4.0 ECOLOGICAL RESOURCES

4.1 Ecology Scope of Work Outline and Schedule

The following is an outline of the scope of ecology work required for the Georgia Department of Transportation (GDOT) projects in the order in which the ecology surveys and reports will be completed. Additional guidance can be found on the Ecology Website (http://gdotteams.dot.ga.gov/info/ecology/default.aspx). For access to the website, complete the form on the user registration site (http://www.dot.ga.gov/doingbusiness/Pages/UserRegistration.aspx). The survey methodology and reporting requirements are noted below in Section 4.2.

These procedures will be followed for all ecology work completed for the GDOT after April 1, 2010 to ensure compliance with applicable laws and agreements with state and federal agencies. If the project is contained under an existing contract with a different scope of work for Ecology, the consultant will contact the GDOT Project Manager (PM), NEPA Analyst and ecologist to discuss possible options to completing work in accordance with this scope of work.

The ecologist will receive a studies request which includes the limits of the survey area. If at the time of receipt, a preferred alignment has been identified, the ecologist will survey an additional 100-foot corridor along either side of the project corridor. The limits of the survey area are transmitted to the Georgia Department of Natural Resources (DNR) and U.S. Fish and Wildlife Service (USFWS) to request early coordination for the known occurrences of protected species in or adjacent to the survey area. At this time, the ecologist will gather and analyze all available data on the habitat, land use and other ecological resources within and adjacent to the survey area. At a minimum, the ecologist will review topographic maps, National Wetland Inventory maps, soil maps, and protected species lists on the USFWS and DNR websites.

After the ecologist receives an element occurrence letter from DNR and has completed all preparatory research, a field survey will be scheduled and conducted. During the field survey, the ecologist will survey the entire survey area and identify and delineate all streams, wetlands, open waters, state mandated buffers and habitats. Required data to be recorded is outlined in the Routine Wetland Determination Data Form (Wetland Data form), North Carolina Division of Water Quality – Stream Identification Form (Stream Data form), Expanded Preliminary Jurisdictional Determination Form (Expanded JD Form) and Ecology Survey Data Sheet.

Stream, wetland, open water and habitat delineations, based on Global Positioning System (GPS) data, will be transmitted to the PM immediately following the completion of the ecology survey. These delineations will be transmitted as preliminary delineations. The PM will be notified that these resources will be verified by the U.S. Army Corps of Engineers (USACE) the Georgia Department of Natural Resources Environmental Protection Division (EPD), and the GDOT ecologist (for consultant surveys), which could change the labeling of the resources.

Data recorded during the field survey will be included in an Ecology Survey Report. This report will be transmitted to (1) the USACE to request jurisdictional determinations on waters of the U.S., (2) EPD to request state waters determinations, (3) the Federal Highway Administration (FHWA) for their files, (4) the U.S. Fish and Wildlife Service (USFWS), if protected species habitat is identified within the survey area, (5) DNR, if species habitat is identified within the survey area, and (6) the U.S. National Marine Fisheries Service (USNMFS) if marine species or essential fish habitat is identified within the survey area.

If habitat for protected species is identified in the survey area, a protected species survey will be scheduled and conducted as per the GDOT approved survey schedule and methodology. If a GDOT approved methodology does not exist, one must be approved by GDOT before the survey is conducted. Following the protected species survey, a Protected Species Survey Report will be written. Populations of protected species (and suitable habitat) will be delineated based on GPS data and labeled as Environmentally Sensitive Areas. These delineations will be transmitted to the PM immediately for placement on the plans. The Protected Species Survey Reports will be transmitted to the agencies as an appendix to the Ecology Assessment of Effects Report.

A preliminary alignment will be chosen that minimizes total project impacts to natural and cultural resources. Once the preliminary design is complete, impacts to resources will be calculated. These calculations will be described in an Ecology Assessment of Effects Report.

The Ecology Assessment of Effects Report will include (1) calculations of impacts to streams, wetlands, open water and natural habitats, (2) biological determinations for all federal and state protected species considered, and (3) an assessment of indirect and cumulative ecological impacts of the proposed impacts.

The Ecology Assessment of Effects Report will initiate coordination under the Fish and Wildlife Coordination Act (FWCA), coordination under Section 7 of the Endangered Species Act (ESA), and the 404b(1) process (Practicable Alternatives Review process), as needed.

Immediately following the authorization of Right-of-Way and the start of final design, the ecologist will apply for the following, as needed: (1) a permit with the USACE under Section 404 of the Clean Water Act, (2) a buffer variance under the National Pollutant Discharge Elimination System (NPDES) permit, (3) a revocable license and (4) a Tennessee Valley Authority License.

If there is a change in the project that requires an additional survey before a preferred alignment is identified, a survey of the newly identified survey area will be conducted and an addendum to the Ecology Survey Report will be written. The Addendum to the Ecology Survey Report will include all of the data required for an Ecology Survey Report for the newly identified area.

If there is a change in the project design after the Assessment of Effects Report is written, an Addendum to the Assessment of Effects Report will be written. The Addendum to the Assessment of Effects Report will include the reason for the design change in addition to all data required for an Assessment of Effects Report for the entire project.

If a studies request is received after a preferred alignment is identified, a single all-inclusive report will be written. This report will be titled the Ecology Survey and Assessment of Effects Report and will include all data and analyses of both the Ecology Survey Report and Assessment of Effects Report.

4.2 Assessment of Ecology Resources

4.2.1 Preparatory Research

Prior to an ecology resource survey, the ecologist will request early coordination for the known occurrences of protected species in or adjacent to the survey area from DNR and USFWS. At this time, the ecologist will gather and analyze all available data on the habitat, land use and other ecological resources within and adjacent to the survey area. At a minimum, the ecologist will review topographic maps, National Wetland Inventory maps, soil maps, and protected species lists on the USFWS and DNR websites.

After the ecologist receives a record occurrence letter from DNR and has completed all preparatory research, a comprehensive field survey will be scheduled and conducted.

4.2.2 Ecology Resource Survey

After the ecologist receives an element occurrence letter from DNR and has completed all preparatory research, a field survey that consists of surveying the entire survey area will be scheduled and conducted. During the field survey, the ecologist will identify and delineate all streams, wetlands, open waters, state mandated buffers and habitats. Required data to be recorded is outlined in the Routine Wetland Determination Data Form (Wetland Data form), North Carolina Division of Water Quality – Stream Identification Form (Stream Data form), Expanded Preliminary Jurisdictional Determination Form (Expanded JD Form) and Ecology Survey Data Sheet.

4.2.3 Ecology Resource Survey Report

The Ecology Resource Survey Report identifies, describes and evaluates protected waters and habitats located within the survey area. The survey area will be clearly delineated by the Project Manager (PM) on conceptual layouts with input from the ecologist.

The ecologist will transmit the resource delineation data to the PM for the ecological resources to be displayed on project layouts and plans. The PM will be notified that the stream, wetland, open water, state mandated buffers and habitat delineations are preliminary at this time. The PM will be notified again once the USACE and EPD have determined the federal and state jurisdiction of

the identified streams, wetland and open waters and the GDOT ecologist has approved the habitat analyses.

The ecologist also will transmit the report to (1) USACE to request Jurisdictional Determinations for all streams, wetlands and open waters, (2) EPD to request buffered state waters determinations for all streams, wetlands, and open waters, and (3) FHWA for their information. If habitat for protected species is identified, the report will be transmitted to (4) USFWS, (5) USNMFS (for marine species) and (6) DNR. Comments from these agencies will be included as an appendix to the Ecology Assessment of Effects Report. Response to comments received will be addressed in the body of the document or in a response letter. The USACE's jurisdictional determination is valid for five years at which time a new determination must be made. If environmental conditions (i.e. drought or flood) change, a new survey for buffered state waters may be required.

If habitat for a protected species is identified during the Ecology Resource Survey, the ecologist will conduct a species survey in accordance with the approved methodology and complete a Protected Species Survey Report. If approved methodology does not exist, then methodology will be approved by the GDOT ecologists and relevant state and federal agencies prior to the survey. The ecologist will record the location of protected species (if located) and the associated habitat. These data will be transmitted to the Project Manager for delineation on the survey area layout. The ecologist also will transmit the report to USFWS, USNMFS, DNR, and FHWA for their information.

Once a preferred alignment is identified, the ecologist will complete the Ecology Assessment of Effects Report.

An outline of the Ecology Resource Report is listed below. The following sections detail the governing laws/regulations, necessary background research, and approved survey methodologies.

A. Transmittal Letter

Write three (3) transmittal letters for the Ecology Resource Survey Report.

1. FHWA to inform them of the survey and its findings.
2. EPD to request concurrence with the state waters determinations outlined in the report.
3. USACE to request jurisdictional determinations on the streams, wetlands and open waters within the survey area.

B. Title Page

Title: Ecology Resource Survey Report
Project number: formatted XXX00-0000-00(00), if one has been assigned.
County
Project name: e.g., SR 84 Widening
PI number

Date
Prepared by: Name of Firm, if prepared by a Consultant
For: Georgia Department of Transportation, if prepared by a Consultant
Name of individual preparer

C. Overview Table
This table will provide a summary of the resources identified within the project area.

D. Executive Summary
Include a brief project description, a brief description of the survey area, a brief description of survey methodology, a summary of the habitats that are located in the project area, state and federal waters that are located in the project area, buffered state waters, streams that should be designed to account for fish passage, biota impaired streams located within one mile of the project site, and protected species that are located in the project area.

E. Table of Contents
Outline the layout of the report.

F. Project Description & Location
Describe the details of the proposed project. Include the location of the project (county, distance from nearest town/city) and size of the survey area in linear feet and acres.

G. Project Need and Purpose
Describe the need for and purpose of the project.

H. Habitats and Land Use Areas
Describe all habitat and land use types found within the survey area. Include soils, general terrain, and habitat size in acres. Illustrate this information in the Habitats Map.

I. Invasive Plant Species Identification
On February 3, 1999, Executive Order (EO) 13112 was signed establishing the National Invasive Species Council. EO 13112 requires that federal actions not contribute to the spread of invasive species.

Review EO 13112 and be prepared to field identify the plant species classified as Class One by the Georgia Exotic Pest Plant Council. Class One species are defined as exotic plants that pose a serious problem in Georgia natural areas by extensively invading native plant communities and displacing native species. Detailed information on each of the listed species can be found at the website of the Georgia Exotic Pest Plant Council (http://www.gaeppc.org/list.cfm).

During the field survey, the ecologist will identify and record all invasive plant species that appear on the GDOT's listed of targeted species. The

ecologist will record the locations of these species and enter the location into the Early Detection & Distribution Mapping System (EDDMaps) database (http://www.eddmaps.org/report/plants.cfm?id=us_ga). Invasive plant colonies greater than 1,000 ft² will be delineated on the plans.

J. State and Federal Protected Species Habitat

1. Governing Laws

a) Endangered Species Act

In compliance with Section 7 of the Endangered Species Act (ESA), GDOT must identify the presence of threatened and endangered species, and their designated critical habitat as well as evaluating project impacts.

Section 7 consultation is not required for candidate species though it is FHWA's policy to consider conservation measures to prevent their further decline and possibly eliminate the need to list them as endangered or threatened. This also should minimize project delays if a candidate species becomes federal listed before construction of a project has been completed. Identify candidate species and describe any planned conservation measures. (A February 20, 2002 FHWA memo notes this conservation policy.)

b) Wildflower Preservation Act of 1973

This state law provides for designation of and protection of plant species that are rare, unusual, or in danger of extinction. The protection offered to these species is limited to those that are found on public lands of the State. It is a misdemeanor to transport, carry, convey, sell, cut, pull up, dig up, or remove protected species listed by this Act. No protected plants may be collected from state-owned lands without express permission of the Georgia DNR. Georgia law specifically states that rules and regulations related to the protection of state protected species will not impede construction of any nature. However, the Wildlife Resources Division routinely makes recommendations to guide more environmentally friendly development in areas where state protected plant and animal species are known to occur.

c) The Georgia Endangered Wildlife Act

This state law is similar to, but somewhat different from, the federal ESA. It prohibits the capture, killing, or selling of protected species and protects the habitat of these species on public lands.

