FAIRFAX COUNTY WATER AUTHORITY
SOURCE WATER ASSESSMENT PROGRAM

FINAL REPORT

January, 2002

Prepared in Fulfillment of the Grant Agreement dated February 22, 2000 between the Virginia Department of Health and the Fairfax County Water Authority

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INTRODUCTION

The Fairfax County Water Authority (FCWA) draws surface water from two primary sources: the Potomac River and the Occoquan Reservoir. The treatment facilities associated with each source are located at opposite ends of Fairfax County and feed an interconnected distribution system. The James J. Corbalis, Jr. Treatment Plant, located at the northern tip of the FCWA service area, draws water from the Potomac River. The Occoquan Reservoir, on the southern border of Fairfax County, supplies the Occoquan and Lorton treatment plants located near the Town of Occoquan.

Operational History

As requested by the Virginia Department of Health (VDH), the Authority has reviewed its operational history over the past 5 years. No violations have occurred during this period.

Assessment Area

The assessment was conducted on a critical portion of the FCWA watershed, and defined based on VDH guidance. For the Occoquan intake, the assessment area is defined as the area directly tributary to the Occoquan Reservoir, downstream of Lake Jackson and the free-flowing portion of Bull Run. For the Potomac intake, the assessment area includes Broad and Sugarland Runs and the area directly tributary to the Potomac River between the Broad Run confluence and the intake. Each assessment area is further broken down into Zone 1, defined as the 5-mile radius upstream of the intake, and Zone 2, the remaining area. The Occoquan assessment area is 64 square miles, with 25 square miles in Zone 1 and 39 square miles in Zone 2. The Potomac assessment area is 107 square miles, with 21 square miles in Zone 1 and 86 square miles in Zone 2.

Components of the Assessment

The FCWA Source Water Assessment Program (SWAP) is comprised of a contaminant inventory, a windshield survey, a Best Management Practice (BMP) inventory, and a susceptibility analysis.

Through the contaminant inventory, information on potential sources of contamination in the assessment area was collected in a Geographical Information System (GIS) or database. The data collected included existing data obtained from other agencies and new data generated by FCWA.

As required by the VDH Source Water Assessment Plan (SWAP), a windshield survey was conducted on Zone 1 area for each intake. The windshield survey consisted of visually identifying potential sources of contamination in the field and obtaining location and property owner information for each site.

The Authority worked closely with County stormwater management departments to develop a BMP database useful for water quality purposes. As part of this process, Authority employees reviewed existing data sets, stormwater management plans, files, and fact sheets and entered available information in a Geographic Information System (GIS) and database.

A susceptibility analysis was conducted to determine the risk associated with various contaminant sources. As part of this effort, buffer distances and stream distances from each intake were determined for each contaminant site. The sources were ranked based on combined buffer and stream distance and the type of facility.

CONTAMINANT INVENTORY

Potential Sources of Contamination

VDH identifies 19 types of potential sources of contamination (PSCs) in the Virginia SWAP, as listed in Table 1. VDH provided data on these PSCs. Information was also collected on petroleum pipelines, sanitary sewer lines and pumping stations, and boat ramps. This section summarizes the PSCs identified within the SWAP areas. Figures 1 and 2 show the locations of the PSCs within the Occoquan and Potomac SWAP areas, respectively, and are referenced throughout this section.

Potential Sources of Contamination
Superfund sites
NPDES (National Pollutant Discharge Elimination System) waste dischargers and no-discharge NPDES permitted facilities
Open solid waste disposal facilities
RCRA (Resource Conservation and Recovery Act) sites
Hazardous waste sites
Tire piles
Industry sites
Petroleum tank farms
Golf courses
Hospitals
Highways
Rail lines
Confined animal feeding operations
Agriculture and pastureland
Military bases
Commercial and general aviation airports
Marinas

Table 1. Data provided by the Virginia Department of Health.

[REDACTED]

Figure 1. Occoquan SWAP Area Potential Sources of Contamination.

[REDACTED]

Figure 2. Potomac SWAP Area Potential Sources of Contamination.

Superfund, RCRA and Hazardous Waste Sites

No RCRA or Hazardous waste sites were identified within the Occoquan or Potomac SWAP areas. One superfund site, the IBM Manassas Plant Spill, was identified within the Occoquan Watershed upstream of the Zone 2 boundary.

NPDES Discharges and Permitted No-discharge Facilities

One NPDES facility, the Occoquan Forest Sewage Treatment Plant, is identified within Zone 2 for the Occoquan intake. Five NPDES discharges are identified within the Potomac SWAP area, all within Zone 2, including two schools, Dulles International Airport, a ready-mix concrete facility, and the Corbalis Water Treatment Plant. These NPDES discharges are shown in Figures 1 and 2.

Open solid waste disposal facilities

No solid waste facilities were identified within the Occoquan SWAP area. The VDH database identified one solid waste facility within the Potomac SWAP area, but its existence could not be verified.

Tire piles

One tire pile, Meadows Farms, was identified at the upstream edge of the Occoquan Watershed boundary. This facility is actually shown in Figure 2, near the edge of the Potomac SWAP boundary.

Golf courses

Only one golf course, Lake Ridge, is located within the Occoquan SWAP area. The Lake Ridge Golf Course is located within Zone 1 and is shown in Figure 1. Beaver Creek Golf Course, currently under construction, will need to be added to the database in the future. Also, Manassas Park Public Golf Course and Westfields Golf Course are upstream of the Occoquan SWAP area but within the watershed. Lowes Island, Algonkian, and Herndon Centennial Golf Courses are within the Potomac SWAP area and shown in Figure 2.

Hospitals

No hospitals were identified within the Occoquan SWAP area, although Prince William Hospital is located within the watershed. Columbia Reston Hospital is located within Zone 2 of the Potomac SWAP area.

