

Environmental Assessment

Fulton-Cobb Diversion Force Main Sewer

Cobb County, Georgia

Chattahoochee River National Recreation Area

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Cost of Environmental Assessment: \$161,270

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PROJECT OVERVIEW

INTRODUCTION

The National Park Service (NPS), Chattahoochee River National Recreation Area (CRNRA, Park) is considering a proposal from the Fulton County Department of Public Works (FCDPW) to develop a wastewater force main diversion within a right-of-way through the Park to divert wastewater while the Big Creek Water Reclamation Facility (BCWRF) is being upgraded. The wastewater force main diversion would go under the river in two locations and enter the CRNRA at the northern end of the Johnson Ferry North unit where it would connect to the Cobb County Water System (CCWS). The force main would require an NPS Special Use Permit (SUP). This document complies with the National Environmental Policy Act (NEPA) of 1969, as amended.

PURPOSE AND NEED FOR ACTION

The purpose of this Environmental Assessment (EA) is to consider whether the National Park Service will issue a SUP to the FCDPW for the construction, operation, and maintenance of a thirty-(30)-inch-diameter, one-mile long force main sewer in the Johnson Ferry North unit of the Park. Currently the Park experiences water quality degradation due to the burdened wastewater system in the north metro Atlanta area. During and after a heavy rainfall, manholes are overflowing and releasing raw sewage and artifacts into the river, tributaries, and surrounding park units. The proposed force main will alleviate the current burden to the sewer infrastructure system in an area of the Park that experiences significant sewage spills regularly.

In accordance with Section 106 of the National Historic Preservation Act (NHPA) (54 USC 306108) as amended, NPS initiated consultation with the Georgia State Historic Preservation Office (SHPO), by letter dated October 10, 2018. The Section 106 process is occurring separately and concurrently to the NEPA compliance for this Federal action.

OVERVIEW OF THE ALTERNATIVES

Two alternatives are addressed in this environmental assessment.

Alternative A – No Action

Alternative B – Permitting of Force Main

HOW TO COMMENT

NPS encourages agencies, non-governmental organizations, and the public to review and comment on the contents of this environmental assessment during a 15-day public review and comment period, using any one of several methods. The preferred method of providing comments is on the NPS planning website: <https://www.nps.gov/chat/learn/management/comment-and-review.htm>. You may also submit written comments to:

Superintendent
Chattahoochee River National Recreation Area
Attn: Fulton Diversion Force Main Environmental Assessment
1978 Island Ford Parkway
Sandy Springs, Georgia 30350

Only written comments will be accepted. Please make sure that your written comments are transmitted or postmarked within 15 days of the posting of the notice of availability. Please be aware that your entire comment will become part of the public record. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

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CHAPTER 1: PURPOSE AND NEED

1.1 INTRODUCTION

Fulton County Department of Public Works (FCDPW) is proposing to develop a wastewater force main diversion within a right-of-way through the Chattahoochee River National Recreation Area (CRNRA, Park) to divert wastewater to connect to Cobb County Water System (CCWS). This document has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality (CEQ) “Regulations for Implementing the Procedural Provisions of NEPA” (40 Code of Federal Regulations [CFR] 1500–1508), NPS Director’s Order 12: *Conservation Planning, Environmental Impact Analysis, and Decision-making* (NPS 2011), and Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA) and implementing regulations, 36 CFR Part 800. The NEPA process for this project is being used to comply with Section 106 of the NHPA.

1.2 PURPOSE AND NEED FOR ACTION

The purpose of this Environmental Assessment (EA) is to consider whether the National Park Service will issue a Special Use Permit (SUP) to the FCDPW for the construction, operation, and maintenance of a thirty-(30)-inch-diameter, one-mile long force main sewer in the Johnson Ferry North unit of the Park. Currently the Park experiences water quality degradation due to the burdened wastewater system in the north metro Atlanta area. During and after a heavy rainfall, manholes are overflowing and releasing raw sewage and artifacts into the river, tributaries, and surrounding park units. The proposed force main will alleviate the current burden to the sewer infrastructure system in an area of the Park that experiences significant sewage spills regularly.

In accordance with Section 106 of the National Historic Preservation Act (NHPA) (54 USC 306108) as amended, NPS initiated consultation with the Georgia State Historic Preservation Office (SHPO), by letter dated October 10, 2018. The Section 106 process is occurring separately and concurrently to the NEPA compliance for this Federal action.

1.3 RELATED PLANS

CRNRA is in the process of evaluating park-specific and regional trail plans that include the area of the proposed force main. It is anticipated that a trail would follow the current utility easement, including the proposed new alignment, as a social trail currently exists along this easement. The Park anticipates formalizing the social trail and including it in the Trail Management Plan. Sections of the proposed Riverlands Trail Project may include the Johnson Ferry North unit of the Park. See section 4.2.

1.4 PURPOSE AND SIGNIFICANCE OF CRNRA AND PROJECT BACKGROUND

SIGNIFICANCE OF CRNRA

The CRNRA was established in 1978 by President Jimmy Carter “to lead the preservation and protection of the 48-mile Chattahoochee River corridor from Buford Dam to Peachtree Creek, and its associated natural and cultural resources, for the benefit and enjoyment of the people” (NPS 2009). The CRNRA includes the Chattahoochee River and adjacent land areas in 16 units along the 48-mile stretch of river. The CRNRA includes approximately 5,200 federally owned acres of property in Cobb, Fulton, Forsyth, and Gwinnett Counties.

PROJECT BACKGROUND

Fulton County is expanding the Big Creek Water Reclamation Facility (BCWRF) to accommodate an increase in wastewater treatment demand that has resulted from the urbanization of the surrounding area. Approximately 3.5 to 10 million gallons per day (MGD) of wastewater currently flowing into the BCWRF would need to be safely redirected to Cobb County via the Riverside Road Pump Station (RRPS), a new diversion pump station (proposed Riverside Diversion Pump Station [RDPS]), and a new bypass force main sewer. The RRPS currently services the BCWRF.

A force main would be installed to connect the proposed RDPS to an existing line of the CCWS with available capacity to achieve this wastewater diversion. This existing CCWS sewer with available capacity is located adjacent to two existing easements on CRNRA property. The proposed force main will be approximately one mile in length within the CRNRA property.

1.5 ISSUES AND IMPACT TOPICS

Issues and concerns affecting this Proposed Action were identified from agency consultation. Issues describe problems or concerns associated with current impacts from environmental conditions as well as problems that may arise from the implementation of any of the alternatives. Specific impact topics were developed for discussion focus, and to allow comparison of the environmental consequences of each alternative. These impact topics were identified based on federal laws, regulations, and Executive Orders; *NPS Management Policies 2006*; and NPS knowledge of limited or easily impacted resources. A brief rationale for the selection of each impact topic is given below, as well as the rationale for dismissing specific topics from further consideration. The following impact topics merit consideration in this EA.

BIOLOGICAL RESOURCES

A review of the Information for Planning and Consultation (IPaC) report from the United States Fish and Wildlife Service (USFWS) and the Georgia Department of Natural Resources (GADNR) databases was conducted to assess the potential for federally and state protected species occurring on the project site. According to the USFWS IPaC report, there are three protected species that are either known to occur or have the possibility of occurring in Fulton or Cobb counties. The IPaC report indicated no critical habitat for these species in Fulton or Cobb County. The IPaC report also indicated 12 migratory species that may be present in Fulton or Cobb County. The IPaC report from the USFWS is attached in **Appendix A**.

According to the GADNR database, there are 16 known occurrences of protected species or other species of concern, at least nine in the CRNRA.

Actions directly related to the installation of the force main would require vegetation clearing, trimming and tree removal; however, the amount of vegetation clearing would be limited to the extent possible.

Biological Resources are addressed as an impact topic in this EA.

CULTURAL RESOURCES

The National Historic Preservation Act (NHPA) (54 USC 306108), NEPA, the Organic Act, NPS *Management Policies 2006* (NPS 2006), Director's Order 12, and NPS-28, *Cultural Resources Management Guideline* require the consideration of impacts on any cultural resources that might be affected by an undertaking. The NHPA requires the consideration of effects on cultural resources either listed in, or eligible to be listed in, the National Register of Historic Places (NRHP). Cultural resources include archaeological resources, cultural landscapes, historic structures and districts, ethnographic resources, objects and museum collections (prehistoric and historic objects, artifacts, works of art, archival documents, and natural history specimens), and traditional cultural properties.

In accordance with Section 106 of the National Historic Preservation Act (NHPA) (54 USC 306108) as amended, NPS initiated consultation with the Georgia State Historic Preservation Office (SHPO), by letter dated October 10, 2018. The Section 106 process is occurring separately and concurrently to the NEPA compliance for this Federal action. The Park consulted with American Indian tribes, including Alabama-Coushatta Tribe of Texas, Alabama-Quassarte Tribal Town, Cherokee Nation, Coushatta Tribe of Louisiana, Eastern Band of Cherokee Indians, Kialegee Tribal Town, The Muscogee (Creek) Nation, Poarch Band of Creeks, Seminole Nation of Oklahoma, Seminole Tribe of Florida, Thlopthlocco Tribal Town, United Keetoowah Band of Cherokee Indians in Oklahoma as well as the SHPO in the identification of historic properties and the assessment of effect.

Archaeological surveys by Edwards-Pittman (EP) determined that ground-disturbing activities from construction of the proposed force main would not affect cultural resources located in the project area. This resource area is addressed as an impact topic in this EA.

HUMAN HEALTH AND SAFETY

The purpose of the force main diversion is to reroute wastewater while the BCWRP is being upgraded. The underground system will minimize sewer leaks and spills while alleviating the overburdened Fulton County sewer system in this area of the region. Because sewer spills and overflows pose a risk to human health and safety, this topic is addressed in this EA.

GEOLOGIC RESOURCES

The project construction involves horizontal directional drill (HDD) and open trenching to lay the force main. HDD is a common construction practice when constructing utilities under a river. There are inherent risks involved with this process. Additionally, the Chattahoochee River follows the Brevard fault line, a deformation that divides the Piedmont of Georgia into the upper and lower regions. Soils will be disturbed and exposed through the open trenching process. To minimize impacts to soils, topsoil would be stockpiled separately to be used as top cover after force main construction to recreate the natural soil horizon and minimize impacts to vegetation. This resource area is addressed as an impact topic in this EA.

SOUNDSCAPES

The project construction would create temporary noise impacts at the CRNRA within the project area. This resource area is addressed as an impact topic in this EA.

VIEWSHEDS

The proposed alternative is collocated along two utility easements that predate the CRNRA. The proposed force main is being placed underground and adjacent to these existing utility lines to minimize the effect on the surrounding vegetation and culturally significant view shed. This resource area is addressed as an impact topic in this EA.

VISITOR USE AND EXPERIENCE

The project would require a portion of the CRNRA trails to close during the construction due to open trenching and the use of heavy machinery. Because this project will impact visitor use and experience, this resource area is addressed as an impact topic in this EA.

WATER RESOURCES

The 1972 Federal Water Pollution Control Act, as amended by the Clean Water Act (CWA) of 1977, is a national policy to restore and maintain the chemical, physical, and biological integrity of the nation's waters; enhance the quality of water resources; and prevent, control, and abate water pollution. NPS *Management Policies 2006* provide direction for the preservation, use, and quality of water originating, flowing through, or adjacent to park boundaries. This resource area is addressed as an impact topic in this EA.

After consultation with NPS hydrologists, the proposed project will not increase flood risk to life and property and will not adversely impact natural and beneficial floodplain values. Therefore, the floodplains portion of the water resources topic was dismissed from further discussion in the EA.

1.6 IMPACT TOPICS DISMISSED FROM FURTHER ANALYSIS

According to Director's Order (D.O.) 12 and its accompanying handbook (NPS 2015), analysis in an EA should focus on significant issues (i.e., pivotal issues or issues of critical importance) and only discuss insignificant issues briefly. As a general rule, issues should be retained for consideration and discussed in detail if:

- the environmental impacts associated with the issue are central to the proposal or of critical importance;
- a detailed analysis of environmental impacts related to the issue is necessary to make a reasoned choice between alternatives;
- the environmental impacts associated with the issue are a big point of contention among the public or other agencies; or
- there are potentially significant impacts to resources associated with the issue.

The following issues and topics did not meet the above criteria because they are not potentially significant, not critical to choosing between alternatives, and are not controversial. Therefore, they were eliminated from further analysis in this EA. A brief rationale for dismissal is provided for each topic.

AIR QUALITY

The 1963 Clean Air Act, as amended (42 USC 7401 et seq.), requires federal land managers to protect air quality in national parks. The project site is located in Fulton County, which is in a non-attainment for PM_{2.5} and Ozone. During construction, dust and vehicle emissions related to construction activities and transport of construction materials and personnel may

temporarily affect local air quality. Air movement would rapidly dissipate hydrocarbons, nitrogen oxide, and sulfur dioxide emissions because air stagnation is uncommon at the project site. Overall, degradation to local air quality would be slight and temporary as a result of dust generated from construction activities, but these effects would be localized and minimal. The proposed project would not affect the park's current level of air quality; therefore, this impact topic was dismissed from further analysis.

CLIMATE CHANGE

Climate change refers to any significant changes in average climatic conditions (such as mean temperature, precipitation, or wind) or variability (such as seasonality and storm frequency) lasting for an extended period (century or longer). Although some effects of climate change are considered known or likely to occur, many potential impacts are unknown. Climate change science is a rapidly advancing field, and new information is being collected and released continually. Construction activities associated with implementation of the proposed action would contribute to increased greenhouse gases emissions, but such emissions would be short term, ending with the project completion, and it is not possible to meaningfully link the greenhouse gases emissions of such individual project actions to quantitative effects on regional or global climatic patterns. Any effects on climate change would not be discernible at a regional scale. Therefore, this impact topic was dismissed from further evaluation.

LIGHTSCAPES

The proposed alternative is collocated along utility easement that predates the existence of the CRNRA. The nature of the underground force main project is unlikely to affect lightscapes.

PREHISTORIC/HISTORIC STRUCTURES

The project site is in the vicinity of known cultural resources. The George A. Powers House at Hyde Farm is listed in the National Register of Historic Places (2001). Hyde Farm is significant as potentially eligible National Register historic district. Cultural resource field surveys resulted in the identification of an additional historic property near CRNRA property, Glenridge Hall. It is located to the west and southwest of the project site, within approximately 1.87 miles. The project area does not extend near the location of this cultural resource. Additionally, the proposed alternative is collocated along utility easement that predates the existence of the CRNRA. The nature of the previously disturbed project area is unlikely to produce prehistoric or historic structures. Therefore, this section of the Cultural Resources impact topic was dismissed from further analysis.

SOCIOECONOMICS

NEPA requires an analysis of impacts on the human environment, which includes economic, social, and demographic elements in the affected area. Installation of the force main may bring a short-term need for additional personnel at the site, but this addition would be minimal and would not affect the surrounding community's overall population, income, and employment base. The proposed action would not appreciably affect local businesses or other agencies. Implementation of the proposed action could provide a beneficial impact on the economies of nearby areas (e.g., minimal increases in employment opportunities for the construction workforce and revenues for local businesses and government generated from construction activities and workers). Any increase, however, would be negligible. Therefore, socioeconomics was dismissed as an impact topic.

ENVIRONMENTAL JUSTICE AND INDIAN TRUST RESOURCES

The proposed action will not have disproportionate impacts on socially or economically disadvantaged populations or on any Indian Trust Resources.

CHAPTER 2: ALTERNATIVES

2.1 OVERVIEW OF THE ALTERNATIVES

NEPA requires federal agencies to explore a range of reasonable alternatives aimed at addressing the purpose of and need for the proposed action. Reasonable alternatives include alternatives that are "technically and economically practical or feasible and meet the purpose and need of the proposed action" (43 CFR § 46.420(b)).

The alternatives under consideration must include a no-action alternative as prescribed by CEQ regulations for implementing NEPA (40 CFR Part 1502.14). The alternatives analyzed in this document, in accordance with NEPA, are based on the result of internal and agency scoping. Alternatives and actions that were considered but would not be technically or economically feasible, would not meet the purpose of and need for the project, would create unnecessary or excessive adverse impacts on resources, or would conflict with the overall management of the park or its resources were dismissed from detailed analysis.

NPS explores and objectively evaluates two alternatives in this EA.

- Alternative A – No Action
- Alternative B – Permitting of Force Main

2.2 ALTERNATIVE A – NO ACTION

Alternative A is a “no action” alternative, which would leave the project site unchanged. Under a “no action” alternative, the Park would not issue a SUP and wastewater will continue to be diverted to Cobb County through undersized pipes, risking sanitary sewer overflows along the Chattahoochee River and its tributaries. This alternative would not safely meet the project purpose and need.

2.3 ALTERNATIVE B – PERMITTING OF FORCE MAIN

The proposed Alternative B, the preferred alternative, would allow the Park to issue a SUP for the installation, operation, and maintenance of a thirty-(30)-inch-diameter sewer line and connect to an existing CCWS sewer in the Johnson Ferry North unit of the Park. The one-mile length of the force main in this alternative is necessary to connect to a location in the CCWS that has available capacity to accommodate the proposed volume of wastewater. This alternative will provide a system suitable for transporting the anticipated 3.5 to 10 MGD of wastewater to the CCWS. Methods of construction for the force main within CRNRA property include open-cut trenching and horizontal directional drill (HDD) installation. Open-cut trenching will be used to lay pipe near existing utility lines and at stream crossings. HDD will be used for the sections that cross the Chattahoochee River at the Riverside Road Pump Station (RRPS) and just downstream of Morgan Falls Dam at the Fulton County Pump Station (FCPS).

The proposed Alternative B includes the construction of a 30-inch force main as shown in yellow in **Figure 1** and green in **Figure 2**. The southern section of the proposed force main will cross the Chattahoochee River just downstream of Morgan Falls Dam and continue southwest through the existing utility easement on CRNRA property before connecting to a proposed manhole on the CCWS existing sewer line.

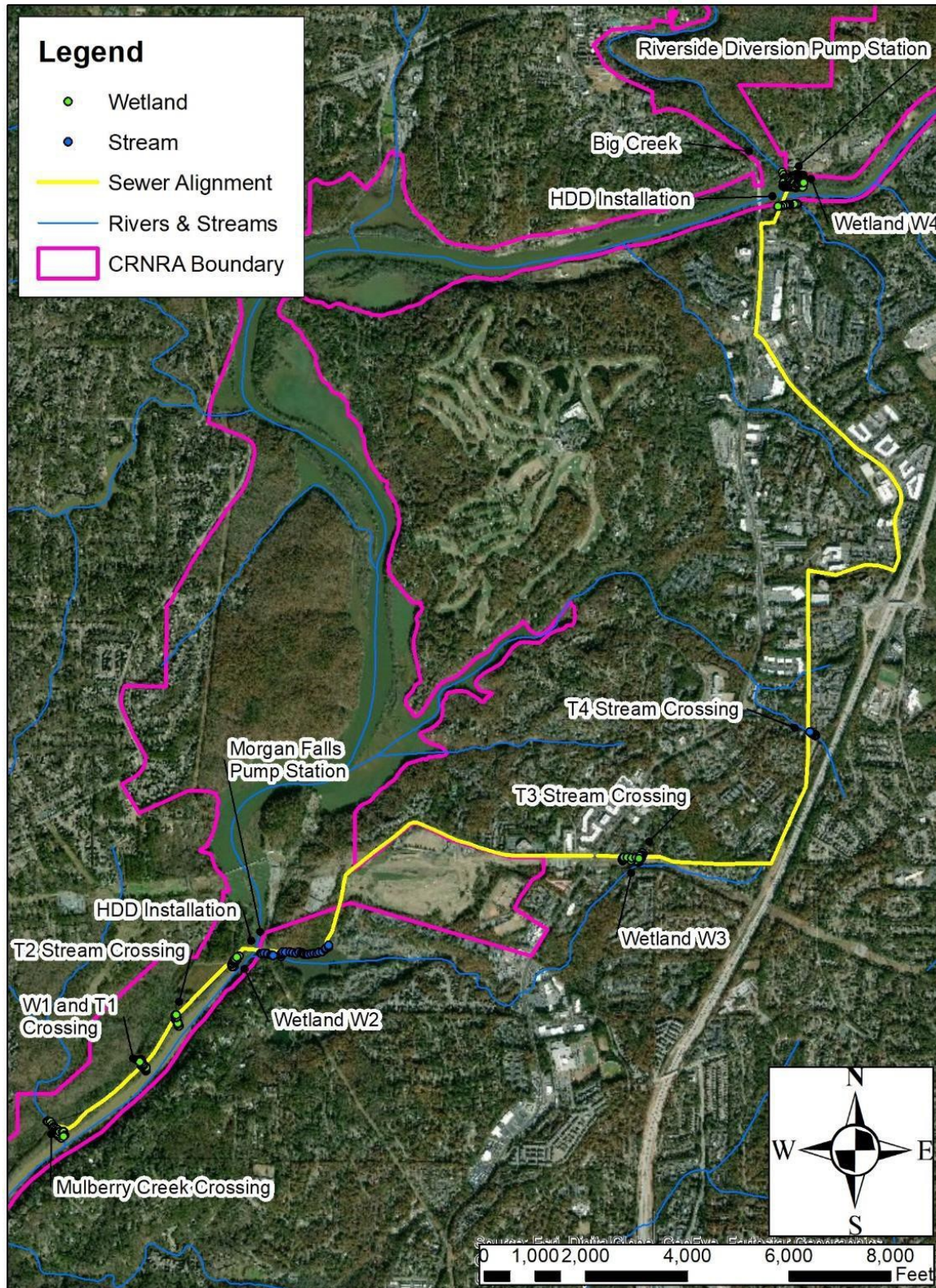


FIGURE 1. PROPOSED FULTON-COBB LINE PROJECT ALIGNMENT.

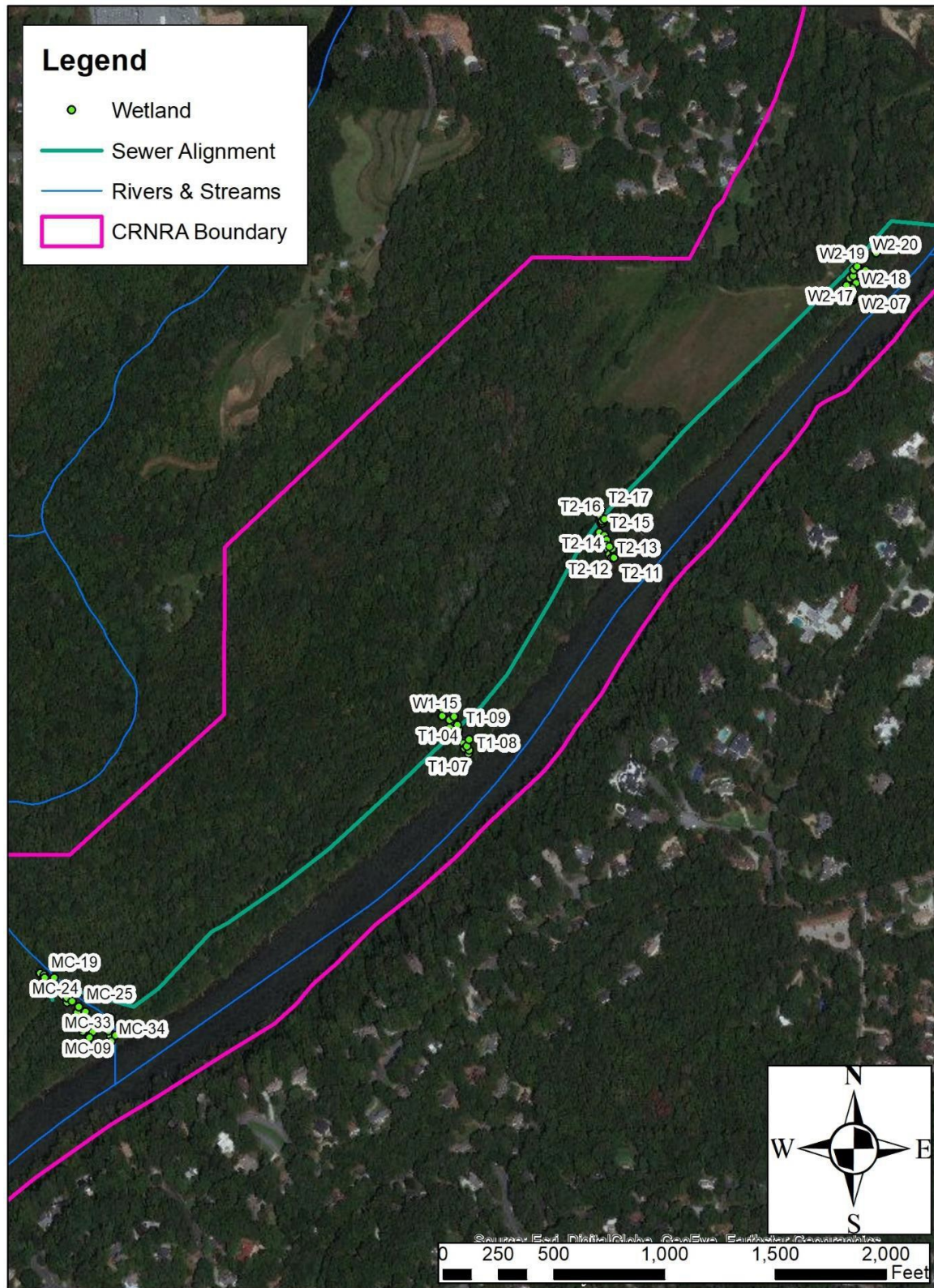


FIGURE 2. PIPING LAYOUT ON CRNRA PROPERTY.

2.4 ALTERNATIVES/ELEMENTS CONSIDERED BUT DISMISSED FROM FURTHER ANALYSIS

ABOVEGROUND TEMPORARY FORCE MAIN SEWER

An aboveground force main sewer was considered but dismissed from further analysis due to the complexity of the construction and cost of deviation from the construction plan. An aboveground line requires different construction materials and methods that are not as technically sound and durable as an underground system. The impacts to resources could potentially be greater due to the more frequent need for maintenance and repairs of an aboveground line. Additionally, an aboveground line would affect the cultural and historic views as seen from the Hyde Farm road and fields.

2.5 MITIGATION MEASURES OF THE PREFERRED ALTERNATIVE

NPS places strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental and cultural impacts. To help ensure the protection of natural and cultural resources and the quality of the visitor experience, the following protection measures would be implemented as part of the proposed action.

CONSTRUCTION AND DESIGN CONSIDERATIONS

The extent and alignment of the FCDPW force main sewer through the CRNRA was selected in order to minimize impacts as well as maintain construction feasibility. The force main is proposed to run within a parallel corridor to two previous installed utilities - an existing 36-inch diameter sanitary sewer interceptor owned and operated by CCWS, and an existing 40-inch diameter petroleum line owned and operated by Colonial Pipeline Company (CPC). The proposed force main alignment would be located as tightly as possible to these previously disturbed utility extents while still maintaining appropriate separations and spacing for construction. The proposed alignment would also maintain appropriate spacing outside the riparian buffers of the Chattahoochee River. The proposed alignment was discussed and coordinated with CPC, CCWS, FCDPW, and the CRNRA and positioned to avoid encroachment and impacts to the CPC pipeline easement and reduce impacts to the existing CCWS easement. CRNRA input was incorporated to ensure that the proposed alignment is still outside the desired riparian stream buffer and does not further affect wetlands to the east of the alignment and east of the Hyde Farm location. The project site is also in such a location that it is away and out of sight of the structures associated with the Hyde Farm site and access to the project would utilize the existing CCWS and CPC easements and would not be accessed from Hyde Farm.

In discussions with staff and the owning utilities, an advantage of the proposed alignment is that it is likely within the previously disturbed limits of construction of the two existing utility lines. Shifts in the alignment away from the current proposed alignment would either encroach on the Chattahoochee River, would increase the chances of impacting previously undiscovered cultural resources, or would deviate further within the boundaries of potential archeological areas. The currently proposed route minimizes impacts to the greatest extent feasible based on coordination with the impacted utility, municipal, state, and federal stakeholders.

In terms of construction method, the force main is proposed to be installed via open-cut trenching, and the profile is designed to be as shallow as possible while also meeting contract standard of depth of cover for buoyancy protection (4-foot minimum cover). This shallower depth limits the width of excavation needed. Trench installation will typically be approximately 6-ft deep (to bottom of trench) and 4-foot wide (trench wall to wall). For open cut force main installations across streams, only the installation width will be disturbed. This method minimizes the construction footprint required.

For the HDD installation of the pipe beneath the Chattahoochee River, this trenchless method further reduces overall construction impact for the extent of the force main crossing from Fulton County into Cobb County. Open-cut trenching or laying the pipe along the bottom of the Chattahoochee River would result in much more impacts to resources than HDD installation. The site laydown area will include containment measures and would be monitored throughout the duration of HDD operations.

The chosen access road follows the cleared and disturbed corridor of the existing utilities in the area. The width is limited to a single lane within this corridor. Entrance for the access road is from Johnson Ferry Road. Project equipment would only enter and exit the project site and access roads once. Equipment would come in and be stored on-site during the duration of construction to prevent unnecessary additional degradation of the easements and access roads. CPC is allowing equipment storage within the easternmost five feet of their easement, and CCWS is allowing equipment storage within the full width of their easement. The chosen methods for access and equipment storage are the most feasibly, environmentally friendly options for the project. The alternative access road at Hyde Farm was dismissed from consideration because the route would be too steep with too many switchbacks for construction equipment to navigate.

CULTURAL RESOURCES

In accordance with Section 106 of the National Historic Preservation Act (NHPA) (54 USC 306108) as amended, NPS initiated consultation with the Georgia State Historic Preservation Office (SHPO), by letter dated October 10, 2018. The Section 106 process is occurring

separately and concurrently to the NEPA compliance for this Federal action. The park consulted with American Indian tribes, including Alabama-Coushatta Tribe of Texas, Alabama-Quassarte Tribal Town, Cherokee Nation, Coushatta Tribe of Louisiana, Eastern Band of Cherokee Indians, Kialegee Tribal Town, The Muscogee (Creek) Nation, Poarch Band of Creeks, Seminole Nation of Oklahoma, Seminole Tribe of Florida, Thlopthlocco Tribal Town, United Keetoowah Band of Cherokee Indians in Oklahoma as well as the SHPO in the identification of historic properties and the assessment of effect.

Edwards-Pittman (EP) conducted archaeological investigations for the proposed wastewater force main project on October 9, 2018, February 26 through March 13, 2019, August 7, 2019, and April 6 through 8, 2020. EP revisited four previously recorded archaeological sites, 9FU4, 9FU124, 9FU284, and 9CO127 (CHAT-114), located within the project area. Additionally, EP recorded one new archaeological site, 9CO780. The proposed project consists of a narrow area of potential effect (APE), primarily located adjacent to existing buried utilities. Based on EP's fieldwork, the portions of the sites located within the APE lack data potential and will not be adversely impacted by the proposed project.

PROTECTION MEASURES

Approved Cobb County Erosion and Sediment Control stream diversion details would be utilized during open cut force main installation across streams. Force main installed below streambeds would be encased in concrete at a 4-foot minimum cover beneath the streambed elevation. Subsequent to force main installation, stream embankments would be stabilized and restored using permanent native vegetative and structural erosion and sedimentation control measures (**See Attachment 1 of the SOF for details**). Temporary access bridges and temporary culverts would be utilized where necessary to minimize impacts to the aquatic environment. All applicable National Park Service Best Management Practices (BMPs) and state BMPs would be utilized during and after project construction in order to minimize environmental impacts as much as possible. This will include vegetative and structural BMPs during construction.

Compensatory Mitigation

Upon project completion, the top of the force main will lie no less than four feet beneath the contour of the land's surface. Therefore, the 0.04 acres of temporary affected PFO1A wetland and 0.02 acres of temporary affected R4 wetland (0.06 acres total of temporary affected wetlands) in the CRNRA will be directly restored in order to uphold the NPS "no net loss of wetlands" goal and 1:1 function replacement, stated in D.O. #77-1. Any disturbed areas within or near the wetland or stream banks will be restored as quickly as practical and covered with stocked wetland topsoil and native vegetation. The existing stream, wetland contours, and

hydrologic drainage features will be restored to their pre-construction conditions using grading techniques and bank stabilization measures approved by the Georgia Soil and Water Conservation Commission. Revegetation details are available in **Attachment 1** of the Wetlands SOF (**Appendix E**).

Impacts are expected to be temporary and moderate. Construction of the force main on CRNRA property will take place between September 1, 2020 and March 31, 2021 and will last approximately 7 months. However, work within wetlands from beginning of impact to end of restoration is anticipated to only take approximately one day per stream/wetland crossing. Project funding and cost recovery fee is the responsibility of the Project owner Fulton County Department of Public Works and its selected contractor.

Since total wetland temporary impacts on NPS land are under 0.1 acres, according to D.O. #77-1, NPS has determined that mitigation for wetlands impact from the proposed activity is not necessary. To protect the stream crossings, existing culverts and armored banks, matting, and temporary crossings will be utilized during construction. Following construction, two permanent bridges will be installed at Ditch Branch and Mulberry Creek to prevent further resource injury from future maintenance work along the utility corridor. The design will be approved by the National Park Service and meet all safety requirements. Permanent bridge installations would qualify as mitigation.

CHAPTER 3: AFFECTED ENVIRONMENT

3.1 OVERVIEW

The “Affected Environment” chapter describes the existing conditions for environmental elements and elements of the human environment that would be affected by the implementation of the alternatives considered in this EA. The components addressed include biological resources, cultural resources, geologic features, human health and safety, soundscapes, view sheds, visitor use and experience, and water resources. Impacts for each of these topics are analyzed in “Chapter 4: Environmental Consequences.”

3.2 BIOLOGICAL RESOURCES

CRNRA has a rich diversity of plant life making it one of the most botanically diverse parks in the national park system. With this diversity of plant life, comes a diverse assemblage of plant communities and animal life. Three areas of biological resources will be analyzed in this EA: vegetation, nonnative and exotic species, and species of concern or their habitat.

VEGETATION

Vegetation near the project site and excluding the existing right-of-way primarily consists of a mix of hardwood and pine tree species including multiple levels of canopy cover. Within the right-of-way, there are tall grasses and herbaceous plants. Areas of wetlands are also found near the project site, containing typical wetland species such river birch (*Betula nigra*), woolgrass (*Scirpus cyperinus*), dotted smartweed (*Polygonum punctatum*), American elm (*Ulmus americana*), Virginia dayflower (*Commelina virginica*), and buckthorn bully (*Sideroxylon lycioides*).

NONNATIVE OR EXOTIC SPECIES

Nonnative and exotic plant species exist in the project area. These include privet (*Ligustrum sinense*, *L. japonicum*), autumn olive (*Eleagnus umbellata*, *E. pungens*), Japanese honeysuckle (*Lonicera japonica*), English ivy (*Hedera helix*), and Nepal grass (*Microstegium vimineum*).

SPECIES OF SPECIAL CONCERN OR THEIR HABITAT

The potential exists for federal, state-listed, and priority species to be in this unit of the park. A review of the Information for Planning and Consultation (IPaC) report from the USFWS databases, which can be found in **Appendix A**, was conducted to assess the potential for federally and state protected species occurring on the project site. The literature review identified three species of conservation concern potentially occur in the project area. These three species include one mammal species, the Northern Long-eared Bat (*Myotis septentrionalis*), and two plant species, Michaux's Sumac (*Rhus michauxii*) and the White Fringeless Orchid (*Platanthera integrilabia*). The NPS indicated, however, that none of these three species exist in the portion of the CRNRA to be impacted by the Project. The IPaC report indicated no critical habitat for these species in Fulton or Cobb County. The report also identified a potential for twelve migratory avian species that could potentially use the areas to breed at varying times of the year.

An office review of available resources was performed by River To Tap (R2T), Inc. personnel, along with coordination with the NPS, to develop a list of protected species that potentially occur near the project area.

The office review indicated that 18 protected species or other species of interest are either known to occur or have the possibility of occurring near the project area in Fulton and Cobb counties. The National Park Service cited additional species known to occur in the CRNRA or nearby, which brings the total to 22 protected species or other species of interest known to or possibly occurring in the project area.

According to the Georgia Department of Natural Resources (DNR) database, there are 16 known occurrences of protected species or other species of concern, at least one including the CRNRA.

The NPS indicated that, along with the species listed in the IPaC report, the following species, along with their critical habitat, are known to occur in or nearby CRNRA: Bald eagles (*Haliaeetus leucocephalus*), Baltimore checkerspot (*Euphydryas phaeton*), Bay star-vine (*Schisandra glabra*), Chattahoochee crayfish (*Cambarus howardi*), Georgia aster (*Symphyotrichum georgianum*), purple milkweed (*Asclepias purpurascens*), tri-colored bat (*Perimyotis subflavus*), and yellow-crowned night heron (*Nyctanassa violacea*). Agency coordination response letters can be found in **Appendix B**.

3.3 CULTURAL RESOURCES

Section 106 of the National Historic Preservation Act (NHPA) of 1966 and *NPS Management Policies 2006* are two of several regulations and guidance documents that specify procedures to identify and protect cultural resources within the CRNRA. The George A. Powers House at Hyde Farm is listed in the National Register of Historic Places (2001). Hyde Farm is significant as potentially eligible National Register historic district. A review of existing information on previously identified historic properties revealed that no National Register of Historic Places (NRHP) listed properties, properties pending NRHP nomination, National Historic Landmarks, or bridges determined eligible for inclusion in the NRHP in the updated Georgia Historic Bridge Survey were identified in the vicinity of the Project.

In accordance with Section 106 of the National Historic Preservation Act (NHPA) (54 USC 306108) as amended, NPS initiated consultation with the Georgia State Historic Preservation Office (SHPO), by letter dated October 10, 2018. The Section 106 process is occurring separately and concurrently to the NEPA compliance for this Federal action. The park consulted with American Indian tribes, including Alabama-Coushatta Tribe of Texas, Alabama-Quassarte Tribal Town, Cherokee Nation, Coushatta Tribe of Louisiana, Eastern Band of Cherokee Indians, Kialegee Tribal Town, The Muscogee (Creek) Nation, Poarch Band of Creeks, Seminole Nation of Oklahoma, Seminole Tribe of Florida, Thlopthlocco Tribal Town, United Keetoowah Band of Cherokee Indians in Oklahoma as well as the SHPO in the identification of historic properties and the assessment of effect.

ARCHEOLOGICAL RESOURCES

There are known archaeological sites within the area of the proposed force main. Edward- Pittman's (EP) archaeological investigations for the proposed wastewater force main project were conducted on October 9, 2018, February 26 through March 13, 2019, August 7, 2019,

and April 6 through 8, 2020. EP revisited four previously recorded archaeological sites, 9FU4, 9FU124, 9FU284, and 9CO127 (CHAT-114), located within the project area. Additionally, EP recorded one new archaeological site, 9CO780.

The proposed project consists of a narrow area of potential effect (APE), primarily located adjacent to existing buried utilities. Based on EP's fieldwork, the portions of the sites located within the APE lack data potential and will not be adversely impacted by the proposed project. No further archaeological work is recommended for the proposed project. If the project design should change to include areas not covered by the current survey, then additional Phase I archaeological survey would be necessary.

CULTURAL LANDSCAPES

Hyde Farm is significant as a potentially eligible National Register historic district. Features of the cultural landscape span from the prehistoric era to the relatively recent end of the Hyde family ownership. The site represents the history of settlement and agriculture on the Chattahoochee River in Piedmont Georgia and includes contributing buildings and landscape features from the nineteenth and twentieth centuries as well as potentially eligible archaeological sites.

Hyde Farm includes natural and cultural landscape characteristics that survive from the historic period retaining the most intact resources from the Hyde era. Natural systems, land use, small-scale features, vegetation, archaeological sites, spatial organization, circulation, vistas and views, topography, and buildings and structures together compose a cultural landscape with significance and integrity.

MUSEUM COLLECTION

The proposed alternative is collocated along utility easement that predates the existence of the CRNRA. The nature of the previously disturbed soils in the project area is unlikely to produce artifacts or isolated finds. However, if archaeological features are encountered during construction, work will cease immediately and the Georgia Department of Natural Resources Historic Preservation Division (NRHPD), Superintendent, and Park Cultural Resources Specialist will be notified. In this event, any recovered artifacts will be prepared for curation at the NPS Southeast Archaeological Center (SEAC) following final analyses report submission.

3.4 GEOLOGIC FEATURES

BREVARD FAULT LINE

The primary purpose for the creation of CRNRA was to recognize the unique geological features associated with the Palisades area south of Johnson Ferry. The cliffs in the area

were formed by geological processes (continental drift) associated with the Brevard Fault. The original park, established in 1978, included an area primarily in the vicinity of these cliffs, which form an imposing rampart overlooking the Chattahoochee River. The cliffs, together with the surrounding native forested uplands and river bottom areas along the 48-mile river corridor, were determined to be a unique resource worthy of national park status. The Brevard Fault Line is located approximately 11,950 feet (approximately 2.26 miles) southeast of the southernmost horizontal directional drilling (HDD) location.

SOILS

The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) maintains the soil survey of Fulton County. The survey shows soils within the project site are comprised mainly of Grover-Mountain Park Complex soils and Toccoa Sandy Loam (**Figure 4**). The project area is surrounded by Altavista series, Cartecay series, Buncombe series, Grover series, and Toccoa series soils. According to the survey, Altavista series consists of sandy loam soils with 0 to 4 percent slopes. Cartecay series consists of fine sandy loam soils with a 0 to 2 percent slope that are frequently flooded. Buncombe series consists of loamy sand soils with a 0 to 3 percent slope that are frequently flooded. Grover series consists of well drained, moderately permeable soils that formed from weathered mica schist. These soils are very deep and generally sloping to steep uplands in the Piedmont at 20 to 60 percent slopes. Toccoa Sandy Loam soils are permeable and frequently flooded. These soil slopes range from zero to 2 percent.

3.5 HUMAN HEALTH AND SAFETY

CRNRA experiences water quality degradation due to the burdened wastewater system in the north metro Atlanta area. During and after a heavy rainfall, manholes are overflowing and releasing raw sewage and artifacts into the river, tributaries, and surrounding park units. The proposed force main will alleviate the current burden to the sewer infrastructure system in an area of the Park that experiences significant sewage spills regularly.

3.6 SOUNDSCAPES

Noise levels at the project site are typical of urbanized suburban areas. Noise sources include road traffic on Roswell Road, Johnson Ferry Road, and local residential streets; industrial noise from Morgan Falls Dam operations to the north; air traffic noise from Dobbins Air Force Base; and residential noise associated with lawn care and other activities to the east, south, and west of the project site. The project site is buffered somewhat from the listed noise threats by mixed hardwood-pine forests.

3.7 VIEWSHEDS

The NPS considers scenery a primary component of park resources value. The visual experience adds to the visitor experience and helps to connect the visitor to the history and culture of an area. The Hyde Farm area in which the force main is proposed is a historically and culturally significant site.

3.8 VISITOR USE AND EXPERIENCE

RECREATIONAL RESOURCES

The Johnson Ferry North unit of CRNRA is a popular hiking destination and is very popular with residential neighbors. Several trails exist on property within the right-of-way, the wooded areas, and along the river. South of the project site near Johnson Ferry Road, there are public restrooms, and parking, and a pavilion that houses a commercial rafting/paddling concession.

VISITOR USE AND EXPERIENCE

In the General Management Plan, September 2009 (GMP) protecting the Park's natural qualities, not only for the ecological resources, but for its restorative value to people as a place of natural beauty and escape from the nearby urban setting were stated as major desired values that should be protected. The natural character of the Park is valued for its scenery, opportunities to learn about the natural world, natural quiet, and the ability to hear natural sounds.

3.9 WATER RESOURCES

The Chattahoochee River is the largest river in metro Atlanta and one of the region's most valuable resources, serving as the primary source of drinking water for millions of residents.

In 1972, the Atlanta Regional Commission completed the Chattahoochee Corridor Study to quell a growing battle over the future of the Chattahoochee River in the Atlanta region. The study aimed to create a balanced, comprehensive plan for the future of the region's most essential natural resource.

The following year, the Georgia General Assembly adopted the Metropolitan River Protection Act (MRPA), which protected a 48-mile stretch of the Chattahoochee River between Buford Dam and Peachtree Creek by creating a 2,000-foot buffer along both banks of the river and its impoundments

WATER QUALITY

The 1972 Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, is a national policy to restore and maintain the chemical, physical, and biological integrity of the nation's waters; enhance the quality of water resources; and prevent, control, and abate water pollution. NPS *Management Policies 2006* (NPS 2006) provide direction for the preservation, use, and quality of water originating, flowing through, or adjacent to park boundaries. Use of proper BMPs following park specific terms and conditions will be mandatory. Leakage and spills are possible with any sanitary sewer system. Potential impacts and impact minimization efforts are discussed in Chapter 4.

WETLANDS

Wetlands include areas inundated or saturated by surface or groundwater for a sufficient length of time during the growing season to develop and support characteristic soils and vegetation. A review of the National Wetlands Inventory (NWI) Map indicates wetlands were identified within the project site (USFWS, 2018). A wetland delineation was conducted by R2T, Inc. on October 22 and 25, 2018 in accordance with the Directors Order #77-1 Wetlands Protection and Procedurals Manual. The delineation revealed the presence of two wetlands within the project area according to the 1987 USACE Manual and the presence of four additional wetlands within the project area on NPS land that qualify as wetlands under the FGDC Wetlands Classification Standard. Locations of these wetland and any potential impacts are defined and analyzed in Chapter 4. See **Appendix E** for the Floodplains and Wetlands Statement of Findings (SOF).

FLOODPLAINS

EO 11988 (Floodplain Management) requires that a Federal agency avoid direct or indirect support of development within the 100-year floodplain whenever there is a practicable alternative. FIRMs are used to identify the regulatory 100-year floodplain for the National Flood Insurance Program (NFIP). Consistent with EO 11988, FIRMs were examined during the preparation of this EA. The project area is located between the cities of Roswell and Sandy Springs, GA FIRM with Community Panel Number 13121C0134G (FEMA, 2013); the proposed project is located within Zone AE. Zone AE has been determined to be within special flood hazard areas, including a regulatory floodway (Chattahoochee River). Since the force main will be buried and grade will be restored to existing grade, the project would not impact the 100-year floodplain.

After consultation with NPS hydrologists, the proposed project will not increase flood risk to life and property and will not adversely impact natural and beneficial floodplain values. Therefore, no floodplains statement of findings will be prepared under EO 11988.

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

4.1 GENERAL METHODOLOGY FOR ESTABLISHING IMPACTS

In accordance with CEQ regulations, direct, indirect, and cumulative impacts are described (40 CFR 1502.16), and the impacts are assessed in terms of context and intensity (40 CFR 1508.27). Where appropriate, mitigating measures for adverse impacts are also described and incorporated into the evaluation of impacts.

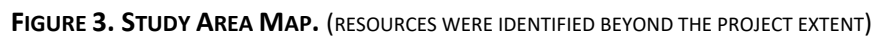
Environmental consequences are determined by describing how the existing condition of a resource would change, either negatively or positively, as a result of implementing any of the alternatives under consideration. Analysis includes the consideration of the context (setting), type (beneficial or adverse), intensity (strength), and duration (short or long term) of the direct, indirect, and cumulative effects of the alternatives.

Context is the setting, situation, or circumstances surrounding a particular resource (40 CFR 1508.27(a)). Context provides a backdrop against which the intensity of impacts can be applied to understand their importance. The geographic study area (or area of analysis) for this assessment is the project area provided in **Figure 3**. The area of analysis may extend beyond the project area boundaries for some cumulative impact assessments. The specific area of analysis for each impact topic is defined at the beginning of each topic discussion.

Intensity is the severity or magnitude of an impact (40 CFR 1508.27(b)). Assessing the intensity of impacts on a specific resource is linked to the context in which that resource is found. The new NPS NEPA handbook (NPS 2015) removed the use of intensity definitions in an EA to define impacts or substitute for impact analysis. Instead, the analysis discloses the existing conditions of resources and documents the “hard look” standard in a narrative that discusses the impacts of the alternatives.

STUDY AREA

The Park areas that would be impacted by the proposed force main include a mile-long stretch of Johnson Ferry North where open trenching method would be used to install the line and connect to the CCWS sewer. Additionally, impacts would occur at the section of the river at the FCPS where HDD would be implemented to install the diversion force main under the river and exit from the Johnson Ferry North unit. Section 2.5 discusses the construction methodology in detail and the other alternatives to HDD dismissed from consideration due to the significant impacts they would cause.



4.2 CUMULATIVE IMPACTS ANALYSIS METHOD

Cumulative impacts are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions” (40 CFR 1508.7).

Cumulative impacts were determined for each impact topic by combining the impacts of the alternative being analyzed and other past, present, and reasonably foreseeable actions that would also result in beneficial or adverse impacts. The evaluation of cumulative impacts is based on a general description of the projects.

This will be the third utility line in this corridor. Currently, there is no way to move construction, mowing, and tree trimming equipment along the existing utility line right of ways due to highly incised streambanks. The park is incurring resource injury due to the need for utility equipment to go outside of their rights-of-way to access the lines. Cumulative impacts from additional equipment finding alternative routes to bypass these highly incised streambanks are expected to further impair resources. Alternate methods for accessing the right-of-way with equipment were analyzed in Chapter 2 and the current proposed route was determined to be the most feasible option to transport large construction equipment.

Additionally, the park is in the process of creating a Trail Management Plan including new trails along the proposed sewer line right-of-way. This utility project may benefit this Trail Management Plan (see section 1.3). The impacts of construction during the implementation of the Trail Management Plan will add to the cumulative impacts of the proposed utility project.

4.3 ENVIRONMENTAL CONSEQUENCES

NEPA requires the disclosure of environmental impacts associated with the alternatives including the no-action alternative. This section identifies impacts resulting from the proposed force main route within the CRNRA and at the crossing of the Chattahoochee River. This section also discusses any cumulative effects that might result from the project.

BIOLOGICAL RESOURCES

Methodology and Assumptions

This analysis assesses the impacts of alternatives on biological resources in the study area. Impacts on biological resources can be direct and indirect as well as beneficial or adverse. Beneficial impacts promote the presence of native vegetation and wildlife and offer the food,

water, nesting, and protection required for the successful habitation by wildlife. Adverse impacts would alter the environment to the detriment of biological resources.

This analysis accepts the assumption that rights-of-way create early successional habitat that are beneficial to the Park and are considered critical habitat for sensitive species and species of concern (Read, 2019).

VEGETATION

This analysis assesses the impacts of the alternatives on vegetation in the study area. Impacts on vegetation can be direct and indirect as well as beneficial or adverse. Beneficial impacts promote the presence of native trees, shrubs, and herbaceous plant species. Adverse impacts would cut, trim, or remove native vegetation or otherwise alter the natural environment.

Vegetation – Alternative A

The no-action alternative would not disturb the existing vegetation.

Vegetation – Alternative B

Permitting a utility right-of-way in this area would impact the vegetation within the utility corridor. The proposed alignment minimizes impacts to vegetation by keeping as close to the existing CCWS sewer as feasible while avoiding impacts to the 50-foot no disturb river buffer. A few large trees would be removed with the proceeds from the sale to go to the U.S. Treasury. The remaining vegetation trimming and clearing would be beneficial to the Park, as it would increase the amount of land managed in an early successional stage that many sensitive species prefer. For machinery and equipment to reach the project site, temporary access roads and bridges would be built along existing utility easements, which would minimize disturbed vegetation along the path and on the stream banks. Heavy equipment would remain on the existing utility line easements or the proposed right-of-way to avoid impacts and disturbance to Park vegetation.

Cumulative Impacts

The additional 20-foot widening of the current easements would increase the number of acres managed as early successional habitat. This would benefit sensitive plant species in the park that prefer this habitat.

Conclusion

Effects on vegetation will be adverse and minor during construction. After project completion, effects on vegetation and re-growth would be short-term, adverse, and minor. Long-term effects would be beneficial with the increase in early successional vegetation areas. After construction, approved restoration methods would be utilized to restore the project site, including temporary access roads, to preconstruction conditions. This will include a permanent native vegetation re-planting program and any other desired, approved methods. If applicable, any loss of trees would be compensated with the Department of the Treasury.

NONNATIVE OR EXOTIC SPECIES

Construction activities are known vectors for the introduction and spread of nonnative and exotic species. Several nonnative and exotic plant species currently exist within the Johnson Ferry North unit of the Park. CRNRA manages for these species, but the quantity of work involved to eradicate these species is overwhelming.

Nonnative and Exotic Species – Alternative A

Nonnative and exotic species would not be affected by the no-action alternative.

Nonnative and Exotic Species – Alternative B

Heavy equipment and construction activities could introduce new nonnative or exotic species into the Park. To mitigate for this possibility, all equipment would be thoroughly washed of mud and debris before coming onto NPS land. Once staged within the park, the equipment would remain onsite until project completion to alleviate the possibility of introducing new nonnative or exotic species. The equipment would also remain on the existing utility line easements or the proposed right-of-way to avoid impacts and disturbance to Park vegetation.

Cumulative Impacts

This project would add another utility company to this corridor that would require access for maintenance, repair, and operation of the sewer utility. The opportunity for the introduction of new non-native and exotic species increases with the additional use of heavy equipment and vehicles by FCDPW.

Conclusion

The possibility exists that nonnative and exotic species may be introduced into the park via the construction activities and use of heavy equipment. To mitigate this possibility, all

equipment would be thoroughly washed before coming onsite and would remain onsite until project completion.

SPECIES OF SPECIAL CONCERN OR THEIR HABITAT

A review of the IPaC report from the USFWS databases, **Appendix A**, was conducted to assess the potential for federally and state protected species occurring on the project site. The literature review identified three species of conservation concern potentially occur in the project area. These three species include one mammal species, the Northern Long-eared Bat (*Myotis septentrionalis*), and two plant species, Michaux's Sumac (*Rhus michauxii*) and the White Fringeless Orchid (*Platanthera integrilabia*). The NPS indicated, however, that none of these three species exist in the portion of the CRNRA to be impacted by the Project. The report also identified a potential for twelve migratory avian species that could potentially use the areas to breed at varying times of the year.

The Park has documented the presence of plant and animal species of concern within maintained utility rights-of-way in the Park (Read, 2019). Utility rights-of way are generally maintained to limit the growth of woody plant species. This creates early successional habitat that is considered critical habitat for many species of concern (Read, 2019). In CRNRA, naturally occurring plant species of concern have been documented in an easement area just south of the Johnson Ferry North unit. These species include state-listed Georgia aster (*Symphyotrichum georgianum*) and purple milkweed (*Asclepias purpurascens*). Other plant and animal species of concern are known to exist in the Johnson Ferry North unit of the park. Additionally, the Georgia Plant Conservation Alliance (GPCA) and the GADNR consider the park a safeguarding site for plant species of concern and have been actively engaged in the protection and introduction of plant species needing safeguarding.

Species of Special Concern – Alternative A

The no-action alternative would not impact species of concern or their habitat. It would also prevent the creation of additional early successional habitat that is considered critical for species of concern.

Species of Special Concern – Alternative B

The construction activities would have an indirect temporary effect on the species of concern, particularly nesting and migrating species, by removal of trees and vegetation within the proposed force main corridor and trenching of streams. The force main corridor would be a narrow (20-foot-wide) stretch of land between the existing utilities and the no disturb riparian buffer. Strict use of NPS and state BMPs and mitigations for the short-term impacts from

clearing and open trench cutting of this corridor and streams would be implemented during the project to avoid possible impact of species of special concern.

IPaC reports have been completed and the GADNR consulted regarding the possible presence of species of concern. The Park GIS database has recently been updated with the location of known species of concern. No species of concern would be impacted by the permitting of the proposed force main.

Species of Special Concern – Cumulative Impacts

Cumulative impacts include the removal of trees and vegetation from the proposed sewer force main corridor creating a wider utility easement pathway through the Park. The conversion of this area to early successional habitat from the force main maintenance practices could benefit species of concern.

Species of Special Concern – Conclusion

Alternative B would result in the removal of trees and vegetation that would have a temporary, short-term impact to park species of concern. However, the creation of additional early successional habitat would benefit these species for the long-term by creating additional critical early successional habitat.

CULTURAL RESOURCES

METHODOLOGY AND ASSUMPTIONS

The CRNRA permitted archeological field work under the ARPA authority, Archeological Resources Protection Act of 1979, (16 USC 470aa-mm) and its regulations 43 CFR 7. As the site 9CO127 has been previously recommended as eligible for the National Register of Historic Places (NRHP), the purpose of testing at 9CO127 (CHAT 114) was to determine the site's condition and preservation potential within the portion of the site that will be impacted by the proposed undertaking. The archaeological resources survey was conducted by Edwards Pittman Environmental Inc. (EP) also resulted in the recordation of one new archaeological resource, 9CO780. Site 9CO780 meets the definition of a site as given by the GCPA (2014). Further testing was conducted at site 9CO780 to determine its eligibility for listing on the NRHP. Archaeological monitoring, including the installment of testing units allowed for further assessment of the potential cultural significance of 9CO780. The proposed project area is located immediately adjacent to an existing buried sewer line, thus the potential for previous ground disturbance within the project area is high. Phase II testing was conducted to help identify any such disturbance that may not have been evident during the Phase I survey due to the limited scope of shovel testing.

Phase II testing is sufficient for determining whether the cultural deposits within the project area are intact, possess significant data potential, and whether the portion of the site that would be impacted by the proposed undertaking is contributing to NRHP eligibility under Criterion D.

Based on EP's fieldwork during Phase I and Phase II testing, the portions of the sites located within the area of potential effect (APE) lack data potential and will not be adversely impacted by the proposed project.

Archaeology – Alternative A

Since Alternative A is a no-action alternative, current cultural resource features, including archaeological resources, would not be affected. Alternative A would result in no impact to the area.

Archaeology - Alternative B

Alternative B, the preferred alternative, would not result in adverse impacts to archaeological sites.

Archaeology – Cumulative Impacts

The proposed force main would be an additional disturbance to the area, on top of the disturbances from the installation of the two existing utility lines decades ago. However, efforts are being made to keep the construction disturbance within the previously disturbed area, so additional negative impacts to archaeological resources are expected to be minimal to none.

Archaeology – Conclusion

The proposed project consists of a narrow area of potential effect (APE), primarily located adjacent to existing buried utilities. Based on EP's fieldwork, the portions of the sites located within the APE lack data potential and will not be adversely impacted by the proposed project. No further archaeological work is recommended for the proposed project. If the project design should change to include areas not covered by the current survey, then additional Phase I archaeological survey would be necessary.

CULTURAL LANDSCAPES

Hyde Farm is located along a portion of the northwest border of the CRNRA and is approximately 1500 linear feet away from the proposed force main path. Construction of the force main will avoid the field associated with Hyde Farm property. Efforts to minimize

visual impacts during construction at Hyde Farm are being considered.

Cultural Landscapes – Alternative A

Alternative A, the no-action alternative would not affect the Hyde Farm cultural landscape.

Cultural Landscapes - Alternative B

The preferred alternative would have temporary visual impacts to the cultural landscape at Hyde Farm from the presence of heavy equipment and machinery during construction activities. Once the construction is complete, there would be permanent manhole structures and vents aboveground.

Cultural Landscapes – Cumulative Impacts

The additional manholes and vents would affect the visual aesthetics of the corridor in the area of the Hyde Farm fields. However, these impacts will be very limited.

Cultural Landscapes – Conclusion

There would be permanent installation of a single combination air valve (CAV) manhole structure within the area of the Hyde Farm fields. These manufactured structures would impact the visual aesthetics of the cultural landscape. To minimize the visual impacts from these structures to the cultural landscape, the force main has been designed to reduce the number of inflection points in the profile that require air release valves and manhole structures, thus limiting the number of vents, which will be minimal compared to the existing gravity sewer manholes and vent structures already part of the cultural landscape. Placement of the structures were also designed to hold as close as feasible to the existing utility corridor.

MUSEUM COLLECTIONS

Museum Collections – Alternative A

Alternative A, the no-action alternative, would result in no artifacts being recovered, and thus, no museum collection.