The Georgia Endangered Wildlife Act is much narrower in scope than the federal ESA.

Federal funded projects require discussion of and survey for all federal threatened, endangered and candidate species known to

occur within the project's county, as well as for those state threatened, endangered, rare and unusual species identified during early coordination with DNR as having occurrence records within 3 miles of the project.

State funded projects require discussion of and survey for all federal, candidate, and state listed species known to occur within the project's county.

d) Bald and Golden Eagle Protection Act of 1940
The Bald and Golden Eagle Protection Act of 1940 provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession and commerce of such birds.

e) Migratory Bird Treaty Act
The Migratory Bird Treaty Act (MBTA) and the Executive Order on the Responsibility of Federal Agencies to Protect Migratory Birds (EO 13186), requires the protection of migratory birds and their habitats. The habitats and structures potentially significant to migratory birds are to be identified within the survey corridor. Of particular concern are suitable migratory bird habitats and existing bridges, culverts, and pipes.

f) Magnuson-Stevens Fishery Conservation and Management Act
In compliance with the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), GDOT must identify unavoidable adverse impacts to EFH.

2. Ecology Resource Survey Report Guidelines

a) Federal Threatened and Endangered Species
The following information will be included for each species listed as federal endangered or threatened on either the USFWS or Georgia DNR website.

Include one or two sentences describing the identifying characteristics of the plant/animal species.

Describe in detail the preferred habitat of the species. Include the known range, known occurrences (if in or adjacent to the project area), community associate species, preferred soil types and general terrain characteristics.

Include a detailed description of all natural areas within/adjacent to the proposed project area. Include tree species, shrub species, forb species, soils, and general terrain characteristics.

If it is determined that there is no suitable habitat in/adjacent to the proposed project area, this determination will be supported clearly by the information above.

If it is determined that there is suitable habitat within the survey area, it will be stated that a species survey will be completed during the appropriate survey season. The approved survey season will be stated, as well as the expected date(s) of the survey.

b) State Protected and Federal Candidate Species

Include the following information for each species listed as well as state endangered, threatened, rare or unusual within 3 miles of the survey area as listed on the element occurrence letter.

[Note: Protocol for state listed species is currently being revised. These requirements will be updated in 2010.]

Include one or two sentences describing the identifying characteristics of the plant/animal species.

Describe in detail the preferred habitat of the species. Include the known range, known occurrences (if in or adjacent to the project area), community associate species, preferred soil types and general terrain characteristics.

Include a detailed description of all natural areas within/adjacent to the proposed project area. Include tree species, shrub species, forb species, soils, and general terrain characteristics.

If it is determined that there is no suitable habitat in the proposed project area for any of the species being considered, then the information provided on the habitat present and habitat needs of each species should clearly support this determination.

If it is determined that there is suitable habitat within the survey area, it will be stated that a species survey will be completed during the appropriate survey season. The approved survey season will be stated, as well as the expected date(s) of the survey.

c) Bats

Include a list of bridges within the survey area. Assess each bridge for bat roosting potential. Signs of bat roosts include visible and audible identification, presence of guano, or staining from guano or body oils. If a bat roost is identified, the ecologist will notify the PM and DNR.

d) Bald and Golden Eagles

Be familiar with information available from the DNR and USFWS regarding the distance from a project area to the nearest recorded bald eagle nest. Element occurrence records by county and quarter quad are available at the DNR website (http://www.georgiawildlife.com/node/1370). Records available through this website are based on nest locations. Sightings of foraging birds, migrating birds, and non-breeding residents are not included in these element occurrence records.

Identify any eagle nests, or suitable foraging habitat within the Survey Corridor.

Note the presence or absence of Bald Eagle nests located within one mile of the Survey Corridor and any suitable foraging habitat located in the project area in the Ecology Resource Survey Report. Delineate this habitat on the Habitat Map.

e) Migratory Birds

The significance of habitat suitable for breeding and non-breeding migratory birds is to be assessed in the field and analyzed in the Ecology Resource Survey Report. Roadway structures such as bridges, culverts, and pipes can provide a suitable nest site for migratory birds, particularly barn swallows, cliff swallows, and eastern phoebes. Existing structures within the survey area that provide suitable nest sites are to be identified in the field and described in the Ecology Resource Survey Report.

f) Essential Fish Habitat

Be familiar with the MSFCMA, and will be prepared to identify any areas of EFH that would be impacted by the proposed project. EFH includes the waters and bottom habitats that are necessary to a species' life cycle. Essential Fish Habitat is designated for all Federal managed marine fish. In Georgia, EFH can be found in the following counties: Camden, Glynn, McIntosh, Liberty, Bryan, and Chatham. The ecologist will consult NMFS website; the South-Atlantic Fisheries Management Council website; and the Mid-Atlantic Fisheries Management Council website for additional information. If the proposed project does not occur in one of these counties, indicate that there will be no impacts to EFH.

Identify any areas where the proposed project could affect EFH, characterize the habitats, and map their locations.

Note the presence or absence of EFH in the Survey Corridor in the Ecology Resource Report. Delineate EFH on the Habitat Map.

g) Critical Habitat

Critical habitat, as defined under the ESA, identifies specific geographic areas that include physical and biological features essential to the conservation of a federal listed species. The federal listing of critical habitats for the protected species of will be reviewed.

Address critical habitat in the Ecology Resource Survey Report in a section titled Critical Habitat. Identify critical habitat that has been designated in the project county.

K. State and Federal Water Identification and Description

Immediately prior to conducting a survey, review the precipitation data and the closest relevant U.S. Geological Survey (USGS) gage station data to determine hindering factors (weather conditions, increased flow) that could affect survey conditions (e.g.., stormwater flow in ephemeral channels).

The USACE recommends that field surveys for jurisdictional waters be completed at least seventy-two (72) hours after the most recent rainfall or subsiding of a flood event. This period of time enhances the chance that streams are classified and characterized appropriately when flows are not a direct response to recent precipitation.

Number state and federal jurisdictional waters occurring on proposed alignments according to the following system: Wetland site designations will begin with "W/L." Non-wetland waters site designations will begin with "Stream" or "Open Water" or "Canal." Ephemeral channels will begin with "Ephemeral." Wetland sites, other waters sites, and ephemeral channels will be numbered together consecutively. If a single water is impacted more than one time by the proposed alignment, number each crossing specifically.

In the description of each wetland include: wetland type (bottomland hardwood, scrub/shrub, emergent, seasonally flooded, seasonally saturated, etc.); dominant vegetation species; hydrologic indicators; existing condition of the wetland (Class 1 – Class 5, as defined by the USACE Compensatory Mitigation Definition of Factors) and types of impacts affecting quality; the approximate size of the wetland (in acres) if the wetland is considered jurisdictional and if not, why it did not qualify as a jurisdictional water; and if the wetland provides suitable habitat for any state or federal listed species.

In the description of each stream include: flow regime (perennial, intermittent) dominant riparian vegetation; approximate width and character of riparian vegetation; existing condition of the stream (fully functional, somewhat impaired, or fully impaired, as defined by the USACE Compensatory Mitigation Definition of Factors) and types of impacts affecting water quality; width and depth of the bankfull stream

channel; width and depth of the wetted channel; indication of flow conditions (high flow, low flow, normal flow); date and amount of last rain event; substrate composition; indication of water quality (e.g., water clarity, smell); if the stream is a warm water stream or a designated cold water/trout stream; if the stream is listed on the most current 303(d) list, or is a tributary of a stream on the most current 303(d) list, and if the stream is on the list, for what use the stream is classified, and what criteria were exceeded; if the resource is a state buffered stream and if so, why; a determination if design must consider fish passage; and if the stream provides suitable habitat for any state or federal listed species.

In the description of each open water include: approximate size (in acres) of the open water; apparent use (water livestock, fishing, etc); vegetation along banks; the existing condition of the open water (Class 1 – Class 5, as defined by the USACE Compensatory Mitigation Definition of Factors); if the resource is a state buffered open water and if so, why; if the open water is considered jurisdictional and if not, why it did not qualify as a jurisdictional water; and if the open water provides suitable habitat for any state or federal listed species.

In the description of each ephemeral channel include: dominant riparian vegetation; approximate width and character of riparian vegetation; width and depth of the bankfull channel; if the ephemeral channel is a tributary of a stream on the most current 303(d) list; if the resource is a state buffered stream and why; and if the channel is considered jurisdictional and if not, why it did not qualify as a jurisdictional water.

Include a description of each biota impaired stream segment that is one linear mile of, and within the same watershed as, a stream that has been classified by the USEPA as a "non-supporting" biota impaired stream. A list of the 305(b)/303(d) streams can be found on EPD's website.

Identify potential buffered state waters during the Assessment of Ecological Resources Survey. Label and delineate these state waters on the plans used during the field survey. The ecologist will coordinate with EPD to verify the buffered state waters within the survey area. The ecologist also will coordinate with designers to either avoid or minimize impacts to these resources.

L. Non-Jurisdictional Waters

Identify, record and delineate all non-jurisdictional waters, such as headwater ephemeral channels. Include a discussion of why the resource is not under the jurisdiction of the USACE and EPD.

M. Maps

Provide all maps in color on 8 ½ by 11 inch paper. For each map include a north arrow, scale bar, delineation of survey limits, and an inset map showing the survey area within the county boundary. A text box should

include the project identification (PI) number, county name(s), a brief project name (e.g., "Bridge Replacement at SR 120 and Big Indian Creek"). If the survey polygon cannot be displayed on a single 8 ½ by 11 inch sheet (using the scales specified below), then "match lines" should be included and labeled to indicate where the survey polygon joins from one page to the next. Identify the source of the background used within the legend or a text box (e.g., "Source: USDA National Agriculture Imagery Program (NAIP)" or "Source: 7.5 minute USGS Topo Quads"). If multiple pages are required, the maps should be labeled as Map 1a, Map 1b, etc. The following is a description of the maps that should be included with each Ecology Resource Survey Report.

1. Survey Area Map with Aerial or Satellite Imagery
   Display a polygon of survey area over an aerial or satellite imagery background. The maximum scale for the survey area map is 1:12,000 (1 inch = 1,000 feet).

2. Survey Area Map with USGS Topographic Background
   Display a polygon of survey area over a USGS topo quad background. The maximum scale for the survey area map is 1:12,000 (1 inch = 1,000 feet).

3. Habitat Map
   Display and label all habitat types over an aerial or satellite imagery background. Also display waters, but do not label them. Habitat type polygons should be filled with a pattern or be transparent so that imagery layer is not obscured. Fill types for habitat polygons will be defined in the legend. The maximum scale for habitat map is 1:9,000 (1 inch = 750 feet).

4. State and Federal Water Map
   Display and label all streams, wetlands and open waters over a USGS topo quad background. The maximum scale for the waters map is 1:4,500 (1 inch = 375 feet).

5. Soil Map
   Display all soil polygons that are crossed by the survey area (available for most counties through the NRCS Soil Data Mart website: http://soildatamart.nrcs.usda.gov/) over a USGS topo quad background. Label all soil polygons with the Map Unit Symbol (MUSYM) and indicate which soil types are hydric. Include a legend that defines all MUSYMs within the survey area (for example, "VOD2 = Vaucluse-Hoffman complex, 8-12% slopes, eroded, not hydric"). Display survey limits, streams, wetlands and open waters; waters do not need to be labeled. The maximum scale for the soils map is 1:9,000 (1 inch = 750 feet).

N. Tables
   1. Stream Summary Table

In this table, include the stream label and type, HUC, latitude and longitude (in decimal degrees), if the stream contains habitat for protected species, and if the stream is subject to state mandated buffer requirements.

2. Wetland/Open Water Summary Table
   In this table, include the resource label and type, HUC, if the resource contains habitat for a protected species, if the resource is subject to state mandated buffer regulations, and latitude and longitude coordinates in decimal degrees.

