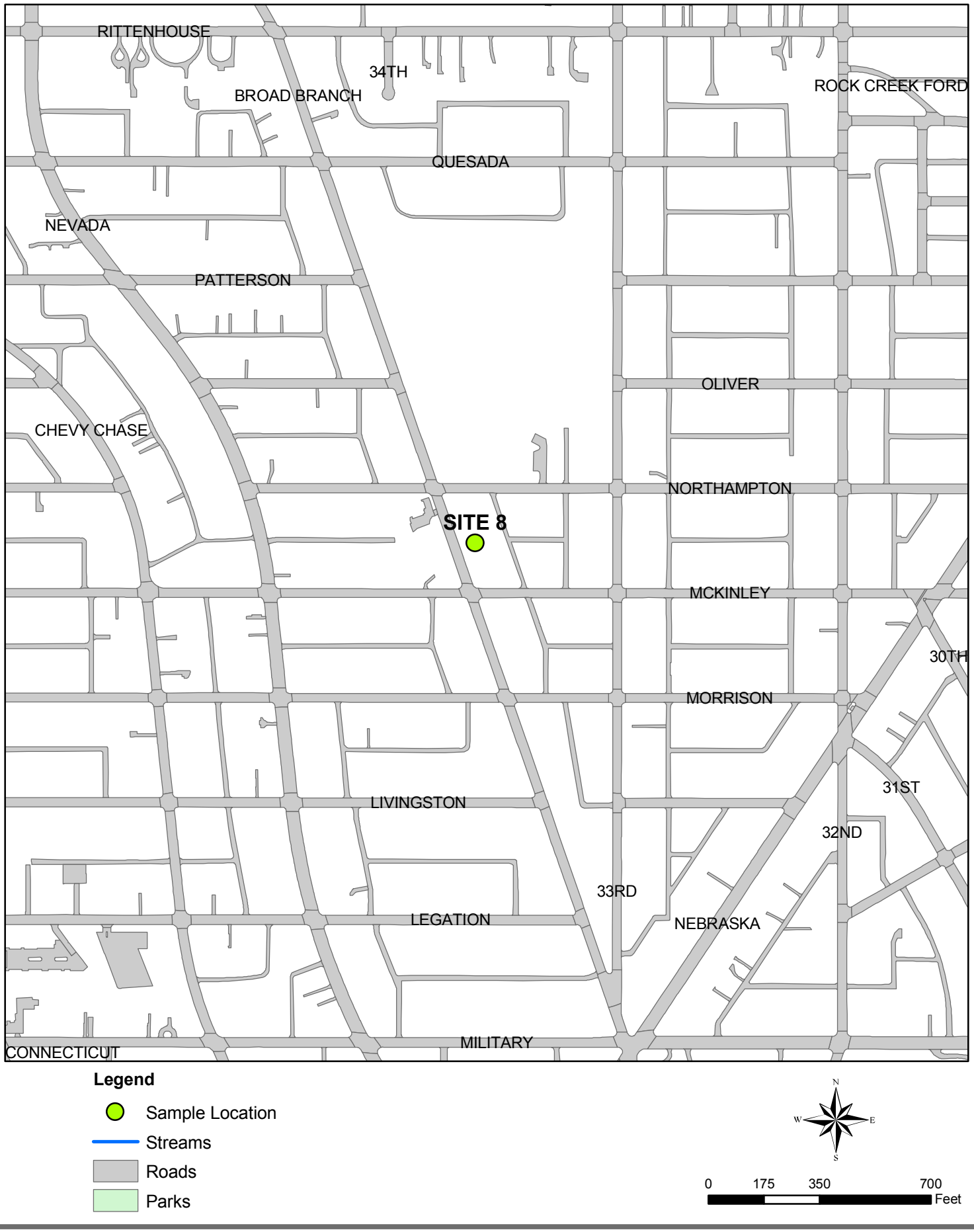
Monitoring Station 5 (Klingle Valley Creek): Devonshire Place and 30th St.



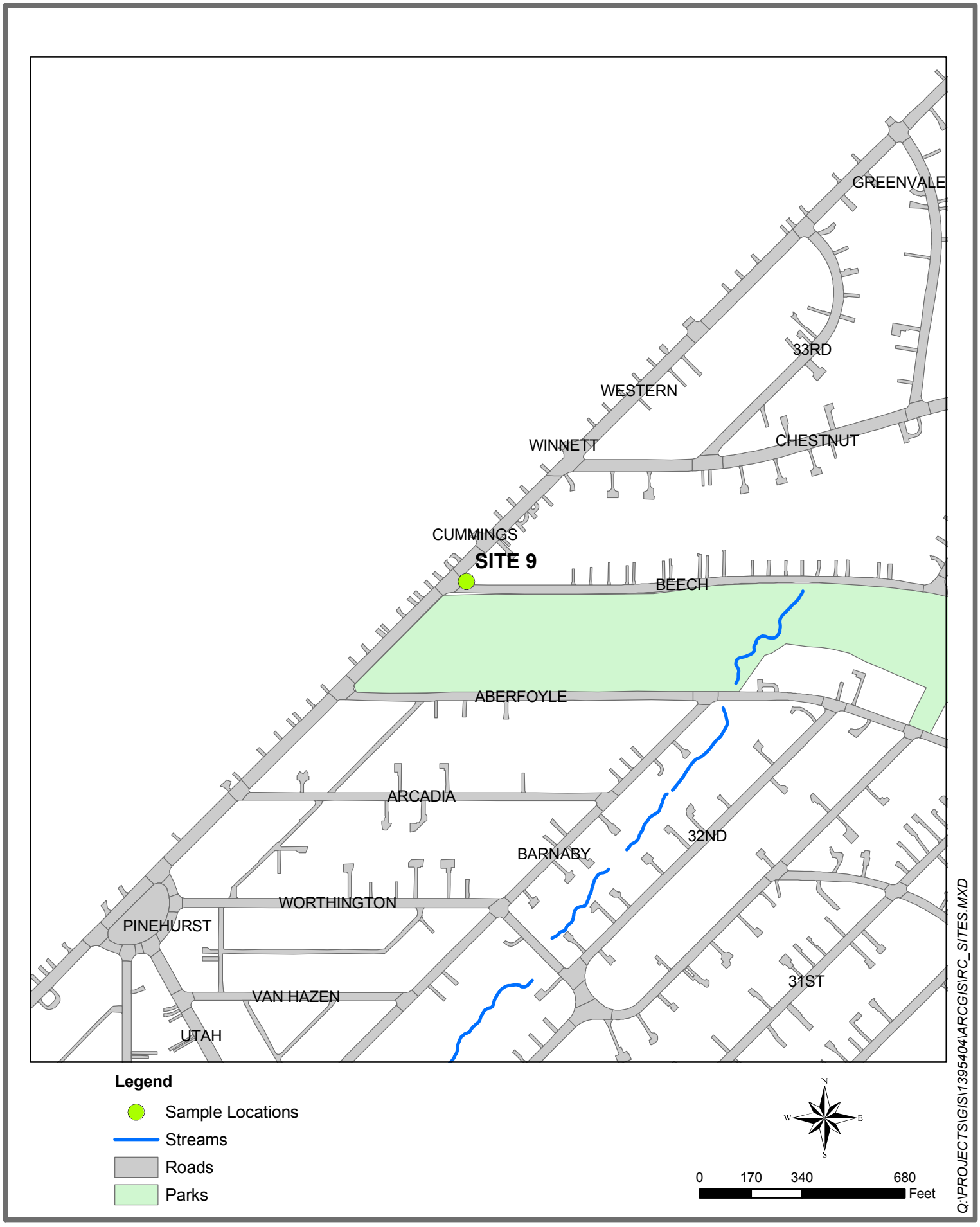
Monitoring Station 6 (Normanstone Creek): Normanstone Dr. and Normanstone Pkwy.



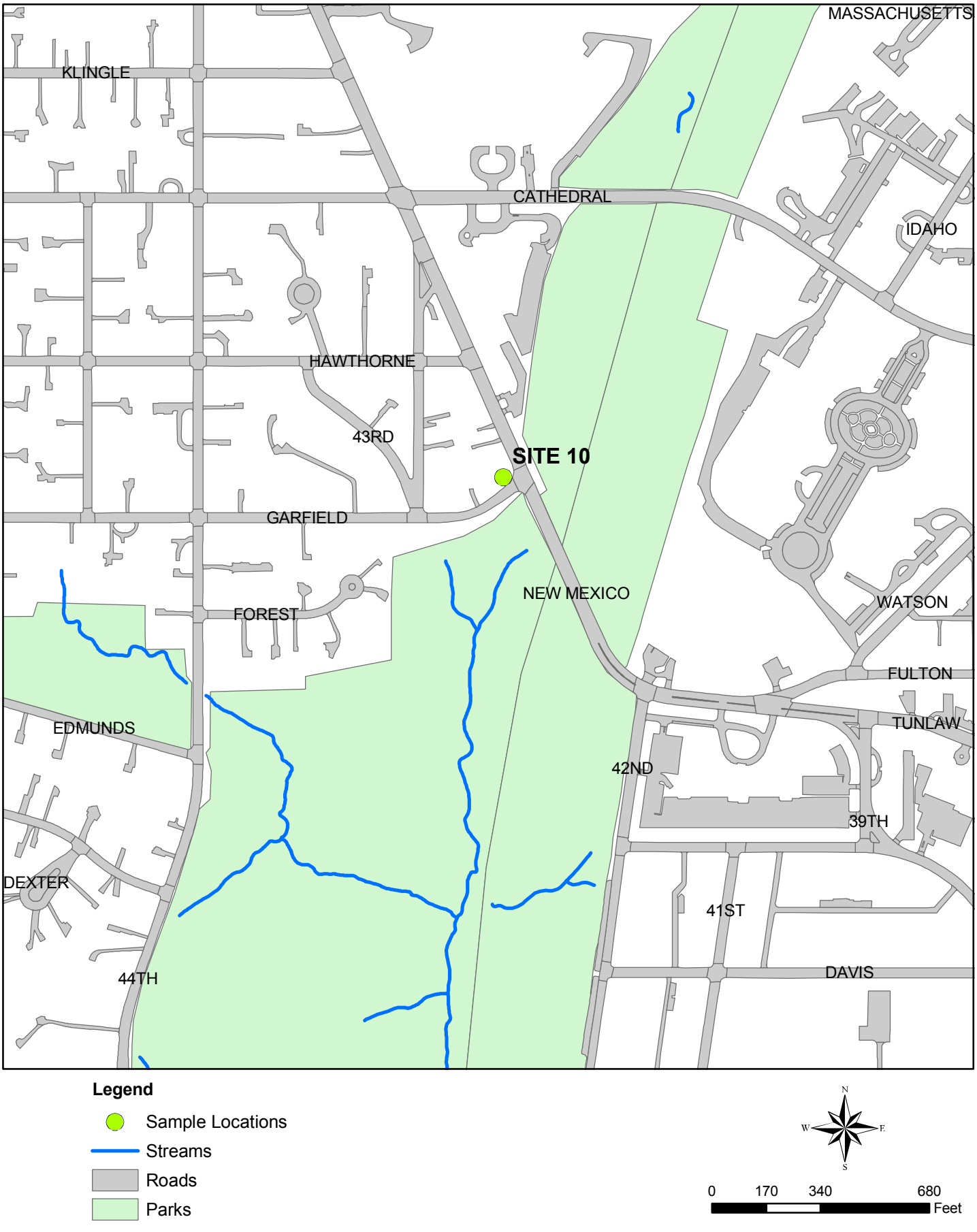
Monitoring Station 7: Portal and 16th Street.