Highways

Locations where major highways cross significant streams were identified within the Occoquan and Potomac SWAP areas. Prince William Parkway, Old Bridge Road, Davis Ford Road, and Yates Ford Road crossings were identified in the Occoquan SWAP area and are shown in Figure 1. The design of Prince William Parkway includes stormwater detention facilities that could mitigate the potential affects of a hazardous spill. The Potomac SWAP area crossings include Route 7/Leesburg Pike, Route 28/Sully Road, Route 267/Dulles Toll Road and Greenway, Route 50/John Mosby Highway, and Route 606/Old Ox Road and are shown in Figure 2.

Rail lines

No active rail lines are located within either the Occoquan or Potomac SWAP areas. Railroad lines are however located upstream from the SWAP boundary within both watersheds.

Confined animal feeding operations

No confined animal feeding operations were identified within either the Occoquan or Potomac SWAP area.

Agriculture and pastureland

No agricultural lands exist in Zone 1 of the Potomac SWAP area. The Occoquan SWAP area and Zone 2 of the Potomac SWAP area contain former agricultural sites which are undergoing development. Intensive agricultural activity was not identified within either SWAP area. Most of the agriculture within these areas includes scattered horse and small cattle grazing operations, hay production, corn and wheat fields, and turf farming operations. Many of the areas identified as agriculture in the land use classifications, described in the following section, are fallow fields.

Military bases

No military bases are located within the Occoquan or Potomac SWAP areas. A small portion of Quantico Marine Base drains to Cedar Run within the Occoquan Watershed outside of the SWAP area.

Commercial and General Aviation airports

Dulles International Airport is the only airport located within either SWAP area and is located within Zone 2 of the Potomac SWAP area, as shown in Figure 2. Manassas Airport is located with the Occoquan Watershed outside of the SWAP area.

Marinas and Boat Ramps

Boat ramps at Lake Ridge Community Park, Fountainhead Regional Park, and Bull Run Marina are located within the Occoquan SWAP area, as illustrated in Figure 1. The Algonkian Regional Park is located within the Potomac assessment area, as shown in Figure 2.

Major Sewers

Sanitary sewer pump stations and locations where major sanitary sewer interceptors cross streams were identified within the SWAP areas.

Five wastewater pumping stations serving the Lake Ridge area of Prince William County are located within 500 feet of the Occoquan Reservoir or a tributary that feeds directly to the reservoir. Approximately 14 miles of 12-inch diameter and larger gravity sewer are within 500 feet of the Occoquan Reservoir or a direct tributary. All of the sewers and pump stations are located within Zone 1 and are within 3.3 stream miles of the intake. The Fairfax County portion of the Occoquan SWAP area is not sewered and is served by individual septic systems. Figure 3 shows the 12-inch and larger sewers located within the Occoquan SWAP area.

22.9 miles of 12-inch and larger are located within the Potomac Zone 1 area, while 68.1 miles are located within Zone 2. Figure 4 shows the 12-inch and larger sewers located within the SWAP area. Of the 12-inch and larger sewers within the SWAP area, there are approximately 82 miles within 500 feet of a stream.

[REDACTED]

Figure 3. 12-inch and larger sewers within the Occoquan SWAP area.

[REDACTED]

Figure 4. 12-inch and larger sewers within the Potomac SWAP area.

Petroleum Pipelines and Storage Facilities

A six-inch diameter petroleum pipeline operated by Plantation Pipeline Company crosses through Fairfax County within the Occoquan SWAP area. The pipeline transports petroleum products from facilities located near Lorton, VA, to a distribution and receiving terminal at Dulles Airport. Approximately 6 miles of pipeline lie within the Occoquan SWAP area. Two parallel pipelines operated by Colonial Pipeline cross the Potomac SWAP area for approximately 14 miles. In addition, approximately 1 mile of pipeline operated by Plantation Pipeline Company lies within the Potomac SWAP area. Figures 5 and 6 show the pipelines within the Occoquan and Potomac SWAP areas, respectively.

[REDACTED]

Figure 5. Petroleum Pipeline within Occoquan SWAP area.

[REDACTED]

Figure 6. Petroleum Pipeline within Potomac SWAP area.

Industry sites

The Harris InfoSource database of U.S. manufacturing companies was used to identify industry within the SWAP area that could pose a threat to the water supply. Each site within the database was classified according to risk based on the Standard Industrial Code (SIC) associated with that facility. Sites were ranked on a scale of 1 to 5, with 1 being Low Risk and 5 being High Risk. The risk identification does not take into account types or quantities of chemicals stored at a specific site, how materials are stored, or spill prevention and detection measures used. Appendix A provides the definition of each risk code found within the FCWA SWAP areas.

No sites having risk category 4 or 5 were identified within the SWAP areas. Ten industrial sites were identified within the Occoquan SWAP area, of which 2 were classified as Code 3, Medium Risk. 167 industrial sites were located within the Potomac SWAP area, with 41 being identified as Code 3, Medium Risk. Additional sites were identified immediately outside the SWAP area.

Field reconnaissance was performed within the SWAP areas to confirm the types of activities associated with the 60 industrial sites classified as Code 3, Medium Risk. Not all sites could be located in the field.

Several sites were identified as potential concerns based on the risk code and preliminary field reconnaissance. Within the Occoquan SWAP area, the Arlington Iron Works, Inc., and a Merchants Tire warehouse were identified as potential concerns for source water protection purposes. The Arlington Iron Works, Inc., is a large facility that performs structural steel fabricating. Materials are stored outside the building with several propane tanks in view. Also, a small-scale junkyard was located at the site. The Merchants Tire warehouse is a large facility with evidence of junk piles, production equipment, and tire storage outside.

