



4.0 SOURCE IDENTIFICATION

This section documents the County's compilation of source identification data, including Geographic Information System (GIS) data and other information as required by its NPDES Storm Sewer System Permit under Part III. C. Source Identification. This section also documents tracking of new and existing stormwater management facilities through the Urban Best Management Practices (BMP)/Stormwater Management (SWM) Facilities database.

4.1 GIS SOURCE IDENTIFICATION DATA

This section identifies permit-required efforts under Parts III.C. 1. and 2. Frederick County has collected source identification data on all permit-required topics. During 2006, Frederick County continued to make progress in enhancing its GIS capabilities and in compiling source identification data about stormwater management and storm drainage infrastructure. This section details GIS data layers that are currently complete with countywide data, as well as GIS layers that are in the process of being created or updated from CADD, photoimagery, or other original data. The following items illustrate the progress made this year on GIS priorities that support NPDES permit compliance efforts.

In January 2005, Frederick County awarded a major contract to collect spatial data at a mapping scale of 1:1200. The contracted data includes orthophotographic images containing half-foot pixel ground resolution, two-foot contour data, planimetric features and a digital elevation model. As of December 2006, all countywide orthophotographic image and digital elevation model data had been delivered and are now available for use. Topographic and planimetric data is expected to be fully available sometime during 2007. The orthophotography gained from this project has updated aerial photography obtained in 2000 at a smaller mapping scale as well as provided current terrain modeling resources. Higher resolution of ground features has been provided, enabling change detection and more contemporary ground feature interpretations.

The derived two-foot contour information will increase the accuracy of elevation data currently stored in Frederick County's GIS holdings. Contour information, breakline, masspoint, and spot elevation features will also be produced, enhancing the amount of terrain data available. A number of planimetric features may be characterized, including higher accuracy hydrographic features and impervious surfaces. The higher accuracy hydrographic features will permit the update of Frederick County's current stream, river, and pond and lake databases. Impervious surfaces data may include features such as roadways, paved and unpaved parking and driveway areas, and building footprints.

A successful pilot project was conducted in 2005 that collected roadway asset information (signs, guardrails, roadway striping, and legends). This project has been expanded to complete the remaining five highway districts. As of December 2006, all highway districts were imaged for asset data collection with two districts remaining for asset feature collections. As the data from.

this project accumulate, Frederick County will acquire the capability to more closely manage pavement operations and maintain roadway assets in general.

In 2004, NPDES staff assisted the GIS Section with the creation of a sinkhole tracking database to be used by Highway Operations in the field. During 2006, this database was also used in watershed restoration planning. The Microsoft Access database RoadwaySinkholes.mdb allows users to review the history of each sinkhole site and to track any repair or inspection actions related to the site. Repair and inspection data may be changed in the Roadway Sinkhole Access database. The geodatabase information is stored as points (sinkholes less than 6 feet in diameter) or polygons (sinkholes 6 feet or more in diameter). These database features and their records may be viewed, queried or printed using the Sinkholes Map, the ArcReader-published map file that is accessed from the RoadwaySinkholes.mdb database.

The ArcReader map application is installed on staff laptop computers allowing field and desktop use of the GIS information. The spatial data available through this application include: stormwater system structures and pipes, aerial photography, soils group data, fire station locations, Maryland state watershed delineations, hydrography, County roadways, and other GIS data. This application allows data queries to be performed as well as the exporting of map images for digital and hard copy viewing. The data are especially useful for spill response and other watershed protection activities.

Beginning January 2006, the Watershed Management Section's (WMS) Community Restoration Coordinator used grant funds from the National Fish and Wildlife Foundation to develop a GIS-based "House Calls" program. The "House Calls" program has allowed the Community Restoration Coordinator to make site visits to interested landowners to discuss specific property conditions and possible voluntary restoration, enhancement, and protection options. The GIS portion of the "House Calls" program includes data layers such as watershed boundaries, agricultural preservation properties, stormwater management and storm drain systems, data from the Watershed Characterization and Stream Corridor Assessments (SCA), zoning, and soil classifications.

Frederick County continues to share its storm drain system data structure with Phase II municipalities within Frederick County to assist in their NPDES stormwater system data collections. This support includes a pre-built stormwater system geodatabase model, metadata files describing the geodatabase and each feature class contained within it, data collection protocols, a NPDES technical presentation, and Frederick County GIS staff contact information.

County staff continued to make improvements to the County's GIS system in 2006. An inventory of GIS holdings is presented in Appendix B. The status of specific data called out in the NPDES permit is listed in Table 4-1. Developable areas and comprehensive planning analyses for the New Market Region to accompany the regional plan update continued in 2006. Staff continued to maintain agricultural preservation property and district data. Additional opportunities to improve water quality exist in these areas. Water and Sewer planning areas were completed in 2004 but the official data will not be released to the public until the ordinance changes and parcels data are available. The pilot parcel project for Frederick County was awarded in 2004. The Department continues its extensive quality control review of the

vectorized parcels as they are completed by Planning Region. Frederick County road centerlines are now complete and undergo periodic updates when new plans arrive.