Monitoring Station 8 (Broad Branch): Broad Branch Rd. and 30th., NW.



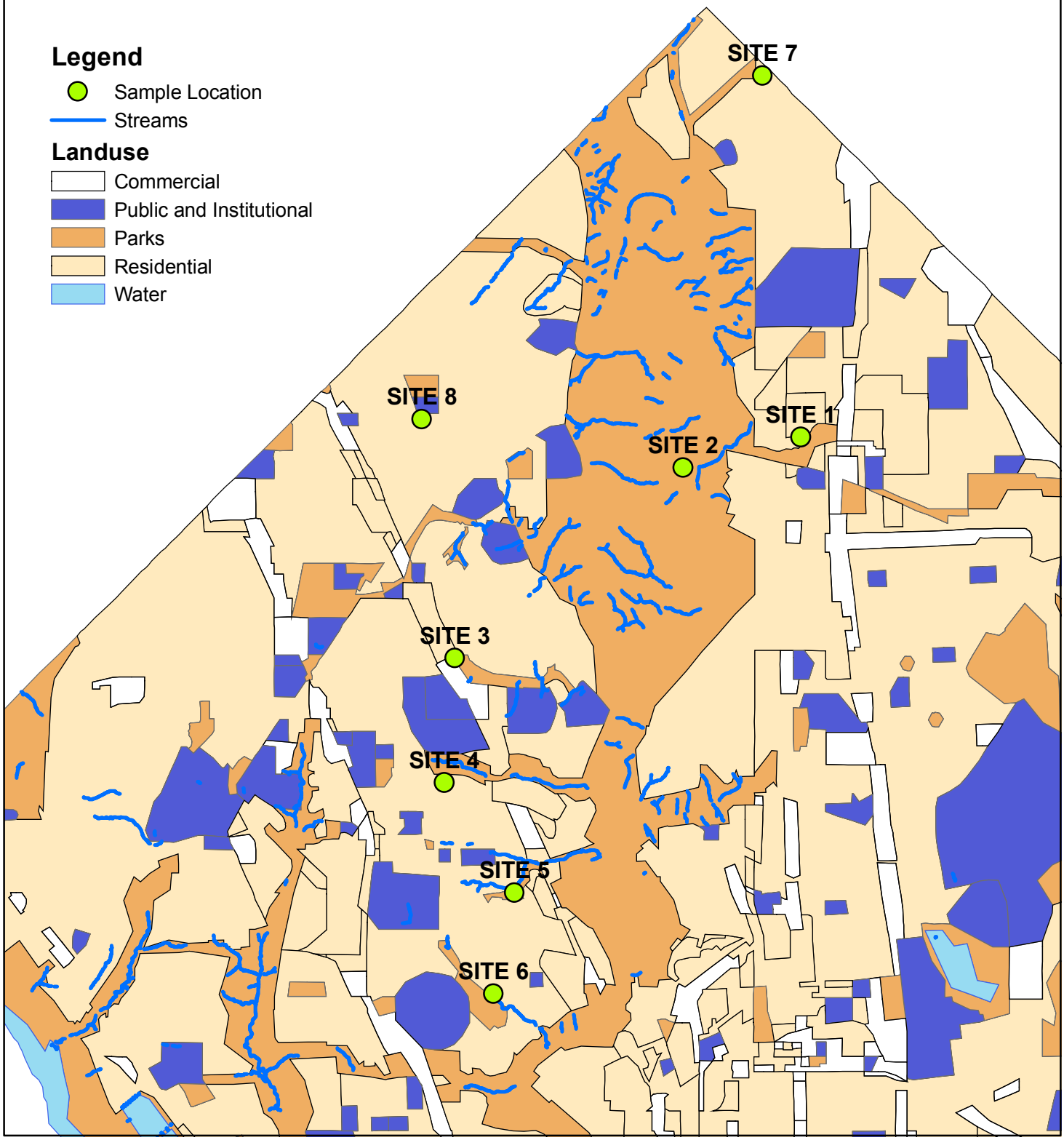
Monitoring Station 9: Oregon and Pinehurst.



Monitoring Station 10 (Archbold Parkway): Intersection of New Mexico Ave. and Garfield St., NW

APPENDIX B

Land Use Types for Rock Creek Storm Monitoring Stations



Rock Creek Land Uses at MS4 Monitoring Sites

APPENDIX C

Quality Assurance Project Plan (QAPP)

1.0 Project Organization

The District of Columbia, District Department of the Environment (DDOE), Water Quality Division, under mandate of the EPA, has developed a storm water monitoring program to determine quantities of non-point source pollution entering the Anacostia River, Rock Creek, and Potomac River subwatersheds via the Municipal Separate Storm Water Sewer System (MS4).

EA Engineering, Science, and Technology, Inc. (EA) has been contracted by the District of Columbia to implement the storm water-monitoring program. EA is responsible for providing all equipment, personnel, sample collectors, and data necessary to carry out the program. Below are the names and responsibilities of persons involved in this program.

EA personnel
Mr. Richard Price will be serving as the Project Manager for this project.

Mr. Quoc Ngyuen will be responsible for all the site monitoring activities including but not limited to the operation and maintenance of sampling equipment, sampling of storm water during storm events and coordination of analytical lab activities.

District of Columbia Personnel
Ms. Nicoline Schulterbrandt, DDOE, Water Quality Division will be acting as the Districts project manager and be responsible for the coordination of lab results for the District and production of all reports required by the EPA.

2.0 Project Description

Non-point source pollution is a growing concern among environmental organizations across the country; non-point source pollution has become the primary contributor of pollutants to receiving waters. To better control pollutants in Municipal Separate Storm Sewer Systems, EPA issued storm water regulations in 1990 that apply to both municipal and industrial activity and both large and medium municipalities. Also contained within these regulations is the requirement that municipalities and industries apply for NPDES permit to discharge storm water runoff.

The District's current MS4 permit specifies representative sampling locations for each of the three subwatersheds designated within the MS4 area of the District: Anacostia River, Rock Creek, and Potomac River. One subwatershed is monitored in each calendar year on a three-year rotating basis. Each of the sites is to be monitored for at least three wet weather events per year. At sites with dry weather flows, dry weather screening samples are collected two times per year as part of the District's dry weather screening program. Samples are collected in accordance with the Permit and monitoring requirements at 40 CFR 122.26 (d)(2)(iii), by EA staff.

The District is required to develop and implement a wet/dry-weather monitoring program for the MS4 to provide the necessary data to determine and report the effectiveness of control measures implemented under the Storm Water Management Program (SWMP). Regulations require that estimates be made of the annual cumulative pollutant loading from the MS4, to estimate and report the mean concentrations and seasonal pollutants in the discharges from major outfalls identify and identify water quality improvements or degradation.

2.1 Description of Sampling Program

EA will be responsible for implementing the wet/dry storm water monitoring program. EA will perform sampling of the wet weather events by installing automatic samplers (where possible) at specified locations within the Anacostia River, Rock Creek, and Potomac River subwatersheds listed in Table 1. Sampling will commence with the first rain event that is a minimum of $\geq$0.1 inches and that is a minimum of 72 h from the last reported rain event ($\geq$ 0.1").

EA will conduct dry weather sampling at each of the three subwatershed stations that have dry weather flows (Table 2). Some stations do not have flows during dry weather and therefore will not be sampled for this program. For those stations with dry weather flows, sampling will be conducted twice during the required monitoring period.

Table 1. Permitted and Non-permitted(*) Sampling Locations for Anacostia River, Rock Creek, and Potomac River Subwatersheds.

