Southern Company

Southern Company Generation.
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July 24, 2019

Langdale and Riverview Hydroelectric Projects (FERC No. 2341-033 & 2350-025)
Final Study Plan and Georgia Power Response to Comments

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Room 1-A- Dockets Room
Washington, D.C. 20426

Dear Secretary Bose:

On behalf of Georgia Power Company (Georgia Power), Southern Company is filing this letter with the Federal Energy Regulatory Commission (FERC) in response to comments received on our May 24, 2019, Proposed Study Plan for the Langdale and Riverview Projects' license surrender and dam decommissioning. In the May 24, 2019 letter, Georgia Power requested that resource agencies and the public (stakeholders) review and file comments with FERC on the Proposed Study Plan by June 24, 2019. Four comment letters were filed with FERC: The Nature Conservancy; Chattahoochee River Conservancy; Chattahoochee River Keeper; and the Georgia Department of Natural Resources, Wildlife Resources Division (Attachment A).

Based on the comments, Georgia Power is filing the Final Study Plan that includes edits to the Hydraulic and Hydrology and the Water Quality studies. The Final Study Plan is provided in Attachment B and is also available at Georgia Power's Langdale and Riverview Projects website at
https://www.georgiapower.com/company/energy-industry/generating-plants/langdale-riverview-projects.html

A few comments were not incorporated into the Final Study Plan. Georgia Power's response to comments not incorporated into the Final Study Plan is provided in Attachment A. In addition, Attachment C contains the 2009 GEL Engineering sediment study referenced in Georgia Power's response to comments.

If you require further information, please contact me at 404.506.7219.

Sincerely,

Courtenay R. O'Mara

Courtenay R. O'Mara, P.E.
Hydro Licensing and Compliance Supervisor

ATTACHMENT A – STAKEHOLDER COMMENTS ON THE LANGDALE AND RIVERVIEW PROJECTS
MAY 24, 2019 PROPOSED STUDY PLAN AND GEORGIA POWER'S RESPONSE

As the Executive Director of Chattahoochee River Conservancy, a 501c3 non-profit organization based in Columbus, Georgia, I believe Georgia Power's intent to decommission and remove Riverview and Langdale Dams on the Chattahoochee River is a positive move for the health of the river and the communities on its banks.

Both dams are located in the center of the Fall Line region which extends from the tailrace of the US Army Corps of Engineers Dam at West Point Lake downstream to Columbus, GA. The Fall Line is a geographic feature representing the transition between Piedmont and Coastal Plain and gets its name from the steep gradient and extensive rock outcroppings. River bottoms in this area are characterized by exposed bedrock that creates habitat unique to southeastern streams. The Fall Line region of most rivers in Georgia and Alabama has been dammed and impounded since the 1800s, leaving very little of this unique habitat existing in a free-flowing condition.

I believe the removal of these dams to be essential for the preservation of native black bass species. Shoal Bass are native only to the Apalachicola-Chattahoochee-Flint Rivers and have been assigned the status of Special Concern by the American Fisheries Society Endangered Species Committee and listed as a species of greatest conservation need by the Florida Fish and Wildlife Conservation Commission.

Referencing the "Rangewide Management Plan for Shoal Bass" compiled by Dr. Steven M. Sammons from Auburn University's School of Fisheries, Aquaculture, and Aquatic Sciences for Southeastern Aquatic Resources Partnership (SARP), I state the following:

Shoal bass are a highly pursued sport fish across the ACF basin in both the main stem of the Apalachicola, Chattahoochee, and Flint Rivers. In some areas strong populations exist but the species has experienced significant declines, particularly in the Chattahoochee River where the necessary habitat of Shoal Bass has been flooded by numerous impoundments. The main stem of the Chattahoochee River between West Point Dam and Bartlett's Ferry Reservoir is specifically listed in the management plan as an area that should be prioritized for restoration and dam removal.

In areas across the ACF Basin with altered flow regimes caused by upstream dams, a general pattern of reduced Shoal Bass recruitment has been documented. It has also been noted that fragmented populations below Langdale and Riverview dams in the main stem of the Chattahoochee River between West Point Dam and the headwaters of Walter F. George reservoir near Columbus, were characterized by low abundance and primarily large fish, an indication of poor recruitment within the population and dangerously low genetic diversity.

Fluvial Specialists, Shoal Bass are intolerant of reservoir habitats, and typically spawn in large shoal areas undergoing long migrations to reach a suitable area. Removing these dams will restore aquatic connectivity within this portion of the watershed and allow natural passage of the fish for spawning purposes. By reconnecting the segmented shoal bass populations, genetic diversity and fecundity will improve.