Table 4-1. Status of GIS data required by NPDES permit			
Source Identification Data	Have Data	Have in GIS	Notes, Schedule for Completion by Watershed
Topographic features	Yes	Yes	Digital Elevation models stored as ASCII text. DEMS were compiled when the County was flown in March 2000 to produce digital orthophotography. The DEMS have been used by County staff to generate 10-foot contours; these contours are not highly accurate and are useful for general planning purposes only. DEMs, 2-foot contours, breaklines, spot elevations to be produced from 2005 Ortho Project.
Existing and planned land use based on present zoning or current master plans	Yes	Yes	The zoning data layer is complete and official, but only as regions are adopted. New Market & Walkersville are the regions that have been adopted at this time. Parcel layer is available (see notes on public and private land ownership). Last update 2004 (zoning district boundaries).
Public and private land ownership	Yes	Yes	Maryland PropertyView available from MD Office of Planning. The Maryland PropertyView package also contains parcel centroids with State Assessment data. Frederick County is currently working with an outside contractor to produce more accurate vector parcel data. All draft data have been delivered. Some areas are still undergoing QA/QC testing. The final product will be up to date as of September 29, 2006 and is expected mid 2007.
Population density	Yes	Yes	Census tracts and census block groups from 2000 and 1990. Census population data / TIGER files are obtained from the U.S. Census Bureau.
Streams	Yes	Yes	Streams and rivers and lakes in shapefile format; complete. 2005 Ortho project data will contain a hydrography database suitable for updating the current County streams information. A dam database created in 2005 from MDE inspected dams data is available for GIS use.
Floodplains	Yes	Yes	Floodplains in shapefile format from MD-DNR and hard copies of the FEMA community panels. County may participate in updates over next several years with FEMA.
Wetlands	Yes	Yes	Shapefiles from MD-DNR and hard copy DNR color plots by quad sheet. The County also has NWI wetlands. County is also building list of hydric soils from Soil Conservation District maps. Soils database updated from NRCS in 2005. County to update GIS wetlands layer for Bennett Creek watershed through grant program.
Storm drain systems, including major outfalls, inlets, appurtenant conveyances, and associated drainage areas	Yes	Yes	Digitizing completed in 2004 for all but ponds and drainage areas. This digitizing is underway as part of the QA/QC process.
Stormwater management facilities	Yes	Yes	SWM Facility Maintenance.mdb from DPW, maintained by Dave Crable. Spatial database editing and management customized for use in ArcGIS in 2005.

Table 4-1. Continued			
Source Identification Data	Have Data	Have in GIS	Notes, Schedule for Completion by Watershed
Sanitary sewer systems	Yes	No	Files are in CADD but are not publicly available due to security reasons. Water and Sewer service areas were completed in GIS in 2004. Water & Sewer service areas are under constant update. In the next year, however, we will be adopting an updated countywide plan with the Maryland Department of the Environment Triennial Review.
Sewage treatment plants	Yes	No	Files in CADD, see sanitary sewer systems above.
Industrial operations	Yes	Yes	A database is available and a shapefile created from TIGER Census addresses; will be updated with new county addressing.
Hazardous waste sites	Yes	Yes	Database with industrial operations also includes permitted hazardous waste generators.
Landfills	Yes	No	This list is maintained by the Division of Utilities and Solid Waste and will need to be georeferenced in a GIS map layer. Debris dumpsites are maintained by the Environmental Compliance Section in DPDR and will also need to be georeferenced.
NPDES permitted sites (both point source and stormwater permittees)	Yes	Yes	Database with industrial operations also includes NPDES permittees.
Impervious areas (e.g., roads, parking lots, and rooftops)	Yes	Yes	Method of estimating impervious area employs The Center for Watershed Protection's imperviousness calculations based on land use classifications. County roadway centerlines are complete and updated as required. 2005 Ortho Project may provide planimetric data describing impervious areas.
Bridges	Yes	Yes	Consultant previously recorded bridges with >20-foot span. County will GPS bridges spanning 10-20 feet
Estimated pollutant loads	Yes	Yes	Prepared annually for NDPEs Annual Report.
County properties	Yes	No	Staff compiled a list of county-owned properties to conduct the NPDES Industrial Permit Assessment from several sources including: Frederick County Public Schools' "active" properties (FCPS tracks buildings rather than properties), Frederick County's 2003 Insurance and Property Record Report, Frederick County's Non-Board-of-Education (BOE) Property Inventory from May 2000 (for properties not owned by FCPS), and a list of Frederick County Maintenance Buildings Owned and/or Operated by Frederick County Commissioners from 2001.
Sampling locations	Yes	Yes	Sampling locations provided and maintained by the County's NPDES consultant, Versar, Inc.
Orthophotography	Yes	Yes	True color, 1:2400 scale, and 1 square foot per pixel. Available for purchase and subject to GIS license agreement. 2005 Ortho Project Ortho Image Specs: 0.5 Ft. Pixels, 1:1200 Mapping Scale are now available as well.
Watersheds	Yes	Yes	County has created 20 watershed classifications that were developed by Planning and DPW. Also have Md_Wtrsheds.shp from MD-DNR. County to update watershed boundaries in 2007.

4.2 URBAN BMP/SWM FACILITIES DATABASE

At present, all SWM facilities have been entered into Frederick County's urban BMP database. There are 576 entries in the database, including 15 new facilities completed on or after January 1, 2006. New facilities are entered into the database upon approval of the as-built survey. The entire file is included on the accompanying CD. Example pages may be found in Appendix C. During the past year, the County continued to improve the entire database by updating and editing where necessary to ensure database integrity.

