

**Planning for
Domestic Wastewater Systems**



**State of Georgia
Department of Natural Resources
Environmental Protection Division
Water Protection Branch
Atlanta, GA 30334**

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When a local government or private concern (owner) identifies a need for a wastewater treatment and disposal system it is imperative that thorough and adequate planning take place. As might be expected, the collection, treatment and disposal of wastewater in Georgia is regulated by a number of environmental laws that are administered by various agencies in local and State government. Although the process may seem to be very complex, proper planning can greatly facilitate completing the process. Since the approach to wastewater treatment may take several different paths, the flowcharts define a step-by-step approach that should be followed.

Flowchart #1 - Planning for Wastewater Systems

If the owner proposes a non-publicly owned system that disposes of the treated wastewater via a subsurface method, e.g. tile field, infiltrators, drip irrigation; he/she should first contact the health department in the appropriate county. If the system is publicly owned and/or the owner is proposing a system where final disposal is not via subsurface, e.g. surface discharge or spray irrigation, the owner must arrange a meeting with the Water Protection Branch (*WPB*) of the Georgia Environmental Protection Division (*EPD*).

County Health Departments:

The owner meets with the environmental health specialist in the county health department and outlines his proposed project. Based on the size of the project, type of waste treated, service area, etc., the health department will determine if they will be the lead agency. If so, the owner should follow the procedures of that department. If not, the owner will be referred to *EPD*.

Georgia Environmental Protection Division

The owner must have a “meeting of intent” with the *WPB* to outline the proposed project. There are two permitting routes that can be taken.

- A. Discharge Permits (NPDES)
- B. No Discharge Permits (LAS)

Wastewater systems that discharge treated wastewater to a surface stream must be permitted through the Federal National Pollution Discharge Elimination System (NPDES) and meet all the requirements of that system. In Georgia, with very few exceptions, surface discharge permits will only be issued to publicly owned systems.

Wastewater systems that do not result in a discharge to surface waters, such as slow rate land treatment systems and urban reuse systems (no discharge), are permitted through the State of Georgia’s land application system (LAS) permitting process. Both publicly and privately owned

systems can apply for and receive LAS permits.

Flowchart #2 - NPDES Permit

A-1: The owner shall make a written request to the *WPB* for a “wasteload allocation for planning” (PWLA). Based on the receiving stream classification and characteristics and the proposed location and quantity of discharge, the *WPB*, after reviewing existing water quality data and conducting water quality modeling as appropriate will provide the owner with an estimated wasteload allocation to define effluent concentrations for the proposed discharge.

A-2: Utilizing the PWLA as guidance, the owner’s registered professional engineer must complete a thorough **antidegradation review** to justify the additional discharge of treated wastewater. This review shall consist of three (3) important elements.

1. Socio-Economic Analysis (**see Attachment 1**)
2. No-Discharge Alternative Feasibility Analysis
3. Public Participation

Adequate socio-economic justification for increasing wastewater system capacity must be presented. Population growth, commercial-industrial needs, job creation, public health, etc. must be considered.

The no-discharge alternative feasibility study will compare the technical aspects and the costs of the proposed discharge alternative with those of an appropriate no-discharge alternative such as slow rate land treatment, urban reuse, or discharge elimination via regionalization. Both present worth costs (capital and operating) and the estimated effect on the water and sewer rate structure of the community shall be presented for each alternative considered. The costs should be based on best available data and professional judgement. At completion of the review, the owner must public notice the results.

A final report on the antidegradation review, including comments received during the public notice period must be submitted to the *WPB* for review and concurrence. Only if the increased wastewater capacity can be justified from a socio-economic standpoint and the no-discharge system is shown to be either technically or economically infeasible will a permit for the increased discharge be considered.

A-3: Regardless of the treatment alternative chosen (discharge or non-discharge) the owner must conduct a watershed assessment. The purpose of the watershed assessment is to assess point and non-point stressors on the stream(s) affected by the proposed system (i.e., all streams that are within the proposed and existing service area) and to develop a plan for maintaining water quality standards in those streams as land uses change due to the growth caused by access to sewer service. **Attachment 2** provides some detailed information about watershed assessments. Because the requirements of an assessment are site specific, however, the *WPB* will work with the owner and consultant to develop the plan of study for the given location. The study will likely include, but is not limited to both dry and wet weather chemical sampling, biological and habitat assessment, and nonpoint source (land use based) modeling. A report on the assessment must be submitted to the *WPB* for review.

