



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 2007, the various GIS sections within Frederick County continued to make progress in enhancing the County's GIS capabilities and in compiling source identification data. This section details County GIS efforts, 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.

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.

An inventory Frederick County GIS holdings as of 2007 is presented in Appendix B. The status of specific data called out in the NPDES permit is listed in Table 4-1.

4.1.1 2007 Division of Public Works GIS Data Activities

The following illustrates efforts made by the Division of Public Works (DPW) GIS Section to enhance the County's GIS capabilities.

1) Pavement Management

DPW is upgrading its pavement management software. A GIS component will be included in this upgrade. This will provide a more accurate accounting of roadway pavement conditions and required maintenance. The GIS module of the upgraded software will utilize the County's revised roadway centerline database for accuracy and GIS data use.

2) Storm Drain System Updates

DPW continued the efforts to update GIS data on the County's storm drain system. Consultants reviewed and georeferenced plans for two watersheds, Bennett Creek and Ballenger Creek, vectorized the storm water pipe data into the pre-existing shapefile, and updated the associated attribute table to include the newly added data. For the Bennett Creek watershed, a total of 71

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	DEMs, 2-foot contours, breaklines and spot elevations were compiled in March 2005 during the production of new 6" digital orthophotography.
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 data are complete but the layer is not yet available to staff.
Public and private land ownership	Yes	Yes	Maryland PropertyView is available from MD Office of Planning. The Maryland Property View package also contains parcel centroids with State Assessment data. Frederick County has completed its work with an outside contractor to produce more accurate vector parcel data. A data maintenance plan is presently under development. Upon completion of that plan, parcel data will be available to all County staff.
Population density	Yes	Yes	These data consist of 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. The 2005 Ortho project data provide a hydrography database that will be 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	FEMA Floodplain data available in GIS format. The data are from FEMA's contractor, AMEC Earth and Environmental, Inc. The FEMA mapping was adopted by the County Commissioners in September 2007 and the final date shown on the Community Panel mapping is September 19, 2007. The data received from AMEC are in shapefile format and includes a Base Flood Elevation file for areas with a detailed study and the usual FEMA flood mapping file.
Wetlands	Yes	Yes	Shapefiles from MD-DNR and hard copy DNR color plots by quad sheet. The County also has NWI wetlands. The County built a list of hydric soils from Soil Conservation District maps. Soils database updated from NRCS in 2005. The County began to update the GIS wetlands layer for Bennett Creek watershed through a grant-funded project.
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 was completed for the Bennett Creek watershed and efforts in Ballenger Creek watershed were begun as part of the QA/QC process of the entire system. An additional 1 to 2 watersheds are planned for updating in 2008.
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 updated in AutoCAD 2007 when as-built drawings become available 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.
Sewage treatment plants	Yes	No	Files in AutoCAD 2007, see sanitary sewer systems above.
Industrial operations	Yes	Yes	Up-to-date information available from EPA Envirofacts website
Hazardous waste sites	Yes	Yes	Up-to-date information available from EPA Envirofacts website
Landfills	Yes	No	This list is maintained by the Division of Utilities and Solid Waste Management (DUSWM) 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	Up-to-date information available from EPA Envirofacts website
Impervious areas (e.g., roads, parking lots, and rooftops)	Yes	Yes	Current 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. Planimetric data became available in late 2007. The County plans to use the data to digitize impervious area in FY 2009.
Bridges	Yes	Yes	Consultant previously recorded bridges with greater than 20-foot span. County will obtain GPS coordinates of bridges spanning 10-20 feet
Estimated pollutant loads	Yes	Yes	Prepared annually for NDPEs Annual Report.
County properties	Yes	Yes	Staff compiled a list of county-owned properties to conduct the NPDES Industrial Permit Assessment from several sources. Multiple county property lists were obtained from DUSWM, Accounting, Parks, Frederick County Public Schools (FCPS), and DPW. During Summer 2007, WMS digitized county-owned parcels from county property lists using draft parcels and will be finalized in 2008.
Sampling locations	Yes	Yes	Sampling locations provided and maintained by the County's NPDES consultant, Versar, Inc.
Orthophotography	Yes	Yes	Available for purchase and subject to GIS license agreement. 2005 Ortho Project Ortho Image Specs: 0.5 Ft. Pixels, 1:1200 Mapping Scale are available. True color, 1:2400 scale, and 1 square foot per pixel from 2000 flyover are available as well.
Watersheds	Yes	Yes	County has created 20 watershed classifications that were developed by Planning and DPW. The County updated the watershed boundaries in 2007 and began work to digitize the subwatersheds and catchments for each of the 20 NPDES watersheds. Also have Md_Wtrsheds.shp GIS layer from MD-DNR.

sheets were reviewed, 49 files were clipped for georeferencing, and 96 profiles were clipped for georeferencing. For the Ballenger Creek watershed, a total of 145 sheets were reviewed, 27 files were clipped for georeferencing, and 94 profiles were clipped for georeferencing.