Anacostia River
(1) Stickfoot Sewer – 2400 block of Martin Luther King Jr. Ave. SE, near Metro bus entrance
(2) O St. Storm Water Pump Station – 125 O St. SE – Just outside front gate at O St. Pump Station
(3) Anacostia High School – Corner of 17th St. and Minnesota Ave. SE
(4) Gallatin & 14th St. NE – Across from the intersection of 14th St. and Gallatin St in large outfall
(5) Varnum & 19th Place, NE -2100 Block of Varnum St.
(6) Nash Run – intersection of Anacostia Drive and Polk St. NE
(7) East Capital St. – 200 Block of Oklahoma Ave. at intersection with D St. NE
(8) Ft. Lincoln – Newton BMP- in the brush along the side of New York Ave. West after the bridge
(9) Hickey Run – 33rd and V Streets, NE, across road from post office access
Rock Creek
(1) Walter Reed - Fort Stevens Drive
(2) Military Road and Beach Drive
(3) Soapstone Creek - Connecticut Avenue and Ablemarle Street
(4) Melvin Hazen Valley Branch - Melvin Hazen Park and Quebec Street
(5) Klingle Valley Creek - Devonshire Place and 30th Street
(6) Normanstone Creek - Normanstone Drive and Normanstone Parkway
(7) Portal & 16th Street *
(8) Broad Branch – Broad Branch and 30th Street, NW, near Ivory Coast Embassy *
(9) Oregon and Pinehurst *
(10) Archbold - Intersection of New Mexico Ave. and Garfield St., NW *

Potomac River
(1) Battery Kemble Creek- 49th and Garfield Streets, NW
(2) Foundary Branch- at Van Ness and Upton Streets, NW in the park
(3) Dalecarlia Tributary- Van Ness Street and Dalecarlia Pkwy
(4) Oxon Run- Mississippi Avenue and 15th Street, SE
(5) Tidal Basin- 12th Street and Constitution Avenue, NW
(6) Washington Ship Channel- 14th and Main, SW
(7) C and O Canal-Potomac Ave. and Foxhall Road, NW

Table 2. Dry Weather Sampling Locations for Anacostia River, Rock Creek, and Potomac River Subwatersheds.

Anacostia River
(1) Stickfoot Sewer – 2400 block of Martin Luther King Jr. Ave. SE, near Metro bus entrance
(3) Anacostia High School – Corner of 17th St. and Minnesota Ave. SE
(4) Gallatin & 14th St. NE – Across from the intersection of 14th St. and Gallatin St in large outfall
(5) Varnum & 19th Place, NE -2100 Block of Varnum St.
Rock Creek
(1) Walter Reed - Fort Stevens Drive
(2) Military Road and Beach Drive
(3) Soapstone Creek - Connecticut Avenue and Ablemarle Street
(4) Melvin Hazen Valley Branch - Melvin Hazen Park and Quebec Street
(5) Klingle Valley Creek - Devonshire Place and 30th Street
(6) Normanstone Creek - Normanstone Drive and Normanstone Parkway
Potomac River
(2) Foundary Branch- at Van Ness and Upton Streets, NW in the park
(4) Oxon Run- Mississippi Avenue and 15th Street, SE
(6) Washington Ship Channel- 14th and Main, SW
(7) C and O Canal-Potomac Ave. and Foxhall Road, NW

Qualified EA sampling personnel will maintain records of the date and duration (in hours) of the storm event sampled; rainfall measurements (in inches) of the storm event that generated the runoff; the duration (in hours) between the storm events sampled and the end of the previous measurable storm event; and an estimate of the total volume in gallons of the discharged sampled.

Results obtained from the sampling activities will be used to determine if discharges from the District's MS4 meet the requirements of 40 CFR 122.26 (d) (iv) and the provisions of the Clean Water Act for all areas within the District according to Table 2 of the NPDES Permit. Permit number DC 0000221.

All field data collected by EA as well as analytical laboratory results obtained from EA's contracted labs will be forwarded to the District for use in generating the annual Discharge Monitoring Report (DMR) and similar reports required by the permit. These reports and monitoring data are submitted to EPA for approval.

3.0 Wet Weather Monitoring

Flow-proportioned composite samples will be collected at all monitoring sites from the three subwatersheds listed in Table 1. Composite samples consist of a mixture of aliquots collected at a constant flow interval, where the volume of each aliquot is proportional to the flow rate of the discharge. Samples will be analyzed for a series of parameters listed in the District's MS4 permit (Appendix A).

Grab samples will be collected during the first two hours of discharge and will be used for the analysis of cyanide, oil, and grease, fecal coliform, fecal streptococcus, total phenols, volatile temperature, residual chlorine, and dissolved oxygen. The field tests will be analyzed by the qualified personnel in accordance EPA methods (Table 3).

Table 3. Field Test Parameters and Methods

Parameter	Method
pH	EPA 150
Temperature	EPA 170.1
Residual Chlorine	EPA 330
Dissolved Oxygen	EPA 360.1

Samples will also be analyzed in a qualified laboratory for various other constituents that will be reported on pre-printed DMR forms provided by EPA (Table 4).

Table 4. Additional Parameters Required for DMR Forms

Monitoring Requirements	Monitoring Frequency
pH	3 times per year
Temperature	3 times per year
Total ammonia nitrogen, organic nitrogen, and total nitrogen	3 times per year
Volatile organic compounds	3 times per year
Acid extractable compounds	3 times per year
Base/neutral extractable compounds	3 times per year
Pesticides/PCBs	3 times per year
Metals, cyanide, and phenols	3 times per year
Conventional pollutants	3 times per year
Hardness	3 times per year

4.0 Dry Weather Monitoring

During dry periods a grab sample will be collected from specified locations listed in Table 2, two times per year. Grab samples will be collected and analyzed per EPA requirements (see Appendix A). In conjunction with these grab samples the following field tests will be performed: pH, temperature, residual chlorine, and dissolved oxygen. The field tests will be analyzed by qualified personnel in accordance EPA methods (Table 2). Samples will also be

analyzed in a qualified laboratory for various other constituents that will be reported on pre-printed DMR forms provided by EPA (Table 4).

5.0 Data Quality Objectives

To ensure that no sample contamination occurs while samples are being transported, split, or stored, EA sampling personnel will implement the use of trip blanks, field blanks, and field duplicates. Trip blanks will be obtained from laboratory and carried throughout sample collection activities. Trip blanks will be performed once per sampling event for all parameters. Field blanks will be filled in the field at the time of the sample collection to show that any detections found in storm water samples were not a result of outside contamination, but actually present in the sample at the time of collection. Field duplicates will be collected once for every 10 samples collected and submitted to the labs for analysis. All trip blanks, field blanks and field duplicates will be performed in accordance with Chapter 1 of SW 846.

Upon collection of samples, all sampling bottles will be capped immediately. Composite samples will be split and prepared in a laboratory. Grab sample activities will use new bottles for every parameter sampled. Automatic sampler tubing will be rinsed with DI water and purged with water from the site. EA will use all these controls to ensure that outside contamination of the samples does not occur and that integrity of samples and data is of the highest quality. The quality of the data obtained from this storm water monitoring program will be of the same quality to compare to other NPDES and non-point source monitoring data currently being compiled by EPA.

5.1 Sample Handling and Chain of Custody

Composite samples will be collected by ISCO 6700 series automatic samplers which will be operated, maintained, and calibrated by qualified EA personnel. Samples will be collected in an iced 5-gallon glass bottle. After the completion of a sampling event, the 5 gallon bottle will be removed from the sampler, capped immediately and placed on ice in coolers for transport to a location identified by EA personnel. Immediately upon arrival, samples will be split into various sized containers with the appropriate preservation and placed in a locked refrigerator until delivery to the laboratory. A courier for the contracted laboratory will pick up the samples and transport them to the laboratory. The 5-gallon glass bottles will then be washed for use with the next sampling event. The glass bottles will be washed according to the procedures in Appendix B. A chain of Custody form (as shown in Appendix C) will be completed starting at the time of the sample collection until analysis at the laboratory. The sample handling procedure will ensure that each parameters holding time is not exceeded.

5.2 Sampling and Analysis Methods

Samples will be collected and analyzed in accordance with EPA approved methods as described in 40 CFR 136. See Appendix A for specific parameters and methods listings.

5.3 Laboratory Quality Control

Samples will be sent to an EA contracted laboratory, which is required to comply with all required EPA method QA/QC procedures.

5.4 Data Management and Validation

After completion of the laboratory analysis, a completed data sheet will be sent to EA in Adobe Acrobat and Excel spreadsheet form. The data sheets will contain the completed chain of custody from along with the analysis methods, analysis time, and date and any comments regarding the analysis. The data results will then be reviewed to ensure the proper QA/QC procedures were used and to identify any questionable data. All issues with data reliability will be investigated with explanation offered to accept, reject, or qualify the data.

5.5 Reports to Management

Upon final review, full copies of laboratory data, rainfall data, and field observations will be forwarded to Ms. Nicoline Schulterbrandt, DDOE Water Quality Division.

APPENDIX A

SAMPLE ANALYSIS REQUIREMENTS FOR WET AND DRY WEATHER SAMPLING

SAMPLE ANALYSIS REQUIREMENTS

Bottle Type	Sample Type	Parameter	Method	Units	MDL
1-L Plastic Unpreserved	Composite	Biochemical Oxygen Demand	SM5210B	mg/L	<5.0
		Total Dissolved Solids	SM2540C	mg/L	<1.0
		Total Suspended Solids	SM2540D	mg/L	<1.0
500 mL Plastic H_2SO_4	Composite	Ammonia Nitrogen	SM4500-NH3-E	mg/L	<1.0
		Phosphorus, Total	EPA 365.3	mg/L	<0.05
		Nitrite + Nitrate	EPA 353.2	mg/L	<0.05
		Chemical Oxygen Demand	EPA 410.4	mg/L	<10.0
		Total Kjeldahl Nitrogen	EPA 351.3	mg/L	<0.5
250 mL Plastic, Filtered, H_2SO_4	Composite	Phosphorus, Dissolved	EPA 365.3	mg/L	<0.5
1000 mL Plastic HNO_3	Composite	Hardness, Total	EPA 130.2	mg/L	
		Antimony, Total	EPA 200.8	µg/L	0.21
		Arsenic, Total	EPA 200.8	µg/L	0.25
		Beryllium, Total	EPA 200.8	µg/L	0.22
		Cadmium, Total	EPA 200.8	µg/L	0.22
		Chromium, Total	EPA 200.8	µg/L	0.18
		Copper, Total	EPA 200.8	µg/L	1.52
		Lead, Total	EPA 200.8	µg/L	0.23
		Mercury, Total (by cold vapor)	EPA 245.1	µg/L	0.20
		Nickel, Total	EPA 200.8	µg/L	0.46
		Selenium, Total	EPA 200.8	µg/L	0.31
		Silver, Total	EPA 200.8	µg/L	0.35
		Thallium, Total	EPA 200.8	µg/L	0.21
		Zinc, Total	EPA 200.8	µg/L	1.52
(2) 1-L Glass Amber	Grab	Dioxin (2,3,7,8) TCDD	EPA 1613	pg/L	4.4
1000 mL Plastic, Sterile	Grab	Fecal Coliform	SM9221E	MPN	
		Fecal Streptococcus	SM9230B	MPN	
250 mL Plastic, NaOH	Grab	Cyanide, Total	EPA 335.2	mg/L	<0.01
(2) 1-L Glass Amber Unpreserved	Composite	BNA Compounds	EPA 625	µg/L	Various
(2) 40 mL Glass Vials Teflon Lids	Grab	Volatile Organic Compound	EPA 624	µg/L	0.5
1-L Glass Amber H_2SO_4 Teflon Lids	Grab	Phenols, Total	EPA 420.2	mg/L	1.9
1-L Glass Amber H_2SO_4 Teflon Lids	Composite	PCBs / Pesticides	EPA 608	µg/L	0.01-1.7
1-L Glass Amber Teflon Lids	Composite	PCBs	EPA 8082 modified	ng/L	0.25-5.0
1-L Glass Amber 1:1 HCl	Grab	Fats (oil and grease)	EPA 1664	mg/L	1.6
100 mL Plastic	Composite	Chlorophyll-a	SM 10020H2	mg/m^3	2
500 mL Plastic H_2SO_4	Composite	Total Ammonia + Organic Nitrogen (TKN)	EPA 351.3	mg/L	0.2
	Field Test	Dissolved Oxygen	EPA 360.1	mg/L	N/A
500 mL Plastic H_2SO_4	Composite	Organic Nitrogen	TKN – NH3	mg/L	N/A
500 mL Plastic H_2SO_4	Composite	Total Nitrogen	NO2 + NO3 + TKN	mg/L	N/A