The owner, as part of the watershed assessment, will develop a control strategy to reduce the nonpoint

source impacts of secondary development in the area. This strategy shall be submitted to the *WPB* as a separate document along with the results of the watershed assessment. If the discharge permit is issued, the owner will be expected to implement the strategy according to a schedule that will be included as a part of the NPDES permit.

A-4: With the results of the watershed assessment, the *WPB*, with other available data and modeling, will develop a final wasteload allocation (WLA) for the proposed discharge. This WLA will provide the permitted effluent concentration for each parameter and may be different than the PWLA.

A-5: With a final WLA, the owner's registered professional engineer will prepare an environmental information document (EID) and design development report (DDR) for the proposed project. A vital part of the EID is a public meeting in which the results of the EID, the antidegradation review, and the watershed assessment are presented to the public. The EID and results of the public meeting, the DDR and an NPDES permit application are submitted to the *WPB* for review and processing. The permit application is not submitted until the DDR is concurred with by the Division.

A-6: If *EPD* concurs with all submittals, the *WPB* will draft an NPDES permit. The draft will be public noticed. The Director of *EPD* will decide if a public hearing is needed based on comments received during the comment period. The Director has the final decision on issuing the permit.

A-7: If a permit is issued, the *WPB* must review and approve all construction plans and specifications prior to initiation of construction.

Flowchart #3 - LAS Permit

B-1: The owner will select an appropriate site for land application of the treated wastewater and request in writing to the *WPB* for a preliminary site concurrence. Based on existing data, the *WPB* will determine if the selected site is suitable for further investigation.

B-2: The owner's registered professional engineer and soils scientist will conduct a thorough soil investigation of the selected site following *EPD*'s guidelines for land application systems. The soils report must be submitted to *WPB* for review and concurrence.

B-3: Regardless of the treatment alternative chosen (discharge or non-discharge) the owner must conduct a watershed assessment. The purpose of the watershed assessment is to assess point and non-point stressors on the stream(s) affected by the proposed system (i.e., all streams that are within the proposed and existing service area) and to develop a plan for maintaining water quality standards in those streams as land uses change due to the growth caused by access to sewer service. **Attachment 2** provides some detailed information about watershed assessments. Because the requirements of an assessment are site specific, however, the *WPB* will work with the owner and consultant to develop the plan of study for the given location. The study will likely include, but is not limited to both dry and wet weather chemical sampling, biological and habitat assessment, and nonpoint source (land use based) modeling. A report on the assessment must be submitted to the *WPB* for review.

The owner, as part of the watershed assessment, will develop a control strategy to reduce the nonpoint