Museum Collections - Alternative B

Under the preferred alternative, the proposed sewer line would be installed underground through CRNRA land. If archaeological features are encountered during construction, work

will cease immediately and the Georgia Department of Natural Resources Historic Preservation Division (NRHPD), Superintendent, and Park Cultural Resources Specialist will be notified. Procedures will be followed, as per DO-28 and found in the guiding regulations in 36 CFR 800.13. No further action will take place until the NPS provides clearance. The Cobb County Cemetery Preservation Commission (CCCPC) reserves the right to examine the property for ethnic, cultural, and religious evidence located therein. If any ethnic, cultural, or religious evidence is found during development, then the CCCPC must be notified at once. All artifacts recovered will be processed and curated. Curation will occur at the NPS Southeast Archaeological Center. Therefore, the installation of the proposed force main could result in artifact discovery and improve knowledge of the historical and cultural significance of the area.

Museum Collections – Cumulative Impacts

The proposed construction work could result in additional artifacts from the area being discovered and improve understanding of the history and culture of the area and the groups who utilized such artifacts.

Museum Collections – Conclusion

Construction of the proposed force main would result in ground disturbing activities within known cultural resource areas. This has the potential to result in artifact discovery, which would lead to the creation of a museum collection.

GEOLOGIC FEATURES

Brevard Fault Line

The project site involves HDD under the river. The Chattahoochee River is unusual in that it is not the typical meandering stream channel. The river follows the Brevard fault line and is one of the oldest and most stable river channels within the United States. This ancient formation divides the upper and lower Piedmont regions of the state. The Brevard Fault Line is located approximately 11,950 feet (approximately 2.26 miles) southeast of the southernmost horizontal directional drilling (HDD) location.

Brevard Fault – Alternative A

Since Alternative A is a no-action alternative, the Brevard fault would not be affected. Alternative A would result in no impact to the area.

Brevard Fault – Alternative B

Alternative B involves HDD under the river in the northern area of the Johnson Ferry North unit. As the river follows the Brevard fault line, the drilling would need to cross this feature. The HDD bore is approximately 42-inches in diameter and requires a 10-foot by 10-foot by 6-foot entry and exit pit at the entry and exit pits for the proposed bore. This is a much less intrusive method of construction compared to open cutting across the Chattahoochee River or laying the proposed main along the streambed. The entry and exit pits are outside of the Chattahoochee River riparian buffer zone. The southernmost HDD installation is approximately 11,950 feet (approximately 2.26 miles) northwest of the Brevard Fault Line, and therefore, is not anticipated to have any negative impacts on the fault line. See **Appendix D** for the geotechnical report.

Brevard Fault – Cumulative Impacts

As the Atlanta metropolitan area grows, the park can only assume that the need for utilities will increase with many of these lines needing to cross the river. This specific line is designed to incorporate future development considerations specific to Fulton County and the Big Creek sewer shed (especially when combined with the facility expansion in order to reduce sanitary sewer overflows [SSOs] to the Chattahoochee River). The design also includes a potential future connection point to the Morgan Falls pump station (just east of the Chattahoochee River) so that it does not need a future force main expansion installation (and would actually result in the abandonment of its existing force main crossing parallel to the proposed alignment if utilized).

Brevard Fault – Conclusion

Alternative A would have no effect on the Brevard fault. Alternative B would require drilling in soil beneath the riverbed and excavating along the western riverbank at tributary stream crossings. Alternative B provides minor, short-term, adverse effects on soils during the time of construction. Long-term effects are negligible.

SOILS

The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) maintains the soil survey of Fulton County. The survey shows soils within the project site are comprised mainly of Grover-Mountain Park Complex soils and Toccoa Sandy Loam (**Figure 4**). The project area is surrounded by Altavista series, Cartecay series, Buncombe series, Grover series, and Toccoa series soils. According to the survey, Altavista series consists of sandy loam soils with 0 to 4 percent slopes. Cartecay series consists of fine sandy loam soils

with a 0 to 2 percent slope that are frequently flooded. Buncombe series consists of loamy sand soils with a 0 to 3 percent slope that are frequently flooded. Grover series consists of well drained, moderately permeable soils that formed from weathered mica schist. These soils are very deep and generally sloping to steep uplands in the Piedmont at 20 to 60 percent slopes. Toccoa Sandy Loam soils are permeable and frequently flooded. These soil slopes range from zero to 2 percent.

Soils – Alternative A

Alternative A is a no-action alternative; therefore, soils would not be impacted by this alternative.

Soils – Alternative B

Construction methods of Alternative B include the use of trenchless pipe installation (HDD) at the river to avoid surface disruption in those areas; however, these methods will require digging and topsoil stockpiles. Additional digging and topsoil stockpiles would be required to lay pipe outside of these areas. Open cut force main installations would be utilized across tributary streams, with disturbance limited to only the installation width. Access roads needed outside of existing road right-of-way will use temporary matting to reduce impacts during construction and will be removed once construction is completed. Surface conditions will be restored and stabilized to match existing pre-construction conditions. All surface construction would be implemented under an erosion and sedimentation control plan. Best Management Practices (BMPs) that comply with national park and state standards are planned for the proposed Project and construction activities would meet requirements outlined in the Georgia Erosion and Sedimentation Control Act of 1975, as amended, the Manual for Erosion and Sedimentation Control in Georgia, the Field Manual for Erosion and Sediment Control in Georgia, and Section 402 of the Federal Clean Water Act. The erosion and sedimentation control plans include the National Park Service construction notes to the contractor for the management of sediment impacts. Alternative B has minor, short-term, adverse effects on soils during construction. Long-term effects are negligible.

Soils – Cumulative Impacts

Cumulative impacts to soils include compaction from the short-term construction activities and long-term maintenance and repair activities. Since two other utilities occur in this corridor, cumulative impacts to soils would increase incrementally each time a utility company accesses the corridor. The incremental cumulative impacts to soils would be minimized and spread out along the corridor as each utility company would only be able to access and work on their respective right-of-way.

With Alternative B, the preferred alternative, soils would be impacted by the construction activities and continued maintenance practices on each utility line. To ameliorate the impacts to soils the application of best management practices to problem areas of soil erosion and compaction in a manner that stops or minimizes erosion, restores soil productivity, and re-establishes or sustains a self-perpetuating vegetative cover would be required.



Human Health and Safety

CRNRA experiences water quality degradation due to the burdened wastewater system in the north metro Atlanta area. During and after a heavy rainfall, manholes are overflowing and releasing raw sewage and artifacts into the river, tributaries, and surrounding park units. The proposed force main will alleviate the current burden to the sewer infrastructure system in an area of the Park that experiences significant sewage spills regularly.

Human Health and Safety – Alternative A

Alternative A, the no-action alternative would not allow the sewer force main in the CRNRA. This alternative could negatively impact the local water quality as the sewer force main will divert raw sewage while the BCWRF is being upgraded and the capacity increased for the rapidly growing metropolitan area.

Human Health and Safety –Alternative B

Alternative B proposes to permit a SUP for a sewer force main through the Johnson Ferry North unit of CRNRA in order to divert raw sewage while the BCWRF is being upgraded. This alternative would decrease potential dangers to the public from raw sewage spills into the river and tributaries due to the ability of FCDPW to increase capacity at the BCWRF.

Human Health and Safety –Cumulative Impacts

Cumulative impacts consider the rapidly growing metropolitan Atlanta area and public health and safety concerns from outdated and overwhelmed infrastructure.

Human Health and Safety –Conclusion

The preferred alternative, Alternative B, allows FCDPW to upgrade the BCWRP. The purpose for the upgrade is to increase capacity for treatment of future projected wastewater from the rapidly growing Fulton County area. This alternative would prevent future sewer overflows into the river.

SOUNDSCAPE

Noise levels at the project site are typical of urbanized suburban areas. Noise sources include road traffic on Roswell Road, Johnson Ferry Road, and local residential streets; industrial noise from Morgan Falls Dam operations to the north; and residential noise associated with lawn care and other activities to the east, south, and west of the project site. The project site is buffered somewhat from the listed noise threats by mixed hardwood-pine forests.

Soundscape – Alternative A

Since Alternative A is a no-action alternative, current noise levels would not be affected. Alternative A would result in no effect to the soundscape.

Soundscape – Alternative B

Construction would result in a moderate, localized, short-term, adverse effect on noise levels as a result of the use of mechanized equipment. There would be no cumulative effect on the soundscape due to the nature of the underground pipe. As a result, Alternative B would have short-term, minor, adverse effects to the soundscape.

Soundscape Conclusion

Alternative A would not affect the soundscape. Alternative B would have minor, short-term, adverse effects to the soundscape during project construction. No cumulative effects are anticipated as there are no long-term impacts to the soundscape from the proposed alternative.

VIEWSHEDS

The NPS considers scenery a primary component of park resources value. The visual experience adds to the visitor experience and helps to connect the visitor to the history and culture of an area. The Hyde Farm area in which the force main is proposed is a historically and culturally significant site.

Viewsheds – Alternative A

Alternative A would not affect the current viewshed.

Viewsheds –Alternative B

Alternative B, permitting the sewer force main would affect the viewshed with permanent manhole and vent structures.

Viewsheds –Cumulative Impacts

The proposed sewer force main would add to the number of permanent structures in the viewshed.

Viewsheds –Conclusion

The addition of manholes and vents would add to the number of structures that would be visible within the viewshed of the Hyde Farm fields.

VISITOR USE AND EXPERIENCE

RECREATIONAL RESOURCES

Currently, the CRNRA is open to the public for use. Several trails exist on property within the right-of-way, in the wooded areas, and along the river, all of which are open. There is also a parking lot located south of the project near Johnson Ferry Road. The park also has a concessionaire at the Johnson Ferry North pavilion that runs river trips all summer. It is important that construction activities do not affect their operation. This will include minimizing use of the parking areas for staging of equipment and limiting the movement of heavy equipment during high visitation times.

Recreational Resources – Alternative A

Under the no-action alternative, there would be no impact to recreational resources.

Recreational Resources – Alternative B

Project construction would require the closing of trails within the northern half of the Hyde Park section of CRNRA. The parking lot and right-of-way would be used to transport equipment and heavy machinery. These adverse, minor effects are short-term. Equipment would be removed, and trails would be re-opened upon completion of the project, resulting in no long-term impacts.

Recreational Resources - Conclusion

None of the alternatives would cause impairment to park resources as there are no impacts under Alternative A and adverse impacts are minor in the short-term and negligible in the long-term under Alternative B.

VISITOR USE AND EXPERIENCE

All trails within the CRNRA are currently open for visitor use.

Visitor Use and Experience - Alternative A

Under the no-action alternative, trails would remain open for public use, resulting in no impact.

Visitor Use and Experience – Alternative B

Under the proposed action alternative, limited extents of trails north of Johnson Ferry Road and west of the Chattahoochee River within the CRNRA would be closed for public use during project construction. This effect is minor, adverse, and short-term. Trails would re-open after project completion, resulting in no long-term effects.

Visitor Use and Experience - Conclusion

Alternative A would result in no impact to visitor use and experience. Alternative B would result in minor, adverse, short-term effects to visitor use due to the closing of trails within the park.

WATER RESOURCES*WATER QUALITY**Water quality – Alternative A*

Under the no-action alternative, the proposed diversion sewer line would not be built, and wastewater would continue to be diverted to Cobb County through undersized pipes, risking sanitary sewer overflows along the Chattahoochee River. This would result in negative water quality impacts to the Chattahoochee River.

Water quality –Alternative B

Under the proposed action alternative, temporary, minor water quality degradation would occur where streams are being trenched for utility installation. State standard and NPS BMPs would be utilized in order to minimize any negative water quality impacts, and in-stream work is anticipated to only last approximately one day. Therefore, this effect is considered minor, adverse, and short-term. The streams would be restored following construction, resulting in no long-term effects.

Water quality –Conclusion

Alternative A would result in significant negative impacts to water quality for years until the BCWRF renovations are complete. The impacts associated with Alternative B would result in minor, adverse, short-term effects to water quality that are much less severe than the impacts associated with Alternative A.

WETLANDS

The Clean Water Act (CWA), as amended in 1977, established the basic framework for regulating discharges of pollutants into the waters of the United States. The U.S. Army Corps of Engineers (USACE) regulates the discharge of dredged or filled material into waters of the United States, including wetlands, pursuant to Section 404 of the Clean Water Act. Additionally, EO 11990 (Protection of Wetlands) requires federal agencies to avoid, to the extent possible, adverse impact of wetlands.

Wetlands include areas inundated or saturated by surface or groundwater for a sufficient length of time during the growing season to develop and support characteristic soils and vegetation. A review of the National Wetlands Inventory (NWI) Map indicates no wetlands were identified within the project site (**Figure 5**). A wetland delineation was conducted by R2T, Inc. on October 23rd and 25th, 2018 in accordance with the 1987 Corps of Engineers Wetlands Delineation Manual and the 1979 Federal Geographic Data Committee (FGDC) Wetlands Classification Standard (AKA “Cowardin classification system”)(revised 2013). Findings from the wetland delineation included the presence of four wetlands on or near the project site (two on CRNRA land) according to the 1987 USACE Manual and the presence of four additional waters within the project area on NPS land that qualify as wetlands under the FGDC Wetlands Classification Standard (**Figure 6**).

Wetlands – Alternative A

Since Alternative A is a no-action alternative, any wetlands within the project area would remain in their current condition and would not be affected.

Wetlands – Alternative B

After a site survey, the presence of two wetlands on the project site within CRNRA boundaries according to the 1987 USACE Manual was confirmed on the western and northern banks near tributaries to the Chattahoochee River and the river crossing and the presence of four additional waters within the project area on NPS land that qualify as riverine wetlands under the FGDC Wetlands Classification Standard was confirmed at tributaries to the Chattahoochee River. The two palustrine wetlands on CRNRA land (in depressions at tributary crossings) and three of the four riverine wetlands (tributaries to the Chattahoochee River and the river itself) are located in the direct path of the proposed force main. The fourth is located on the northern end of the project (near the intersection of Riverside Road and Roswell Road)

where the boundaries of the CRNRA only encompass the boundaries of the river and major creeks; this riverine wetland will not be impacted by the project. This project will impact 0.04 acres of palustrine wetlands within the CRNRA according to the 1987 USACE Manual and 0.02 acres of additional waters within NPS boundaries that qualify as riverine wetlands under the FGDC Wetlands Classification Standard. By using Best Management Practices and by implementing proper Erosion Control Plans during construction impacts to wetlands will be minimized. After construction, the wetlands would be fully restored NPS policy, protocol and conditions, fulfilling a “no net loss of function” of wetlands.

Land where the construction equipment will be located is elevated above the wetland, and the equipment will not affect the wetland. The wetland located adjacent to the proposed force main will be avoided to the extent possible during construction. Construction of the force main would be performed using NPS and state Best Management Practices (BMPs) to avoid affecting the wetlands. Therefore, Alternative B may cause short-term, minor effects to wetlands.

Wetlands - Cumulative

There should not be any long-term cumulative effects from Alternative B as any impacts to the wetlands would be fully restored per the NPS policy, protocol and conditions, fulfilling a “no net loss of function” of wetlands.

Wetlands - Conclusion

Alternative A would result in no effect to wetlands, and Alternative B would result in short-term, minor affects due to construction on 0.04 acres of wetlands according to the 1987 USACE Manual and 0.02 acres of additional waters within NPS boundaries that qualify as wetlands under the FGDC Wetlands Classification Standard. No cumulative effects on wetlands are anticipated from this project since construction of the force main would avoid the wetlands to the extent possible. Therefore, no net-loss of function to wetlands will occur from the project.

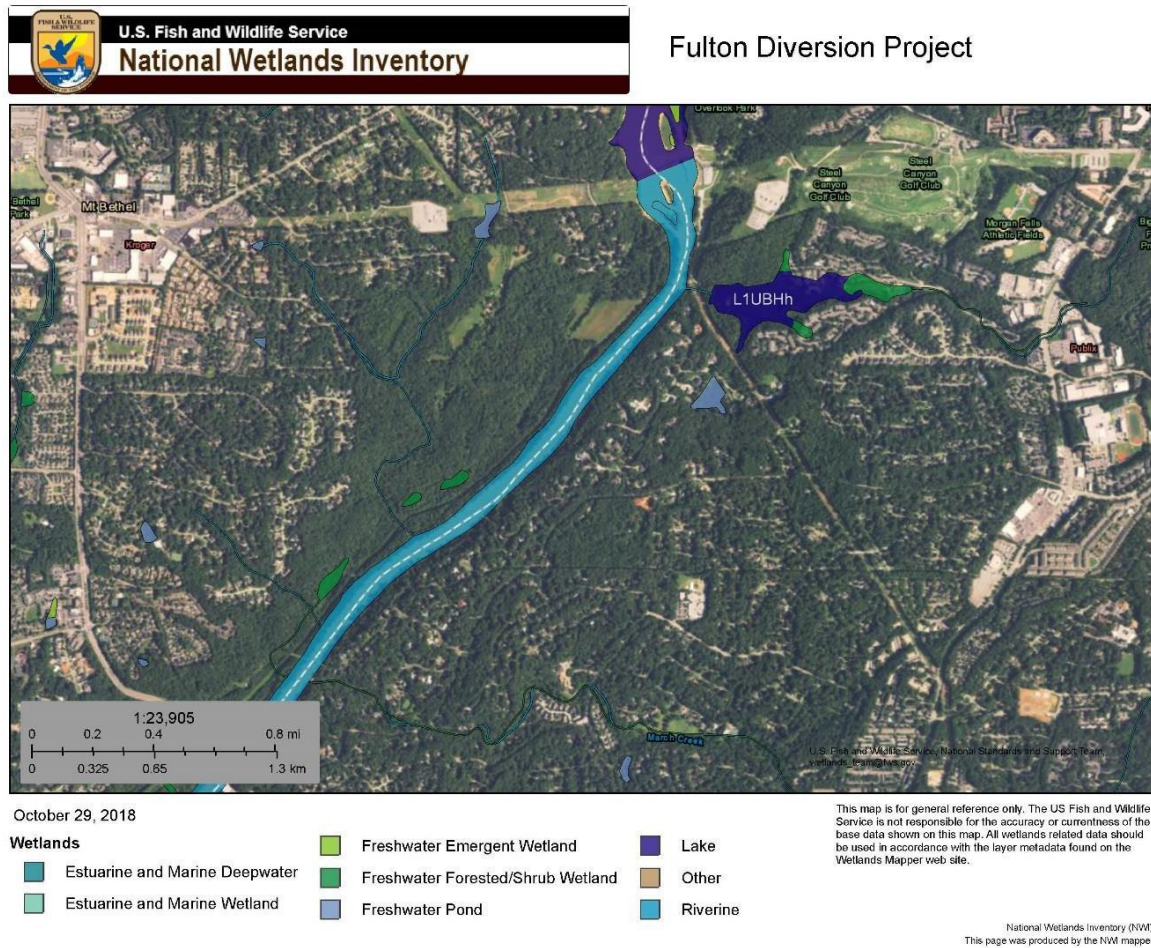
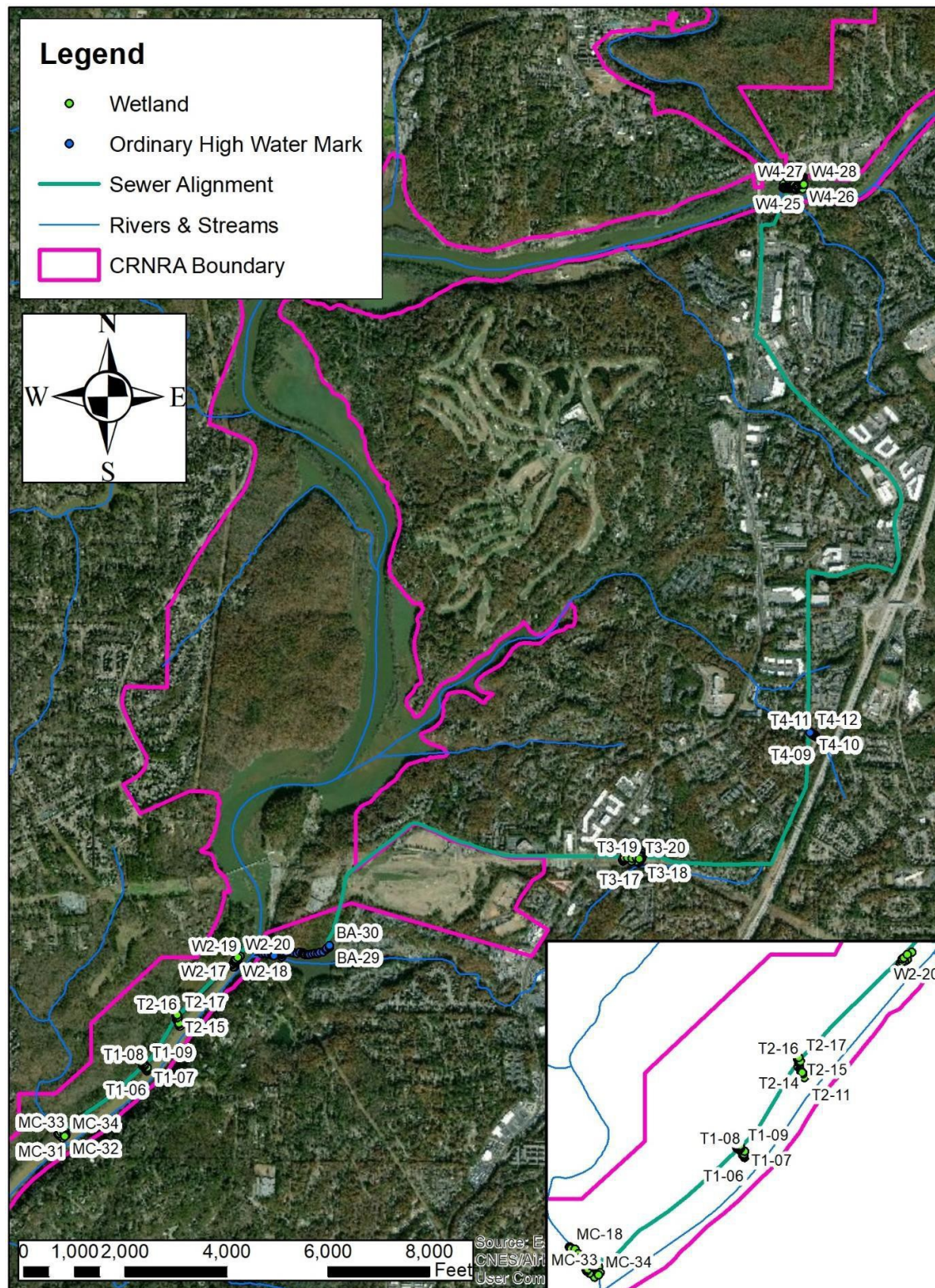


FIGURE 5. NATIONAL WETLANDS INVENTORY MAP - SOUTH OF MORGAN FALLS DAM.

**FIGURE 6. FULTON DIVERSION WETLANDS DELINEATION.**

FLOODPLAINS

A review of FEMA FIRMs indicated the 100 and 500-year floodplain of the Chattahoochee River at the project site. (**Figures 7-9**). The MRPA established the Chattahoochee Corridor Plan to protect and preserve water quality of the Chattahoochee River. The MRPA establishes limits on disturbed areas and increases in impervious surfaces.

Floodplains – Alternative A

Since Alternative A is a no-action alternative, all floodplains within the project area would not be affected and would remain in their current conditions. However, under the no-action alternative, wastewater will continue to be diverted to Cobb County through undersized pipes, risking sanitary sewer overflows along the Chattahoochee River.

Floodplains – Alternative B

Under the proposed action alternative, minor impacts to the floodplain may occur. A review of FEMA Flood Insurance Rate Maps indicated the 100 and 500-year floodplain is inside the project area. The proposed force main will cross through both floodplains. Installation of the proposed wastewater force main and pump station will not result in modifications to the floodplain because the wastewater force main pipeline will be buried beneath the riverbed of the Chattahoochee River. Project construction may cause short-term, minor effects to the floodplain. However, upon project completion, the grade will be restored to preconstruction conditions, resulting in no change to the grade. Therefore, Alternative B would result in no effects to the floodplain due to the nature of the underground force main.

Floodplains - Conclusion

Alternative A would result in no effect to the floodplains. Alternative B could have short-term, adverse effects to the floodplain during construction. However, effects for both alternatives after project completion are negligible. No cumulative effects are anticipated from this project due to the nature of the buried pipe.

After consultation with NPS hydrologists, the proposed project will not increase flood risk to life and property and will not adversely impact natural and beneficial floodplain values. Therefore, the Floodplains Statement of Findings Process was not initiated, mitigation will not be required, the topic has been dismissed from further consideration.

National Flood Hazard Layer FIRMette

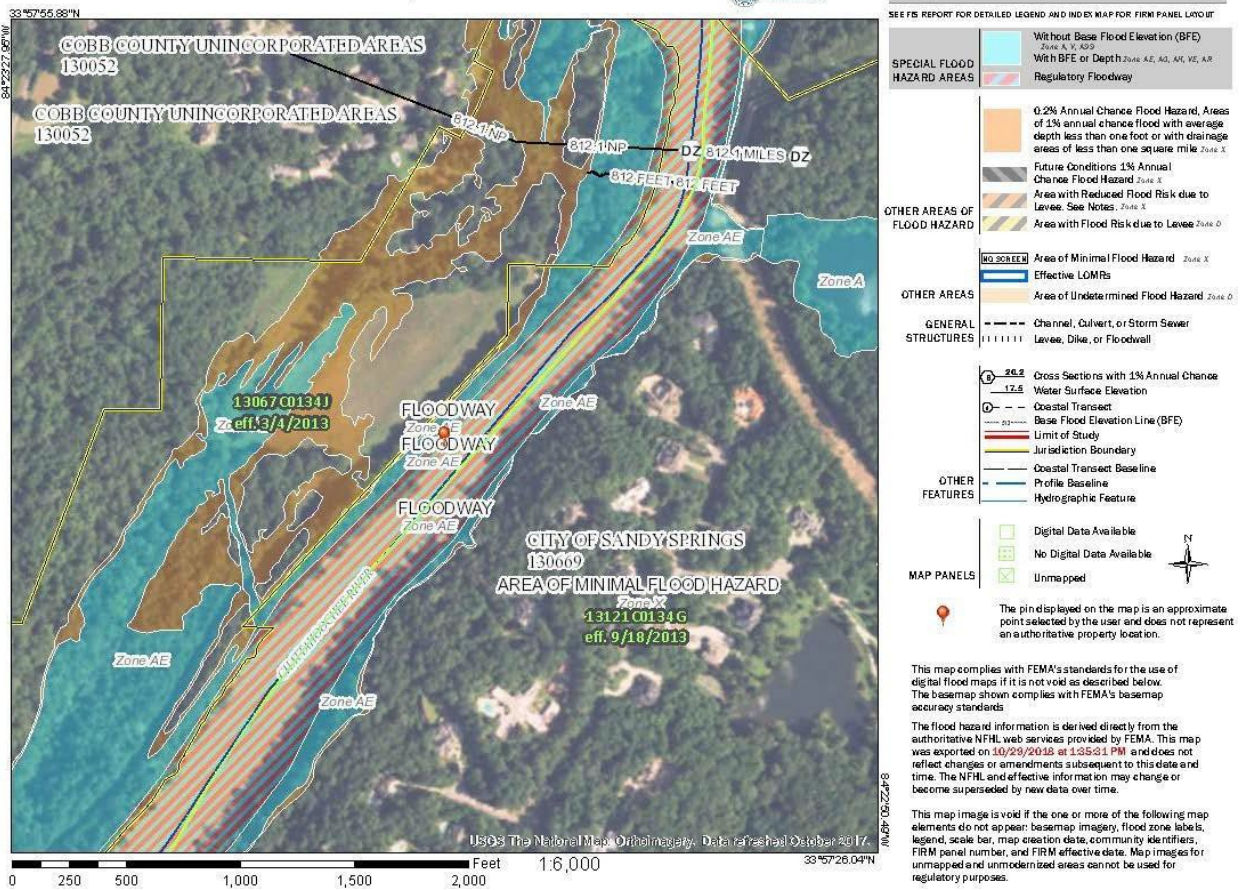


FIGURE 7. FEMA FLOOD INSURANCE RATE MAP AT CHATTAHOOCHEE RIVER CROSSING.

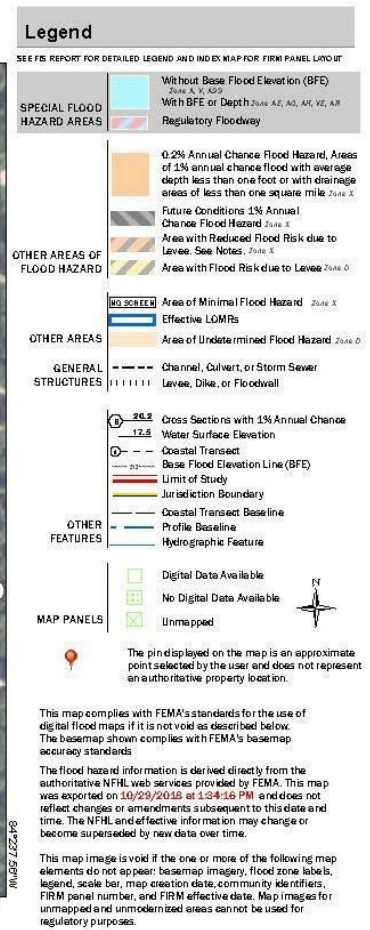
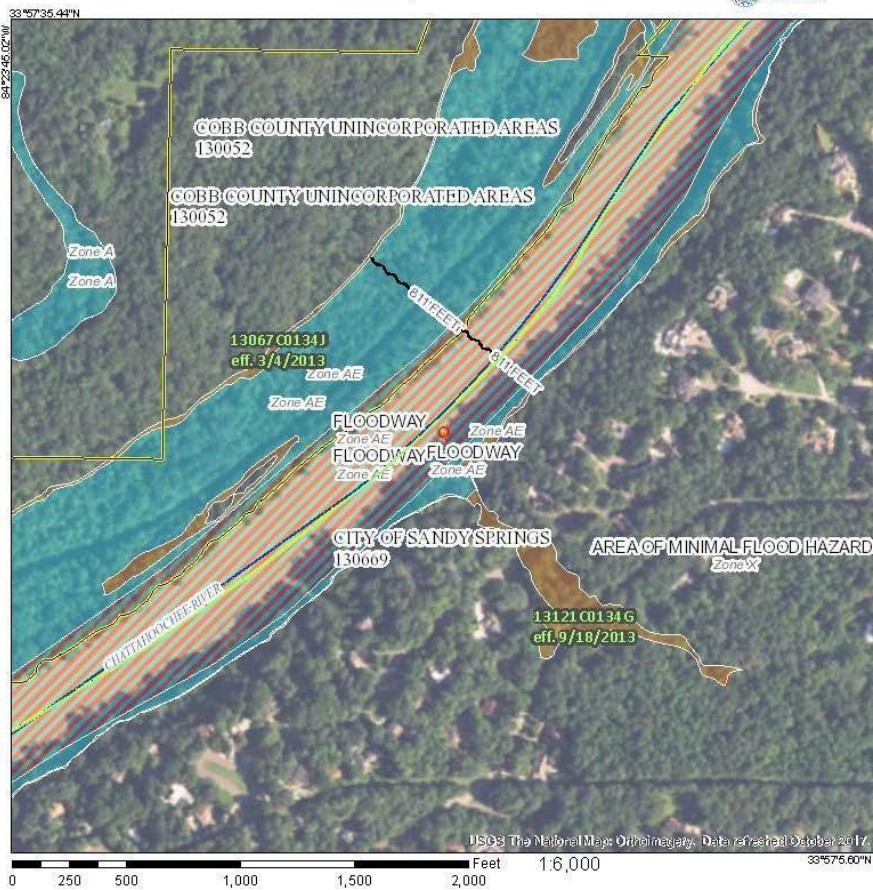


FIGURE 8. FEMA FLOOD INSURANCE RATE MAP SOUTH OF RIVER CROSSING.

National Flood Hazard Layer FIRMette

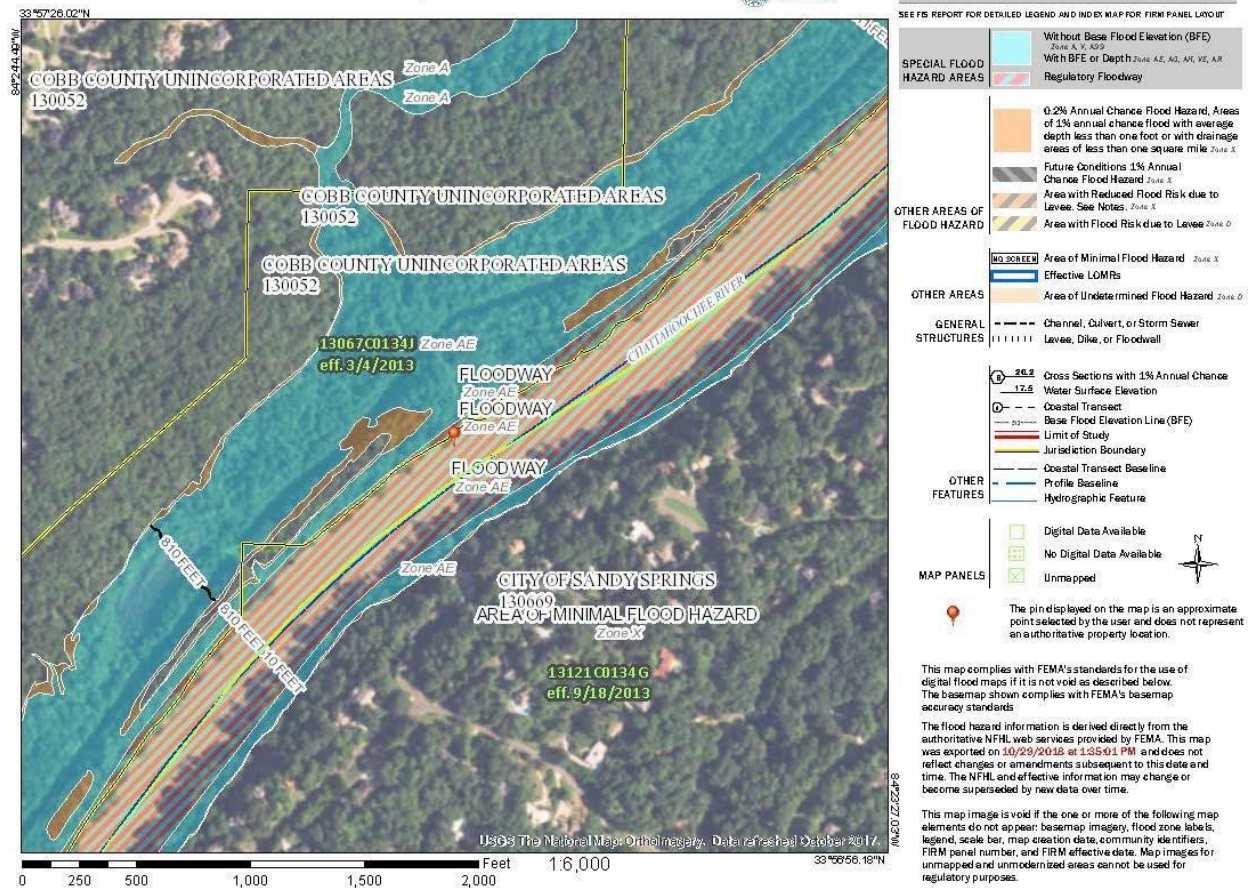


FIGURE 9. FEMA FLOOD INSURANCE RATE MAP AT SOUTHERN-MOST END OF PROJECT SITE.

CHAPTER 5: CONSULTATION AND COORDINATION

5.1 CONSULTATION AND COORDINATION

LIST OF AGENCIES AND TRIBES CONSULTED

Agency consultation began early in the environmental assessment process and is ongoing to ensure that all relevant agencies are informed of any NPS planning actions. The following agencies have been or are being consulted:

- Advisory Council on Historic Preservation
- Alabama-Coushatta Tribe of Texas
- Alabama-Quassarte Tribal Town
- Cherokee Nation
- Cobb County Water System
- Coushatta Tribe of Louisiana
- Eastern Band of Cherokee Indians
- Fulton County Department of Public Works
- Georgia Historic Preservation Office
- Georgia Environmental Protection Division
- Georgia Department of Natural Resources
- Kialegee Tribal Town
- The Muscogee (Creek) Nation
- Poarch Band of Creeks
- Seminole Nation of Oklahoma
- Seminole Tribe of Florida

- Thlopthlocco Tribal Town
- United Keetoowah Band of Cherokee Indians in Oklahoma
- United States Army Corps of Engineers
- United State Fish and Wildlife Service

PUBLIC INVOLVEMENT

Notices have been passed out to residents during the project to notify residents of project work occurring in their area (**Appendix C**) and were also posted to the project website: FCDiversion.com.

LIST OF PREPARERS

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Melissa Keneely, Environmental Scientist, River To Tap, Inc.

Travis LaForge, Edwards Pittman Environmental, Inc.

CHAPTER 6: ACRONYMS AND ABBREVIATIONS

APE	Area of Potential Effects
AQI	Air Quality Index
BCWRF	Big Creek Water Reclamation Facility
CCWS	Cobb County Water System
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CMBS	centimeters below surface
CRNRA	Chattahoochee River National Recreation Area
DO	Director Order
EA	Environmental Assessment
EPEI	Edwards-Pittman Environmental, Inc.
EPD	Environmental Protection Division (State of Georgia)
FCPS	Fulton County Pump Station
FEMA	Federal Emergency Management Agency
FGDC	Federal Geographic Data Committee
FIRM	Flood Insurance Rate Map
GHPA	Georgia Historic Preservation
GPCA	Georgia Council of Professional Archaeologists
HDD	Horizontal Directional Drilling
IPAC	Information for Planning and Consultation
MRPA	Metropolitan Rivers Protection Act
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969 National
NHPA	Historic Preservation Act
NPS	National Park Service
NRCS	National Resources Conservation Services
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
RDPS	Riverside Diversion Pump Station
RRPS	Riverside Road Pump Station
SHPO	State Historic Preservation Office
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Services

CHAPTER 7: REFERENCES

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Appendix A

United States Fish and Wildlife Service IPaC Report

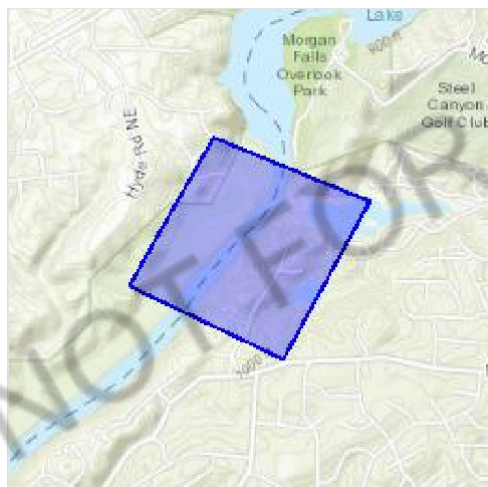
IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Cobb and Fulton counties, Georgia



Local office

Georgia Ecological Services Field Office

- ☐ (706) 613-9493
- ☐ (706) 613-6059

355 East Hancock Avenue
Room 320
Athens, GA 30601

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME

STATUS

Northern Long-eared Bat *Myotis septentrionalis*
 No critical habitat has been designated for this species.
<https://ecos.fws.gov/ecp/species/9045>

Threatened

Flowering Plants

NAME

STATUS

Michaux's Sumac *Rhus michauxii*
 No critical habitat has been designated for this species.
<https://ecos.fws.gov/ecp/species/5217>

Endangered

White Fringeless Orchid *Platanthera integrilabia*
 No critical habitat has been designated for this species.
<https://ecos.fws.gov/ecp/species/1889>

Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the [FAQ below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Jul 31
Blue-winged Warbler <i>Vermivora pinus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 1 to Jun 30
Eastern Whip-poor-will <i>Antrostomus vociferus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20

Golden Eagle *Aquila chrysaetos*

Breeds elsewhere

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1680>

Prairie Warbler *Dendroica discolor*

Breeds May 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Red-headed Woodpecker *Melanerpes erythrocephalus*

Breeds May 10 to Sep 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Rusty Blackbird *Euphagus carolinus*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wood Thrush *Hylocichla mustelina*

Breeds May 10 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence ()

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any

week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.

- The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season 🐣

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort 📊

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

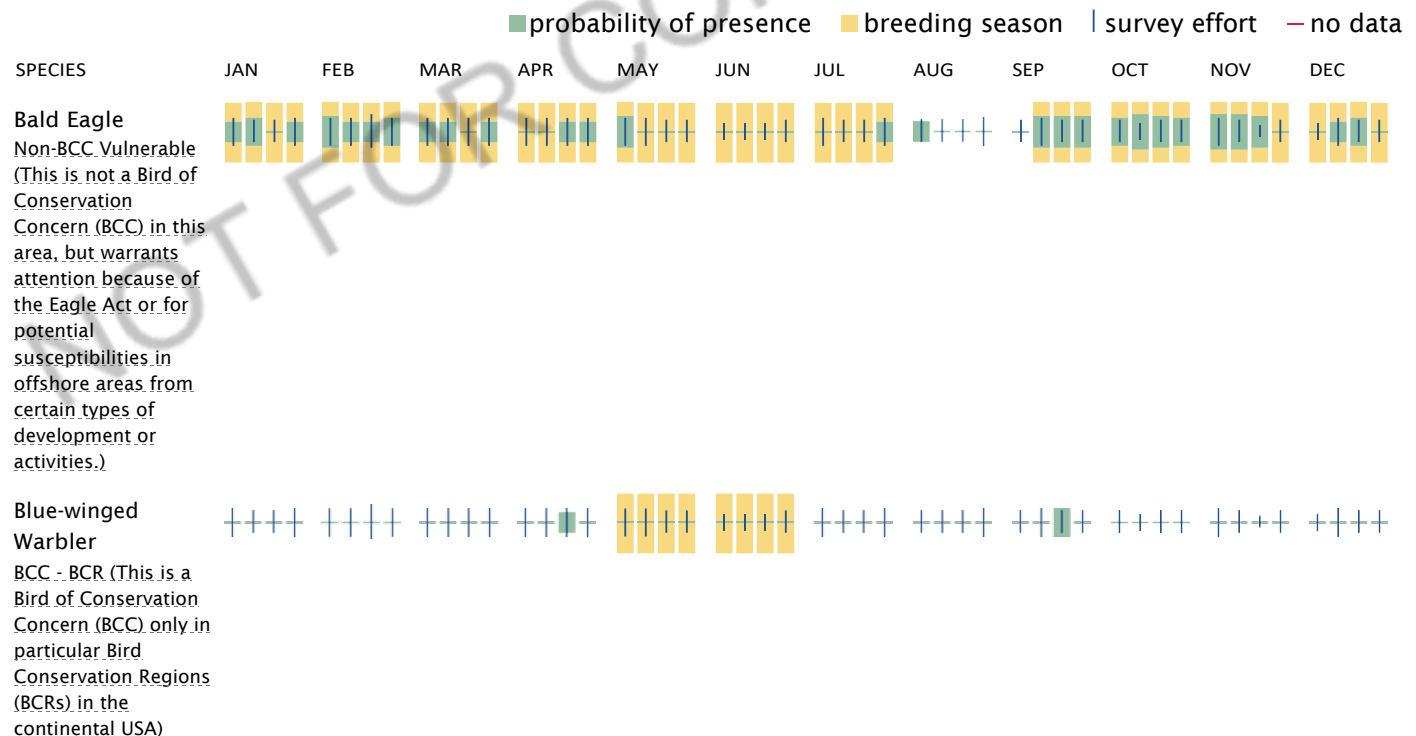
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

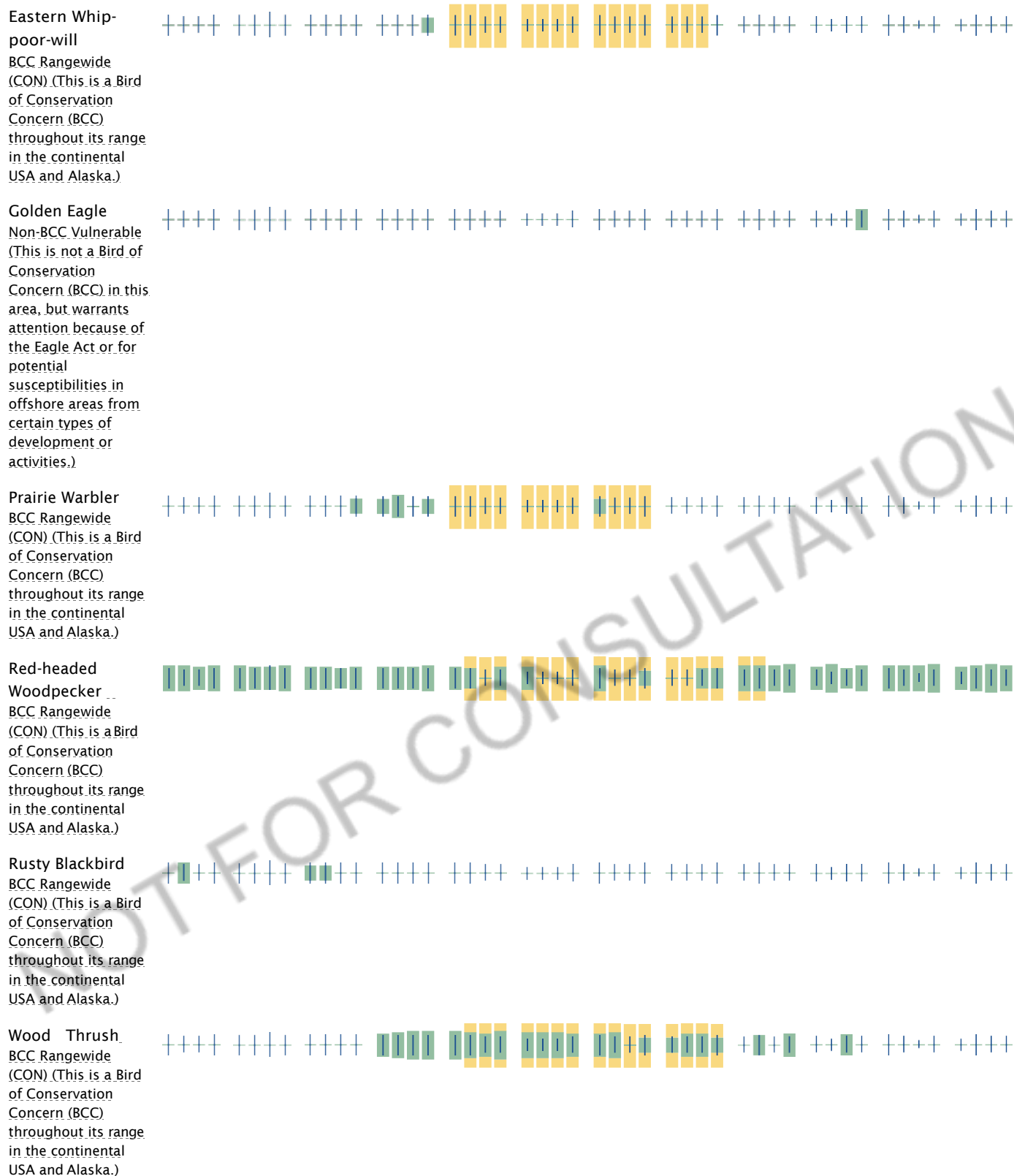
No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to

occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) and/or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [E-bird Explore Data Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands onsite.

This location overlaps the following wetlands:

FRESHWATER POND

[PUBHh](#)

LAKE

[L1UBHh](#)

RIVERINE

[R2UBH](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions onsite.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters.

Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

Appendix B

Agency Consultation

November 26, 2019

RECEIVED

NOV 29 2019

Athens, GA
USFWS

United States Fish and Wildlife Service
Georgia Ecological Services Field Office
355 East Hancock Avenue, Room 320
Athens, GA 30601

SUBJECT: Fulton-Cobb Diversion Line and Pump Station Project, Cobb County, GA, Chattahoochee River National Recreation Area, *Early Coordination No Effect* Concurrence Request

Dear Sir or Madam:

Fulton County is proposing to develop a wastewater force main diversion pipeline within a right-of-way through the Chattahoochee River National Recreation Area (CRNRA) to divert wastewater to connect to Cobb County Water System (CCWS). We are requesting concurrence from the United States Fish and Wildlife Service (USFWS) that the proposed diversion line and pump station project will *not affect* the below listed protected species or their critical habitat.

Fulton County is expanding the Big Creek Water Reclamation Facility (BCWRF) to accommodate an increase in wastewater treatment demand that has resulted from the urbanization of the surrounding area. Approximately 10 million gallons per day (MGD) of wastewater currently flowing into the BCWRF will need to be safely redirected to Cobb County for treatment. The Riverside Road Pump Station (RRPS) currently services the BCWRF. A new pump station and pipeline will be installed to connect the RRPS to an existing line of the CCWS with available capacity to achieve this wastewater diversion. This existing CCWS manhole with available capacity is located within a right-of-way on CRNRA property. The proposed pipeline will be approximately six miles in length and approximately one mile in length within the CRNRA property.

The proposed Alternative B, the preferred alternative, includes the construction of a 30-inch high-density polyethylene (HDPE) force main on CRNRA property and 24-inch HDPE piping for the remaining section east of the Chattahoochee River to safely convey wastewater during the construction upgrade of the BCWRF. The length of the pipeline in this alternative is necessary to connect to a location in the CCWS that has available capacity to accommodate the proposed volume of wastewater. This alternative will provide a system suitable for transporting the anticipated 3.5 to 10 MGD of wastewater from the BCWRF basin to the CCWS. Methods of construction for the pipeline within CRNRA property include open-cut trenching and horizontal directional drill HDD installation. Open-cut trenching will be used to lay pipe near existing utility right-of-way, including at stream crossings. HDD will be used for the section which cross the Chattahoochee River.

The potential exists for federal, state-listed, and priority species to be in this unit of the park. However, our analysis of construction methods for the preferred alternative and potential impacts on species of special concern shows that this project will have a negligible impact on these species. Therefore, we are respectfully request a *no effect* concurrence from USFWS.

Please don't hesitate to call me (770) 569-7038 x 103 or email Amanda.lester@r2tinc.com with any questions or comments.

Sincerely,
R2T, Inc.

Amanda H. Lester
Amanda Lester P.E.

c/o Melissa Keneely



U. S. Fish and Wildlife Service
RG Stephens, Jr. Federal Building
355 E. Hancock Ave., Rm 320, Box 7
Athens, GA 30601 ; 706-613-9493

FWS Log No.

NG-20-36-FULT

Based on information you provided, no further action is required under S7(a)(2) of the Endangered Species Act. However, if new information or changes in the project involve federally-listed species, further consultation with the Service may be necessary.

Donald W. Imm
Donald W. Imm, Ph.D., Field Supervisor

12/21/19
Date



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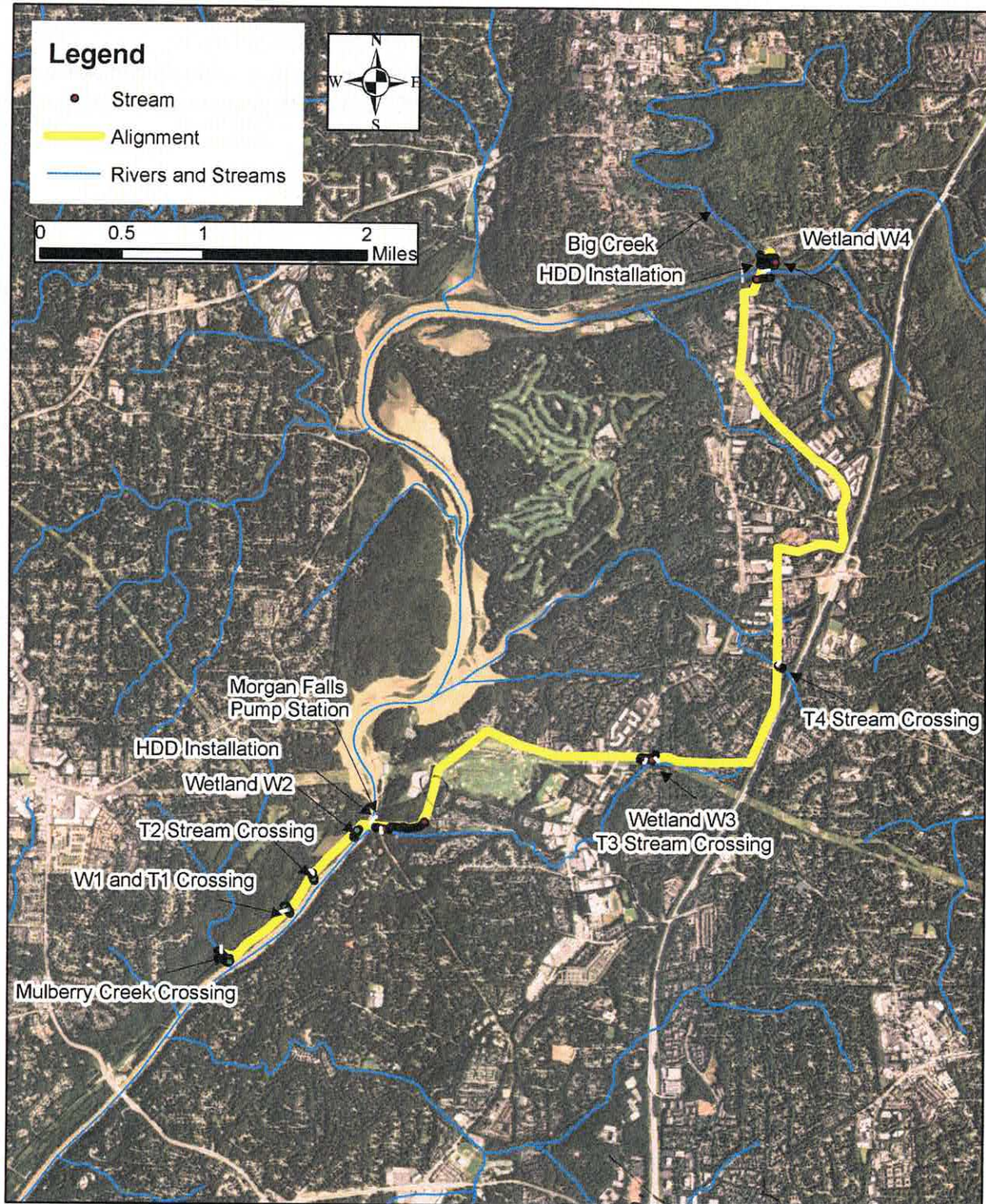


Figure 1. Piping Layout.

*Fulton-Cobb
line
Support
@ R2T*

Introduction

Fulton County is proposing to develop a wastewater force main diversion pipeline within a right-of-way through the Chattahoochee River National Recreation Area (CRNRA) to divert wastewater to connect to Cobb County Water System (CCWS).

Purpose and Need for Action

Fulton County is expanding the Big Creek Water Reclamation Facility (BCWRF) to accommodate an increase in wastewater treatment demand that has resulted from the urbanization of the surrounding area. Approximately 3.5 to 10 million gallons per day (MGD) of wastewater currently flowing into the BCWRF will need to be safely redirected to Cobb County for treatment. The Riverside Road Pump Station (RRPS) currently pumps wastewater to the BCWRF.

The proposed action is the construction of a new pump station and pipeline to be installed to connect the RRPS to an existing sanitary sewer line of the CCWS with available capacity to achieve this water diversion (**Figure 1**). The nearest CCWS manhole with available capacity is located within a right-of-way on CRNRA property. The proposed pipeline will be approximately six miles in length and approximately one mile in length within the CRNRA property.

The new sanitary sewer pipeline would consist of 30-inch and 24-inch pipe. The pipeline extends from near Mulberry Creek in the south first crossing the Chattahoochee River south of the Morgan Falls Dam, adjacent to the Morgan Falls Pump Station. The pipeline will continue through existing easements in the City of Sandy Springs to the second crossing south of the existing RRPS site (**Figure 1**). The pipeline at these locations will be installed using horizontal directional drilling (HDD) methods under the river. Additional creek crossings within the CRNRA, are also proposed. The new pump station, the Riverside Diversion Pump Station, will be installed at the same site as the RRPS and will pump 10 MGD from the RRPS to the CCWS.

Fulton Cobb Diversion Waters

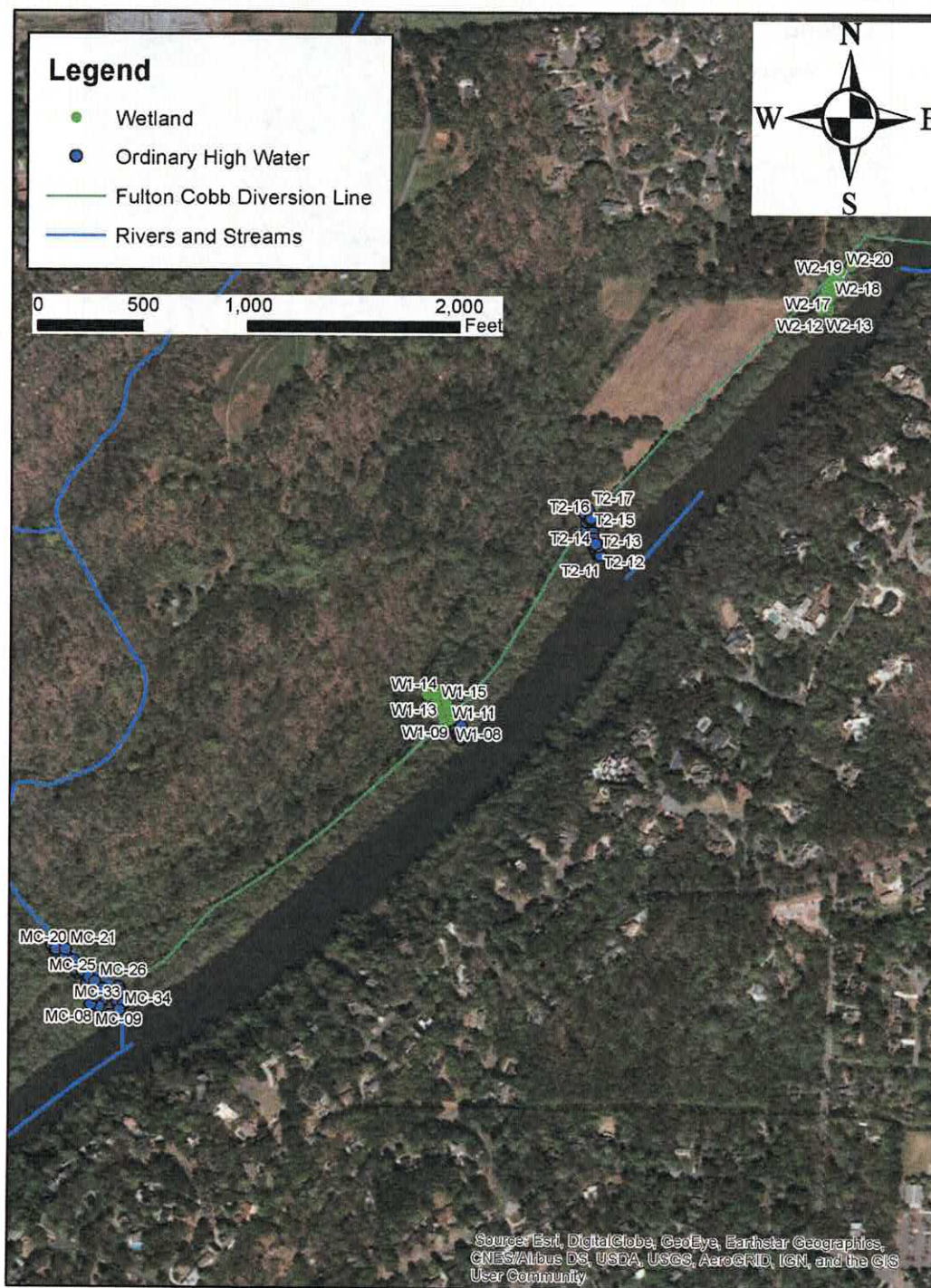


Figure 2. Piping Layout on CRNRA Property.