APPENDIX B

SAMPLE CONTAINER CLEANING PROCEDURES

SAMPLE CONTAINER CLEANING PROCEDURES

The following cleaning treatment sequence has been determined to be adequate to minimize contamination in the automatic smapling container, whether borosilicate glass, linear polytehtylene, polypropylene, or Teflon:

Cleaning Treatment Sequence:

1. Phosphate-free detergent
2. rinse 3 times with tap water
3. nitric acid (1:1 solution)
4. rinse 3 times with tap water
5. hydrochloric acid (1:1 solution)
6. rinse 3 times with tap water
7. rinse 5 times with reagent-grade water

APPENDIX C

SAMPLE CHAIN OF CUSTODY FORM

Microbac

Baltimore Division
Baltimore, MD 21224
Tel: 410-633-1800
Fax: 410-633-6553
www.microbac.com

Sample Submittal
Chain of Custody Record

Work Order Number:

Page ____ of ____

Client Name	Project	Turnaround Time (Required)	QC and EDD Type (Required)	
Address	Location	[ ] Routine (10 working days)	[ ] Level I	[ ] EDD
City, State, Zip	PO #	[ ] RUSH* (notify lab)	[ ] Level II	Format:
Contact	Compliance Monitoring? [ ] Yes [ ] No	_____ (needed by)	[ ] Level III	Comments:
Telephone #	(1)Agency/Program		[ ] Level IV CLP-like	

Sampled by (PRINT) _____ **Sampler Signature** _____ **Sampler Phone #** _____

Send Report via [ ] e-mail (address) _____ [ ] Mail [ ] Telephone [ ] Fax (fax #) _____

* **Matrix Types:** Soil/Solid (S), Sludge, Oil, Wipe, Drinking Water (DW), Groundwater (GW), Surface Water (SW), Waste Water (WW), Other (specify)

Client Sample ID	Matrix*	Grab	Composite	Filtered	Date Collected	Time Collected	No. of Containers	Requested Analysis									Comments

Possible Hazard Identification [ ] Hazardous [ ] Non-Hazardous [ ] Radioactive **Sample Disposition** [ ] Dispose as appropriate [ ] Return [ ] Archive

Number of Containers: / Cooler Number: / Temp upon receipt(°C): / Sample Received on Ice or Refrigerated from Client: Yes / No	Relinquished By (signature)	Printed Name/Affiliation	Date/Time	Received By (signature)	Printed Name/Affiliation
	Relinquished By (signature)	Printed Name/Affiliation	Date/Time	Received By (signature)	Printed Name/Affiliation
	Relinquished By (signature)	Printed Name/Affiliation	Date/Time	Received for Lab By (signature)	Printed Name/Affiliation

APPENDIX D

DMR Forms for Rock Creek Storm Monitoring Stations:

2. Military Road and Beach Drive
3. Soapstone Creek
5. Klingle Valley Creek

(EPA will release the Official DMR forms for Walter Reed, Melvin Hazen Valley Branch, and Normanstone Creek in October 2007.)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-0004

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

NAME: GOVERNMENT OF THE DISTRICT OF
ADDRESS: 441 4TH STREET, N.W.
WASHINGTON, DC 20001
FACILITY: GOVERNMENT OF THE DC
LOCATION: 441 4TH STREET, N.W.
WASHINGTON, DC 20001
ATTN:jeffrey boltz

DC0000221	MS2A
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	06	09	01	TO	07	08	31

DMR MAILING ZIP CODE: 20032
MAJOR

MILITARY ROAD AND BEACH DRIVE
External Outfall

No Discharge ☐

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
Temperature, water deg. fahrenheit	SAMPLE MEASUREMENT	******	******		******	******	84.2		0		
00011 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	deg F		Three Per Year	GRAB
BOD, 5-day, 20 deg. C	SAMPLE MEASUREMENT	******	******		******	******	61		0		
00310 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
pH	SAMPLE MEASUREMENT	******	******		6.20	******	7.58		0		
00400 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		Req. Mon. MINIMUM	******	Req. Mon. ANNL MAX	SU		Three Per Year	GRAB
Solids, total suspended	SAMPLE MEASUREMENT	******	******		******	******	82		0		
00530 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Oil & grease	SAMPLE MEASUREMENT	******	******		******	******	8		0		
00556 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	GRAB
Nitrogen, total (as N)	SAMPLE MEASUREMENT	******	******		******	******	2.4		0		
00600 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Nitrogen, organic total (as N)	SAMPLE MEASUREMENT	******	******		******	******	1.2		0		
00605 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Dr. Hamid Karimi	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations	3/15/10	202-535-2244		07	8	14
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA Code	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

ROCK CREEK WATERSHEDM WATER MONITORING LOCATION NAME CHANGED TO MILITARY ROAD AND BEACH DRIVE. MON. IS QRTLY, REPORTED ANNLLMON. IS QRTLY, REPORTED ANNLY.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-0004

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

NAME: GOVERNMENT OF THE DISTRICT OF
ADDRESS: 441 4TH STREET, N.W.
WASHINGTON, DC 20001

FACILITY: GOVERNMENT OF THE DC
LOCATION: 441 4TH STREET, N.W.
WASHINGTON, DC 20001

ATTN:jeffrey boltz

DC0000221	MS2A
PERMIT NUMBER	**DISCHARGE NUMBER**

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	06	09	01	TO	07	08	31

DMR MAILING ZIP CODE: 20032
MAJOR

MILITARY ROAD AND BEACH DRIVE
External Outfall

No Discharge ☐

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
Nitrogen, ammonia total (as N)	SAMPLE MEASUREMENT	******	******		******	******	0		0		
00610 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Nitrogen, Kjeldahl, total (as N)	SAMPLE MEASUREMENT	******	******		******	******	1.2		0		
00625 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Nitrite plus nitrate total 1 det. (as N)	SAMPLE MEASUREMENT	******	******		******	******	1.2		0		
00630 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Phosphorus, total (as P)	SAMPLE MEASUREMENT	******	******		******	******	0.21		0		
00665 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Phosphorus, dissolved	SAMPLE MEASUREMENT	******	******		******	******	0.066		0		
00666 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Cyanide, total (as CN)	SAMPLE MEASUREMENT	******	******		******	******	0.083		0		
00720 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	GRAB
Hardness, total (as CaCO3)	SAMPLE MEASUREMENT	******	******		******	******	250		0		
00900 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Dr. Hamid Karimi	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	8/15/07	202-535-2244		07	8	14
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA Code	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

ROCK CREEK WATERSHEDM WATER MONITORING LOCATION NAME CHANGED TO MILITARY ROAD AND BEACH DRIVE. MON. IS QRTLY, REPORTED ANNLLMON. IS QRTLY, REPORTED ANNLY.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-0004

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

NAME: GOVERNMENT OF THE DISTRICT OF
ADDRESS: 441 4TH STREET, N.W.
WASHINGTON, DC 20001

FACILITY: GOVERNMENT OF THE DC
LOCATION: 441 4TH STREET, N.W.
WASHINGTON, DC 20001

ATTN:jeffrey boltz

DC0000221	MS2A
PERMIT NUMBER	DISCHARGE NUMBER

DMR MAILING ZIP CODE: 20032
MAJOR

MILITARY ROAD AND BEACH DRIVE
External Outfall

No Discharge ☐

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	06	09	01	TO	07	08	31

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
Fecal streptococci, MF m-enterococcus ag	SAMPLE MEASUREMENT	******	******		******	******	80,000		0		
31679 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	#/100mL		Three Per Year	GRAB
Base/neutral compounds	SAMPLE MEASUREMENT	******	******		******	******	36		0		
32015 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Acid compounds	SAMPLE MEASUREMENT	******	******		******	******	0		0		
32020 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
PCB-1016	SAMPLE MEASUREMENT	******	******		******	******	0		0		
34671 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
PCB-1221	SAMPLE MEASUREMENT	******	******		******	******	0		0		
39488 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
PCB-1232	SAMPLE MEASUREMENT	******	******		******	******	0		0		
39492 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
PCB-1242 bot. dep., dry solid	SAMPLE MEASUREMENT	******	******		******	******	0		0		
39499 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Dr. Hamid Karimi	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	8/5/07	202-535-2244	07	8	14
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA Code NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

ROCK CREEK WATERSHEDM WATER MONITORING LOCATION NAME CHANGED TO MILITARY ROAD AND BEACH DRIVE. MON. IS QRTLY, REPORTED ANNLLMON. IS QRTLY, REPORTED ANNLY.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-0004