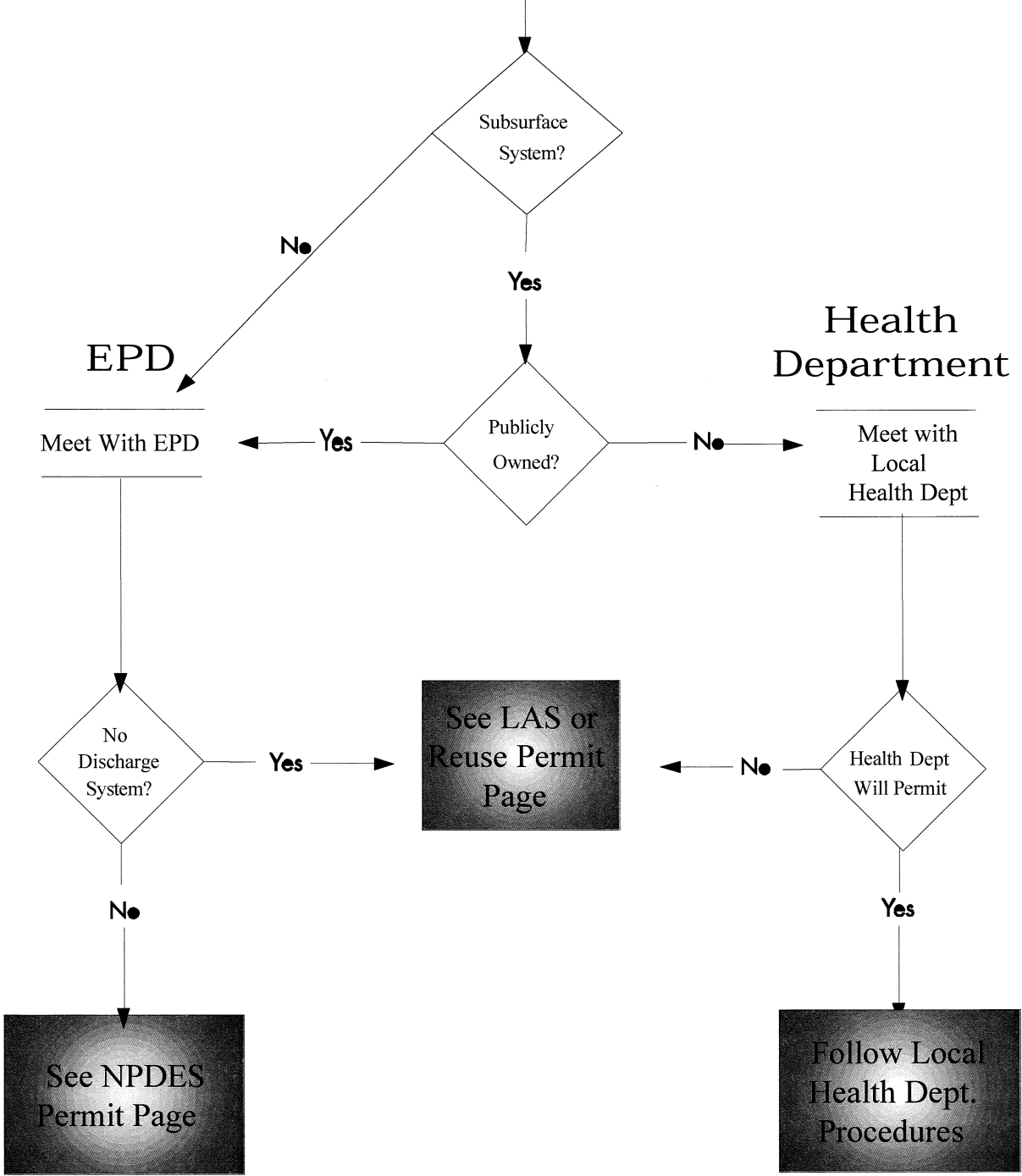
source impacts of secondary development in the area. This strategy shall be submitted to the *WPB* as a separate document along with the results of the watershed assessment. If the no-discharge permit is issued, the owner will be expected to implement the strategy according to a schedule that will be included as a part of the LAS permit.

B-4: The owner's registered professional engineer will prepare an environmental information document (EID) and a design development report (DDR) for the proposed system. As part of the EID the owner will hold a public meeting in which the environmental impacts of the project will be presented and public comments solicited. The EID and results of the public meeting, the DDR and an LAS permit application are submitted to the *WPB* for review and processing. The permit application is not submitted until the DDR is concurred with by the Division. *NOTE: For privately owned systems, an executed trust indenture must be submitted with the permit application.*