3. Protected Species Summary Table
   In this table, include the species' latin name, common name, federal status, state status, if habitat is present within the survey area, survey season, and proposed survey date.

O. Photographs
   Include a clearly labeled photograph of each stream, wetland, open water and habitat type.

   Format all photographs to fit four (4) photographs per page.

P. Appendices
   1. Stream Data Forms
   2. Wetland Data Forms
   3. Expanded JD Forms
   4. Ecology Survey Data Sheet
   5. Agency Correspondence
      Include the record occurrence letter from DNR in addition to all other correspondence with state or federal agencies.

4.3 Plan Delineations

Delineate and label all streams, wetlands open waters, state mandated buffers and protected species habitats on the plans. If protected species are found during a species survey, delineate the location of the species on the plans.

[Note: Guidance on plan delineation and resource labeling is forthcoming.]

4.4 State and Federal Protected Species Surveys

Complete surveys for federal protected species and state protected species known to occur within 3 miles of the project area, if potential habitat for the listed species is identified within the survey area. Conduct protected species surveys as per the approved methodologies during the approved survey season. If approved methodologies do not exist, obtain GDOT and relevant state and federal agency approval prior to conducting the survey. The State and Federal Protected Species Survey Report will be written for each species surveyed.

Complete an aquatic survey report for protected fish, mussels, crayfish, and snails. The approved aquatic survey methodologies and report are described below in Section 4.4.2. Please note that surveys for state protected burrowing crayfish are not included in this section of the GDOT's Environmental Procedures Manual.

4.4.1 State and Federal Protected Species Survey Report

A. Project Description
Include an overview of proposed project.

B. Study Area
Include size of habitat and area/type of potential impact.

C. Species Description
Include a detailed description of the physical characteristics, life history, and habitat requirements of the species.

D. Survey Methodology
Include detailed description of the approved methodology.

E. Preparatory Data
Detail data acquired in preparation for survey; websites, literature, conversations with botanists, element occurrence. Include literature cited. Coordinate with GA DNR and USFWS biologists/botanists to offer participation in the survey and to determine optimal survey schedule.

F. Qualifying Statement
State the experience of surveyors with the target species as well as relevant zoological experience or experience conducting botanical surveys.

G. Field Survey Description
Detail date, time, weather conditions, number/name of surveyors, width/length of transects, length of time of survey.

H. Habitat Quality
Detail tree species, shrub species, forb species, soils, terrain characteristics. Make special note of invasive species.

I. Species Impact
Include an analysis of the habitat/individuals within the survey area as compared to the current population of the species.

J. Figures

1. Habitat Location Map
Display and label all habitat types over an aerial or satellite imagery background. Also display waters, but do not label them. Habitat type polygons should be filled with a pattern or be transparent so that imagery layer is not obscured. Fill types for habitat polygons will be defined in the

legend. The maximum scale for habitat map is 1:9,000 (1 inch = 750 feet).

2. Species Range Map
Include a species range map and cite the source of the data. Display the range on a map of Georgia.

K. Photographs
Include photographs of all surveyed areas.

L. Appendices
1. Species Survey Data Sheet
2. Species Location Data Form
3. Agency Correspondence

4.4.2 Aquatic Survey Methodology and Report

A. Surveyor Qualifications
The lead surveyor will have sufficient knowledge within the basin in which the survey will be completed. This includes species-specific biological and ecological requirements, the ability to identify freshwater fish, mussel, crayfish, and snail species from the basin, and the ability to identify suitable habitat for fish, mussel, crayfish, and snail species. The lead surveyor will have sufficient experience, which includes documented field-time, and the ability to demonstrate skills in correctly executing survey methods and in locating and correctly identifying federal and state protected freshwater fish, mussel, crayfish, and snail species. Furthermore, the lead surveyor will be able to document experience in the safe-care and handling of federal and state protected freshwater fish, mussel, crayfish, and snail species. Individuals familiar with southeastern U.S. freshwater fish, mussel, crayfish, and snail species but not with listed species in the area to be surveyed will work with an expert who has experience with the appropriate listed species. Documentation of field-time and/or a letter of recommendation regarding the surveyor's in-basin experience and their knowledge in surveying, handling, and identifying freshwater fish, mussel, crayfish and snail species, including federal and state protected species, may be requested. The individual will review and agree to abide by all applicable provisions of Chapter 4 of Title 27 of the Official Code of Georgia Annotated relating to fish.

Prior to any survey for federal protected species, a section 10(a)(1)(A) recovery permit from the USFWS, (http://permits.fws.gov) and the necessary scientific collecting permit from the Special Permit Unit of the Wildlife Resources Division of the Georgia DNR (Georgia Department of Natural Resources, Wildlife Resources Division; 770-761-3044) will be obtained.

Prior to any survey for a state protected species, the necessary scientific collecting permit from the Special Permit Unit of the Wildlife Resources

Division of the Georgia DNR (Georgia Department of Natural Resources, Wildlife Resources Division; 770-761-3044) will be obtained.

B. Preliminary Research

The most recent protected species lists issued on a county by county basis by the USFWS Region 4 Georgia Ecological Services Office and DNR and the HUC8 Watershed Rare Elements List developed by DNR will be reviewed. A list of all federal and state protected fish, mussels, crayfish, and snails will be compiled using species from the USFWS/DNR County lists and the HUC8 Watershed list. These species will be the target species that will be addressed during the survey and subsequent report and will determine the types of survey conducted (i.e., fish survey, mussel survey, fish and mussel survey).

Please note that surveys for state protected burrowing crayfish are not included in this section of GDOT's Environmental Procedures Manual.

A thorough review of available resources pertaining to the target species will be conducted. Such resources include distributional maps, published journal articles, and field biologists who have experience with the relevant species or drainage area. Other resources include databases maintained by The Nature Conservancy and museums, identification keys (a suggested key is McMahon and Bogan 2001) or characteristics determining identification, historical distribution and previous collection locations, recovery plans, habitat descriptions, life history (especially spawning seasons), and applicable Federal Register documents.

Fish Atlas Maps
http://fishesofgeorgia.uga.edu/index.php?page=speciespages/list_species&class=fish

Prior to conducting a survey, precipitation data and the closest relevant USGS gage station data will be reviewed to determine hindering factors (weather conditions, increased flow) that could affect collecting conditions (i.e., turbidity, temperature, etc.). If gage stations are not available, every attempt will be made to determine the condition of the stream before the survey is executed to ensure conditions are appropriate for surveying. This may include contacting the local DNR, the USFWS, or other related natural resource offices.

Survey period for all aquatic species begins April 30th and ends November 30th (exceptions are for special surveys requiring life-history data, etc.). These are typically the timeframes in which flows and turbidity are low, allowing for good detectability. Consultation with the USFWS is required for surveys outside the survey season.

Landowner permission will be obtained, as necessary, to access each bridge or culvert crossing area prior to sampling. Prior to surveying, the

local DNR wildlife office will be contacted and informed of proposed activities as stipulated in the state permit. If appropriate, local law enforcement officers will also be notified.

Additional consideration should be given to prevent the spread or introduction of non-indigenous species while conducting surveys. Before moving between basins, all gear, including, but not limited to, wetsuits, collecting bags, boats and trailers, must be washed and dried and deemed free of mud and aquatic plants. Boats and trailers must also be scrubbed and washed down with chlorine bleach, and live wells must be emptied over dry land or in the basin where the water was collected, especially when they have been in basins where zebra mussels (*Dreissena polymorpha*) have been detected.

Special care should be exercised when working in streams in the southern part of the state so that the non-native apple snails (*Pomacea insularum*) are not introduced to other basins. This should be of particular concern when working in the Satilla, St. Mary's, Suwannee, and possibly the Ochlockonee river basins.

The website for the USFWS's Aquatic Nuisance Species Task Force is provided for additional information (www.anstaskforce.gov).

C. Early Coordination

Early coordination will be completed prior to each survey. The ecologist will be contacted first to determine if early coordination with DNR has been conducted recently. If early coordination has not been completed within the past two years, an email request will be sent to the DNR Wildlife Resources Division Georgia Natural Heritage Program and the USFWS requesting all known incidences of federal and state protected species within 3 miles of the proposed study area. The email will include a location map showing the general location of the project and a brief project description. For larger projects, a GIS shapefile showing the project boundaries should be included.

Early coordination will be completed with the USFWS and GDOT prior to the survey. The USFWS considers early coordination an important aspect in determining whether appropriate survey techniques are being adhered to and/or ensuring that deviations from this chapter will be accepted by the USFWS. At this stage, the USFWS may be contacted for technical assistance regarding the project location, fish, mussel, crayfish and snail species in the area, project impacts, and the survey methodologies. The USFWS office responsible for the area in which the survey will be conducted will be contacted for technical assistance. All correspondences regarding technical assistance to the lead USFWS office will be copied to the USFWS aquatic biologist in the appropriate region, as well as the GDOT ecologist.

If there are no deviations from this chapter or need for technical assistance from the USFWS, it is recommended that the surveyor provide the USFWS with the basic information below and time frames the aquatic survey will be conducted. This information can be informally provided to the USFWS via a brief letter and/or email, preferably 30 days prior to the start of the survey. Information to include in early coordination will include preliminary research; state the purpose of the survey; include a survey area description including a brief description of the proposed project that would impact the streams/rivers being surveyed; include a project location map represented on a 7.5 minute USGS topographical map; include a description of the area where the stream(s) to be surveyed is located, including physiographic area, general topography, land use, drainage basin, and potential suitable habitat; include a full text description of the equipment to be used; list the person(s) who will be conducting the field survey and provide a brief summary stating their affiliations, qualifications, and all valid permits; indicate the date(s) during which the survey will be completed; list the person(s) who will confirm all identifications and provide a brief summary of their affiliations and qualifications.

Deviation from this methodology is acceptable only as directed by and with the approval of both the USFWS and GDOT.

D. Field Work

The type of aquatic survey (e.g., mussel survey/fish survey) will be determined based on three factors: (1) species listed as protected on the DNR/USFWS County List or HUC8 watershed list, (2) species known range and the stream to be surveyed occur within the same basin, and (3) potential habitat is identified within the survey area.

For example, if it is determined after reviewing the County/HUC8 Watershed lists that there are protected mussel species and no protected fish species within the basin, then only a mussel survey will be conducted. If it is determined that the target species occurs in a different basin than the stream within the project corridor, a survey will not be conducted. Note that surveys for state listed species will be conducted if the species is on the county lists or the HUC8 watershed list, suitable habitat is present, and the stream is within the same basin as the species. This is a change from the previous scope that only required surveys for state listed species with known occurrence records within 3-miles of the project corridor.

Prior to conducting any aquatic surveys, it is recommended that the Office of Environmental Services is provided a list of target species to ensure that a survey is necessary. Surveys and reports will not be accepted if it is obvious that a survey was not warranted (i.e., conducted outside of the basin for a target species or conducted for a project which there is no target species listed on the County/HUC8 Watershed list) and

GDOT was not contacted. If there is any doubt if a survey should be conducted, seek prior approval. Surveys and reports may be accepted if it is determined after conducting the survey that the habitat was not suitable for any target species.

If the target species include federal and state protected snail and mussel species, a qualitative survey will be conducted in accordance with the 2008 USFWS Freshwater Mussel Survey Protocol. In addition, the following will also be required for mussel surveys. For species photographs, if the periostracum of individuals is not visible in unionids, individuals should be gently scrubbed to expose the periostracum so that verification of identifications can be facilitated. Best judgment by an experienced surveyor should be used as to the extent of scrubbing so that the animals are not harmed. For aquatic invasives, the presence or absence of Corbicula and Sphaeriidae should be documented. For water quality, Total Alkalinity, Total Hardness, and Calcium Hardness will be measured using the appropriate test kits. For sexually dimorphic mussel species, the number of males and females collected during the survey will be recorded. It is not recommended that the animals be opened to check for gravidity due to the potential for increased mortality. This information should be included on the raw datasheets that are included in the report.