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

NAME: GOVERNMENT OF THE DISTRICT OF
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FACILITY: GOVERNMENT OF THE DC
LOCATION: 441 4TH STREET, N.W.
WASHINGTON, DC 20001

ATTN:jeffrey boltz

DC0000221	MS2A
PERMIT NUMBER	**DISCHARGE NUMBER**

MONITORING PERIOD							
	YEAR	MO	DAY		YEAR	MO	DAY
FROM	06	09	01	TO	07	08	31

DMR MAILING ZIP CODE: 20032
MAJOR

MILITARY ROAD AND BEACH DRIVE
External Outfall

No Discharge ☐

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
PCB-1248	SAMPLE MEASUREMENT	******	******		******	******	0		0		
39500 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
PCB-1254	SAMPLE MEASUREMENT	******	******		******	******	0		0		
39504 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
PCB-1260	SAMPLE MEASUREMENT	******	******		******	******	0		0		
39508 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Phenols	SAMPLE MEASUREMENT	******	******		******	******	0.11		0		
46000 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	GRAB
Solids, total dissolved (TDS)	SAMPLE MEASUREMENT	******	******		******	******	720		0		
70296 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Pesticides, general	SAMPLE MEASUREMENT	******	******		******	******	0		0		
74053 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Four Per Year	COMPOS
Coliform, fecal general	SAMPLE MEASUREMENT	******	******		******	******	40,000		0		
74055 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	#/100mL		Three Per Year	GRAB

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Dr. Hamid Karimi	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations	8/5/10	202-535-2244		07	8	14
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA Code	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

ROCK CREEK WATERSHEDM WATER MONITORING LOCATION NAME CHANGED TO MILITARY ROAD AND BEACH DRIVE. MON. IS QRTLY, REPORTED ANNLLMON. IS QRTLY, REPORTED ANNLY.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-0004

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

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ATTN:jeffrey boltz

DC0000221	MS2A
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	06	09	01	TO	07	08	31

DMR MAILING ZIP CODE: 20032
MAJOR

MILITARY ROAD AND BEACH DRIVE
External Outfall

No Discharge ☐

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
Metals, total	SAMPLE MEASUREMENT	******	******		******	******	0.302		0		
78240 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Volatile compounds, (GC/MS)	SAMPLE MEASUREMENT	******	******		******	******	0		0		
78732 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	GRAB
Chemical Oxygen Demand (COD)	SAMPLE MEASUREMENT	******	******		******	******	270		0		
81017 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE	DATE		
Dr. Hamid Karimi	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	8/5/07	202-535-2244	07	8	14
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA Code NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

ROCK CREEK WATERSHEDM WATER MONITORING LOCATION NAME CHANGED TO MILITARY ROAD AND BEACH DRIVE. MON. IS QRTLY, REPORTED ANNLLMON. IS QRTLY, REPORTED ANNLY.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-0004

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

NAME: GOVERNMENT OF THE DISTRICT OF
ADDRESS: 441 4TH STREET, N.W.
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FACILITY: GOVERNMENT OF THE DC
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WASHINGTON, DC 20001

ATTN:jeffrey boltz

DC0000221	MS3A
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	06	09	01	TO	07	08	31

DMR MAILING ZIP CODE: 20032
MAJOR

SOAPSTONE CRK CONNETICUT AVE
External Outfall

No Discharge ☐

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
Temperature, water deg. fahrenheit	SAMPLE MEASUREMENT	******	******		******	******	80.6		0		
00011 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	deg F		Three Per Year	GRAB
BOD, 5-day, 20 deg. C	SAMPLE MEASUREMENT	******	******		******	******	61		0		
00310 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
pH	SAMPLE MEASUREMENT	******	******		6.95	******	7.60		0		
00400 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		Req. Mon. MINIMUM	******	Req. Mon. ANNL MAX	SU		Three Per Year	GRAB
Solids, total suspended	SAMPLE MEASUREMENT	******	******		******	******	89		0		
00530 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Oil & grease	SAMPLE MEASUREMENT	******	******		******	******	5		0		
00556 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	GRAB
Nitrogen, total (as N)	SAMPLE MEASUREMENT	******	******		******	******	13		0		
00600 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Nitrogen, organic total (as N)	SAMPLE MEASUREMENT	******	******		******	******	1.6		0		
00605 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Dr. Hamid Karimi	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	8/15/10	202-535-2244		07	8	14
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA Code	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

ROCK CREEK WATERSHEDHIGH SCHOOL MONITORING LOCATION NAME CHANGED TO SOAPSTONE CREEK (CONNECTICUT AVE. AND ABLEMARLE STREET.MON. IS QRTLY, REPORTED ANNLY.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-0004

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

NAME: GOVERNMENT OF THE DISTRICT OF
ADDRESS: 441 4TH STREET, N.W.
WASHINGTON, DC 20001

FACILITY: GOVERNMENT OF THE DC
LOCATION: 441 4TH STREET, N.W.
WASHINGTON, DC 20001

ATTN:jeffrey boltz

DC0000221	MS3A
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	06	09	01	TO	07	08	31

DMR MAILING ZIP CODE: 20032
MAJOR

SOAPSTONE CRK CONNETICUT AVE
External Outfall

No Discharge ☐

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
Nitrogen, ammonia total (as N)	SAMPLE MEASUREMENT	******	******		******	******	0		0		
00610 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Nitrogen, Kjeldahl, total (as N)	SAMPLE MEASUREMENT	******	******		******	******	1.6		0		
00625 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Nitrite plus nitrate total 1 det. (as N)	SAMPLE MEASUREMENT	******	******		******	******	13		0		
00630 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Phosphorus, total (as P)	SAMPLE MEASUREMENT	******	******		******	******	0.43		0		
00665 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Phosphorus, dissolved	SAMPLE MEASUREMENT	******	******		******	******	0.27		0		
00666 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Cyanide, total (as CN)	SAMPLE MEASUREMENT	******	******		******	******	0.0027		0		
00720 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	GRAB
Hardness, total (as CaCO3)	SAMPLE MEASUREMENT	******	******		******	******	370		0		
00900 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Dr. Hamid Karimi	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	8/15/07	202-535-2244		07	8	14
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA Code	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

ROCK CREEK WATERSHEDHIGH SCHOOL MONITORING LOCATION NAME CHANGED TO SOAPSTONE CREEK (CONNECTICUT AVE. AND ABLEMARLE STREET MON. IS QRTLY, REPORTED ANNLY.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-0004

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

NAME: GOVERNMENT OF THE DISTRICT OF
ADDRESS: 441 4TH STREET, N.W.
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FACILITY: GOVERNMENT OF THE DC
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ATTN:jeffrey boltz

DC0000221	MS3A
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	06	09	01	TO	07	08	31

DMR MAILING ZIP CODE: 20032
MAJOR

SOAPSTONE CRK CONNETICUT AVE
External Outfall

No Discharge ☐

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
Fecal streptococci, MF m-enterococcus ag	SAMPLE MEASUREMENT	******	******		******	******	170,000		0		
31679 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	#/100mL		Three Per Year	GRAB
Base/neutral compounds	SAMPLE MEASUREMENT	******	******		******	******	65		0		
32015 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Acid compounds	SAMPLE MEASUREMENT	******	******		******	******	0		0		
32020 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
PCB-1016	SAMPLE MEASUREMENT	******	******		******	******	0		0		
34671 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
PCB-1221	SAMPLE MEASUREMENT	******	******		******	******	0		0		
39488 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
PCB-1232	SAMPLE MEASUREMENT	******	******		******	******	0		0		
39492 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
PCB-1242 bot. dep., dry solid	SAMPLE MEASUREMENT	******	******		******	******	0		0		
39499 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Dr. Harold Karimi	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	8/15/07	202-535-2244		07	8	14
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COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

ROCK CREEK WATERSHEDHIGH SCHOOL MONITORING LOCATION NAME CHANGED TO SOAPSTONE CREEK (CONNECTICUT AVE. AND ABLEMARLE STREET.MON. IS QRTLY, REPORTED ANNLY.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-0004

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ATTN:jeffrey boltz

DC0000221	MS3A
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	06	09	01	TO	07	08	31

DMR MAILING ZIP CODE: 20032
MAJOR

SOAPSTONE CRK CONNETICUT AVE
External Outfall

No Discharge ☐

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
PCB-1248	SAMPLE MEASUREMENT	******	******		******	******	0		0		
39500 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
PCB-1254	SAMPLE MEASUREMENT	******	******		******	******	0		0		
39504 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
PCB-1260	SAMPLE MEASUREMENT	******	******		******	******	0		0		
39508 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Phenols	SAMPLE MEASUREMENT	******	******		******	******	0.085		0		
46000 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	GRAB
Solids, total dissolved (TDS)	SAMPLE MEASUREMENT	******	******		******	******	330		0		
70296 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Pesticides, general	SAMPLE MEASUREMENT	******	******		******	******	0		0		
74053 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Coliform, fecal general	SAMPLE MEASUREMENT	******	******		******	******	30,000		0		
74055 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	#/100mL		Three Per Year	COMPOS

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Dr. Hamid Karimi	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	5/15/07	202-535-2244		07	8	14
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NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

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PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

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ATTN:jeffrey boltz

DC0000221	MS3A
PERMIT NUMBER	**DISCHARGE NUMBER**

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	06	09	01	**TO**	07	08	31

DMR MAILING ZIP CODE: 20032
MAJOR

SOAPSTONE CRK CONNETICUT AVE
External Outfall

No Discharge ☐

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
Metals, total	SAMPLE MEASUREMENT	******	******		******	******	0.169		0		
78240 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	GRAB
Volatile compounds, (GC/MS)	SAMPLE MEASUREMENT	******	******		******	******	11		0		
78732 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	GRAB
Chemical Oxygen Demand (COD)	SAMPLE MEASUREMENT	******	******		******	******	220		0		
81017 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
Dr. Hamid Karimi	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	8/15/07	202-535-2244		07	8	14
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA Code	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