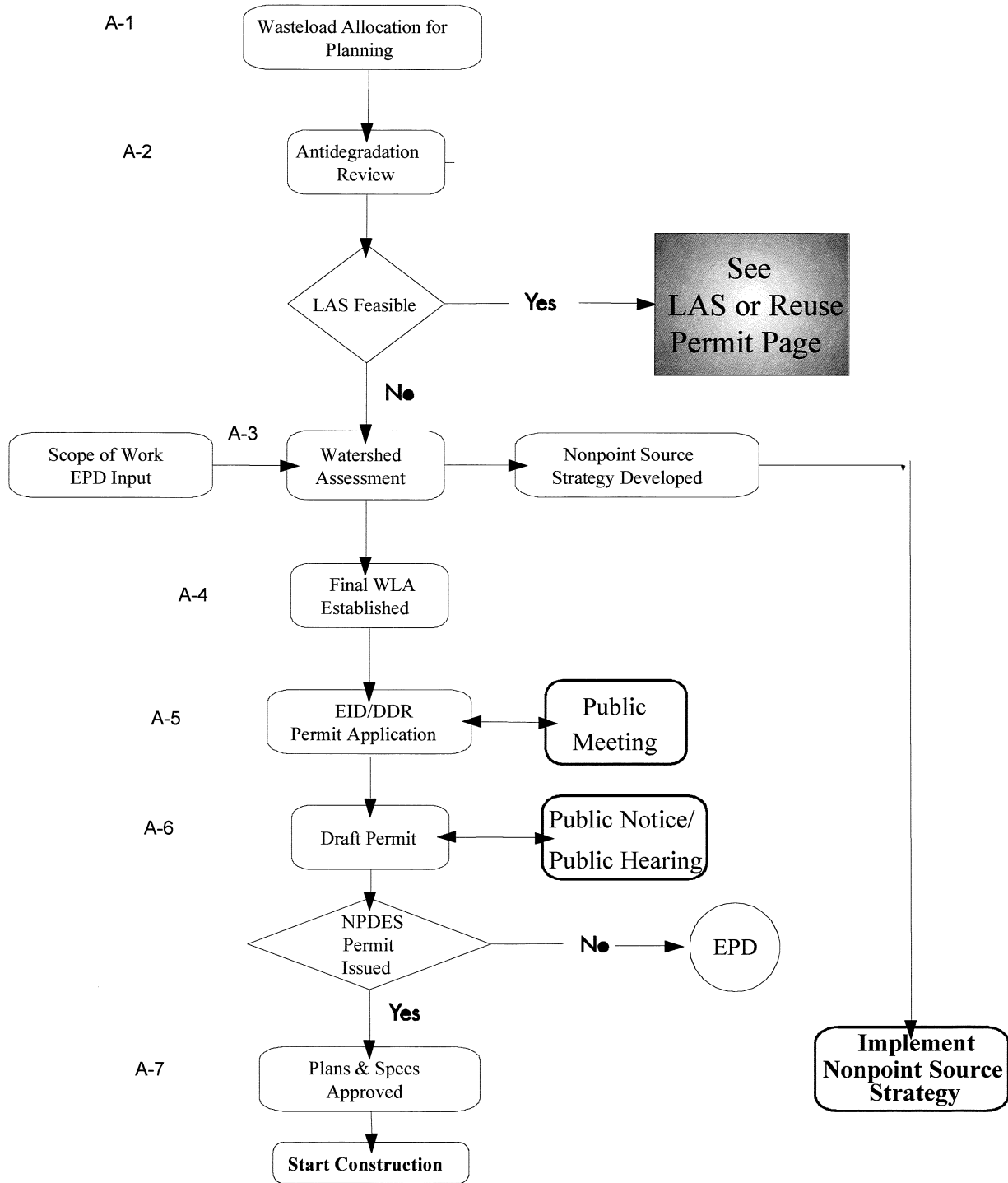
B-5: If *EPD* concurs with all submittals, the *WPB* will draft an LAS permit. The draft will be public noticed. The Director of *EPD* will decide if a public hearing is needed based on comments received during the notice period. The Director has the final decision on issuing the permit.

B-6: If a permit is issued, the *WPB* must review and approve all construction plans and specifications prior to initiation of construction.