If a federal protected mussel or snail is identified during the qualitative survey, a follow-up quantitative survey may be required. This survey and subsequent report will be coordinated with USFWS and the GDOT ecologist.

If the target species include federal and state protected fish and stream dwelling crayfish, the survey reach will be determined as stated in the 2008 USFWS Freshwater Mussel Survey Protocol. Fish and crayfish surveys can be conducted concurrently. Surveys will be conducted with a 6 - 20 foot long by 4 - 6 foot deep seine net having 3/16-1/4 inch mesh. The length of the seine net used will be appropriate for the size of the stream to be surveyed, i.e., a 6' seine net may be employed on streams less than 10' wide. Although seining will be the principal collection method; species and site specific methods may be utilized as allowed by the surveyor's federal and state permits including: electroshocking, daytime/nighttime snorkeling, hoop nets, gill nets and flipping rocks for crayfish. Sampling techniques employed at each site should be based on the habitat observed within the survey reach and probability of collecting federal and state protected species. In areas where there is a high probability of collecting a federal or state protected mussel species or benthic fish species, use of any electroshocking equipment should be kept to a minimum. Electroshocking will not be employed in the Conasauga mainstem within the range of the Conasauga logperch (*Percina jenkinsi*) or amber darter (*Percina antesella*). There will be no electroshocking in amber or Etowah darter (*Etheostoma etowahae*) habitat within sections of the Etowah River drainage (Etowah mainstem,

Amicalola Creek, Shoal Creek, etc). There will be no electroshocking in Brasstown Creek in Towns County without written permission from DNR Nongame Conservation Section. This is to protect the Sicklefin Redhorse (*Moxostoma* sp.).

A representative color photograph will be taken of each fish species observed during the survey. Photographs will be of good quality; sufficient to show the important diagnostic characteristics necessary to differentiate between species of similar appearance. It is recommended that these photographs be taken of the live fish while it is held in a viewing tank designed for photography. View tanks are easily made and can be very portable. The viewing tank should be filled with site water, and photographs should be taken streamside. An aerator should be used to ensure the fish is not be stressed by oxygen depletion.

A representative color photograph will be taken of each crayfish species observed during the survey. For each species, a photograph will be taken of the chela, rostrum, and carapace. The photograph of the chela and rostrum will be from directly above to adequately show the shape. The photograph of the carapace will be taken from the side.

All fish and crayfish species should be released in the stream unharmed, to appropriate habitats in the area of collection. After properly confirming identifications, voucher specimens may be taken in accordance with the surveyor's federal and state permit and should be incorporated into the research collection of fishes at an accredited state school. Voucher specimens are not required.

The recommended field data sheets located in the 2008 USFWS Mussel Survey protocol will be completed for all streams surveyed for target species.

In addition, data sheets will be completed for perennial streams within the project corridor that were assessed for habitat and not surveyed because it was determined to not contain suitable habitat for target species. If surveys are not performed because the determination is made onsite that suitable habitat does not exist in the stream for the target species, the surveyor will document the stream by completing a data sheet which will be included along with a detailed discussion in the subsequent aquatic survey report (see below).

E. Report Preparation

A draft report sufficient to satisfy the requirements of the methodology stipulated in this chapter will be submitted. The Report will be titled, "Aquatic Protected Species Survey Report" hereinafter referred to as the Report. A separate Report for each GDOT project number should be drafted, unless otherwise instructed.

1. Introduction

   Study Location and Purpose: Overview of the proposed project including a prose description of the proposed project, the general location of the project (such as county and approximate location to nearest town), latitude and longitude of the approximate center of the project, and the HUC in which the project occurs. Also include a justification statement for the aquatic survey (reference the 3 factors listed in 4.1; e.g., This report documents the results of a survey conducted in the Flint River for protected mussels).

   Background Information: Detail data acquired in preparation for survey; include information compiled from websites, literature, correspondence with experts, element occurrence data, and coordination with DNR and USFWS biologists. Include in this section a brief prose description of each target species including the common name and scientific name: federal and state designated status of the species; approximate species range; suitable habitat; and any known element occurrences data. The species description will be limited to 1 or 2 sentences and will provide a general description of the physical appearance of the species. The suitable habitat discussion will include a detailed description of the habitat requirements of the species.

2. Survey Protocols/Methodology

   Include a brief discussion of the survey area including physiographic area, general topography, land use, drainage basin, length of survey reach, and indicate date(s) which the survey was completed. Include a full text description of the equipment and techniques used to collect each taxon (mussels, snails, fish, and crayfish). Include the equipment used to measure water quality and describe if/how specimens were preserved. Justifications as to why the survey methodologies were not followed will be included in the Report if necessary, as well as any correspondence or communication with the USFWS and GDOT regarding these deviations.

3. Results/Discussion

   Site Condition and Water Quality: For each stream assessed for habitat, include a prose description of the stream. This will include an in-depth discussion of each stream, detailing stream characteristics within the survey reach. Discussion will include in-stream features, water quality and riparian features. Information recorded using the USFWS data sheets should be reported here. The stream descriptions will include descriptions of key features found within the stream and a discussion of in-stream features by habitat type (e.g., riffle, pool, edge). Include a brief discussion on stream gage and recent rainfall data. The discussion on water quality should mention if the water quality data is within the excepted standards. For each stream description, state if a surveyed was conducted.

If multiple streams were surveyed, and if the target species differed from stream to stream, state which species were sampled for in each stream.

Biological Survey: summarize survey results by taxon. Indicate the number of species and individuals collected, and the number of target species collected. For target species, include information of location within the survey reach and proximity to the proposed project (e.g., The Chattahoochee crayfish was found throughout the survey reach commonly encountered in riffles with cobble. This species was found within the footprint of the proposed project.)

Summary: For each target species, briefly summarize the habitat requirements of the species and discuss the presence/absence of suitable habitat within the survey reach of each stream. This should be a logical and in-depth discussion of the quality and suitability of the habitat for supporting the species. Summarize survey results and discuss how the proposed project may impact the species habitat or affect the species and recommend possible ways to avoid these impacts. This discussion should provide sufficient information so that a biological determination can be proposed by the ecologist.

If multiple streams were surveyed, a discussion of suitable habitat for each target species should be included for each stream. Habitat discussions for multiple streams can only be combined if the streams have the same characteristics. However, if the streams are determined to be unsuitable for different reasons, each stream should be discussed separately.

4. Qualifications Statement
   Include a list of persons who conducted the field surveys; list the persons who confirmed identifications for each taxon and give a brief summary of their affiliations/qualifications.

5. Appendix
   a) Figures
      All maps will be produced in 8.5" X 11" format based on 7.5 minute USGS quad maps. A north arrow, a scale, and the source of the map will be indicated in the legend. An outline of the state of Georgia showing the all county boundaries with the relevant counties highlighted will also be included in the map legend. Graphic rendering of 7.5 minute USGS quad based maps will be clear, visually sharp and not affected by any computer graphics manipulations so as to diminish features such as topographic contour lines, stream courses, etc. For projects that are of such length that multiple map pages are required, match lines will be clearly indicated. The graphic rendering of the proposed alignment will not be so coarse as to visually obstruct important terrain or environmental mapping

features. The use of a black dashed line to indicate the proposed alignment is recommended. The graphics included in the project Report will be clear enough to allow for all pertinent information to remain legible during photocopying for any subsequent submittals to reviewing agencies. The Report should include the following figures:

- Project Location Map
  If the preferred alignment has not yet been determined, display a polygon of survey area over a USGS topo quad background. If a preferred project alignment has been determined, display the project alignment over a USGS topo quad background. The maximum scale for the survey area map is 1:12,000 (1 inch = 1,000 feet).

- Aquatic Survey Limits
  Display and label the limits of the survey area over an aerial or satellite imagery background. The maximum scale for habitat map is 1:9,000 (1 inch = 750 feet).

b) Tables
Include a table for water quality, include a summary of the species, providing complete lists of the species found, including common name, scientific name, conservation status; for fishes and crayfishes include the number of individuals observed, number released, and number preserved; for mussels include the number of live or fresh dead observed, the number of relic shell observed, and the shell measurements of any listed individuals; for snails include the number of live or fresh dead observed, and the number of relic shell observed.

c) Photographs
Include photographs of the representative stream reach or reaches surveyed at each site; include representative photographs for species encountered.

d) Data Sheets
Include data sheets, field notes, and hand sketches of the individual habitats surveyed within each stream reach or reaches. The sketch maps will include unique stream features at the survey site, collecting locations of any species of interest, a north arrow, indication of direction of stream flow, and the survey limits must be labeled. All text in the hand sketches must be legible.

e) References
List of references used in preliminary research, in preparation for the survey and for the survey report including but not limited to journal articles, unpublished papers, and personal communication and any keys used in identification.

F. Deliverables

1. Written or Verbal Results
   Within two weeks after completing the field survey, report verbally or in writing the results of the survey to GDOT's ecologist.

2. Field Notes
   One full set of copies of all project field notes will be delivered with the Ecology Resource Survey Report.

3. Aquatic Protected Species Survey Report
   Submit one full color draft copy of the Report for comments and corrections. Submit revised drafts as necessary. Once reviews are complete, submit three (or more as requested) full color copies of the final Report for distribution. All copies of the Report will be unbound or easily unbound and in 8 ½" X 11" format.

4. Coordination Letters

5. Additional Copies of Reports
   The copy of the final Report (including copies of original field data sheets) will be sent directly to:

   U.S. Fish and Wildlife Service
   Georgia Ecological Services
   c/o Sandy Tucker, Field Supervisor
   105 Westpark Drive, Suite D
   Athens, Georgia 30606

   Georgia Department of Natural Resources
   Nongame Conservation Section
   Wildlife Resources Conservation Center
   2065 U.S. Highway 278 SE

   Additionally, surveys conducted in Georgia within the Apalachicola-Chattahoochee-Flint River and Ochlockonee River basins will be sent directly to:

   U.S. Fish and Wildlife Service
   Panama City Field Office
   c/o Jerry Ziewitz
   1601 Balboa Ave.
   Panama City, Florida 32405

4.5 Ecology Assessment of Effects

Following the identification of a preferred alignment, the ecologist will write the Ecology Assessment of Effects Report. In this report, calculate impacts to protected species, ecological habitats, streams, wetlands and open waters. Detail the impact and

related agency coordination required for the proposed project. State if any permits are required, and if so, which. Include a brief discussion of the direct, indirect, and cumulative impacts the project would have on ecological resources at the end of the report. Cumulative impacts would refer to all effects to the species in the past, present and future. Incremental effects of the proposed project or related projects could also be discussed.

4.5.1 Ecology Assessment of Effects Report

A. Transmittal Letters

1. Transmittal to FHWA
   This letter will be written for all Ecology Assessment of Effects Reports.

2. Section 7 initiation
   This letter will be written for all projects that require coordination under Section 7 of the Endangered Species Act (ESA).

3. FWCA initiation
   This letter will be written for all projects that require coordination under FWCA.

B. Title Page

1. Title: Ecology Assessment of Effects Report
2. Project number: formatted STP00-0000-00(00), if assigned
3. County
4. Project name: e.g., SR 84 Widening
5. PI number
6. Date
7. Prepared by: Name of Firm, if appropriate
8. For: Georgia Department of Transportation, if appropriate
9. Name of individual preparer
10. Name of reviewer

C. Overview Table
Provide a summary of the resources and proposed impacts identified within the project area.

D. Executive Summary
Include a brief project description, a brief description of the survey area, a brief description of survey methodology, a summary of the habitats that are located in the project area, state and federal waters that are located in the project area, buffered state waters, streams crossings that should be designed to account for fish passage, biota impaired streams located within one mile of the project site, and protected species that are located in the project area.

E. Table of Contents
The table of contents outlines the layout of the report.

F. Project Description and Location

In this section describe the reason for and details of the proposed project. Include the location of the project (county, distance from nearest town/city) and size of the project in linear feet and acres. Include a summary of the need and purpose of the project.

G. Habitats within the Project Area

Describe all habitats found within the project area and the impact to these habitats resulting from the proposed project. Include habitat size, impact size and minimization measures. Illustrate the habitat delineations will on the Habitats Map.