Within the Potomac SWAP area, four sites were considered of potential concern. Virginia Paving is a large asphalt production facility, with much of the industrial activity located outside. Alban Tractor Company is a large facility with a significant amount of outside storage and production. AutoMata International is a large facility that produces printed circuit boards. Although no storage or production is located outside, its size warrants classification as a medium risk facility. Trobridge Steel Company Inc. and Dulles Industries are located on adjacent properties, both large facilities with material storage or operations outdoors.

Figures 1 and 2 show the locations of industry sites within the Occoquan and Potomac SWAP areas.

Fairfax County Emergency Response Data

Available data from the Fairfax County Emergency Response Plan was obtained from the county Fire Marshall's Office. Fourteen sites were identified within the Potomac SWAP area, including the Corbalis Water Treatment Plant, several telecommunications facilities, and US Geological Survey. These facilities are shown in Figure 2. Many of the facilities are associated with sulfuric acid storage. No facilities in the emergency response plan were located within the Occoquan SWAP area.

Land Use

Land use coverages were developed for the Occoquan and Potomac SWAP areas using 4-meter resolution IKONOS satellite imagery. Percent imperviousness was also calculated for these areas. Land use coverage was also developed for the entire Occoquan Watershed using 30-meter resolution LANDSAT satellite imagery.

The Potomac SWAP area averages 19% impervious whereas the Occoquan SWAP area (the area downstream of Lake Jackson and the free flowing Bull Run) averages 10% impervious, reflecting greater development within the Potomac SWAP area. Table 2 summarizes the land use and percent imperviousness within the Occoquan and Potomac SWAP areas. Figures 7 and 8 show the land use coverage for the Occoquan and Potomac SWAP areas, respectively.

	Occoquan SWAP Area			Potomac SWAP Area		
Landuse	Area (ac)	Percent of Area	Percent of Total Area	Area (ac)	% of Total Area	Impervious %
Agricultural	1,120	3%	2%	9,622	14%	1%
Barren/ Transitional	342	1%	5%	1,389	2%	9%
Commercial	285	1%	52%	1,412	2%	65%
Forest	14,387	35%	0%	21,440	31%	2%
Grassland	556	1%	3%	3,320	5%	4%
Institutional	435	1%	34%	2,127	3%	28%
Office	53	0%	32%	2,983	4%	52%
Residential HDR	891	2%	29%	3,718	5%	49%
Residential MDR	4,007	10%	17%	13,298	19%	31%
Residential LDR	16,892	41%	4%	3,470	5%	8%
Highway (Primary)	457	1%	64%	3,535	5%	56%
Urban/ Industrial	45	0%	42%	1,642	2%	43%
Water	1,545	4%	100%	455	1%	100%
Total	41,015	100%	10%	68,411	100%	19%

Table 2. SWAP Area Land Use Summary.

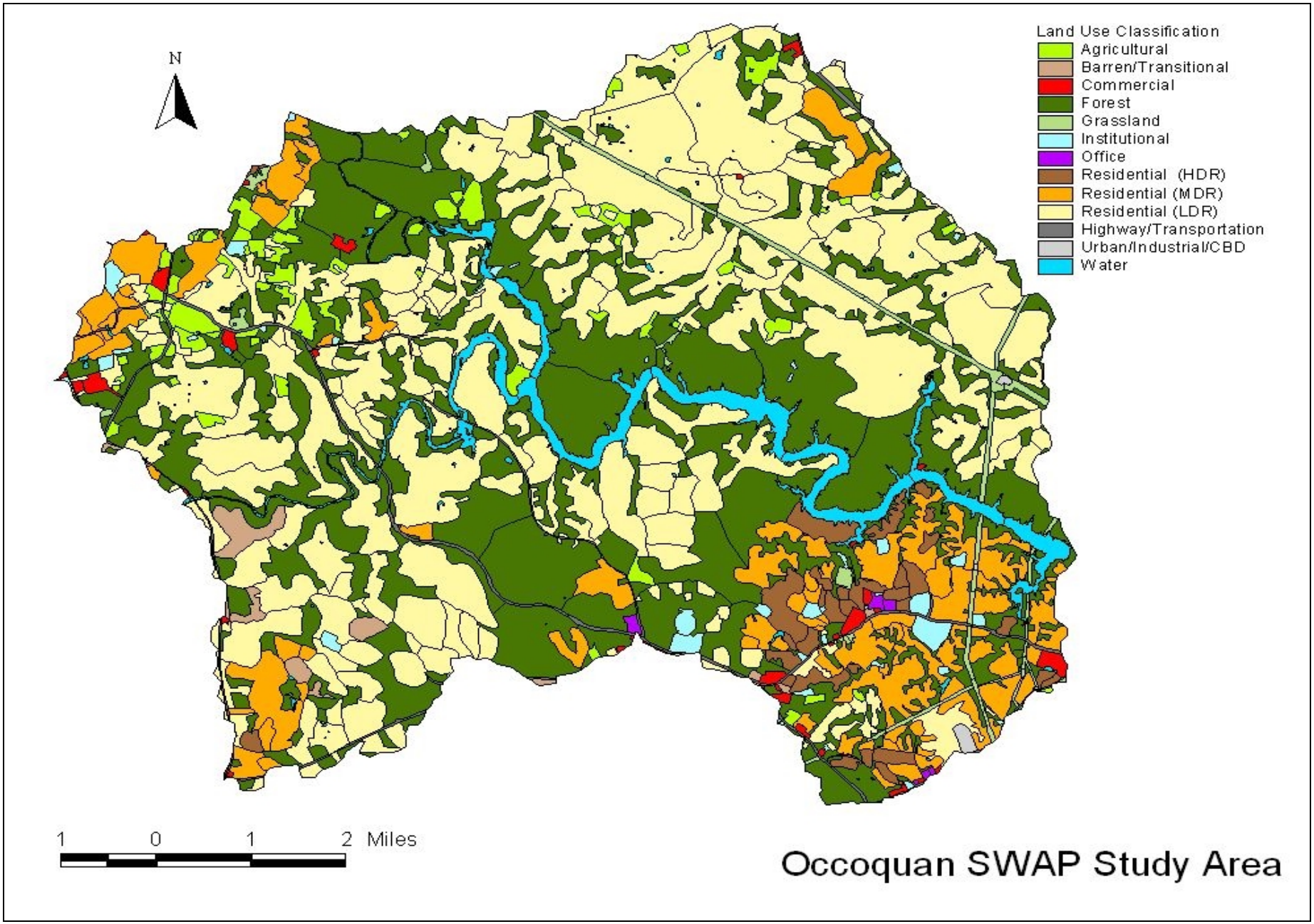

Figure 7. Occoquan SWAP Area Land Use (Zones 1 and 2 only).