ROCK CREEK WATERSHEDHIGH SCHOOL MONITORING LOCATION NAME CHANGED TO SOAPSTONE CREEK (CONNECTICUT AVE. AND ABLEMARLE STREET.MON. IS QRTLY, REPORTED ANNLY.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-0004

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

NAME: GOVERNMENT OF THE DISTRICT OF
ADDRESS: 441 4TH STREET, N.W.
WASHINGTON, DC 20001

FACILITY: GOVERNMENT OF THE DC
LOCATION: 441 4TH STREET, N.W.
WASHINGTON, DC 20001

ATTN:jeffrey boltz

DC0000221	MS5A
PERMIT NUMBER	**DISCHARGE NUMBER**

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	06	09	01	TO	07	08	31

DMR MAILING ZIP CODE: 20032
MAJOR

KLINGLE VALLEY CREEK
External Outfall

No Discharge ☐

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
Temperature, water deg. fahrenheit	SAMPLE MEASUREMENT	******	******		******	******	70.9		0		
00011 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	deg F		Three Per Year	GRAB
BOD, 5-day, 20 deg. C	SAMPLE MEASUREMENT	******	******		******	******	51		0		
00310 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
pH	SAMPLE MEASUREMENT	******	******		7.20	******	7.50		0		
00400 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		Req. Mon. MINIMUM	******	Req. Mon. ANNL MAX	SU		Three Per Year	GRAB
Solids, total suspended	SAMPLE MEASUREMENT	******	******		******	******	52		0		
00530 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Oil & grease	SAMPLE MEASUREMENT	******	******		******	******	9		0		
00556 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	GRAB
Nitrogen, total (as N)	SAMPLE MEASUREMENT	******	******		******	******	2.6		0		
00600 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Nitrogen, organic total (as N)	SAMPLE MEASUREMENT	******	******		******	******	1.4		0		
00605 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS

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DC0000221	MS5A
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	06	09	01	TO	07	08	31

DMR MAILING ZIP CODE: 20032
MAJOR

KLINGLE VALLEY CREEK
External Outfall

No Discharge ☐

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
Nitrogen, ammonia total (as N)	SAMPLE MEASUREMENT	******	******		******	******	0		0		
00610 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Nitrogen, Kjeldahl, total (as N)	SAMPLE MEASUREMENT	******	******		******	******	1.4		0		
00625 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Nitrite plus nitrate total 1 det. (as N)	SAMPLE MEASUREMENT	******	******		******	******	1.2		0		
00630 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Phosphorus, total (as P)	SAMPLE MEASUREMENT	******	******		******	******	0.45		0		
00665 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Phosphorus, dissolved	SAMPLE MEASUREMENT	******	******		******	******	0.16		0		
00666 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Cyanide, total (as CN)	SAMPLE MEASUREMENT	******	******		******	******	0.01		0		
00720 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	GRAB
Hardness, total (as CaCO3)	SAMPLE MEASUREMENT	******	******		******	******	200		0		
00900 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	GRAB

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DMR MAILING ZIP CODE: 20032
MAJOR

KLINGLE VALLEY CREEK
External Outfall

No Discharge ☐

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
Fecal streptococci, MF m-enterococcus ag	SAMPLE MEASUREMENT	******	******		******	******	0		0		
31679 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	#/100mL		Three Per Year	GRAB
Base/neutral compounds	SAMPLE MEASUREMENT	******	******		******	12	27		0		
32015 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	Req. Mon. AVERAGE	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Acid compounds	SAMPLE MEASUREMENT	******	******		******	******	0		0		
32020 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
PCB-1016	SAMPLE MEASUREMENT	******	******		******	0	0		0		
34671 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	Req. Mon. AVERAGE	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
PCB-1221	SAMPLE MEASUREMENT	******	******		******	******	0		0		
39488 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
PCB-1232	SAMPLE MEASUREMENT	******	******		******	******	0		0		
39492 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
PCB-1242 bot. dep., dry solid	SAMPLE MEASUREMENT	******	******		******	******	0		0		
39499 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS

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DMR MAILING ZIP CODE: 20032
MAJOR

KLINGLE VALLEY CREEK
External Outfall

No Discharge ☐

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
PCB-1248	SAMPLE MEASUREMENT	******	******		******	******	0		0		
39500 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
PCB-1254	SAMPLE MEASUREMENT	******	******		******	******	0		0		
39504 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
PCB-1260	SAMPLE MEASUREMENT	******	******		******	******	0		0		
39508 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Phenols	SAMPLE MEASUREMENT	******	******		******	******	0.062		0		
46000 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	GRAB
Solids, total dissolved (TDS)	SAMPLE MEASUREMENT	******	******		******	******	450		0		
70296 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Pesticides, general	SAMPLE MEASUREMENT	******	******		******	******	0		0		
74053 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS
Coliform, fecal general	SAMPLE MEASUREMENT	******	******		******	******	80,000		0		
74055 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	#/100mL		Three Per Year	COMPOS

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DC0000221	MS5A
PERMIT NUMBER	**DISCHARGE NUMBER**

DMR MAILING ZIP CODE: 20032
MAJOR

KLINGLE VALLEY CREEK
External Outfall

No Discharge ☐

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	06	09	01	**TO**	07	08	31

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
Metals, total	SAMPLE MEASUREMENT	******	******		******	******	0.552		0		
78240 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	GRAB
Volatile compounds, (GC/MS)	SAMPLE MEASUREMENT	******	******		******	******	0		0		
78732 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	GRAB
Chemical Oxygen Demand (COD)	SAMPLE MEASUREMENT	******	******		******	******	230		0		
81017 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. ANNL MAX	mg/L		Three Per Year	COMPOS

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APPENDIX E

Complete Analytical Results for Rock Creek Storm Monitoring Stations

ROCK CREEK SUBWATERSHED
DRY WEATHER SAMPLING
(ROTATION 2-RAW DATA)

		Ft. Stevens Drive		Military and Beach		Soapstone		Hazen Park		Klingle Valley		Normanstone Creek		Portal and 16th St		Broad Branch		Oregon		Glover Archbold	
Parameter	**Units**	**DRY 1**	**DRY 2**	**DRY 1**	**DRY 2**	**DRY 1**	**DRY 2**	**DRY 1**	**DRY 2**	**DRY 1**	**DRY 2**	**DRY 1**	**DRY 2**	**DRY 1**	**DRY 2**	**DRY 1**	**DRY 2**	**DRY 1**	**DRY 2**	**DRY 1**	**DRY 2**
1,1,1-TRICHLOROETHANE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-TRICHLOROETHANE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DICHLOROETHANE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-TRICHLOROBENZENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROBENZENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROETHANE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROPROPANE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-DICHLOROBENZENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-DICHLOROBENZENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-DIMETHYLPHENOL	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-DINITROPHENOL	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-DINITROTOLUENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-DINITROTOLUENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-CHLOROETHLYVINYL ETHER	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-CHLOROPHENOL	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-NITROPHENOL	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,3'-DICHLOROBENZIDINE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDD	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDT	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,6-DINITRO-2-METHYLPHENOL	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-CHLORO-3-METHYLPHENOL	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-CHLOROPHENYLPHENYLETHER	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ACENAPHTHENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ACENAPHTHYLENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ACID COMPOUNDS	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ACROLEIN	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ACRYLONITRILE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ALDRIN	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ALPHA-BHC	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ANTHRACENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ANTIMONY, TOTAL	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0079	ND	ND	ND	ND	ND	ND	ND	ND	ND
AROCLOR 1016	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AROCLOR 1221	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AROCLOR 1232	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AROCLOR 1242	NG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AROCLOR 1248	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AROCLOR 1254	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AROCLOR 1260	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ARSENIC, TOTAL	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	0.0044	ND	0.004	ND	0.0036	ND	0.0042	0.002	0.0031
BENZIDINE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BENZO(A)ANTHRACENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BENZO(A)PYRENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BENZO(B)FLUORANTHENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BENZO(G,H,I)PERYLENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BERYLLIUM, TOTAL	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BETA-BHC	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BIS(2-CHLOROETHOXY)METHANE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BIS(2-CHLOROETHYL)ETHER	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BIS(2-CHLOROISOPROPYL)ETHER	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	150	ND	ND	ND	23	ND	ND
BOD5	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	5.2	ND	7.7	ND	5.6	ND	11	13	ND
BODU	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	9.36	ND	13.9	ND	10.1	ND	19.8	23.4	ND
BROMODICHLOROMETHANE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOFORM	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BUTYLBENZYLPHTHALATE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CARBON TETRACHLORIDE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLORDANE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROBENZENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROETHANE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROFORM	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROMETHANE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROPHYLL-A	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.8		0.5		5		3.6		1.1
CHROMIUM, TOTAL	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0032	ND	0.0067	0.0052	0.0033	0.0026	0.0052	0.0038	0.0031	ND
CHRYSENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CIS-1,3-DICHLOROPROPENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
COD	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	30	20	42	ND	48	ND	50	72	23
COPPER, TOTAL	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0023	0.081	0.029	0.027	ND	0.041	ND	0.042	0.023	0.017
CYANIDE, TOTAL	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0051	ND	0.0065	ND	ND	0.0041	0.0018	0.0015	0.0044	0.029
DELTA-BHC	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DIBENZ(A,H)ANTHRACENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DIBROMOCHLOROMETHANE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DICHLOROBROMOMETHANE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA										
DIETHYLPHTHALATE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	14	ND	35	ND	43	ND	ND
DIMETHYLPHTHALATE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DI-N-BUTYLPHTHALATE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DI-N-OCTYL PHTHALATE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DIOXIN (2,3,7,8-TCDD)	PG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.55	0.48	0.62	0.4	1.15	0.52	0.8	0.38	0.65	0.36
DISSOLVED PHOSPHORUS	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.1	0.27	0.27	0.16	0.016	0.16	0.016	0.16	0.68	0.06

NA - No dry weather flow.
ND - none detected

ROCK CREEK SUBWATERSHED
DRY WEATHER SAMPLING
(ROTATION 2-RAW DATA)