Fulton Diversion Topographic Map Section 1

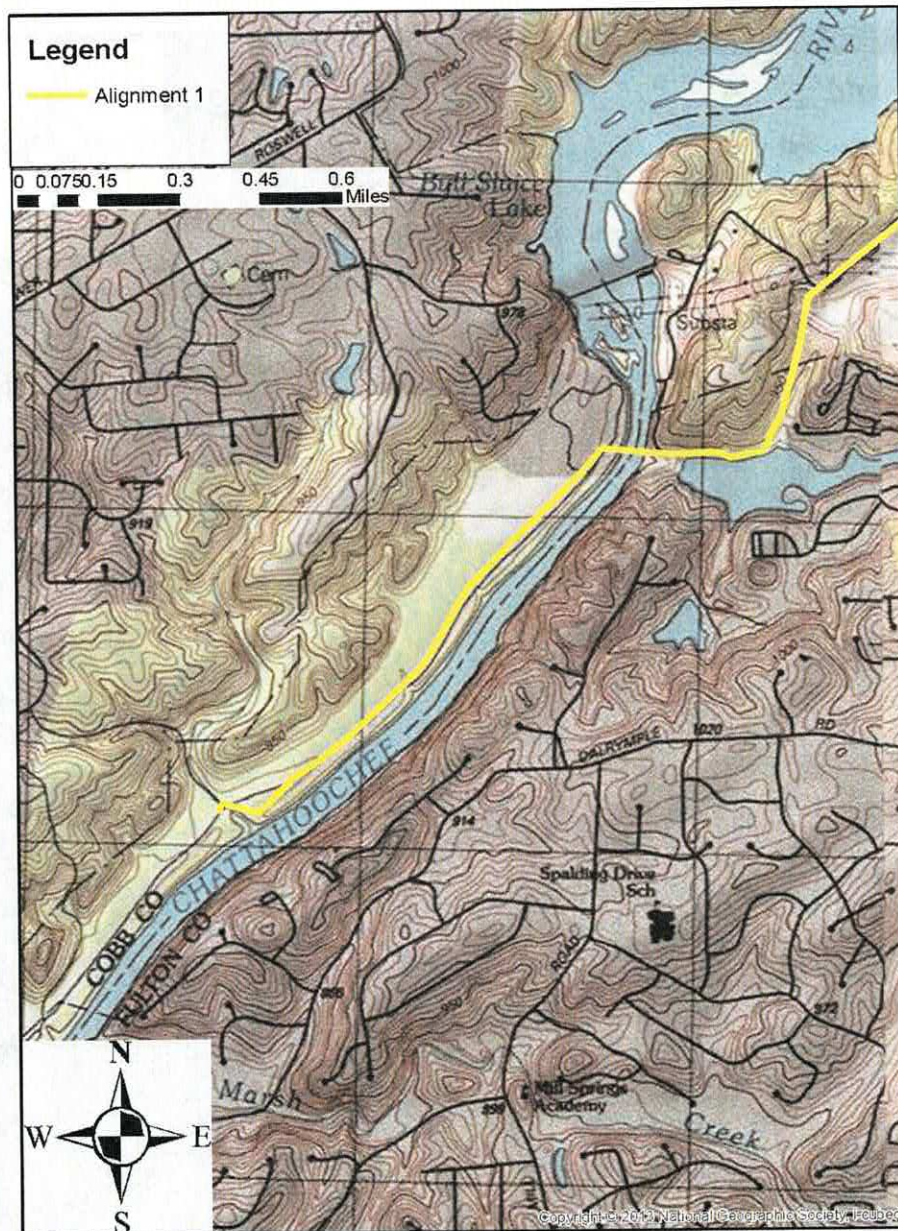


Figure 3. Fulton-Cobb Diversion Project Topographic Map.

Species and Critical Habitat

An office review of available resources was performed by River to Tap (R2T), Inc. personnel, along with coordination with the National Park Service (NPS), to develop a list of protected species that potentially occur near the project area.

The office review indicated that 18 protected species or other species of interest are either known to occur or have the possibility of occurring near the project area in Fulton and Cobb counties. The National Park Service cited additional species known to occur in the CRNRA or nearby, which brings the total to 22 protected species or other species of interest known to or possibly occurring in the project area.

According to the USFWS IPAC report, there are three protected species that are either known to occur or have the possibility of occurring in Fulton or Cobb counties: Northern Long-eared Bat (*Myotis septentrionalis*), Michaux's Sumac (*Rhus michauxii*), and White Fringeless Orchid (*Platanthera integrilabia*). **The IPAC report indicated no critical habitat for these species in Fulton or Cobb Counties.** The IPAC report also indicated 12 migratory that may be present in Fulton or Cobb county.

According to the Georgia Department of Natural Resources (DNR) database, there are 16 known occurrences of protected species or other species of concern, at least one including the CRNRA. These include:

- American Ginseng (*Panax quinquefolius*)
- Bay Star-vine (*Schisandra glabra*)
- Bluestripe Shiner (*Cyprinella callitaenia*)
- Chattahoochee Crayfish (*Cambarus howardi*)
- Delicate Spike (*Elliptio arctata*)
- Dwarf / Michaux's Sumac (*Rhus michauxii*)
- Georgia Aster (*Symphyotrichum georgianum*)
- Henslow's Sparrow (*Ammodramus henslowii*)
- Highscale Shiner (*Notropis hypsilepis*)
- Mole Kingsnake (*Lampropeltis rhombomaculata*)
- Pink Ladyslipper (*Cypripedium acaule*)
- Sculptured Pigtoe (*Cyclonaias infucata*)
- Shinyrayed Pocketbook (*Hamiota subangulata*)
- Shoal Bass (*Micropterus cataractae*)
- Tri-colored Bat (*Perimyotis subflavus*)
- Twisted Sedge (*Carex torta*)

The NPS indicated that, along with the species listed in the IPAC report, the following species, along with their critical habitat, are known to occur in or nearby CRNRA: Bald Eagles (*Haliaeetus leucocephalus*), Baltimore Checkerspot (*Euphydryas phaeton*), Bay Star-vine, Chattahoochee Crayfish, Georgia Aster, Purple Milkweed (*Asclepias purpurascens*), Tri-colored Bat, and Yellow-crowned Night Heron (*Nyctanassa violacea*).

Table 1. Georgia Habitat Information for Species

Scientific Name	Common Name	Habitat Information in Georgia
<i>Myotis septentrionalis</i>	Northern Long-eared Bat	Caves and mines in winter; riparian areas, upland forests, cracks and crevices in dead and live trees in summer
<i>Ammodramus henslowii</i>	Henslow's Sparrow	Grassy areas, especially wet grasslands, pitcher plant bogs, pine flatwoods, power line corridors in CP. Requires open veg at ground level with grass canopy above
<i>Cambarus howardi</i>	Chattahoochee Crayfish	Riffle areas of streams; in rocks with swift-flowing water
<i>Cyclonaias infucata</i>	Sculptured Pigtoe	Large rivers to small creeks
<i>Cyprinella callitaenia</i>	Bluestripe Shiner	Flowing areas in large creeks and medium-sized rivers over rocky substrates
<i>Elliptio arcata</i>	Delicate Spike	Creeks and rivers with moderate current; mainly in crevices and under large rocks in silt deposits
<i>Hamiota subangulata</i>	Shinyrayed Pocketbook	Medium sized creeks to large rivers in sand substrates in slow to swift flowing water
<i>Lampropeltis rhombomaculata</i>	Mole Kingsnake	Georgia habitat information not available
<i>Micropterus cataractae</i>	Shoal Bass	Large river, shoal and fluvial specialist
<i>Notropis hypsilepis</i>	Highscale Shiner	Flowing areas of small to large streams over sand or bedrock substrates
<i>Perimyotis subflavus</i>	Tri-colored Bat	Open forests with large trees and woodland edges; roost in tree foliage; hibernate in caves or mines with high humidity
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Edges of lakes and large rivers; seacoasts
<i>Nyctanassa violacea</i>	Yellow-crowned Night Heron	River swamps; marshes; cypress/gum ponds
<i>Euphydryas phaeton</i>	Baltimore Checkerspot	Chattahoochee River parks
<i>Carex torta</i>	Twisted Sedge	Rocky streambeds
<i>Cypripedium acaule</i>	Pink Ladyslipper	Upland oak-hickory-pine forests; piney woods
<i>Panax quinquefolius</i>	American Ginseng	Mesic hardwood forests; cove hardwood forests
<i>Rhus michauxii</i>	Dwarf/Michaux's Sumac	Open forests over ultramafic rock
<i>Schisandra glabra</i>	Bay Star-vine	Rich woods on stream terraces and lower slopes
<i>Symphyotrichum georgianum</i>	Georgia Aster	Upland oak-hickory-pine forests and openings; sometimes with <i>Echinacea laevigata</i> or over amphibolite
<i>Asclepias purpurascens</i>	Purple Milkweed	Calcareous flatwoods, wet meadows near Rome
<i>Platanthera integrilabia</i>	White Fringeless Orchid	Red maple-gum swamps; peaty seeps and streambanks with <i>Parnassia asarifolia</i> and <i>Oxypolis rigidior</i>

River to Tap (R2T), Inc. personnel, prepared a Nationwide Permit application for impacts to aquatic resources within the proposed project area. The United States Army Corps of Engineers (USACE) has reviewed the application and issued **NWP SAS-2019-00050**. As part of the permit process the USACE completed coordination with other federal and state agencies as described in Part C (32)(d) of the NWP Program. During the coordination procedure, no adverse comments regarding the proposed work were received.

Description of the Proposed Action

The alternatives analyzed in the Environmental Assessment (EA), in accordance with NEPA, are based on the result of internal and agency scoping. Alternatives and actions that were considered but would not be technically or economically feasible, would not meet the purpose of and need for the project, would create unnecessary or excessive adverse impacts on resources, or would conflict with the overall management of the park or its resources were dismissed from detailed analysis. These alternatives or alternative elements and their reasons for dismissal are discussed at the end of this section.

Alternative A – No Action

Alternative A is a “no action” alternative, which would leave the project site unchanged. Under a “no action” alternative, wastewater will be diverted to Cobb County through undersized pipes, risking sanitary sewer overflows along the Chattahoochee River and its tributaries. This alternative would not safely meet the project purpose and need.

Alternative B – Building of Pipeline

The proposed Alternative B, the preferred alternative, includes the construction of a 30” HDPE pipeline as shown in yellow in **Figure 1** and green in **Figure 2**. The southern section of the proposed pipeline will cross the Chattahoochee River just south of Morgan Falls Dam and continue southwest through the existing utility easement on CRNRA property before connecting to an existing CCWA manhole.

The proposed Alternative B includes the construction of a 30-inch HDPE piping on CRNRA property and 24-inch HDPE piping for the remaining section east of the Chattahoochee River to safely convey wastewater during the construction upgrade of the BCWRF. The length of the pipeline in this alternative is necessary to connect to a location in the CCWS that has available capacity to accommodate the proposed volume of wastewater. This alternative will provide a system suitable for transporting the anticipated 3.5 to 10 MGD of wastewater from the BCWRF basin to the CCWS. Methods of construction for the pipeline within CRNRA property include open-cut trenching and HDD installation. Open-cut trenching will be used to install pipe near existing utility right-of-way, including at stream crossings. HDD will be used for the section which cross the Chattahoochee River.

Effects of the Action

This project will employ the use of open-cut trenching and horizontal directional drill (HDD) to install pipeline beneath the Chattahoochee River. This method avoids contact with aquatic species and will not affect their habitat. Additionally, construction of the pipeline will be done using BMPs and will avoid contact with terrestrial wildlife to the extent possible. Because the pipeline will be installed within an existing utility easement, minimal amounts of trees will be removed. Due to the nature of the pipeline, the finished pipeline will have negligible effects to terrestrial wildlife and their habitat.

The HDD process and moving of equipment may disrupt and cause temporary loss of some plant life; however, a review of the plant and animal species of special concern identified that the existing project site is not critical habitat for protected species. The listed migratory birds either have a range all across the continental USA and Alaska or are not Birds of Conservation Concern in this region. Therefore, it is unlikely that the proposed project will affect any species of special concern. Therefore, Alternative B could result in a no effect on species of special concern.

Vegetation near the project site excluding the existing right-of-way primarily consists of a mix of hardwood-type and pine species including multiple levels of canopy cover. Within the existing easement, there are small trees and tall grasses. Areas of wetlands are also found near the project site, and those areas contain typical wetland species including River Birch (*Betula nigra*), Woolgrass (*Scirpus cyperinus*), Dotted Smartweed (*Polygonum punctatum*), American Elm (*Ulmus americana*), Virginia Dayflower (*Commelina virginica*), and Buckthorn Bully (*Sideroxylon lycioides*).

Project construction would require the removal of vegetation within the project right-of-way. However, the installation method used for the pipeline and the proposed route of the pipe adjacent to an existing right-of-way will minimize the removal of vegetation. For machinery and equipment to reach the project site, temporary access roads will need to be created as well, which would disturb vegetation along the adjacent existing easement path. Effects on vegetation will be adverse and minor during construction. After project completion, effects on vegetation and re-growth would be short-term, adverse, and minor. Long-term effects are negligible.

Overall, this project will have negligible effect on wildlife and wildlife habitat, and will result in minor, adverse, short-term effects and negligible long-term effects on vegetation. Therefore, we are requesting a *no effect* concurrence from USFWS.

Conclusion

The potential exists for federal, state-listed, and priority species to be in this unit of the park. However, our analysis of construction methods for the preferred alternative and potential impacts on species of special



Fulton-Cobb Diversion Line and Pump Station Project
Cobb County, Georgia
Chattahoochee River National Recreation Area

concern shows that this project will have a negligible impact on these species. Therefore, we are requesting a *no effect* concurrence from USFWS.

References

- Fish and Wildlife Service. U.S. Department of Interior. Environmental Conservation Online System. Information for Planning and Consultation. <https://ecos.fws.gov/ipac/location/index>
- Georgia Department of Natural Resources. 2013. Wildlife Conservation Section Biotics Database. Wildlife Resources Division, Social Circle.; Available at <http://www.georgiawildlife.com> (Accessed: 2019 November 11)



MARK WILLIAMS
COMMISSIONER

RUSTY GARRISON
DIRECTOR

December 31, 2019

Amanda Lester
River to Tap, Inc
580 W Crossville Road
Suite 101
Roswell, GA 30075

Subject: Known occurrences of natural communities, plants and animals of highest priority conservation status on or near Fulton-Cobb Diversion Line and Pump Station, Fulton and Cobb Counties, Georgia

Dear Ms. Lester:

This is in response to your request of November 26, 2019. The following Georgia natural heritage database element occurrences (EOs) were selected for the current site using the local HUC10 watershed for elements whose range distribution is limited by aquatic systems (AQ) and within 3 miles for all other EOs (TR).

(-84.347262, 33.980202, WGS84)

GA *Ammodramus henslowii* (Henslow's Sparrow) (TR), approx. 2.4 mi W of site

GA *Cambarus howardi* (Chattahoochee Crayfish) in Chattahoochee River | Tributaries to the Chattahoochee River. (AQ), near the subject project

GA *Cambarus howardi* (Chattahoochee Crayfish) in Unnamed Creek Huc 10 - 0313000111 (AQ), approx. 1.5 mi S of site

GA *Cambarus howardi* (Chattahoochee Crayfish) in Unnamed Perennial Streams in Huc 10 - 0313000109 (AQ), approx. 4.5 mi E of site

GA *Cambarus howardi* (Chattahoochee Crayfish) in Unnamed Tributary Huc 10 - 0313000110 Big Creek, Chattahoochee Upper North (AQ), approx. 6.2 mi NE of site

GA *Cambarus howardi* (Chattahoochee Crayfish) in Rottenwood Creek Huc 10 - 0313000111 (AQ), approx. 5.4 mi SW of site

GA *Cambarus howardi* (Chattahoochee Crayfish) [Historic] in Sope Creek Huc - 10 0313000111 (AQ), approx. 6.7 mi W of site

Carex torta (Twisted Sedge) [Historic] (TR), approx. 0.4 mi S of site

***Cyclonaias infucata* (Sculptured Pigtoe) [Historic] in Chattahoochee River (AQ), near the subject project**

GA *Cyprinella callitaenia* (Bluestripe Shiner) [Historic] in Big (Vickery) Creek (AQ), near the subject project

GA *Cypripedium acaule* (Pink Ladyslipper) (TR), approx. 0.7 mi E of site

GA *Cypripedium acaule* (Pink Ladyslipper) (TR), approx. 2.6 mi NE of site

GA *Elliptio arctata* (Delicate Spike) [Historic] in Chattahoochee River Huc 10 - 0313000111 (AQ), near the subject project

US *Hamiota subangulata* (Shinyrayed Pocketbook) [Historic] in Chattahoochee River Near Roswell (AQ), near the subject project

Micropterus cataractae (Shoal Bass) in Dick Creek (AQ), approx. 13.1 mi E of site

Micropterus cataractae (Shoal Bass) in Chattahoochee River Huc 10 - 0313000109 (AQ), approx. 18.7 mi NE of site

***Micropterus cataractae* (Shoal Bass) in Chattahoochee River Huc 10 - 0313000111 (AQ), near the subject project**

Micropterus cataractae (Shoal Bass) in Chattahoochee River Huc 10 - 0313000111 (AQ), approx. 4.1 mi SW of site

Micropterus cataractae (Shoal Bass) in Big/Vickery Creek Huc 10 - 0313000110 (AQ), approx. 0.4 mi NW of site

GA *Monotropsis odorata* (Sweet Pinesap) (TR), approx. 2.6 mi S of site

GA *Notropis hypsilepis* (Highscale Shiner) in Big Creek (AQ), approx. 0.8 mi N of site

GA *Notropis hypsilepis* (Highscale Shiner) in Big Creek (AQ), near the subject project

GA *Notropis hypsilepis* (Highscale Shiner) in Unnamed Tributary to Big Creek Huc 10 - 0313000110 (AQ), approx. 4.6 mi NE of site

Panax quinquefolius (American Ginseng) (TR), approx. 0.8 mi E of site

Panax quinquefolius (American Ginseng) (TR), approx. 0.9 mi NE of site

Panax quinquefolius (American Ginseng) (TR), approx. 0.8 mi SE of site

Perimyotis subflavus (Tri-colored Bat) (TR), approx. 1.7 mi W of site

Perimyotis subflavus (Tri-colored Bat) (TR), approx. 0.2 mi S of site

Perimyotis subflavus (Tri-colored Bat) (TR), approx. 1.6 mi SE of site

Perimyotis subflavus (Tri-colored Bat) (TR), approx. 2.4 mi NE of site

US *Rhus michauxii* (Dwarf Sumac) (TR), approx. 1.2 mi NW of site

US *Rhus michauxii* (Dwarf Sumac) [Extirpated?] (TR), approx. 2.9 mi W of site

GA *Schisandra glabra* (Bay Star-vine) (TR), approx. 1.1 mi SW of site

GA *Schisandra glabra* (Bay Star-vine) (TR), approx. 2.2 mi E of site

GA *Schisandra glabra* (Bay Star-vine) (TR), on site (-84.378, 33.966, WGS84)

GA *Symphyotrichum georgianum* (Georgia Aster) (TR), approx. 1.2 mi NW of site

GA *Symphyotrichum georgianum* (Georgia Aster) (TR), approx. 0.9 mi E of site

GA *Symphyotrichum georgianum* (Georgia Aster) (TR), approx. 1.8 mi W of site

BIG TREES NATURE PRESERVE [Georgia Department of Natural Resources] (TR), on or immediate vicinity of site

CHATTAHOOCHEE RIVER GREENWAY [Georgia Department of Natural Resources] (TR), approx. 0.9 mi E of site

Chattahoochee Nature Center [Chattahoochee Nature Center] (TR), approx. 1.4 mi W of site

Chattahoochee River National Recreation Area [National Park Service] (TR), on or immediate vicinity of site

McFarlane Nature Park [Cobb County Parks and Recreation] (TR), approx. 1.4 mi W of site

Greenspace program acquisition (TR), approx. 2.3 mi S of site

Greenspace program acquisition (TR), approx. 0.7 mi SW of site

Restrictive covenant [U.S. Army Corps of Engineers] (TR), approx. 2.6 mi NE of site

Bridge/Culvert Inspection (33.91538, -84.4178), Bats Present: No, Species: N/A (TR), approx. 2.9 mi SW of site

Bridge/Culvert Inspection (33.9333, -84.3579), Bats Present: No, Species: N/A (TR), approx. 2.3 mi SE of site

Bridge/Culvert Inspection (33.9823, -84.3417), Bats Present: No, Species: N/A (TR), on or immediate vicinity of site

Bridge/Culvert Inspection (34.0099, -84.333), Bats Present: No, Species: N/A (TR), approx. 0.9 mi E of site

Bridge/Culvert Inspection (34.0218, -84.3243), Bats Present: Yes, Species: Unknown (TR), approx. 1.7 mi NE of site

Morgan Falls Bat Cave (TR), on or immediate vicinity of site

Chattahoochee Upper North 1 (0313000111) [SWAP High Priority Watershed] (TR), on or immediate vicinity of site

Recommendations:

Federally listed species have been documented near the proposed project. To minimize potential impacts to federally listed species, we recommend consultation with the United States Fish and Wildlife Service. In North Georgia, email GAES_Assistance@fws.gov. In Southeast Georgia, call the Coastal Georgia Office at 912-832-8739. In Southwest Georgia, please contact John Doesky at 706-544-6030 or John.Doesky@fws.gov.

Please be aware that state protected species have been documented near the proposed project. For information about these species, including survey recommendations, please visit our webpage at <http://georgiawildlife.com/conservation/species-of-concern#rare-locations>. Surveys for species of conservation concern should be conducted prior to commencement of construction.

If the applicant is willing to assume presence and implement provisions to protect *state listed* aquatic species identified during this review, it may not be necessary to complete any additional surveys for *state listed* aquatic species. Please refer to the Aquatic Survey Determination Protocol For State Listed Species in determining whether surveys are recommended. Although this document was prepared for use on GDOT projects, it may be applicable to other projects, as well. For any additional questions about state-listed fishes, mussels, crayfishes, snails, or aquatic insects, please contact Brett Albanese Brett.Albanese@dnr.ga.gov for projects in the Tennessee Drainage, Paula Marcinek Paula.Marcinek@dnr.ga.gov for projects in the Atlantic Slope Drainages (Savannah, Ogeechee, Altamaha, Satilla, and St. Mary's), Ani Popp Anakela.Popp@dnr.ga.gov for projects in the Coosa and Tallapoosa Drainages, and Matt Rowe Matthew.Rowe@dnr.ga.gov for projects in the Gulf Slope Drainages (Apalachicola-Chattahoochee-Flint, Aucilla, Ochlocknee, and Suwanee).

This project occurs within a high priority watershed. As part of Georgia's State Wildlife Action Plan, high priority watersheds were identified to protect the best-known populations of high priority aquatic species, important coastal habitats, and migratory corridors for anadromous species. Please refer to Appendix F of Georgia's State Wildlife Action Plan to find out more specific information about this high priority watershed:

<https://georgiawildlife.com/wildlifeactionplan>.

To protect aquatic habitats and water quality, we recommend that all machinery be kept out of streams and wetlands during construction, if applicable. Further, we strongly advocate leaving vegetation intact within 100 feet of streams. We recommend that stringent erosion control practices be used during construction activities and that vegetation is re-established on disturbed areas as quickly as possible. Silt fences and other erosion control devices should be inspected and maintained until soil is stabilized by vegetation. Please use natural vegetation and grading techniques (e.g. vegetated swales, turn-offs, vegetated buffer strips) that will ensure that the project area does not serve as a conduit for storm water or pollutants into the watershed during or after construction. These measures will help protect water quality near the project as well as in downstream areas.

In areas where the project alignment must cross streams, we recommend establishment of at least a 25-foot undisturbed vegetative buffer between each stream bank and the bore pits and allow this buffer to regenerate to shrub-scrub growth after the pipe is installed. Streams should not be culverted/forded to allow equipment access during construction or for future right-of-way maintenance. Wider buffers may be needed for projects that cross high priority streams or where land slopes sharply toward the stream being crossed.

Please install temporary erosion control devices, if required, before any other work is performed, and permanent erosion control devices at the earliest possible time during the work. Monitor erosion control devices weekly until disturbed areas have been permanently stabilized and give persons who monitor erosion control devices the authority to halt construction and/or require immediate implementation of corrective measures at a given stream crossing or construction site if they observe failed erosion control measures associated with a visible increase in turbidity downstream of the structures.

Please be aware that the type of erosion control material used during construction can impact wildlife. We strongly recommend using natural, biodegradable materials such as ‘jute’ or ‘coir’. Mesh strands should be movable, as opposed to fixed. Use of plastic fencing frequently leads to wildlife entrapment and death.

Morgan Falls Bat Cave is located within the immediate vicinity of the proposed project. Caves in Georgia are protected under the Cave Protection Act of 1977. The Georgia Department of Natural Resources does not maintain the cave database and cannot release exact cave locations. For more information about caves within your project area, exact locations and appropriate protection measures, please contact the Georgia Speleological Society. Visit the GSS website for contact information: <http://caves.org/survey/gss/GSSWebsite/Home.html>.

Disclaimer:

Please keep in mind the limitations of our database. The data collected by the Wildlife Conservation Section comes from a variety of sources, including museum and herbarium records, literature, and reports from individuals and organizations, as well as field surveys by our staff biologists. In most cases the information is not the result of a recent on-site survey by our

staff. Many areas of Georgia have never been surveyed thoroughly. Therefore, the Wildlife Conservation Section can only occasionally provide definitive information on the presence or absence of rare species on a given site. Our files are updated constantly as new information is received. **Thus, information provided by our program represents the existing data in our files at the time of the request and should not be considered a final statement on the species or area under consideration.**

If you know of populations of highest priority species that are not in our database, please fill out the appropriate data collection form and send it to our office. Forms can be obtained through our web site (<http://georgiawildlife.com/conservation/species-of-concern#rare-locations>) or by contacting our office. If we can be of further assistance, please let us know.



Laci Pattavina, Wildlife Biologist, Environmental Reviews
laci.pattavina@dnr.ga.gov, (706) 557-3228

Data Available on the Wildlife Conservation Section Website

- Georgia protected plant and animal profiles are available on our website. These accounts cover basics like descriptions and life history, as well as threats, management recommendations and conservation status. Visit <http://georgiawildlife.com/conservation/species-of-concern#rare-locations>.
- Rare species and natural community information can be viewed by Quarter Quad, County and HUC8 Watershed. To access this information, please visit our GA Rare Species and Natural Community Information page at: <http://georgiabiodiversity.org/>
- Downloadable files of rare species and natural community data by quarter quad and county are also available. They can be downloaded from: <http://georgiabiodiversity.org/natels/natural-element-locations.html>

Appendix C

Public Notices

UTILITY WORK NOTICE

Project: Fulton-Cobb Diversion Force Main and Pump Station

Sandy Springs Permit No.: UT19-00174

Dates: September 23, 2019 – December 20, 2019

Activity: A new sewer force main is being constructed through Sandy Springs that connects the Pump Station in Roswell to facilities in Cobb County. The current section under construction is Dunwoody Pl from Northridge Pkwy to Roswell Rd. Construction is in the north bound lane and will involve nightly lane closures with flagmen. **Work hours will be 7:00 PM to 5:00 AM, Sunday through Thursday.**

Utility Owner: Fulton County Department of Public Works

Utility Contractor: John D. Stephens, Inc.



Project Manager: Neil Loudermilk

Contact Number: (706) 490-2400

Superintendent: David Steffes

Contact Number: (678) 614-6990



Sr. Construction PM: Simeon Solomero

Contact Number: (404) 612-7418

Project Manager: Walt Rekuc

Contact Number: (404) 612-7394

For more information go to: www.fcdiversion.com or email info@fcdiversion.com

UTILITY WORK NOTICE

Project: Fulton-Cobb Diversion Force Main and Pump Station

City of Sandy Springs Permit No.: UT1900177

Dates: February 17 – May 29, 2020

Activity: A new sewer force main is being constructed through Sandy Springs that connects the Pump Station in Roswell to facilities in Cobb County. The current section under construction is Morgan Falls Rd from Roswell Rd to west of the Steel Canyon Golf Club. Construction is in the eastbound lane and will involve daily lane closures with flagmen.

Utility Owner: Fulton County Department of Public Works

Utility Contractor: John D. Stephens, Inc.



Project Manager: Neil Loudermilk

Contact Number: (706) 490-2400

Sr. Construction PM: Simeon Solomero

Contact Number: (404) 612-7418

Superintendent: David Steffes

Contact Number: (678) 614-6990

Project Manager: Walt Rekuc

Contact Number: (404) 612-7394

For more information go to: www.fcdiversion.com or email info@fcdiversion.com

UTILITY WORK NOTICE

Project: Fulton-Cobb Diversion Force Main and Pump Station

GDOT Permit No.: 1206659

Dates: February 17 – March 13, 2020

Activity: A new sewer force main is being constructed through Sandy Springs that connects the Pump Station in Roswell to facilities in Cobb County. The current section under construction is Roswell Rd from Dunwoody Place to Roberts Drive. Construction is in the northbound lane and will involve daily lane closures with flagmen.

Utility Owner: Fulton County Department of Public Works

Utility Contractor: John D. Stephens, Inc.



Project Manager: Neil Loudermilk

Contact Number: (706) 490-2400

Sr. Construction PM: Simeon Solomero

Contact Number: (404) 612-7418

Superintendent: David Steffes

Contact Number: (678) 614-6990

Project Manager: Walt Rekuc

Contact Number: (404) 612-7394

For more information go to: www.fcdiversion.com or email info@fcdiversion.com

Fulton-Cobb Diversion Force Main John D. Stephens, Inc.

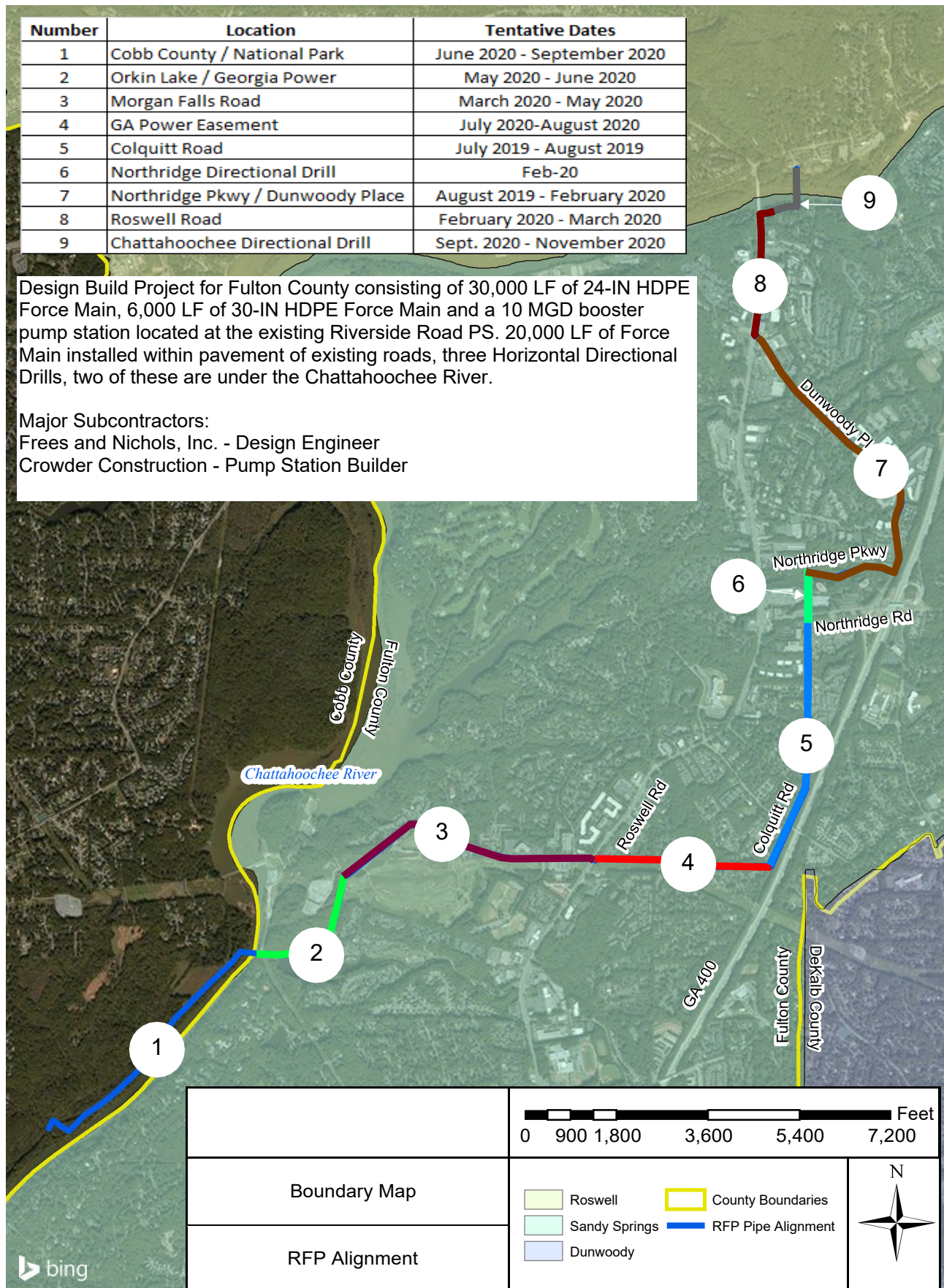
Number	Location	Tentative Dates
1	Cobb County / National Park	June 2020 - September 2020
2	Orkin Lake / Georgia Power	May 2020 - June 2020
3	Morgan Falls Road	March 2020 - May 2020
4	GA Power Easement	July 2020-August 2020
5	Colquitt Road	July 2019 - August 2019
6	Northridge Directional Drill	Feb-20
7	Northridge Pkwy / Dunwoody Place	August 2019 - February 2020
8	Roswell Road	February 2020 - March 2020
9	Chattahoochee Directional Drill	Sept. 2020 - November 2020

Design Build Project for Fulton County consisting of 30,000 LF of 24-IN HDPE Force Main, 6,000 LF of 30-IN HDPE Force Main and a 10 MGD booster pump station located at the existing Riverside Road PS. 20,000 LF of Force Main installed within pavement of existing roads, three Horizontal Directional Drills, two of these are under the Chattahoochee River.

Major Subcontractors:

Frees and Nichols, Inc. - Design Engineer

Crowder Construction - Pump Station Builder



Fulton-Cobb Diversion Force Main John D. Stephens, Inc.

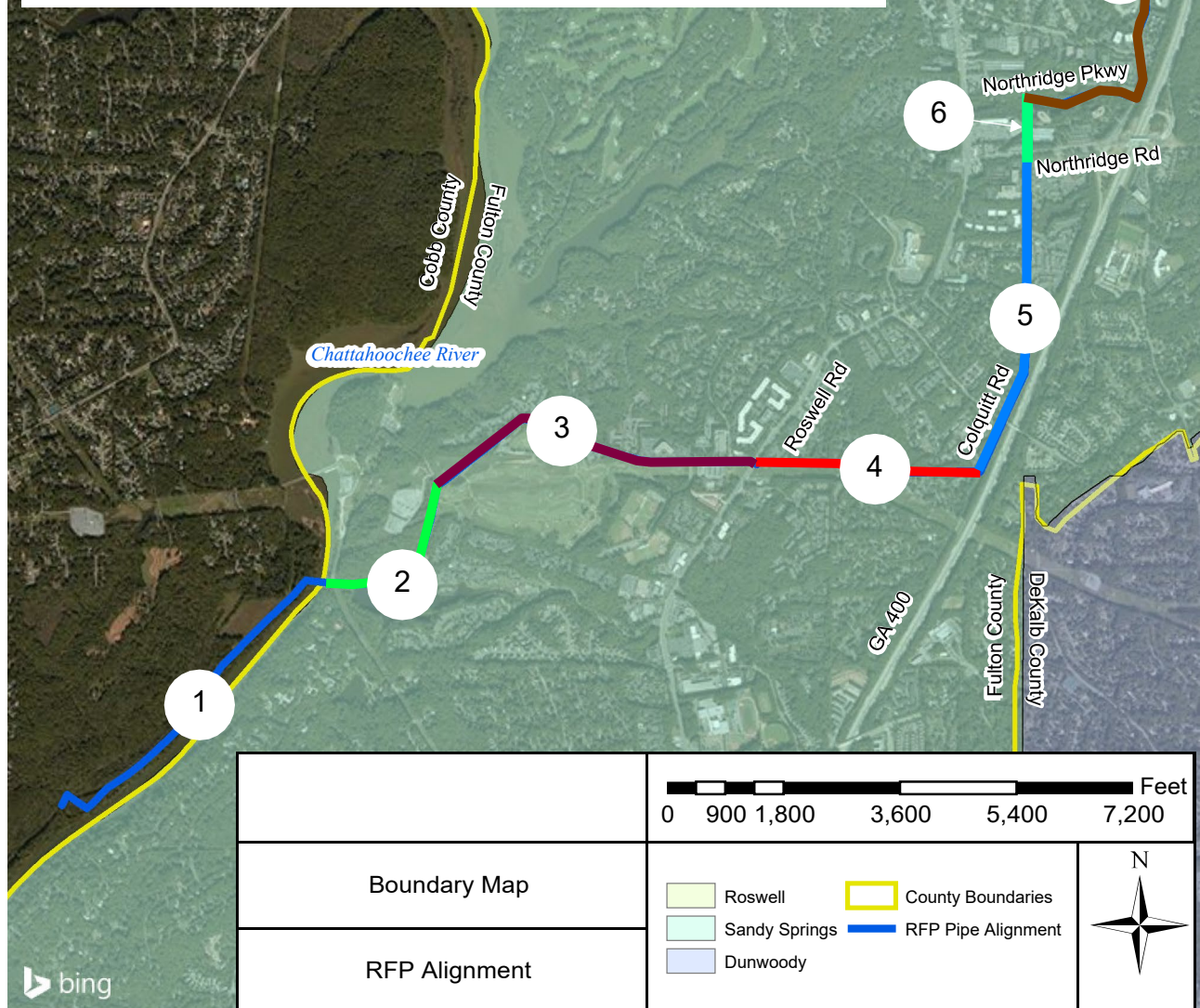
Number	Location	Tentative Dates
1	Cobb County/National Park	April 2020 - May 2020
2	Orkin Lake/Georgia Power	February 2020 - March 2020
3	Morgan Falls Road	January 2020 - February 2020
4	GA Power Easement	March 2020 - April 2020
5	Colquitt Road	July 2019 - August 2019
6	Northridge Directional Drill	October 2019 - November 2019
7	Northridge Parkway/Dunwoody Place	September 2019 - November 2019
8	Roswell Road	November 2019 - December 2019
9	Chattahoochee Directional Drill	November 2019 - December 2019

Design Build Project for Fulton County consisting of 30,000 LF of 24-IN HDPE Force Main, 6,000 LF of 30-IN HDPE Force Main and a 10 MGD booster pump station located at the existing Riverside Road PS. 20,000 LF of Force Main installed within pavement of existing roads, three Horizontal Directional Drills, two of these are under the Chattahoochee River.

Major Subcontractors:

Frees and Nichols, Inc. - Design Engineer

Crowder Construction - Pump Station Builder



From: [Neil Loudermilk](#)
To: [Will Hackett](#)
Subject: FW: NEWS RELEASE Sewers work Draft
Date: Wednesday, February 12, 2020 4:46:44 PM
Attachments: [image002.png](#)

External Email. Use caution when clicking links or opening attachments.

From: Banks, Corlette <Corlette.Banks@fultoncountyga.gov>
Sent: Monday, November 4, 2019 10:14 AM
To: Solomero, Simeon <Simeon.Solomero@fultoncountyga.gov>; Neil Loudermilk <NLoudermilk@johndstephens.com>; Eric Malvin <emalvin@johndstephens.com>
Subject: RE: NEWS RELEASE Sewers work Draft

Good morning,
Following up to see if there are any changes to this. As soon as we get changes, we can get this out.
Thanks!

From: Solomero, Simeon
Sent: Friday, November 01, 2019 7:37 AM
To: nloudermilk@johndstephens.com; Eric Malvin
Cc: Banks, Corlette
Subject: FW: NEWS RELEASE Sewers work Draft

Neil/Eric,

The attached is the "news release" the County is about to publish. Please go over it and see if any change in work time schedule to ensure accuracy. Let me know ASAP.

Thanks,

Simeon S. Solomero, Jr., CCM, PMP, LEED-AP
Sr. Construction Project Manager
Fulton County
Department of Public Works
Technical Services Group
Office No.: 404-612-7418
Cell No.: 404-630-8639
simeon.solomero@fultoncountyga.gov

*"Effectiveness and Efficiency
Are What Make Things Happen...
Effectiveness is Doing the Right Things...
And Efficiency is Doing Things Right"*

From: Banks, Corlette
Sent: Thursday, October 31, 2019 5:59 PM
To: Solomero, Simeon <Simeon.Solomero@fultoncountyga.gov>

Cc: Clark, David <David.Clark@fultoncountyga.gov>

Subject: FW: NEWS RELEASE Sewers work Draft

See below – any changes.

From: Carver, Darryl

Sent: Tuesday, October 29, 2019 6:39 PM

To: Banks, Corlette <Corlette.Banks@fultoncountyga.gov>

Cc: Carver, Darryl <Darryl.Carver@fultoncountyga.gov>

Subject: NEWS RELEASE Sewers work Draft

NEWS RELEASE

Department of External Affairs

MEDIA CONTACT: Darryl Carver

404-612-8305 (office)

404-931-5744 (cell)

darryl.carver@fultoncountyga.gov

141 Pryor St. SW, Suite 3090

Atlanta, GA 30303

www.fultoncountyga.gov

<https://twitter.com/FultonInfo>

<https://www.facebook.com/FultonInfo>

Tuesday, October 29, 2019



FULTON COUNTY GOVERNMENT

Work on sewer lines continues during night time hours

Dunwoody Place travelers to be impacted during off peak times

SANDY SPRINGS, Ga. – As part of the Big Creek Water Reclamation Facility expansion project, crews will perform major work along Dunwoody Place that will impact travelers during the night time hours. As part of that project, Fulton County contractor John D. Stephens Inc. began constructing a new sewer main through Sandy Springs that will connect a pump station in Roswell to facilities in Cobb County.

Night time construction will begin November 4, 2019 through November 8, 2019 resuming November 11, 2019 through November 15, 2019. If necessary the work will resume the week of November 18, 2019. Motorists should be prepared for northbound lanes of Dunwoody Place, in the area of Roberts Drive, to be closed to allow the work to proceed. Electronic message boards will be in place to alert citizens of the work and possible traffic impacts.

Upon completion, this new sewer main will divert up to 10 million gallons of wastewater per day to Cobb County for treatment in anticipation of the Big Creek Water Reclamation Facility nearing its capacity by 2020. This project includes the construction of about seven miles of sewer main within Sandy Springs and Roswell as well as Cobb County. The project also includes construction of a new pump station. A project to expand the Big Creek facility is currently underway and expected to be completed in three to four years.

For more Fulton County news, sign up for the weekly e-newsletter #OneFulton at <https://goo.gl/Nb1L84>. You can also visit Fulton County's website at www.fultoncountyga.gov or connect with Fulton County government on Twitter at [@FultonInfo](https://twitter.com/FultonInfo) or Facebook at [@fultoninfo](https://www.facebook.com/FultonInfo).

###

UTILITY WORK NOTICE

Project: Fulton-Cobb Diversion Force Main and Pump Station

Sandy Springs Permit No.: UT19-00178

Dates: September 16, 2019 – September 27 2019

Activity: A new sewer force main is being constructed through Sandy Springs that connects the Pump Station in Roswell to facilities in Cobb County. The current section under construction is Northridge Pkwy from 400 Northridge Pkwy to Dunwoody Place. Construction is in the eastbound lane and will involve daily lane closures with flagmen.

Utility Owner: Fulton County Department of Public Works

Utility Contractor: John D. Stephens, Inc.



Project Manager: Neil Loudermilk

Contact Number: (706) 490-2400

Sr. Construction PM: Simeon Solomero

Contact Number: (404) 612-7418

Superintendent: David Steffes

Contact Number: (678) 614-6990

Project Manager: Walt Rekuc

Contact Number: (404) 612-7394

For more information go to: www.fcdiversion.com or email info@fcdiversion.com

UTILITY WORK NOTICE

Project: Fulton-Cobb Diversion Force Main and Pump Station

Sandy Springs Permit No.: UT19-00173

Dates: July 8, 2019 – August 2019

Activity: A new sewer force main is being constructed through Sandy Springs that connects the Pump Station in Roswell to facilities in Cobb County. The current section under construction is Colquitt Road from the Georgia Power Easement south of Pitts Road to Northridge Road. Construction is in the northbound lane and will involve daily lane closures with flagmen.

Utility Owner: Fulton County Department of Public Works

Utility Contractor: John D. Stephens, Inc.



Project Manager: Greg Rosinski

Contact Number: (404) 433-9004

Sr. Construction PM: Simeon Solomero

Contact Number: (404) 612-7418

Superintendent: David Steffes

Contact Number: (678) 614-6990

Project Manager: Walt Rekuc

Contact Number: (404) 612-7394

For more information go to: www.fcdiversion.com or email info@fcdiversion.com

Appendix D

Geotechnical Report



UNITED
CONSULTING

REPORT

**For Freese and Nichols,
Inc.**

Geotechnical Exploration
Fulton-Cobb Diversion Line and
Pump Station Project
575 Riverside Road
Roswell, Georgia
Project No.: FREN1-18-GA-02753-01



December 20, 2018

Mr. Trooper Smith, P.E.
Freese and Nichols, Inc.
125 Townpark Drive
Suite 300
Kennesaw, Georgia 30144

Via Email: tw@freese.com

RE: Report of Geotechnical Exploration
Fulton-Cobb Diversion Line and Pump Station Project
575 Riverside Road
Roswell, Fulton County, Georgia
Project No.: FRENI-18-GA-02753-01

Dear Mr. Smith:

United Consulting is pleased to submit this report of our Geotechnical Exploration for the above-referenced project. The work was completed in general accordance with our Proposal No. P2017.0981.01R2 dated Sep-11-2018 (Rev. 2) and Work Authorization dated Sep-18-2018.

We appreciate the opportunity to assist you with this project and look forward to our continued participation. Please contact us if you have any questions or if we can be of further assistance.

Sincerely,

UNITED CONSULTING



Rafael I. Ospina, P.E.
Geotechnical Engineer



Chris L. Roberds, P.G.
Senior Executive Vice President

SRT/RIO/CLR/nj

unc-sps/894/FRENI-18-GA-02753-01/Geotechnical Documents/ FRENI-18-GA-02753-01 - Geo.docx

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Unconfined Compression Test Report (1)

1.0 EXECUTIVE SUMMARY

United Consulting has completed a Geotechnical Exploration on the Fulton-Cobb Diversion Line and Pump Station project in Sandy Springs and Roswell, Fulton County Georgia. Please refer to the text of the report for a more detailed discussion of the items summarized below.

1. Below the ground surface, boring B-1 encountered approximately 13 feet of fill soils, borings B-3, B-4, and B-5 encountered approximately 8 feet of fill soils, and boring B-2 encountered approximately 3 feet of fill soils. The fill generally appeared to be free of debris and organic content, but slightly variable in consistency. However, we recommend that the quality of the fill be thoroughly evaluated at the time of construction and funds be allocated for the removal of any low consistency fill soils, debris or other unsuitable materials that may be encountered.
2. Partially Weathered Rock (PWR) was encountered in all the borings starting at depths ranging from the 3 feet to 33 feet. Auger refusal was encountered in borings B-1, B-2, B-3, and B-5 at depths ranging from 15 to 36 feet. Significant difficult excavation conditions (ripping and blasting in mass excavation and blasting for trench/utility excavations) associated with PWR or rock should be expected for excavations for the entry and exit pits for both river crossings. United Consulting recommends the construction budget include funds for difficult excavation.
3. Groundwater was encountered at the time of drilling in boring B-1 at a depth of 18 feet. Shallower groundwater should be expected near the existing river crossings and some control of groundwater during construction is expected in that area. We do not anticipate that control of groundwater will significantly impact the proposed Pump Station construction. It is possible that perched water levels could develop at shallower depths above partially weathered rock or rock at the site. The contractor should be prepared to manage perched water or groundwater as needed.
4. Provided that the site is prepared as per recommendations, it is our opinion that the new Pump Station building can be supported on conventional shallow foundations such as spread footings and/or continuous strip footings. An allowable soil bearing pressure of up to 3,000 pounds per square foot (psf) can be used for the design of conventional shallow foundations.
5. Alternatively, based on the provided loads of the proposed structure, the new Pump Station building can be supported on a slab-on-grade. We recommend a subgrade modulus of 120 pounds per cubic inch (pci) be used for slab design
6. United Consulting utilized available geotechnical information (N-Values) and our experience with similar soil conditions to provide a seismic site classification of "Site Class C" for the Pump Station site.

2.0 PROJECT INFORMATION

The project site included the Riverside Road Pump Station at 575 Riverside Road in Roswell; Roberts Drive in Sandy Springs; and Morgan Falls Pump Station at Morgan Falls Road in Sand Springs, Fulton County, Georgia. The Riverside Road Pump Station, on which borings B-1, B-2, and B-3 were drilled, contained the pump station building with generators and an asphalt pavement in the central portion, some vacant, grass-covered areas with light brush in the southern portion and was located to the north of the Chattahoochee River. Roberts Drive, where boring B-4 was drilled, was running east-west, to the west of Highway 9 (Roswell Road), and located south of the Chattahoochee River. The Morgan Falls Pump Station, where boring B-5 was drilled, contained the pump station building and asphalt pavement and was located to the east of the Chattahoochee River. The general locations of the project site are shown on the attached Boring Location Plan (Figure 1, Pages 1 through 3).

We understand that the project will consist of a newly constructed at grade Pump Station with a footprint area of 25 by 47 feet (1,175 square feet), and approximately 6 miles of wastewater force main piping. The new Pump Station will be constructed adjacent to the existing Riverside Road Pump Station.

Based on a telephonic conversation with Peter Bartels and Will Hackett of Freese and Nichols, Inc. on December 14, 2018, we understand that the Pump Station building will be a 1-story building with a masonry veneer consisting of blocks of 8" width. There will be a perimeter wall surrounding the structure, as well as one internal wall. The perimeter walls are expected to contribute the majority of the structural loads, between 2,000 to 2,500 lbs per lineal feet. The internal walls and building is expected to contribute structural loads of around 150 psf.

The diversion line will leave the Riverside Road Pump Station crossing under the Chattahoochee River to the south side of the river and then installed in the new easement to Roswell Road. The force main will cross the river at two locations. Horizontal Direction Drilling (HDD) will be used for installation of the force main under the river extending to entry and exit pits on each side of the river. The diversion line will remain in the right-of-way and tapping into an existing 42" interceptor at a property owned by the US Parks Department in Cobb County.

3.0 PURPOSE

The purpose of this Geotechnical Exploration was to assess the general type and condition of the subsurface materials at the Project Site and to provide recommendations regarding the design and construction of the building foundations, grading, earthwork, quality control and other geotechnical related issues, deemed pertinent to this project.

4.0 SCOPE

The scope of our geotechnical exploration included the following items:

1. Boring layout and clearing underground utilities;
2. A visual reconnaissance of the site from a geotechnical standpoint;
3. Drilling five (5) Standard Penetration Test (SPT) borings to assess the quality and consistency of the subsurface soils;
4. Performing two rock cores (one core at two SPT locations) to assess the quality and continuity of the rock below the auger refusal levels;
5. Visual evaluation of the soil samples obtained during our field testing program for further identification and classification;
6. Performing laboratory testing consisting of thirty (30) natural moisture content tests, twelve (12) grain size analysis with hydrometer, and twelve (12) Atterberg Limits on representative soil samples as well as eight (8) unconfined compression tests on representative rock cores;
7. Analyzing the existing soil conditions with respect to the proposed construction; and
8. Preparing this report to document the results of our field-testing program, engineering analysis, and to provide our findings and general recommendations.

5.0 SUBSURFACE CONDITIONS

Initially, borings B-1, B-2, and B-3 encountered a surficial layer of grass and topsoil, and borings B-4 and B-5 encountered a surficial layer of asphalt. Beneath the surficial materials, boring B-1 encountered approximately 13 feet of fill soils, borings B-3, B-4, and B-5 encountered approximately 8 feet of fill soils, and boring B-2 encountered approximately 3 feet of fill soils. The fill soil consisted of very loose to medium dense sand with varying amounts of silt, clay, mica, and rock fragments; or soft to firm clay with varying amounts of sand, silt, and gravel. The Standard Penetration Test resistance (N-values) in the fill sands ranged from 3 blows per foot (bpf) to 23 bpf, while those in the fill clays ranged from 3 bpf to 8 bpf. Low consistency fill soils (N-value \leq 5 bpf) were encountered at the surface in boring B-5 and between 3 to 5 feet in boring B-4.

Beneath the fill soils, typical residual soils of the Piedmont Physiographic Province of Georgia were encountered in the borings. The residual soils generally consisted of very loose to very dense sand with varying amounts of silt, clay, rock fragments and mica. Boring B-5 also contained a layer of soft silt with some sand and clay, and traces of mica. N-values within the residual sand soils ranged from 2 to 72 blows per foot (bpf) and an N-Value of 4 was recorded in the residual silt. Low consistency residual soils (N-value \leq 5 bpf) was encountered between 13 to 20 feet in boring B-5.

Partially Weathered Rock (PWR) was encountered in all borings starting at depths ranging from the 3 feet to 33 feet. PWR is a term for residuum that can be penetrated with a soil drilling auger but has N-values in excess of 100 bpf. The PWR encountered was classified as very dense sand with varying amounts of rock fragments, clay, silt, and mica; or hard silt with varying amounts of sand and rock fragments.

Auger refusal was encountered in borings B-1, B-2, B-3, and B-5 at depths ranging from 15 to 36 feet. Auger refusal is the depth that the boring cannot be advanced with a soil drilling auger. Auger refusal within residual soils generally represents a seam of dense PWR, boulders, or top of massive bedrock.

Groundwater was encountered in boring B-1 at a depth of 18 feet at the time of drilling. Groundwater levels should also be anticipated to fluctuate with the change of seasons, during periods of very low or high precipitation, or due change in floodplain or watershed upstream of the site.

Borings B-1, B-2, and B-3 were backfilled with soil cuttings. Borings B-4 and B-5 were backfilled with soil cuttings, with the upper 1.5 feet backfilled with hydrated "quickcrete", and then the surface hole patched with 4" (or original thickness) of cold asphalt patch.

For a more detailed description of the subsurface conditions encountered, please refer to the boring logs in The Appendix.

Rock coring was performed in borings B-3 and B-5 below auger refusal depth. The following tables provide a summary of the core recoveries and the rock quality designations (RQD) in each of the core holes. The type of rock consisted of Garnet Gneiss and Muscovite Mica Schist, typically encountered in the region.



Table 1: Rock Coring Data

Boring	Depth (feet)	Recovery (%)	RQD (%)
B-3	Run 1: 15-25	15%	0%
	Run 2: 25-35	55%	13%
	Run 3: 35-45	63%	29%
	Run 4: 45-55	98%	86%
	Run 5: 55-60	75%	75%
B-5	Run 1: 30-40	100%	63%
	Run 2: 40-50	99%	74%
	Run 3: 50-60	96%	81%

The results of the rock coring indicate generally variable rock quality with occasionally poor rock quality. The definitions of the terms used related to rock quality are included in The Appendix.

6.0 LABORATORY TESTING PROGRAM

Laboratory testing for this project included thirty (30) natural moisture content tests, twelve (12) grain size analysis with hydrometer, and twelve (12) Atterberg Limits. The results of the moisture content tests are shown on boring logs next to the respective samples tested. The natural moisture content of the samples tested ranged from 4.8% to 51.5%. A narrative description of the laboratory tests is included in The Appendix.

Eight (8) unconfined compression tests (ASTM D2938/AASHTO T226) were carried out on core samples. The results of these tests are tabulated below:

Table 2: Unconfined Compression Test Results

Boring	Depth (feet)	Diameter (in)	Height (in)	Maximum Load (lbs)	Cross Sectional Area (in ²)	Unconfined Compressive Strength (psi)
B-3	29'4" to 29'8"	1.828	4.092	12,240	2.62	4663.8
B-3	40'5" to 40'9"	1.828	4.045	14150	2.62	5391.6
B-3	50'0" to 50'4"	1.828	4.033	50150	2.62	19108.6
B-3	58'1" to 58'5"	1.828	4.121	36310	2.62	13835.2
B-5	30'3" to 30'7"	1.828	4.185	17720	2.62	6751.8
B-5	46'5" to 46'9"	1.828	3.969	10070	2.62	3837.0
B-5	51'1" to 51'5"	1.828	4.019	8530	2.62	3250.2
B-5	57'2" to 57'6"	1.828	3.993	1790	2.62	682.0

7.0 DISCUSSION AND RECOMMENDATIONS

The following recommendations are based on our understanding of the proposed construction, the data obtained in the soil test borings, a site reconnaissance, and our experience with subsurface conditions similar to those encountered at the project site.

We recommend that United Consulting be provided with updated documents early in the preparation of final construction drawings to determine if our recommendations are still valid or should be re-evaluated and revised.

7.1 Existing Fill Evaluation

Boring B-1 encountered approximately 13 feet of fill soils, borings B-3, B-4, and B-5 encountered approximately 8 feet of fill soils, and boring B-2 encountered approximately 3 feet of fill soils. The fill generally appeared to be free of debris and organic materials, but slightly variable in consistency.

As with any undocumented fill, it is possible that poor quality fill, trash pits, debris or other deleterious materials could be present intermediate of the boring locations. We recommend that areas of existing fill be thoroughly evaluated during construction by proofrolling. Further, we suggest that funds be allocated for the remediation of isolated areas of poor quality fill or debris that may be encountered during construction.

7.2 Site Preparation

The site includes existing pavement areas. Where not incorporated into the currently planned construction, the pavement should be demolished and removed from the areas of the proposed construction. Underground utilities not incorporated into this construction should be relocated to at least 10 feet outside the perimeter of the proposed building footprints. Any abandoned lines should then be excavated and removed from the area of the proposed construction. All excavations should be subsequently backfilled with properly compacted engineered fill. We do not recommend active or non-active utility lines located below the area of the proposed structures be left in place. Any abandoned utility pipes, if left in place and outside of the proposed building footprint, should be filled-in under pressure with cement grout having a minimum 28-day compressive strength of 500 pounds per square inch (psi). This would prevent localized cave-in upon eventual deterioration and loss of structural integrity of the pipe. Also, septic tanks, septic fields, and associated underground structures, if present, should be properly removed. The excavated trenches and pits associated with the removal of the buried structures should be backfilled with engineered fill.

The existing topsoil, vegetation and trees including their root mat should also be removed from the area of the proposed construction. Removal of trees should include removal of their root ball, which may extend to several feet below grade.

After lowering the site grade where planned and prior to placement of engineered fill or commencement of construction, areas to receive fill, foundations, slabs, and pavements, including the area of the proposed structure, should be proofrolled with a fully loaded tandem-axle dump truck. Proofrolling should be performed under the observation of the Geotechnical Engineer or his representatives so that areas

which exhibit “pumping” (wave type displacement) during proofrolling may be treated by a method recommended by the Geotechnical Engineer. This method may consist of undercutting, and backfilling with suitable engineered fill, replacing with surge stone, and a layer of crusher run, or some other method that is deemed suitable.

7.3 Caving Considerations

All excavations should be conducted in accordance with the Occupational Safety and Health Administration (OSHA) guidelines. Flattening of the excavation sidewalls and/or the use of bracing may be needed to maintain stability during construction.

7.4 Difficult Excavation

Partially Weathered Rock (PWR) was encountered in all the borings starting at depths ranging from the 3 feet to 33 feet. Auger refusal was encountered in borings B-1, B-2, B-3, and B-5 at depths ranging from 15 to 36 feet. Significant difficult excavation conditions (ripping and blasting in mass excavation and blasting for trench/utility excavations) associated with PWR or rock should be expected for excavations associated with entry and exit pits for both river crossings.

It is also important to note that depths to PWR and rock can vary over short horizontal distances in the Piedmont geologic area, and PWR and rock could be encountered during construction at shallower depths between and outside the boring locations for this study.

PWR typically requires loosening by ripping with large dozers pulling single tooth rippers in mass excavation. The use of specialized excavation equipment (such as ram-hoes, jackhammers, or possibly blasting) is typically required for PWR excavation in confined (trench) excavations. Relatively sound, massive, rock typically requires blasting for removal in mass or trench excavation.

Excavation techniques will vary based on the weathering of the materials, fracturing and jointing in the rock, and the overall stratigraphy of the feature. Actual field conditions usually display a gradual weathering progression with poorly defined and uneven boundaries between layers of different materials. We recommend that the following definitions for rock in earthwork excavation be included in bid documents:

1. General Excavation: Any material occupying an original volume of more than 1 cubic yard which cannot be excavated with a single-tooth ripper drawn by a crawler tractor having a minimum draw bar pull rating of not less than 80,000 lbs. usable pull (Caterpillar D-8 or larger).
2. Trench Excavation: Any material occupying an original volume of more than 1/2 cubic yard which cannot be excavated with a backhoe having a bucket curling force rated at not less than 40,000 lbs., using a rock bucket and rock teeth (John Deere 790 or larger).