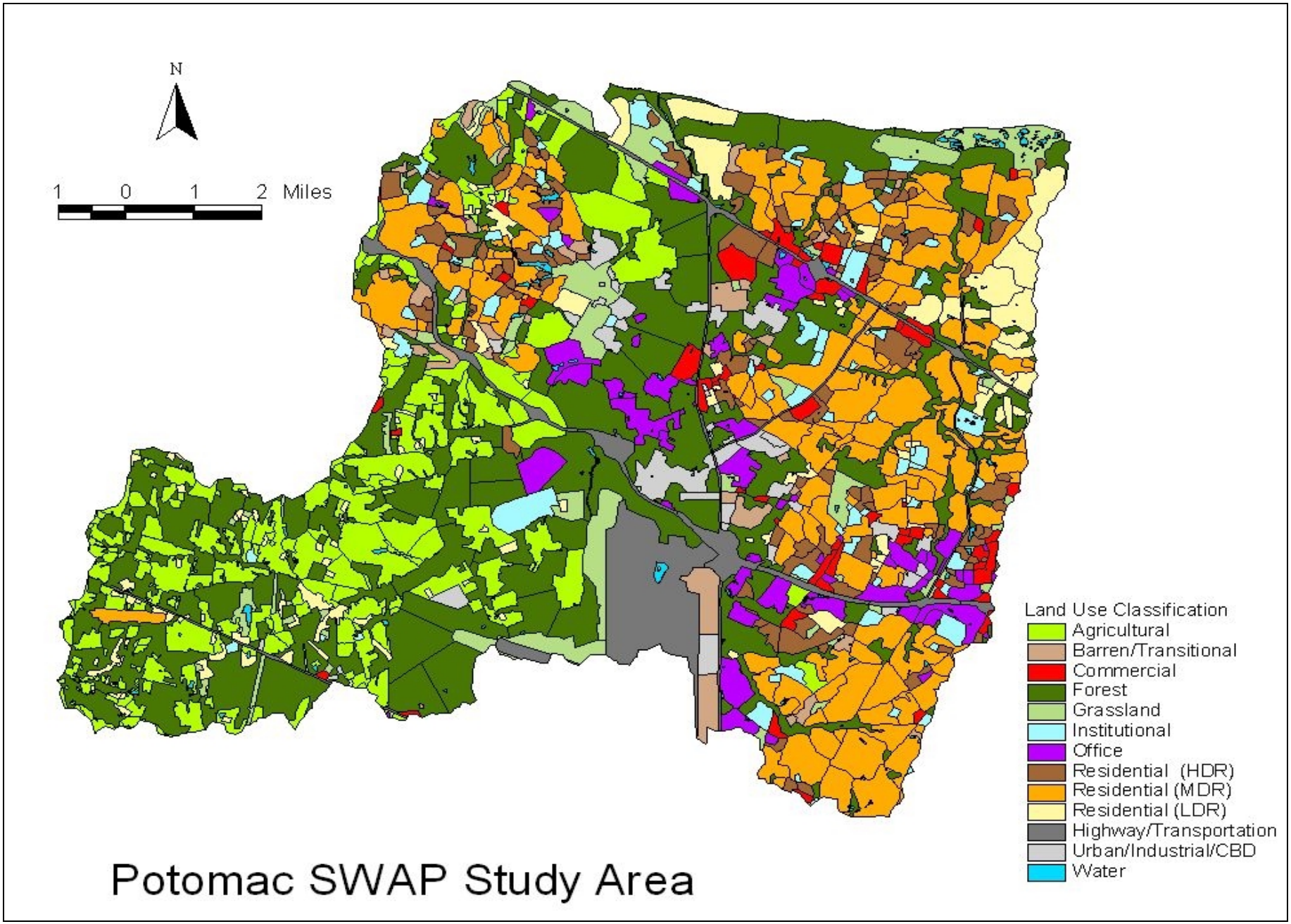

Figure 8. Potomac SWAP Area Land Use (Zones 1 and 2 only).

Table 3 summarizes land use in the entire Occoquan Watershed based on the LANDSAT satellite imagery. Figure 9 shows the land use coverage for the entire Occoquan Watershed.

Land Use	Acres	Percent
Agriculture	94,754	25
Barren/Transitional	350	0
Forest	160,288	42
Grassland	41,892	11
Water	3,910	1
Residential	51,648	14
Urban/Industrial	25,900	7
Total	378,741	100

Table 3. Occoquan Watershed Land Use Summary.