Henry Jackson
Executive Director
Chattahoochee River Conservancy
henry@chattahoocheeriverconservancy.org

The Nature Conservancy
Protecting nature. Preserving life.

The Nature Conservancy in Georgia
100 Peachtree St
Suite 2250
Atlanta, GA 30303

Tel (404) 873-6946
Fax (404) 873-6984

Nature.org/Georgia

June 21, 2019

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Submitted via FERC eFiling System and via USPS

RE: The Nature Conservancy in Georgia's comments regarding Georgia Power's study plans under its application to surrender the Langdale (P-2341-033) and Riverview (P-2350-025) Projects

Dear Secretary Bose,

We appreciate the opportunity to review and comment as the Federal Energy Regulatory Commission (FERC) evaluates Georgia Power's application to surrender the Langdale and Riverview hydropower projects on the Chattahoochee River.

The Nature Conservancy (Conservancy) is a science-based conservation organization working in all 50 states and 70 countries to 'conserve the lands and waters on which all life depends.' We have worked in partnership with regulatory agencies and other non-profits for decades to restore aquatic habitat and hydrologic function in Georgia's rivers and streams. While the impact of hydropower projects can be mitigated somewhat through siting and operational best practices[1] it is essential that we properly assess the role of hydropower in providing low carbon, low cost, low impact power where better alternatives may exist[2].

The power generating units at the Langdale and Riverview Projects have not been operable since 2009; therefore, the benefits of the dam structures have not been realized for a decade, while their impacts on aquatic habitat and hydrologic function in the Chattahoochee River remained. The Conservancy joins with many other regulatory agencies[3], nongovernmental organizations, academic researchers, and corporations in advocating for the removal of obsolete barriers as "an effective approach to restoring river and stream structure, functions, and dynamics."

1. **<u>The Conservancy supports the surrender of the Langdale and Riverview hydropower licenses prior to the end of their license terms and the eventual removal of these barriers, along with the Crow Hop diversion d</u>am.** The Conservancy would support retention of some elements of the in-stream structures for cultural and historic purposes if reasonable, feasible, and safe.

[1] Opperman et al. 2015. https://www.nature.org/content/dam/tnc/nature/en/documents/power-of-rivers-report.pdf
[2] Opperman et al. 2019. https://www.nature.org/en-us/explore/newsroom/wwf-tnc-free-flowing-rivers/
[3] U.S. Army Corps of Engineers. 2018. https://www.army.mil/article/211916/assistant_secretary_of_the_army_for_civil_works_announces_regulatory_guidance_letter_18_01

2. **The Conservancy supports the scope of the study plan, tasks and schedule. In addition the Conservancy has the following recommendations on three aspects of the study plan**:

a. Hydraulic & Hydrologic (H&H) Modeling

i. The applicant should include a visual rendering of the river post de-commissioning and structural removal, using the H&H results to the extent possible. This will provide community members concerned with the loss of river access with a vision for the future of this section of the Chattahoochee River. Commonly heard misconceptions about removing low-head dams have included statements that it will "dry up the river," there will be a loss of flood protection, or unsightly mudflats will be present along the exposed shoreline for years. 1

a) Example: https://www.americanrivers.org/2018/06/now-is-the-time-to-restore-the-mississippi-river-gorge/

b. Water Quality (WQ) Study

i. This portion of the study must address the quantity, quality and composition of the sediment contained in the reservoir area above each structure. As noted by the Chattahoochee Riverkeeper in their comment letter dated March 4, 2019:

> "The Eagle and Phenix Mill Dam was the first major dam built across the Chattahoochee River in 1834 before significant land disturbing activity began in the upper Chattahoochee River basin. This could explain why there was little sediment discovered during the structure's removal in 2013. Langdale was the second structure constructed in the region in 1860, followed by North Highlands (1900), City Mills (1900) and Riverview (1902). Significant sediment flows in the region would have remained high until 1975 when West Point Dam was constructed. Given this timeline, the age of these structures, and the agricultural history of the region, it is plausible that there may be more legacy sediment than anticipated behind the structures Georgia Power proposes to remove." 2

Considering the long and intensely industrial history of the Columbus riverfront and decades of military training activities at Fort Benning, it also seems plausible that legacy contaminants in the sediment are present and may require remediation prior to removal of these structures. Refer to Section 404 of the Clean Water Act as it relates to the removal of obsolete dams[4] and the Advisory Committee on Water Information Subcommittee on Sedimentation's Dam Removal Analysis Guidelines for Sediment[5].

c. Shoal Bass Literature Review Study

i. The Conservancy supports the study and methodology proposed. The Native Black Bass Initiative (NBBI) since 2010 has worked to conserve and restore regionally-endemic black bass populations through a collaborative partnership of local, state, and federal agencies; universities; nongovernmental organizations;