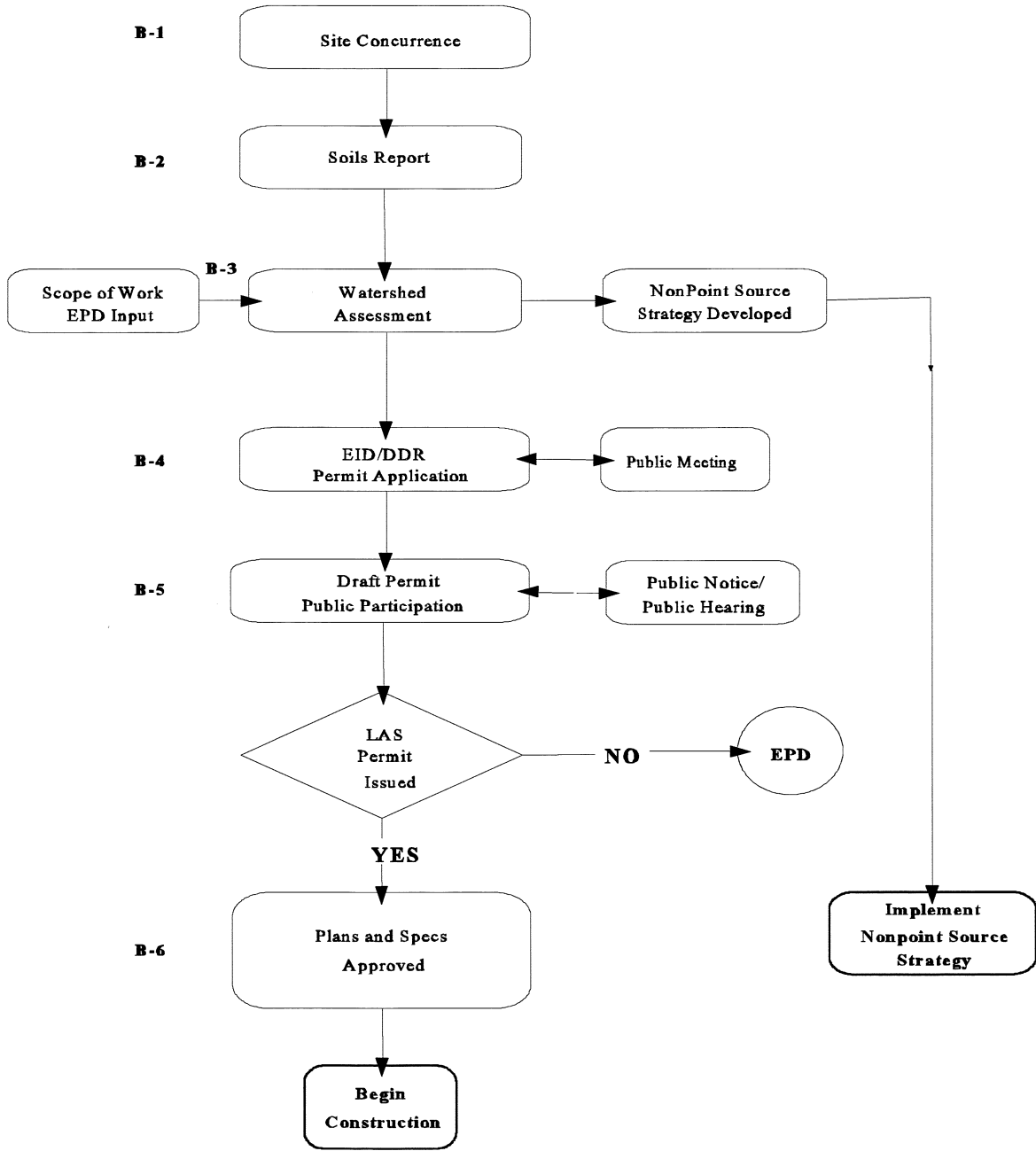
Flowchart #1 Planning for a Wastewater Treatment System



Flowchart #2 NPDES Permit



Flowchart #3 LAS or Reuse Permit



Attachment 1

Refer to:

State of Georgia
Environmental Protection Division
Antidegradation Analysis Guidelines

Latest Edition

ATTACHMENT #2

Guidelines for Watershed Assessments for Domestic Water Systems

A **Watershed Assessment** includes the gathering of existing information about a watershed and its point and nonpoint pollution sources, as well as the collection of new chemical, physical and biological monitoring data. This information is then used to evaluate current and predicted future water quality problems and to recommend short and long term solutions. The local government can use these recommendations to develop a **Watershed Protection Plan**, parts of which will be incorporated into an NPDES discharge permit or other enforceable watershed or water resources protection program. The guidelines outlined here may be supplemented by additional requirements from EPD.

General Information

Name and address of local government, group of governments, watershed protection group or other responsible entity.

Name, address, telephone number, fax number and E-mail address of contact person(s).

Defining the Watershed

The purpose of this section is to describe or identify the watershed, responsibilities and resources for watershed management, and to collect information needed to assess and project the future impacts of management scenarios on water quality. Identify, describe, or cite: 1) the political jurisdictions, pertinent authorities and organizations within the watershed(s); 2) the physical characteristics, land use, and population information; 3) facilities and activities which can affect or are affected by water quality or quantity; 4) service areas and areas which warrant special water quality protection measures in the watershed(s). It is recommended that watershed information be compiled in a Geographic Information System (GIS) format.