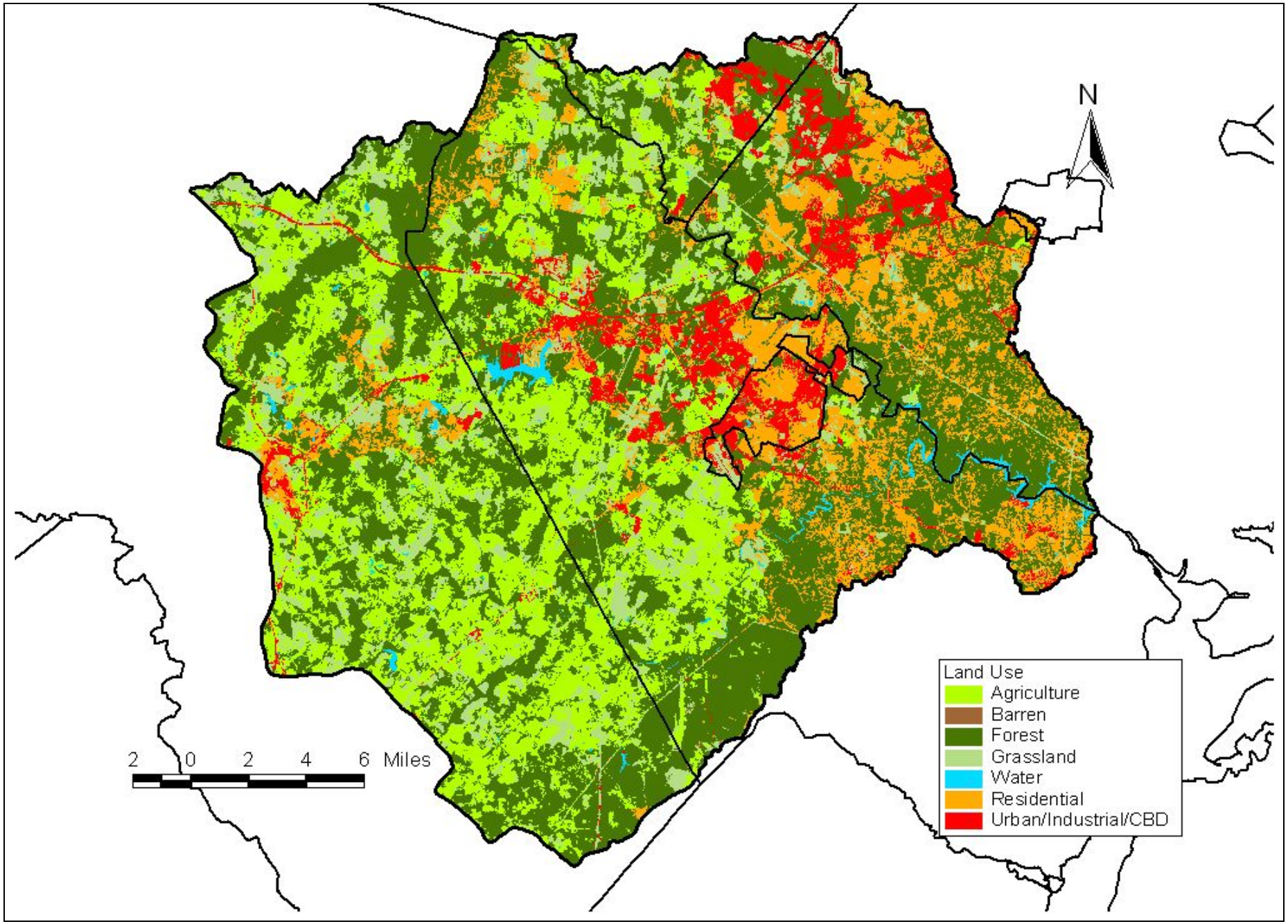

Figure 9. Occoquan Watershed Land Use.

Pesticide and Fertilizer Manufacture/Distribution and Storage Facilities

As part of the SWAP, the Authority conducted an inventory of pesticide storage, manufacture, and distribution facilities. The area covered includes the Occoquan Watershed and the SWAP area for the Potomac River.

The Northern Virginia Regional Commission (NVRC) conducted a similar inventory in 1992 as part of the Occoquan Watershed Toxic Materials Management Program (TMMP). The TMMP included a monitoring program, identifying potential toxics sources, development of a GIS, and identification of alternative management strategies. The inventory portion of the NVRC study was used as a guide for conducting this effort.

Pesticide and fertilizer facilities were primarily identified based on the telephone yellow pages. The facilities identified in the Yellow Pages were associated with a location and entered into a GIS. The Yellow pages were searched using the categories listed in Table 4:

Private Businesses	Institutions
Agricultural Supply Stores	Airports
Fertilizers	Country Clubs
Garden Centers	Golf Courses (Public and Private)
Hardware Retail	Hospitals
Landscape Contractors	Parks (with recreation areas)
Lawn and Garden Supplies	Schools
Lawn Maintenance Companies	
Lumber Yards	
Marinas	
Nurseries	
Pest Control	
Pest Control Equipment and Supplies	
Plants (Retail and Wholesale)	
Pool Maintenance Companies	
Seeds and Bulbs	
Sod Farms and Services	
Topsoil Distributors	
Tree Service	
Weed Control Service	

Table 4. Categories Searched in Yellow Pages.

The most common categories found in the Yellow Pages database, following schools, were landscape contractors, garden centers, and golf courses. Table 5 lists the number of sites identified within each category. Figures 10 and 11 show the locations of the sites in the Occoquan Watershed and the Potomac SWAP Area, respectively.

Category	Number of Sites
Schools	86
Landscape Contractors	33
Garden Centers	28
Golf Courses	20
Tree Service	17
Pool Maintenance	14
Parks	14
Hardware -- Retail	13
Hospitals	13
Lawn and Garden Supplies	11
Nurseries	8
Pest Control	6
Topsoil Distributors	5
Country Clubs	5
Fertilizers	2
Airports	1
Sod Farms and Services	1
Marinas	1
Total	278

Table 5. Pesticide Sites Identified from Yellow Pages.

[REDACTED]

Figure 10. Pesticide Sites located in the Occoquan Watershed.

[REDACTED]

Figure 11. Pesticide Sites located in the Potomac SWAP Area.