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[4] U.S. EPA Office of Water. 2016. https://www.epa.gov/cwa-404/frequent-questions-removal-obsolete-dams

[5] U.S. Department of the Interior. 2017. https://acwi.gov/sos/pubs/dam_removal_analysis_guidelines_for_sos_final_vote_2017_12_22_508.pdf

and corporations. The NBBI has gathered the most comprehensive information base on the genetics, life history, habitat requirements, distribution, and threats to native southeastern black bass including Shoal Bass[6].

ii. In addition, the conservancy recommends that a step be included to incorporate the results of the H&H model to inform the study report findings. In other words, the applicant should consult with members of the NBBI to provide an assessment of the suitability of in-stream habitats as modeled by the H&H Study to determine the potential impact on Shoal Bass population, distribution and availability as a target for game fishing in this section of the river. **3**

The Nature Conservancy is grateful for this opportunity to provide input on Georgia Power's application to surrender the Langdale and Riverview hydropower projects on the Chattahoochee River, and we look forward to continued partnership opportunities with the Federal Energy Regulatory Commission to mitigate the impacts of hydropower operations in the Chattahoochee River and other river systems in Georgia.

Sincerely,

Sara J. Gottlieb
Director of Freshwater Science & Strategy, Georgia Chapter

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[6] Birdsong et al. 2015.
https://www.researchgate.net/publication/275354943_Native_Black_Bass_Initiative_Implementing_watershed-scale_approaches_to_conservation_of_endemic_black_bass_and_other_native_fishes_in_the_southern_United_States

GEORGIA POWER RESPONSE TO LETTER FROM THE NATURE CONSERVANCY DATED JUNE 21, 2019

Response 1

Georgia Power has incorporated a visual rendering as part of the H&H study output. The visual rendering will be presented to stakeholders at the public meeting.

Response 2

The Nature Conservancy requested that "Georgia Power address the quantity, quality, and composition of the sediment contained in the reservoir above each structure".

No state or federal resource agencies have requested sediment studies as part of the proposed surrender and dam decommissioning.

As part of the Hydraulic and Hydrologic (H&H) study, Georgia Power has collected bathymetry data which may be used to estimate the quantity of sediment behind the dams. Additionally, Georgia Power is proposing to collect some core samples in select locations in the river to estimate the top of bedrock in the stream for better predictive H&H modelling. Sieve analysis in some of the samples will determine the sediment composition. Georgia Power has not proposed to collect and analyze the quality of the sediments in the Langdale and Riverview project area because there is existing information on sediment quality in the Chattahoochee River. Georgia Environmental Protection Division (Georgia EPD) does not regulate for sediment and existing water quality in the Langdale and Riverview Project area meets state standards. Additionally, as described in Georgia Power's surrender application (Exhibit E) filed with FERC in December 2018, a sediment analysis study was completed for the recent removal of the City Mills and Eagle Phoenix hydroelectric projects, which were originally constructed in 1866 and were located approximately 30 river miles downstream of the Langdale and Riverview Projects (GEL Engineering 2009[1]) (Attachment C). Based on this sediment analysis and lack of sediment behind the dams, the U.S. Army Corps of Engineers (USACE) determined that it was unnecessary to remove sediment prior to dam removal and to conduct additional biological testing of the sediment (USACE 206 Environmental Report 2004)[2] . Langdale and Riverview are located well upstream of both Columbus and Fort Benning.

Response 3

Georgia Power has included in the Final Study Plan, a reference to provide the Native Black Bass Initiative with the H&H model results for evaluating effects of the dam removal on shoal bass.

[1] Filed with FERC on 08/23/2010; FERC Accession Number 20100823-5189 (24090659)

[2] Filed with FERC on 10/19/2010; FERC Accession Number 201019-5151 (24264516)

GEORGIA
DEPARTMENT OF NATURAL RESOURCES

WILDLIFE RESOURCES DIVISION

MARK WILLIAMS
COMMISSIONER

RUSTY GARRISON
DIRECTOR

June 24, 2019

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E., Room IA
Washington, DC 20426

RE: Comments on Georgia Power Company (GPC) Response to Additional Information Request and Proposed Study Plan (May 2019) Langdale Project, FERC # 2341 and Riverview Project FERC # 2350

Dear Secretary Bose:

The Georgia Department of Natural Resources, Wildlife Resources Division (WRD) Fisheries Section has reviewed Power Company (GPC) Response to Additional Information Request and Proposed Study Plan (May 2019) Langdale Project, FERC # 2341 and Riverview Project FERC # 2350. In our February 27, 2019 comment letter, we pledged support for the proposed studies outlined in GPC Notice of Application for Surrender of License, Soliciting Comments, Motions to Intervene and Protests, Langdale Project, FERC # 2341 and Riverview Project FERC # 2350.