Topographic map (USGS 7.5 Minute or equivalent with scale between 1:10,000 and 1:24,000) which includes the following information:

Delineation of the watershed(s) to be assessed and the surrounding areas for at least one mile outside these watershed limits. At a minimum, the watershed assessment area must include all streams and other water bodies in the current and proposed service area of the water pollution control plant being built or expanded. This service area may encompass entire watersheds, portions of watersheds, or both. To the extent possible watershed delineations should coincide with those established by the USGS under contract with the EPD. The local government should check with the EPD to determine if the watersheds delineated by the USGS are available for the study area.

Land use activities (current and projected for the next 10-25 years).

Current zoning designations.

Soil types within the watershed.

Population densities (current and projected for the next 10-25 years).

Areas in the watershed which are served by municipal or private wastewater treatment facilities versus areas served by individual septic systems.

Drinking water sources (surface water intakes and community wells).

Stormwater treatment facilities such as detention and retention basins, constructed and natural wetlands, inground treatment systems and other structural controls. Particular attention should be paid to regional ponds and other large-scale stormwater control facilities in the watershed.

Areas in the watershed which are affected by EPD's Rules for Environmental Planning Criteria, including water supply watersheds, groundwater recharge areas, wetlands, river corridor and mountain protection areas. State stream buffer protection requirements and any existing local buffer requirements should also be noted.

Previous watershed protection and management efforts should also be referenced in the assessment.

Note: Local governments are required by the Georgia Planning Act of 1989 to prepare comprehensive plans and update them on a regular basis. These plans are submitted to the Georgia Department of Community Affairs and must address certain Environmental Planning Criteria requirements. The plans can provide valuable information on current and projected future conditions and activities in the watershed, and should be reviewed as part of the watershed assessment procedure. Any other planned or ongoing environmental assessments or protection efforts should be noted and coordination of all such efforts is strongly encouraged. For example, EPD or the local government(s) may be conducting assessments for the Safe Drinking Water Act Source Water Assessment Program. Local governments may also be implementing stormwater management programs to comply with their NPDES municipal separate storm sewer system discharge permits.

Legal Authority Evaluation

Identify all local governments who have authority over the zoning and development activities of any of the delineated areas of the watershed.

Evaluate each local government's codes and other regulations to determine if adequate authority exists to perform a watershed assessment, develop a watershed plan and implement a plan for each entity.

Identify weaknesses in each local government's authority and areas where additional requirements need to be included.

Source Identification (Point and Nonpoint)

Location and description of the following facilities, which should be also be indicated on appropriate maps:

NPDES-permitted discharges, including municipal and industrial wastewater facilities, and areas/facilities covered by municipal and industrial stormwater permits.

Other permitted wastewater treatment facilities, such as land application systems and water reuse facilities.

Waste treatment systems greater than 10,000 GPD which are under Department of Human Resources (DHR) control, including inground disposal systems such as drip irrigation and drain fields. These systems do not receive permits from EPD, but must be approved by EPD before a construction permit can be issued by DHR.

Locations covered by Land Disturbance Activity permits and the NPDES General Permit for Stormwater Discharges from Construction Activities (once this permit becomes effective). Mapping of these locations can help to identify areas of high growth, as well as potential erosion and sedimentation problems in the watershed(s).

Operating and closed municipal landfills and hazardous waste sites.

Note: Visual surveys and local knowledge may be needed to identify some pollutant sources. Adopt-A-Stream surveys and citizen complaints to the local government can provide valuable information about problem areas, while land use and zoning information is also useful for identifying potential sources of certain pollutants.

Watershed Assessment

Select and describe the assessment procedure or model(s) which will be used to assess and project the relative effects of major sources of background, point and nonpoint source impacts under current and various future management scenarios. Identify stream segments and lakes in the watershed(s) and describe the condition of those water bodies as described in the latest report on "Water Quality in Georgia (Section 305 (b) report) and other applicable sources of data and information. Describe and quantify to the extent possible, estimated significant background, point and nonpoint sources of pollution, and the source or cause of those effects by stream segment or water body. Describe additional data or information needed to evaluate conditions and support the assessment procedures or model(s) employed.

Existing Water Quality Information

Monthly mean rainfall estimates for the most current past five years, at a minimum.

Estimated runoff coefficients (ratio of runoff to rainfall) for each land use type.

List of all water bodies within the watershed(s).