Removal of rock by blasting can be very expensive. The costs of excavation vary with the type of material encountered and the quantities to be excavated. Hence, control of quantities is important. You may consider independent recording of the blasting contractors air track drilling in order to have independent verification of quantities. We will be happy to assist as requested by you with this undertaking.

7.5 Earthwork

The onsite soils, if free of organic and other deleterious materials, should generally be suitable for reuse as engineered fill with proper moisture control. Partially weathered rock (PWR) can be used as engineered fill if it breaks up sufficiently to meet gradation requirements. PWR can also be mixed with soil to meet gradation requirements.

Due to the presence of high silt contents, some of the onsite soil may be sensitive to moisture variation. During rainy seasons, these soils will be difficult to dry. As a practical consideration during extended periods of wet weather, wet onsite soils may need to be discarded and replaced with drier soils. These soils should be placed within a narrow range of their optimum moisture content (typically within about 3 percent of optimum moisture) to achieve proper compaction. Typical restrictions on suitable fill are no organics, plasticity index less than 25, and maximum particle size of four inches, with not more than 30 percent greater than 3/4-inch. These restrictions should also be applied to imported borrow soils if needed.

Positive drainage should be maintained at all times to prevent saturation of exposed soils in case of sudden rains. Rolling the surface of disturbed soils will also improve runoff and reduce the soil moisture and construction delays. The degree of soil stability problems will also be dependent upon the precautions taken by the contractor to help protect the soils from saturation during construction.

Moisture-density determinations should be performed for each soil type used, to provide data necessary for quality assurance testing. Soil moisture contents at the time of compaction should be adjusted so that they are within moisture content limits that will allow the required compaction to be obtained.

7.5.1 Blast Rock

When blast rock needs to be used as engineered fill on a site, the spacing of the blasting holes should be decreased in order to minimize the size of the blast rock material. The following paragraphs can be considered as general guidelines for the use of blast rock as engineered fill.

- Blast rock greater than inches in any dimension up to a maximum size of 3 feet may be used in deep fill areas provided a thorough mix of smaller size rocks and fines is made during fill placement to fill the voids as much as possible between the larger rock pieces.
- Attempts shall be made to break the larger pieces into smaller sizes, and the material thoroughly walked-in with a large tracked vehicle such as a Caterpillar D-9, and/or a heavy vibratory compactor such as a Caterpillar 815.
- A minimum of 8 feet of clean engineered fill should be placed over blast rock fills beneath and within 10 lateral feet of building areas, and at least 4 feet of clean engineered fill should be placed below pavement subgrades. Greater thicknesses of engineered fill may be needed to allow for installation of shallow utilities using conventional light construction equipment.

- All areas receiving blast rock pieces should be well choked with compacted soil to provide a uniform and stable base prior to placement of the engineered fill. This base should be evaluated, prior to placement of the engineered fill, by proof rolling with a fully loaded tandem-axle dump truck under the direction of the Geotechnical Engineer. Placement of a separation geotextile between the blast rock fill and engineered fill may be required at the direction of the Geotechnical Engineer based on conditions encountered in the field.
- All blast rock placement shall be continuously monitored by the Geotechnical Engineer or his representative to document the fill placement.

7.6 Groundwater Considerations

Groundwater was encountered at the time of drilling in boring B-1 at a depth of 18 feet. Shallower groundwater should be expected near the existing river crossings and some control of groundwater during construction is expected in that area.

The contractor should be prepared for dewatering, and groundwater should be lowered to depths of at least 3 feet below excavation depths throughout construction.

Management of groundwater during construction can likely be accomplished using perimeter and interior interconnected trenches gravity drained to appropriate outfalls. Where gravity drainage may not be possible, collected water would need to be routed to sumps and pumped for discharge. Considering the groundwater levels are likely indicative of perched water, permanent control of groundwater may not be needed. However, the need for localized or more comprehensive permanent control of groundwater will need to be further evaluated based on conditions at the time of construction.

We do not anticipate that control of groundwater will significantly impact the proposed Pump Station construction.

7.7 Slopes

We recommend that where fill is to be placed on existing slopes or gullies greater than 4(H):1(V), the slopes be benched to prevent sliding of the fill mass along the existing surface. This can be achieved by notching the slope face by at least about two feet horizontally with the compactor blade as each lift is compacted. A typical benching detail is provided in The Appendix.

Permanent slopes should be constructed no steeper than 2(H):1(V). Fill slopes of up to 20 feet in total height constructed to 2(H):1(V) should be acceptable for this project, assuming proper benching, and placement and compaction of engineered fill. Fill slopes greater than 20 feet must be designed by a licensed professional engineer, and global stability evaluated. If less than desirable soils, such as topsoil or wet soils are to be wasted on slopes, or if an appropriate level of quality control and compaction testing under the supervision of the geotechnical engineer is not planned during slope construction, 2(H):1(V) slopes will not be adequate and flatter slopes should be considered.

All slopes should be protected from erosion during construction and provided with appropriate permanent vegetation or other cover after construction. Slopes should be protected from concentrated run-off flow by means of berms and drainage ditches to direct runoff around slopes or through concrete channels. Appropriate vegetative cover should consist of fast growing grasses that will rapidly create a dense root mat over the entire slope. Landscaping consisting of isolated shrubs and pine straw will not provide adequate slope protection.

A minimum building or retaining wall setback (from the nearest edge of foundations) of at least 10 feet from the crest of slopes is recommended. A minimum setback of 5 feet is recommended for pavements and curbs.

7.8 Foundation Design and Construction

Following site preparation as recommended, the proposed structure can be supported on a shallow foundation system. The shallow foundations may consist of shallow strip footings supported within and underlain by suitable bearing soils. Based on the subsurface exploration data obtained, a maximum allowable soil bearing pressure as listed in the table below is recommended for foundation design in order to maintain total and differential settlement on the order of 1 inch and 0.5 inches over 30 feet span.

Estimated Total Settlement (inches)	Net Allowable Soil Bearing Pressure (psf)
< 1/4	1000
< 1/2	2000
< 3/4	3000

We recommend minimum footing dimensions of 24 inches for strip footings. Footings should bear at least 12 inches below outside finished grades for frost protection. The Geotechnical Engineer must evaluate each footing excavation prior to steel reinforcement or concrete placement. Conditions that are observed should be compared to the test boring data and design requirements. If unsuitable bearing material is encountered, it should be excavated and replaced or otherwise treated as recommended by the Geotechnical Engineer.

Surface water control should be maintained to prevent accumulation of water in footing excavations. Standing water in footing excavations should be removed promptly. Soil softened by the water should be removed, and the Geotechnical Engineer or his representative should reexamine the area.

The structure may alternatively be supported exclusively on a slab-on-grade.

7.9 Ground Floor Slabs

A slab-on-grade may be utilized for the proposed pump station structure. We recommend a subgrade modulus of 120 pounds per cubic inch (pci) be used for slab design. It has been our experience that the floor slab subgrade is often disturbed by weather, foundation and utility line installation, and other construction activities between completion of grading and slab construction. For this reason, our geotechnical engineer should evaluate the subgrade immediately prior to placing the concrete. Areas

judged by the geotechnical engineer to be unstable should be redensified or undercut and replaced with engineered fill compacted to at least 98 percent of its Standard Proctor maximum dry density.

7.10 Retaining Walls

The following retaining wall recommendations pertain to cast-in-place building and site retaining walls and are not intended for modular block or MSE walls. If modular block or MSE walls are planned on the site, United Consulting should be notified because additional evaluation will be required to provide recommendations specific to the planned wall types and locations.

The design of retaining walls must include the determination of the lateral pressure that will act on the wall. The lateral earth pressure is a function of the soil properties, surcharge loads behind the wall, and amount of deformation that the wall can undergo. This deformation is basically dependent upon the relative rigidity of the wall system.

The active earth pressure condition develops when the wall moves away from the soil over a sufficient distance, such as for a freestanding cantilever wall. The at-rest condition exists when there is no lateral strain on the soil, such as walls, which are rigidly restrained like a basement or sub-foundation wall. The passive condition occurs when the wall moves into the soil.

The following equivalent fluid pressures are recommended for three earth pressure conditions.

Table 3 - Lateral Earth Pressures

Earth Pressure Condition	Earth Pressure Coefficient	Recommended Equivalent
		Fluid Pressure
Active	$K_A = 0.33$	40 psf/foot
At-Rest	$K_O = 0.50$	60 psf/foot
Passive	$K_P = 3.00$	360 psf/foot

We note that considerable horizontal deflections are required to mobilize the passive pressure; therefore, the designer should consider a safety factor of 2 to the stated ultimate passive earth pressure in design.

The recommended equivalent fluid pressures are based on an assumed soil density of 120 pcf, an internal friction angle of 30 degrees and cohesion of zero. A coefficient of friction of 0.36 for sliding may be used for the retaining wall design.

The parameters listed above are based on a level properly compacted backfill, no friction at the wall-soil interface, and no surcharge effects. For design of retaining walls, which could be inundated, the buoyant unit weight of the inundated soil should be used to determine the lateral earth pressure. The hydrostatic pressure based on the maximum ponding elevation should be utilized in the analysis.

Heavy compaction equipment should not be used to compact backfill within 5 feet laterally behind any retaining wall unless the wall is designed for the increased pressure or temporarily braced. Therefore, light compaction equipment may be required in this zone. Retaining wall backfill should be compacted to

95 percent of the Standard Proctor maximum dry density. A permanent drainage system such as a footing drain, or a fabric drain such as Enka drain, Mira drain, etc., is recommended for any retaining walls which are more than 5 feet in height.

The retaining walls should be designed by a professional engineer familiar with retaining wall design and registered in Georgia. Global stability should be determined, and the designer should consider sloping backfill, surcharges and other factors affecting wall loadings.

7.11 Fill Placement

Moisture-density determinations should be performed for each soil type used to provide data necessary for quality assurance testing. The natural moisture content at the time of compaction should be within moisture content limits, which will allow the required compaction to be obtained. This is generally within three percentage points of the optimum moisture. The contractor should be prepared to increase or decrease soil water content as needed to achieve the required degrees of compaction.

The fill should be placed in thin lifts (not to exceed 8-inch loose thickness) and compacted. We recommend the fill be compacted to at least 98 percent of Standard Proctor (ASTM D 698) maximum dry density within top two feet and at least 95 percent of Standard Proctor maximum dry density elsewhere on the site.

A Geotechnical Engineer on a full-time basis should observe grading operations. In-place density tests taken by that individual will assess the degree of compaction being obtained. The frequency of the testing should be determined by the Geotechnical Engineer.

7.12 Seismic Site Class

United Consulting utilized available geotechnical information (N-values) and our experience with the similar soil conditions to provide a seismic site class for the Site. United Consulting recommends that a seismic site classification of "Site Class C" be utilized for the pump station site.

A site class determination based on the average N values is necessarily conservative. A site-specific geophysical study acquiring soil shear wave velocity data may or may not demonstrate sufficient stiffness to allow a higher site class. Shear wave velocity measurements were beyond our authorized scope of work. United Consulting will be pleased to provide the additional seismic services, if requested.

8.0 LIMITATIONS

This report is for the exclusive use of **Freese and Nichols, Inc.** and the designers of the project described herein, and may only be applied to this specific project. Our conclusions and recommendations have been prepared using generally accepted standards of Geotechnical Engineering practice in the State of Georgia. No other warranty is expressed or implied. Our firm is not responsible for conclusions, opinions or recommendations of others.

The right to rely upon this report and the data within may not be assigned without UNITED CONSULTING'S written permission.

The scope of this evaluation was limited to an evaluation of the load-carrying capabilities and stability of the subsoils. Oil, hazardous waste, radioactivity, irritants, pollutants, molds, or other dangerous substance and conditions were not the subject of this study. Their presence and/or absence are not implied or suggested by this report, and should not be inferred.

Our conclusions and recommendations are based upon design information furnished to us, data obtained from the previously described exploration and testing program and our past experience. They do not reflect variations in subsurface conditions that may exist intermediate of our borings, and in unexplored areas of the site. Should such variations become apparent during construction, it will be necessary to re-evaluate our conclusions and recommendations based upon "on-site" observations of the conditions.

If the design or location of the project is changed, the recommendations contained herein must be considered invalid, unless our firm reviews the changes and our recommendations are either verified or modified in writing. When design is complete, we should be given the opportunity to review the foundation plan, grading plan, and applicable portions of the specifications to confirm that they are consistent with the intent of our recommendations.

UNITED CONSULTING

APPENDIX

General Notes/Narrative of Drilling Operations

Figure 1 – Boring Location Plan

Exploration Procedures

Laboratory Procedures

SPT Boring Logs (8)

Core Photographs (3)

Typical Benching Detail

Typical Retaining Wall Drainage Detail

Lab Summary Sheet (2)

Liquid and Plastic Test Report (2)

Grain Size Distribution Curves (12) Unconfined

Compression Test Report (1)

GENERAL NOTES

The soil classifications noted on the Boring Logs are visual classifications unless otherwise noted. Minor constituents of a soil sample are termed as follows:

Trace	0 - 10%
Some	11 • 35%
Suffix "y" or "ey"	36 • 49%

LEGEND

[2J

Split Spoon Sample obtained during Standard Penetration **Testing**

[g]

Relatively Undisturbed Shelby Tube Sample

V
0

Groundwater Level at Time of Boring Completion

y

--

Groundwater Level at 24 hours (or as noted) after Termination of **Boring**

w

Natural Moisture Content

LL

Liquid Limit

PL

Plastic Limit

Atterberg Limits

PI

Plasticity Index

PF

Percent Fines (Percent Passing #200 Sieve)

γ_d

Dry Unit Weight (Pounds per Cubic Foot or PCF

γ_m

Moist or In-Situ Unit Weight (PCF)

γ_{sat}

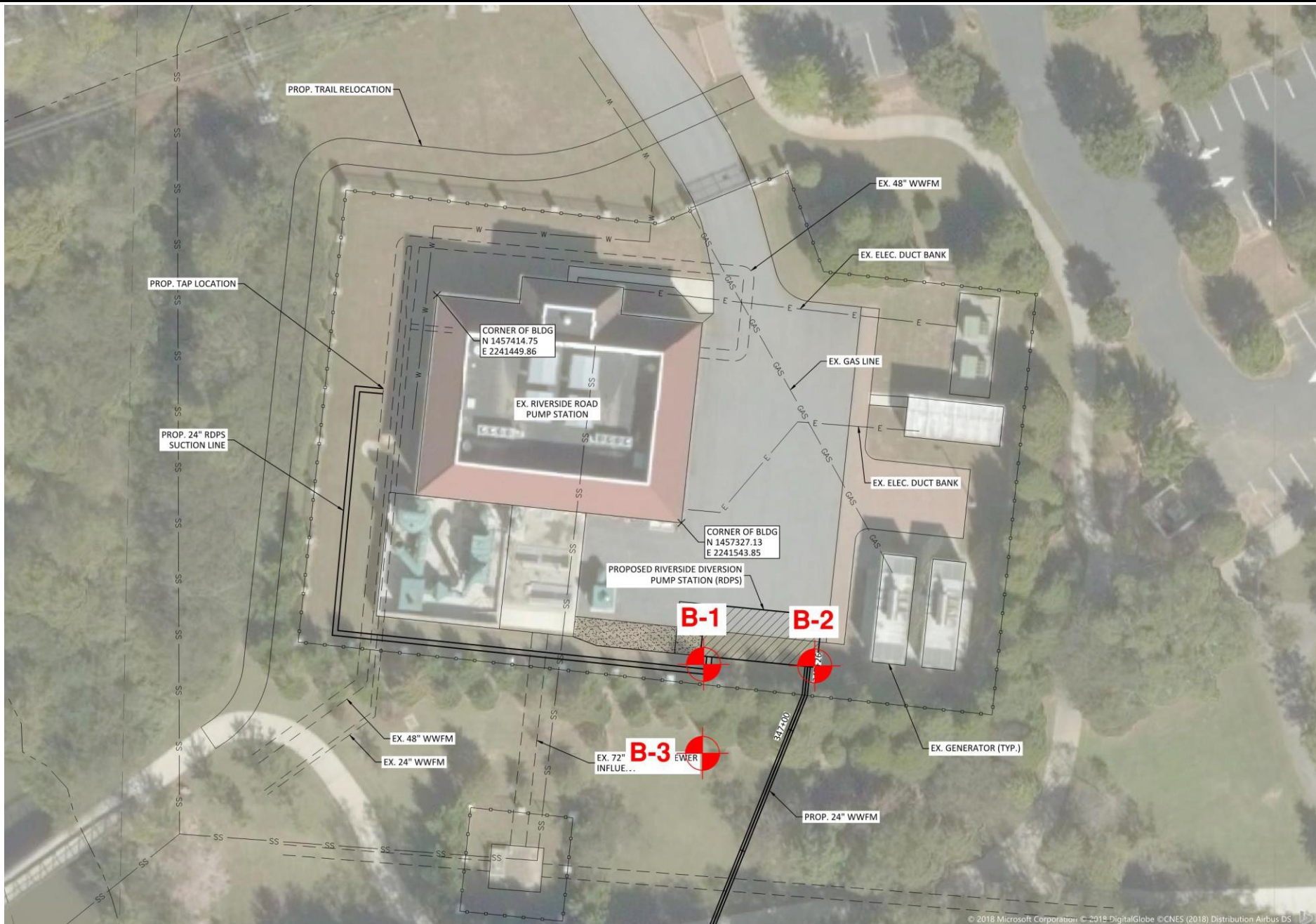
Saturated Unit Weight (PCF)

BORING LOG DATA AND NARRATIVE OF DRILLING OPERATIONS

The test borings were made by mechanically advancing helical hollow stem augers into the ground. Samples were covered at regular intervals in each of the borings following established procedures for performing the Standard Penetration Test in accordance with ASTM Specification D-1586. Soil samples were obtained with a standard 1.4" I.D. x 2.0" O.D. split barrel sampler. The sampler is first seated 6" to penetrate any loose cuttings and then driven an additional foot with the blows of a 140 pound hammer freely falling a distance of 30". The number of blows required to drive the sampler each six inches is recorded on the Boring Logs. The total number of blows required to drive the sampler the final foot is designated the "standard penetration resistance." This driving resistance, known as the "**N**" value, is a measure of the relative density of granular soils and is an indication of the consistency of cohesive deposits.

The Following table describes soil consistencies and relative densities based on standard-penetration resistance values (**N**) determined by the Standard Penetration Test.

	"N"	Consistency
Clay and Silt	0-2	Very Soft
	3-4	Soft
	5-8	Firm
	9-15	Stiff
	16-30	Very Stiff
	Over 31	Hard
	"N"	Relative Density
Sand	0-4	Very Loose
	5-10	Loose
	11-19	Firm
	20-29	Medium Dense
	30-49	Dense
	50+	Very Dense



Scale:	NTS
Prepared:	SRT
Checked:	RIO
Project No.:	FRENI-18-GA-02753-01

Notes

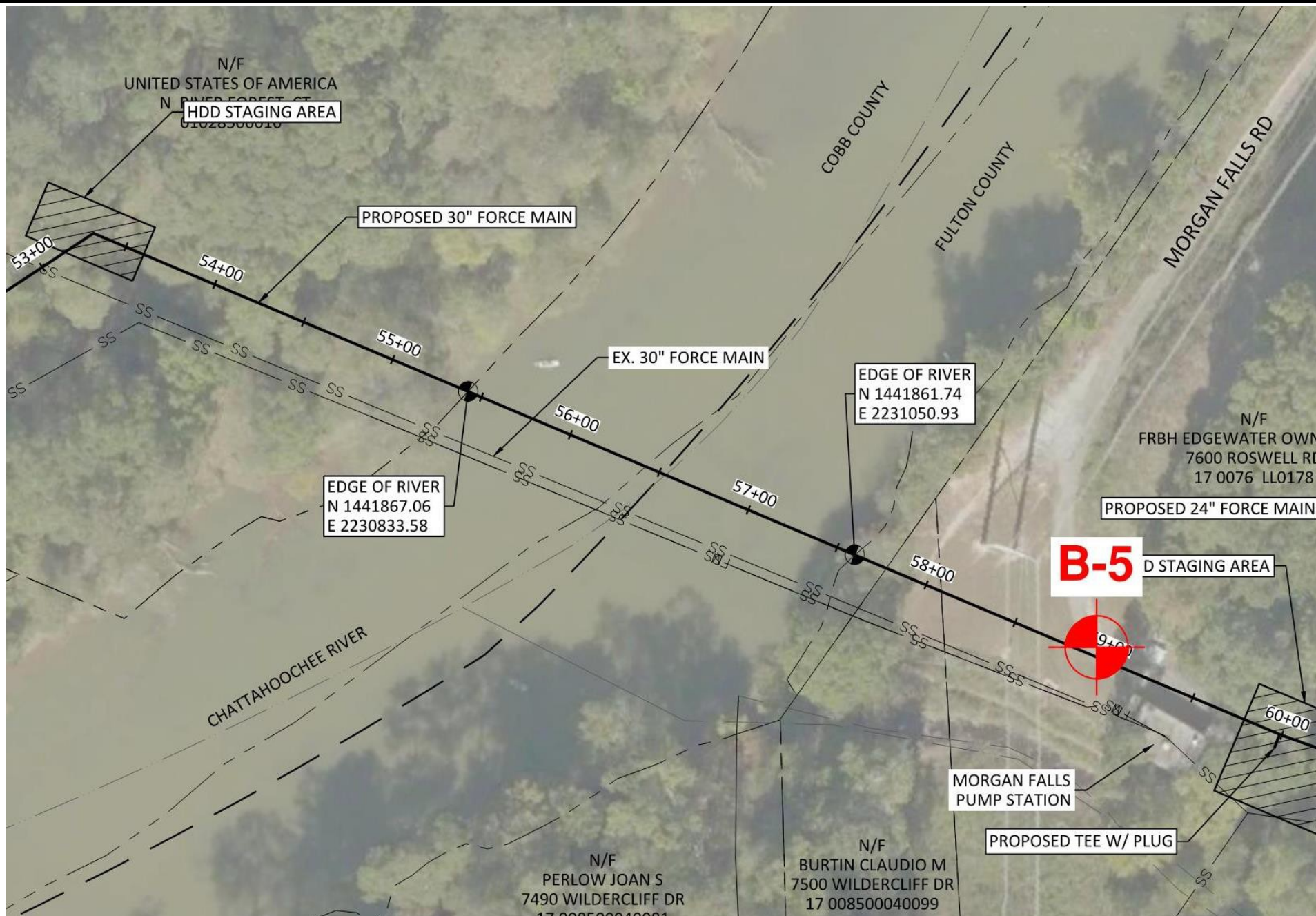
Client:	Freese and Nichols, Inc.
Site:	Fulton-Cobb Diversion Line and Pump Station Project Roswell, Georgia
Title:	Boring Location Plan



Scale:	NTS
Prepared:	SRT
Checked:	RIO
Project No.:	FRENI-18-GA-02753-01

Notes

Client:	Freese and Nichols, Inc.
Site:	Fulton-Cobb Diversion Line and Pump Station Project Sandy Springs, Georgia
Title:	Boring Location Plan



Scale:	NTS
Prepared:	SRT
Checked:	RIO
Project No.:	FRENI-18-GA-02753-01

Notes

Client:	Freese and Nichols, Inc.
Site:	Fulton-Cobb Diversion Line and Pump Station Project Sandy Springs, Georgia
Title:	Boring Location Plan

EXPLORATION PROCEDURES

Standard Penetration Test (SPT) borings

Five (5) SPT borings (designated B-1 through B-5) were performed at the approximate locations indicated on the attached Boring Location Plan (Figure 1). The SPT borings were performed in general accordance with ASTM D 1586. Soil samples obtained during testing were visually evaluated by the Project Engineer and classified according to the visual-manual procedure described in ASTM D 2488. A narrative of field operations is included in The Appendix.

The test locations in the field were determined by the Project Engineer by the use of a handheld GPS unit. The test locations should, therefore, be considered approximate.

Rock Coring

Rock coring was performed below the auger refusal levels in two borings (B-3 and B-5).

Core drilling procedures are utilized to determine the characteristics and continuity of materials below the soil drilling refusal level. The core drilling procedure is performed in general accordance with ASTM designation D 2113-70. Initially, casing is set through the overburden soils or hollow stem augers are utilized to keep the hole from collapsing. Refusal materials are then cored with a diamond-studded bit fastened to the end of a hollow core barrel. This device is rotated at high speeds and is capable of cutting the hardest rock. The cuttings are brought to the surface by circulating water. Rock core samples of the materials penetrated are protected and retained in the inner core barrel. Upon completion of the drill run, the core barrel is brought to the surface and the samples are removed and placed in partitioned boxes. The samples are then returned to our laboratory where the rock is identified and "recovery" and Rock Quality Designation (RQD) are determined.

The ratio of the length of core obtained to the distance drilled is known as the "core recovery", expressed as a percent. The "Rock Quality Designation" (RQD) is the ratio of recovered rock sample in sections four or more inches long to the distance drilled. This designation is generally applied only to samples of NX size or larger and to sample described as moderately hard or harder. The NX size designates a bit which obtains core samples 2-1/8 inches in diameter. The percent recovery and RQD are related to rock soundness and continuity. An RQD ratio of 90 percent or more denotes excellent rock; 75 to 90 percent denotes good rock; 50 to 75 percent denotes fair rock; and 25 to 50 percent denotes poor rock. Hardness terms are based on the following descriptions:

Soft:	May be broken with fingers
Moderately Soft:	May be scratched with a nail, corners and edges may be broken with fingers
Moderately Hard:	Light blow of hammer required to break sample
Hard:	Hard blow of hammer required to break sample
Very Hard:	Rock core rings when struck with hammer

LABORATORY PROCEDURES

Grain Size (Sieve) Analysis with or without Hydrometer

Grain Size Analysis tests were performed to determine the particle size distribution of selected samples tested. The grain size distribution of soils coarser than a number 200 sieve was determined by passing the samples through a standard set of nested sieves. Materials finer than the number 200 sieves were suspended in water and the grain size distribution computed from the time rate of settlement of the different size particles. Air-dried soil passed through a #200 sieve. 50 grams of that must soak in s/c agent for a minimum of 8 hours. Soil is then put in graduated cylinder with a hydrometer. Readings are taken at specified times. A graph is drawn from data. These tests were similar to those described by ASTM D 421 and D 422. The results are included in The Appendix.

Liquid and Plastic Limits (Atterberg Limits)

Liquid Limit and Plastic Limit tests aid in the classification of the soils and provide an indication of the soil behavior with moisture change. The Plasticity Index is bracketed by the Liquid Limit (LL) and the Plastic Limit (PL). The Liquid Limit is the moisture content at which the soil will flow as a heavy viscous fluid and is the upper limit of the plastic range, as determined in accordance with ASTM D 4318. The Plastic Limit is the moisture content at which the soil begins to lose its plasticity, as determined in accordance with ASTM D 4318. The Plasticity Index is the difference between the Liquid Limit and Plastic Limit. The Liquidity Index is the ratio of the difference between the in-place moisture and the plastic limit to the Plasticity Limit. The data obtained are in The Appendix.

Moisture Content

The moisture content was determined for selected soil samples obtained in the split spoon sampler. A representative portion of each sample was weighed and then placed in an oven and dried at 110 degrees Centigrade for at least 15 to 16 hours. After removal from the oven, the soil was again weighed. The weight of the moisture lost during drying thus was determined. From this data, the moisture content of the sample was then calculated as the weight of moisture divided by dry weight of the soil, expressed as a percentage. This test was conducted according to ASTM D 2216. The moisture content results are indicated on the attached boring logs.

Moisture content is a useful index of a soil's compressibility. If the soil is to be used as fill, the moisture content may be compared to the range of water content for which proper compaction may be achieved.

Unconfined Compression Strength (Rock)

The Unconfined Compressive Strength (UCS) of rock cores is evaluated in general accordance with the American Society of Testing and Materials (ASTM) procedure D2938. This method addresses protocols for preparation of the sample, performance of the UCS test, and acquiring and reporting data.

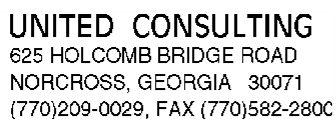
The specimen tested was cylindrical in shape, with a length to diameter ratio of 1.8, and diameter of 1.9 inches. The ends of the specimen were cut parallel to each other and at right angles. The end surfaces were flat and capped with a capping compound to assure a smooth surface.

Once the testing specimen was capped and placed on the base plate of the loading frame, and raised by turning the loading frame switch to up until the samples are securely held between the top and bottom plates. The load was then applied continuously and without shock, at a strain rate of approximately 0.05 in/min. The maximum load sustained by the specimen was recorded. The compressive strength of the specimen was calculated from the maximum compressive load on the specimen and the initial computed cross-sectional area.

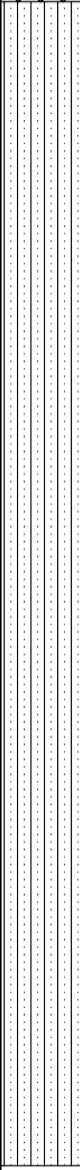







BORING LOG

CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-1 PROJECT
NAME: Fulton-Cobb Diversion Line and Pump Station Project DATE: 11/27/18
JOB NO.: FRENI-18-GA-02753-01 DRILLER: Big Dog Drilling RIG: Diedrich D-50 LOGGED BY: WP

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES						NOTES
				NO.	TYPE	BLOWS/6"	N VALUE	RECOV.	W	
	870	Grass/Topsoil	0							Automatic Hammer Hammer Efficiency=86% to 98% Average Efficiency=93 % SA #1: LL=40%; PI=21% SA #3: LL=34%; PI=6%
		Sand - some clay and silt, trace gravel; firm; gray-brown (Fill) (SC)		1		11-8-8	16	14	16.1	
	- medium dense									
		5	2		4-8-15	23	18	16.6		
	865									
	- firm (SM)		3		15-8-11	19	18	11.8		
		10								
	860									
	Sand - trace silt and rock fragments; dense; tan-brown-white (Residual) (SM)		4		16-24-16	40	16	10.0		
		15								
	855									
	Partially Weathered Rock sampled as: Sand - some silt and rock fragments; very dense; dark brown-gray (SM)									
		20	5		27-35-50/5"	50/5"	14	9.2		
	850									
	- trace silt; tan brown		6		50/3"	50/3"	3	7.3		
		25								
	845									
	- some silt		7		50/2"	50/2"	2			
		30								
	840									
- silty; brown		8		50/5"	50/5"	5	19.2			
	35									
835										
AUGER REFUSAL AT 36 FEET										
830										



CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-2 PROJECT
NAME: Fulton-Cobb Diversion Line and Pump Station Project DATE: 11/27/18
JOB NO.: FRENI-18-GA-02753-01 DRILLER: Big Dog Drilling RIG: Diedrich D-50 LOGGED BY: WP

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES						NOTES
				NO.	TYPE	BLOWS/6"	N VALUE	RECOV.	W	
	870	Grass/Topsoil	0							Automatic Hammer Hammer Efficiency=86% to 98% Average Efficiency=93% SA #1: LL=32; PI=13
		Sand - some clay, silt, and gravel, trace mica, root hair; firm; brown (Fill) (SC)		1		4-7-9	16	16	13.5	
	865	Partially Weathered Rock sampled as: Sand - some silt and rock fragments; very dense; orange-tan (Residual) (SM)		2		15-50/2"	50/2"	8	10.4	SA #4: Non-Plastic
			5							
	860	Sand - some silt, gravel, and mica, trace clay; firm; orange-tan (SM)		3		3-3-15	18	15	38.8	
			10							
	855	- dense; gray		4		8-17-21	38	14	15.4	
			15							
	850	- very dense; dark gray-brown		5		16-23-44	67	18	15.5	
			20							
	845	Partially Weathered Rock sampled as: Sand - some silt and rock fragments; very dense; brown (SM)		6		50/2"	50/2"	2		
			25							
	840	- mostly rock fragments		7		4-10-50/5"	50/5"	2	18.6	
			30							
835	AUGER REFUSAL AT 34 FEET	35							Groundwater was not encountered at the time of drilling. LL=Liquid Limit PI=Plasticity Index	
830		40								



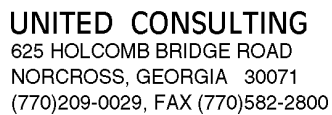
UNITED CONSULTING
625 HOLCOMB BRIDGE ROAD
NORCROSS, GEORGIA 30071
(770)209-0029, FAX (770)582-2800

Sheet 1 of 2

BORING LOG

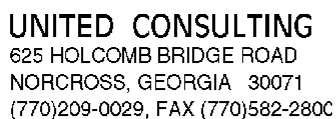
CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-3 PROJECT
NAME: Fulton-Cobb Diversion Line and Pump Station Project DATE: 11/27+11/28 JOB
NO.: FRENI-18-GA-02753-01 DRILLER: Big Dog Drilling RIG: Diedrich D-50 LOGGED BY: WP

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES						NOTES
				NO.	TYPE	BLOWS/6"	N VALUE	RECOV.	W	
	870	Grass/Topsoil	0							Automatic Hammer Hammer Efficiency=86% to 98% Average Efficiency=93% SA #1: LL=30; PI=10
		Sand - some clay and silt, trace mica, root hair, gravel; loose; brown (Fill) (SC)		1		2-3-4	7	12	14.4	
	865		5	2		4-5-5	10	18	18.5	SA #3: Non-Plastic
	860	Sand - some silt and gravel, trace clay; very dense; dark brown-gray (Residual) (SM)	10	3		8-37-35	72	14	4.8	No Recovery AUGER REFUSAL AT 15 FEET Groundwater was not encountered at the time of drilling
	855	Partially Weathered Rock	15	4		50/0"	50/0"	0		Run 1: 15' to 25' Core Time: 26 Mins
		Gray moderately weak highly weathered Gneiss								
			20			REC=15% RQD=0%		18"		
	845	Brown moderately hard moderately weathered Gneiss	25							UCS Test from 29'4" to 29'8" UCS=4663.8 psi Run 2: 25' to 35' Core Time: 47 Mins
		Gray-white moderately hard moderately weathered Gneiss								
			30			REC=55% RQD=13%		66"		
	835	Gray-white moderately hard moderately weathered Garnet Gneiss	35							Run 3: 35' to 45' Core Time: 35 Mins
	830		40			REC=63% RQD=29%		75"		




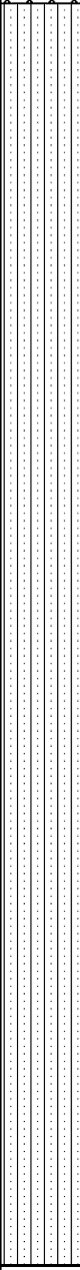









CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-3 PROJECT
NAME: Fulton-Cobb Diversion Line and Pump Station Project DATE: 11/27+11/28 JOB
NO.: FRENI-18-GA-02753-01 DRILLER: Big Dog Drilling RIG: Diedrich D-50 LOGGED BY: WP

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CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-4 PROJECT
NAME: Fulton-Cobb Diversion Line and Pump Station Project DATE: 11/29/18
JOB NO.: FRENI-18-GA-02753-01 DRILLER: Big Dog Drilling RIG: Diedrich D-50 LOGGED BY: WP

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES						NOTES	
				NO.	TYPE	BLOWS/6"	N VALUE	RECOV.	W		
	895	4" Asphalt+6" GAB	0							Automatic Hammer Hammer Efficiency=86% to 98% Average Efficiency=93% SA #1: LL=36; PI=13	
		Clay - sandy, some silt, trace gravel; firm; red-brown (Fill) (CL) - silty; soft; brown		1		4-4-4	8	16	17.9		
			5	2		2-1-2	3	12	21.8		
	890										
	885	Sand - silty, micaceous; medium dense; brown (Residual) (SM) - some silt, trace clay and gravel; medium dense; tan-brown		3		8-5-6	11	18	21.1	SA #4: Non-Plastic	
			10								
	880			4		8-8-16	24	18	13.6		
			15								
	875		- firm; white intrusions		5		8-8-7	15	17		16.3
				20							
870	Partially Weathered Rock sampled as: Sand - silty, some mica, trace clay and rock fragments; very dense; tan-brown (SM)		6		18-50/4"	50/4"	10	20.7	SA #7: Non-Plastic		
		25									
865	Sand - some silt and mica, trace clay and gravel; dense; gray-brown- white (SM)		7		27-18-30	48	16	14.5			
		30									
860	Partially Weathered Rock sampled as: Sand - silty, some mica, trace clay and rock fragments; very dense; brown gray (SM) - some clay, trace rock fragments; tan-brown		8		50/3"	50/3"	3				
		35									
855			9		50/2"	50/2"	2				
		40									

BORING LOG

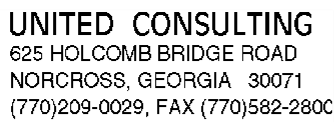
CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-4 PROJECT
NAME: Fulton-Cobb Diversion Line and Pump Station Project DATE: 11/29/18
JOB NO.: FRENI-18-GA-02753-01 DRILLER: Big Dog Drilling RIG DIEDRICH D-50 LOGGED BY: WP

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BORING LOG

CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-5 PROJECT
NAME: Fulton-Cobb Diversion Line and Pump Station Project DATE: 11/29+11/30 JOB
NO.: FRENI-18-GA-02753-01 DRILLER: Big Dog Drilling RIG: Diedrich D-50 LOGGED BY: WP

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CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-5 PROJECT
NAME: Fulton-Cobb Diversion Line and Pump Station Project DATE: 11/29+11/30 JOB
NO.: FRENI-18-GA-02753-01 DRILLER: Big Dog Drilling RIG: Diedrich D-50 LOGGED BY: WP

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Photo # 1: B-3 – 15 feet to 25 feet



Photo # 2: B-3 – 25 feet to 35 feet



Photo # 3: B-3 – 35 feet to 45 feet



Photo # 4: B-3 – 45 feet to 55 feet



Photo # 5: B-3 – 55 feet to 60 feet



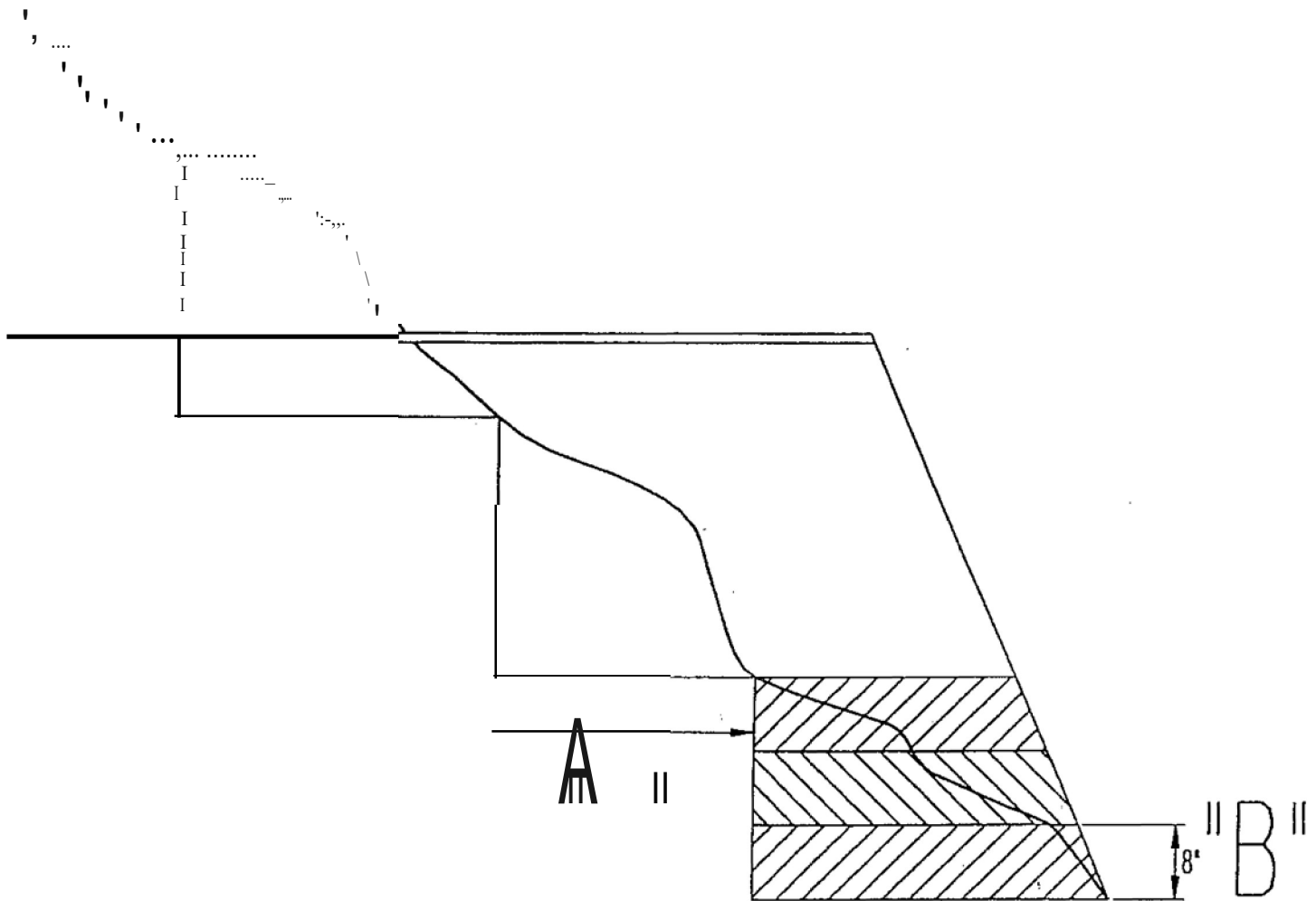
Photo # 6: B-5 – 30 feet to 40 feet



Photo # 7: B-5 – 40 feet to 50 feet



Photo # 8: B-5 – 50 feet to 60 feet



1. THE ABOVE DIAGRAM ILLUSTRATES A TYPICAL BENCHING FOR PLACEMENT OF FILL ON A SLOPING SURFACE.
2. THE DIAGRAM SHOWS THAT BEFORE FILL IS PLACED, THE FIRST STEP IS CUT INTO THE SLOPE A MAXIMUM DISTANCE OF ABOUT 8 FEET 'A' (ABOUT $\frac{3}{4}$ THE WIDTH OF USUAL D-8 BULLDOZER BLADE). SUCCESSIVE LAYERS OF FILL ARE THEN PLACED. BEFORE FINAL LAYER IS PLACED, THE SECOND STEP IS CUT 8 FEET INTO THE SLOPE AND SUCCESSIVE LAYERS ARE AGAIN PLACED.
3. SELECT FILL MATERIAL SHOULD BE PLACED IN 8 INCH LIFTS AND COMPACTED TO THE SPECIFIED DENSITY ('B'),

**FULTON-COBB DIVERSION LINE AND PUMP STATION PROJECT
SUMMARY OF SOIL DATA**

Sample Identification		Sample Type	Sample Depth	Soil Classification	As R'cd Moisture %	Atterberg Limits				Grain Size Distribution			Compaction		Gs	Organic Content %	Unit Weight		Permeability (cm/sec)	Additional Tests Conducted (See Notes)
										% Finer No. 4 Sieve	% Finer No. 200 Sieve	% Finer .005 mm	Maximum Dry Density (lb/cuft)	Optimum Moisture %			Moisture %	Dry (lb/cuft)		
Borehole Number	Sample ID					L.L.	P.L.	P.I.	L.I.											
B-1	1	Bag	0-1.5	SC	16.1	40	19	21	-0.14	97.4	48.8	36.0	-	-	-	-	-	-	-	-
B-1	2	Bag	3.5-5	-	16.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-1	3	Bag	8.5-10	SM	11.8	34	28	6	-2.70	74.8	28.3	12.0	-	-	-	-	-	-	-	-
B-1	4	Bag	13.5-15	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-1	5	Bag	18.5-20	-	9.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-1	6	Bag	23.5-25	-	7.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-1	8	Bag	33.5-35	-	19.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-2	1	Bag	0-1.5	SC	13.5	32	19	13	-0.42	87.6	37.4	21.0	-	-	-	-	-	-	-	-
B-2	2	Bag	3.5-5	-	10.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-2	3	Bag	8.5-10	-	38.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-2	4	Bag	13.5-15	SC	15.4	NV	NP	NP	-	78.5	26.5	5.0	-	-	-	-	-	-	-	-
B-2	5	Bag	18.5-20	-	15.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-2	7	Bag	28.5-30	-	18.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-3	1	Bag	0-1.5	SC	14.4	30	20	10	-0.56	91.4	44.3	22.0	-	-	-	-	-	-	-	-
B-3	2	Bag	3.5-5	-	18.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-3	3	Bag	8.5-10	SM	4.8	NV	NP	NP	-	64.8	16.9	3.0	-	-	-	-	-	-	-	-
B-4	1	Bag	0-1.5	CL	17.9	36	23	13	-0.39	99.9	50.3	25.0	-	-	-	-	-	-	-	-
B-4	2	Bag	3.5-5	-	21.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

ABBREVIATIONS: LIQUID LIMIT (LL)
PLASTIC LIMIT (PL)
PLASTICITY INDEX (PI)
LIQUIDITY INDEX (LI)
SPECIFIC GRAVITY (Gs)
MOISTURE (Mc)
NP - NO PLASTICITY
NV - NO VALUE

NOTES: T = TRIAXIAL TEST
U = UNCONFIRMED COMPRESSION TEST
C = CONSOLIDATION TEST
DS = DIRECT SHEAR TEST
O = ORGANIC CONTENT
P = pH
Vc = Volume /shrinkage change

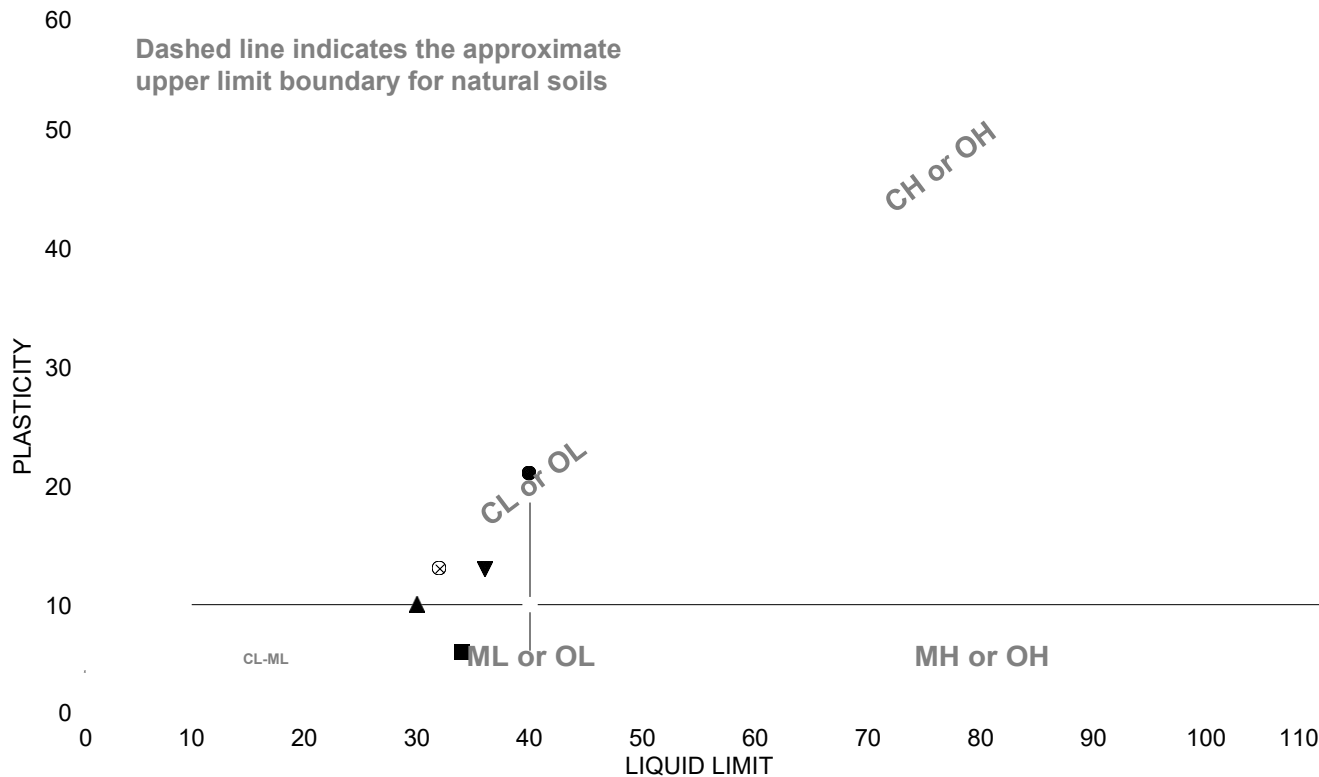
**FULTON-COBB DIVERSION LINE AND PUMP STATION PROJECT
SUMMARY OF SOIL DATA**

Sample Identification Borehole Sample		Sample Type	Sample Depth	Soil Classi- fication	As R'cd Moisture %	Atterberg Limits				Grain Size Distribution			Compaction		Gs	Organic Contant %	Unit Weight		Permeability (cm/sec)	Additional Tests Conducted (See Notes)
										% Finer No. 4 Sieve	% Finer No. 200 Sieve	% Finer .005 mm	Maximum Dry Density (lb/cuft)	Optimum Moisture %			Moisture %	Dry (lb/cuft)		
Number	ID					L.L.	P.L.	P.I.	L.I.											
B-4	3	Bag	8.5-10	-	21.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B-4	4	Bag	13.5-15	SM	13.6	NV	NP	NP	-	98.6	21.6	5.0	-	-	-	-	-	-	-	
B-4	5	Bag	18.5-20	-	16.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B-4	6	Bag	23.5-25	-	20.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B-4	7	Bag	28.5-30	SM	14.5	NV	NP	NP	-	99.6	32.0	8.0	-	-	-	-	-	-	-	
B-4	11	Bag	48.5-50	SM	10.3	NV	NP	NP	-	96.0	29.5	7.0	-	-	-	-	-	-	-	
B-5	1	Bag	0-1.5	SM	15.2	NV	NP	NP	-	87.9	26.0	15.0	-	-	-	-	-	-	-	
B-5	2	Bag	3.5-5	-	11.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B-5	3	Bag	8.5-10	-	19.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B-5	4	Bag	13.5-15	ML	39.6	40	30	10	0.96	100.0	83.5	36.0	-	-	-	-	-	-	-	
B-5	5	Bag	18.5-20	-	51.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B-5	6	Bag	23.5-25	-	15.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

ABBREVIATIONS: LIQUID LIMIT (LL)
PLASTIC LIMIT (PL)
PLASTICITY INDEX (PI)
LIQUIDITY INDEX (LI)
SPECIFIC GRAVITY (Gs)
MOISTURE (Mc)
NP - NO PLASTICITY
NV - NO VALUE

NOTES: T = TRIAXIAL TEST
U = UNCONFIRMED COMPRESSION TEST
C = CONSOLIDATION TEST
DS = DIRECT SHEAR TEST
O = ORGANIC CONTENT
P = pH
Vc = Volume /shrinkage change

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●		B-1	0-1.5 ft	16.1	19	40	21	SC
■		B-1	8.5-10.0 ft	11.8	28	34	6	SM
▲		B-3	0-1.5 ft	14.4	20	30	10	SC
◆		B-3	8.5-10.0 ft	4.8	NP	NV	NP	SM
▼		B-4	0-1.5 ft	17.9	23	36	13	CL
*		B-4	28.5-30.0 ft	14.5	NP	NV	NP	SM
⊕		B-4	48.5-50.0 ft	10.3	NP	NV	NP	SM
⊕		B-5	13.5-15.0 ft	39.6	30	40	10	ML
⊗		B-2	0-1.5 ft	13.5	19	32	13	SC
⊗		B-2	13.5-15.0 ft	15.4	NP	NV	NP	SM

United Consulting

Norcross, Georgia

Client: FREESE AND NICHOLS, INC.

Project: FULTON-COBB DIVERSION LINE AND PUMP STATION

Project No.: FREN18GA0275301

Figure

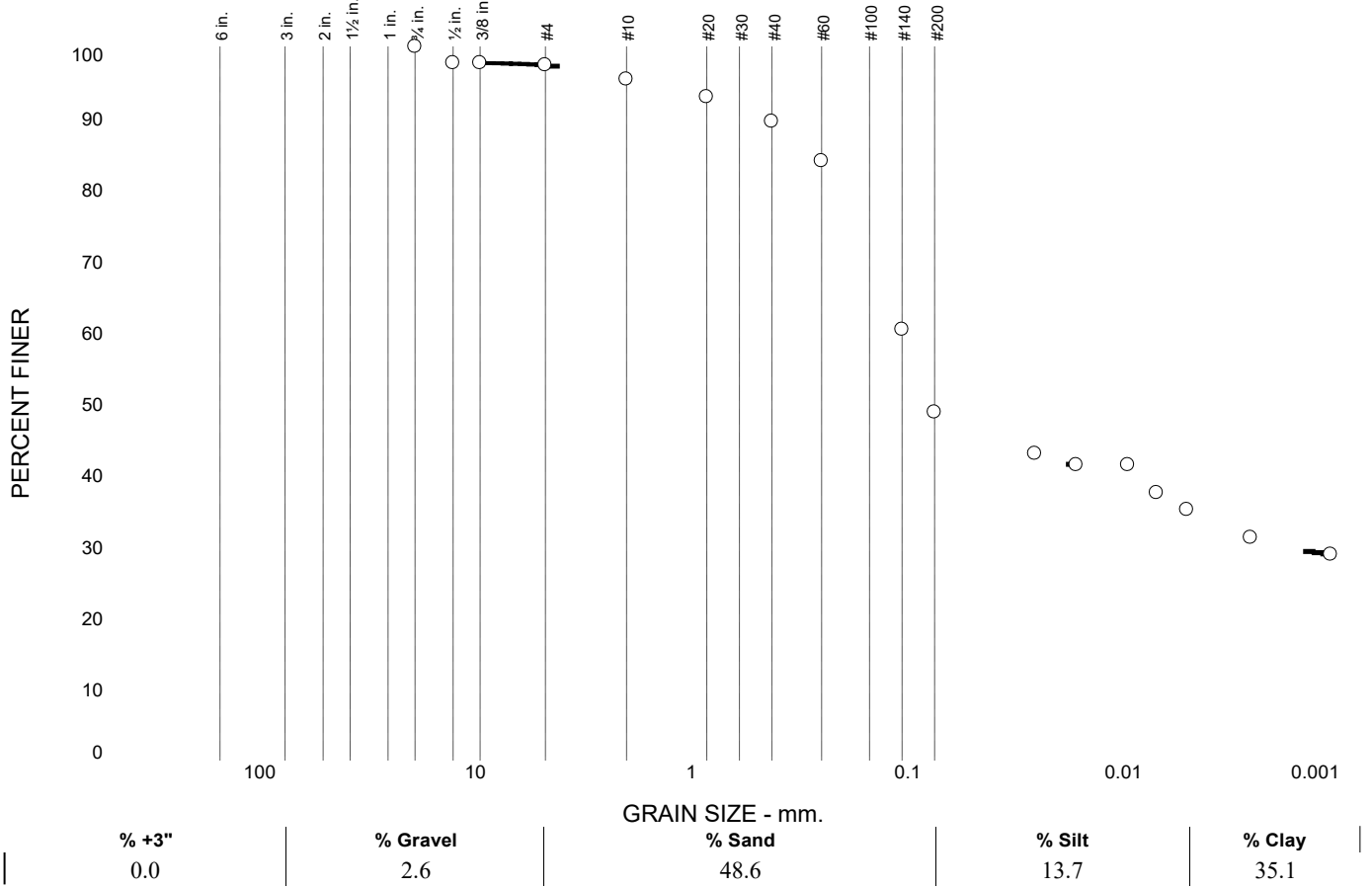
Figure 1 is a Plasticity Chart (U.S. Customary Units) showing the relationship between Liquid Limit (X-axis, 0 to 110) and Plasticity (Y-axis, 0 to 60). The chart is divided into regions for soil classification based on the Unified Soil Classification System (USCS). The regions are labeled as follows:

- CL-ML**: Low Plasticity Clay to Silty Clay (Liquid Limit < 25, Plasticity < 10).
- ML or OL**: Medium Plasticity Clay to Silty Clay (Liquid Limit > 25, Plasticity < 10).
- CH or OH**: High Plasticity Clay to Silty Clay (Liquid Limit > 25, Plasticity > 10).
- MH or OH**: Medium to High Plasticity Clay to Silty Clay (Liquid Limit > 70, Plasticity < 10).

A dashed line indicates the approximate upper limit boundary for natural soils, separating the regions of high plasticity (CH or OH) from the regions of medium plasticity (ML or OL and MH or OH).

Figure

Particle Size Distribution Report



SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75	100.0		
0.5	97.7		
0.375	97.7		
#4	97.4		
#10	95.4		
#20	93.0		
#40	89.5		
#60	84.0		
#140	60.4		
#200	48.8		

* (no specification provided)

Material Description

Sand, some clay and silt, trace gravel, brown

Atterberg Limits

PL= 19

LL= 40

PI= 21

Coefficients

D₉₀= 0.4573

D₈₅= 0.2667

D₆₀= 0.1049

D₅₀= 0.0783

D₃₀= 0.0019

D₁₅=

D₁₀=

C_u=

C_c=

Classification

USCS= SC

AASHTO= A-6(7)

Remarks

Sample Number: B-1

Depth: 0-1.5 ft

Date: 12/7/18

United Consulting

Client: FREESE AND NICHOLS, INC.

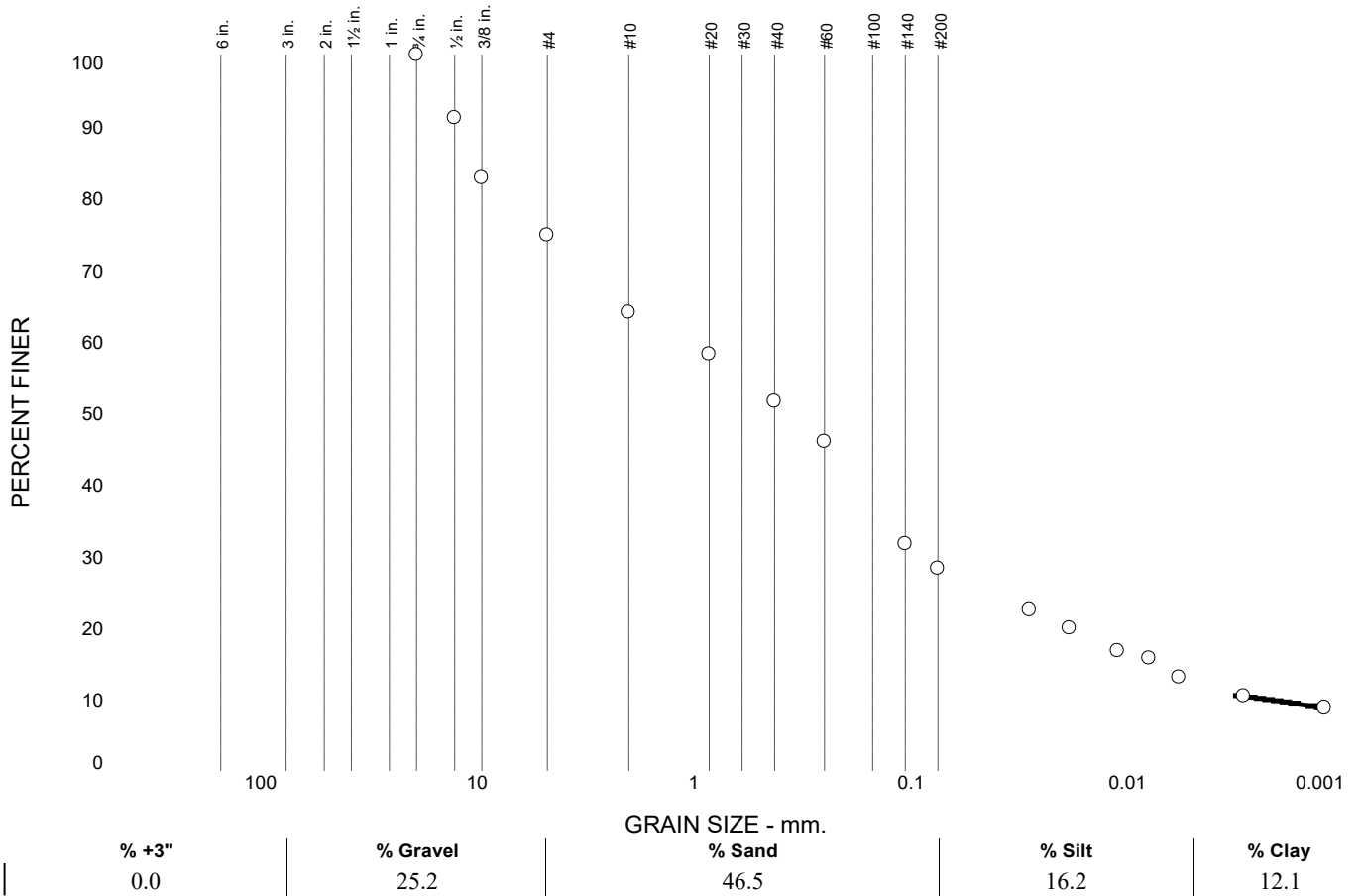
Project: FULTON-COBB DIVERSION LINE AND PUMP STATION

Norcross, Georgia

Project No: FREN18GA0275301

Figure

Particle Size Distribution Report



SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75	100.0		
0.5	91.2		
0.375	82.8		
#4	74.8		
#10	64.0		
#20	58.2		
#40	51.6		
#60	46.0		
#140	31.7		
#200	28.3		

* (no specification provided)

Material Description

Sand, some gravel, silt and clay, brown

Atterberg Limits

PL= 28

LL= 34

PI= 6

Coefficients

D₉₀= 12.1903

D₈₅= 10.3289

D₆₀= 1.1324

D₅₀= 0.3588

D₃₀= 0.0913

D₁₅= 0.0072

D₁₀= 0.0023

C_u= 501.04

C_c= 3.26

Classification

USCS= SM

AASHTO= A-2-4(0)

Remarks

Sample Number: B-1

Depth: 8.5-10.0 ft

Date: 12/7/18

United Consulting

Client: FREESE AND NICHOLS, INC.