In addition to the Yellow Pages database, information on certified pesticide applicators and distributors was obtained from the State Department of Agriculture Office of Pesticide Services. The database contains the name, association, address, certification number, and permits held for every applicator or distributor selling over $50,000 per year in the Northern Virginia area. Because the Certified Applicators data consists mainly of individuals, not businesses, these records are only in a database, and not in the GIS. Table 6 lists the number of certified applicators located in each jurisdiction.

Jurisdiction	Number of Certificates
Fairfax County	641
Loudon County	191
Prince William County	325
Fauquier County	80
City of Manassas	20
City of Manassas Park	6
City of Falls Church	35
City of Fairfax	59
Total	1357

Table 6. Number of Certified Applicators within each Jurisdiction.

WINDSHIELD SURVEY

A windshield survey was conducted within Zone 1 for each intake. Information collected as part of the survey for each potential source of contamination (PSC) includes facility name and address, latitude and longitude of the site, and property owner name and address. VDH provided a list of the PSCs to be identified during the windshield survey; this list is contained in Table 1, Appendix F, of the Virginia Source Water Assessment Plan.

Parking lots, stormwater facilities, agricultural sites, gas stations, car washes, and dry cleaners were the most common PSCs in both the Occoquan and Potomac SWAP areas. Other LUAs found within the study area include golf courses, marinas, and salt storage sites. Tables 7 and 8 summarize the results of the windshield survey for the Occoquan and Potomac intakes, respectively. Figures 12 and 13 show the location of the LUAs.

Land Use Activity	Number of Sites Identified
Above ground storage tank	1
Boat Ramp	3
Car Wash	1
Dry Cleaners	5
Gas Station / Service Center	9
Parking Lot	35
Pasture(Grazing)	9
Salt Storage Site	1
Stormwater Infiltration Pond	10
Total	74

Table 7. Occoquan Reservoir Windshield Survey Results (Zone 1).

Land Use Activity	Number of Sites Identified
Car Wash	1
Dry Cleaners	8
Gas Station / Service Center	14
Golf Course	1
Marina	1
Other	1
Parking Lot	64
Pasture (Grazing)	9
Photo Processor/Printer	3
Stormwater Infiltration Pond	36
Total	138

Table 8. Potomac River Windshield Survey Results (Zone 1).

[REDACTED]

Figure 12. Occoquan Reservoir Windshield Survey Results (Zone 1 - 5 mile radius).

[REDACTED]

Figure 13. Potomac River Windshield Survey Results (Zone 1 - 5 mile radius).

INVENTORY OF BEST MANAGEMENT PRACTICES

An inventory of Best Management Practices (BMPs) and stormwater management (SWM) facilities within the Occoquan Watershed and the SWAP area for the Potomac River, was conducted. The information collected for this project includes data on BMPs and/or SWM facilities available from local government agencies. This study was conducted to collect as much information as possible on BMPs while making optimal use of available SWAP funding and resources. This data collection is not a complete or final inventory of BMPs in the watershed, but is the best available data and a starting point for further data collection.

Table 9 lists the number of BMP/SWM facilities within each county identified during this data collection effort. Note that approximately 220 facilities are in the database but not in the GIS; this is because some information was available on those facilities, but they could not be precisely located geographically. These facilities are likely within the study area based on tax map number or plan number, but are not contained in the GIS due to either a problem with georeferencing, or a lack of specific information on the location of the facility.

	Fairfax	Prince Wm.	Loudoun	Total
Number in FCWA database	301	552	215	1068
Number located in FCWA GIS	301	406	141	848

Table 9. Number of records contained in FCWA BMP database and GIS.

The types of facilities identified include dry ponds, wet ponds, underground facilities, trenches, and other types of facilities. Just over 65 percent of the facilities identified were dry ponds. Table 10 lists the types of facilities identified. The information found on BMPs in this study is summarized below.

Facility Type	Total
Dry Pond	716
Wet Pond	104
Underground Storage	130
Trench	31
Filter Strip/Grass Swale/Sheet Flow	28
Nonstructural	22
Bioretention Facility	19
Unidentified	18
Total	1068

Table 10. Types of Facilities Identified.

Figures 14 and 15 show BMP locations for those facilities that were located through this study. In addition, the figures include locations for BMPs identified in other databases, including the BMP database provided by the Virginia Department of Conservation and Recreation (DCR), and a database for the Town of Herndon, provided by the Northern Virginia Regional Commission. The DCR database includes only projects that were funded through grants.