		Ft. Stevens Drive		Military and Beach		Soapstone		Hazen Park		Klingle Valley		Normanstone Creek		Portal and 16th St		Broad Branch		Oregon		Glover Archbold	
Parameter	**Units**	**DRY 1**	**DRY 2**	**DRY 1**	**DRY 2**	**DRY 1**	**DRY 2**	**DRY 1**	**DRY 2**	**DRY 1**	**DRY 2**	**DRY 1**	**DRY 2**	**DRY 1**	**DRY 2**	**DRY 1**	**DRY 2**	**DRY 1**	**DRY 2**	**DRY 1**	**DRY 2**
ENDOSULFAN I	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ENDOSULFAN II	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ENDRIN ALDEHYDE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ETHYLBENZENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FECAL COLIFORM	CFU/100 ML	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	300	1600	500	500	2	1600	2	1600	2	900
FECAL STREPTOCOCCUS	CFU/100 ML	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	30	170	80	17	2	110	110	350	300	23
FLUORANTHENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FLUORENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
GAMMA-BHC	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HEPTACHLOR	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HEPTACHLOR EPOXIDE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HEXACHLOROBENZENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HEXACHLOROBUTADIENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HEXACHLOROCYCLOPENTADIENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HEXACHLOROETHANE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
INDENO(1,2,3-CD)PYRENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ISOPHORONE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LEAD, TOTAL	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	0.0091	ND	ND	ND	0.0089	ND	0.0051	0.0043	0.0022
MERCURY, TOTAL	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
METALS, TOTAL	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0255	0.153	0.107	0.175	0.011	0.122	0.0131	0.0947	0.075	0.0223
METHYLENE CHLORIDE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NAPHTHALENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NICKEL, TOTAL	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.009	0.0081	0.011	0.009	0.0051	0.0051	0.0053	0.0066	0.0056	ND
NITRATE + NITRITE (NO2 + NO3)	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.9	4.5	4.9	4.6	2	2.2	2.9	2.7	2.5	2.9
NITROBENZENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-NITROSODIMETHYLAMINE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-NITROSO-DI-N-PROPYLAMINE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-NITROSODIPHENYLAMINE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
OIL AND GREASE	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PAH1	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PAH2	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PENTACHLOROPHENOL	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PESTICIDES, GENERAL	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PHENANTHRENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PHENOLS, TOTAL	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.018	0.014	0.076	0.022	0.048	0.02	0.039	0.025	0.032	0.015
PYRENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SILVER, TOTAL	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0019	ND	0.0016	ND	0.0015	ND	0.0015	ND	0.0018	ND
TETRACHLOROETHENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
THALLIUM, TOTAL	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOLUENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL BASE/NEUTRAL	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	164	ND	35	ND	66	ND	ND
TOTAL DISSOLVED SOLIDS	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	330	400	810	470	420	470	280	230	380	330
TOTAL NITROGEN	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.9	4.5	ND	4.6	2	2.2	2.9	2.7	2.5	2.9
TOTAL PAHs	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBS	NG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL SUSPENDED SOLIDS	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	12	9	10	ND	11	2.2	9.7	50	6.5
TRANS-1,2-DICHLOROETHENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRANS-1,3 DICHLOROPROPENE	UG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	1400	ND	1200	ND	1000	ND	1000	800	550
ZINC, TOTAL	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	0.05	0.057	0.13	ND	0.061	ND	0.033	0.031	ND

NA - No dry weather flow.
ND - none detected

ROCK CREEK SUBWATERSHED
WET WEATHER SAMPLING
(ROTATION 2-RAW DATA)

		Ft. Stevens Drive			Military and Beach				Soapstone			Hazen Park		Klingle Valley			Normanstone Creek			Portal and 16th St.			Broad Branch			Oregon			Glover Archbold		
Parameter	**Units**	WET 1	WET 2	WET 3	WET 1	WET 2	WET 3	WET 1	WET 2	WET 3	WET 1	WET 2	WET 3	WET 1	WET 2	WET 3	WET 1	WET 2	WET 3	WET 1	WET 2	WET 3	WET 1	WET 2	WET 3	WET 1	WET 2	WET 3	WET 1	WET 2	WET 3
1,1,1-TRICHLOROETHANE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
1,1,2,2-TETRACHLOROETHANE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
1,1,2-TRICHLOROETHANE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
1,1-DICHLOROETHANE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
1,1-DICHLOROETHENE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
1,2,4-TRICHLOROBENZENE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
1,2-DICHLOROBENZENE	UG/L	ND		ND	ND		ND	ND		ND	ND		ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
1,2-DICHLOROETHANE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
1,2-DICHLOROPROPANE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
1,2-DIPHENYLHYDRAZINE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
1,4-DICHLOROBENZENE	UG/L	ND		ND	ND		ND	ND		ND	ND		ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		11	ND	
2,4,6-TRICHLOROPHENOL	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
2,4-DICHLOROPHENOL	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
2,4-DIMETHYLPHENOL	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
2,4-DINITROPHENOL	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
AROCLOR 1221	MG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
AROCLOR 1232	MG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
AROCLOR 1242	NG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
AROCLOR 1248	MG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
AROCLOR 1254	MG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
AROCLOR 1260	MG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
BENZENE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
BENZIDINE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
BENZO(A)ANTHRACENE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
BENZO(A)PYRENE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
BENZO(B)FLUORANTHENE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
BENZO(G,H,I)PERYLENE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
BENZO(K)FLUORANTHENE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
BERYLLIUM, TOTAL	MG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
BETA-BHC	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
BIS(2-CHLOROETHYL)ETHER	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
BIS(2-CHLOROISOPROPYL)ETHER	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
BOD5	MG/L	51	16	ND	61	13	ND	61	22	8.5	22	27	ND	51	ND		36	ND		30	ND		21	ND		29	ND		11	ND	
BODU	MG/L	91.8	28.8	ND	110	23.4	ND	110	39.6	15.3	39.6	48.6	ND	91.8	ND		64.8	ND		54	ND		37.8	ND		52.2	ND		19.8	ND	
BROMODICHLOROMETHANE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
BROMOFORM	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
BROMOMETHANE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
BUTYLBENZYLPHITHALATE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
CADMIUM, TOTAL	MG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0023	ND	ND	ND	ND		0.0035	ND		0.0015	ND		0.0012	ND		0.0012	ND		0.0015	ND	
CARBON TETRACHLORIDE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
CHLORDANE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
CHLOROBENZENE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
CHLOROETHANE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
CHLOROFORM	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	11	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
CHLOROMETHANE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
CHLOROPHYLL-A	UG/L	1.6	1.9	ND		3.8	ND	2.2	ND	ND	ND	ND	ND	3.4	7.1			2.5			1.1			6.2			5.6			1.7	
CHROMIUM, TOTAL	MG/L	0.0036	ND	0.005	0.013	0.0031	0.0079	0.0077	0.0032	0.0082	0.016	0.0065	0.0059	0.013	0.0039		0.0084	ND		0.011	ND		0.01	ND		0.0077	0.005		0.0038	ND	
CHRYSENE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
CIS-1,3-DICHLOROPROPENE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
COD	MG/L	150	0.051	24	270	0.052	ND	220	0.074	29	130	0.043	21	230	23		93	11		120	22		74	21		89	20		36	18	
COPPER, TOTAL	MG/L		0.0093	0.018	0.093	0.008	0.042	0.029	0.018	0.029	0.11	0.11	0.043	0.11	0.064		0.13	ND		0.11	0.0052		0.051	0.002		0.038	0.0065		0.11	0.0051	
DELTA-BHC	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
DIBROMOCHLOROMETHANE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
DIELDRIN	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
DIETHYLPHTHALATE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	12	ND	ND	ND	ND		ND	84		ND	32		ND	27		ND	34		ND	15	
DIMETHYLPHTHALATE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
DI-N-BUTYLPHTHALATE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
DIOXIN (2,3,7,8-TCDD)	PG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		0.81	0.84		0.81	0.52		0.88	0.58		0.74	0.5		0.69	0.76	
DISSOLVED PHOSPHORUS	MG/L	0.00013	0.21	0.13	0.00012	0.043	0.066	0.00009	0.095	0.27	0.34	0.22	0.2	0.00028	0.16		0.38	0.06		0.31	0.079		0.32	0.16		0.26	0.073		0.31	0.19	
ENDOSULFAN I	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
ENDOSULFAN II	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
ENDOSULFAN SULFATE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
ENDRIN	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
ENDRIN ALDEHYDE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
ETHYLBENZENE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
FECAL COLIFORM	CFU/100 ML	90000	170000	900	400	40000	500	30000	20000	1600	ND	3.00E+06	1600	800	80000		28000	300		11000	22		90000	900		24000	900		5000	900	
FECAL STREPTOCOCCUS	CFU/100 ML	2200	80000	23	ND	80000	90	400	170000	140	ND	1.10E+06	170	ND	ND		30000	ND		35000	ND		3400	17		17000	1600		13000	23	
FLUORANTHENE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
GAMMA-BHC	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
HARDNESS	MG/L	160	380	270	160	250	250	170	370	300	160	190	270	150	200																
HEPTACHLOR	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
HEPTACHLOR EPOXIDE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
HEXACHLOROBENZENE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
HEXACHLOROBUTADIENE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
HEXACHLOROCYCLOPENTADIENE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
HEXACHLOROETHANE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
INDENO(1,2,3-CD)PYRENE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
ISOPHORONE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
MERCURY, TOTAL	MG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
METALS, TOTAL	MG/L	0.0894	0.0592	0.125	0.302	0.0186	0.0936	0.169	0.0806	0.124	0.515	0.312	0.132	0.552	0.248		0.415	ND		0.452	0.0418		0.192	0.002		0.125	0.0205		0.191	0.0361	
METHYLENE CHLORIDE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
NICKEL, TOTAL	MG/L	ND	0.017	0.011	0.0058	0.0053	0.0063	ND	0.024	0.0082	0.017	0.0085	0.0072	0.018	0.011		0.0093	ND		0.019	0.0076		0.011	ND		0.0073	0.0059		0.0056	0.0066	