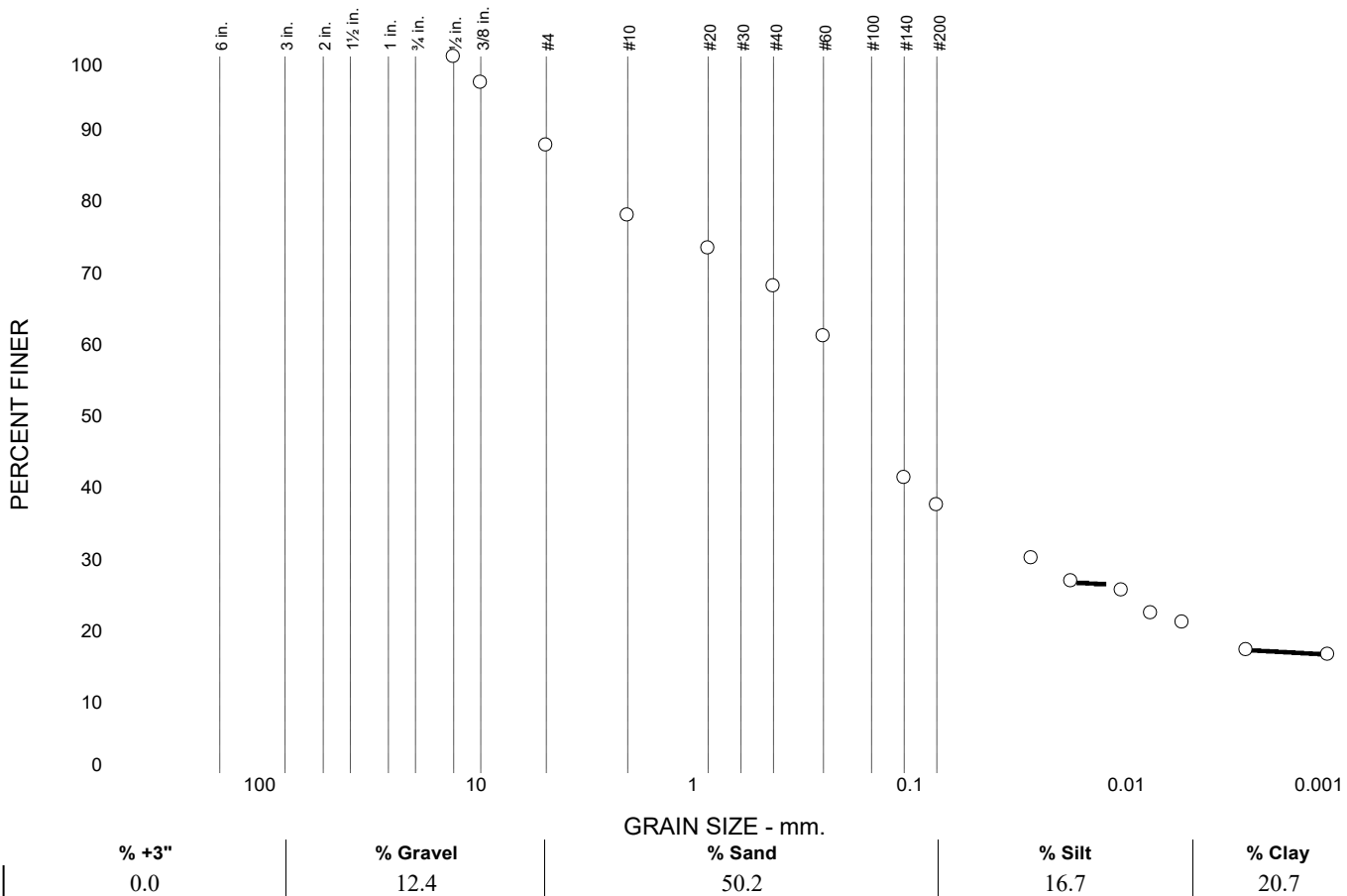
Project: FULTON-COBB DIVERSION LINE AND PUMP STATION

Norcross, Georgia

Project No: FREN18GA0275301

Figure

Particle Size Distribution Report



SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.5	100.0		
0.375	96.4		
#4	87.6		
#10	77.9		
#20	73.3		
#40	68.0		
#60	61.0		
#140	41.2		
#200	37.4		

* (no specification provided)

Material Description

Sand, some clay, silt and gravel, brown

Atterberg Limits

PL= 19 LL= 32 PI= 13

Coefficients

D90= 5.7231 D85= 3.8622 D60= 0.2378
D50= 0.1581 D30= 0.0274 D15=
D10= Cu= Cc=

Classification

USCS= SC AASHTO= A-6(1)

Remarks

Sample Number: B-2 Depth: 0-1.5 ft

Date: 12/7/18

United Consulting

Client: FREESE AND NICHOLS, INC.

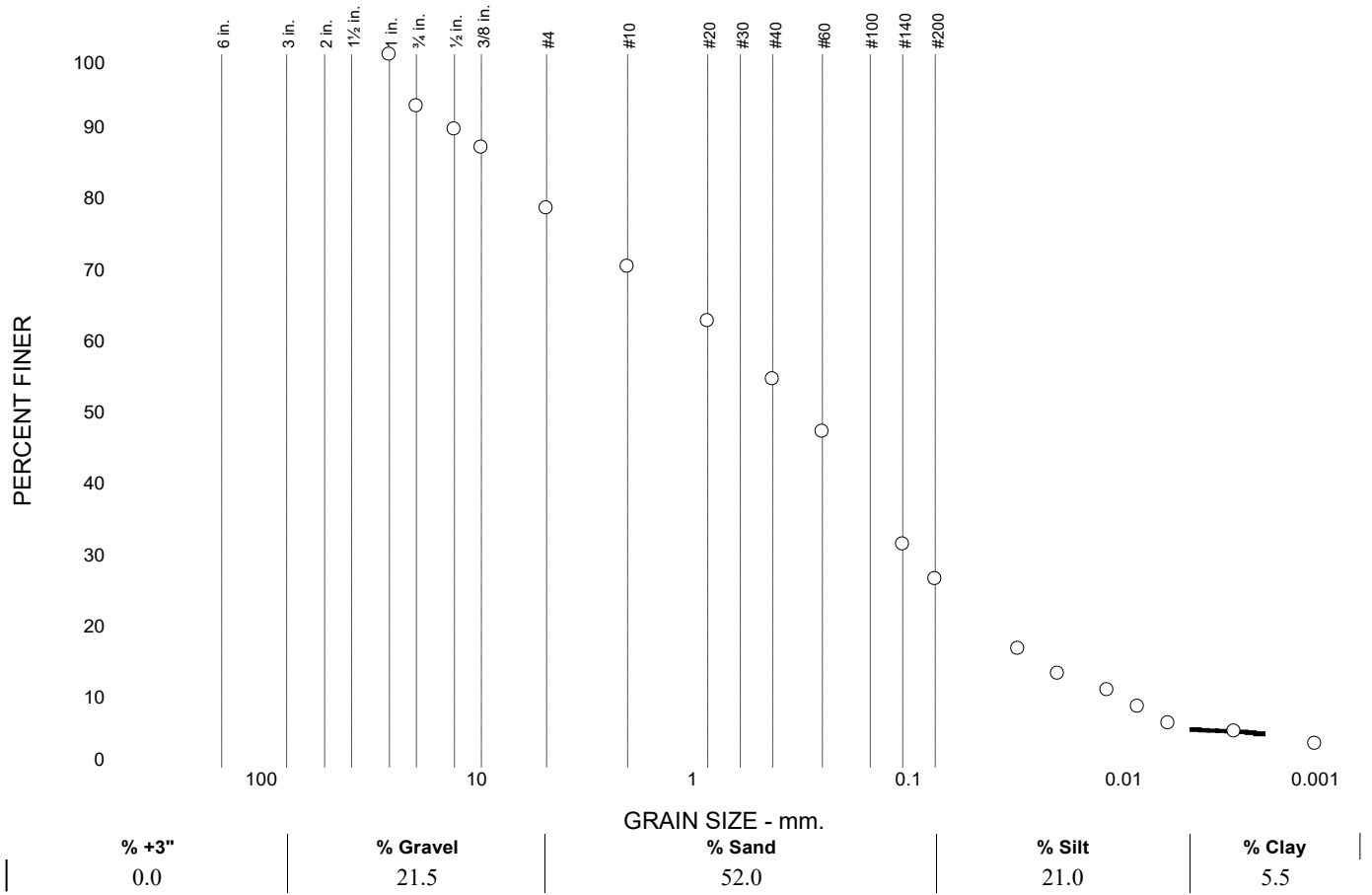
Project: FULTON-COBB DIVERSION LINE AND PUMP STATION

Norcross, Georgia

Project No: FREN18GA0275301

Figure

Particle Size Distribution Report



SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
0.75	92.8		
0.5	89.5		
0.375	87.0		
#4	78.5		
#10	70.3		
#20	62.6		
#40	54.5		
#60	47.2		
#140	31.4		
#200	26.5		

* (no specification provided)

Material Description

Sand, some gravel and silt, trace clay, brown

Atterberg Limits

PL= NP

LL= NV

PI= NP

Coefficients

D₉₀= 13.9588

D₈₅= 8.0459

D₆₀= 0.6685

D₅₀= 0.3014

D₃₀= 0.0971

D₁₅= 0.0258

D₁₀= 0.0104

C_u= 64.35

C_c= 1.36

Classification

USCS= SM

AASHTO= A-2-4(0)

Remarks

Sample Number: B-2

Depth: 13.5-15.0 ft

Date: 12/7/18

United Consulting

Client: FREESE AND NICHOLS, INC.

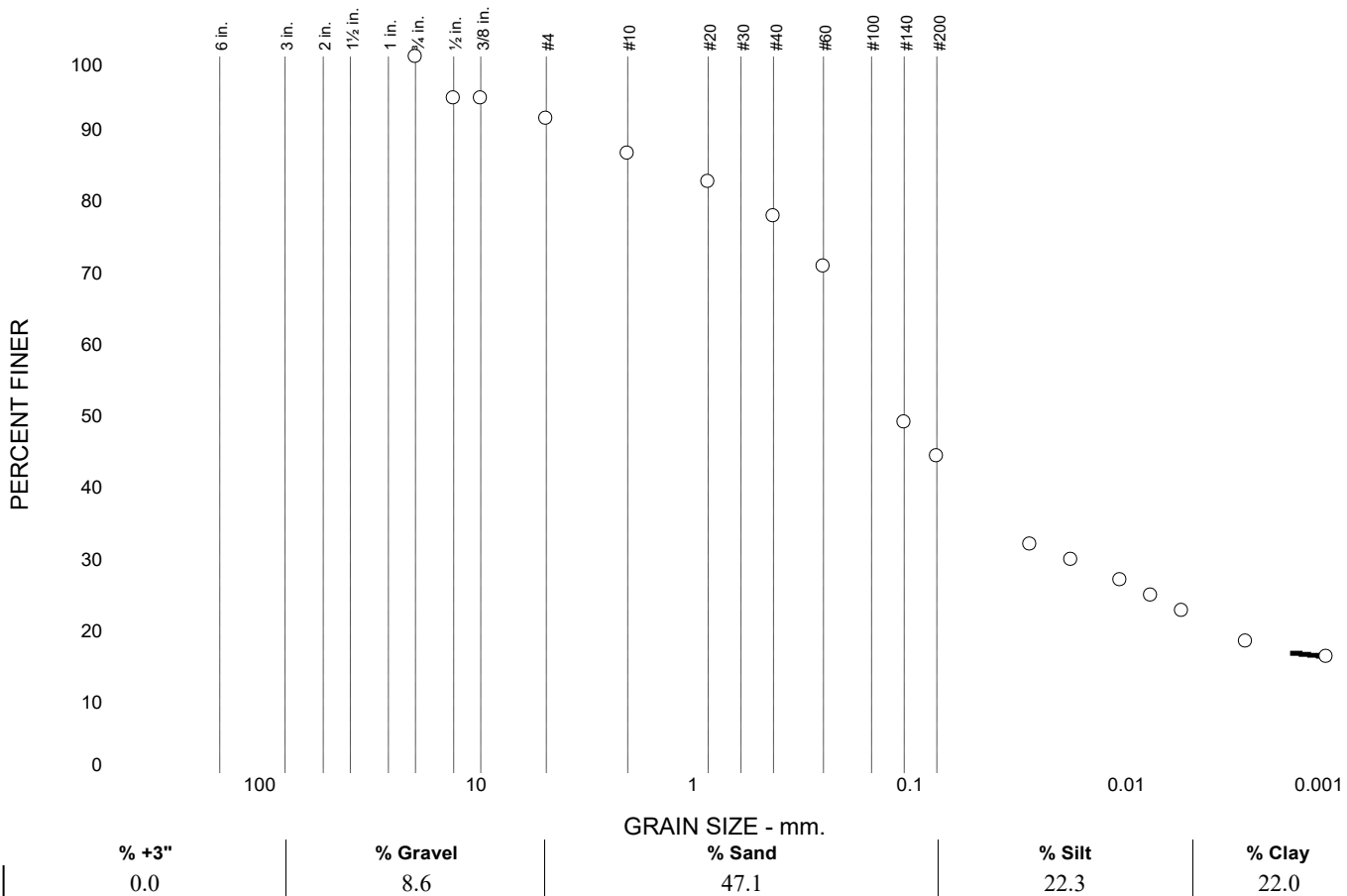
Project: FULTON-COBB DIVERSION LINE AND PUMP STATION

Norcross, Georgia

Project No: FREN18GA0275301

Figure

Particle Size Distribution Report



SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75	100.0		
0.5	94.2		
0.375	94.2		
#4	91.4		
#10	86.5		
#20	82.5		
#40	77.8		
#60	70.7		
#140	49.0		
#200	44.3		

Material Description

Sand, some silt and clay, trace gravel, brown

Atterberg Limits

PL= 20 LL= 30 PI= 10

Coefficients

D₉₀= 3.8106 D₈₅= 1.4334 D₆₀= 0.1652
D₅₀= 0.1118 D₃₀= 0.0189 D₁₅=
D₁₀= C_u= C_c=

Classification

USCS= SC AASHTO= A-4(1)

Remarks

* (no specification provided)

Sample Number: B-3 Depth: 0-1.5 ft

Date: 12/7/18

United Consulting

Client: FREESE AND NICHOLS, INC.

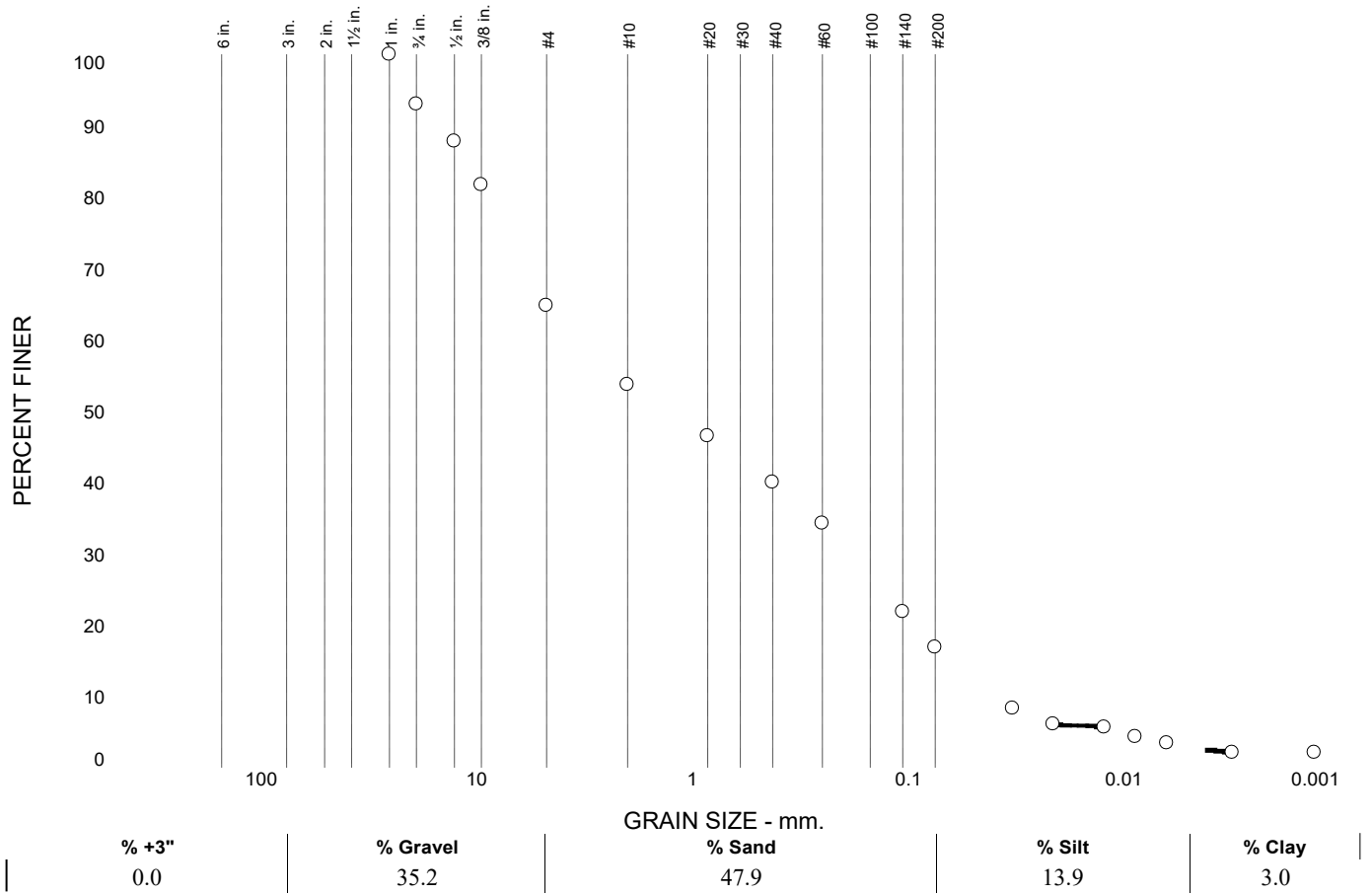
Project: FULTON-COBB DIVERSION LINE AND PUMP STATION

Norcross, Georgia

Project No: FREN18GA0275301

Figure

Particle Size Distribution Report



SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
0.75	93.0		
0.5	87.8		
0.375	81.7		
#4	64.8		
#10	53.7		
#20	46.5		
#40	40.0		
#60	34.2		
#140	21.9		
#200	16.9		

* (no specification provided)

Material Description

Sand, some gravel and silt, trace clay, brown

Atterberg Limits

PL= NP

LL= NV

PI= NP

Coefficients

D₉₀= 15.1094

D₈₅= 10.9487

D₆₀= 3.5821

D₅₀= 1.2872

D₃₀= 0.1823

D₁₅= 0.0648

D₁₀= 0.0403

C_u= 88.89

C_c= 0.23

Classification

USCS= SM

AASHTO= A-1-b

Remarks

Sample Number: B-3

Depth: 8.5-10.0 ft

Date: 12/7/18

United Consulting

Client: FREESE AND NICHOLS, INC.

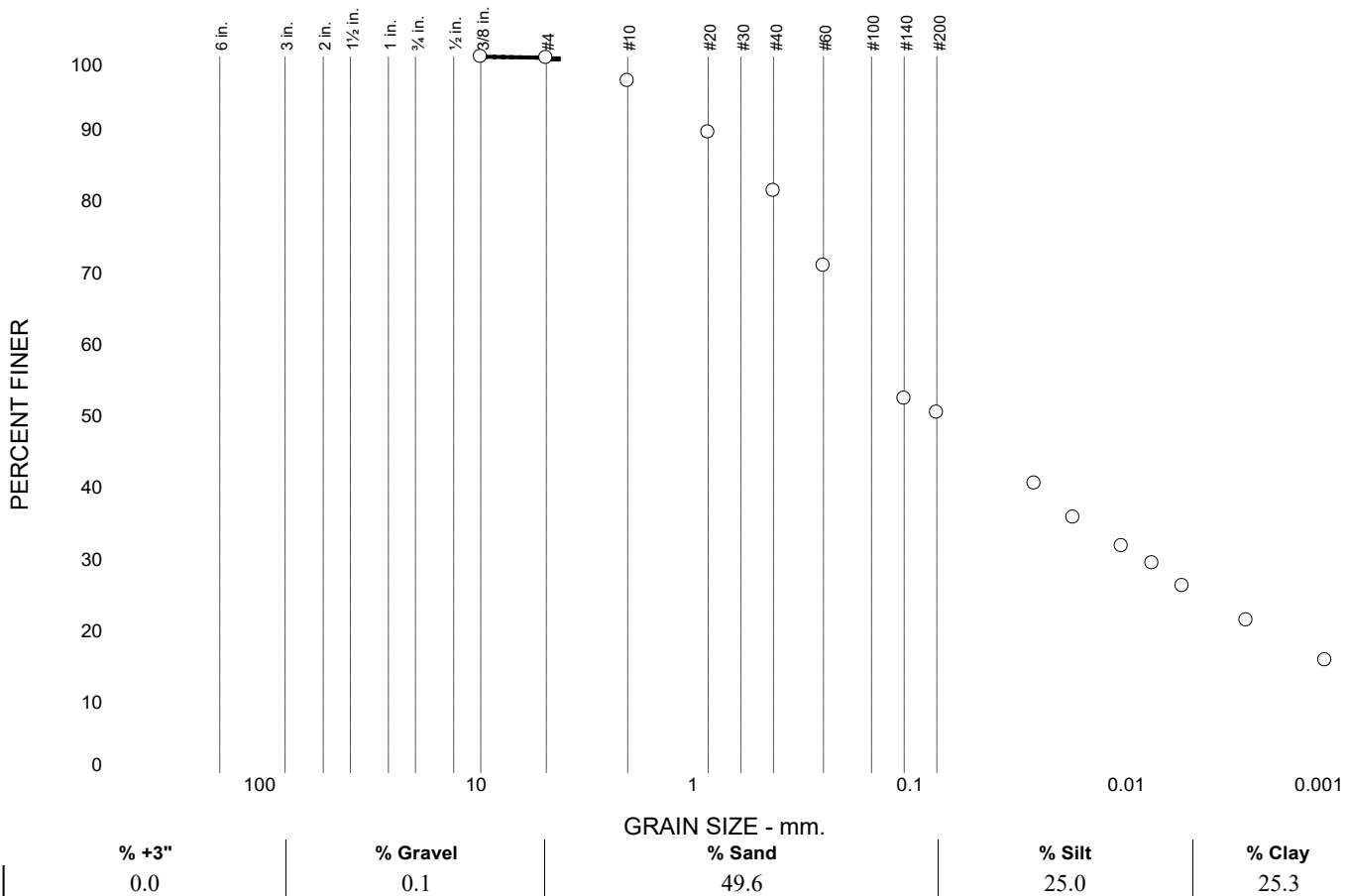
Project: FULTON-COBB DIVERSION LINE AND PUMP STATION

Norcross, Georgia

Project No: FREN18GA0275301

Figure

Particle Size Distribution Report



SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375	100.0		
#4	99.9		
#10	96.6		
#20	89.5		
#40	81.3		
#60	70.9		
#140	52.3		
#200	50.3		

Material Description

Clay- sandy, some silt, trace gravel, red brown

Atterberg Limits

PL= 23 LL= 36 PI= 13

Coefficients

D90= 0.8982 D85= 0.5572 D60= 0.1619
D50= 0.0700 D30= 0.0082 D15=
D10= Cu= Cc=

Classification

USCS= CL AASHTO= A-6(4)

Remarks

* (no specification provided)

Sample Number: B-4 Depth: 0-1.5 ft

Date: 12/7/18

United Consulting

Client: FREESE AND NICHOLS, INC.

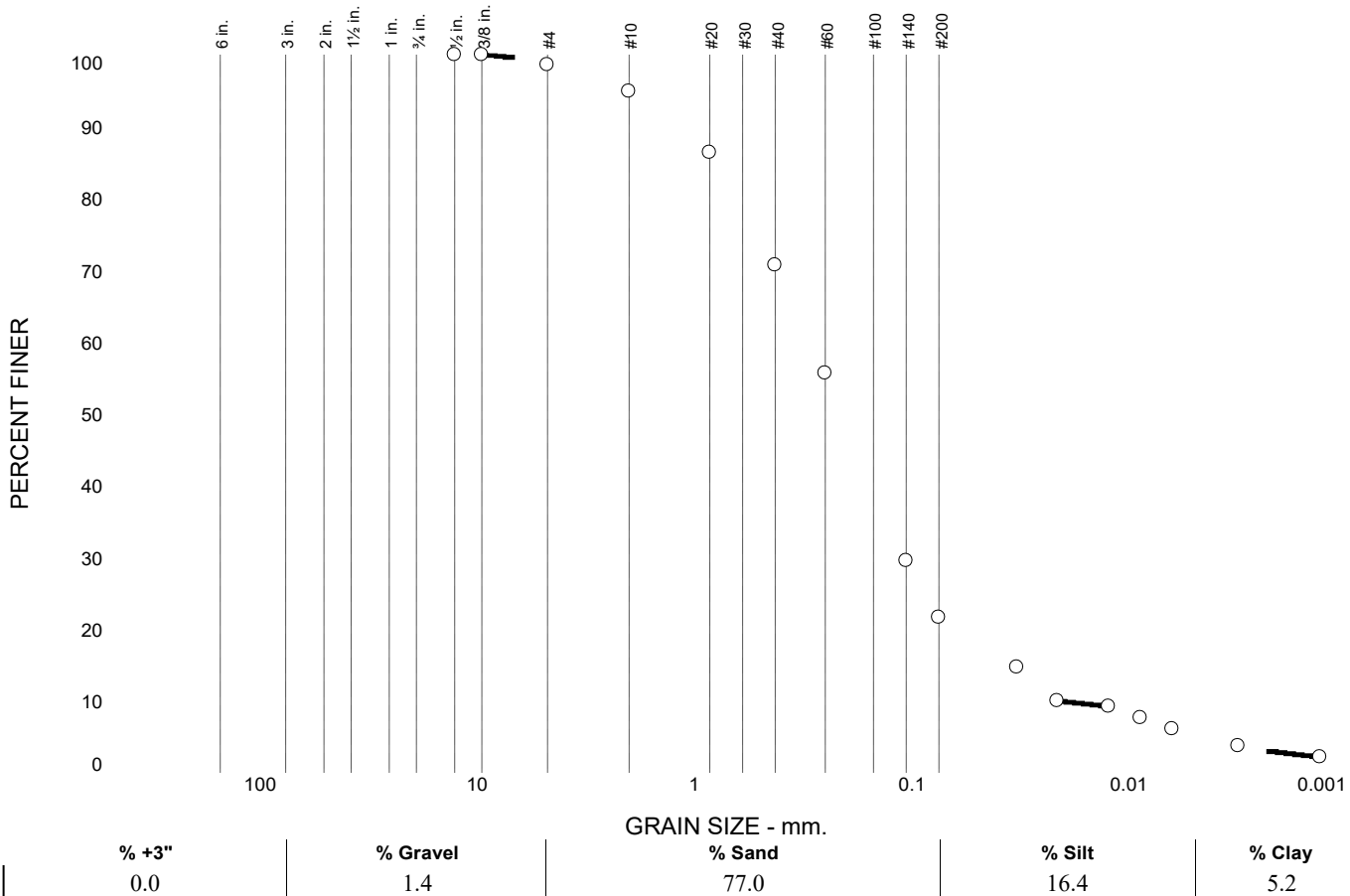
Project: FULTON-COBB DIVERSION LINE AND PUMP STATION

Norcross, Georgia

Project No: FREN18GA0275301

Figure

Particle Size Distribution Report



SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.5	100.0		
0.375	100.0		
#4	98.6		
#10	94.9		
#20	86.4		
#40	70.7		
#60	55.7		
#140	29.5		
#200	21.6		

* (no specification provided)

Material Description

Sand, some silt, trace clay and gravel, tanish brown

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D90= 1.0943 D85= 0.7855 D60= 0.2893
D50= 0.2082 D30= 0.1078 D15= 0.0337
D10= 0.0210 Cu= 13.80 Cc= 1.92

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

Sample Number: B-4 Depth: 13.5-15.0 ft

Date: 12/7/18

United Consulting

Client: FREESE AND NICHOLS, INC.

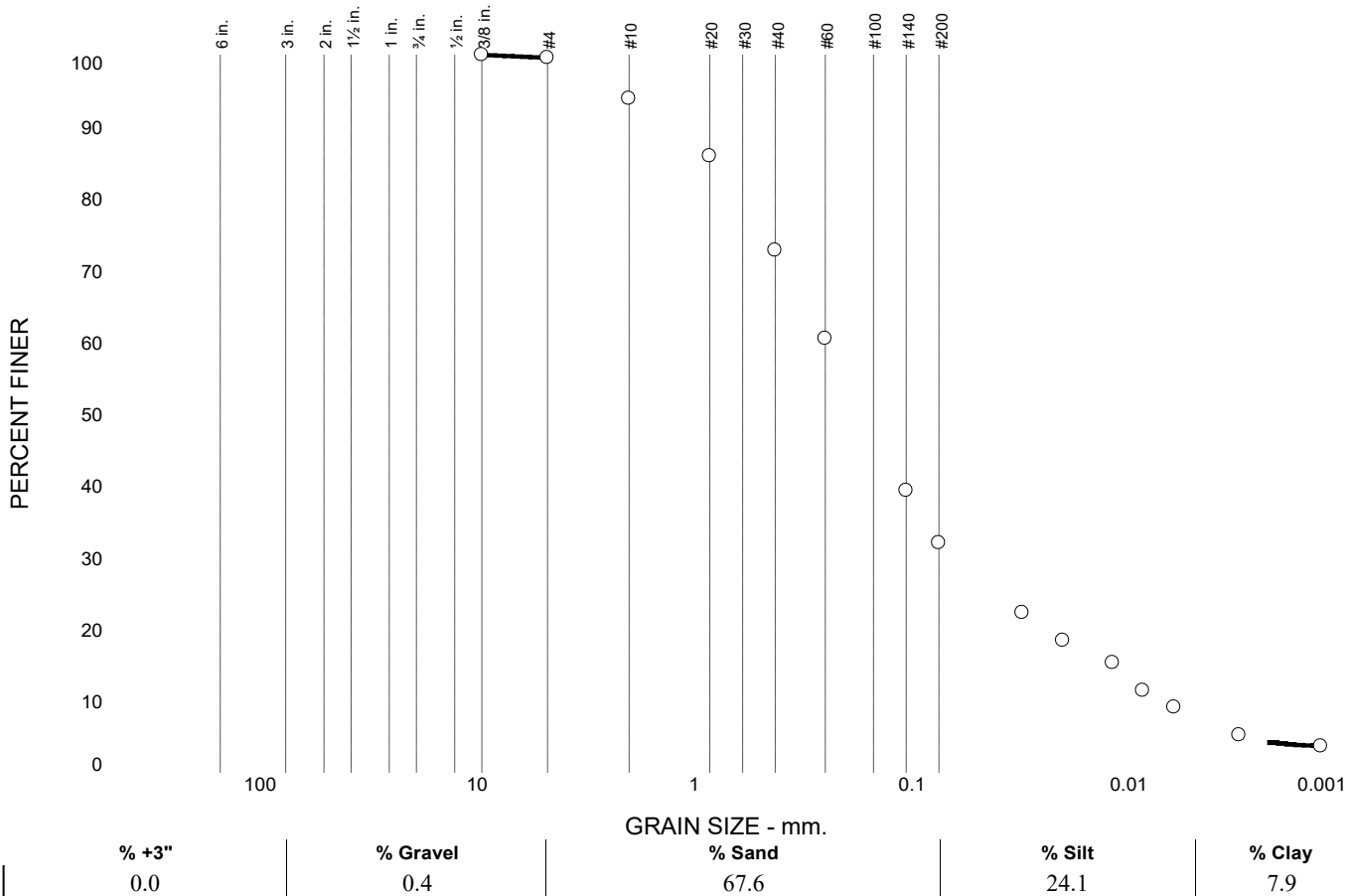
Project: FULTON-COBB DIVERSION LINE AND PUMP STATION

Norcross, Georgia

Project No: FREN18GA0275301

Figure

Particle Size Distribution Report



SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375	100.0		
#4	99.6		
#10	93.9		
#20	85.9		
#40	72.8		
#60	60.5		
#140	39.3		
#200	32.0		

Material Description

Sand, some silt, trace clay and gravel, tanish brown

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D90= 1.2126 D85= 0.7989 D60= 0.2450
D50= 0.1641 D30= 0.0661 D15= 0.0115
D10= 0.0072 Cu= 34.06 Cc= 2.48

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

* (no specification provided)

Sample Number: B-4 Depth: 28.5-30.0 ft

Date: 12/7/18

United Consulting

Client: FREESE AND NICHOLS, INC.

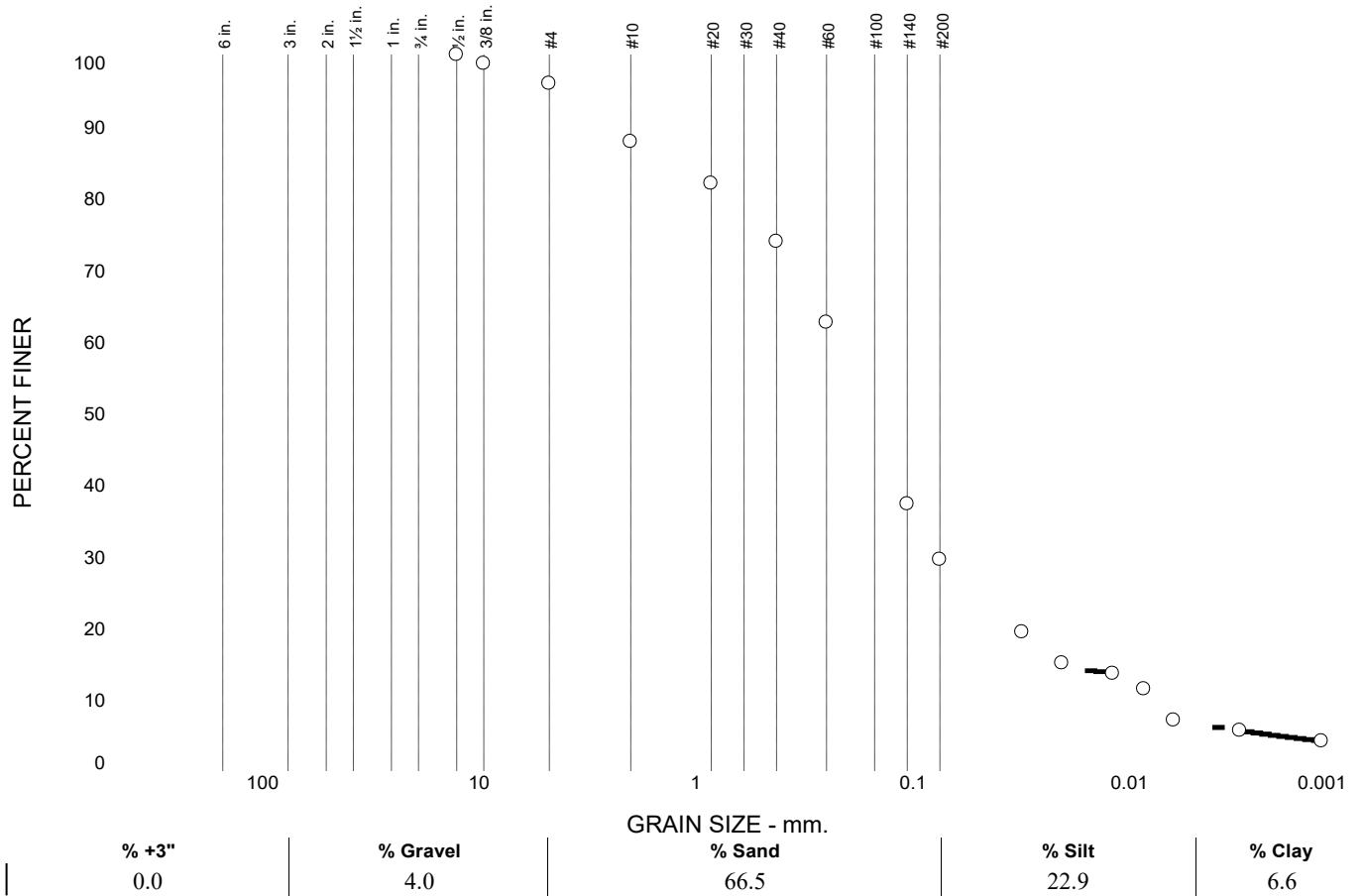
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Norcross, Georgia

Project No: FREN18GA0275301

Figure

Particle Size Distribution Report



SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.5	100.0		
0.375	98.8		
#4	96.0		
#10	87.9		
#20	82.0		
#40	73.9		
#60	62.6		
#140	37.3		
#200	29.5		

* (no specification provided)

Material Description

Sand, some silt, trace clay and gravel, tanish brown

Atterberg Limits

PL= NP

LL= NV

PI= NP

Coefficients

D₉₀= 2.5066

D₈₅= 1.3270

D₆₀= 0.2271

D₅₀= 0.1631

D₃₀= 0.0769

D₁₅= 0.0203

D₁₀= 0.0077

C_u= 29.47

C_c= 3.38

Classification

USCS= SM

AASHTO= A-2-4(0)

Remarks

Sample Number: B-4 Depth: 48.5-50.0 ft

Date: 12/7/18

United Consulting

Client: FREESE AND NICHOLS, INC.

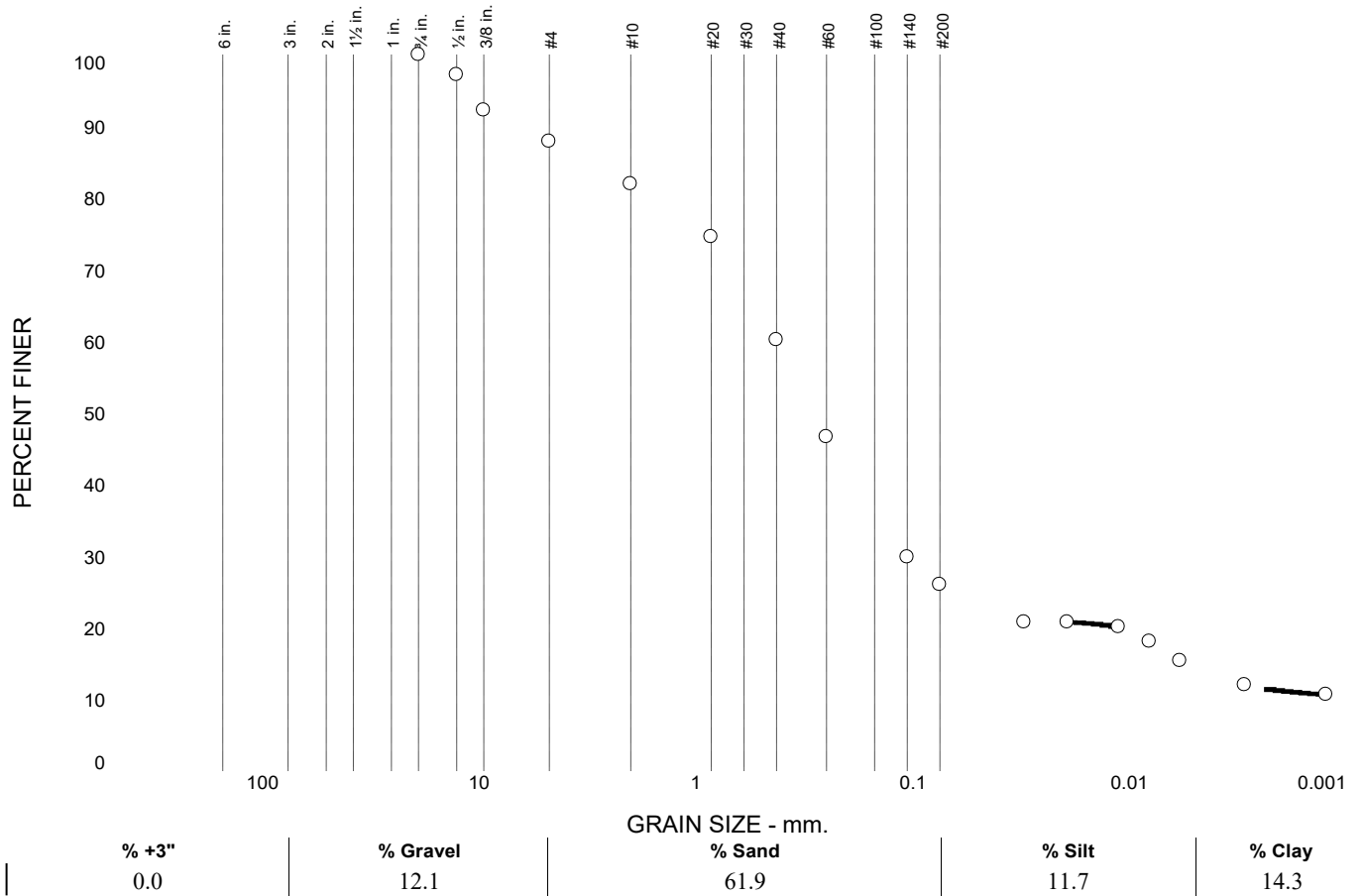
Project: FULTON-COBB DIVERSION LINE AND PUMP STATION

Norcross, Georgia

Project No: FREN18GA0275301

Figure

Particle Size Distribution Report



SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75	100.0		
0.5	97.2		
0.375	92.3		
#4	87.9		
#10	82.0		
#20	74.6		
#40	60.2		
#60	46.7		
#140	29.9		
#200	26.0		

* (no specification provided)

Material Description

Sand, some clay, gravel and silt, brown

Atterberg Limits

PL= NP

LL= NV

PI= NP

Coefficients

D₉₀= 7.8078

D₈₅= 2.9824

D₆₀= 0.4217

D₅₀= 0.2857

D₃₀= 0.1070

D₁₅= 0.0055

D₁₀=

C_u=

C_c=

Classification

USCS= SM

AASHTO= A-2-4(0)

Remarks

Sample Number: B-5

Depth: 0-1.5 ft

Date: 12/7/18

United Consulting

Client: FREESE AND NICHOLS, INC.

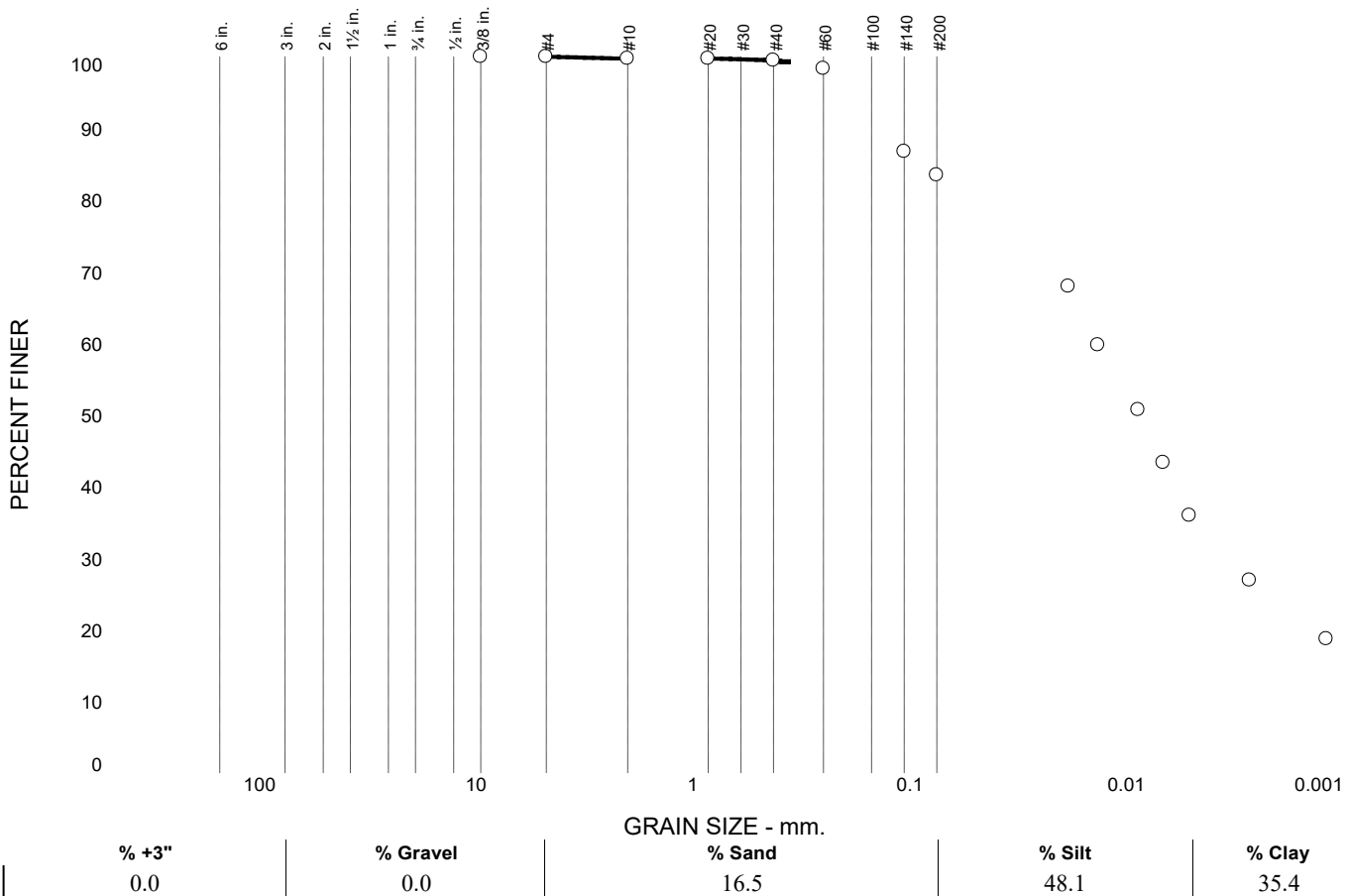
Project: FULTON-COBB DIVERSION LINE AND PUMP STATION

Norcross, Georgia

Project No: FREN18GA0275301

Figure

Particle Size Distribution Report



SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375	100.0		
#4	100.0		
#10	99.8		
#20	99.8		
#40	99.5		
#60	98.3		
#140	86.7		
#200	83.5		

* (no specification provided)

Material Description

Silt, some clay and sand, brown

Atterberg Limits

PL= 30 LL= 40 PI= 10

Coefficients

D₉₀= 0.1336 D₈₅= 0.0902 D₆₀= 0.0137
D₅₀= 0.0086 D₃₀= 0.0036 D₁₅=
D₁₀= C_u= C_c=

Classification

USCS= ML AASHTO= A-4(10)

Remarks

Sample Number: B-5 Depth: 13.5-15.0 ft

Date: 12/7/18

United Consulting

Client: FREESE AND NICHOLS, INC.

Project: FULTON-COBB DIVERSION LINE AND PUMP STATION

Norcross, Georgia

Project No: FREN18GA0275301

Figure



UNITED CONSULTING

625 Holcomb Bridge Road, Norcross, GA 30071

Tel. 770/209-0029 FAX 770/582-2900

www.unitedconsulting.com

UNCONFINED COMPRESSION TEST OF ROCK

ASTM D2938 / AASHTO T226 / UC SOP L9

Title: **Fulton-Cobb Diversion Line and Pump Station**

Project No.: FREN1-18-GA-02753-01[illegible]

Important Information about This Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply this report for any purpose or project except the one originally contemplated.*

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an

assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by: the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.*

Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help

others recognize their own responsibilities and risks. *Read these provisions closely. Ask questions. Your geotechnical engineer should respond fully and frankly.*

Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold-prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical-engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your GBC-Member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@geoprofessional.org www.geoprofessional.org

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Appendix E

Wetlands SOF

(Provided via Separate Electronic Copy)

Wetland Statement of Findings

Fulton-Cobb Diversion Force Main Sewer Cobb

County, Georgia

Chattahoochee River National Recreation

Area July 2020

Recommended:

Superintendent

Date

Chattahoochee River National Recreation Area

Certification of Technical Adequacy and Servicewide Consistency:

Chief, Water Resources Division

Date

Approved:

Stan Austin

Date

Regional Director, Interior Region 2

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INTRODUCTION

On behalf of the National Park Service, River To Tap (R2T), a consultant for the Fulton County Department of Public Works (FCDPW), has prepared an Environmental Assessment (EA) for the special use permitting of the Fulton-Cobb Diversion Force Main Sewer (Project). The National Park Service (NPS) is an assisting federal agency for this project. The purpose of this Statement of Findings for Floodplain and Wetlands document is to comply with Executive Order 11988: Protection of Floodplains and Executive Order 11990: Protection of Wetlands, which requires the NPS and other federal agencies to evaluate the potential impact of project work within floodplains and wetlands located on the Chattahoochee River National Recreation Area (CRNRA, Park) property. This Statement of Findings (SOF) has been prepared in accordance with the policies and procedures within NPS Director's Order (D.O.) #77-1 and the Wetland Protection and Procedural Manual and NPS Director's Order (D.O.) #77-2 Floodplain Management. This SOF documents compliance with these NPS wetland protection and floodplain management procedures.

Two palustrine wetland areas (Cowardin classification system) and four riverine wetlands reside within the CRNRA Project boundary and have the potential to be impacted during construction. Therefore, this SOF extends across the entire length (1.2 miles) of the Project limit of disturbance within the CRNRA. Descriptions of all wetlands and possible impacts are addressed in this document.

The proposed project will be located next to an existing sewer line easement. Through the compliance process, the NPS has determined that there is no practicable, non-floodplain alternative location for the proposed action. All impacts to the floodplain will be temporary and the floodplain will be restored to its pre-disturbance condition. This project will not result in any increased flood risk to life or property and will not adversely impact natural and beneficial floodplain values. Therefore, the Floodplain Statement of Findings process does not need to be initiated, and the topic has been dismissed from further discussion in the SOF.

PURPOSE AND NEED FOR ACTION

Currently the Chattahoochee River experiences water quality degradation due to the burdened wastewater system in the north metro Atlanta area. During and after a heavy rainfall, sewer manholes are overflowing and releasing raw sewage and artifacts into the river, tributaries, and surrounding Park units. The proposed force main will alleviate the current burden to the sewer infrastructure system in an area of the Park that experiences significant sewage spills regularly.

STUDY AREA DESCRIPTION

The Project is situated on the west bank of the Chattahoochee River in Cobb County near Atlanta, Georgia, just downstream of Morgan Falls Dam. The proposed force main will be located between historic Hyde Farm and the Chattahoochee River along existing utility lines and is approximately 1.2 miles long and includes 10 acres in the Johnson Ferry North (JFN) unit of the park. JFN provides recreational trails, a boating concessionaire, and boat ramp access to the Chattahoochee River.

The path of the force main extending through the CRNRA is located parallel to existing utilities, which run parallel to the Chattahoochee River approximately 150 feet to the west of the river. Currently, two buried utility lines, including a 36-inch gravity sanitary sewer line and a 40-inch petroleum product line, exist near the project limits of disturbance.

DESIGN ALTERNATIVES CONSIDERED

NPS Director's Order #77-1: Wetland Protection requires proponents that propose impacts to wetlands on park lands to explore a range of reasonable alternatives aimed at avoiding or minimizing wetland impacts to NPS wetlands. The alternatives under consideration can include a no-action alternative. The alternatives analyzed in this document are based on the result of internal and agency scoping. Alternatives and actions that were considered but would not be technically or economically feasible, would not meet the purpose of and need for the project, would create unnecessary or excessive adverse impacts on resources, or would conflict with the overall management of the park or its resources were dismissed from detailed analysis.

The NPS in coordination with the Fulton County Department of Public Works (FCDPW) and Cobb County Water System (CCWS) identified a range of reasonable alternatives to implement the proposed action while taking into consideration minimization and mitigation of wetland resource impacts of the diversion force main.

Alternative A: No Action Alternative

The no action alternative is a reflection of the future without project conditions and "sets the baseline for which future conditions with the project are measured." (NPS DO #12, Section 2.7). For the purpose of this EA, under the no action alternative (future without project condition), the NPS would not issue a Special Use Permit (SUP) to FCDPW to complete the proposed diversion force main and the force main would not be routed in a manner that would impact the CRNRA. Under the no action alternative, wastewater will continue to be diverted to Cobb County through undersized pipes, risking sanitary sewer overflows along the

Chattahoochee River and its tributaries. This alternative would not safely meet the project purpose and need, and it would risk causing negative impacts to CRNRA wetlands, water quality, and public safety.

Alternative B: Permitting of the Force Main

The proposed Alternative B includes the NPS permitting (SUP) of a sanitary sewer force main extending from a Cobb County manhole north of Johnson Ferry Road to the Fulton County Pump Station (FCPS), located across the river from Johnson Ferry North just downstream of Morgan Falls Dam (**Figure 1**).

Alternative B includes the construction of a 30-inch piping on CRNRA property to safely convey wastewater during the construction upgrade of the Big Creek Water Reclamation Facility (BCWRF). Methods of construction for the force main within CRNRA property include open-cut trenching and horizontal directional drilling (HDD) installation. Open-cut trenching will be used to lay pipe near the existing utilities, including at stream crossings. HDD will be used for the two sections that cross the Chattahoochee River. The 1.2-mile length of the force main in this alternative is necessary to connect to a location in Cobb County that has available capacity to accommodate the proposed volume of wastewater. This alternative will provide a system suitable for transporting the anticipated 3.5 to 10 MGD of wastewater from the BCWRF basin to Cobb County sewer.

The proposed 30-inch buried force main will begin at a Cobb County manhole located within the CRNRA. It will continue north along an existing utility for approximately 1.2 miles, crossing Mulberry Creek, Crooked Branch, and Ditched Branch (tributaries to the Chattahoochee River), along with two palustrine wetland areas, one of which connects to Crooked Branch. See **Figures 2 – 6**. The force main in this area is within both the 100-year and 500- year floodplain according the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map panel 13067C0134J. The force main will then cross beneath the Chattahoochee River with the use of HDD and exit east of the FCPS. The force main will then continue outside of CRNRA property. Boring will begin and end outside of the 50-foot riparian buffer of the Chattahoochee River; therefore, it will not impact the river bottom, nor will there be any impacts within the ordinary high water or top of bank lines. Additionally, the bore holes for the HDD installation avoids wetland areas at entrance and exit at both crossings.

At each minor stream crossing, open-cut trenching and topsoil stockpiles will be used. Soil stockpiles will be contained within the limits of construction outside of riverine and palustrine wetlands and outside of stream buffers.

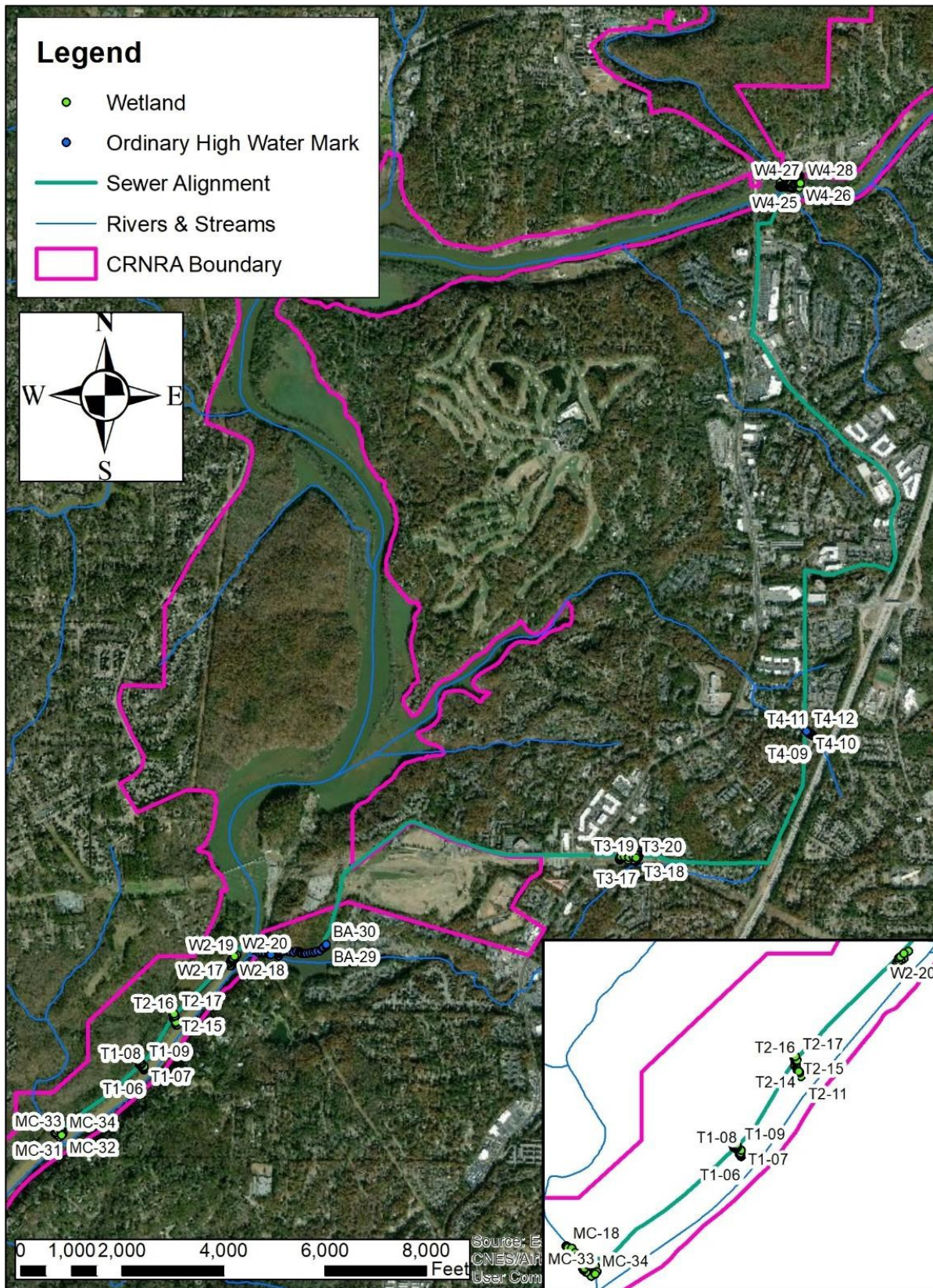


FIGURE 1. ENTIRE ROUTE OF PROJECT ALIGNMENT.