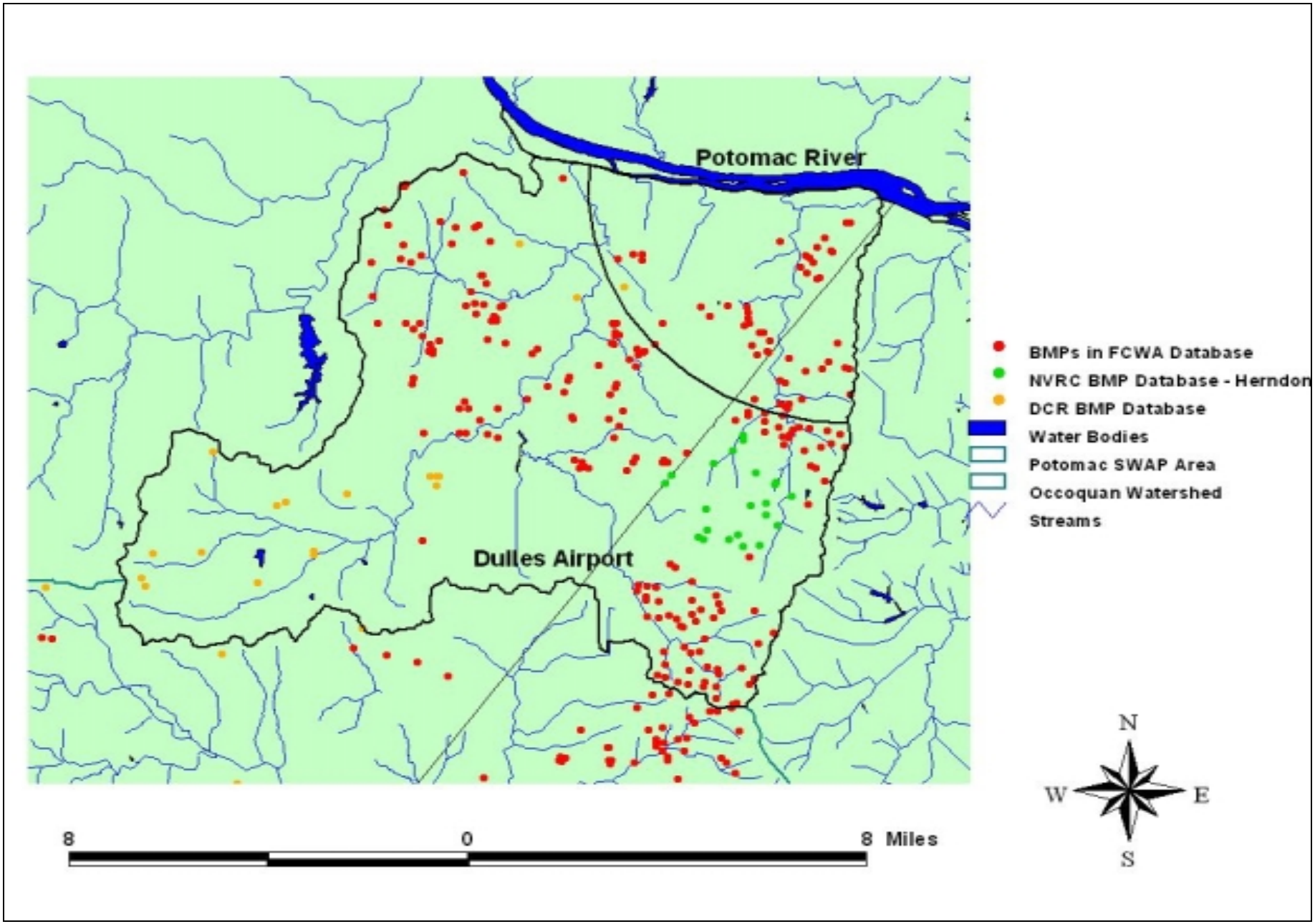

Figure 14. BMPs identified in Broad and Sugarland Run Watersheds.

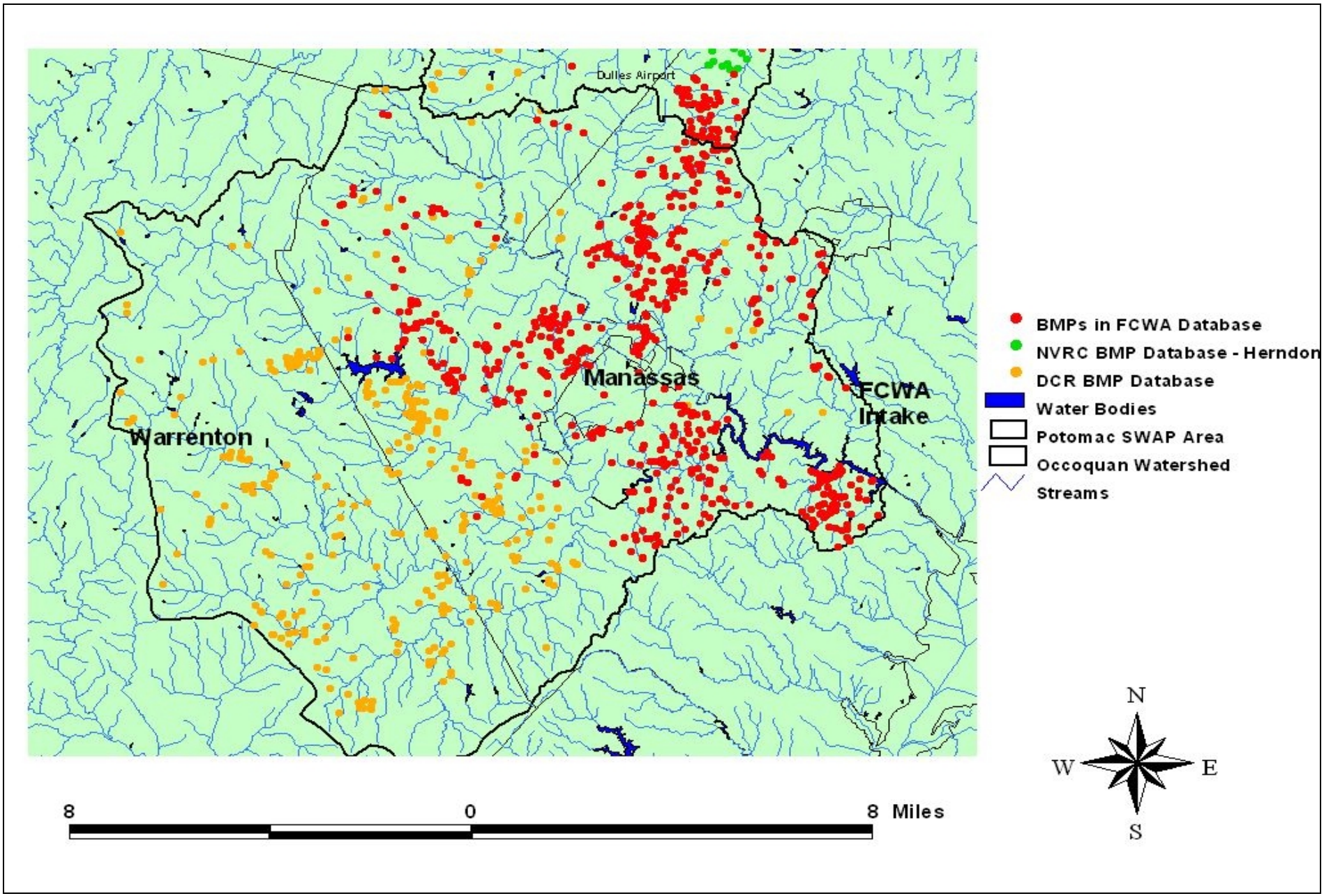

Figure 15. BMPs identified in the Occoquan Watershed.