Georgia Power has since proposed to develop a 'white paper', based on literature review and consultation with resources experts, discussing the potential effects dam removal on Shoal Bass (*Micropterus cataractae*). As noted in the study proposal, significant Shoal Bass research has been conducted since its formal description in 1999. We expect that distilling this research into a single, comprehensive, 'white paper' should adequately inform the dam removal process.

Georgia Power remains in consultation with WRD regarding the decommission and removal of these projects and we support the proposed studies and actions. The removal of these projects is expected to restore connectivity and riverine characteristics in this reach of the Chattahoochee River benefiting fish, wildlife and aquatic resources. The WRD will continue to engage in this process, evaluate study results to better understand the potential range of conditions resulting from this project, provide substantive comment and request additional studies, as needed.

FISHERIES MANAGEMENT SECTION
2065 U.S. HIGHWAY 278 S.E. | SOCIAL CIRCLE, GEORGIA 30025-4711
706.557.3305 | FAX 706.557.3030 | WWW.GEORGIAWILDLIFE.COM

We appreciate the opportunity to comment on the proposal and look forward to continued consultation with Georgia Power and other stakeholders as this process moves ahead. If additional information is needed, please contact Thom Litts (thom.litts@dnr.ga.gov).

Sincerely,

Matt Thomas
Chief

cc. Jon Ambrose
Steve Schleiger

Chris Manganiello, Atlanta, GA.
June 26, 2019

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Submitted via FERC eFiling System

RE: COMMENT regarding Georgia Power Company’s Proposed Study Plan for Langdale and Riverview Hydroelectric Project Numbers 2341-033 & 2350-025

Dear Secretary Bose,

Chattahoochee Riverkeeper appreciates the opportunity to file comments in response to the Georgia Power Company’s request for comments on the Proposed Study Plan for Langdale and Riverview Hydroelectric Project Numbers 2341 & 2350, dated May 2019.

Established in 1994, Chattahoochee Riverkeeper (CRK) is an environmental advocacy and education organization with more than 8,600 members dedicated solely to making the Chattahoochee River a sustainable resource for the five million people who depend on it. Our mission is to advocate and secure the protection and stewardship of the Chattahoochee River, its lakes, tributaries, and watershed, in order to restore and preserve their ecological health for the people and wildlife that depend on the river system.

Hydraulic and Hydrologic Modeling Plan
CRK looks forward to reviewing the results of the Hydraulic and Hydrologic Modeling Plan.
Ensuring that that there is enough flow in the river for municipal water supply and wastewater assimilation is critically important.

CRK understands that the projects are run of river dams, and that West Point Dam’s discharges drive the overall volume of flow in this stretch of river. However, CRK believes removing parts or all of the dams will alter the velocity, duration, and timing of water flow through the project areas.

The proposed barrier removals may result in a more-flashy and less regular stream flow that could be a problem for municipalities’ raw water supply withdrawal points and the East Alabama Water, Sewer and Fire Protection District’s wastewater discharge. There are other wastewater discharges—including West Point (Ga.), Lanett (Al.), and inflow from Long 1
Cane Creek (which supports multiple wastewater discharges in Georgia)—that must also be considered when evaluating comprehensive assimilative capacity for this stretch of the Chattahoochee River.

In the Methodology section, please explain why some dams would be partially or entirely removed in some scenarios but not in others.

Shoal Bass Literature Review
CRK recognizes that barrier removal and the constructed whitewater course in Columbus, Georgia has not improved aquatic connectivity for shoal bass. However, because the Georgia Power Company's proposed removal will ultimately result in a natural streambed (as opposed to a manufactured streambed), CRK anticipates improved aquatic function. The proposed removal could create an 11-mile stretch of river shoal habitat. Georgia Power should make shoal bass habitat restoration a priority in the section of the Chattahoochee River.

Water Quality Plan
The USACE Clean Water Action Section 404 permitting and Section 401 Water Quality Certification processes are critical steps for addressing public and agency concerns about the nature, volume, and other characteristics of legacy sediment contained in the project areas. In August 2016, stakeholders and regulatory staff from the Savannah District, the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, and the Georgia Environmental Protection Division discussed the new Nationwide Permit A for low head dam removal. Regulatory staff expressed specific concern about legacy sediment as one reason for not developing regional conditions for or immediately implementing Nationwide Permit A. Instead, the Savannah District ultimately did not adopt NWP-A, but rescinded NWP-A for five years. 2

The Eagle and Phenix Mill Dam was the first major dam built across the Chattahoochee River in 1834 before significant land disturbing activity began in the upper Chattahoochee River basin. This could explain why there was little sediment discovered during the structure's removal in 2013. Langdale was the second structure constructed in the region in 1860, followed by North Highlands (1900), City Mills (1900) and Riverview (1902).Significant sediment flows in the region would have remained high until 1975 when West Point Dam was constructed. Given this timeline, the age of these structures, and the agricultural history of the region, it is plausible that there may be more legacy sediment than anticipated behind the structures Georgia Power proposes to remove.