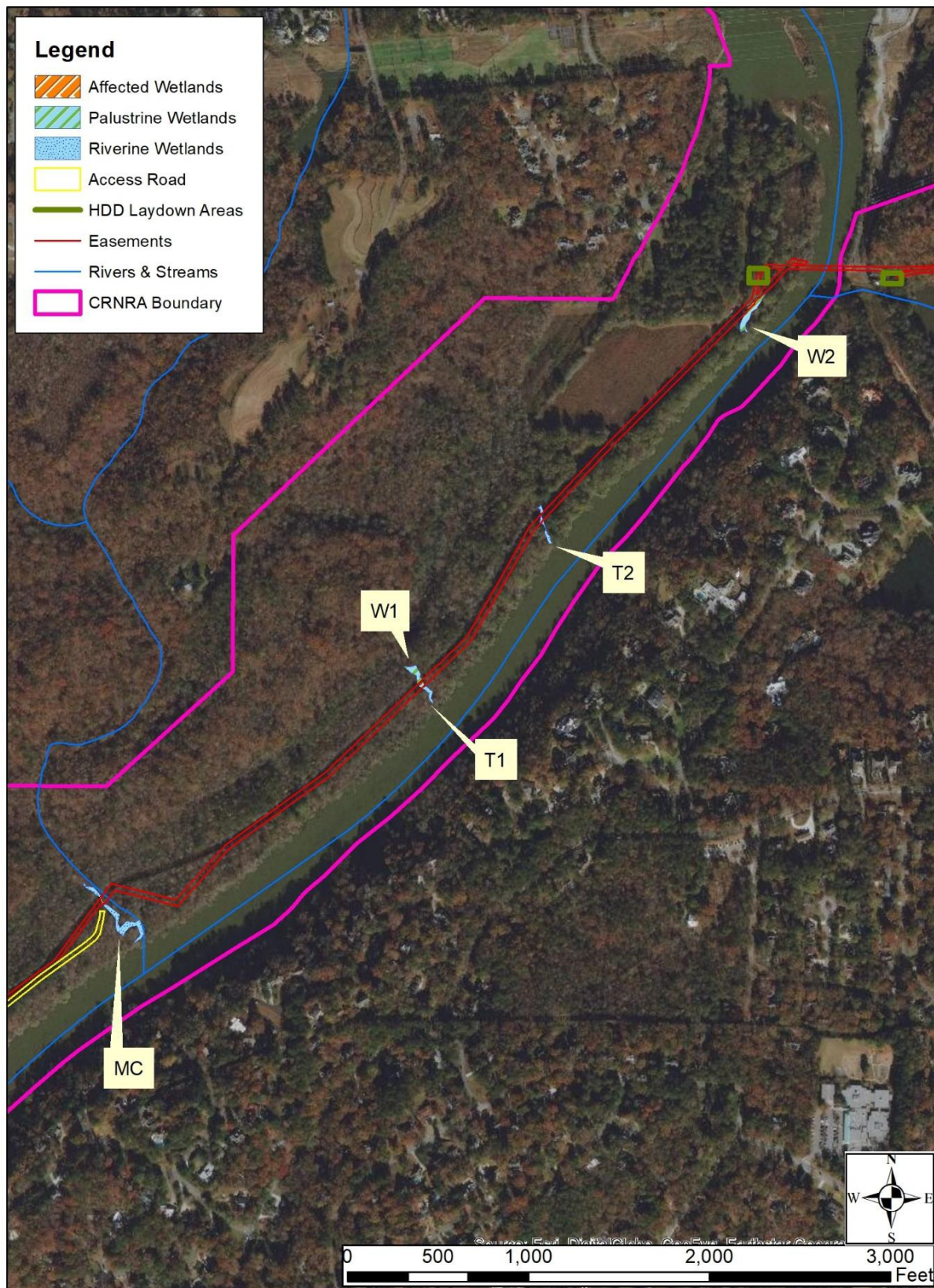


FIGURE 2. AERIAL OVERVIEW OF AFFECTED WETLANDS AND LIMIT OF DISTURBANCE ON CRNRA PROPERTY.





FIGURE 4. Crooked Branch (T1) AND WETLAND 1 IMPACTED AREAS.



FIGURE 5. Ditched Branch (T2) IMPACT AREAS.



FIGURE 6. WETLAND 2 IMPACT AREAS.

BEST MANAGEMENT PRACTICES AND IMMEDIATE SITE RESTORATION

Erosion Control Plans (ECPs) and the use of NPS conditions and State of Georgia standard Best Management Practices (BMPs) will be implemented to minimize stream and wetland impacts to the maximum extent possible. See **Attachment 1** for detailed explanations of BMP notes. The land surrounding the riverine riverbanks, riverine tributary banks, and palustrine wetlands is mostly uplands. Equipment and machinery will remain on the upland limits of disturbance, wherever possible, to ensure impacts from heavy machinery will be minimized to reduce temporary construction impacts to these natural features.

Immediately following construction, the impacted area within the Park will be restored to its original state to the maximum extent practicable. Once construction is complete, a blade or bucket on the excavator will scrape the stockpiled sediments (placed on the existing right-of-way) back into the excavated tributaries to match original grades on either side. The stream profile will be graded to pre-disturbance configuration. Backfilling excavated streams and wetlands and other measures deemed necessary will be implemented as project features immediately following construction within each impacted aquatic resource in order to restore the impacted environment and maintain the quality of the area that existed prior to construction. The backfill elevation will be carefully monitored in order to ensure that it closely approximates the prevailing elevation of the surrounding wetlands. A variety of at least six native wetland plants (including tree saplings within the disturbed forested wetland areas) will be planted in the regraded/restored area.

Best management practices will be used during drilling to prevent drill fluid leakage such as building a 20 feet x 20 feet ring levee around the drill entry and exit points and pumping the returned drilling fluids into holding tanks for recycling. Should a hydraulic fracture and release of drilling fluids occur, standard practice will be to move the return pit to the fracture site and pump. The drill path will be regularly patrolled to check for hydraulic fractures, and fluid returns to the drilling rig will be monitored.

Construction of the force main will impact approximately 6.5 acres of low-quality bottomland hardwood habitat, three tributaries/riverine wetlands (0.02 acres) and two palustrine wetland areas (0.04 acres). See **Table 1** for a summary of impacts.

EXISTING STREAMS AND WETLANDS

The NPS utilizes the 1979 Federal Geographic Data Committee (FGDC) Wetlands Classification Standard (Cowardin classification system) to determine wetland areas on NPS land.

Wetlands delineation for the Project are used for the identification of the limits of the waters of the United States within the Project including wetlands, impounded water, rivers, and streams in compliance with Section 404 of the Clean Water Act and the Cowardin method, as regulated by the NPS.

A wetlands delineation of the proposed development of a sanitary sewer force main was conducted by R2T, Inc. in October and November 2018. According to the 1987 USACE manual and the Cowardin classification system, R2T confirmed the presence of two palustrine wetland areas and four riverine wetlands (which are tributaries to the Chattahoochee River) within the portion of the Project on CRNRA land (**Figure 7**).

The Chattahoochee River will not be impacted by the project due to the HDD install under the river, and the positioning of the bores outside of the 50-foot riparian buffer of the river. Three of the four riverine wetlands (that are not the Chattahoochee River) found on CRNRA land will be impacted by open-cut trench installation. The fourth riverine wetland found on CRNRA land is located on the northern end of the Project where CRNRA land is limited to solely the boundaries of the rivers and major creeks (near the intersection of Riverside Road and Roswell Road) and will not be impacted by the project.

PALUSTRINE FORESTED WETLANDS

Palustrine forested wetlands are dominated by mature hardwood trees that inhabit the floodplains of the Chattahoochee River, tributary streams, and associated sloughs. These areas experience variable degrees of flooding but are flooded frequently enough to qualify as wetlands. These wetlands provide important habitat for wildlife, protect the water quality of the river by stabilizing the stream and riverbanks, help control flooding, and produce plant material that helps support the adjacent aquatic ecosystem.

Wetlands (W) 1 and 2 (see **Figures 8** and **9**) are both PFO1A (palustrine, forested, broad-leaved deciduous, temporarily flooded) wetlands located within CRNRA property. W1 (0.11 acres) is in a depression within the existing right-of-way and connects to a small draining tributary, Crooked Branch (T1). W2 (0.17 acres) is in a depression slightly east of the proposed path south of the HDD river crossing.

WETLAND 1

Wetland (W) 1 is found in a depression along Crooked Branch, T1 (**Figure 8**). The depression which contains W1 and T1 spans the entire width of the right-of-way. It is approximately 0.1 acres. W1 can be easily flooded during events of heavy rain, but because of its drainage channel, T1, it can only be temporarily flooded. Primary wetland indicators for W1 include the

presence of surface water, a high-water table (approximately 10 inches beneath the surface), saturation, and watermarks. Secondary wetland indicators include the presence of drainage patterns and a sparsely vegetated concave surface.

Within the wetland, the survey team identified woolgrass (*Scirpus cyperinus*) (a facultative wetland species), and a dense cover of dotted smartweed (*Polygonum punctatum*) (an obligate plant species). Surrounding the wetland, R2T identified Chinese privet (*Ligustrum sinense*) (a facultative upland species), river birch (*Betula nigra*) (a facultative wetland species), and tuliptree (*Liriodendron tulipifera*) (a facultative upland species). Overall, 67 percent of the dominant plant species identified are either obligate, facultative wetland, or facultative species.

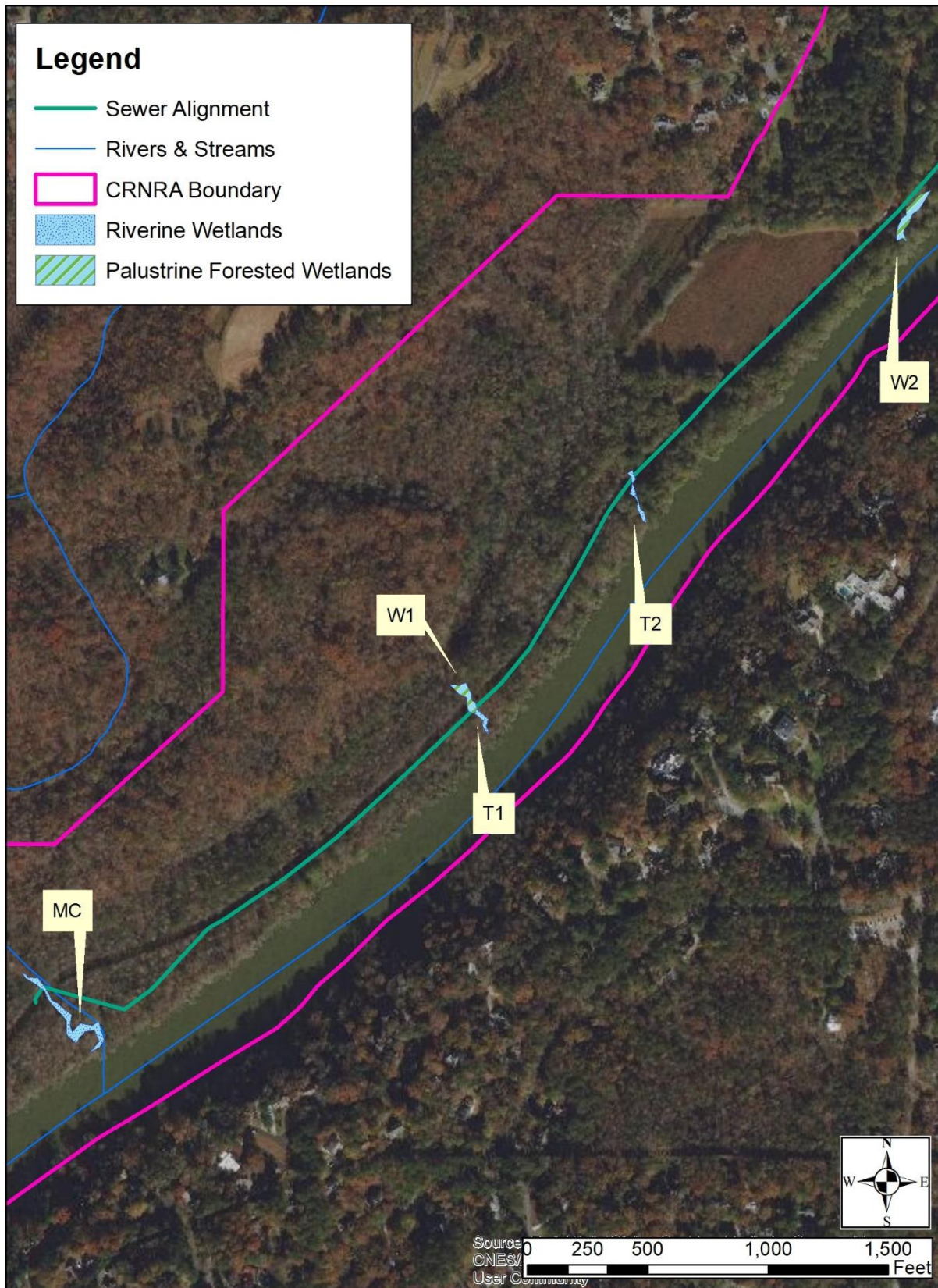


FIGURE 7. WETLANDS ON CRNRA PROPERTY.



FIGURE 8. WETLAND 1 (PFO) AND Crooked Branch (T1) (R2).

WETLAND 2

Wetland (W) 2 is found in a depression parallel to the Chattahoochee River within the riparian buffer between the river and an existing easement and trail (**Figure 9**). W2 is approximately 0.2 acres. W2 can be easily flooded during events of heavy rain, but because of its drainage to the Chattahoochee River, it can only be temporarily flooded. Primary wetland indicators for W2 include the presence of surface water, a high-water table (approximately 5 inches beneath the surface), saturation, sediment deposits, and a thin muck surface. Secondary wetland indicators include the presence of drainage patterns and its geomorphic position.

Within the wetland, the survey team identified a dense cover of American elm (*Ulmus americana*) (a facultative wetland species) and two additional facultative wetland species: Virginia dayflower (*Commelina virginica*) and buckthorn bully (*Sideroxylon lycioides*). Surrounding the wetland, the survey team identified red maple (*Acer rubrum*) (a facultative species), water oak (*Quercus nigra*) (a facultative species), blackgum (*Nyssa sylvatica*) (a facultative species), and muscadine (*Vitis rotundifolia*) (a facultative species). Overall, 100 percent of the dominant plant species identified are either facultative wetland or facultative species.



FIGURE 9. WETLAND 2 (PFO).

LOWER PERENNIAL RIVERINE WETLANDS

Lower perennial wetlands are wetlands contained within a channel that contains flowing water that moves towards the Chattahoochee River. The gradient is low and water velocity is slow, with the water in most of these systems usually flowing throughout the year. The substrate of these systems within the Chattahoochee River watershed is typically sand and mud (Cowardin, Carter, Golet, and LaRoe 1979). These areas experience frequent water flow throughout the year during normal years, which qualifies them as wetlands. These wetlands provide important habitat for wildlife. Oxygen deficits may sometimes occur, so the fauna is composed mostly of species that reach their maximum abundance in still water. True planktonic organisms are common (Cowardin, Carter, Golet, and LaRoe 1979). Additionally, these wetlands typically serve as large sources of water input to the Chattahoochee River. Therefore, the physical, chemical, and biological aspects of the water quality of these wetlands directly influences the ecosystem within the Chattahoochee River and the quality of the water within it.

Mulberry Creek (MC) (0.28 acres), Crooked Branch (T1) (0.04 acres), and Ditched Branch (T2) (0.06 acres) are tributary streams to the Chattahoochee River determined via the Cowardin method located on the western bank of the Chattahoochee River. MC, T1, and T2 are R2 (perennial riverine) wetlands located within CRNRA property. MC is considered an R2SBC wetland, indicating it is an perennial stream bed that seasonally floods.

MULBERRY CREEK

Mulberry Creek (MC) is a perennial tributary stream to the Chattahoochee River (**Figure 10**). The wetland spans the entire width of the right-of-way and continues upstream and downstream of the right-of-way. It is approximately 0.3 acres.

Surrounding the streambanks, the survey team identified a dense cover of southern sugar maple (*Acer floridanum*) (a facultative upland species) and American elm (*Ulmus americana*) (a facultative wetland species). Additionally, the survey team identified tuliptree (*Liriodendron tulipifera*) (a facultative upland species), black walnut (*Juglans nigra*) (a facultative upland species), black gum (*Nyssa sylvatica*) (a facultative species), Chinese privet (*Ligustrum sinense*) (a facultative upland species), green briar (*Smilax rotundifolia*) (a facultative species), willow oak (*Quercus phellos*) (a facultative wetland species), Adam's needle (*Yucca filamentosa*) (a facultative species), Beale's barberry (*Mahonia bealei*) (an upland species), and trumpet vine (*Campsis radicans*) (a facultative species). Overall, 62.5 percent of the dominant plant species identified are either facultative wetland or facultative species.



FIGURE 10. MULBERRY CREEK (R2).

CROOKED BRANCH (T1) AND DITCHED BRANCH (T2)

Crooked Branch (T1) (**Figure 8**) and Ditched Branch (T2) (**Figure 11**) are perennial tributary streams to the Chattahoochee River. The wetlands span the entire width of the right-of-way and continue upstream and downstream of the right-of-way. Crooked Branch is approximately 0.04 acres and Ditched Branch is approximately 0.06 acres.

Surrounding the streambanks, the survey team identified a dense cover of two facultative species: water oak (*Quercus nigra*) and green briar (*Smilax rotundifolia*). Additionally, the survey team identified loblolly pine (*Pinus taeda*) (a facultative species), tuliptree (*Liriodendron tulipifera*) (a facultative upland species), southern sugar maple (*Acer floridanum*) (a facultative upland species), ironwood (*Carpinus caroliniana*) (a facultative species), green briar (*Smilax rotundifolia*) (a facultative species), black gum (*Nyssa sylvatica*) (a facultative species), Chinese privet (*Ligustrum sinense*) (a facultative upland species), willow oak (*Quercus phellos*) (a facultative wetland species), and muscadine (*Vitis rotundifolia*) (a facultative species). Overall, 87.5 percent of the dominant plant species identified are either facultative wetland or facultative species.



FIGURE 11. Ditched Branch (T2) (R2).

FLOODPLAINS

The Project is located within both the 100-year and 500-year floodplain. Project site topography is lowest near the force main discharge location to Cobb County near Mulberry Creek. Base flood elevation according the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map panel 13067C0134J is 811 feet above sea level to 812 feet above sea level. The floodplain of the Chattahoochee River is a natural resource within the CRNRA and consists of an expansive, high quality, riparian buffer. The canopy layer is dominated by tulip poplar (*Liriodendron tulipifera*), American elm (*Ulmus americana*), and southern sugar maple (*Acer floridanum*), with scattered black walnut (*Juglans nigra*) and loblolly pine (*Pinus taeda*). The understory is dominated by black gum (*Nyssa sylvatica*), Chinese privet (*Ligustrum sinense*), American elm, and southern sugar maple, with scattered water oak (*Quercus nigra*) and ironwood (*Carpinus caroliniana*). The forest floor is dominated by Chinese privet, black gum, southern sugar maple, and water oak, with scattered willow oak (*Quercus phellos*), Adam's needle (*Yucca filamentosa*), and Beale's barberry (*Mahonia bealei*). The vines include green briar (*Smilax rotundifolia*), trumpet vine (*Campsis radicans*) and muscadine (*Vitis rotundifolia*).

The proposed project will be located next to an existing sewer line easement. Through the compliance process, the NPS has determined that there is no practicable, non-floodplain alternative location for the proposed action. All impacts to the floodplain will be temporary and the floodplain will be restored to its pre-disturbance condition. This project will not result in any increased flood risk to life or property and will not adversely impact natural and beneficial floodplain values. Therefore, the Floodplain Statement of Findings process was not initiated, and the topic was dismissed from further discussion in the SOF.

QUALIFICATIONS

Director's Order #77-1 requires that wetland delineations be performed by a qualified wetland professional. R2T staff have been trained and certified for basic wetland delineation in accordance to the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual and the 2008 Atlantic and Gulf Coastal Plain and Eastern Mountains and Piedmont Regional Supplements.

WETLAND FUNCTIONS AND VALUES

Hydrologic Functions: Hydrologic functions are those related to the quantity of water that enters, is stored in, or leaves a wetland. These functions include such factors as the reduction in water flow velocity, the role of wetlands as ground-water recharge or discharge areas, and

the influence of wetlands on atmospheric processes. The ability of wetlands to store waters allows wetlands connected to rivers and streams to support flows during dry weather conditions, and thus help to support fish and aquatic life uses (“National Guidance: Wetlands and Non-Point Source Control” 1990).

No fill material will be placed in any of the wetlands. The sewer force main will be open-trenched. BMPs and NPS conditions will be strictly followed to minimize effects to wetland areas. Wetlands W1 and W2 serve as overflow and water storage area during flooding. They also contribute to the filtering of pollutants from runoff as it flows into the river. W2 most likely serves as runoff collection ponds during heavy rain events.

Wetlands MC, T1, T2, and Big Creek (BC) all have their largest contributions to hydrologic functions. MC, T1, and T2 are tributaries to the Chattahoochee River. BC is a tributary to the Chattahoochee River on the northern end of the project (where CRNRA boundaries are limited to the boundaries of the river and major creeks), and the survey limits of it also encompassed the Chattahoochee River itself. The tributaries serve as water supply to the Chattahoochee River, as well as overflow and water storage areas during flooding. The Chattahoochee River, which eventually joins the Flint River and flows into the Apalachicola River before eventually emptying into the Gulf of Mexico, is an important source of water for the states of Georgia, Alabama, and Florida and is an ecologically, economically, and socially significant river basin.

Biotic Functions: Biotic functions refer to ecological processes, including trophic interactions and nutrient cycling. This entails an adaptive community of organisms inclusive of its respective species composition, diversity and functional organization. Wetlands serve as habitat, supporting these biotic and chemical processes. Wetland systems directly affected temporarily by the proposed project include palustrine and riverine systems.

Site visits to the smaller tributaries (MC, T1, and T2) showed little signs of having a significant biotic function due to their small size and degradation over the years. Big Creek is a larger tributary connecting to the Chattahoochee River that is able to support a larger diversity of wildlife. The Chattahoochee River is a large river basin in Georgia that supports a vast variety of wildlife and wildlife habitat. In this area of Georgia, the Chattahoochee River is eroded due to years of degradation from surrounding development. Many protected aquatic species have already been extirpated from this part of the Chattahoochee River, including most protected mollusk species. However, the river still supports many wildlife species and/or their potential habitats, including many protected species (e.g. Chattahoochee crayfish, shoal bass,

bluestripe shiner, highscale shiner, etc.). Although no critical habitat for protected species is listed in the area, the huge ecological significance of the river warrants careful use of NPS- and state- approved BMPs.

Chemical Functions: Chemical functions refer to the ability of wetlands to filter water and to trap sediments and pollutants before the water enters larger aquatic systems. This is important in providing clean drinking water and in maintaining healthy ecosystems in which wildlife can thrive. By avoiding palustrine wetlands to the maximum extent possible and backfilling them with original soil where open cut trenching is required, loss of the chemical function of wetlands is expected to be minimal.

Geomorphological Functions: Geomorphological functions refer to streambank and erosion stabilization provided by wetlands. Vegetation that exists within wetland areas binds the soil on the streambanks and within the riparian buffer, which helps reduce erosion and sedimentation. Efforts are being made to minimize wetland impacts by routing the sewer alignment outside of wetlands to the maximum extent possible, by utilizing work bridges/low water crossings to avoid entering riverine wetlands when they intersect the work area, and by using state standard and NPS BMPs. Evidence of erosion and streambank sloughing is present. Therefore, avoidance and minimization efforts are important to prevent further damage. The project is not anticipated to cause further erosion, with the use of appropriate BMPs and avoidance and minimization methods.

Recreational Functions: Recreational functions refer to the ability of wetlands to provide beautiful places for sightseeing (aesthetic function), hiking, fishing, hunting, boating, bird watching, and photography. Due to the existing easements in the area and the project efforts to maintain work within the previously disturbed areas, the recreational functions of the wetlands on CRNRA property are not anticipated to diminish.

Cultural Functions: Cultural functions refer to the cultural resources and historical/archaeological significance of the site. Multiple cultural resources lie within or in proximity to the project area. 9CO780 is in proximity to MC and 9CO406 is extremely close to the border of MC; however, neither site overlaps the wetland area. 9CO127 partially overlaps W2. Therefore, preservation of W2 will also serve to protect the cultural resources that lie within it. Efforts have been made to move the alignment as far away as practicably possible from W2 in order to minimize impacts to it.

AFFECTED WETLANDS (ENVIRONMENTAL CONSEQUENCES)

Maps of the temporarily affected wetlands are available in the “Existing Streams and Wetlands” section above.

PROPOSED IMPACTS

Temporary, adverse impacts relating to the construction of the sanitary sewer force main will occur during project construction. Total proposed wetland impact area within the CRNRA of palustrine forested (PFO) wetlands is approximately 0.04 acres and of perennial riverine wetlands (R2) is approximately 0.02 acres (for a total of 0.06 acres of wetland impacts). Since the project involves minor wetland impacts (less than 0.1 acres) on NPS land for an underground utility line, NPS has determined that compensatory mitigation for wetland impacts from the proposed activity is not required in accordance to D.O. #77-1. To protect the stream crossings, existing culverts and armored banks, matting, and temporary crossings will be utilized during construction. Following construction, two permanent bridges will be installed at Mulberry Creek and Ditched Branch to prevent further resource injury from future maintenance work along the utility corridor. The design will be approved by the National Park Service and meet all safety requirements. Permanent bridge installations would qualify as mitigation.

The primary impact to wetlands and the tributary streams to the Chattahoochee River will be from the open-cut trenching. This method will require the excavation of a trench (approximately six feet deep and four feet wide) in order to place the pipe beneath the contour of the surface. Excavation of the force main will entail driving heavy equipment through the wetlands and streams within the limits of disturbance, removing the existing earthen material to the required width (approximately four feet wide) and depth (approximately six feet deep) and placing in a linear fashion along the northside of the excavation within the limits of disturbance. Excavation of trench materials and stockpile of material will only be for the amount of pipe installed per workday.

A depth of six feet is necessary to prevent pipe buoyancy in wet areas; however, the depth is limited to six feet to prevent further potential environmental, cultural, or archaeological disturbances. Pipes running underneath streams will be placed in a concrete encasement. A minimum depth of at least four feet is required for encasements.

TABLE 1. CRNRA WETLANDS IMPACTS TABLE.

Resources	Resource Type	Resource Area (acres)	Impact Area (acres)	Impact Description	Impact Type
Mulberry Creek (MC)	Perennial Stream/R2SBC	0.27	0.01	Open-Cut Trenching	Short term, Moderate
Crooked Branch (T1)	Perennial Stream/R2	0.04	0.002	Open-Cut Trenching	Short term, Moderate
Ditched Brach (T2)	Perennial Stream/R2	0.06	0.01	Open-Cut Trenching	Short term, Moderate
W1	PFO1A	0.11	0.02	Open-Cut Trenching	Short term, Moderate
W2	PFO1A	0.17	0.02	Open-Cut Trenching	Short term, Moderate
Chattahoochee Crossing 1 Downstream of Morgan Falls Dam	Perennial Stream/R2UBH	1.10	0	HDD Crossing	None
Chattahoochee River Crossing 2 Upstream of Big Creek (BC) Confluence	Perennial Stream/R2UBH	3.68	0	HDD Crossing	None
Total Impacts to Riverine Wetlands			0.022		
Total Impacts to Palustrine Wetlands			0.04		
Total Wetland Impacts			0.062		

Below ground installation of the sanitary sewer main is necessary for several reasons: above ground installation will still result in significant disturbance; above ground installation will require anchoring; and the proposed pipe is made of non-metallic material, which will result in buoyancy issues in the floodplain. Additionally, open-cut trenching in these areas is necessary because it was determined that trenchless installation below these small tributary streams will result in greater impacts to the systems rather than fewer. In order to protect the hydrology of these streams and wetlands, standard state and NPS BMPs will be utilized including silt fencing, mulch from wood chippings from clearing, native stone, and temporary stream diversions via rock dams. After construction in the area is complete, open cut areas will be backfilled with original soil, tributary streambank stabilization will be installed according to project specifications (**Attachment 1**), and grassing/plantings will be placed on each end of the temporary easement to complete restoration of the crossing. See **Attachment 1** for all NPS construction notes, standard BMP notes, restoration notes, etc.

The temporary construction impact will affect the hydrologic functions of the wetlands and streams due to stream diversions and dewatering of work areas in order to allow for dry excavation and the protection of the final grade for the trench. However, diversion structures will be removed as soon as construction in that area is complete and the stream will be reshaped to its original cross section and stabilized. Digging and the creation of stockpiles will temporarily change the hydrology of the landscape within the Project limits of disturbance by temporarily changing the microtopographic relief (geomorphological features) in the area.

Open-cut diversions are likely to require only one-day to complete, depending on weather conditions. Diversions will be installed where necessary to allow streams to continue to flow, while allowing for dry work. Diversions will be removed when no longer needed and the stream will be reshaped and stabilized. See below John D. Stephens (JDS) Pipe Installation Plan for work approach details at each stream crossing.

Any work that requires impacts to the palustrine or riverine wetlands (e.g. stream diversions, temporary culverts, placement of any type of fill, etc.) will be removed immediately following completion of work in that area, and the wetland will be restored to pre-construction conditions. All disturbed wetland areas will be planted with native herbaceous plant seedlings spaced 12 inches on center. This process from start of in-water impacts to wetland restoration is anticipated to take approximately one day, depending on weather conditions. Backfill will only use original fill material from site excavation. No offsite fill will be utilized.

Impacts to hydrology may also lead to impacts to biotic functions (via changing the habitat in

the area) and cultural value (via hydrologic damage in the form of excess water, physical damage, increased erosion rates) from flooding, increased water velocity, increased siltation; however, these impacts are expected to be temporary and moderate and minimized by utilizing state and NPS standard BMPs.

Big Creek (BC) and the Chattahoochee River at the confluence with BC will not be impacted due to the HDD installation of the force main below the river. The HDD installation is anticipated to take approximately nine to 10 weeks including gaining access to the site, prep work, the installation itself, and restoring the impacted areas. The beginning and end bore pits are located outside of the riparian buffer zone and wetland areas in order to minimize environmental impacts from the installation.

JOHN D. STEPHENS (JDS) PIPE INSTALLATION PLAN

1. Scope

JDS will be responsible for installing approximately (5,300) linear feet of 30" High Density Polyethylene Pipe (HDPE). The force main and the Horizontal Directional Drill (HDD) river crossing insertion pit will be installed in the NPS/Fulton County Utility easement corridor.

Work will then be done in the westward direction from our river crossing (HDD) location to the tie-in location per the plans at the junction manhole installed on the existing 42" Cobb County Interceptor Force main, with a depth being approximately (10') deep. We will also install (5) Air Release Manholes along the route. Native materials will be utilized in most areas for bedding and backfill, unless otherwise noted or needed. If needed #57 stone will be utilized for pipe bedding. There will be a temporary fence around all work areas necessary to ensure public safety when JDS is not on site.

2. Safety

All work will be performed in compliance with the requirements of OSHA Construction Standards, Part 1926, Subpart P, Excavations, Trenching, and Shoring. A copy of our site-specific safety plan has been previously submitted for information purposes to the owner/engineer for their records. All excavations which are left unattended overnight shall be protected with, but not limited to safety fence, fence panels, equipment, street plates and or barricades.

3. Initial Site Prep

Clearing and grubbing operations will take place prior to force main operations. Trees will

be cleared via shin-cutting machine. Wood chippings from this operation will be left in place as mulch for an added erosion control measure.

Erosion Control – Silt Fence will be installed along the downstream (River Side) of the work area to prevent run-off from excavated spoils. Construction Entrances will be installed on each end of the work site, or as required.

Stream Crossings – The work approach at each stream crossing will be as follows (**Figure 12**):

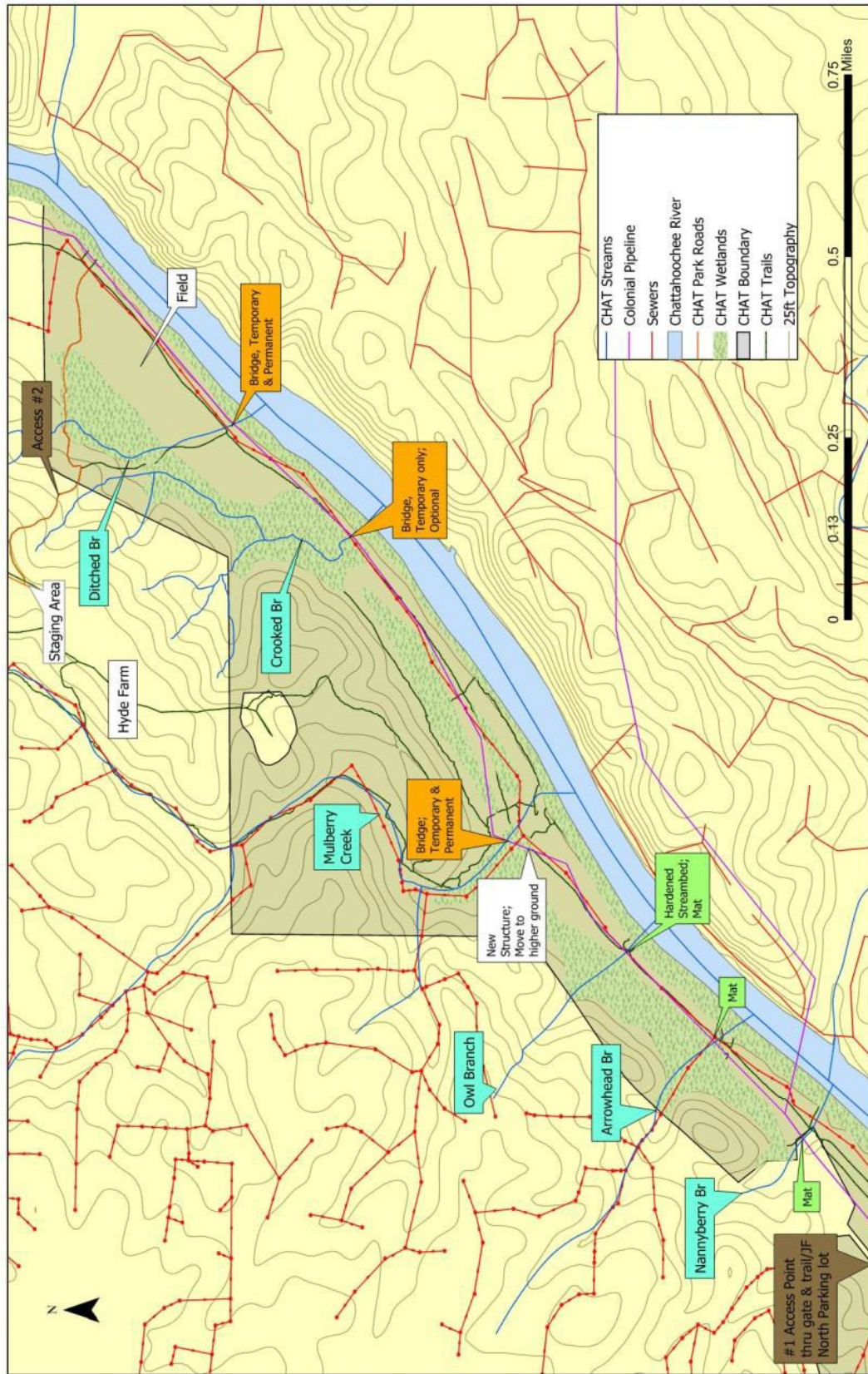
- 1) Nannyberry Branch: There is an existing road crossing and culvert here. JDS will stabilize this existing crossing and provide temporary matting at this crossing.
- 2) Arrowhead Branch: There is an existing road crossing and culvert. JDS will stabilize this existing crossing and provide temporary matting at this crossing.
- 3) Owl Branch: The streambed was previously hardened and armored by another utility. The plan is to use temporary matting at this crossing also.
- 4) Mulberry Creek, Crooked Branch, and Ditched Branch: To protect the stream crossings, temporary crossings will be utilized during construction. Streams at these locations will be open cut for force main installation with temporary diversions. The temporary crossing footprint will coincide with force main location to reduce stream disturbance. Temporary crossings will be installed during construction and will be removed, and the stream restored and vegetated/stabilized after construction. Following construction, two permanent bridges will be installed at Mulberry Creek and Ditched Branch to prevent further resource injury from future maintenance work along the utility corridor. The design will be approved by the National Park Service and meet all safety requirements. Permanent bridge installations would qualify as mitigation

Unloading/Staging of Materials - will be done using a 624 loader to off load trucks, then the material will be placed in intervals along the pipe route. Pipe and other needed materials will be placed on along the edge of the easement line along the northern edge of the easement.

4. Pipe Installation

Pipe Fusion utilizing an IPS T900 Track Butt Fusion Machine will fuse two sections of pipe. First by setting two 50-foot sections of pipe into the machine and clamping them down; prepping each joint by facing or shaving each joint, then aligning them to be flush with each other. Next, we will heat each joint to the designed temperature set by the manufacturer, once heated properly the two ends will be hydraulically pulled

FIGURE 12. WORK APPROACH AT EACH STREAM CROSSING.



together and held in place for the recommended cooling period. This will allow the molten material to join together, forming a homogenous pipe unit. Once the pipe has cooled it will be pulled ahead for the next pipe joint to be made; this will continue until all pipes for this run of pipe are fused together. Each joint will be data logged and each worker will be certified in the use of all fusing equipment.

Excavation will be performed with the following equipment and personnel, 310 Komatsu lead excavator, 210 Komatsu backfill excavator, and 624 JD loader. Excavation of the force main will entail removing the existing earthen material to the required width (approximately 4' wide) and depth (approximately 6' deep), placing in a linear fashion along the northside of the excavation. Once the ditch is excavated to the pipe length required (typically 50 linear feet), bedding will be installed and graded, then pipe will be placed into the ditch. Grade rods will be used to maintain grade/cover. The pipe will then be backfilled with spoil materials from the excavation and compacted. Excavation of trench materials and stockpile of material will only be for the amount of pipe installed per workday.

Pipe Installation at each stream crossing will occur during one workday. Each excavated trench across will be perpendicular to the stream and will take place using open cut methods previously described. Flow of the stream will be controlled with pumps and temporary rock dams to divert water around the work area (see detail below per GSWCC standards). From that point, creek restoration will include the streambank stabilization methods per project details outlined in **Attachment 1**. Grassing/plantings will be placed on each end of the temporary easement to complete restoration of the crossing.

5. Bypass Pumping

Flows will be pumped from the existing CCWS interceptor around the proposed tie-in location and to a downstream location on the existing CCWS interceptor. This will occur during installation of the tie-in manhole junction structure. Bypass pumping should only take approximately one week.

6. Shoring

Crews will utilize but not be limited to beams and street plates, hydraulic shoring, manhole boxes, sloping / benching as needed in order to stabilize trench walls.

7. Dewatering

Dewatering will be accomplished by methods which will ensure a dry excavation and the protection of the final grade for the trench. Methods for dewatering may include sump pumps, well points, or other suitable methods which will not damage or weaken adjacent structures, foundations, or subgrades. Shallow excavations will be dewatered using open ditches provided such ditches are kept open and free draining.

8. Blasting

No blasting is anticipated at this time. If this should change and blasting is required, a revised plan will be submitted to address this activity.

9. Bedding

Trenches will be excavated to properly allow for the placement of bedding materials for the full trench width and spread to form a uniform support for the pipe and/or appurtenances. Bedding material will be placed so that the material supports the haunch area uniformly and encases the pipe. Material will be rolled with a split wheel compactor to ensure compaction in the pipe zone area per the specified lifts and densities.

10. Backfilling

Backfill will be placed in the specified lifts prior to compaction and compacted with a wheel compactor attachment. In areas where wheel compactor will not achieve compaction such as existing utilities, structures etc. tamps, rollers etc. shall be utilized. Once pipe has been installed, native material will be used for backfilling and compacted in 12" lifts in the trench to pre-construction grade.

11. Field Testing

An independent testing laboratory will conduct tests for compaction and density. Each fill layer will be tested at intervals as stated in the project specifications. JDS will make all necessary excavations for testing access and supply any samples of materials necessary for conducting compaction and density tests.

12. Trail Restoration

Grading of all structures, roads and embankments within the limits will be conducted in a continuous manner behind the pipe installation operation. Grading will not remove or loosen materials beyond the required limits shown on the contract drawings. From

graded aggregate base (GAB) subgrade, 6-inches of GAB will be installed and compacted to grade for trail surface.

JUSTIFICATION FOR USE OF THE FLOODPLAIN AND WETLANDS

The purpose of the Project is to provide for the safe alternative transportation of wastewater during the upgrade of the BCWRF. The proposed force main will connect to an existing Cobb County manhole located within the right-of-way and within the 100-year regulatory floodplain. Collocating the force main as close as possible to the existing rights-of-way minimizes effects on park resources and values.

In order to execute the purpose, need, and allow the Project to divert wastewater during the upgrade to the BCWRF, the project must include some wetlands. This is because the nature of a gravity-fed sewer system requires that it be placed at the lowest elevation; usually along a river (or stream). CRNRA is currently crisscrossed with water and sewer lines for this reason. Additionally, having the sewer force main connect to a larger Cobb County manhole protects the water quality of the river - since the addition of more wastewater to smaller pipes could lead to more sewer overflows.

MITIGATIVE MEASURES

AVOIDANCE AND MINIMIZATION

A range of reasonable alternatives were considered in this EA. Upon taking into consideration the minimization and mitigation of impacts to natural resources, cultural and archeological resource impacts; visitor use impacts; construction schedule of the diversion force main; and project cost, operations, and maintenance; the NPS in coordination with FCDPW selected Alternative B, to permit the diversion sewer force main.

GENERAL CONDITIONS

- The Permittee must notify the Superintendent in writing at least 5 business days in advance of Project activities and will coordinate all activities with the Superintendent or designated representative.
- ☐ The Permittee may not use pesticides or herbicides on Park lands without obtaining the Superintendent's prior written approval.
- All equipment and debris incidental to the force main construction (survey markers, sediment fencing, etc.) will be removed from the project area as soon as it is no longer required for operations.
- The Permittee must keep the Permitted Area clean and free of litter or other debris at all times.

- ☐ The Permittee shall plant, restore, and rehabilitate all disturbed areas with NPS-approved *native* seed mixes and *native* vegetation.
- Natural river stone will be used in the place of riprap or, at a minimum, be used with riprap to provide a more natural appearance to disturbed areas.
- All work will cease during dam releases from Buford Dam and/or Morgan Falls Dam or during heavy rains and will not resume until the river height has receded and conditions are suitable for the movement of equipment and material.
- FCDPW and the NPS will monitor pre- and post-construction in the force main limit of disturbance, stream crossings, and the drill entry point work area to ensure they are restored to pre-existing conditions and to help determine the need for additional mitigation actions.

BIOLOGICAL RESOURCES MITIGATION MEASURES

VEGETATION

- Removal of mature coniferous and deciduous trees within 250 ft. of a wetland, stream, or river shall be minimized to the extent practicable.

NONNATIVE OR EXOTIC SPECIES

- All equipment will be inspected and cleaned before arrival on Park lands to minimize the introduction of invasive species.

SPECIES OF SPECIAL CONCERN OR THEIR HABITAT

- Construction activities will be timed to avoid nesting activities of bird species.
- Employees of John D. Stephens (JDS) and its subcontractors will be notified that harassing, injuring, or destroying wildlife in the CRNRA is prohibited (including all snakes), and that it is illegal to damage or destroy nests or dens of wildlife. Appropriate measures will be employed to avoid these areas.
- USFWS has provided pre-consultation letter of No Affect concurrence. The included IPaC report does not indicate critical habitat for bald eagles. However, CRNRA recommends prior to construction, the project area will be inspected by USFWS or other qualified personnel for the presence of bald eagle nest trees, including both active and alternate nests. If nesting locations are identified within the limits of disturbance prior to construction, construction related activities will be restricted to the non-nesting period. Construction-related activities that will occur within 660 ft. of a nest will be performed outside the bald eagle nesting season, which in this region generally extends from October 1 to May 15. This 660-ft buffer will be maintained unless coordination with USFWS indicates that the buffer zone may be reduced based on the specifics of the situation. Damage to nest trees will be avoided, including damage to their root systems through soil disturbance or compaction.

CULTURAL RESOURCES MITIGATION MEASURES

ARCHEOLOGICAL RESOURCES

- If archaeological features are encountered during construction, work will cease immediately and the Georgia Department of Natural Resources Historic Preservation Division (NRHPD), Superintendent, and Park Cultural Resources Specialist will be notified. Procedures will be followed, as per DO-28 and found in the guiding regulations in 36 CFR 800.13. No further action will take place until the NPS provides clearance.
- The Cobb County Cemetery Preservation Commission (CCCPC) reserves the right to examine the property for ethnic, cultural, and religious evidence located therein. If any ethnic, cultural, or religious evidence is found during development, then the CCCPC must be notified at once. All artifacts recovered will be processed and curated.

CULTURAL LANDSCAPES

- All equipment and construction activities will remain within the pre-determined staging and ingress and egress areas to prevent impacts to the cultural landscape of the Hyde Farm fields.

MUSEUM COLLECTIONS

- All artifacts, field notes, maps, drawings, and data resulting from the Phase II testing, Phase I survey, and any found during construction of 9CO127 and 9CO780 shall be curated by the Applicant. Curation will occur at the NPS Southeast Archaeological Center.

GEOLOGIC FEATURES MITIGATION MEASURES

BREVARD FAULT

- FCDPW will provide the NPS with information on the drilling fluid system proposed for use before the start of construction, and best management practices will be used during drilling to prevent drill fluid leakage. A 20 x 20-foot ring levee will be built around the drill entry & exit points. Drilling fluid returns will be pumped into holding tanks for recycling and closely monitored. Should a fracture and loss of fluid returns occur, the standard practice will be to move the return pit to the fracture site & pump from that point. In addition to monitoring drilling fluid returns, FCDPW will regularly patrol the drill path to check for hydraulic fractures.

SOILS

- All equipment will be maintained in a clean and well-functioning state to avoid or minimize contamination from fluids and fuels. Prior to starting work each day, all machinery will be inspected for leaks (e.g., fuel, oil, and hydraulic fluid) and all necessary repairs will be made before the commencement of work.
- Fueling of equipment will take place outside the Park whenever possible; if fueling within the Park is required, no less than two persons will attend these activities, and fueling will be completed over a physical barrier, such as a tarp, and absorbent materials.
- Movement of heavy equipment and vehicles will be limited during rain events and periods of soil saturation to minimize trenching and rutting of the ground.
- Erosion control methods will be inspected on a daily basis and repaired as necessary to maintain function.
- Coir, jute and natural material matting will be used to stabilize soil and banks. No polypropylene, nylon, or polyvinyl chloride (PVC) netting (turf reinforcement matting) is to be used within the park.
- No outside fill dirt will be used. All backfilling will utilize original soil.
- When backfilling trenches, the backfill material shall be replaced in the order removed (with topsoil on top) and properly compacted to minimize erosion and promote stabilization.

HUMAN HEALTH AND SAFETY MITIGATION MEASURES

- A hazardous spill plan will be required from the contractor stating preventive measures to be implemented and the actions that will be taken in the case of a spill. Hazardous spill clean-up materials will be onsite at all times. All refueling of equipment shall have spill containment pads in position prior to refueling activities. This measure is designed to avoid/minimize the introduction of chemical contaminants associated with machinery (e.g., fuel, oil, and hydraulic fluid) used in project implementation.
- The FCDPW must erect and maintain appropriate warning signs, barricades, or other warning devices during construction activities.

SOUNDSCAPES MITIGATION MEASURES

- All work will be conducted during normal working hours.

VIEWSHEDS MITIGATION MEASURES

- All structures (manholes and vents) will be discreet as much as possible to prevent further impacts to the viewshed.

VISITOR USE AND EXPERIENCE MITIGATION MEASURES

RECREATIONAL RESOURCES

- The public will be notified of construction activities and temporary trail closures via public notices, social media and onsite signage.
- Temporary trail closures or detours must be approved by the Superintendent prior to implementation.

VISITOR USE AND EXPERIENCE

- Trail use will be temporarily limited during construction activities. Wildlife watching/fishing will be affected in the immediate vicinity of the construction.

WATER RESOURCES MITIGATION MEASURES WATER QUALITY

- Standard erosion-control measures will be used to minimize soil erosion and will comply with current Georgia Soil and Water Conservation Commission (GSWCC) Green Book practices (2014), the Georgia Erosion and Sedimentation Act of 1975, Redwoods Amendment of March 27, 1978 (General Authorities Act), and NPS Management policies.
- Silt fencing fabric will be inspected daily during project work and weekly after project completion, until removed. Accumulated sediments will be removed when the fabric is estimated to be approximately 75 percent full. *Silt removal will be accomplished in such a way as to avoid introduction of silt into the local environment.* All silt fencing will be removed by the contractor(s) after soil stabilization.
- All activities must be compliant with the Clean Water Act. Preparedness includes mats, portable bridges, and other temporary methods for stream crossings. *Operation of equipment within streams and wetland areas is prohibited. All activities must occur within the limits of disturbance in wetland areas.*
- Stream and river buffers are to be protected at all times (35 feet on streams, 50 feet on the river). All work within riparian buffers must be done in a manner that minimally impacts the vegetation.

WETLANDS

Planning emphasis for the project was first to avoid impacts to wetland resources. Where impacts to wetlands are unavoidable, design and construction implementation will minimize impacts and use best management practices to the greatest extent possible (see **Attachment 1** for BMP details). Approximately 0.062 acres of wetlands (0.04 acres palustrine; 0.022 acres

riverine) will be temporarily impacted during the force main construction.

- Construction activities occurring within wetland areas will employ specialized BMPs to minimize disturbance to these areas.
- The streambed shall be restored to the original gradient following project completion, unless specifically modified by project.
 - Temporary stream diversions will be removed, and the stream will be reshaped and stabilized as soon as work in the area is completed.
- In addition to spreading stockpiled wetland topsoil on disturbed wetland areas, all disturbed wetland areas will be planted with native herbaceous plant seedlings spaced 12 inches on center.
- Orange construction fencing will line both edges of the limits of disturbance and machinery will not be driven in the wetlands outside the fencing.
- Silt fencing will line the down-slope edge of the limit of disturbance area of the wetlands.

Upon project completion, the top of the force main will lie no less than four feet beneath the contour of the land's surface. Therefore, the 0.04 acres of temporary affected PFO1A wetland and 0.02 acres of temporary affected R2 wetland (0.06 acres of total temporary wetland impacts) in the CRNRA will be directly restored in order to uphold the NPS "no net loss of wetlands" goal and 1:1 function replacement, stated in D.O. #77-1. Any disturbed areas within or near the wetland or stream banks will be restored as quickly as practical and covered with the existing removed and stocked wetland topsoil and vegetation. The existing stream, wetland contours, and hydrologic drainage features will be restored to their pre-construction conditions using grading techniques. Revegetation details are available in **Attachment 1**.

The 0.06 acres of impacts are expected to be temporary and moderate. Construction of the force main on CRNRA property will take place between September 1, 2020 and March 31, 2021 and will last approximately 7 months. However, work within wetlands from beginning of impact to end of restoration is anticipated to only take approximately one day per stream/wetland crossing. Project funding and cost recovery fee is the responsibility of the Project owner Fulton County Department of Public Works and its selected contractor.

To protect the stream crossings, existing culverts and armored banks, matting, and temporary crossings will be utilized during construction. Following construction, two permanent bridges will be installed at Mulberry Creek and Ditched Branch to prevent

further resource injury from future maintenance work along the utility corridor. The design will be approved by the National Park Service and meet all safety requirements. Permanent bridge installations would qualify as mitigation.

FLOODPLAINS

- Construction activities occurring within floodplains will employ specialized BMPs (see **Attachment 1**) to minimize disturbance to these areas.
 - It was determined that the proposed project will not impact life or property, nor will it adversely impact natural and beneficial floodplain values. Therefore, the Floodplain Statement of Findings process was not initiated, the topic was dismissed from further consideration, and mitigation is not required.

Compliance

To fulfill compliance requirements, permits will be obtained under the following regulations:

- Clean Water Act Section 404
- National Environmental Policy Act
- Rivers and Harbors Act Section 10

Clean Water Act Section 404

A Nationwide Permit (NWP) will complete requirements under the Clean Water Act Section 404. NWPs are required for activities that individually and cumulatively have minimal adverse impacts to the aquatic environment. NWP 12 applies to “activities required for the construction, maintenance, repair, and removal of utility lines and associated facilities in waters of the United States, provided the activity does not result in the loss of greater than 1/2 -acre of waters of the United States for a single and complete project.”

National Environmental Policy Act

The Environmental Assessment and this Statement of Findings for Executive order 11990 will complete the requirements for the National Environmental Policy Act.

Rivers and Harbors Act Section 10

Upon completed request, a Letter of Concurrence sent to the US Army Corps of Engineers will complete the requirements under the Harbors and Rivers Act Section 10.

CONCLUSION

A total of 0.062 acres of wetland will be impacted on NPS land. The permitting of the Project will meet the purpose and need of the Project, which is to suitably transport 3.5 to 10 MGD of wastewater from the BCWRF to Cobb County for treatment. The force main has been designed to avoid floodplain and wetland impacts to the maximum extent possible. However, avoidance of floodplain and wetlands MC, T1, T2, and W1 will not be feasible due to its presence within the limit of disturbance. Project activities are expected to result in moderate temporary impacts to the floodplain and wetland. Total wetland disturbance is expected to be approximately 0.04 acres for PFO1A wetlands and an additional 0.022 acres for R2 wetlands. By using Best Management Practices and by implementing proper Erosion Control Plans during construction as described in the sections titled "Affected Wetlands" and "Investigation of Alternatives," impacts to all wetland areas will be minimized. After construction, the wetlands will be fully restored as according to the Erosion Control Plans, fulfilling a "no net loss" of wetlands. To protect the stream crossings, existing culverts and armored banks, matting, and temporary crossings will be utilized during construction. Following construction, two permanent bridges will be installed at Mulberry Creek and Ditched Branch to prevent further resource injury from future maintenance work along the utility corridor. The design will be approved by the National Park Service and meet all safety requirements. Permanent bridge installations would qualify as mitigation.

REFERENCES

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ATTACHMENT 1: MITIGATION MEASURES

ACAD Ref: 23.1c (LMS Tech)
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LOCATION MAP

NOT TO SCALE

SHEET NO.	TITLE
ES-1	LOCATION MAP, DRAINAGE MAP, INDEX, SYMBOLS AND LEGEND
ES-2	EROSION CONTROL GENERAL NOTES
ES-3	EROSION CONTROL NARRATIVE PLAN
ES-4	EROSION CONTROL NARRATIVE PLAN
ES-5	EROSION CONTROL NARRATIVE PLAN
ES-6	FEMA FIRM MAPS
ES-7	RC ALLOWANCES
ES-8	EROSION CONTROL PLAN ACCESS ROAD STA 0+00 TO STA 24+02
ES-9	EROSION CONTROL PLAN ACESS ROAD STA 24+02 TO END
ES-10	EROSION CONTROL PLAN STA 0+00 TO STA 26+00
ES-11	EROSION CONTROL PLAN STA 26+00 TO STA 52+00
ES-12	EROSION CONTROL PLAN STA 52+00 TO STA 63+00 AND STA 334+50 TO END
ES-13	EROSION CONTROL PLAN STA 63+00 TO STA 90+00
ES-14	EROSION CONTROL PLAN STA 90+00 TO STA 117+00
ES-15	EROSION CONTROL PLAN STA 117+00 TO STA 144+00
ES-16	EROSION CONTROL PLAN STA 144+00 TO STA 171+50
ES-17	EROSION CONTROL PLAN STA 171+50 TO STA 198+00
ES-18	EROSION CONTROL PLAN STA 198+00 TO STA 225+00
ES-19	EROSION CONTROL PLAN STA 225+00 TO STA 252+00
ES-20	EROSION CONTROL PLAN STA 252+00 TO STA 280+00
ES-21	EROSION CONTROL PLAN STA 280+00 TO STA 308+00
ES-22	EROSION CONTROL PLAN STA 308+00 TO STA 336+00
CE-1	COBB COUNTY EROSION CONTROL DETAILS
CE-2	COBB COUNTY EROSION CONTROL DETAILS
CE-3	COBB COUNTY EROSION CONTROL DETAILS
CE-4	FULTON COUNTY EROSION CONTROL DETAILS
CE-5	EROSION CONTROL DETAILS

SITE PURPOSE AND CONSTRUCTION ACTIVITY

THE SITE IS FOR THE INSTALLATION OF A WASTEWATER FORCE MAIN FROM FULTON COUNTY TO COBB COUNTY. MAJOR CONSTRUCTION ACTIVITY WILL INCLUDE INSTALLATION OF 24-INCH AND 30-INCH PIPING & ACCOMPANYING SITE WORK AND RESTORATION. BEST MANAGEMENT PRACTICES WILL BE CONSTRUCTED AND MAINTAINED THROUGHOUT LAND DISTURBING ACTIVITIES.

SITE DESCRIPTION AND LOCATION

PROJECT START: LAT: N33.95, LONG W84.40
PROJECT END: LAT: N34.01, LONG W84.35
TOTAL SITE AREA: ± 32.1 AC.
TOTAL AREA OF DISTURBANCE: ± 32.1 AC.
COBB COUNTY: 6.5 AC, SANDY SPRINGS: 25.1 AC, ROSWELL: 0.5 AC

THE PROJECT IS LOCATED EAST OF THE CHATTAHOOCHEE RIVER IN COBB COUNTY AND FULTON COUNTY. THE PROJECT SITE IS LOCATED IN LAND LOTS 0149, 0152, 0218, 0219, 0220, 0282, 0283, 0284, AND 0285 OF THE 1ST DISTRICT IN COBB COUNTY, GA. THE PROJECT SITE IS LOCATED IN LAND LOTS 0361, 0363, 0364, 0367, 0368, 0372 (6TH DISTRICT); 0458 (12TH DISTRICT); 0023, 0024, 0030, 0076, 0077, 0084 (17TH DISTRICT); AND 0362, 0384, 0385 (18TH DISTRICT) IN FULTON COUNTY, GA.

THE EXISTING PUMP STATION SITE BORDERS A POWER AND SEWER EASEMENT WITHIN THE US NATIONAL PARK SERVICE CHATTAHOOCHEE RIVER NATIONAL RECREATION AREA. THE PROJECT SITE ENCOMPASSES STREAM BUFFERS & FLOODPLAINS.

THE PROPOSED SITE CONDITIONS WILL INCLUDE THE INSTALLATION OF 24-INCH AND 30-INCH WASTEWATER FORCE MAIN TO EXISTING SEWER PIPE.

THE SITE GRADE WILL BE RETURNED TO NATURALIZED CONTOURS TYPICAL OF A RIPARIAN ENVIRONMENT. ALL DISTURBED PAVEMENT, CURB, SIDEWALK AND LANDSCAPING WILL BE REPLACED IN KIND. TOP SOIL WILL BE SCRAPED AND SET ASIDE FOR REPLACEMENT POST INSTALLATION.

ADJACENT PROPERTIES

THE ADJACENT PROPERTIES TO THIS PROJECT INCLUDE THE CHATTAHOOCHEE NATIONAL RECREATION AREA, RESIDENTIAL AND COMMERCIAL AREAS, AND A GOLF COURSE. SPECIAL USE PERMITS FROM THE US NATIONAL PARK SERVICE SHOULD BE FOLLOWED TO REDUCE CONSTRUCTION IMPACTS.

HYDRAULIC CONDITIONS

SITE GRADE IS ALTERED TO ACCOMMODATE THE INSTALLATION OF THE WASTEWATER FORCE MAIN, HOWEVER NO IMPERVIOUS AREA IS PROPOSED. NO HYDROLOGIC STUDY WAS PERFORMED, AND NO ADDITIONAL STORMWATER INFRASTRUCTURE IS PROPOSED. RUNOFF COEFFICIENTS WILL NOT CHANGE.