SUSCEPTIBILITY ANALYSIS

A susceptibility analysis was conducted on each potential source of contamination based on distance upstream from the intake and overland distance from the stream. Within each category, the facilities were ranked based on the sum of the stream and overland distance, or the total distance to the intake. The results of the susceptibility analysis are contained in Appendix B.

DATA FILES TRANSMITTED TO VDH

Table 11 lists the data and GIS files that are being transmitted to VDH along with this report as part of the SWAP submission.

Data Type	File(s)	Comments
BMPs	non_access_fcwa_bmps_ffx.* (dbf, sbn, sbx, shp, shx)	Fairfax County BMP data
	non_access_fcwa_bmps_loudoun.* (dbf, sbn, sbx, shp, shx)	Loudoun County BMP data
	non_access_fcwa_bmps_prince_wm.* (dbf, sbn, sbx, shp, shx)	Prince William County BMP data
	herndon_bmps.* (dbf, sbn, sbx, shp, shx)	Town of Herndon Data
SWAP Zones	occoquan_zone1.* (dbf, shp, shx)	Occoquan intake Zone 1 boundary
	occoquan_zone2.* (dbf, shp, shx)	Occoquan intake Zone 2 boundary
	alloccoquan.* (dbf, sbn, sbx, shp, shx)	Occoquan watershed boundary
	potomac_zone1.* (dbf, shp, shx)	Potomac intake Zone 1 boundary
	potomac_zone2.* (dbf, shp, shx)	Potomac intake Zone 2 boundary
Fairfax County Emergency Response Database	Ffx Emergency Data.* (dbf, sbn, sbx, shp, shx)	Fairfax County Emergency Response Database
Land Use	lu_occoquan.* (dbf, shp, shx)	Occoquan SWAP area land use
	lu_potomac.* (dbf, shp, shx)	Potomac SWAP area land use
	occ_pwmz_final.* (aih, ain, dbf, sbn, sbx, shp, shx)	Occoquan Watershed land use
Pesticide/Fertilizer Manufacture/ Distribution/ Storage	fcwa_pest_fert.* (dbf, sbn, sbx, shp, shx)	All identified pesticide/fertilizer sites within Occoquan Watershed and Potomac SWAP area
Sewers	pwc_occ_manholes.* (dbf,	Prince William County manholes

Data Type	File(s)	Comments
	sbn, sbx, shp, shx)	
	pwc_occ_pumpstations_pt.* (dbf, sbn, sbx, shp, shx)	Prince William County pump stations
	pwc_occ_sewers.* (dbf, sbn, sbx, shp, shx)	Prince William County sewers
	ffx_sewers.* (aih, ain, dbf, sbn, sbx, shp, shx)	Fairfax County sewers
	lcsa_manhole.* (dbf, shp, shx)	Loudoun County Sanitation Authority manholes
	lcsa_sewers.* (dbf, shp, shx)	Loudoun County Sanitation Authority sewers
Petroleum Facilities/ Pipelines	refinedfac.* (dbf, sbn, sbx, shp, shx)	Refined product shape files from PennWell MapSearch edited by CDM for location
	refinedproducts.* (dbf, sbn, sbx, shp, shx)	Petroleum pipelines obtained from PennWell MapSearch
	npms-apr.* (dbf, shp, shx)	Pipeline data obtained from National Pipeline Mapping System.
Railroads	railroads.* (dbf, sbn, sbx, shp, shx)	Railroad data
Windshield Survey	occ_winshield_survey.* (dbf, sbn, sbx, shp, shx)	Results of Occoquan Windshield Survey (Zone 1)
	pot_windshield_survey.* (dbf, sbn, sbx, shp, shx)	Results of Potomac Windshield Survey (Zone 1)
Susceptibility Analysis	Potomac River Tables.xls	Potomac SWAP area susceptibility analysis
	Occoquan Reservoir Tables.xls	Occoquan area susceptibility analysis

Table 11. Data files transmitted to VDH with this report.

APPENDIX A - RISK CODE DEFINITIONS

Risk Code	Surface Water Quality Risk	Description [Examples found in Potomac or Occoquan SWAP Areas]
1	Low	No identifiable risk to surface water quality. [Bakeries, ice manufacturing, sewing, and stitching. Stone. Concrete.]
2	Low-Medium	Little risk, the manufacturing process may involve the use of glues varnishes, paints, finishes, ink, and solvents. [Binding and publishing, silk screening. Computer, computer peripheral, electronic equipment manufacturing and repairing.]
3	Medium	Medium risk due to potential outdoor storage of potential contaminants and/or the use of potentially hazardous materials in quantities which could constitute a risk for spills or discharges into the storm sewer system. [Manufacturing of paints and coatings. Expanded plastic foam products. Printed circuit board manufacturing. Tire manufacturing and retreading. Semiconductors. Asphalt production and testing. Also include metal fabricating, welding, and machining which may have the potential to release metals, cutting fluids, solvents, paints, and finishes.]
4	Medium-High	None identified.
5	High	None identified.

Appendix A. Risk Code Definitions - Taken from Task Order No. 3 Report: VDH Source Water Assessment Program Contaminant Inventory, prepared by Camp Dresser & McKee.

APPENDIX B - RESULTS OF SUSCEPTIBILITY ANALYSIS

[REDACTED]