Cultural Resources Plan
CRK continues to support the complete or partial removal of the three dams and the Riverview Powerhouse (P-2350-025), and the intent to repurpose the Langdale Powerhouse (P-2341-033). CRK would support retention of some elements of the dams or other properties for cultural and historic purposes if reasonable, feasible, and safe. Will underwater surveys (for example, divers) be used to evaluate the dam's physical condition? 3

If you have any questions, please do not hesitate to contact us.

Sincerely,
/JU/
Jason Ulseth
Riverkeeper
404.352.9828
julseth@chattahoochee.org

GEORGIA POWER RESPONSE TO LETTER FROM CHRIS MANGANIELLO (CHATTAHOOCHEE RIVERKEEPER) DATED JUNE 26, 2019

Response 1

Georgia Power is consulting with the City of Valley and the East Alabama Water, Sewer, and Fire Protection District to address the effect of removing the Langdale, Crow Hop, and Riverview dams on water withdrawals and discharges. Presently, Georgia Power is collecting additional bathymetric data to support a two dimensional HEC-RAS model to evaluate effects of dam removal on water supply withdrawal and discharge points between West Point and Riverview. This effort has been added to the H&H portion of the Final Study Plan.

Georgia Power's proposal is to surrender the FERC licenses for Langdale and Riverview Projects and remove all three dams. This proposal is consistent with the U.S. Fish and Wildlife's goal to benefit diverse native populations of fishes and invertebrates by opening approximately 11 miles of riverine shoal habitat. The H&H model is designed to evaluate alternatives to Georgia Power's proposal, for example, breaching each dam individually or in total (25%, 50%, and 75% breach). Flow velocity was a critical factor in those evaluations because shoal bass need a flow velocity of 3-5 feet per second to move upstream.

Response 2

No state or federal resource agencies have requested sediment studies as part of the proposed surrender and dam decommissioning.

As part of the Hydraulic and Hydrologic (H&H) study, Georgia Power has collected bathymetry data which may be used to estimate the quantity of sediment behind the dams. Additionally, Georgia Power is proposing to collect some core samples in select locations in the river to estimate the top of bedrock in the stream for better predictive H&H modelling. Sieve analysis in some of the samples will determine the sediment composition. Georgia Power has not proposed to collect and analyze the quality of the sediments in the Langdale and Riverview project area because there is existing information on sediment quality in the Chattahoochee River. Georgia Environmental Protection Division (Georgia EPD) does not regulate for sediment and existing water quality in the Langdale and Riverview Project area meets state standards. Additionally, as described in Georgia Power's surrender application (Exhibit E) filed with FERC in December 2018, a sediment analysis study was completed for the recent removal of the City Mills and Eagle Phoenix hydroelectric projects, which were originally constructed in 1866 and were located approximately 30 river miles downstream of the Langdale and Riverview Projects (GEL Engineering 2009[3]) (Attachment C). Based on this sediment analysis and lack of sediment behind the dams, the U.S. Army Corps of Engineers (USACE) determined that it was unnecessary to remove sediment prior to dam removal and to conduct additional biological testing of the sediment (USACE 206 Environmental Report 2004)[4] . Langdale and Riverview are located well upstream of both Columbus and Fort Benning.

Response 3

Georgia Power proposes to remove the dams and therefore is not proposing underwater surveys of the dams to evaluate the physical condition; however, in the Cultural Resources Study Plan, Georgia Power proposes to survey the entire reach of the Langdale and Riverview Projects after the dams have been breached to identify and evaluate any cultural features exposed at lower water levels. Georgia Power remains in consultation with the Georgia and Alabama State Historic Preservation Officers and federally recognized Native American tribes.