H. Invasive Plant Species Control Methods

Using the field survey data, delineate the invasive plant species locations on the plans. Describe the known range of each species identified and the range of the species within and adjacent to the project area. State specific measures that will be taken to control the spread of the species identified within the project area.

I. State and Federal Protected Species Effects

1. Federal Threatened and Endangered Species

If no habitat was identified during the Ecology Resource survey, state that the project will have "no effect" to the species and reference the data in the previous report. Include a summary of the data in the Ecology Resource Survey Report and Protected Species Survey Report that supports this determination.

If potential habitat was found for the species during the Ecology Resource survey but the Protected Species survey found the habitat to not be suitable, state that the project will have "no effect" to the species. Include a summary of the data in the Ecology Resource Survey Report and Protected Species Survey Report that supports this determination.

If potential habitat was found for the species during the Ecology Resource survey and no individuals were found during the Protected Species survey, state that the proposed project "may affect, but not likely to adversely affect" the species. Reference the protected species survey report that is included in the appendix. The ecologist prepaing the report will initiate informal Section 7 Consultation and prepare Special Provisions 107.23G.

If potential habitat is found during the Ecology Resource Survey and the species is identified during the Protected Species survey, the ecologist preparing the report will initiate formal Section 7 Consultation and prepare Special Provisions 107.23G.

State Protected and Federal Candidate Species

If neither the species nor its suitable habitat is present, conclude the discussion of the federal candidate and state listed species with a determination of "no effect." If there is suitable habitat or if the species is present and GDOT has taken adequate measures to avoid impacts. Conclude the discussion with a determination of "no significant adverse affect." Conclude the discussion with a determination of "significant adverse affect" if the species will be significantly impacted by the proposed project.

Complete a discussion of design measures to avoid and/or minimize impact to protected species. Include the location of limiting factors such as historic resources, residences, businesses, cemeteries, railroads, transmission lines, and design factors such as cost and horizontal and vertical alignment. After discussion with the Project Manager and other appropriate personnel, include all appropriate Special Provisions in the Ecology Assessment of Effects Report.

2. Bats

Include a list of bridges within the project area that shows signs of active bat roosts. If bat roosts are identified, notify DNR and coordinate to plan avoidance of all unnecessary impact and minimization of any unavoidable impact to the roosts.

3. Bald Eagle

The presence of suitable foraging habitat within the project area may require the implementation of Special Provision 107.23 G. The "1989 Recovery Plan Management Guidelines for the Southeastern Region" define the area within one mile of a bald eagle nest as the "secondary management zone."

If there is no nest within one mile of the proposed project area, and if no suitable foraging habitat exists within the project area, then use the biological determination of "no effect." In such cases, include a brief statement supporting the "no effect" determination in the Ecology Assessment of Effects Report.

If there is suitable foraging habitat identified within the proposed project area, include the location of the nearest recorded bald eagle nest in the Ecology Assessment of Effects Report. Precise distances and directions are not necessary (e.g., 22 miles to the south, beside the Ocmulgee River at the border of Wilcox and Dodge Counties), but a general description of the nearest nest location (e.g., located in the Abbeville North NW quarter-quad, which is located approximately twenty miles to the south) would be useful to agencies reviewing any proposed biological determination. If the project area is within one mile of a bald eagle nest, more specific location information will be required.

If a project is located within one mile of an eagle nest, or if suitable foraging habitat exists within the project area, discuss the potential for "take" within the Ecology Assessment of Effects report. Include a discussion supporting a biological determination with a description of site variables, survey results, nest information, discussion of 2007 National Bald Eagle Management Guidelines and/or 1989 Recovery Plan Management Guidelines for the Southeastern Region, and special provisions. Address each particular type of "take" that could occur as a result of the project.

The Bald and Golden Eagle Protection Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." For GDOT, the most likely "take" scenario would involve a project that could "disturb" bald eagles. The National Bald Eagle Management Guidelines, published by USFWS in May 2007, define "disturb" as: "'To agitate or bother a bald or golden eagle to the degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, causing injury, death, or nest abandonment.' In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death, or nest abandonment."

Do not employ the ESA wording (with the exception of "no effect") in the biological determination proposed in a report. Under the Bald and Golden Eagle Protection Act, there is no analogy to the ESA verbiage of "may affect, not likely to adversely affect" or "may affect, likely to adversely affect." Instead, describe the biological determination as the likelihood that "take" would occur as a result of the proposed project.

The guidance above was developed through consultation between the department and USFWS in August 2007. If needed, technical assistance is available through USFWS Ecological Services.

4. Migratory Birds

Based upon the selected alignment within the survey corridor, the anticipated impacts to migratory birds are to be described in the Ecology Assessment of Effects Report. Efforts to avoid and minimize impacts to suitable migratory bird habitat are to be detailed in the EAOE. Unavoidable impacts to suitable migratory bird habitat are to be quantified. Impacts to suitable migratory bird habitat may warrant the issuance of a special provision. For example, if a significant area of suitable migratory bird breeding habitat would be impacted, clearing or grubbing of the habitat would not be permissible during the breeding season of migratory birds, which extends from April 1 through August 31.

Any roadway structure that provides a suitable nest site for migratory birds will require a special provision. The provision would restrict all activities that have the potential to "take" migratory birds that nest on roadway structures. In some cases, the provisions may allow for the installation of restrictive barriers on bridges to prevent nesting. Restrictive barriers are not permissible on culverts or pipes. The special provision must be reviewed and approved by the Project Manager.

5. Critical Habitat

This section will identify which (if any) species listed for the county has had critical habitat designated and will identify if critical habitat has been designated in the project county.

If no species listed in the county has had critical habitat designated and no critical habitat is designated for the county, state so in the section. No additional discussion on critical habitat would be required.

If a species listed in the county has critical habitat designated and no critical habitat is designated for the county, state so in this section. Include a brief discussion of the location of nearest critical habitat and distance from project (e.g., Critical habitat for the shiny-rayed pocketbook mussel has been designated in the Flint River approximately 25 miles southwest of the proposed project). Conclude this discussion with a biological determination of no effect; may affect, not likely to adversely affect; or may affect, likely to adversely affect.

If a species listed in the county has critical habitat designated and critical habitat is designated for the county, state so in this section. Include a brief discussion of the location of critical habitat and the distance from the project. If critical habitat is located in close proximity to the proposed project corridor, or it is determined that the proposed project has the potential the affect critical habitat then discuss in detail each primary constituent element potentially affected by the proposed project. Include detailed avoidance and minimization measures addressing each constituent element and will conclude with a biological determination of no effect; may affect, not likely to adversely affect; or may affect, likely to adversely affect.

6. Essential Fish Habitat

Impacts to areas that qualify as EFH will be discussed in a section of the Ecology Assessment of Effects Report under a separate heading. If impacts will occur, provide a brief discussion that describes the areas containing EFH, include a list of the species for which coordination will be done, what impacts may affect the EFH, how all issues have been addressed and resolved (including avoidance, minimization, and mitigation measures), and list the Fisheries Management Council or NMFS responsibility area within which the

coordination will be conducted. Coordination letters will be prepared by the ecologist responsible for preparing the Ecology Report.

J. State and Federal Water Impact

Include the approximate extent of impact in acres for wetlands, open waters and ephemeral channels. Describe the types of impacts that would occur as a result of the proposed project. Impacts within construction limits are considered permanent and impacts between construction limits and the edge of ROW are considered temporary. Orange barrier fence will be labeled on plans and used during construction to avoid any unnecessary impact to resources.

Include the approximate extent of stream impacts in linear feet that would occur as a result of the proposed project. Impacts include bank armoring from placement of rip rap. If bridges are proposed, state if the bridge will clear span the stream or if pilings or bents will be required.

Include a discussion of the stream crossings designed for fish passage and a discussion of the stream crossings that will not be designed for fish passage. If the stream crossing is not being designed for fish passage, include justification to support this decision.

Include the approximate impacts (in acres) to each pond or lake as well as the type of impact that would occur as a result of the proposed project.

K. State Buffer Requirements

In compliance with the National Pollutants Discharge Elimination System (NPDES) permit under Section 402 of the Clean Water Act, any encroachment within the designated 25-foot or 50-foot buffer of a state water will be described, and the need for a variance will be indicated. The description will include the location of the occurrence with respect to labeled, cited Waters of the US or State waters and the extent to which the proposed project encroaches on the buffer.

Buffer encroachments that will occur in conjunction with a bridge or culvert may be exempt from the need for a buffer variance. As of July, 2007, the roadway drainage feature exemption includes/exempts all buffer encroachments within the 50-foot from edge of culvert, or 100-foot from edge of bridge footprint. This exemption also extends to the project ROW, though all encroachments must be necessary for construction to be considered exempt. The July 2007 interpretation includes all tributaries or unassociated state waters, including the water being crossed.

The ecologist will indicate the classification of the stream as defined in the Georgia Water Quality Control Act as a warm water stream or a cold water trout stream in the description of the stream. A list of designated

cold water trout streams can be found in Section 15 at http://rules.sos.state.ga.us/docs/391/3/6/03.pdf.

(If a buffer variance is necessary, prepare an application package for submittal to EPD. See Chapter VIII, Section 5.0 for direction on preparing Vegetated Buffer Variance Applications.)

L. Avoidance Analysis

Once the Ecology Resource Report has been completed and transmitted to the PM and after all potential ecological impacts within the project corridor have been identified, mapped, qualified and quantified, evaluate the need to convene a project team meeting to discuss avoidance and minimization needs.

Include a detailed analysis of the alternatives examined to avoid impacts to state and federal waters as well as state and federal protected species. Include a discussion of the Alternative Alignment Impact Summary Table. Include a detailed discussion of how the preferred alignment avoids impacts.

The ecologist responsible for conducting the survey and preparing the report will initiate a discussion concerning avoidance and minimization of project impacts. If Consultant ecologists are under contract directly with the Office of Environmental Services, they will discuss design and mitigation alternatives with the GDOT ecologist. If the GDOT ecologist determines that a meeting is necessary to research the location/design factors affecting the extent of the potential impacts on the proposed project, the GDOT ecologist will be responsible for making contact with GDOT's NEPA analyst to schedule a meeting with appropriate personnel. Appropriate personnel may include design engineers with GDOT or with a consulting firm and/or other environmental team members. This meeting will be fully documented for use in the Ecology Assessment of Effects Report.

M. Minimization Measures

Include a discussion of design measures and alternatives examined to minimize impact to state and federal waters and state and federal protected species with the location and numbers of limiting factors such as historic resources, residences, businesses, cemeteries, railroads, transmission lines, and other factors such as cost, intersection alignments, and horizontal and vertical alignment. Include any measures that may be used to remediate temporary impacts.

Include a brief description of all design efforts made and alternatives examined, with the design considerations for fish passage, to minimize impacts to each state and federal water along each alignment.

N. Indirect and Cumulative Impact Assessment

Per the Council on Environmental Quality's (CEQ) regulations (40 CFR §§ 1500 – 1508) implementing the procedural provisions of NEPA, "secondary impacts" (or "indirect impacts") are those that are "caused by an action and are later in time or farther removed in distance but are still reasonably foreseeable" (40 CFR § 1508.8). Cumulative impacts are those which result from the incremental consequences of an action when added to other past, present and reasonably foreseeable future-actions (40 CFR § 1508.7).

Include a discussion of potentially significant secondary and/or cumulative ecological impacts that would be anticipated as a result of project implementation. Such impacts might include, but are not limited to: deleterious long-term effects to listed species due to habitat fragmentation; water quality impairment to waters downstream of the project vicinity; the potential for losses of complete wetland systems in areas of rapid commercial, industrial or residential development, even thought the road project, itself, would only result in partial impacts to wetlands. Beneficial secondary or cumulative effects, such as improvements to aquatic habitat and fish passage from the replacement of a culvert with a bridge or arch span, would also be included in this discussion.