ND - none detected

(ROTATION 2-RAW DATA)

		Ft. Stevens Drive			Military and Beach				Soapstone			Hazen Park		Klingle Valley			Normanstone Creek			Portal and 16th St.			Broad Branch			Oregon			Glover Archbold		
Parameter	**Units**	WET 1	WET 2	WET 3	WET 1	WET 2	WET 3	WET 1	WET 2	WET 3	WET 1	WET 2	WET 3	WET 1	WET 2	WET 3	WET 1	WET 2	WET 3	WET 1	WET 2	WET 3	WET 1	WET 2	WET 3	WET 1	WET 2	WET 3	WET 1	WET 2	WET 3
NITRATE + NITRITE (NO2 + NO3)	MG/L	0.52	2.7	3	1	0.93	1.2	0.76	13	2.4	1.1	8.1	2.2	0.4	1.2		1.1	22		1.5	21		1	9		0.72	14		1.8	4.8	
NITROBENZENE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
N-NITROSODIMETHYLAMINE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
N-NITROSO-DI-N-PROPYLAMINE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
N-NITROSODIPHENYLAMINE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
ORGANIC NITROGEN	MG/L	ND	2.3	1.5	ND	ND	1.2	ND	ND	1.6	4.2	2.8	1.3	ND	1.4																
PAH1	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
PAH2	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
PAH3	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
PENTACHLOROPHENOL	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
PESTICIDES, GENERAL	MG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
PHENANTHRENE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
PHENOL	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
PHENOLS, TOTAL	MG/L	0.11	0.095	0.14	0.069	0.11	0.00012	0.057	0.085	0.042	0.066	0.037	0.049	0.062	0.039		0.018	0.029		0.036	0.041		0.023	0.036		0.065	0.034		0.013	0.037	
SILVER, TOTAL	MG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0018	ND	ND	ND	ND		0.0018	ND		0.002	ND		0.0017	ND		0.0017	ND		0.0015	ND	
TETRACHLOROETHENE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
THALLIUM, TOTAL	MG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0021	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
TOLUENE	UG/L	ND	2.7	ND	ND	ND	ND	ND	1.4	ND	ND	2.6	ND	ND	ND		ND	ND		ND	ND		ND	ND		7.6	ND		ND	ND	
TOTAL BASE/NEUTRAL	MG/L	ND	ND	ND	36	ND	ND	65	12	ND	49	33	ND	27	20		17	84		18	32		ND	27		ND	60		ND	27	
TOTAL DISSOLVED SOLIDS	MG/L	180	520	540	720	200	240	110	330	320	680	180	300	450	240		110	330		90	730		200	430		30	250		88	440	
TOTAL KJELDAHL NITROGEN (TKN)	MG/L	ND	2.3	1.5	ND	ND	1.2	ND	ND	1.6	4.2	2.8	1.3	ND	1.4																
TOTAL NITROGEN	MG/L	ND	5	4.5	1	ND	2.4	ND	13	4	5.3	11	3.5	ND	2.6		1.1	22		1.5	21		1	9		0.72	14		1.8	4.8	
TOTAL PAHs	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
TOTAL PCBS	NG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
TOTAL PHOSPHORUS (TP)	MG/L	0.24	0.42	0.16	0.18	0.14	0.21	0.24	0.21	0.43	0.62	0.47	0.37	0.45	0.22		0.61	0.076		0.51	0.098		0.35	0.18		0.38	0.085		0.56	0.2	
TOTAL SUSPENDED SOLIDS	MG/L	57	15	11	82	52	60	89	10	44	210	67	16	52	25		64	ND		110	ND		83	8.6		110	74		14	7	
TOXAPHENE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
TRANS-1,2-DICHLOROETHENE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
TRANS-1,3 DICHLOROPROPENE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		1300	ND		700	ND		550	ND		800	500		550	ND	
TRICHLOROETHENE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
VINYL CHLORIDE	UG/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND		ND	ND		ND	ND		ND	ND		ND	ND	
VOLATILE COMPOUNDS	MG/L	ND	2.7	ND	ND	ND	ND	ND	1.4	11	ND	2.6	ND	ND	ND		1300	ND		700	ND		550	ND		808	500		561	ND	
ZINC, TOTAL	MG/L	0.069	0.03	0.069	0.16	ND	0.032	0.11	0.033	0.068	0.28	0.15	0.068	0.098	0.029		0.2	ND		0.28	0.029		0.091	ND		0.054	ND		0.051	0.022	

ND - none detected

APPENDIX F

Land Use Characteristics and Runoff Coefficients for Rock Creek

Estimation of Runoff Coefficients for the Monitored Sewersheds

Runoff coefficients were estimated for each of the eight sewersheds contributing flow to the Rock Creek monitoring sites.

The runoff coefficients were estimated based on the impervious area within each District zoning category. The methodology used is as follows.

1. Information regarding each zoning category was obtained from the District's zoning web site, www.dcoz.dcgov.org/info/map.shtm.
2. The maximum occupancy of the lot for each zoning category was assumed to be covered by an impervious surface (from the structure(s)).
3. An additional percentage of the remaining unoccupied lot area was assumed to be covered by a driveway surface.
4. The average runoff coefficient for each zoning category was estimated using Equation 3 on page 5-16 of the "*Guidance Manual for the Preparation of Part 2 of the NPDES Permit Applications for Discharges from Municipal Separate Storm Sewer Systems", 1992.* The equation is as follows:

$$\mathbf{Rv_i = 0.05 + 0.009 * I} \qquad \textbf{(Equation 3)}$$

Where: Rv_i = Runoff Coefficient
I = Percent imperviousness

TABLE 1. ESTIMATED OF THE RUNOFF COEFFICIENT FOR DISTRICT LAND USE ZONING CATEGORIES.

Land Use-Zoning		Maximum Occupancy	Driveway Occupancy	Total Impervious	Rv_i
C-1	Commercial				0.64
C-1-A	Neighborhood Shopping	60	20	80	0.77
C-2-A	Community business center-low moderate density	60	20	80	0.77
C-2-B	Community business center -medium density	80	20	100	0.95
C-2-C	Community business center- high density	80	20	100	0.95
C-3-A	Medium bulk major business and employment	75	20	95	0.905
C-3-B	Medium bulk major business and employment	100		100	0.95
C-3-C	High Bulk major business and employment	100		100	0.95
C-4	Central Business district	100		100	0.95
C-5	(PAD) Pennsylvania Avenue Development	100		100	0.95
C-M-1	Low Bulk commercial and light manufacturing	100		100	0.95
C-M-2	Medium bulk commercial and light manufacturing	100		100	0.95
C-M-3	High bulk commercial and light manufacturing	100		100	0.95
CR	Mixed residential, retail, offices & light industrial uses	75	20	95	0.905
M-5	Mixed residential and commercial				0.68
M-6	Mixed residential and commercial				0.64
M-7	Mixed residential and commercial				0.64
M-11	Mixed residential and commercial				0.64
M-20	Mixed residential and commercial				0.68
M	General industry	100		100	0.95
P-1	Public - Federal and Institutional				0.77
P-2	Public - Federal and Institutional				0.77
P-3	Public - Federal and Institutional				0.68
P-4	Parks				0.35
R-1	Residential				0.48
R-2	Residential				0.65
R-3	Residential				0.65
R-4	Residential				0.64
R-1-A	Single family detached dwellings	40	10	50	0.5
R-1-B	Single family detached dwellings	40	10	50	0.5
R-2	Single family detached dwellings	40	10	50	0.5
R-3	Row dwellings & flats	60	15	75	0.725
R-4	Row dwellings & flats	60	15	75	0.725
R-5-A	Low density apartments	60	20	80	0.77
R-5-B	Moderate density apartment houses	60	20	80	0.77
R-5-C	Medium density apartment houses	75	20	95	0.905
R-5-D	Medium-High density apartment houses	75	20	95	0.905
R-5-E	High density	75	20	95	0.905
SP-1	Medium density residential/limited office	80	15	95	0.905
SP-2	Medium density residential/limited office	80	15	95	0.905
W-1	Low density mixed residential-commercial	80	15	95	0.905
W-2	Medium density mixed residential-commercial	75	20	95	0.905
W-3	High density mixed residential-commercial	75	20	95	0.905

TABLE 2. WEIGHTED RUNOFF COEFFICIENT FOR THE MONITORED ROCK CREEK SEWERSHEDS.

Monitoring Site		Zone	Rv_i	Acres
MS-1	Ft. Stevens Drive	P4	0.35	5.97
		R1	0.48	15.70
		R2	0.65	3.38
MS-2	Military and Beach	P3	0.68	0.04
		P4	0.35	30.60
MS-3	Soapstone	C1	0.64	6.20
		C2	0.68	3.04
		M6	0.64	4.93
		P1	0.77	18.55
		P2	0.77	21.12
		P3	0.68	6.74
		P4	0.35	14.63
		R1	0.48	222.30
		R2	0.65	0.14
		R3	0.65	0.87
		R4	0	31.70
MS-4	Hazen Park	P1	0.77	9.81
		P2	0.77	4.24
		P3	0.68	16.80
		P4	0.35	7.48
		R1	0.48	49.80
MS-5	Klingle Valley	P3	0.68	26.50
		P4	0.35	1.36
		R1	0.48	23.70
		R2	0.65	0.44
MS-6	Normanstone Creek	R1	0.48	10.30
MS-7	Portal and 16th St	P4	0.35	0.32
		R1	0.48	5.36
MS-8	Broad Branch	C1	0.64	21.12
		P2	0.77	16.78
		P3	0.68	8.74
		P4	0.35	37.82
		R1	0.48	418.00
		R2	0.65	23.30
		R3	0.65	3.58
		R4	0	11.62
MS-9	Oregon	P3	0.68	21.00
		P4	0.35	3.02
		R1	0.48	60.40

Monitoring Site		Zone	Rv_i	Acres
MS-10	Glover Archbold	C1	0.64	4.41
		P2	0.77	4.57
		P3	0.68	13.30
		P4	0.35	1.01
		R1	0.48	10.40
		R2	0.65	3.81
		R3	0.65	11.30