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[3] Filed with FERC on 08/23/2010; FERC Accession Number 20100823-5189 (24090659)

[4] Filed with FERC on 10/19/2010; FERC Accession Number 201019-5151 (24264516)

ATTACHMENT B – FINAL STUDY PLAN FOR THE LANGDALE AND RIVERVIEW PROJECTS

Final Study Plan

Langdale and Riverview Hydroelectric Projects
FERC Project Numbers 2341 & 2350

Prepared with:

Southern Company Generation Hydro Services

and

July 2019

LANGDALE AND RIVERVIEW HYDROELECTRIC PROJECTS
FERC PROJECT NUMBERS 2341 & 2350

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ACRONYMS AND ABBREVIATIONS

ADCNR	Alabama Department of Conservation and Natural Resources
ADEM	Alabama Department of Environmental Management
AIR	Additional Information Request
ALSHPO	Alabama State Historic Preservation Officer
BOD	Biological Oxygen Demand
cfs	cubic feet per second
Commission	Federal Energy Regulatory Commission
DO	dissolved oxygen
EPA	U.S. Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
FSP	Final Study Plan
fps	feet per second
F&W	Fish and Wildlife
GASHPO	Georgia State Historic Preservation Officer
GDNR	Georgia Department of Natural Resources
GEPD	Georgia Environmental Protection Division
Georgia Power	Georgia Power Company
GPS	Global Positioning System
HAER	Historic American Engineering Record
HEC-RAS	Hydrologic Engineering Center River Analysis System
H&H	Hydrologic and Hydraulic
HPD	Historic Preservation Division
kW	kilowatt
NBBI	Native Black Bass Initiative
NRPH	National Register of Historic Places
NEPA	National Environmental Policy Act
PSP	Proposed Study Plan or Study Plan
PWS	Public Water Supply
RM	river mile
SARP	Southeast Aquatic Resources Partnership
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey

1.0 INTRODUCTION

Georgia Power Company (Georgia Power) is filing with the Federal Energy Regulatory Commission (FERC or Commission) this Final Study Plan (FSP or Study Plan) in support of the license surrender and decommissioning of the Langdale Project (FERC No. 2341) and the Riverview Project (FERC No. 2350) (the Projects). Georgia Power filed the Proposed Study Plan (PSP) with FERC on May 24, 2019 and provided a 30-day public and agency review and comment period. Four stakeholders provided comments, the majority of which were supportive of Georgia Powers PSP. Two comments were incorporated into the Hydraulic & Hydrologic Study and one comment was incorporated into the Water Quality Study.

Langdale Project

The Langdale Project is located on the Chattahoochee River, adjacent to the City of Valley, Alabama, along the border of Georgia and Alabama. The Langdale Project is located approximately 9.5 river miles downstream of the U.S. Army Corps of Engineers (USACE) West Point Dam (RM 201.4), which began operation in 1976 and regulates the flow through the Middle Chattahoochee River region.

The Langdale Project was constructed between 1904 and 1908 and purchased by Georgia Power from West Point Manufacturing Company in 1930. Over time, the four horizontal generating units developed maintenance problems, and eventually were no longer operable or repairable. Generation records suggest that Georgia Power stopped operating the horizontal units in approximately 1954. The horizontal units were officially retired in 1960, leaving only the two 520 kilowatt (kW) vertical units operating at the Langdale Project; these two units remain in place in the powerhouse but have not operated since 2009. The Langdale Project previously operated as a run of river project.

Riverview Project

The Riverview Project is located approximately at river mile (RM) 191.0 (Crow Hop Diversion Dam) and RM 190.6 (Riverview Dam) on the Chattahoochee River, downstream of the City of Valley, Alabama and in Harris County, Georgia (**Figure 1-1)**. The Project is located approximately 10.5 RM downstream of the U.S. Army Corps of Engineers (USACE) West Point Project and 0.9 RM downstream of the Langdale Project.

The Project consists of two separate dams, Riverview Dam and Crow Hop Diversion Dam (Crow Hop Dam), and a powerhouse with generating equipment located on the western abutment of Riverview Dam. Crow Hop Dam is the upstream dam and is situated across the main river, diverting flow into a headrace channel between an island and the western bank. The headrace channel is approximately 1-mile-long. Riverview Dam and the powerhouse are located at the lower end of this headrace channel (**Figure 1-2**). The Project was constructed in several phases. The smaller downstream dam was constructed in 1906 for West Point Manufacturing Company. Originally, the dam diverted water into the adjacent mill building to provide power for mill operation. The existing powerhouse was built in 1918 and houses two 240 kilowatt (kW) generating units. Crow Hop Dam was constructed in 1920. Georgia Power purchased the Riverview Project from West Point Manufacturing Company in 1930 and began operating the two generating units. Over time, the units developed maintenance problems, and eventually were no longer operable or repairable. Georgia Power stopped operating the units in 2009. The Riverview Project previously operated as a run of river project.

Georgia Power filed applications for license surrender for the Projects with FERC on December 18, 2018, in accordance with the Commission's regulations at 18 C.F.R. § 6.1 and 6.2. The licenses for the Projects expire on December 31, 2023.