For guidance on the assessment of secondary and cumulative impacts, refer to the following documents:

"NEPA and Transportation Decisionmaking: Secondary and Cumulative Impact Assessment in the Highway Project Development Process" (Federal Highway Administration Project Development Branch)
http://www.environment.fhwa.dot.gov/projdev/tdm2_c_imp.asp

"Considering Cumulative Effects Under the National Environmental Policy Act" (Council on Environmental Quality)
http://ceq.hss.doe.gov/nepa/ccenepa/ccenepa.htm

O. Permit and Mitigation

If the proposed project will impact Jurisdictional Waters of the U.S., a permit will be required under Section 404 of the Clean Water Act. If a permit is required, state the permit type.

Both stream and wetland mitigation will be required if more than 0.10 acre of wetland or 100 linear feet of stream will be impacted by the proposed project. State the permit and mitigation requirements of the proposed project.

Reproduce and include the table entitled "Wetland SOP Worksheet" (refer to the SOP, Standard Operating Procedure for Calculating Compensatory Mitigation Requirements for Adverse Impacts to Wetlands, Open Waters and/or Streams, at the website of the US Army Corps of Engineers, Savannah, Georgia District, Permits link) for the purpose of calculating the required mitigation credits for the reported wetland impacts for each

alternative alignment surveyed. The table will express the numeric values applicable for each factor according to the professional judgment of the ecologist upon observing each wetland site during fieldwork. The table will show computation of the sum of the factors for each wetland site, indicate the area of effect in acres for each wetland site, indicate the product of the sum of the factors multiplied by the area of effect for each wetland site, and will indicate the sum of those products to provide the total required mitigation credits for the proposed project.

Report the number of required wetland credits separately for each alignment. Document the total wetland required credits cumulative for each eight-digit HUC crossed/impacted by the proposed project. The footer of each worksheet will contain the GDOT project number, county, PI number, the name of the preparer, and the date that the calculation was done.

Reproduce and include the table entitled "Stream SOP Worksheet" (refer to the SOP, Standard Operating Procedure for Calculating Compensatory Mitigation Requirements for Adverse Impacts to Wetlands, Open Waters and/or Streams, at the website of the US Army Corps of Engineers, Savannah, Georgia District, Permits link) for the purpose of calculating the required mitigation credits for the reported stream impacts for each alternative alignment surveyed. The table will express the qualitative and numeric values applicable for each factor according to the professional judgment of the ecologist upon observing each stream site during fieldwork. The table will show computation of the sum of the factors for each stream site, indicate the area of effect in linear feet for each stream site, indicate the product of the sum of the factors multiplied by the area of effect for each stream site, and will indicate the sum of those products to provide the total required mitigation credits for the proposed project. Stream sites will be designated according to the labeling system described in Section 4.4.1.B of this chapter.

Report the number of required stream credits separately for each alignment. Document the cumulative stream credits required for each eight-digit HUC crossed/impacted by the proposed project in the table. The footer of each worksheet will contain the GDOT project number, county, PI number, the name of the preparer, and the date that the calculation was done.

Determine if the required mitigation credits will be deducted from a GDOT mitigation bank or purchased from a commercial mitigation bank. Consultant ecologists will make this determination in consultation with the GDOT ecologists.

A. Figures

1. Project Area Map- Include project limits, north arrow, scale, project number, and project vicinity. Create two maps; one projected on a topographic layer, the other on an aerial photograph.

2. Habitats Map- Include project limits, north arrow, scale, project number, project vicinity, streams, wetlands, open waters, and delineations of all habitat types. State and federal waters will be delineated but not labeled. Habitat types will be labeled. This map will be projected on an aerial photograph.

3. State and Federal Waters Map- Include project limits, north arrow, scale, project number, project vicinity, streams, wetlands and open waters. All state and federal waters will be labeled. This map will be projected on a topographic layer.

4. Soil Map- Include project limits, north arrow, scale, project number, project vicinity, streams, wetlands and open waters. All state and federal waters will be labeled. This map will be projected on a topographic layer.

B. Tables
1. Stream Summary
2. Stream SOP
3. Wetland Summary
4. Wetland SOP
5. Buffered State Waters Summary
6. Protected Species Summary
7. Alternative Alignment Impact Summary

C. Appendix
1. Protected Species Survey Report
2. Correspondence

4.6 Agency Coordination

4.6.1 Section 7 of the Endangered Species Act

A. Section 7 Consultation (Informal)

If a determination of "may affect" is made for any federal listed species, coordination under Section 7 of the ESA will be required. If a state listed species is observed in the proposed project corridor, coordination with DNR Natural Heritage will be required under the Georgia Wildflower Protection Act and/or the Georgia Endangered Wildlife Protection Act of 1973.

If a determination of "may affect, not likely to adversely affect" is reached for a federal listed species, the ecologist will prepare a coordination cover letter requesting the initiation of Informal Section 7 Consultation.

If Section 7 Consultation is being initiated for marine species such as the shortnose sturgeon, a protected sea turtle or a whale species, address the coordination letter to USNMFS copy/furnished to the lead agency. The Consultant ecologist will contact the GDOT ecologist for specific contact information. If Section 7 Consultation is being initiated for any non-marine species, address the letter to the USFWS and a copy will be furnished to the lead federal agency and the Georgia DNR.

List the project number, the county, the PI number and request initiation of Informal Section 7 Consultation under the ESA in the subject line of the coordination letter. The first paragraph of the letter will provide a brief description of the proposed project. The second paragraph will provide a brief summary of the total impacts to Waters of the US and the mitigation that would be required. The third paragraph will briefly summarize the impacts to the species for which a "may affect" determination has been recommended and indicate that a determination of "may affect, not likely to adversely affect" is recommended. The third paragraph will also list the species for which a "no effect" determination has been recommended. The fourth paragraph will respectfully request the concurrence of the lead agency and of the USFWS and/or USNMFS with the recommended determination. The fourth paragraph will also include the contact information of the GDOT ecologist and that ecologist's direct supervisor. The GDOT ecologist will review and approve the Consultant coordination letter and attach the appropriate Report before the coordination letter is signed. The GDOT ecologist will transmit the Informal Section 7 Package to the lead federal agency, USFWS and/or USNMFS, and Georgia DNR.

B. Section 7 Consultation (Formal)

If a "may affect, likely to adversely affect" determination is made for a federal listed species, prepare a Biological Assessment Report. Also, draft a coordination cover letter requesting the initiation of Formal Section 7 Consultation.

If Section 7 Consultation is being initiated for marine species such as the shortnose sturgeon, a protected sea turtle, a whale species, or essential fish habitat, a coordination letter will be addressed to NMFS and copy/furnished to the lead agency. The Consultant ecologist will contact the GDOT ecologist for specific contact information. If Section 7 Consultation is being initiated for any non-marine species, the letter will be addressed to the lead federal agency and a copy will be furnished to the USFWS and Georgia DNR.

List the project number, the county, the PI number and request initiation of Formal Section 7 Consultation under the ESA in the subject line of the coordination letter. The first paragraph of the letter will provide a brief description of the proposed project. The second paragraph will provide a brief summary of the total impacts to Waters of the US and the mitigation

that would be required. The third paragraph will briefly summarize the impacts to the species for which a "may affect" determination has been recommended and indicate that a determination of "may affect, likely to adversely affect" or "may affect, not likely to adversely affect" is recommended. The third paragraph will also list the species for which a "no effect" determination has been recommended. The fourth paragraph will respectfully request the concurrence of the lead agency and of the USFWS and/or NMFS with the recommended determination. The fourth paragraph will also include the contact information of the GDOT ecologist and that ecologist's direct supervisor. The GDOT ecologist will review and approve the Consultant coordination letter and attach the appropriate Report before the coordination letter is signed. The GDOT ecologist will transmit the Formal Section 7 Package to the lead federal agency, USFWS and/or USNMFS, and Georgia DNR.

4.6.2 Magnuson Stevenson Act

For projects on which unavoidable adverse impacts would occur to EFH, a letter addressed to the Habitat Conservation Division Office of the USNMFS in Charleston, South Carolina, will be prepared with the attached Ecology Assessment of Effects Report. This letter will be furnished to the lead federal agency. The letter will request that the USNMFS initiate coordination under the 1998 Amendment to Fishery Management Plans (FMP) which was prepared in accordance with MSFCMA.

List the project number, the county, the PI number and request initiation of coordination under the 1998 Amendment to Fishery Management Plans which was prepared in accordance with MSFCMA in the subject line of the coordination letter. The first paragraph of the letter will provide a brief description of the proposed project, its Purpose & Need, its location, the Fisheries Management Council (FMC) in which the project occurs (either the South-Atlantic FMC or the Mid-Atlantic FMC). The second paragraph will provide a brief summary of the total impacts to Waters of the US and the mitigation that would be required. The third paragraph will briefly describe the areas containing EFH, list the species for which coordination will be done, detail the habitat elements that will be impacted by the proposed project, state what impacts may affect the EFH, and describe how all issues have been addressed and resolved, including avoidance, minimization, and mitigation measures. The fourth paragraph will respectfully request the agreement of the lead agency and of USNMFS that sufficient measures have been taken to protect EFH. The fourth paragraph also will include the contact information of the Project Manager and of the Ecology Section Chief at OES. The GDOT ecologist will review and approve the Consultant coordination letter and attach the appropriate Report before the coordination letter is signed. The GDOT ecologist will transmit the Section 7 Package to the lead Federal agency and USNMFS.

4.6.3 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act can be found on the USFWS Service website at: http://www.fws.gov/laws/lawsdigest/FWCOORD.HTML

For intermittent or perennial streams impacted by culverts on new location, by longitudinal encroachment, by morphologic change, or by culvert extensions greater than 100 feet as measured along the center of the impacted channel, the ecologist will draft a letter requesting initiation of FWCA coordination. All correspondence with the lead federal agency prepared by the Ecology Consultant will be reviewed, approved and signed by the GDOT ecologist prior to mailing.

Exemptions: Projects with impacts to intermittent and perennial streams that meet the following criteria will not require FWCA coordination:

- The extension of existing culverts or pipes in streams less than 100 feet where no listed species occur;
- Longitudinal encroachment on a former stream that has been previously channelized and is now considered a roadside ditch, or a roadside ditch that has been created by roadway construction;
- Re-channelization of an impacted stream (urbanized, no aquatic life, or otherwise polluted) where no loss of stream channel would occur.

Initiation: In order to initiate FWCA coordination, draft a letter addressed to the lead federal agency, copied to USFWS. Attach the Ecology Assessment of Effects Report to the coordination letter. The letter will request that the lead Federal agency initiate coordination under the FWCA regarding the proposed stream encroachment or channel loss on the subject project.

List the project number, the county, the PI number and request initiation of coordination under the FWCA in the subject line. Provide a brief description of the proposed project in the first paragraph of the letter. Provide a brief summary of the total impacts to state and federal waters and the mitigation that will be required in the second paragraph. Provide a summary of the nature and amount of the proposed stream channel impact. Fully disclose all efforts made in design to avoid or minimize the impact. Discuss any alternatives explored for the project that would reduce or avoid the impact, costs associated with those alternatives, any limitations on selection of those alternatives, and practical reasons for choice of the preferred alternative in the letter. Respectfully request the approval of the lead federal agency and of the USFWS that all reasonable avoidance and minimization measures have been explored. In the fourth paragraph, also include the contact information of the GDOT ecologist and that ecologist's direct supervisor.

4.6.4 NPDES Permit Buffer Variance

Buffers protected under the Georgia Erosion and Sedimentation Control Act of 1975 (the Act) are those vegetative corridors that border state waters. The Act defines state waters as "any and all rivers, streams, creeks, branches,

lakes, reservoirs, ponds, drainage systems, springs, wells, and other bodies of surface or subsurface water, natural or artificial, lying within or forming a part of the boundaries of the state, which are not entirely confined and retained completely upon the property of a single individual, partnership, or corporation."