RECEIVING WATERS

CRITICAL AREAS

DUE TO THE ALIGNMENT OF THE EXISTING SYSTEM, FEDERALLY RECOGNIZED WETLANDS AND STATE WATERS ARE WITHIN THE LIMITS OF DISTURBANCE. ALL SENSITIVE AREAS WILL BE DELINEATED ON THE PLANS AND PROTECTED BY DOUBLE ROWS OF SILT FENCE.

SOIL TYPE

THE NRCS SOIL TYPES ARE SHOWN ON THE PLAN SHEETS.

BEST MANAGEMENT PRACTICES TO BE IMPLEMENTED

- BUFFER ZONE: Bf
- CHECK DAM: Cd
- CONSTRUCTION ENTRANCE: Co
- MULCHING: Ds1
- TEMPORARY SEEDING: Ds2
- PERMANENT SEEDING: Ds3
- DUST CONTROL: Du
- DIVERSION: Dv
- ROCK FILTER DAM: Rd
- STREAMBANK STABILIZATION: Sb
- SEDIMENT BARRIER: Sd1-Hb, Sd1-NS, Sd1-S
- SEDIMENT TRAP: Sd2-F, Sd2-P
- TEMPORARY STREAM CROSSING: Sr
- SLOPE STABILIZATION: Ss
- TURBIDITY CURTAIN: Tc
- TREE PROTECTION: Tr

GEORGIA SOIL AND WATER CONSERVATION COMMISSION	
Level II Certified Design Professional	
CERTIFICATION NUMBER	0000029504
ISSUED: 04/03/2019	EXPIRES: 04/03/2022

24 HOUR CONTACT
FULTON DPW
(404) 612-7394

SITE VISIT CERTIFICATION		
"I CERTIFY UNDER PENALTY OF LAW THAT THIS PLAN WAS PREPARED AFTER A SITE VISIT TO THE LOCATIONS DESCRIBED HEREIN BY MYSELF OR MY AUTHORIZED AGENT, UNDER MY DIRECT SUPERVISION."		
AMANDA LESTER	04/09/2019	0000029504
GASWCC LEVEL II DESIGN PROFESSIONAL	DATE	CERTIFICATION #

ES&PC CERTIFICATION STATEMENT		
"I CERTIFY THAT THE PERMITTEE'S EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN PROVIDES FOR AN APPROPRIATE AND COMPREHENSIVE SYSTEM OF BEST MANAGEMENT PRACTICES REQUIRED BY THE GEORGIA WATER QUALITY CONTROL ACT AND THE DOCUMENT "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA" (MANUAL) PUBLISHED BY THE STATE SOIL AND WATER CONSERVATION COMMISSION AS OF JANUARY 1 OF THE YEAR IN WHICH THE LAND-DISTURBING ACTIVITY WAS PERMITTED, PROVIDES FOR THE SAMPLING OF THE RECEIVING WATER(S) OR THE SAMPLING OF THE STORM WATER OUTFALLS AND THAT THE DESIGNED SYSTEM OF BEST MANAGEMENT PRACTICES AND SAMPLING METHODS IS EXPECTED TO MEET THE REQUIREMENTS CONTAINED IN THE GENERAL NPDES PERMIT NO. GAR 100001, GAR 100002 AND GAR 100003."		
AMANDA LESTER	04/09/2019	0000029504
GASWCC LEVEL II DESIGN PROFESSIONAL	DATE	CERTIFICATION #

GSWCC LEVEL II DESIGN PROFESSIONAL

ES&PC CERTIFICATION STATEMENT		
"I CERTIFY THAT THE PERMITTEE'S EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN PROVIDES FOR THE MONITORING OF: (A) ALL PERENNIAL AND INTERMITTENT STREAMS AND OTHER WATER BODIES SHOWN ON THE USGS TOPOGRAPHIC MAP AND ALL OTHER FIELD VERIFIED PERENNIAL AND INTERMITTENT STREAMS AND OTHER WATER BODIES, OR (B) WHERE ANY SUCH SPECIFIC IDENTIFIED PERENNIAL OR INTERMITTENT STREAM AND OTHER WATER BODY IS NOT PROPOSED TO BE SAMPLED, I HAVE DETERMINED IN MY PROFESSIONAL JUDGEMENT, UTILIZING THE FACTORS REQUIRED IN THE GENERAL NPDES PERMIT NO. GAR 100002, THAT THE INCREASE IN TURBIDITY OF EACH SPECIFIC IDENTIFIED SAMPLED RECEIVING WATER WILL BE REPRESENTATIVE OF THE INCREASE IN THE TURBIDITY OF A SPECIFIC IDENTIFIED UN-SAMPLED RECEIVING WATER."		
AMANDA LESTER	04/09/2019	0000029504
GASWCC LEVEL II DESIGN PROFESSIONAL	DATE	CERTIFICATION #

PERMIT NO. GAR100002 CERTIFICATION

"I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT CERTIFIED PERSONNEL PROPERLY GATHER AND EVALUATE THE INFORMATION SUBMITTED. BASED ON MY INQUIRY OF THE PERSON OR PERSONS WHO MANAGE THE SYSTEM, OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS."

NAME (OWNER) DATE

ES&PC CERTIFICATION STATEMENT		
"I CERTIFY THAT THE PERMITTEE'S EROSION AND RUNOFF CONTROL MEASURES ARE IN COMPLIANCE WITH THE COBB COUNTY SEDIMENT CONTROL AND FLOOD PROTECTION REGULATIONS AND WILL NOT INCREASE THE RUNOFF RATE FROM THE SITE FOR RAINSTORMS WITH A RETURN PERIOD OF 2, 5, 10, 25, 50 AND/OR 100 YEARS."		
AMANDA LESTER	04/09/2019	0000029504
GASWCC LEVEL II DESIGN PROFESSIONAL	DATE	CERTIFICATION #

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drawing. If not one inch on
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VERIFY SCALE 1

F&J JOB NO.

JDS1848
6
DATE

04/26/2019
DRAWN

REVISED
CHECKED

AHL

DATE
FILE NAME

BY

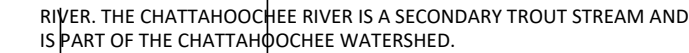
360 Interstate North Parkway
Suite 250
Atlanta, GA 30339
Phone - (404) 334-4310
Web - www.freese.com

1841 FEELER RD
UNIT 100
ATLANTA, GA 30338
PHONE: (678) 336-
5732
FAX: (770) 629-8525

ER
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FULTON COUNTY DEPARTMENT OF PUBLIC WORKS
FULTON-COBB DIVERSION LINE
AND PUMP STATION

EROSION
LOCATION MAP, DRAINAGE MAP
INDEX, SYMBOLS AND LEGEND



Arnold H Lester

SWCD: Region 1

Project Name: FULTON/COBB DIVERSION LINE

City/County: SANDY SPRINGS/FULTON/COBB

Name & email of person filling out checklist: Amanda Lester, P.E. amanda.lester@r2tinc.com

Address:

Date on Plans: 02/01/2019

ester, P.E. amanda.lester@r2tinc.com

TO BE SHOWN ON ES&PC PLAN

Included		Page #	Y/N	TO BE SHOWN ON E&SPC PLAN
ES-1	Y			
				1 The applicable Erosion, Sedimentation and Pollution Control Plan Checklist established by the Commission as of January 1 of the year in which the land-disturbing activity was permitted. (The completed Checklist must be submitted with the E&SPC Plan or the Plan will not be reviewed)
ES-1	Y			2 Level I certification number issued by the Commission, signature and seal of the certified design professional. (Signature, seal and Level I number must be on each sheet pertaining to E&SPC Plan or the Plan will not be reviewed)
ES-3	Y			3 The name and phone number of the 24-hour local contact responsible for erosion, sedimentation and pollution controls.
ES-1	Y			4 Provide the name, address, email address , and phone number of primary permittee.
ES-1	Y			5 Note total and disturbed acreage of the project or phase under construction.
ES-1	Y			6 Provide the GPS locations of the beginning and end of the Infrastructure project. Give the Latitude and Longitude in decimal degrees.
ES-1	Y			7 Initial date of the Plan and the dates of any revisions made to the Plan including the entity who requested the revisions.
ES-1	Y			8 Description of the nature of construction activity.
ES-1	Y			9 Provide vicinity map showing site's relation to surrounding areas. Include designation of specific phase, if necessary.
ES-1	Y			10 Identify the project receiving waters and describe all sensitive adjacent areas including streams, lakes, residential areas, wetlands, marshlands, etc. which may be affected.
ES-1	Y			11 Design professional's certification statement and signature that the site was visited prior to development of the E&SPC Plan as stated on Part IV page 21 of the permit.
ES-1	Y			12 Design as professional's certification statement and signature that the permittee's E&SPC Plan provides for an appropriate and comprehensive system of BMPs and sampling to meet permit requirements as stated on Part IV page 20 of the permit.
ES-1	Y			13 Design professional certification statement and signature that the permittee's E&SPC Plan provides for representative sampling as stated on Part IV D.6.c.(3) page 37 of the permit as applicable."
ES-1	Y			14 Clearly note the statement that "The design professional who prepared the E&SPC Plan is to inspect the installation of the initial sediment storage requirements, perimeter control BMPs, and sediment basins within 7 days after installation," in accordance with Part IV A.5 page 26 of the permit."
ES-1	Y			15 Clearly note the statement that "Non-exempt activities shall not be conducted within the 25 or 50-foot undisturbed stream buffers as measured from the point of vested vegetation or within 25-feet of the coastal marshland buffer as measured from the Jurisdictional Determination Line without first acquiring the necessary variances and permits."
ES-5	Y			16 Provide a description of any buffer encroachments and indicate whether a buffer variance is required.
ES-1	Y			17 Clearly note the statement that "Amendments/revisions to the E&SPC Plan which have a significant effect on BMPs with a hydraulic component must be certified by the design professional."
ES-1	Y			18 Clearly note the statement that "Waste materials shall not be discharged to waters of the State, except as authorized by a Section 404 permit."
ES-1	Y			19 Clearly note statement that "The escape of sediment from the site shall be prevented by the installation of erosion and sediment control measures and practices prior to land disturbing activities."
ES-1	Y			20 Clearly note statement that "Erosion control measures will be maintained at all times. If full implementation of the approved Plan does not provide for effective erosion control, additional erosion and sediment control measures shall be implemented to control or treat the sediment source."
ES-1	Y			21 Clearly note the statement "Any disturbed area left exposed for a period greater than 14 days shall be stabilized with mulch or temporary seeding."
ES-5	Y			22 Any construction activity which discharges storm water into an Impaired Stream Segment, or within 1 linear mile upstream or downstream of the same watershed as, any portion of an Tide Impaired Stream Segment must comply with Part II, C. of the permit. Include the completed Appendix 1 listing all the BMPs that will be used for those areas of the site which discharge to the Impaired Stream Segment."
ES-5	Y			23 a TMDL implementation Plan for sediment has been finalized for the Impaired Stream Segment (identified in Item 22 above) at least six months prior to submittal of NOI, the E&SPC Plan must address any site-specific conditions or requirements included in the TMDL Implementation Plan."
ES-1	Y			24 BMPs for concrete washdown of trucks, concrete mixer trucks, hoppers and the rear of the machinery. Washout of the drum at the construction site is prohibited."
ES-1	Y			25 Provide BMPs for the remediation of all petroleum spills and leaks.
ES-4	Y			26 Description of the measures that will be installed during the construction process to control pollutants in storm water that will occur after construction operations have been completed."

ES-4	Y	27	Description of practices to provide cover for building materials and building production on site. *				
ES-4	Y	28	Description of the practices that will be used to reduce the pollutants in storm water discharges. *				
ES-3	Y	29	Description and chart or timeline of the intended sequence of major activities which disturb soils for the major portions of the site (i.e., initial perimeter and sediment storage BMPs, clearing and grubbing activities, excavation activities, utility activities, temporary and final stabilization).				
ES-4	Y	30	Provide complete requirements of inspections and record keeping for the primary permittee. *				
ES-5	Y	31	Provide complete requirements of sampling frequency and reporting of sampling results. *				
ES-5	Y	32	Provide complete details for retention of records as per Part IV.F. of the permit. *				
ES-4	Y	33	Description of analytical methods to be used to collect and analyze the samples from each location. *				
ES-4	Y	34	Appendix B rationale for NTU values of all outfall sampling points where applicable. *				
ALL	Y	35	Deliniate all sampling locations, potential and intermittent streams and other water bodies into which storm water is discharged also provide a summary chart of the justification and analysis for the representative sampling as applicable. *				
ES-3	Y	36	A description of appropriate controls and measures that will be implemented at the construction site including: (1) initial sediment storage requirements and sediment storage BMPs, (2) intermediate grading and drainage BMPs, and (3) final BMPs. For construction sites where there will be no mass grading and the initial/perimeter and the final/perimeter BMPs, intermediate grading and drainage BMPs, and final BMPs are the same, the Plan may combine all of the BMPs into a site plan. *				
ALL	Y	37	Graphic scale and North arrow.				
ALL	Y	38	Existing and proposed contour lines with contour line drawn at an interval in accordance with the following: <table><tr><td>Existing Contours</td><td>USGS 1' 200' Topographic Sheets</td></tr><tr><td>Proposed Contours</td><td>1" 400' Centerline Profile</td></tr></table>	Existing Contours	USGS 1' 200' Topographic Sheets	Proposed Contours	1" 400' Centerline Profile
Existing Contours	USGS 1' 200' Topographic Sheets						
Proposed Contours	1" 400' Centerline Profile						
N/A	N/A	39	Use of alternative BMPs whose performance has been documented to be equivalent to or superior to conventional BMPs as certified by a Design Professional (unless disapproved by EPA or the Georgia Soil and Water Conservation Commission). Please refer to the Alternative BMP Guidance Document found at www.gseac.org .				
N/A	N/A	40	Use of alternative BMP for application to the Equivalent BMP List. Please refer to Appendix A-2 of the Manual for Erosion & Sediment Control in Georgia 2016 Edition. *				
ALL	Y	41	Deletion of the applicable 25-foot or 50-foot undisturbed buffers adjacent to State waters and any additional buffers required by the Local Issuing Authority. Clearly note and delineate all areas of impact.				
ALL	Y	42	Deletion of on-site wetlands and all State waters located on and within 200 feet of the project site.				
N/A	N/A	43	Deletion and acreage of contributing drainage basins on the project site.				
N/A	N/A	44	Deletion on-site drainage and off-site water sheds using USGS 1' 200' topographical sheets.				
N/A	N/A	45	An estimate of the runoff coefficient or peak discharge flow of the site prior to and after construction activities are completed.				
N/A	N/A	46	Storm-drain pipe and well velocities with appropriate outlet protection to accommodate discharges without erosion. Identify/Delineate all storm water discharge points.				
ALL	Y	47	Soil series for the project site and their delineation.				
ALL	Y	48	The limits of disturbance for each phase of construction.				
N/A	N/A	49	Provide a minimum of 67 cubic yards of sediment storage per acre drained using a temporary sediment basin, retrofitted detention pond, and/or excavated inlet sediment traps for each common drainage location. Sediment storage facilities must be in place prior to and during the land disturbance activities until final stabilization of the site has been achieved. A written justification explaining the decision to use equivalent controls when a sediment basin is not delineated must be included in the Plan. A written justification explaining the decision to locate a sediment basin is not required. A written justification as to why 67 cubic yards of storage is not attainable must also be given. Worksheets from the Manual must include structural BMPs and calculations used by the design professional to obtain the required sediment storage when using equivalent controls. When discharging from sediment basins and impoundments, permits are required to utilize outlet structures that withdraw water from the surface, unless infeasible. If outlet structures that withdraw water from the surface are not feasible, a written justification explaining this decision must be included in the Plan.				
ALL	Y	50	Location of Best Management Practices that are consistent with and no less stringent than the Manual for Erosion and Sediment Control in Georgia. Use uniform coding symbols from the Manual, Chapter 6, if legend.				
CE-2	Y	51	Provide detailed drawings for all structural practices. Specifications must, at a minimum, meet the guidelines set forth in the Manual for Erosion and Sediment Control in Georgia.				
CE-1	Y	52	Provide vegetative plan, noting all permanent and temporary vegetative practices. Include species, planting dates and seeding, irrigation, lime and mulching rates. Vegetative plan shall be site specific for appropriate time of year that seeding will take place and for the appropriate geographic region of Georgia.				

*Using this checklist for a project that is less than 1 acre and not part of a common development within 200 feet of a perennial stream(s), the checklist items would be N/A.

Effective January 1, 2019



FREESE & NICHOLS

JDU						
JRC						
JDJ						

- 1) A NATIONAL PARK SERVICE (NPS) SPECIAL USE PERMIT IS REQUIRED FOR ALL CONSTRUCTION WORK INCLUDING REPAIRS, REHABILITATION, OR MAINTENANCE ACTIVITIES WITHIN THE RIGHT-OF-WAY AND/OR INVOLVING THE BED AND BANK OF THE RIVER WITHIN THE PERMITTED RIGHT-OF-WAY. REFERENCE PERMIT NO: XXXXXX
- 2) THE PERMITTEE IS RESPONSIBLE FOR ENSURING THAT ITS OFFICERS, EMPLOYEES, REPRESENTATIVE, AGENTS, CONTRACTORS, AND SUBCONTRACTORS ARE FAMILIAR WITH THE PERMIT AND COMPLY WITH ITS TERMS AND CONDITIONS. ALL PERSONS WORKING FOR THE PERMITTEE WITHIN THE PERMITTED AREA MUST CARRY A COPY OF THE PERMIT.
- 3) THE PERMITTEE MUST PROVIDE THE NPS WITH CURRENT CONTACT INFORMATION (COMPANY ADDRESS, POINTS OF CONTACT, TELEPHONE NUMBERS, EMAIL ADDRESSES ETC.) FOR BOTH ROUTING AND EMERGENCY COMMUNICATIONS.
- 4) THE PERMITTEE MUST POST ON ITS FACILITIES IN THE PARK AT LEAST ONE SIGN, OF A DESIGN AND IN A LOCATION ACCEPTABLE TO THE NPS, WITH THE COMPANY'S NAME, PRIMARY POINT OF CONTACT, AND EMERGENCY TELEPHONE NUMBER.
- 5) THE PERMITTEE MUST NOTIFY THE SUPERINTENDENT IN WRITING AT LEAST 5 BUSINESS DAYS BEFORE CONDUCTING ANY MAINTENANCE OR NON-EMERGENCY REPAIR WORK WITHIN THE PERMITTED AREA. THE WRITTEN NOTICE MUST DESCRIBE THE LOCATION OF THE PROPOSED WORK, THE EQUIPMENT TO BE USED, AND THE SIZE OF WORK CREWS ANTICIPATED TO BE WORKING IN THE PARK. THE SUPERINTENDENT MAY REQUIRE AND ON-SITE MEETING BEFORE ANY MAINTENANCE OR NON-EMERGENCY REPAIR WORK COMMENCES AND MAY ASSIGN A SITE MONITOR TO BE PRESENT DURING SUCH WORK. IN THE EVENT OF EMERGENCIES, ALL WORK IN THE PERMITTED AREA MUST BE CONDUCTED DURING THE PARK'S NORMAL BUSINESS HOURS. TO RESPOND TO AN EMERGENCY, THE PERMITTEE MAY ENTER THE PERMITTED AREA AT OTHER TIMES, TO CONDUCT REPAIR WORK AFTER NOTIFYING THE SUPERINTENDENT AT EMAIL AND CALLING THE PARK'S CHIEF OF RESOURCES AT NUMBER.
- 6) THE PERMITTEE MUST ERECT AND MAINTAIN APPROPRIATE WARNING SIGNS, BARRICADES, OR OTHER WARNING DEVICES DURING ALL PERIODS WHEN IT IS USING THE PERMITTED AREA, INCLUDING PERIODS OF MAINTENANCE OR REPAIR.
- 7) THE NPS MAY ENTER AND INSPECT THE PERMITTED AREA AT ANY TIME WITHOUT PROVIDING PRIOR NOTICE TO THE PERMITTEE.
- 8) IF NECESSARY TO PROTECT PARK RESOURCES OR VISITORS, THE NPS MAY REQUIRE THE PERMITTEE TO SUSPEND ITS ACTIVITIES IN THE PERMITTED AREA OR TO RELOCATE OR REMOVE ITS FACILITIES OR EQUIPMENT; PROVIDED THAT IF THE NPS DETERMINES THAT THE PERMITTEE MUST RELOCATE OR REMOVE ITS FACILITIES OR EQUIPMENT, THE NPS WILL EXERCISE ITS BEST EFFORTS TO ACCOMMODATE THE PERMITTEE AT ANOTHER LOCATION IN THE PARK.
- 9) NOTWITHSTANDING THE ISSUANCE OF THE PERMIT, THE NPS (A) MAY ESTABLISH TRAILS, ROADS, OR OTHER IMPROVEMENTS ACROSS, OVER, ON, OR THROUGH THE PERMITTED AREA FOR USE BY THE NPS, BY PARK VISITORS, OR BY OTHERS AND (B) MAY AUTHORIZE ITS CONTRACTORS OR OTHER PERMITTEES TO USE THE PERMITTED AREA AT THE SAME TIME THAT HE PERMITTEE IS USING IT, AS LONG AS THOSE OTHER USES WILL NOT UNREASONABLY INTERFERE WITH THE PERMITTEES USE OF THE PERMITTED AREA UNDER THE PERMIT.
- 10) THE PERMITTEE MAY NOT ALLOW ANOTHER PARTY TO CO-LOCATE EQUIPMENT ON THE PERMITTEES INFRASTRUCTURE WITHOUT OBTAINING THE NPS'S PRIOR WRITTEN APPROVAL. AS A CONDITION OF SUCH APPROVAL THE NPS WILL REQUIRE THE CO-LOCATOR TO APPLY FOR AND BE ISSUED ITS OWN NPS ROW PERMIT.
- 11) THE PERMITTEE MUST KEEP THE PERMITTED AREA CLEAN AND FREE OF LITTER OR OTHER DEBRIS AT ALL TIMES.
- 12) EXCEPT AS EXPRESSLY AUTHORIZED BY THIS PERMIT OR SUBSEQUENTLY APPROVED IN WRITING BY THE SUPERINTENDENT, THE PERMITTEE MAY NOT MOVE, REMOVE, ALTER, DAMAGE, OR DESTROY ANY PARK RESOURCES WITHIN THE PERMITTED AREA OR THE PARK, AS DIRECTED BY THE SUPERINTENDENT, THE PERMITTEE MUST TAKE ALL REASONABLE MEASURES TO AVOID OR MINIMIZE DAMAGE TO PARK RESOURCES, THE SUPERINTENDENT MAY REQUIRE REASONABLE MITIGATION IN RETURN FOR ALLOWING IMPACTS TO PARK RESOURCES UNDER THIS PERMIT.
- 13) THE PERMITTEE MUST IMMEDIATELY SUSPEND ALL ACTIVITIES AND NOTIFY THE SUPERINTENDENT UPON THE DISCOVERY OF ANY THREATENED OR ENDANGERED SPECIES OR ARCHEOLOGICAL, PALEONTOLOGICAL, OR HISTORICAL RESOURCES WITHIN OR NEAR THE PERMITTED AREA, ALL NATURAL AND CULTURAL RESOURCES DISCOVERED IN THE PERMITTED AREA ARE THE PROPERTY OF THE UNITED STATES.
- 14) THE PERMITTEE MAY NOT USE PESTICIDES OR HERBICIDES ON PARK LANDS WITHOUT OBTAINING THE SUPERINTENDENT'S PRIOR WRITTEN APPROVAL.
- 15) THE PERMITTEE MUST DO EVERYTHING WITHIN ITS POWER TO PREVENT AND SUPPRESS FIRES RESULTING FROM THE PERMITTEE'S ACTIVITIES UNDER THIS PERMIT.
- 16) WITHIN 4 HOURS AFTER THE DAMAGE OR DISRUPTION OCCURS, THE PERMITTEE MUST REPAIR OR RESTORE ANY UTILITIES WITHIN THE PARK THAT ARE DAMAGE OR DISRUPTED AS A RESULT OF THE PERMITTEE'S ACTIVITIES UNDER THIS PERMIT.
- 17) ALL EQUIPMENT WILL BE INSPECTED AND CLEANED BEFORE ARRIVAL ON PARK LANDS TO MINIMIZE THE INTRODUCTION OF INVASIVE SPECIES. ALL EQUIPMENT SHALL BE MAINTAINED IN A CLEAN AND WELL-FUNCTIONING STATE TO AVOID OR MINIMIZE CONTAMINATION FROM OILS, FLUIDS, AND FUELS. PRIOR TO STARTING WORK EACH DAY, ALL MACHINERY WILL BE INSPECTED FOR LEAKS (E.G. FUEL, OIL AND HYDRAULIC FLUID) AND ALL NECESSARY REPAIRS WILL BE MADE BEFORE THE COMMENCEMENT OF THE WORK.
- 18) A HAZARDOUS SPILL PLAN WILL BE REQUIRED FROM THE CONTRACTOR STATING PREVENTATIVE MEASURES TO BE IMPLEMENTED AND THE ACTIONS THAT WILL BE TAKEN IN CASE OF A SPILL. HAZARDOUS SPILL CLEAN-UP MATERIALS WILL BE ONSITE AT ALL TIMES. ALL REFUELING OF EQUIPMENT SHALL HAVE SPILL CONTAINMENT PADS IN POSITION PRIOR TO REFUELING ACTIVITIES. THIS MEASURE IS DESIGNED TO AVOID/MINIMIZE THE INTRODUCTION OF CHEMICAL CONTAMINANTS ASSOCIATED WITH MACHINERY (E.G. FUEL, OIL, AND HYDRAULIC FLUID) USED IN PROJECT IMPLEMENTATION.
- 19) MOVEMENT OF HEAVY EQUIPMENT AND VEHICLES WILL BE LIMITED DURING RAIN EVENTS AND PERIODS OF SOIL SATURATION TO MINIMIZE TRENCHING AND RUTTING OF THE GROUND.
- 20) SENSITIVE AREAS WILL REQUIRE THE USE OF HAND TOOLS (HAND DIGGING, HAND CUTTING) TO PREVENT DAMAGES TO RESOURCES AND INFRASTRUCTURE.
- 21) EROSION CONTROL METHODS WILL BE INSPECTED ON A DAILY BASIS AND REPAIRED AS NECESSARY TO MAINTAIN FUNCTION.
- 22) SILT FENCING FABRIC WILL BE INSPECTED DAILY DURING PROJECT WORK AND WEEKLY AFTER PROJECT COMPLETION, UNTIL REMOVED. ACCUMULATED SEDIMENTS WILL BE REMOVED WHEN THE FABRIC IS ESTIMATED TO BE APPROXIMATELY HALF FULL. SILT REMOVAL WILL BE ACCOMPLISHED IN SUCH A WAY AS TO AVOID INTRODUCTION OF SILT INTO THE LOCAL ENVIRONMENT. ALL SILT FENCING WILL BE REMOVED BY THE CONTRACTOR AS SOIL STABILIZATION.
- 23) THE PERMITTEE SHALL PLANT, RESTORE, AND REHABILITATE ALL DISTURBED AREAS WITH NPS-APPROVED NATIVE SEED MIXES AND NATIVE VEGETATION.
- 24) MEASURES WILL BE TAKE TO AVOID THE INTRODUCTION OF EXOTIC INVASIVE PLANT AND ANIMAL SPECIES, THE LIST OF WHICH AND EXOTIC PLANT SPECIES IS AVAILABLE FROM THE GEORGIA DEPARTMENT OF NATURAL RESOURCES, WILDLIFE DIVISION AT [HTTP://WWW.CVOOS.UGA.EDU/ENVIRONMENTAL/POLICY-REPORTS/INVASIVESPECIES.PDF](http://www.cvoos.uga.edu/environmental/policy-reports/invasivespecies.pdf) AND THE GEORGIA EXOTIC PEST PLANT COUNCIL WEBSITE AT [HTTP://WWW.GAEPCC.ORG/LIST_CFM](http://www.gaepcc.org/list_cfm)
- 25) NATURAL RIVER STONE WILL BE USED IN THE PLACE OF RIPRAP OR, AT A MINIMUM, BE USED WITH RIPRAP TO PROVIDE A MORE NATURAL APPEARANCE TO DISTURBED AREAS.
- 26) COIR, JUTE, AND NATURAL MATERIAL WILL BE USED TO STABILIZE SOIL AND BANKS. NO POLYPROPYLENE, NYLON, OR POLYVINYL CHLORIDE (PVC) NETTING (TURF REINFORCEMENT MATTING) IS TO BE USED WITHIN THE PARK.
- 27) FILL DIRT IS TO FROM A LOCAL SOURCES AND PREFERABLY CERTIFIED TO BE FREE OF EXOTIC INVASIVE SEEDS AND PROPAGULES.
- 28) WHEN BACKFILLING TRENCHES, THE BACKFILL MATERIAL SHALL BE REPLACED IN THE ORDER REMOVED (WITH TOPSOIL ON TOP) AND PROPERLY COMPACTED TO MINIMIZE EROSION AND PROMOTE STABILIZATION.
- 29) MOWING IS ALLOWED BETWEEN DECEMBER 1ST AND MARCH 31ST. MOWING OUTSIDE OF THIS TIME FRAME MUST BE APPROVED IN WRITING BY THE SUPERINTENDENT.
- 30) TO MINIMIZE DIRECT EFFECTS FROM CONSTRUCTION ON WATER QUALITY AND AQUATIC LIFE, ALL PROTECTION MEASURE IMPLEMENTED DURING CONSTRUCTION WILL BE CLEARLY STATED IN THE CONSTRUCTION SPECIFICATIONS. COFFERDAMS WILL BE CONSTRUCTED TO CONTAIN ALL RUNOFF FROM CONSTRUCTION SITE. COFFER DAMS WILL BE CONSTRUCTED FROM THE LANDWARD SIDE ONLY AND WILL BE REMOVED AT A SUITABLE TIME AFTER THE SITES ARE STABILIZED.
- 31) ALL ACTIVITIES MUST BE COMPLIANT WITH THE CLEAN WATER ACT. PREPAREDNESS INCLUDES MATS, PORTABLE BRIDGES, AND OTHER TEMPORARY METHODS FOR STREAM CROSSINGS. OPERATION OF EQUIPMENT WITHIN STREAMS AND WETLAND AREAS IS PROHIBITED WITHOUT WRITTEN APPROVAL FROM THE PARK SUPERINTENDENT.
- 32) STREAM AND RIVER BUFFERS ARE TO BE PROTECTED AT ALL TIMES (35 FEET ON STREAMS, 50 FEET ON THE RIVER). ALL WORK WITHIN RIPARIAN BUFFERS MUST BE DONE IN A MANNER THAT MINIMALLY IMPACTS THE VEGETATION. STREAM BANK VEGETATION SHOULD BE HAND-TRIMMED, NOT CLEARED OR MOWED.
- 33) ALL WORK WILL CEASE DURING DAM RELEASES FROM MORGAN FALLS DAM OR DURING HEAVY RAINS AND WILL NOT RESUME UNTIL THE RIVER HEIGHT HAS RECEDED AND CONDITIONS ARE SUITABLE FOR THE MOVEMENT OF EQUIPMENT AND MATERIAL.
- 34) CONSTRUCTION ACTIVITIES OCCURRING WITHIN WETLAND AREAS AND FLOODPLAINS WILL EMPLOY SPECIALIZED BMPS TO MINIMIZE DISTURBANCE TO THESE AREAS.

HEAVY EQUIPMENT USE IN WETLANDS MUST BE AVOIDED IF AT ALL POSSIBLE. HEAVY EQUIPMENT OPERATED IN WETLAND AREAS MUST BE PLACED ON MATS OR OTHER MEASURES EMPLOYED TO MINIMIZE SOIL AND PLANT DISTURBANCE.

REMOVAL OF MATURE CONIFEROUS AND DECIDUOUS TREES WITHIN 250 FT OF A WETLAND, STREAM, OR RIVER SHALL BE MINIMIZED.

THE STREAMBED SHALL BE RESTORED TO THE ORIGINAL GRADIENT FOLLOWING PROJECT COMPLETION, UNLESS SPECIFICALLY MODIFIED BY THE PROJECT.

BMP'S SUCH AS CONSTRUCTION EXITS, WATERING STATIONS AND SWEEPERS MAY BE UTILIZED TO MINIMIZE OFF-SITE VEHICLE TRACKING OF SEDIMENTS AND THE GENERATION OF DUST.

(2) NON-EXEMPT ACTIVITIES SHALL NOT BE CONDUCTED WITHIN THE 25 OR 50-FOOT UNDISTURBED STREAM BUFFERS AS MEASURED FROM THE POINT OF WRESTED VEGETATION WITHOUT FIRST ACQUIRING THE NECESSARY VARIANCES AND PERMITS.

(3) PETROLEUM BASED PRODUCTS- CONTAINERS FOR PRODUCTS SUCH AS FUELS, LUBRICANTS, TARS WILL BE INSPECTED DAILY FOR LEAKS AND SPILLS. THIS INCLUDES ON-SITE VEHICLE AND MACHINERY DAILY INSPECTIONS AND REGULAR PREVENTATIVE MAINTENANCE OF SUCH EQUIPMENT. EQUIPMENT MAINTENANCE AREAS WILL BE LOCATED AWAY FROM STORM WATER, NATURAL DRAINS AND STORM WATER DRAINAGE INLETS. IN ADDITION, TEMPORARY FUELING TANKS SHALL HAVE A SECONDARY CONTAINMENT LINER TO PREVENT/MINIMIZE SITE CONTAMINATION. DISCHARGE OF OILS, FUELS AND LUBRICANTS IS PROHIBITED. PROPER DISPOSAL METHODS WILL INCLUDE COLLECTION IN A SUITABLE CONTAINER AND DISPOSAL AS REQUIRED BY LOCAL AND STATE REGULATIONS.

(4) SOLVENTS- ALL PRODUCTS WILL BE STORED IN TIGHTLY SEALED ORIGINAL CONTAINERS WHEN NOT IN USE. EXCESS PRODUCT WHICH NOT BE DISCHARGED TO THE STORM WATER COLLECTION SYSTEM. EXCESS PRODUCT, MATERIALS USED WITH THESE PRODUCTS AND PRODUCT CONTAINERS WILL BE DISPOSED OF ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.

(5) CONCRETE TRUCK WASHING- NO CONCRETE TRUCKS WILL BE ALLOWED TO WASH OUT OR DISCHARGE SURPLUS CONCRETE OR DRUM WASH WATER ONSITE.

(6) FERTILIZER/HERBICIDES- THESE PRODUCTS WILL BE APPLIED AT RATES THAT DO NOT EXCEED THE MANUFACTURER'S SPECIFICATIONS OR ABOVE THE GUIDELINES SET FORTH IN THE CROP ESTABLISHMENT OR IN THE GSWC MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA. ANY STORAGE OF THESE MATERIALS WILL BE UNDER ROOF IN SEALED CONTAINERS.

(7) CONSTRUCTION MATERIALS- NO CONSTRUCTION MATERIALS WILL BE BURIED OR DISPOSED OF ONSITE. ALL SUCH MATERIAL WILL BE DISPOSED OF ACCORDING TO PROPER WASTE DISPOSAL PROCEDURES.

(8) NO WASTE WILL BE DISPOSED OF INTO STORM WATER INLETS OR WATERS OF THE STATE.

(9) THE DESIGN PROFESSIONAL WHO PREPARED THE ES&PC PLAN IS TO INSPECT THE INSTALLATION OF BMP'S WITHIN 7 DAYS AFTER INITIAL CONSTRUCTION ACTIVITY BEGINS.

(10) ANY AMENDMENT TO THE EROSION CONTROL PLANS WHICH HAVE A SIGNIFICANT EFFECT ON BMP'S WITH A HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL.

(11) SOIL CLEANUP AND CONTROL PRACTICES

(12) LOCAL, STATE AND MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP WILL BE CLEARLY POSTED AND PROCEDURES MADE AVAILABLE TO SITE PERSONNEL.

(13) MATERIAL AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE MATERIAL STORAGE AREAS. TYPICAL MATERIALS AND EQUIPMENT INCLUDES, BUT IS NOT LIMITED TO: BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, CAT LITTER, SAND, SAWDUST AND PROPERTY LABELED PLASTIC AND METAL WASTE CONTAINERS.

(14) SPILL PREVENTION PRACTICES AND PROCEDURES WILL BE REVIEWED AFTER A SPILL AND ADJUSTED AS NECESSARY TO PREVENT FUTURE SPILLS.

(15) ALL SPILLS WILL BE CLEANED UP IMMEDIATELY UPON DISCOVERY. ALL SPILLS WILL BE REPORTED AS REQUIRED BY LOCAL, STATE AND FEDERAL REGULATIONS.

(16) FOR SPILLS THAT IMPACT SURFACE WATER (LEAVE A SHEEN ON SURFACE WATER), THE NATIONAL RESPONSE CENTER (NRC) WILL BE CONTACTED WITHIN 24 HOURS A 1-800-426-2675.

(17) FOR SPILLS OF AN UNKNOWN AMOUNT, THE NATIONAL RESPONSE CENTER (NRC) WILL BE CONTACTED WITHIN 24 HOURS A 1-800-426-2675.

(18) FOR SPILLS GREATER THAN 25 GALLONS AND NO SURFACE WATER IMPACTS, THE GEORGIA EPD WILL BE CONTACTED WITHIN 24 HOURS.

(19) FOR SPILLS LESS THAN 25 GALLONS AND NO SURFACE WATER IMPACTS, THE SPILL WILL BE CLEANED UP AND LOCAL AGENCIES WILL BE CONTACTED AS REQUIRED.

(20) THE CONTRACTOR SHALL NOTIFY THE LICENSED PROFESSIONAL WHO PREPARED THIS PLAN IF MORE THAN 1320 GALLONS OF PETROLEUM IS STORED ONSITE (THIS INCLUDES CAPACITIES OF EQUIPMENT) OR IF ANY ONE PIECE OF EQUIPMENT HAS A CAPACITY GREATER THAN 660 GALLONS. THE CONTRACTOR WILL NEED A SPILL PREVENTION CONTAINMENT AND COUNTERMEASURES PLAN PREPARED BY A LICENSED PROFESSIONAL.

(21) A SANITARY UNIT WILL BE ONSITE TO COLLECT ALL SANITARY WASTE DURING CONSTRUCTION ACTIVITY.

COBB COUNTY TREE PRESERVATION

(1) WHEN DIGGING NEAR TREES, THE CONTRACTOR SHALL PRUNE ALL EXPOSED ROOTS ONE INCH IN DIAMETER OR LARGER ON THE SIDE OF THE TRENCH ADJACENT TO THE TREES. PRUNING SHALL CONSIST OF MAKING A CLEAN CUT FLUSH WITH THE SIDE OF THE TRENCH TO PROMOTE NEW ROOT GROWTH. FOR QUESTIONS, CONTACT CECIL ATCHLEY, COUNTY ARBORIST, AT 770-528-2124.

(2) THE CONTRACTOR SHALL PROTECT ALL TREES AND VEGETATION ON SITE EXCEPT AS NOTED ON THE PLANS OR APPROVED BY THE ENGINEER AND/OR THE COBB COUNTY WATER SYSTEM.

(3) PROTECT THE TRUNKS OF ANY TREES BEING PRESERVED WITHIN THE TEMPORARY OR PERMANENT UTILITY EASEMENTS WITH STRAPPED ON PLANKING OR SIMILAR PROTECTIVE DEVICE.

(4) TREE PROTECTION DEVICES MUST BE INSTALLED AND INSPECTED PRIOR TO ANY CLEARING, GRUBBING OR GRADING.

(5) PRUNING OF TREE LIMBS TO PROVIDE CLEARANCE FOR EQUIPMENT AND MATERIALS SHALL BE DONE ACCORDING TO STANDARD ARBORICULTURAL PRACTICE (SEE ANSI A300-1995).

(6) ROOT SYSTEMS OF SIGNIFICANT TREES, AS INDICATED ON THE PLANS, WHICH ARE ENCOUNTERED DURING CONSTRUCTION, SHALL BE FREE-BORED.

(7) A PRE-CONSTRUCTION CONFERENCE IS REQUIRED PRIOR TO THE ISSUANCE OF THE ON-SITE CONSTRUCTION PERMIT. CALL THE SITE INSPECTIONS SECTION AT 770-528-2142 TO ARRANGE A MEETING AT THE SITE.

(8) TREE PROTECTION AND REPLACEMENT SHALL BE ENFORCED ACCORDING TO COBB COUNTY STANDARDS. ANY FIELD ADJUSTMENTS TO TREE PROTECTION DEVICE TYPES, LOCATIONS OR SUBSTITUTIONS OF PLANT MATERIALS SHOWN ON THE APPROVED PLANS ARE SUBJECT TO THE REVIEW AND APPROVAL OF THE COBB COUNTY ARBORIST.

(9) THE INSTALLATION OF EROSION CONTROL DEVICES CAUSE HARM TO TREES, ON INDIVIDUAL LOTS, USE SILT FENCE ONLY AS NEEDED AND LOCATE IT AS FAR FROM TREE PROTECTION ZONES AS POSSIBLE.

COBB COUNTY EROSION CONTROL NOTES

(1) EROSION CONTROL PRACTICES MUST COMPLY WITH THE MINIMUM BEST MANAGEMENT PRACTICES FOR EROSION CONTROL (COBB COUNTY CODE SECT. 50-75), AND SHALL COMPLY WITH THE STANDARDS / SPECIFICATIONS IN THE "MANUAL FOR EROSION CONTROL AND SEDIMENT CONTROL IN GEORGIA".

(2) EROSION AND SEDIMENT CONTROL DEVICES MUST BE INSTALLED AND INSPECTED PRIOR TO ANY GRADING ON SITE. PLEASE CALL 770-528-2134 WITH ENOUGH LEAD TIME FOR AN INSPECTION TO MEET YOUR SCHEDULE.

(3) DISTURBED AREAS ARE TO BE MULCHED DAILY BEFORE CONTRACTOR ACTIVITIES CEASE FOR THE DAY. DISTURBED AREAS TO BE LEFT IDLE FOR FIVE DAYS, AND NOT TO FINAL GRADE, WILL BE ESTABLISHED TO TEMPORARY MULCH (DS1) OR VEGETATION (DS2). DISTURBED AREAS TO BE LEFT IDLE FOR TWO WEEKS OR MORE WILL BE ESTABLISHED TO PERMANENT VEGETATION (DS3). ALL AREAS TO FINAL GRADE WILL BE ESTABLISHED TO PERMANENT VEGETATION IMMEDIATELY UPON COMPLETION. WHEN HAND PLANTING, MULCH (HAY OR STRAW) SHOULD BE UNIFORMLY SPREAD OVER SEED AREA WITHIN 24 HOURS OF SEEDING. DURING UNSUITABLE GROWING SEASONS, MULCH WILL BE USED AS A TEMPORARY COVER (DS3). ON SLOPES THAT ARE 2:1 OR STEEPER, MULCH WILL BE ANCHORED.

(4) IN CONCENTRATED FLOW AREAS, ALL SLOPES STEEPER THAN 2.5:1 AND WITH THE HEIGHT TEN FEET OR GREATER, AND CUTS AND FILLS WITHIN STREAM BUFFER, SHALL BE STABILIZED WITH THE APPROPRIATE EROSION CONTROL MATTING OR BLANKET.

(5) COBB COUNTY LAND DISTURBANCE PERMIT MUST BE DISPLAYED ON SITE AT ALL TIMES DURING CONSTRUCTION AND IN PLAIN VIEW FROM A COUNTY ROAD OR STREET.

(6) THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION CONTROL MEASURES AND PRACTICES PRIOR TO OR CONCURRENT WITH LAND DISTURBING ACTIVITIES. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.

(7) SEDIMENT / EROSION CONTROL DEVICES MUST BE CHECKED AFTER EACH STORM EVENT. EACH DEVICE IS TO BE MAINTAINED OR REPLACED IF SEDIMENT ACCUMULATION HAS REACHED ONE HALF THE CAPACITY OF THE DEVICE. ADDITIONAL DEVICES MUST BE INSTALLED IF NEW CHANNELS HAVE BEEN DEVELOPED.

(8) THE USE OF POLYMERS (PAMS) IS ACCEPTED AS A BMP AS RECOMMENDED BY THE STATE SOIL & WATER CONSERVATION COMMISSION BMP "GREEN BOOK". COBB COUNTY ALSO REQUIRES THAT POLYMERS USED TO STABILIZE CONSTRUCTION SITES MUST BE USED IN CONJUNCTION WITH MULCHING AND OR HYDROSEEDING.

(9) ADDITIONAL EROSION CONTROL DEVICES TO BE USED AS REQUIRED BY COBB COUNTY.

(10) THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION CONTROL MEASURES AND PRACTICES PRIOR TO, OR CONCURRENT WITH, LAND DISTURBING ACTIVITIES.

(11) EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.

(12) ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR

- 1) A PRECONSTRUCTION MEETING WITH THE LAND DISTURBANCE INSPECTOR IS REQUIRED PRIOR TO RELEASE OF THE PERMIT. CONTACT ENGINEERING AT 770-594-6100 TO SCHEDULE.
- 2) AN ENCROACHMENT PERMIT IS REQUIRED FOR ANY WORK WITHIN THE PUBLIC RIGHT OF WAY FROM THE ROSWELL DEPARTMENT OF TRANSPORTATION. THE CONTRACTOR SHALL FURNISH AND MAINTAIN ALL NECESSARY BARRICADES WHILE ROADWAY FRONTAGE IMPROVEMENTS ARE BEING MADE. CONTACT JOHN WOOTEN FOR ENCROACHMENT PERMITS AND TRAFFIC CONTROL PLAN APPROVAL AT 770-594-6108.
- 3) A TREE REMOVAL PERMIT IS REQUIRED FOR ALL TREES 3-INCH CALIPER OR GREATER, IF LOT IS OVER 1-ACRE.
- 4) A TREE REMOVAL PERMIT IS REQUIRED FOR REMOVAL OF SPECIMEN TREES.
- 5) TREE PROTECTION FENCING MUST BE INSTALLED AND APPROVED BY THE CITY ARBORIST PRIOR TO ISSUANCE OF THE LAND DISTURBANCE PERMIT, AS APPLICABLE. CONTACT THE CITY ARBORIST AT 770-594-6293 FOR INSPECTION WHENEVER SPECIMEN TREES, BUFFERS, OR TREE SOLE AREAS ARE LOCATED ON OR ADJACENT TO THE SITE.
- 6) CONSTRUCTION IS ONLY ALLOWED MON.-SAT. BETWEEN THE HOURS OF 7:00 AM AND 7:00 PM; HOWEVER THIS DOES NOT APPLY TO ANY PERSON PERFORMING CONSTRUCTION ACTIVITY AT HIS OR HER RESIDENCE, BUT SUCH PERSONS ARE SUBJECT TO THE NOISE RESTRICTIONS SET OUT IN SUBSECTION 8.8.3(S) OF THE CITY CODE.
- 7) ALL CONSTRUCTION SHALL MINIMALLY COMPLY WITH THE CITY OF ROSWELL STANDARD CONSTRUCTION SPECIFICATIONS AND SUBDIVISION REGULATIONS AND THE BEST MANAGEMENT PRACTICES AS SET FORTH IN THE CITY OF ROSWELL SOIL EROSION, SEDIMENTATION AND POLLUTION CONTROL ORDINANCE.
- 8) ALL SILT BARRIERS AND CONSTRUCTION ENTRANCE PADS MUST BE PLACED PRIOR TO ANY CLEARING AND/OR GRADING. NO GRADING SHALL BE DONE UNTIL SILT BARRIER INSTALLATION IS COMPLETE AND A LAND DISTURBANCE NOTIFICATION IS ISSUED BY THE LAND DEVELOPMENT INSPECTOR.
- 9) CONTRACTOR MUST NOTIFY LAND DEVELOPMENT INSPECTOR (770-594-6100) TWENTY-FOUR (24) HOURS PRIOR TO BEGINNING CONSTRUCTION AND AT THE BEGINNING OF EACH NEW PHASE OR AFTER A LULL OF MORE THAN 14 DAYS. CONTACT YOUR LAND DISTURBANCE INSPECTOR TO SCHEDULE INSPECTIONS.
- 10) OWNER AGREES TO PROVIDE AND MAINTAIN OFF-STREET PARKING ON THE SUBJECT PROPERTY DURING THE ENTIRE CONSTRUCTION PERIOD.
- 11) BURNING OF DEBRIS OR CONSTRUCTION MATERIALS IS NOT PERMITTED WITHIN THE CITY OF ROSWELL.
- 12) BURIAL OF CONSTRUCTION MATERIALS IS NOT PERMITTED WITHIN THE CITY OF ROSWELL.
- 13) THE OWNER/DEVELOPER IS RESPONSIBLE TO COORDINATE WITH THE US ARMY CORPS OF ENGINEERS CONCERNING PERMITS OR REQUIREMENTS WHEN WETLANDS OR STREAMS ARE PROPOSED TO BE DISTURBED ON THE PROPERTY. FAILURE TO REQUEST A DETERMINATION OF PERMIT REQUIREMENT BEFORE DISTURBING ANY WETLANDS OR STREAMS COULD RESULT IN PENALTIES BEING IMPOSED BY THE CORPS OF ENGINEERS.
- 14) A CITY OF ROSWELL TRENCHING PERMIT IS REQUIRED PRIOR TO ANY TRENCHING ACTIVITY. CONTACT YOUR CITY OF ROSWELL LAND DEVELOPMENT INSPECTOR OR CALL 770-594-6100 TO OBTAIN A TRENCHING PERMIT.
- 15) NO ADDITIONAL DRAINAGE AREAS SHALL BE DIVERTED ONTO CITY RIGHT-OF-WAY UNLESS SHOWN ON THE APPROVED SITE PLAN(S).
- 16) ALL CORRUGATED METAL STORM DRAINPIPE SHALL BE FULLY BITUMINOUS-COATED GALVANIZED STEEL OR ALUMINIZED TYPE II WITH RE-ROLLED ENDS AND BANDS.
- 17) ALL EXTERIOR LIGHTING SHALL BE PLACED SO AS NOT TO DIRECTLY ILLUMINATE ADJACENT PROPERTY.

- 1) IF APPLICABLE, THE CONTRACTOR/OPERATOR / OWNER UPON FILING THE NOI AND NOT FOR THE STATE NPDES CONSTRUCTION GENERAL PERMIT SHALL SUBMIT COPIES OF THE NOI AND NOT TO THE CITY ENGINEER ALONG WITH A COPY OF THE CERTIFIED MAIL RECEIPT.
- 2) NOTICE IS HEREBY GIVEN THAT ALL EROSION AND SEDIMENT DEVICES AND PRACTICES MUST BE INSTALLED AND MAINTAINED AT ALL TIMES. NO FURTHER NOTICE WILL BE GIVEN. ANY SITE UPON WHICH THE LAND DEVELOPMENT INSPECTOR FINDS ANY DEFICIENCY WILL BE SUBJECT TO AN IMMEDIATE ENFORCEMENT ACTION WITHOUT WARNING. ALL SEDIMENT CONTROL WILL BE MAINTAINED UNTIL ALL UP GRADIENT GROUND WITHIN THE CONSTRUCTION AREA HAS BEEN COMPLETELY STABILIZED WITH PERMANENT VEGETATION AND ALL ROADS/DRIVEWAYS HAVE BEEN PAVED.
- 3) PRIOR TO COMMENCING LAND DISTURBANCE ACTIVITY, THE LIMITS OF LAND DISTURBANCE SHOULD BE CLEARLY AND ACCURATELY DEMARCATED WITH STAKES, RIBBONS, OR OTHER APPROPRIATE MEANS. THE LOCATION AND EXTENT OF ALL AUTHORIZED LAND DISTURBANCE SHALL OCCUR WITHIN THE APPROVED LIMITS INDICATED ON THE APPROVED PLANS. NO CLEARING BEYOND THE LIMITS OF DISTURBANCE SHOWN ON THE APPROVED PLANS SHALL BE ALLOWED.
- 4) NO LAND DISTURBING ACTIVITY OR STORAGE OF MATERIALS WITHIN ANY TREE SAVE AREA SHALL BE ALLOWED.
- 5) THE PROPERTY OWNER AND CONTRACTOR ARE EQUALLY RESPONSIBLE FOR ALL EROSION CONTROL ACTIVITIES.
- 6) ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE SPECIFICATIONS IN THE MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA AND APPLICABLE UPDATES THERETO ON THE GASWCC WEBSITE.
- 7) A CONSTRUCTION SITE COPY OF THE EROSION SEDIMENT AND/OR POLLUTION CONTROL PLAN MUST BE KEPT UP TO DATE. REVISIONS TO THE PLAN SHALL BE APPROVED BY THE CITY ENGINEER OR ASSIGNED PLAN REVIEWER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN QUALIFIED PROFESSIONAL ADVICE WHEN QUESTIONS ARISE CONCERNING DESIGN AND EFFECTIVENESS OF EROSION CONTROL DEVICES, NOT THE CITY OF ROSWELL.
- 8) EROSION CONTROL DEVICES THAT ARE INSTALLED AS DIRECTED BY THE LAND DEVELOPMENT INSPECTOR BUT NOT SHOWN ON THE APPROVED PLAN AND WHICH ALSO SUBSEQUENTLY FAIL ARE THE RESPONSIBILITY OF THE CONTRACTOR.
- 9) THE CONSTRUCTION EXIT(S) SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ON TO PUBLIC RIGHT-OF-WAY OR PRIVATE ROADS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH STONE, AS CONDITIONS DEMANDS, AND REPAIR AND/OR CLEAN-OUT OF ANY STRUCTURES USED TO TRAP SEDIMENT. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLE ONTO PUBLIC/PRIVATE ROADWAY OR INTO STORM DRAIN MUST BE REMOVED.
- 10) TYPE C SILT FENCE FABRIC SHALL BE COMPRISED OF GA. DEPARTMENT OF TRANSPORTATION QUALIFIED PRODUCTS LIST (QPL) B36 FOR SILT FENCE FABRIC. TYPE "A" SILT FENCE FABRIC AND CONSTRUCTION MAY BE ALLOWED WITH PRIOR WRITTEN APPROVAL FROM THE LAND DEVELOPMENT INSPECTOR.
- 11) SILT FENCES SHALL NOT BE PLACED IN STREAM BUFFERS, FLOOD PLAINS OR ACROSS AREAS OF CONCENTRATED FLOW. CHECK DAMS OR ROCK FILTER DAMS, AS APPROPRIATE ARE TO BE INSTALLED ACROSS AREAS OF CONCENTRATED FLOW.
- 12) TOPSOIL SHALL BE STOCKPILED AND USED TO DRESS FINAL GRADES.
- 13) BELOW ALL FILL SLOPES GREATER THAN 25% AND HIGHER THAN 10 FEET, A FLAT AREA LENGTH OF 10 FEET BETWEEN THE TOE OF THE SLOPE TO THE FENCE SHALL BE PROVIDED.
- 14) ALL OPEN DRAINAGE SWALES MUST BE GRASSED, AND RIPRAP MUST BE PLACED AS REQUIRED TO CONTROL EROSION. A MINIMUM OF 10 SQUARE YARDS OF 40 LB. STONE SHALL BE PLACED AT ALL HEADWALLS OR FLUMES.
- 15) PLAN REVISIONS WHICH INVOLVE A HYDRAULIC COMPONENT MUST BE REVISED BY THE DESIGN ENGINEER AND APPROVED BY THE CITY ENGINEER.
- 16) WHENEVER FEASIBLE, NATURAL VEGETATION SHALL BE RETAINED, PROTECTED AND SUPPLEMENTED. THE DISTURBED AREA AND THE DURATION OF EXPOSURE TO EROSION ELEMENTS SHALL BE KEPT TO A PRACTICABLE MINIMUM. DISTURBED SOIL SHALL BE STABILIZED AS QUICKLY AS PRACTICABLE; ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.
- 17) TEMPORARY VEGETATION AND/OR HEAVY MULCHING SHALL BE EMPLOYED TO PROTECT EXPOSED CRITICAL AREAS DURING DEVELOPMENT. IN NO CASE SHALL A CRITICAL AREA BE LEFT BARE FOR MORE THAN SEVEN (7) DAYS.
- 18) WHEN UTILITY CONSTRUCTION IS WITHIN FLOODPLAIN, THE CONTRACTOR SHALL RESTORE THE FLOODPLAIN TO THE ORIGINAL CONDITION AND GRADE IMMEDIATELY UPON COMPLETION. UPON COMPLETION OF RESTORATION, A PROFESSIONAL ENGINEER SHALL CERTIFY IN WRITING TO THE ENGINEERING DIVISION THAT ALL WORK IS COMPLETE AND FLOODPLAIN IS RESTORED.
- 19) ADDITIONAL PLANTINGS WILL BE NECESSARY IF A SUFFICIENT STAND OF GRASS FAILS TO GROW.
- 20) THE LAND DEVELOPMENT INSPECTOR WILL DETERMINE ADEQUATE COVER OF NEW PLANTINGS.
- 21) GRADING EQUIPMENT MUST CROSS FLOWING STREAMS BY MEANS OF BRIDGES OR CULVERTS EXCEPT WHEN SUCH METHODS ARE NOT FEASIBLE, PROVIDED, IN ANY CASE, THAT SUCH CROSSING IS KEPT TO A MINIMUM.
- 22) CONCENTRATED FLOW AREAS, ALL SLOPES STEEPER THAN 2.5:1 AND WITH A HEIGHT OF TEN FEET OR GREATER, AND CUTS AND FILLS WITHIN STREAM BUFFERS, SHALL BE STABILIZED WITH THE APPROPRIATE EROSION CONTROL MATTING OR BLANKETS.
- 23) ALL SLOPES STEEPER THAN 3:1 SHALL RECEIVE SURFACE ROUGHENING TREATMENT OR BE STABILIZED WITH GDOT APPROVED EROSION CONTROL BLANKETS OR SOIL REINFORCEMENT MATTING. MOWED SLOPES SHALL NOT BE STEEPER THAN 3:1. ALL SLOPES MUST BE PROTECTED UNTIL A PERMANENT VEGETATIVE STAND IS ESTABLISHED.

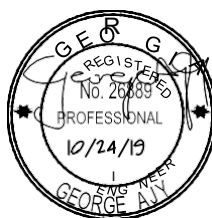
 **GSWCC** **GEORGIA SOIL AND WATER
CONSERVATION COMMISSION**

Arnold H. Senter

Level II Certified Design Professional

CERTIFICATION NUMBER 0000029504

ISSUED: 04/03/2019 EXPIRES: 04/03/2022



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FULTON COUNTY DEPARTMENT OF PUBLIC WORKS
FULTON-COBB DIVERSION LINE
AND PUMP STATION
EROSION
EROSION CONTROL
GENERAL NOTES

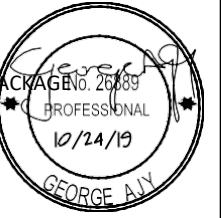
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ES-2

PACKAGE 3

ACTUAL FIELD CONDITIONS.

OFFICE, ETC.)



EROSION

[illegible]

Armeda H. Lester

INTERMEDIATE GRADING AND TEMPORARY VEGETATIVE PLAN (PHASE II)

- 1) THE CONSTRUCTION EXIT, SILT FENCE, OUTLET PROTECTION, MULCHING, TEMPORARY GRASSING, AND PERMANENT GRASSING SHALL ALL BE MAINTAINED AND REPAIRED DURING THE GRADING PHASE OF CONSTRUCTION.
- 2) DURING CONSTRUCTION, THE CONTRACTOR SHALL MAINTAIN CAREFUL SCHEDULE AND PERFORMANCE TO ENSURE THAT LAND STRIPPED OF ITS NATURAL GROUND COVER IS EXPOSED ONLY IN SMALL QUANTITIES, AND THEREFORE LIMITED DURATIONS, BEFORE PERMANENT EROSION PROTECTION IS ESTABLISHED.

- 3) STREAMBANK STABILIZATION SHALL BE INSTALLED PRIOR TO DISTURBANCE

ON ANY STREAM BANK DURING CONSTRUCTION.