4.1.2 2007 Enterprise GIS Data Activities

The following illustrates efforts made by the Enterprise GIS Section to enhance the County's GIS capabilities. Efforts were made in six areas as outlined below:

1) Countywide Roadway Imaging Data Collection

The 2006 roadway imaging data collection information has been accepted and is being used to "virtually drive" county roadways from the desktop. This data collection provides access to county roadway images allowing data users to view all aspects of roads from ditch line to ditch line and associated roadway assets. These data allow for the collection of roadway assets information such as stormwater inlets, signing, guardrails, etc. Frederick County plans to update this imaging data collection every two years, with new road updates every year, as needed.

2) Pictometry Data

Pictometry data is oblique, 6-inch resolution, aerial photography. These aerial photographic data will be in use during 2008 with updates planned for every two years. These data allow for viewing of aerial image features in height, depth and width views as well as the ability to measure aerial features and may be utilized with other GIS data.

3) 2005 Orthophotography and Planimetric Data

The 2005 orthophotography and planimetric data are now available to the County. March 2007 aerial photography (six-inch resolution) was available in December 2007. This recent aerial photography was produced as part of a Maryland State cooperative contract. The Planimetric data became available in late 2007 and the County plans to use them to digitize impervious area in FY 2009.

4) LIDAR Data

The County plans to participate in a future LIDAR State contract that will provide high accuracy elevation data with full county coverage.

5) Parcel Data

The Frederick County vector parcel data collection is complete but the layer is not yet available to County staff.

6) Frederick County Roadway Centerline Data Project

The product of this project will be correctly and accurately geocoded addresses and roadway calibration. When completed, the centerline will be conflated with the Maryland SHA centerline and then periodically uploaded to the SHA database. Approximately six differing County centerline files will be combined into this database.

4.1.3 2007 Division of Planning GIS Data Activities

The Division of Planning staff is working on transferring their major datasets like water and sewer, developed areas, current zoning, and comprehensive plans to the parcel layer. Prior to the development of the most recent parcel data, all of these layers were digitized to the tax maps. Planning staff is now taking the more accurate vector data from parcels and remapping these layers on a parcel by parcel basis. There will no longer be large countywide polygons, but rather each parcel will now be keyed with these data.

There are two regional plans currently undergoing updates: the Thurmont Region Plan and the New Market Region Plan. Staff continues to maintain agricultural preservation property and district data. The Division of Planning is also working to support the analysis and data creation for the Water Resource Element project, part of HB1141. This work includes modeling pollutant loads and impervious areas for current and 20-year projections.

Working in conjunction with the U.S. Census Bureau's Local Update of Census Addresses (LUCA) project, the Division is creating a countywide housing unit inventory. This dataset will provide comprehensive information for each housing unit in the County by type, address, and tax assessment.

There are also a number of special projects concerning water quality and resources and involving GIS that the Division has been responsible for throughout the year: the Stream Buffer Ordinance, Wellhead Protection Ordinance, Stream Use Classifications, and Federal Emergency Management Agency (FEMA) Floodplain mapping.

4.1.3.1 Stream Buffer Ordinance

In July 2007, the Frederick County Commissioners adopted enhanced stream protection regulations for the Linganore Watershed. This zoning code change was a key recommendation made in the Linganore Source Water Protection Plan and its subsequent Action Plan. These initiatives were designed to address Lake Linganore's sediment and phosphorus Total Maximum Daily Load (TMDL) and fulfill other County policies as well as stem future residential development on steep slopes adjacent to Lake Linganore, a recreational lake and drinking water reservoir.

The new stream buffer law establishes the Linganore Watershed Protection Area and creates three tiers of stream setbacks: 100 feet, 150 feet, and 175 feet (or more), depending on the extent of slope within a defined stream valley corridor. The stream protection ordinance applies to land undergoing any subdivision and prohibits grading and construction within the buffer. Utilities,

trails and driveways are allowed in the newly expanded stream buffer in certain situations. The full Stream Buffer Ordinance can be found in Appendix M.

4.2 URBAN BMP/SWM FACILITIES DATABASE

At present, all SWM facilities have been entered into Frederick County's urban BMP database. There are 599 entries in the database, including 25 new facilities completed on or after January 1, 2007. 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.