In compliance with the Georgia Erosion and Sedimentation Act of 1975, as amended, any location where the proposed project would encroach within the designated 25-foot, or 50-foot buffer for cold water trout streams, of a state water will be described, and the need for a variance will be indicated. The ecologist will indicate the classification of the stream as defined in the Georgia Water Quality Control Act as a warm water stream or a cold water trout stream in the description of the stream. A list of designated trout streams can be found in Section 15 at http://rules.sos.state.ga.us/docs/391/3/6/03.pdf.

If buffer impacts cannot be avoided and have been minimized, determine which application criteria the impact(s) would fall under; A or H.

Criteria A is appropriate if the buffer is to be impacted, but not the water itself (i.e., impacts do not require a 404 permit).

Criteria H is appropriate if the buffer and the water itself are both to be impacted (i.e., impacts require a 404 permit). Such impacts also require the design of permanent stormwater mitigation. The design must remove 80% of the total suspended solids (TSS) from the water entering the buffered resource. A re-vegetation plan will also be required, which may include Special Provisions 700 and possibly a Special Provisions 702.

Exceptions- Buffer encroachments that will occur in conjunction with a bridge or culvert may be exempt from the need for a buffer variance. As of July 2007, the roadway drainage feature exemption includes/exempts all buffer encroachments within the 50-foot from edge of culvert, or 100-foot from edge of bridge footprint, for work necessary to construct the bridge/culvert.

If a buffer variance is necessary, prepare an application package for submittal to EPD. The variance application package will consist of a cover letter, the application, a map of the project area with impacted buffers labeled, and a set of erosion control plans. The plans will clearly label the resource, the area of impact described in the application, and the area of buffer that will not be impacted. Under Criteria H, plans will also be included showing the design to address the removal of 80% TSS.

A. Application Type

The type of application that should be completed will be determined by the type of encroachment involved. A cold water trout stream will require an application for a 50-foot vegetative buffer encroachment. A warm water stream or pond will require an application for a 25-foot vegetative buffer encroachment. The discussion below concerns applications made under

Criteria H (Projects Requiring a 404 Permit, a replanting plan, and 80% TSS removal). Consultants preparing an application under a different criterion should discuss this encroachment with the GDOT ecologist before completing the application.

B. Cover Letter

Place the cover letter on GDOT letterhead and address the letter to the location indicated at the front of the application. In the body of the cover letter include:

1. A subject line that reads "Application for a 25-foot Vegetative Buffer Encroachment for Project _____, _____ County" or "Application for a 50-foot Vegetative Buffer Encroachment for Project _____, _____ County,"
2. A brief project description,
3. A discussion of the purpose and need of the proposed project,
4. A statement that alternatives were considered,
5. The identification of the stream involved,
6. A description of the stream involved,
7. A statement that the proposed action will conserve the existing natural resources and protect the existing environmental conditions of the project site, and
8. A phone number and other contact information of the applicant.

C. Body of Application

1. Project information

   Page 1 of the application will solicit information concerning details of the proposed project. Provide accurate information for each request.
2. Details concerning encroachment

   The next several pages (Section B) of the application will include questions concerning the detailed nature of the buffer encroachment. The application must answer these questions, providing ample details.

D. Additional Application Attachments

The application also asks for the inclusion of several additional materials related to the project. These additional materials include erosion and sedimentation control plans, photographs of the encroachment site, the Section 404 permit (or application if the permit has not been obtained yet), and a map of the project area with the state waters labeled. Once all of the additional project materials have been collected and included with the rest of the application package (cover letter and application), the Consultant package will be sent to the GDOT for approval.

When the application is complete and all of the additional materials have been collected and included, the application package will be routed to EPD. Erosion and Sedimentation Control Unit personnel will review and evaluate the application package.

E. EPD's Public Advisory Notice

If the application is complete, EPD will publish their 30-day Public Advisory Notice in the legal organ (newspaper) local to the project site. This Public Advisory will be published only once, and the public will have 30 days from the date of publication to comment on the project. Once EPD has published their notice, EPD will route a copy of the Public Advisory Notice to the department. The applicant will then be required to publish their own 30-day Public Advisory Notice in the legal organ local to the project site.

F. GDOT's Public Advisory Notice

The package of information from EPD will include important information pertaining to the publication of GDOT's 30-day Public Advisory Notice. The Georgia DOT's advisory is not required to be identical to the advisory published by EPD, but the following must be included:

1. The location of the project;
2. A description of the proposed buffer encroachment;
3. Where the public can go to review site plans;
4. Where comments should be sent

The Georgia DOT's 30-day Public Advisory Notice will need to be published in the legal organ local to the project site. The Advisory will be published only once, and the public will have 30 days from the date of publication to comment on the project. All comments will be directed to EPD's Erosion and Sedimentation Control Unit. After it is published, the tear sheet from the original newspaper clipping with the posted date of the published legal notice will be sent to EPD. The evaluation process cannot be completed until EPD receives these materials. Any comments received during the 30-day comment period must be addressed prior to the issuance of the variance.

EPD's decision to grant a vegetative buffer variance is based upon the evaluation of information collected from several resources. The Erosion and Sedimentation Control Unit will begin their evaluation by reviewing GDOT's package. For a 30-day period, the Erosion and Sedimentation Control Unit will evaluate comments made by the populace in response to their Public Advisory Notice. Subsequently, the Erosion and Sedimentation Control Unit will evaluate comments made by the populace in response to GDOT's Public Advisory Notice. Shortly after GDOT sends the tear sheet from the original newspaper clipping with the posted date of the published legal notice to EPD, a decision will be made to either allow or forbid the encroachment upon the vegetative buffer. Assuming that GODT has been given permission to encroach upon the vegetative buffer, EPD will route a final correspondence letter explaining the conditions under which the variance has been approved. The variance must be routed to the Project Manager after it has been received from EPD.

4.6.5 Section 404 of the Clean Water Act Permit

Section 404 of the Clean Water Act (CWA) established programs to regulate the discharge of dredged and/or fill material into Waters of the United States. These waters include, but are not limited to wetlands, streams, rivers, ponds and lakes. The program is regulated by the USACE. Activities in Waters of the US that are regulated under this program include fills for development, water resource projects (such as dams or levees), infrastructure development (such as highways and airports), and conversion of wetlands to uplands for farming and forestry. No discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. When applying for a permit, it must be demonstrated that steps have been taken to avoid and minimize impacts to jurisdictional Waters of the US and any remaining, unavoidable impacts will be mitigated through activities to restore, enhance or create Waters of the US.

The ecologist will apply for a USACE 404 Permit immediately following approval and transmittal of the Ecology Assessment of Effects Report.

A. Nationwide and Regional Permits

Nationwide Permits (NWP), Regional Permits (RP), and Individual Permits (IP) are the three permits issued by the USACE. NWPs are the simplest form of the 404 permit and authorize a category of activities throughout the nation. These permits are valid only if the conditions applicable to the permit are met. The most commonly used NWP by GDOT are the NWP 3, 14, 23, 25, 27, and 33.

If the conditions of the NWP cannot be met, then an RP or IP will be required. RPs are issued by the USACE for a general category of activities when the activities are similar in nature and cause minimal impacts and when the regional permit would reduce the duplication of regulatory control by state and federal agencies. RP 96 is used by GDOT for activities that are similar in nature and cause minimal environmental impact, both individually and cumulatively.

A PCN is an application sent to the USACE when applying for NWPs or RPs. For more information, go to the UCACE website at http://www.sas.usace.army.mil/permit.htm. A PCN is generally required for all NWPs and RPs with one exception; NW 25 applications for projects that do not impact Section 10 waters are exempted from the PCN requirements.

Submit a PCN to the USACE immediately following the transmittal of the Ecology Assessment of Effects Report. Once the PCN is submitted, there is a 45 day review period and upon completion of the 45 day review period, the permit is issued. If comments are received, GDOT may be required to respond. The USACE has the final decision on whether the permit is issued or denied.

Include the following information a PCN:

1. Project location or address and description.
2. Project impacts (ecological, historical, and archaeological)
3. Statement of construction and design measures taken to avoid/minimize impacts.
4. Statement of mitigation measures to be taken.
5. Statement regarding the presence of threatened or endangered species.
6. Statement regarding a Water Quality Management Plan for the site.
7. Statement regarding whether or not the project is located in a 303d stream.
8. Statement of whether or not the project is located in a trout stream.
9. Statement of whether or not the project will require a buffer variance.
10. Statement of whether or not culverts are proposed in streams and/or wetlands.
11. Statement regarding in-stream/wetland storm water management.
12. Statement of whether or not the project located within 5 miles of an airport.
13. Statement of whether or not the project area is within a US Environmental Protection Agency (USEPA) priority watershed.
14. Transmittal Letter.
15. A copy of the approved Ecology Assessment of Effects Report.
16. For a NWP 23, a copy of the approved Categorical Exclusion (CE) (commitments table and signature pages only) must be included.
17. Plan sheets illustrating the impacted areas.

B. Revocable License

Federal consistency concurrence for uses of NWPs within Bryan, Brantley, Camden, Charlton, Chatham, Effingham, Glynn, Liberty, Long, McIntosh, and Wayne Counties is conditioned upon submission of documentation that the proposed project does not lay below the 5.6 foot MTL (mean tide level) elevation. Since there are no readily identifiable monuments (e.g., roads, railroads, political boundaries) depicting the geographic extent of estuarine areas below 5.6 feet MTL, the applicant must submit as part of the PCN, a topographic map showing that a project is located above the 6 foot (2 meter) contour and a statement that the impacts will be limited to that area located above the 6 foot (2 meter) contour. The USACE also can determine that a project is located landward of the 6 foot (2 meter) contour. If it is determined by the applicant with proper determination or by the USACE that the project will be located landward of the 6 foot (2 meter) contour, this will be considered sufficient to establish that a project lies at an elevation above 5.6 feet MTL for the purposes of the Nationwide Permit qualification and the USACE can conclude that the Georgia Coastal Management Program (GCMP) concurs with the federal consistency certification.

If information regarding the elevation of the project is not submitted or if a topographic map indicates that the project lies below the 6 foot (2 meter) contour, federal consistency is denied for use with the NWPs for the counties listed above. The USACE will consider the response to Question 1 on the completed PCN to be conclusive with regard to the proximity of the project to tidal waters regulated by the Georgia Coastal Resources Division (CRD). If the answer to Question 1 is "Yes," then federal consistency is denied for the project and a site specific federal consistency determination must be obtained from the CRD. The USACE cannot authorize the use of a NWP for any project that does not meet federal consistency. In order for the GCMP to concur, an application for a revocable license must be submitted as part of the application process as an attachment to the PCN. The application can be found at http://www.sas.usace.army.mil/permit.htm.

For projects that fall within the eleven counties above, the answer to Question 1 must be "Yes." In addition, information must be provided as either part of the Ecology Assessment of Effects Report or as a separate topographic map which is part of the PCN application package that shows the elevation of the project corridor. If the project is located above the 6 foot (2 meter) contour elevation, there does not need to be a copy of the Revocable License application; however, there needs to be a discussion of the project and why federal consistency concurrence is not required. If the project lies below 5.6 feet MTL a copy of the completed application for a Revocable License will be included as a part of the PCN application package.

For those projects that require a Revocable License, the PCN should be submitted to the USACE a minimum of eight months prior to the scheduled project let date. In addition to the USACE, a copy of the PCN and the request for a Revocable License must be submitted to the CRD. Once the request for a Revocable License has been received, CRD is allowed six months after receipt of the application and supporting materials to review the federal consistency determination although CRD does not anticipate needing the full six months for review. Concurrence on the federal consistency certification will be granted if CRD determines that the project will have a minimal effect to coastal marshlands. If a response has not been received within six months after CRD has begun their review, it can be conclusively presumed that concurrence has been granted on the applicant's federal consistency determination.

C. Individual Permit

For proposed projects where the impacts to Waters of the U.S. exceed the requirements of a NWP or an RP, and an IP will be required. Also if a project impacts a USACE approved mitigation site an IP is required. The Georgia DOT has a two step process that is described below for obtaining an IP; the PAR process and submittal of the permit application. This process should be initiated once the preferred alignment has been

decided, but with ample time to discuss avoidance and minimization measures. The IP application must be submitted to the USACE immediately after the completion of the Ecology Assessment of Effects Report. If the proposed project will require an IP the ecologist will prepare for and participate in the PAR process.