- 4) EARTHWORK OPERATIONS IN THE VICINITY OF STREAM BUFFERS SHALL BE CAREFULLY CONTROLLED TO AVOID DUMPING OR SLOUGHING INTO THE BUFFER AREAS.
- 5) TOPSOIL SHALL BE REMOVED TO SUITABLE SUBGRADE MATERIAL. TOPSOIL MAY BE UTILIZED TO CONSTRUCT BERMS AS REQUIRED.
- 6) STOCK PILES OF SOIL AND OTHER ERODIBLE MATERIALS SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE CONTRACTOR IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION FOR STOCKPILES ON SITE AS WELL AS FOR MATERIALS TRANSPORTED FROM THE PROJECT SITE.
- 7) EROSION CONTROL DEVICES SHALL BE INSTALLED IMMEDIATELY AFTER GROUND DISTURBANCE OCCURS. THE LOCATION OF SOME OF THE EROSION CONTROL DEVICES MAY HAVE TO BE ALTERED FROM THAT SHOWN ON THE APPROVED PLANS IF DRAINAGE PATTERS DURING CONSTRUCTION ARE DIFFERENT FROM THE FINAL PROPOSED DRAINAGE PATTERNS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACCOMPLISH EROSION CONTROL FOR ALL DRAINAGE PATTERNS CREATED AT VARIOUS STAGES DURING CONSTRUCTION. ANY DIFFICULTY IN CONTROLLING EROSION DURING ANY PHASE OF CONSTRUCTION SHALL IMMEDIATELY BE REPORTED TO THE ENGINEER.

- 8) TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES ARE NOT TO BE REMOVED UNTIL ALL DISTURBED AREAS ARE STABILIZED. AFTER STABILIZATION IS COMPLETE, ALL MEASURES SHALL BE REMOVED WITHIN (30) THIRTY DAYS. TRAPPED SEDIMENT SHALL BE SPREAD AND SEEDED.
- 9) ALL CUT AND FILL SLOPES MUST BE SURFACE ROUGHED AND VEGETATED WITHIN SEVEN (7) DAYS OF THEIR CONSTRUCTION.
- 10) THE CONTRACTOR SHALL ESTABLISH BARRIERS AT THE TOP OF ALL SLOPES UNDER CONSTRUCTION. CUT AND FILL SLOPES SHALL NOT EXCEED 3H:1V ON RESIDENTIAL PROJECTS AND SHALL NOT EXCEED 2H:1V ON ALL OTHER PROJECTS.
- 11) ALL GRADED SLOPES 3:1 OR GREATER MUST BE HYDRO SEEDED AND COVERED WITH GDOT APPROVED WHEAT OR WOOD FIBER MATTING. IF NOT HYDRO-SEEDED, GDOT APPROVED MATTING THAT HAS BEEN IMPREGNATED WITH SEED AND FERTILIZER MUST BE USED. ALL SLOPES MUST BE PROPERLY PROTECTED UNTIL PERMANENT VEGETATIVE COVER IS ESTABLISHED.
- 12) ALL DRAINAGE SWALES AND GRADED AREAS SHALL BE APPLIED WITH VEGETATIVE COVER AS SOON AS FINAL GRADE IS ACHIEVED.
- 13) MULCH OR TEMPORARY GRASSING SHALL BE APPLIED TO ALL EXPOSED AREAS WITHIN SEVEN (7) DAYS OF LAND DISTURBANCE. ALL DISTURBED AREAS LEFT MULCH MORE THAN THIRTY (30) DAYS SHALL BE STABILIZED WITH TEMPORARY VEGETATION.
- 14) EROSION AND SEDIMENT CONTROL MEASURES MUST BE INSPECTED AFTER EACH RAIN EVENT. EACH DEVICE IS TO BE MAINTAINED OR REPLACED IF SEDIMENT ACCUMULATION HAS REACHED HALF THE CAPACITY OF THE DEVICE. ADDITIONAL DEVICES MUST BE INSTALLED IF NEW CHANNELS DEVELOP.
- 15) CONSTRUCT TEMPORARY AND PERMANENT DRAINAGE STRUCTURES AS NECESSARY FOR PROPER SITE DRAINAGE AND CONVEYANCE TO THE PROPER BEST MANAGEMENT PRACTICES SHOWN ON THE SITE PLAN. INSTALL ALL OUTLET PROTECTION BMP'S CONCURRENT WITH DRAINAGE OUTFALLS.
- 16) STORM DRAIN OUTLET PROTECTION SHALL BE PLACED AT ALL OUTLET HEADWALLS AS SOON AS THE HEADWALL IS CONSTRUCTED.
- 17) THE CONTRACTOR SHALL MAINTAIN ANY SEDIMENT PONDS UNTIL PERMANENT GROUNDCOVER IS ESTABLISHED. SEDIMENT SHALL BE CLEANED OUT OF THE POND WHEN IT REACHES ONE THIRD (1/3) OF THE BASIN.

FINAL GRADING AND PERMANENT VEGETATIVE PLAN (PHASE III)

- 1) SMOOTH GRADES AND PERMANENTLY VEGETATE DISTURBED AREAS AT

COMPLETION OF CONSTRUCTION.

- 2) THE CONTRACTOR SHALL APPLY PERMANENT OR TEMPORARY SOIL STABILIZATION TO ALL DENUDED OR DISTURBED AREAS WITHIN (7) SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. SOIL STABILIZATION MUST ALSO BE APPLIED TO DENUDED OR DISTURBED AREAS WHICH MAY NOT BE AT FINAL GRADE BUT WHICH WILL REMAIN UNDISTURBED FOR LONGER THAN (30) THIRTY DAYS. SOIL STABILIZATION MEASURES INCLUDED VEGETATIVE ESTABLISHMENT, MULCHING AND THE EARLY APPLICATION OF GRAVEL BASE MATERIAL ON AREAS TO BE PAVED.
- 3) INSTALLATION OF WATER QUALITY DEVICES SHALL BE CONCURRENT WITH FINAL STABILIZATION AND/OR PRIOR TO MAINTENANCE/PERFORMANCE BOND EXPIRATION.
- 4) PERIMETER SILT FENCING TO REMAIN THROUGHOUT CONSTRUCTION. AT COMPLETION OF CONSTRUCTION, ALL AREAS ARE TO BE PERMANENTLY VEGETATED.
- 5) AS SOON AS PRACTICALLY POSSIBLE, PERMANENT LANDSCAPING SHALL BE INSTALLED ALONG ALL STREETS AND THROUGHOUT THE SITE TO PROTECT THE LAND AND HELP MINIMIZE THE EFFECTS OF SEDIMENT RUNOFF INTO STATE BUFFERS OR ONTO ADJACENT PROPERTIES.
- 6) WHEN THE SITE IS STABILIZED AND AT THE DIRECTION OF THE COUNTY ENGINEER, THE CONTRACTOR IS TO REMOVE THE SEDIMENT BASINS AND STABILIZE THE DISTURBED AREAS.
- 7) THE CONSTRUCTION EXIT CAN BE REMOVED ONCE FINAL PAVING AND FINAL VEGETATION IS ESTABLISHED.
- 8) THE STREAMBANK PROTECTION WILL REMAIN AS PERMANENT STRUCTURES.
- 9) UPON COMPLETION OF THE PROJECT AND RECEIPT OF THE CERTIFICATE OF

COMPLETION, THE CONTRACTOR SHALL REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AND DISPOSE OF THEM UNLESS NOTED OTHERWISE ON THE PLANS.

COMPLIANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS

THE CONTRACTOR WILL OBTAIN COPIES OF ANY AND ALL LOCAL AND STATE REGULATIONS WHICH ARE APPLICABLE TO STORM WATER MANAGEMENT, EROSION CONTROL, AND POLLUTION MINIMIZATION AT THIS JOB SITE AND WILL

ANY AGENT OF A REGULATORY BODY. THE CONTRACTOR WILL COMPLY WILL ALL CONDITIONS OF ANY AND ALL LOCAL, STATE, AND FEDERAL AGENCIES THAT HAVE GOVERNING AUTHORITY, INCLUDING CONDITIONS RELATED TO MAINTAINING THE ES&PC PLAN AND EVIDENCE OF COMPLIANCE WITH THE ES&PC PLAN AT THE JOB SITE AND ALLOWING REGULATORY PERSONNEL ACCESS TO THE JOB SITE TO RECORDS IN ORDER TO DETERMINE COMPLIANCE.

NO WASTE MATERIALS INCLUDING BUILDING MATERIALS SHALL BE DISCHARGED TO WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT.

WASTE MATERIALS

ALL WASTE MATERIALS WILL BE COLLECTED AND STORED IN A SECURELY LIDDED METAL DUMPSTER. THE DUMPSTER WILL MEET ALL SOLID WASTE MANAGEMENT REGULATIONS. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE WILL BE DEPOSITED IN THE DUMPSTER. THE DUMPSTER WILL BE EMPTIED A MINIMUM OF ONCE PER WEEK OR MORE OFTEN IF NECESSARY AND TRASH WILL BE HAULED AS REQUIRED BY LOCAL REGULATIONS. NO CONSTRUCTION WASTE WILL BE BURIED ON-SITE.

ALL PERSONNEL WILL BE INSTRUCTED ON PROPER PROCEDURES FOR WASTE DISPOSAL. A NOTICE STATING THESE PRACTICES WILL BE POSTED AT THE JOBSITE AND THE CONTRACTOR WILL BE RESPONSIBLE FOR SEEING THAT THESE PROCEDURES ARE FOLLOWED.

FOR BUILDING MATERIALS, BUILDING PRODUCTS, CONSTRUCTION WASTES, TRASH, LANDSCAPE MATERIALS, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE AND OTHER MATERIALS PRESENT ON THE SITE, PROVIDE COVER (E.G. PLASTIC SHEETING, TEMPORARY ROOFS) TO MINIMIZE THE EXPOSURE OF THESE PRODUCTS TO PRECIPITATION AND TO STORMWATER, OR A SIMILARLY EFFECTIVE MEANS DESIGNED TO MINIMIZE THE DISCHARGE OF POLLUTANTS FROM THESE AREAS. MINIMIZATION OF EXPOSURE IS NOT REQUIRED IN CASES WHERE EXPOSURE TO PRECIPITATION AND TO STORMWATER WILL NOT

RESULT IN A DISCHARGE OF POLLUTANTS, OR WHERE EXPOSURE OF A SPECIFIC MATERIAL OR PRODUCT POSES LITTLE RISK TO STORMWATER CONTAMINATION (SUCH AS FINAL PRODUCTS AND MATERIALS INTENDED FOR OUTDOOR USE).

POLLUTION PREVENTION MEASURES

ALL POLLUTION FROM WASTE DISPOSAL PRACTICES, SOIL ADDITIVES, REMEDIATION OF SPILLS AND LEAKS OF PETROLEUM PRODUCTS, CONCRETE TRUCK WASHOUT, ETC., SHOULD ANY OF THESE OCCUR, WILL BE CONTROLLED BY THE IMPLEMENTATION OF APPROPRIATE BMP'S. THE SITE WILL BE IN COMPLIANCE WITH ALL APPLICABLE STATE AND LOCAL WASTE DISPOSAL AND SANITARY SEWER REGULATIONS.

POTENTIAL POLLUTANTS INCLUDE BUT ARE NOT LIMITED TO: PETROLEUM, FERTILIZER, PAINT, CONCRETE, DETERGENTS, TAR, CLEANING SOLVENTS, AND OTHER HAZARDOUS MATERIALS.

HAZARDOUS WASTES

ALL HAZARDOUS WASTE MATERIALS WILL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL, STATE, AND/OR FEDERAL REGULATIONS AND BY THE MANUFACTURER OF SUCH PRODUCTS. THE JOB SITE SUPERINTENDENT, WHO WILL ALSO BE RESPONSIBLE FOR SEEING THAT THESE PRACTICES ARE FOLLOWED, WILL INSTRUCT SITE PERSONNEL IN THESE PRACTICES. MATERIAL SAFETY DATA SHEETS (MSDS'S) FOR EACH SUBSTANCE WITH HAZARDOUS PROPERTIES THAT IS USED ON THE JOB SITE WILL BE OBTAINED AND USED FOR THE PROPER MANAGEMENT OF POTENTIAL WASTES THAT MAY RESULTS FROM THESE PRODUCTS. AN MSDS WILL BE POSTED IN THE IMMEDIATE AREA WHERE SUCH PRODUCT IS STORED AND/OR USED AND ANOTHER COPY OF EACH MSDS WILL BE MAINTAINED IN THE ES&PC PLAN FILE AT THE JOB SITE CONSTRUCTION TRAILER OFFICE. EACH EMPLOYEE WHO MUST HANDLE A SUBSTANCE WITH HAZARDOUS PROPERTIES WILL BE INSTRUCTED ON THE USE OF MSDS SHEETS AND THE SPECIFIC INFORMATION IN THE APPLICABLE MSDS FOR THE PRODUCT HE/SHE IS USING, PARTICULARLY REGARDING SPILL CONTROL TECHNIQUES.

THE CONTRACTOR WILL IMPLEMENT THE SPILL PREVENTION CONTROL PLAN AND COUNTERMEASURES (SPCC) PLAN FOUND WITHIN THIS ES&PC PLAN AND WILL TRAIN ALL PERSONNEL IN THE PROPER CLEANUP AND HANDLING OF SPILLED MATERIALS.

NO SPILLED HAZARDOUS MATERIALS OR HAZARDOUS WASTES WILL BE ALLOWED TO COME IN CONTACT WITH STORMWATER DISCHARGES. IF SUCH CONTACT OCCURS, THE STORMWATER DISCHARGE WILL BE CONTAINED ON SITE UNTIL APPROPRIATE MEASURES IN COMPLIANCE WITH STATE AND FEDERAL REGULATIONS ARE TAKEN TO DISPOSE OF SUCH CONTAMINATED STORMWATER. IT SHALL BE THE RESPONSIBILITY OF THE JOB SITE SUPERINTENDENT TO PROPERLY TRAIN ALL PERSONNEL IN THE USE OF THE SPCC PLAN.

HAZARDOUS PRODUCTS

THESE PRACTICES ARE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS.

PRODUCTS WILL BE KEPT IN ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE. ORIGINAL LABELS AND MATERIAL SAFETY DATA WILL BE RETAINED; THEY CONTAIN IMPORTANT INFORMATION. IF SURPLUS PRODUCT MUST BE DISPOSED OF, MANUFACTURERS' OR LOCAL AND STATE RECOMMENDED METHODS FOR PROPER DISPOSAL WILL BE FOLLOWED.

GOOD HOUSEKEEPING PRACTICES

- 1) AN EFFORT WILL BE MADE TO STORE ONLY ENOUGH PRODUCT TO DO THE JOB.
- 2) ALL MATERIALS ONSITE WILL BE STORED IN THEIR APPROPRIATE CONTAINER AND, IF POSSIBLE, UNDER ONE ROOF ON ENCLOSURE.
- 3) PRODUCTS WILL BE KEPT IN THEIR ORIGINAL CONTAINER WITH ORIGINAL MANUFACTURER'S LABEL.

COMPLY FULLY WITH SUCH REGULATIONS. THE CONTRACTOR WILL SUBMIT WRITTEN EVIDENCE OF SUCH COMPLIANCE IF REQUESTED BY THE OPERATOR OR

INSPECTION

1) EACH DAY WHEN ANY TYPE OF CONSTRUCTION ACTIVITY HAS TAKEN PLACE AT A PRIMARY PERMITTEE'S SITE, CERTIFIED PERSONNEL PROVIDED BY THE PRIMARY PERMITTEE SHALL INSPECT: (A) ALL AREAS AT THE PRIMARY PERMITTEE'S SITE WHERE PETROLEUM PRODUCTS ARE STORED, USED, OR HANDLED FOR SPILLS AND LEAKS FROM VEHICLES AND EQUIPMENT AND (B) ALL LOCATIONS AT THE PRIMARY PERMITTEE'S SITE WHERE VEHICLES ENTER OR EXIT THE SITE FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING. THESE INSPECTIONS MUST BE CONDUCTED UNTIL A NOTICE OF TERMINATION IS SUBMITTED.

- 2) MEASURE RAINFALL ONCE EVERY 24 HOURS EXCEPT ANY NON-WORKING

SATURDAY, NON-WORKING SUNDAY AND NON-WORKING FEDERAL HOLIDAY UNTIL A NOTICE OF TERMINATION IS SUBMITTED. MEASUREMENT OF RAINFALL MAY BE SUSPENDED IF ALL AREAS OF THE SITE HAVE UNDERGONE FINAL STABILIZATION OR ESTABLISHED A CROP OF ANNUAL VEGETATION AND A SEEDING OF TARGET PERENNIALS APPROPRIATE FOR THE REGION.

3) CERTIFIED PERSONNEL (PROVIDED BY THE PRIMARY PERMITTEE) SHALL INSPECT THE FOLLOWING AT LEAST ONCE EVERY FOURTEEN (14) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM THAT IS 0.5 INCHES RAINFALL OR GREATER (UNLESS SUCH STORM ENDS AFTER 5:00 PM ON ANY FRIDAY OR ON ANY NONWORKING SATURDAY, NON-WORKING SUNDAY OR ANY NON-WORKING FEDERAL HOLIDAY IN WHICH CASE THE INSPECTION SHALL BE COMPLETED BY THE END OF THE NEXT BUSINESS DAY AND/OR WORKING DAY, WHICHEVER OCCURS FIRST): (A) DISTURBED AREAS OF THE PRIMARY PERMITTEE'S CONSTRUCTION SITE ; (B) AREAS USED BY THE PRIMARY PERMITTEE FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION ; AND (C) STRUCTURAL CONTROL MEASURES. EROSION AND SEDIMENT CONTROL MEASURES IDENTIFIED IN THE PLAN APPLICABLE TO THE PRIMARY PERMITTEE'S SITE SHALL BE OBSERVED TO ENSURE THAT THEY ARE OPERATING CORRECTLY. WHERE DISCHARGE LOCATIONS OR POINTS ARE ACCESSIBLE, THEY SHALL BE INSPECTED TO ASCERTAIN WHETHER EROSION CONTROL MEASURES ARE EFFECTIVE IN PREVENTING SIGNIFICANT

IMPACTS TO RECEIVING WATER(S). FOR AREAS OF A SITE THAT HAVE UNDERGONE FINAL STABILIZATION OR ESTABLISHED A CROP OF ANNUAL VEGETATION AND A SEEDING OF TARGET PERENNIALS APPROPRIATE FOR THE REGION, THE PERMITTEE MUST COMPLY WITH PART IV.D.4.A.(4). THESE INSPECTIONS MUST BE CONDUCTED UNTIL A NOTICE OF TERMINATION IS SUBMITTED.

- 4) CERTIFIED PERSONNEL (PROVIDED BY THE PRIMARY PERMITTEE) SHALL INSPECT AT LEAST ONCE PER MONTH DURING THE TERM OF THIS PERMIT (I.E., UNTIL A NOTICE OF TERMINATION IS SUBMITTED TO EPD) THE AREAS OF THE SITE THAT HAVE UNDERGONE FINAL STABILIZATION OR ESTABLISHED A CROP OF ANNUAL VEGETATION AND A SEEDING OF TARGET PERENNIALS APPROPRIATE FOR THE REGION. THESE AREAS SHALL BE INSPECTED FOR EVIDENCE OF, OR THE POTENTIAL FOR, POLLUTANTS ENTERING THE DRAINAGE SYSTEM AND THE RECEIVING WATER(S). EROSION AND SEDIMENT CONTROL MEASURES IDENTIFIED IN THE PLAN SHALL BE OBSERVED TO ENSURE THAT THEY ARE OPERATING CORRECTLY. WHERE DISCHARGE LOCATIONS OR POINTS ARE ACCESSIBLE, THEY SHALL BE INSPECTED TO ASCERTAIN WHETHER EROSION CONTROL MEASURES ARE EFFECTIVE IN PREVENTING SIGNIFICANT IMPACTS TO RECEIVING WATER(S).
- 5) BASED ON THE RESULTS OF EACH INSPECTION, THE SITE DESCRIPTION AND THE POLLUTION PREVENTION AND CONTROL MEASURES IDENTIFIED IN THE EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN, THE PLAN SHALL BE REVISED AS APPROPRIATE NOT LATER THAN SEVEN (7) CALENDAR DAYS FOLLOWING EACH INSPECTION. IMPLEMENTATION OF SUCH CHANGES SHALL BE MADE AS SOON AS PRACTICAL BUT IN NO CASE LATER THAN SEVEN (7) CALENDAR DAYS FOLLOWING EACH INSPECTION.

- 6) A REPORT OF EACH INSPECTION THAT INCLUDES THE NAME(S) OF CERTIFIED PERSONNEL MAKING EACH INSPECTION, THE DATE(S) OF EACH INSPECTION, CONSTRUCTION PHASE (I.E., INITIAL, INTERMEDIATE OR FINAL), MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THE EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN, AND ACTIONS TAKEN IN ACCORDANCE WITH PART IV.D.4.A.(5). OF THE PERMIT SHALL BE MADE AND RETAINED AT THE SITE OR BE READILY AVAILABLE AT A DESIGNATED ALTERNATE LOCATION UNTIL THE ENTIRE SITE OR THAT PORTION OF A CONSTRUCTION PROJECT THAT HAS BEEN PHASED HAS UNDERGONE FINAL STABILIZATION AND A NOTICE OF TERMINATION IS SUBMITTED TO EPD. SUCH REPORTS SHALL BE READILY AVAILABLE BY END OF THE SECOND BUSINESS DAY AND/OR WORKING DAY AND SHALL IDENTIFY ALL INCIDENTS OF BEST MANAGEMENT PRACTICES THAT HAVE NOT BEEN PROPERLY INSTALLED AND/OR MAINTAINED AS DESCRIBED IN THE PLAN. WHERE THE REPORT DOES NOT IDENTIFY ANY INCIDENTS, THE

INSPECTION REPORT SHALL CONTAIN A STATEMENT THAT THE BEST MANAGEMENT PRACTICES ARE IN COMPLIANCE WITH THE EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN. THE REPORT SHALL BE SIGNED IN ACCORDANCE WITH PART V.G.2. OF THIS PERMIT.

SAMPLING REQUIREMENTS

THIS PERMIT REQUIRES THE MONITORING OF NEPHELOMETRIC TURBIDITY IN RECEIVING WATER(S) OR OUTFALLS IN ACCORDANCE WITH THIS PERMIT. THIS SECTION IS APPLICABLE TO PRIMARY PERMITTEES WITH A TOTAL PLANNED DISTURBANCE EQUAL TO OR GREATER THAN FIVE (5) ACRES. THE FOLLOWING PROCEDURES CONSTITUTE EPD'S GUIDELINES FOR SAMPLING TURBIDITY.

STORM WATER SAMPLING

STORM WATER SAMPLES ARE TO BE ANALYZED IN ACCORDANCE WITH METHODOLOGY AND TEST PROCEDURES ESTABLISHED BY 40 CFR PART 136 AND THE GUIDANCE DOCUMENT TITLED "NPDES STORM WATER SAMPLING GUIDANCE DOCUMENT, EPA 833-8-92-001".

STORM WATER IS TO BE SAMPLED FOR NEPHELOMETRIC TURBIDITY UNITS (NTU) AT THE OUTFALL LOCATION. A DISCHARGE OF STORM WATER RUNOFF FROM DISTURBED AREAS WHERE BEST MANAGEMENT PRACTICES HAVE NOT BEEN PROPERLY DESIGNED, INSTALLED, AND MAINTAINED SHALL CONSTITUTE A SEPARATE VIOLATION FOR EACH DAY ON WHICH SUCH CONDITION RESULTS IN THE TURBIDITY OF THE DISCHARGE EXCEEDING THE APPLICABLE VALUE SELECTED FROM APPENDIX B IN PERMIT NO. GAR100002.

- 4) SUBSTANCES WILL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER.
- 5) WHENEVER POSSIBLE, ALL OF A PRODUCT WILL BE USED UP BEFORE DISPOSING OF THE CONTAINER.

SAMPLE TYPE

ALL SAMPLING SHALL BE COLLECTED BY "GRAB SAMPLES" AND THE ANALYSIS OF THESE SAMPLES MUST BE CONDUCTED IN ACCORDANCE WITH METHODOLOGY AND TEST PROCEDURES ESTABLISHED BY 40 CFR PART 136 (UNLESS OTHER TEST PROCEDURES HAVE BEEN APPROVED); THE GUIDANCE DOCUMENT TITLED "NPDES STORM WATER SAMPLING GUIDANCE DOCUMENT, EPA 833-B-92-001" AND GUIDANCE DOCUMENTS THAT MAY BE PREPARED BY THE EPD.

- 1) SAMPLE CONTAINERS SHOULD BE LABELED PRIOR TO COLLECTING THE SAMPLES.

- 2) SAMPLES SHOULD BE WELL MIXED BEFORE TRANSFERRING TO A SECONDARY CONTAINER.
- 3) LARGE MOUTH, WELL CLEANED AND RINSED GLASS OR PLASTIC JARS SHOULD BE USED FOR COLLECTING SAMPLES. THE JARS SHOULD BE CLEANED THOROUGHLY TO AVOID CONTAMINATION.
- 4) MANUAL, AUTOMATIC OR RISING STAGE SAMPLING MAY BE UTILIZED. SAMPLES REQUIRED BY THIS PERMIT SHOULD BE ANALYZED IMMEDIATELY, BUT IN NO CASE LATER THAN 48 HOURS AFTER COLLECTION. HOWEVER, SAMPLES FROM AUTOMATIC SAMPLERS MUST BE COLLECTED NO LATER THAN THE NEXT BUSINESS DAY AFTER THEIR ACCUMULATION, UNLESS FLOW THROUGH AUTOMATED ANALYSIS IS UTILIZED. IF AUTOMATIC SAMPLING IS UTILIZED AND THE AUTOMATIC SAMPLER IS NOT ACTIVATED DURING THE QUALIFYING EVENT, THE PERMITTEE MUST UTILIZE MANUAL SAMPLING OR RISING STAGE SAMPLING DURING THE NEXT QUALIFYING EVENT. DILUTION OF SAMPLES IS NOT REQUIRED. SAMPLES MAY BE ANALYZED DIRECTLY WITH A PROPERLY CALIBRATED TURBIDIMETER. SAMPLES ARE NOT REQUIRED TO BE COOLED.
- 5) SAMPLING AND ANALYSIS OF THE RECEIVING WATER(S) OR OUTFALLS BEYOND THE MINIMUM FREQUENCY STATED IN THIS PERMIT MUST BE REPORTED TO EPD AS SPECIFIED IN PART IV. E.

NOTE: APPENDIX B CHART AND RATIONALE ARE TO BE PROVIDED WHEN SAMPLING OUTFALLS. THIS CHART IS NOT NEEDED WHEN SAMPLING RECEIVING WATERS UPSTREAM AND DOWNSTREAM OF SITE.

**APPENDIX B
NEPHELOMETRIC TRUBIDITY UNIT (NTU) TABLES
WARM WATER (SUPPORTING WARM WATER FISHERIES)**

	SURFACE WATER DRAINAGE AREA (SQ. MILES)							
SIZE (AC)	0-4.99	5-9.9	10-24.99	25-49.99	50-99.99	100-249.99	250-499.99	500+
1.00-10	75	150	200	400	750	750	750	750
10.01-25	50	100	100	200	300	500	750	750
25.01-50	50	50	100	100	200	300	750	750
50.01-100	50	50	50	100	100	150	300	600
100.0+	50	50	50	50	50	100	200	100

NOTE: TO USE THESE TABLES, SELECT THE SIZE (ACRES) OF THE FACILITY OR COMMON DEVELOPMENT. THEN, SELECT THE SURFACE WATER DRAINAGE AREA (SQUARE MILES). THE NTU MATRIX VALUE ARRIVED AT FROM THE ABOVE TABLES IS THE ONE TO USE IN PART III.C.4. CIRCLE THE NTU VALUE WHICH MATCHES SITE'S CONDITIONS.

FULTON COUNTY DEPARTMENT OF PUBLIC WORKS
FULTON-COBB DIVERSION LINE
AND PUMP STATION

F&N JOB NO. JDS1848
DATE 04/26/2019
DRAWN
REVISED
CHECKED
DATE
FILE NAME

ISSUE
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Atlanta, GA 30339
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REGISTERED
ENGINEER
I

EROSION CONTROL
NARRATIVE PLAN

SHEET

ES-4

Amade H. Senter

Level II Certified Design Professional

CERTIFICATION NUMBER: 0000029504
ISSUED: 04/03/2019 EXPIRES: 04/03/2022

24 HOUR CONTACT
FULTON DPW
(404) 612-7394



GRAPHIC SCALE

PACKAGE



EROSION

JDU
JRC
JDU
AHL

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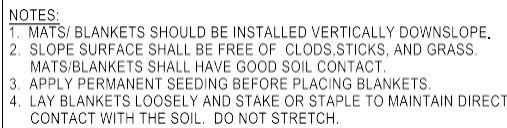
<p align="center"> DETAIL 02270-21 COBB COUNTY WATER SYSTEM DISTURBED AREA STABILIZATION APPLICATION TABLE </p>	
<p>AUGUST 8, 2001</p>	<p align="right">_____ AGENCY DIRECTOR</p>

AGENCY DIRECTOR

<u>SEASON</u>	<u>KIND OF SEED</u>	<u>POUNDS PER</u>
<u>ACRE</u> JAN.1 - MAY 15	UNHULLED COMMON BERMUDA	45
	KENTUCKY 31 FESCUE	300
	REBEL II SUPREME	150
MAY 16 - SEPT. 1	HULLED COMMON BERMUDA	75
SEPT.2 - DEC. 31	UNHULLED COMMON BERMUDA	45
	KENTUCKY 31 FESCUE	300
	REBEL II SUPREME	150

- # 1 DISTURBED AREA STABILIZATION APPLICATION TABLE

AGENCY DIRECTOR



4 SLOPE STABILIZATION ^{Ss}

Ds1 (WITH MULCHING) & (WITH TEMPORARY SEEDINGS) **Ds2**

AGENCY DIRECTOR

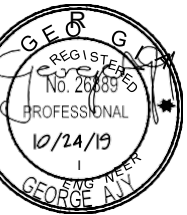
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|------------------------------|-----|
| DISTURBED AREA STABILIZATION | Ds1 |
| MULCHING & SEEDINGS | Ds2 |



Ds3

AGENCY DIRECTOR

-
- A diagram showing a river with a dam and a bridge. The river flows from left to right. A dam is located in the middle of the river, with water flowing over it. A bridge is located downstream from the dam, crossing the river. There are trees on both banks of the river.



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**FULTON-COBB DIVERSION LINE
AND PUMP STATION**
EROSION
COBB COUNTY
EROSION CONTROL DETAILS

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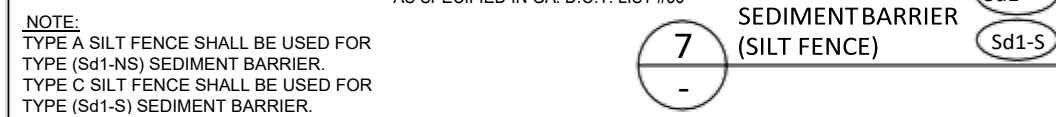
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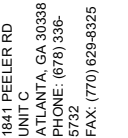
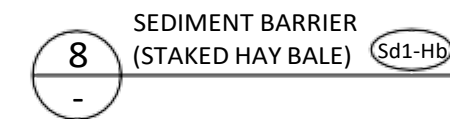
Sd SEDIMENT BARRIER
(SILT FENCE)

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**Sd1 SEDIMENT BARRIER
(STAKED HAYBALE)**

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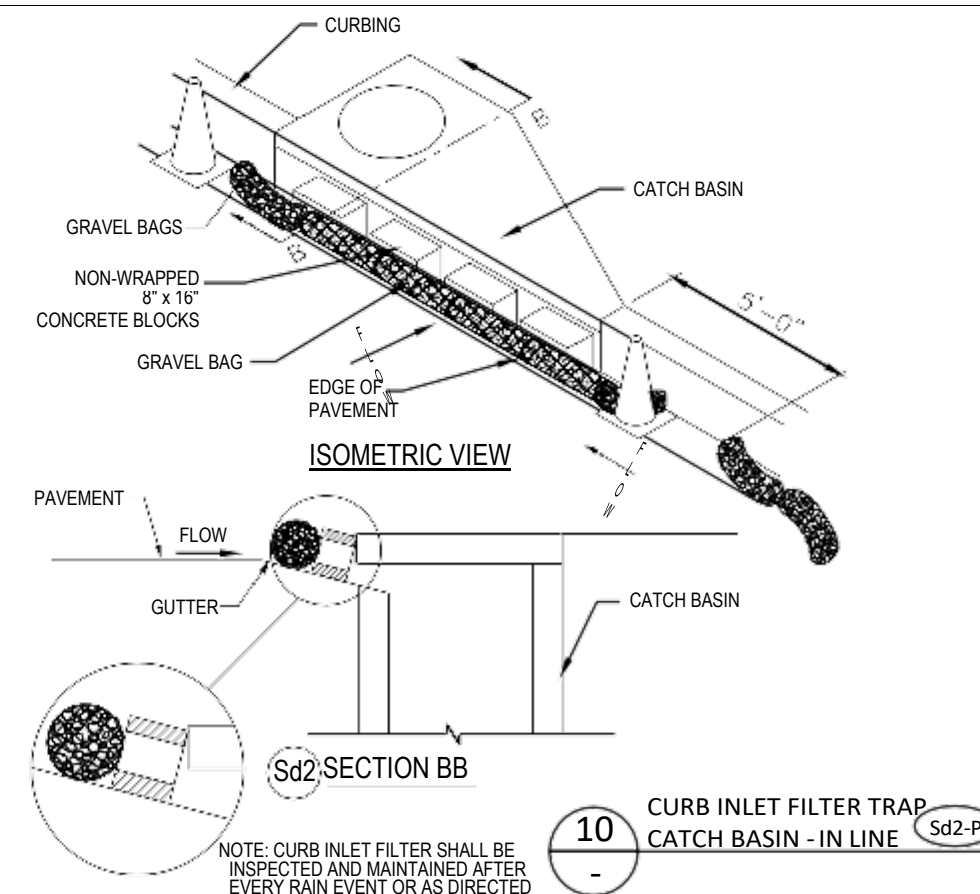
(Cd) CHECK DAM

AGENCY DIRECTOR



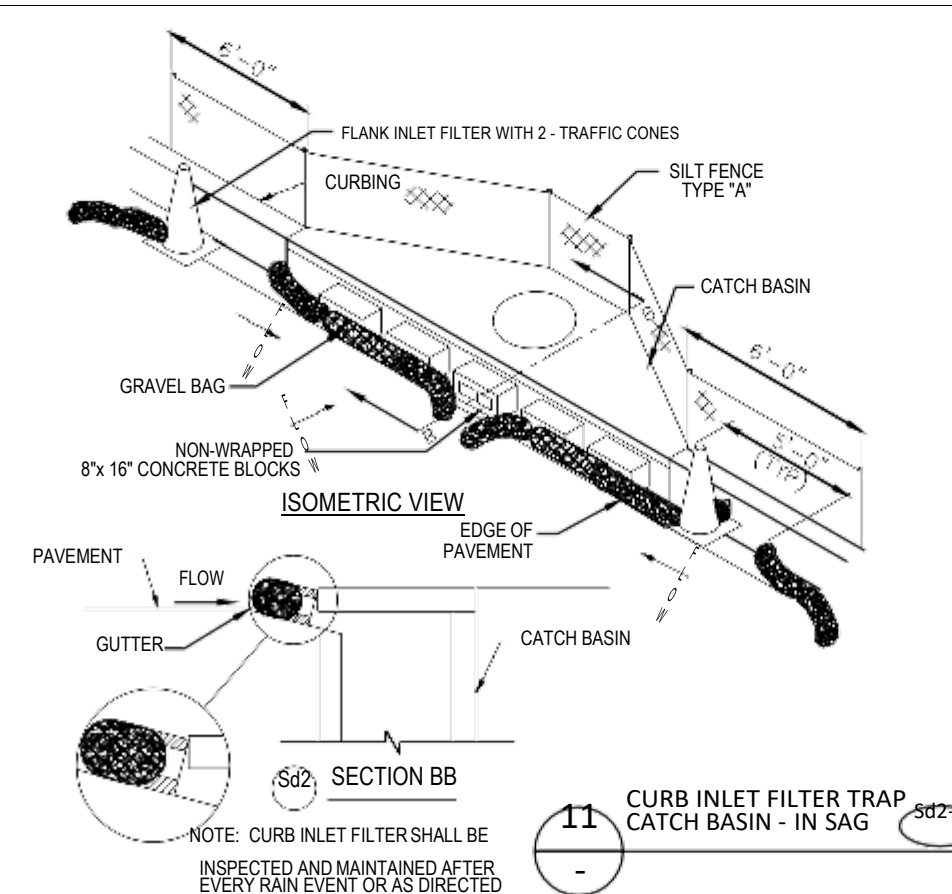
**Sd2 CURB INLET FILTER TRAP
(CATCH BASIN - INLINE)**

AGENCY DIRECTOR

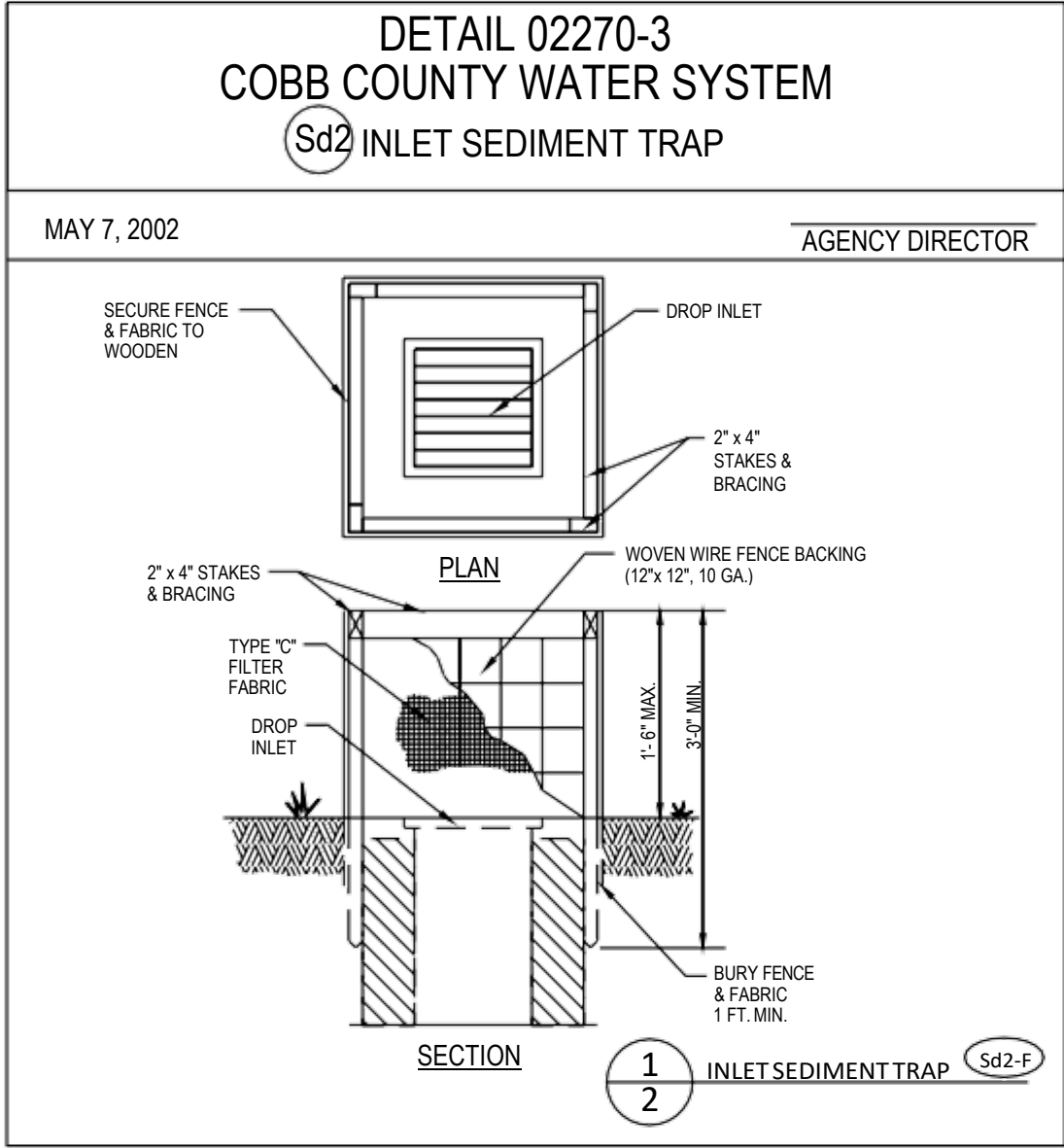


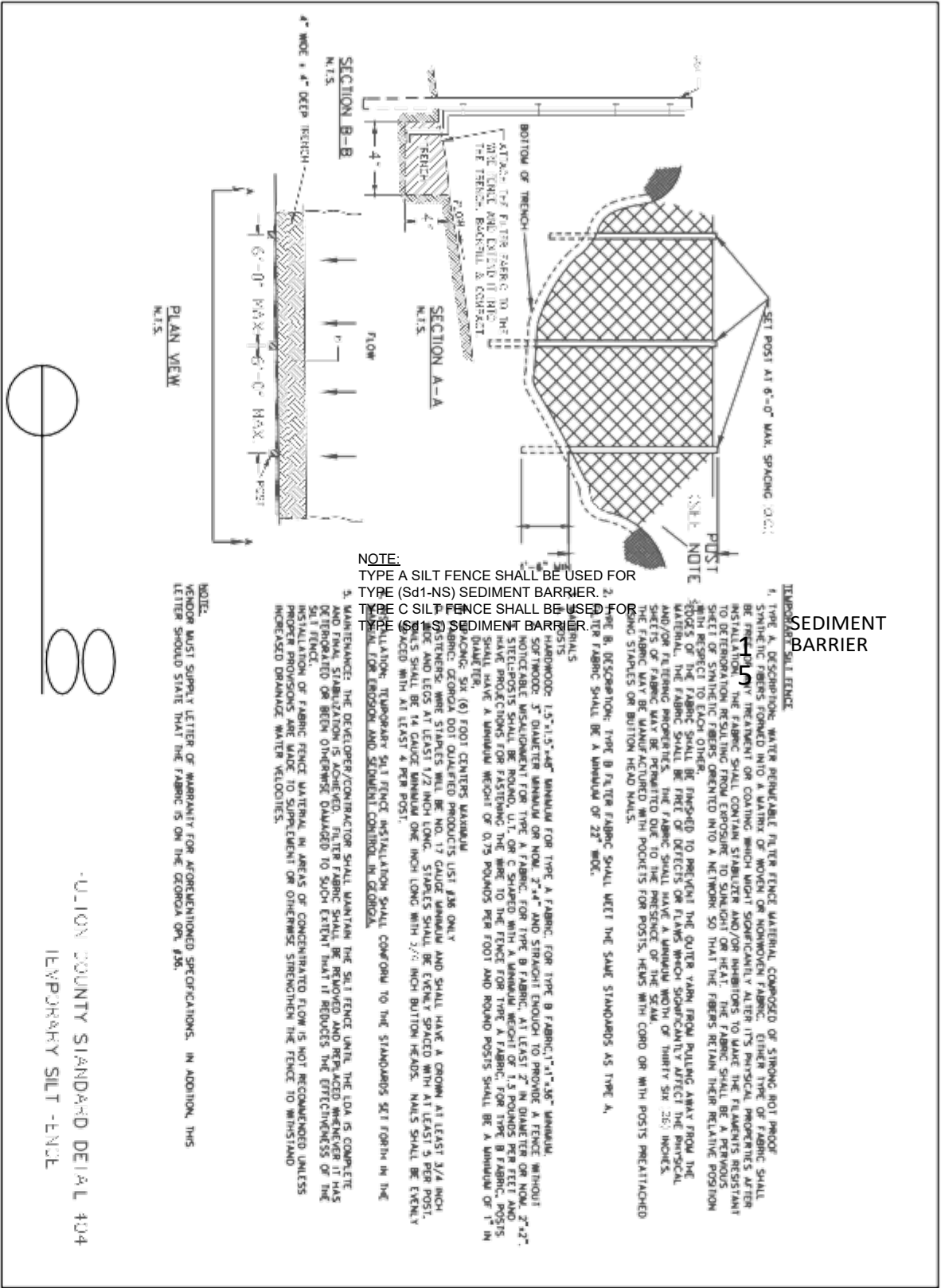
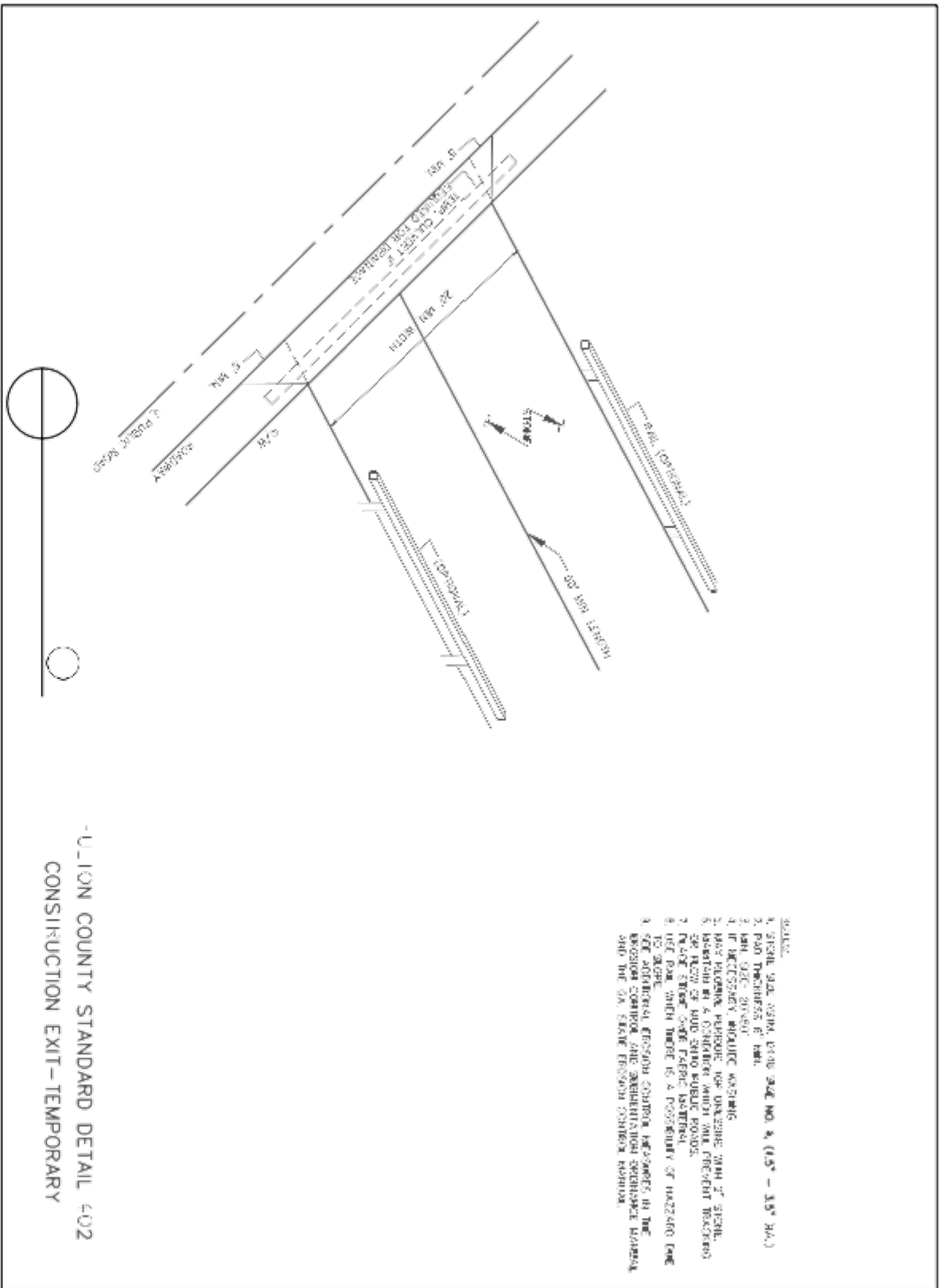
Sd2 CURB INLET FILTER TRAP
(CATCH BASIN - INSAG)

AGENCY DIRECTOR



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1 CONSTRUCTION Co
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OSWCC
OREGON STATE WATER
COMMISSION

Donna H. Foster

Level II Certified Design Professional

Certification Number _____
Issued **04/03/2019** Expires **04/03/2022**
0000029504

**24 HOUR
CONTACT F
ULTON DPW**



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FULTON COUNTY DEPARTMENT OF PUBLIC WORKS
FULTON-COBB DIVERSION LINE
AND PUMP STATION

EROSION

FULTON COUNTY
EROSION CONTROL DETAILS

SHEET CE-4 PACKAGE 3				F&N JOB NO.	JDS18486
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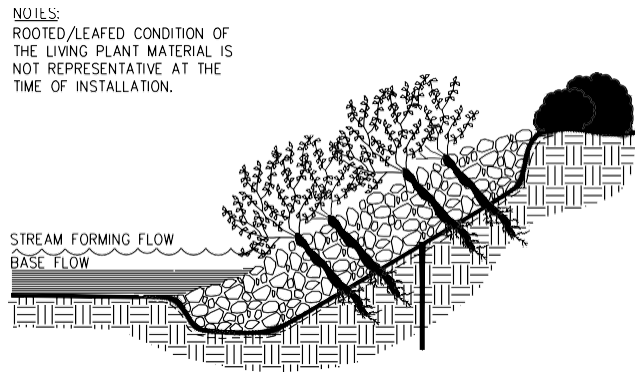
NOTE:

- 1) ALL BUFFER RESTORATION SHALL COMPLY WITH APPLICABLE SPECIFICATIONS SET FORTH IN THE GSWCC MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA, LATEST EDITION.
- 2) ALL PLANTS SHALL BE HEALTHY, VIGOROUS MATERIAL AND FREE OF PESTS AND DISEASE.
- 3) CONTRACTOR IS TO VERIFY LOCATION OF ALL TREES WITH COUNTY ARBORIST PRIOR TO INSTALLATION.
- 4) ALL PLANTS MUST BE CONTAINER GROWN OR BALLED AND BURLAPPED AS INDICATED IN THE PLANT LIST.
- 5) CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETE COVERAGE OF ALL PLANTING BEDS.
- 6) ALL PLANTS ARE SUBJECT TO APPROVAL OF THE OWNER BEFORE, DURING, AND AFTER INSTALLATION.
- 7) ALL SHRUBS, GROUND COVER, AND PLANTING BEDS ARE TO BE COMPLETELY COVERED WITH AGED SHREDDED HARDWOOD MULCH TO A MINIMUM OF THREE (3) INCHES.
- 8) THE CONTRACTOR IS TO LOCATE ALL UNDERGROUND UTILITIES AND SHALL AVOID DAMAGE TO ALL UTILITIES DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE TO ANY UTILITIES, STRUCTURES, OR OTHER DAMAGED ITEMS WHICH OCCURS AS A RESULT OF THE LANDSCAPING WORK.
- 9) THE CONTRACTOR IS RESPONSIBLE FOR FULLY MAINTAINING ALL PLANTING AND LAWNS UNTIL THE WORK IS ACCEPTED BY THE OWNER. MAINTENANCE INCLUDES BUT NOT LIMITED TO: WATERING, SPRAYING, MULCHING, FERTILIZING, ETC.
- 10) THE CONTRACTOR SHALL GUARANTEE ALL PLANT MATERIAL FOR A PERIOD OF ONE YEAR BEGINNING AT THE DATE OF FINAL ACCEPTANCE. THE CONTRACTOR SHALL PROMPTLY MAKE ALL REPLACEMENTS BEFORE THE END OF THE GUARANTEE PERIOD (PER DIRECTION OF OWNER).
- 11) ANY PLANT MATERIAL THAT DIES, TURNS BROWN OR DEFOLICATES PRIOR TO FINAL ACCEPTANCE SHALL BE REMOVED AND REPLACED WITH MATERIAL OF THE SAME SPECIES, QUANTITY AND SIZE.
- 12) THE CONTRACTOR SHALL SUPPLY ALL PLANTING MIX: 50% TOP SOIL AND 50% ORGANIC SOIL ADDITIVES.
- 13) NO TREES AND SHRUBS SHALL BE LOCATED WITHIN THE PERMANENT SEWER EASEMENT.
- 14) SHRUBS SHALL BE PLANTED ALTERNATIVELY.
- 15) BUFFER RESTORATION SHALL NOT RESULT IN FURTHER DISTURBANCE OF THE SITE.

16 BUFFER ZONE Bf

STREAM STABILIZATION

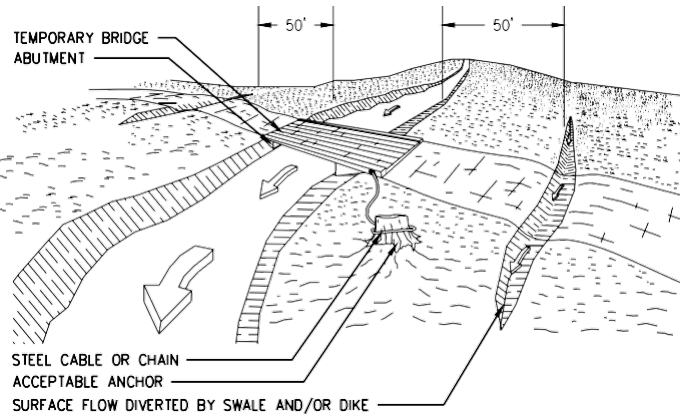
JOINT PLANTING CROSS SECTION



18 STREAMBANK STABILIZATION Sb

TEMPORARY STREAM CROSSINGS

TEMPORARY BRIDGE CROSSING



NOTE:

- 1) THE TEMPORARY BRIDGE SHALL BE CONSTRUCTED AT OR ABOVE BANK ELEVATION TO PREVENT THE ENTRAPMENT OF FLOATING MATERIALS AND DEBRIS.
- 2) ABUTMENTS SHALL BE PLACED PARALLEL TO AND ON STABLE BANKS.
- 3) BRIDGES SHALL BE CONSTRUCTED TO SPAN THE ENTIRE CHANNEL. IF THE CHANNEL WIDTH EXCEEDS EIGHT FEET (AS MEASURED FROM THE TOPS OF THE BANKS), A FOOTING, PIER OR BRIDGE SUPPORT MAY BE CONSTRUCTED WITHIN THE WATERWAY WITH PRIOR APPROVAL FROM NATIONAL PARK SERVICE.
- 4) BRIDGES SHALL BE SECURELY ANCHORED AT ONLY ONE END USING STEEL CABLE OR CHAIN. THIS WILL PREVENT CHANNEL OBSTRUCTION IN THE EVENT THAT FLOODWATERS FLOAT THE BRIDGE. LARGE TREES, LARGE BOULDERS, OR DRIVEN STEEL ANCHORS CAN SERVE AS ANCHORS.
- 5) BRIDGE MAT SELECTION SHALL BE APPROVED BY THE NATIONAL PARK SERVICE PRIOR TO INSTALLATION.

19 TEMPORAY STREAM CROSSING Sr-B

TEMPORARY METHODS

MULCHES. SEE STANDARD DS1 - DISTURBED AREA STABILIZATION (WITH MULCHING ONLY). SYNTHETIC RESINS MAY BE USED INSTEAD OF ASPHALT TO BIND MULCH MATERIAL. REFER TO STANDARD TB-TACKIFIERS AND BINDERS. RESINS SUCH AS CURASOL OR TERRATAK SHOULD BE USED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

VEGETATIVE COVER. SEE STANDARD DS2 - DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDING).

SPRAY-ON ADHESIVES. THESE ARE USED ON MINERAL SOILS (NOT EFFECTIVE ON MUCK SOILS). KEEP TRAFFIC OFF THESE AREAS. REFER TO STANDARD TB-TACKIFIERS AND BINDERS.

TILLAGE. THIS PRACTICE IS DESIGNED TO ROUGHEN AND BRING CLODS TO THE SURFACE. IT IS AN EMERGENCY MEASURE WHICH SHOULD BE USED BEFORE WIND EROSION STARTS.

RRIGATION. THIS IS GENERALLY DONE AS AN EMERGENCY TREATMENT. SITE IS SPRINKLED WITH WATER UNTIL THE SURFACE IS WET. REPEAT AS NEEDED.

BARRIERS. SOLID BOARD FENCES, SNOWFENCES, BURLAP FENCES, CRATE WALLS, BALES OF HAY AND SIMILAR MATERIAL CAN BE USED TO CONTROL AIR CURRENTS AND SOIL BLOWING. BARRIERS PLACED AT RIGHT ANGLES TO PREVAILING CURRENTS AT INTERVALS OF ABOUT 15 TIMES THEIR HEIGHT ARE EFFECTIVE IN CONTROLLING WIND EROSION.

CALCIUM CHLORIDE. APPLY AT RATE THAT WILL KEEP SURFACE MOIST. MAY NEED RETREATMENT.

PERMANENT METHODS

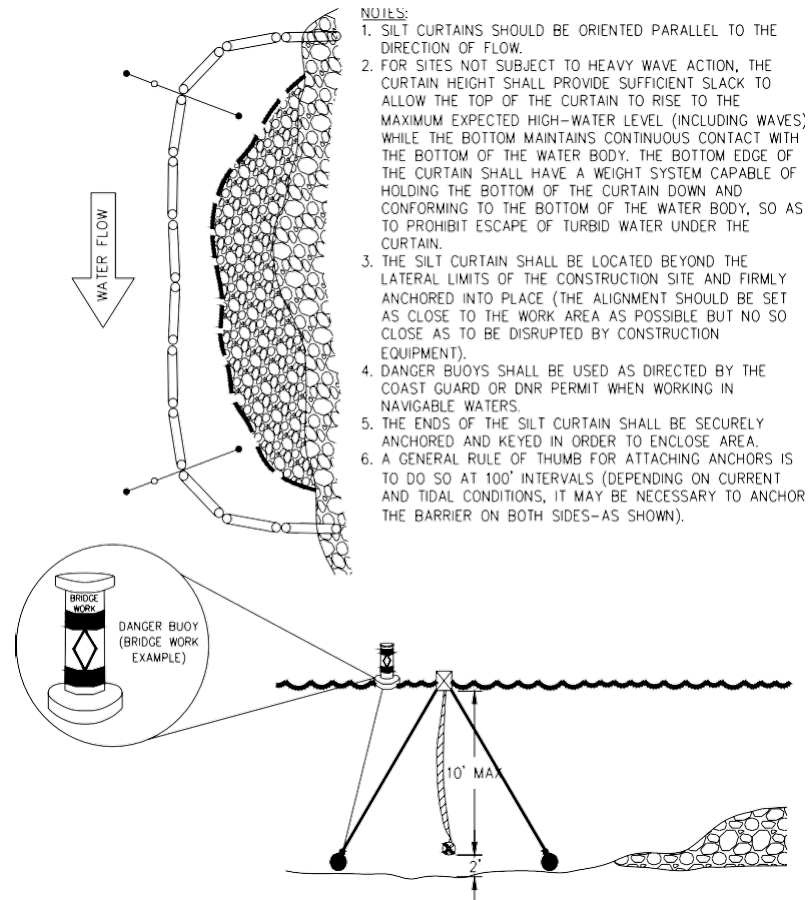
PERMANENT VEGETATION. SEE STANDARD DS3 - DISTURBED AREA STABILIZATION (WITH PERMANENT VEGETATION). EXISTING TREES AND LARGE SHRUBS MAY AFFORD VALUABLE PROTECTION IF LEFT IN PLACE.

TOPSOILING. THIS ENTAILS COVERING THE SURFACE WITH LESS EROSION SOIL MATERIAL. SEE STANDARD TP - TOPSOILING.

STONE. COVER SURFACE WITH CRUSHED STONE OR COARSE GRAVEL. SEE STANDARD CR-CONSTRUCTION ROAD STABILIZATION.

TURBIDITY CURTAIN SYSTEM

ANCHOR SYSTEM AND LAYOUT DETAILS



20 TURBIDITY CURTAIN Tc

GSWCC
GEORGIA SOIL AND WATER
CONSERVATION COMMISSION

Level II Certified Design Professional

CERTIFICATION NUMBER: 0000029504

ISSUED: 04/03/2019 EXPIRES: 04/03/2022

24 HOUR
CONTACT_F
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FULTON COUNTY DEPARTMENT OF PUBLIC WORKS
FULTON-COBB DIVERSION LINE
AND PUMP STATION
EROSION

EROSION CONTROL DETAILS

T&N JOB NO.	JD51848	DATE	04/26/2019	DRAWN	JN	REVISION	DATE	CHECKED	FILE NAME
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NO.	1	ISSUE	DATE	BY	FILE NAME	VERIFY SCALE	Bar is one inch on original drawing, if not one inch on this sheet, adjust scale.	0	

SHEET
CE-5