List of all impaired water bodies (i.e., rivers, streams, lakes, reservoirs and estuarine waters partially meeting or not meeting their designated uses), as listed in the most current edition of the "Water

Quality in Georgia” Report. All available information on each water body should be given, including 305(b) and 303(d) status, criterion violated, potential cause, etc.

Existing dry weather (base flow) and wet weather stream flow data (from USGS gaging stations, etc.).

Existing dry and wet weather water quality data. This information may include local, State and Federal stream and watershed monitoring information, Adopt-A-Stream monitoring and streamwalk reports and a variety of other information.

Existing aquatic biomonitoring (fish and benthic macroinvertebrate) and habitat information.

Discharge monitoring reports (DMRs) from permitted wastewater facilities and stormwater discharge information collected for stormwater permit compliance.

Note: The USEPA “Surf Your Watershed” internet site (<http://www.epa.gov.surf>) also provides information on many indices of water quality, as well as links to numerous existing databases with useful information for watershed assessments.

Watershed Monitoring

An initial proposal or scope of work for the watershed monitoring activities must be submitted to EPD for review and approval. The proposed plan should identify the nature and extent of additional data collection necessary to adequately assess the condition of water bodies in the watershed.

Sampling locations, including an explanation of why each site was selected. The number of sites will vary according to the size of the watershed, variety of land uses, hydrology, known or suspected pollutant sources and other factors.

Sampling schedule for wet and dry weather sample collection. The monitoring program must include both types of sampling in order to provide representative data. The sampling schedule should provide realistic time frames which reflect the uncertainties of wet weather sampling, but there must be an estimated completion date for all work.

Dry and wet weather sampling criteria. Suggested dry weather criteria is a period of at least 72 hours since the last rainfall; suggested wet weather criteria is at least 0.1 inches of rainfall with an interevent period of at least 72 hours. An interevent period is the time elapsed since the previous rainfall event.

Standard operating procedures and a description of the equipment to be used, including automated sampling devices, if applicable. Monitoring must be conducted according to approved test procedures set forth in 40 CFR Part 136, unless other approved test procedures have been specified. Clean sampling techniques are strongly recommended for metals analyses.

Analytical parameters. The following parameters should be included: BOD, COD, TSS, TP, NO₂+NO₃-N, NH₃-N, TKN, total lead, total copper, total zinc, total

cadmium, fecal coliform, pH, dissolved oxygen, hardness, turbidity, specific conductance, water temperature and air temperature. Any pollutant which is listed as a "criterion violated" on the 305(b)/303(d) list or is suspected as a source of impairment for a particular water body must be included as a monitoring parameter in that area.

Biological evaluation should include habitat assessment, fish and aquatic macroinvertebrate community assessments and reference stations. Impacts on biological communities must be evaluated for the pollutant or stressor causing the impact.

Evaluation and Discussion

Describe water quality goals. Evaluate, identify, and describe water bodies within the watershed(s) which are or may be impaired or fail to support designated uses, the reason, and the actions necessary to protect the beneficial use of each water body.

This portion of the assessment should provide a detailed discussion of the watershed assessment information and identify the current and predicted point and nonpoint source pollution problems in the watershed. The discussion should integrate this information with the water quality problems identified in the 305(b)/303(d) listings and any ongoing actions to alleviate these problems. Predictive tools (water quality models) should be used to demonstrate how water quality standards can and will be met in the watershed. Such predictions should include forecasted trends toward changing activities and land uses, as well as the predicted effects of various controls and BMPs recommended in the assessment.

Recommended Corrective Actions

Identify potential corrective actions and responsibilities which may feasibly be employed to restore or protect existing or potentially impaired or nonsupporting water bodies in the watershed(s). Establish a schedule for evaluating, selecting, and implementing corrective actions within the watersheds assessed.

The **Watershed Assessment** must include a list of recommended corrective actions to address the specific problems identified in the assessment and to improve and ultimately meet water quality standards. This list of corrective actions should be comprehensive and may include structural and non-structural controls, best management practices, suggested changes to the local government's existing legal authority, ideas for additional future activities, funding needs, cooperative projects and other activities in the watershed.

The local government can then use this list to choose actions for its **Watershed Protection Plan** which are appropriate for its size and resources. The Plan must include specific actions and detailed schedules for implementation.

Appendices and References

As appropriate

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