Individual Permits are issued following a full public interest review. A public notice is distributed to all known interested parties after an application is made. The permit decision is generally based on the outcome of a public interest balancing process where the benefits of the project are balanced against the detriments of the project. After evaluating any comments received and after all the necessary information has been received, the USACE makes a final decision on the application and a permit is granted unless the proposal is found to be contrary to the public interest.

1. Phase 1 – The Practicable Alternatives Review (PAR) Process

The purpose of the PAR is to obtain resource agency input on project alternatives, as well as to gather information for the continued project review. The agencies involved include GDOT, USACE, FHWA, USEPA, USFWS, USNMFS, DNR (including EPD), and any other appropriate commenting agency. The PAR must be concluded prior to FHWA's approval of the document prepared in compliance with NEPA: the CE, Draft Environmental Assessment (EA) or Draft Environmental Impact Statement (EIS).

a) Inclusions- A PAR Report is forwarded to all agencies involved which contains the following information:

- A project description,
- Purpose and Need statement,
- Description of GDOT's preferred alternative
- Cultural impacts
- Ecological impacts associated with a preferred alternative, and
- A description of any and all other alternatives reviewed and their associated cultural and ecological impacts.
- Layouts showing all alternatives

2. Phase 2 - Application

Phase 2 will begin with the submittal of a permit application to the USACE and may not take place immediately after Phase 1. After the application is submitted to the USACE, they will determine if the application is complete and investigate alternatives. Once a determination is made that the permit package is complete, the USACE will issue a Joint Public Notice (JPN). Resource agencies and the public will have 30 days to comment. During and after the comment period ends, the USACE will forward all comments received from the JPN to GDOT for a response. After receiving GDOT's response to the comments and completion of any additional analysis, and adoption of

the approved environmental document, the USACE will make the decision to either issue or deny the permit.

The permit application will include the following:

a) Transmittal Letter –
The transmittal letter will include:

- Brief project description.
- Brief discussion of wetland and/or stream impacts.
- Brief discussion of any threatened or endangered species issues.
- Brief discussion of Section 106 issues.
- Short statement discussing Section 401 (water quality).
- List of Enclosures (noted in B., below).
- The concluding paragraph will respectfully request issuance of the permit and a statement that a copy of the application is being sent to the appropriate resource agencies.

b) Application Package
The application package will include:

- Application Form CESAS Form 19. A downloadable form can be found at http://www.sas.usace.army.mil/wetlndap.htm#prepare.
- Reproducible drawings, size 8-1/2" x 11", of the plan cover sheet and typical section(s).
- Project location map, project need and purpose statement and project description.
- Volume of fill in cubic yards to be placed within the wetlands
- Ecology Assessment of Effects.
- Section 106 documentation.
- Mailing labels of the adjacent property owners along the entire project corridor for distribution of the JPN.
- Approved NEPA Document (to USACE only).

D. Section 401 of the Clean Water Act Water Quality Certification

Section 401 of the CWA provides authority directly to the states to review certain federal permit actions which may affect waters of the state. The state will provide the applicant with a Section 401 Water Quality Certification if it is determined that the project, as proposed, will not adversely affect the quality of the waters of the state. The state may add conditions to the Certification to insure protection of the waters.

The following is a summary of the WQC process.

1. Administered by the EPD.
2. A WQC is required on all projects that require an IP.
3. The application consists of a cover letter to EPD and copy of the Ecology Assessment of Effects Report.
4. The cover letter indicates streams and wetlands where work is to be done, provides estimated fill quantities, and gives erosion control assurances.

5. An IP cannot be issued without Section 401 certification; provisional permits may be issued without WQC.

Projects cannot be certified for let (11 weeks prior to the let) until GDOT has received the appropriate 404 permit. A copy of the permit must be posted at the construction site. Non-compliance can result in the levying of heavy fines, and in some cases prison sentences. The USACE may require additional mitigation and the removal of the unpermitted fill.

E. Section 10 Permit

Section 10 Permits are required for any work in or over navigable Waters of the US or work that affects the course, location, condition, or capacity of such waters. Typical activities include construction of piers, wharves, bulkheads, dolphins, marinas, ramps, floats intake structures, cable or pipeline crossings, dredging and excavation. If the project requires both an IP and a Section 10 permit, GDOT will submit a joint application.

A Section 10 application is to be submitted to the USACE immediately following the completion of the Ecology Assessment of Effects Report. Upon submittal of the application, the USACE places the application on JPN and the public has 30 days to submit comments. Upon completion of the 30 day review period, if no comments are received, the permit is issued to GDOT. If comments are received during the 30 day review period, GDOT must respond satisfactorily to those comments. The USACE has the final decision on whether the permit is issued or denied.

1. Transmittal letter will include
   a) Brief project description.
   b) Brief discussion of wetland and/or stream impacts.
   c) Brief discussion of any threatened or endangered species issues.
   d) Brief discussion of Section 106 issues.
   e) List of Enclosures (noted in B., below).
   f) The concluding paragraph will respectfully request issuance of the permit and a statement that a copy of the application is being sent to the appropriate resource agencies.

2. Application Package will include
   a) Application Form CESAS Form 19. A downloadable form can be found at http://www.sas.usace.army.mil/wetlndap.htm#prepare.
   b) Reproducible drawings, size 8-1/2" x 11" of the plan cover sheet and typical section(s).
   c) Project location map, project need and purpose statement and project description.
   d) Ecology Report/Description of Jurisdictional Wetlands.
   e) Section 106 documentation.
   f) Mailing labels of the adjacent property owners for distribution of the JPN.
   g) Approved NEPA Document (to USACE only).

F. Mitigation

Compensatory mitigation is required if proposed project impacts exceed 100 linear feet of stream and/or 0.10 acre of wetland and/or open water. Mitigation must be purchased from a USACE approved commercial mitigation bank that serves the same HUC (Hydrologic Unit Code) as the project location. Include the proposed bank of purchase in the permit application. If credits are not available from a HUC in the primary service area, seek permission from the USACE to obtain credits from a secondary service area. If a local government is responsible for the Preliminary Engineering phase of plan development, then they are also responsible for obtaining the 404 permit and mitigation credits.

G. Tennessee Valley Authority

Authorization from the TVA is required under Section 26a of the TVA Act for impacts to waters within the Tennessee River watershed. Along with regulated rivers and TVA reservoirs, TVA's jurisdiction includes the limits of the 500-year floodplain or to the upper limits of TVA flowage rights, whichever is higher. Along off-reservoir, unregulated streams and rivers, TVA jurisdiction is typically applied to the limits of the 100-year floodplain. Georgia counties found within the Tennessee Valley watershed include Catoosa, Dade, Fannin, Gilmer, Rabun, Towns, Union, Walker and Whitfield.

1. Regulated Activities
   a) Placement of culverts in streams and relocation of stream channels
   b) Addition of lanes to highways that require culvert extensions
   c) New location roadways that would cross or relocate a stream
   d) Bridge replacements when lanes are added
   e) New bridge construction upstream or downstream of the existing bridge

2. Activities that are NOT regulated under the TVA
   a) Removal of trees, stumps, brush, or sand/gravel
   b) Excavation of a new channel
   c) Excavation of a trench for utilities
   d) Construction over intermittent streams
   e) Replacement of culverts or bridges of same or greater hydraulic capacity, creating no new or additional obstruction, and within the same highway alignment that is to be considered maintenance activity
   f) Directional boring under streams or rivers
   g) Discharges into the Tennessee River System unless they are made through or by an outfall pipe, etc.

3. Transmittal Letter Inclusions
   a) Brief project description

b) Brief discussion of wetland and/or stream impacts and any threatened or endangered species issues
c) Short discussion of any archaeology and/or history issues
d) A short statement confirming approval of the environmental document
e) A short statement respectfully requesting issuance of the Section 26a permit.

4. TVA Form 17423 Inclusions
   a) Name, address, and phone number of permittee (GDOT)
   b) Project location
   c) Date of the proposed letting
   d) List of any previous USACE/TVA permits/approvals granted to GDOT
   e) Statement as to whether any portion of the project is already complete
   f) List any other certifications or approval/denials received from other federal, state, or local agencies
   g) Statement as to whether any agency has denied approval of the project

5. Application Package Inclusions
   a) Project location map
   b) Half-size plans including the cover sheet, typical section(s), and plan and profiles
   c) Ecology Assessment of Effects and any addendums
   d) Copy of the hydraulic/hydrologic study for all the stream/river crossings
   e) Copy of the approved NEPA document
   f) A checklist for the TVA application must be included. The above information must be submitted 12 months in advance of the anticipated project letting.

4.7 Consultant Deliverables

The Consultant will submit a single copy of all first submittals. Multiple final drafts will be requested after the review has been completed. All maps and photographs will be in color and all text and tables in black. All documents will be submitted unbound.

It is the responsibility of the consultant ecologist to transmit field survey data to the Project Manager following the Ecology Resource Survey.

The following is a list of all documents that may be required for each GDOT project.

4.7.1 Ecology Resource Survey Report
4.7.2 Ecology Resource Survey Report Transmittal Letter
4.7.3 State Water Determination Request
4.7.4 Jurisdictional Determination Request
4.7.5 Resource Report Overview Table
4.7.6 Resource Report Protected Species Summary Table
4.7.7 Resource Report Stream Summary Table

4.7.8 Resource Report WL/Open Water Summary Table
4.7.9 Resource Report Buffered State Water Summary Table
4.7.10 Resource Report Ecology Survey Data Sheet
4.7.11 North Carolina Stream ID Form
4.7.12 Wetland Data Form
4.7.13 Expanded Preliminary Jurisdictional Determination Form
4.7.14 Protected Species Survey Report
4.7.15 Protected Species Location Data Form
4.7.16 Protected Species Survey Data Sheet
4.7.17 AOE Report Text
4.7.18 AOE Report Transmittal Letter
4.7.19 AOE Report FWCA Letter
4.7.20 AOE Report Informal Section 7 Letter
4.7.21 AOE Report Formal Section 7 Letter
4.7.22 AOE Report Magnuson Stevenson Act Letter
4.7.23 AOE Report Overview Table
4.7.24 AOE Report Buffered State Water Table
4.7.25 AOE Report Protected Species Summary Table
4.7.26 AOE Report Stream Summary Table
4.7.27 AOE Report WL/Open Water Summary Table
4.7.28 AOE Alternative Alignment Impact Summary Table
4.7.29 Wetland and Open Water SOP Worksheet
4.7.30 Stream SOP Worksheet
4.7.31 Pre-Construction Notification (PCN)
4.7.32 PCN Supplemental Information
4.7.33 PCN Cover Letter
4.7.34 Buffer Variance Application
4.7.35 Buffer Variance Application Transmittal Letter
4.7.36 Individual Permit Application
4.7.37 Water Quality Certification Request (for IP Application)
4.7.38 Special Provisions 107.23G (forthcoming)
4.7.39 Special Provisions 700 (forthcoming)
4.7.40 Special Provisions 702 (forthcoming)

4.8 Templates

All templates are located on the Ecology Website (http://gdotteams.dot.ga.gov/info/ecology/default.aspx).

For access to the website, complete the form on the user registration site (http://www.dot.ga.gov/doingbusiness/Pages/UserRegistration.aspx)

4.9 Useful Websites

4.9.1 http://www.gadnr.org/
4.9.2 http://endangered.fws.gov/wildlife.html
4.9.3 http://www.ganet.org/dnr/wild
4.9.4 http://www.gaports.com
4.9.5 http://www.nwi.fws.gov
4.9.6 http://www.sas.usace.army.mil

4.9.7 *http://www.atlreg.com*
4.9.8 *http://www.wetlands.com*
4.9.9 *http://www.epa.gov*
4.9.10 *http://www.epa.gov/OWOW/wetlands*
4.9.11 *http://www.nps.gov/rivers*