On April 11, 2019, FERC issued an additional information request (AIR) regarding decommissioning studies proposed by Georgia Power. As part of its response, Georgia Power filed the PSP to provide more information on the studies Georgia Power proposed to conduct to support its surrender applications for the Projects.

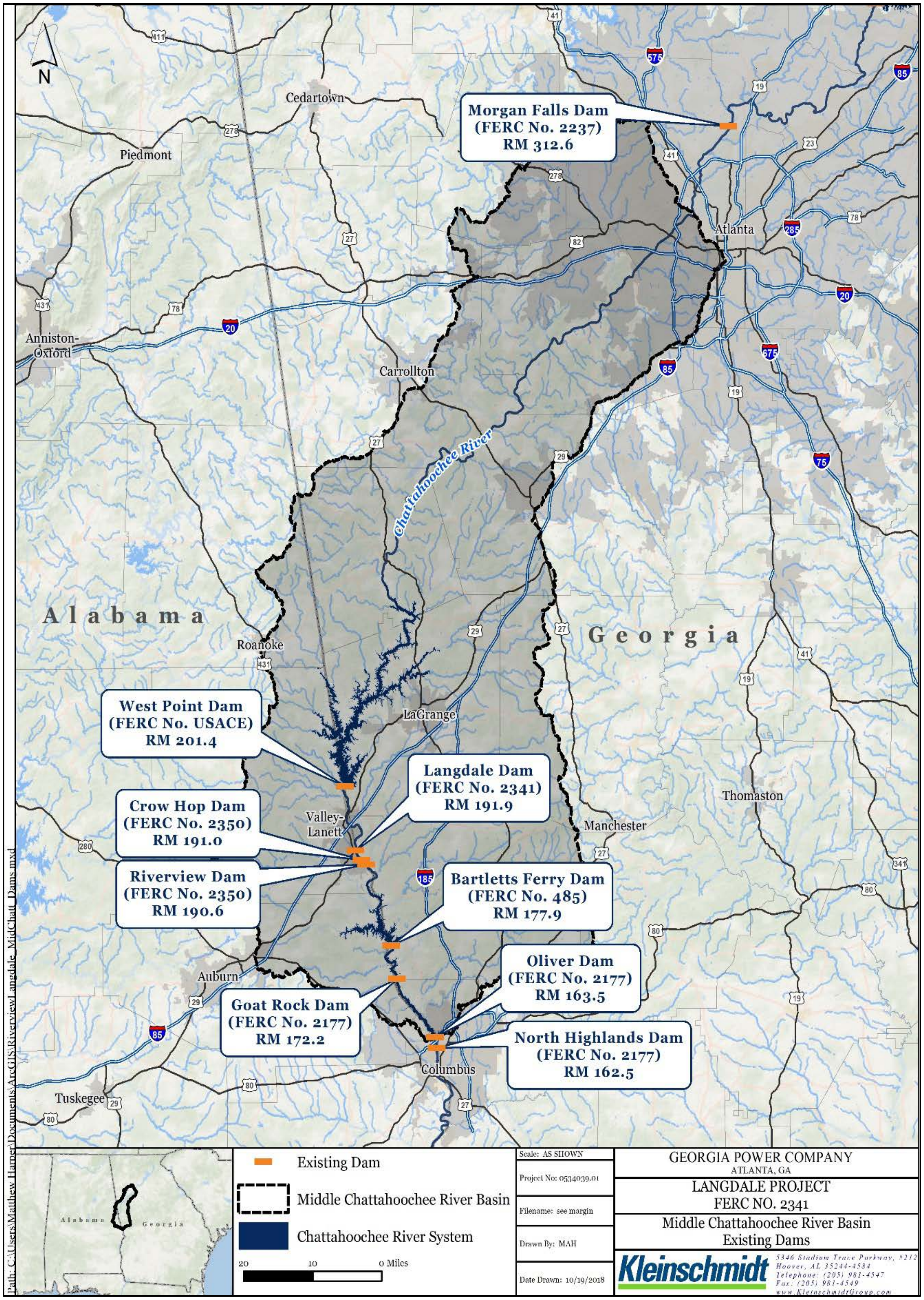

FIGURE 1-1 MIDDLE CHATTAHOOCHEE RIVER BASIN EXISTING DAMS

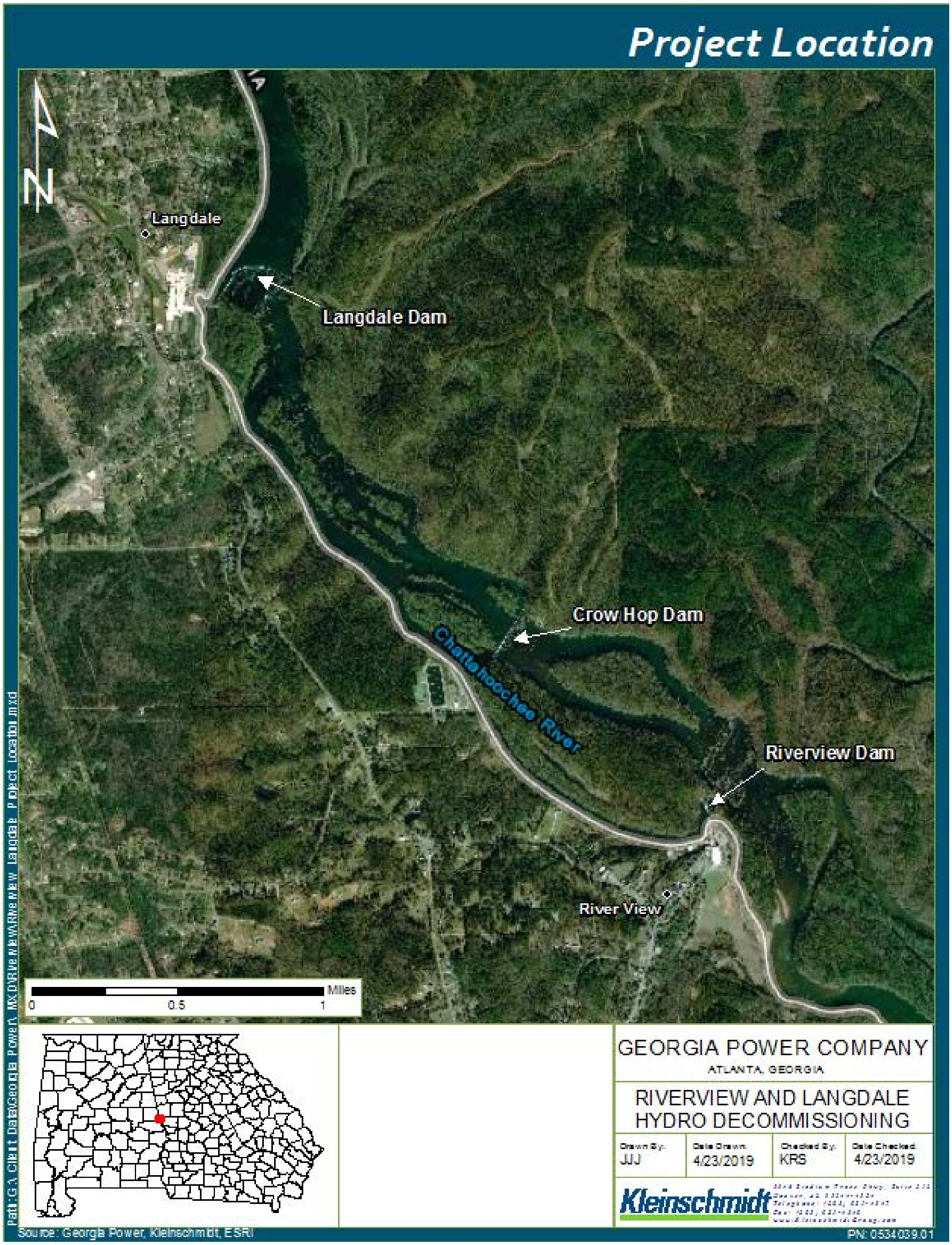

FIGURE 1-2 LANGDALE AND RIVERVIEW PROJECT LOCATIONS

1.1 Document Organization

Sections 2 through 6 present 5 study plans by topic/resource area. Each study plan describes the goals and objectives, study background, study area, methodology, reporting, and study schedule, which includes a study report and public comment period. For the cultural resources study, the State Historic Preservation Offices have identified resource agency goals. The FSP includes:

- **Section 2 –** Hydraulic & Hydrologic (H&H) Modeling Study
- **Section 3 –** Mussel Survey Study
- **Section 4 –** Shoal Bass Literature Review Study
- **Section 5 –** Water Quality Study
- **Section 6 –** Cultural Resources study

1.2 Stakeholder Consultation

Georgia Power proposed these studies in its applications for surrender. On April 11, 2019, FERC requested that Georgia Power provide additional information about each of the studies. In addition to those studies proposed in the surrender applications, Georgia Power developed a Shoal Bass Literature Review Study based on the comments received on the applications.

TABLE 1-1 provides the master schedule for all studies. Georgia Power will communicate with all participants by e-mail, mail, and/or the project website, to ensure notification of the availability of the study reports in a timely and efficient manner. Upon filing with FERC, the study reports will be made available electronically for stakeholder review on the Internet at both Georgia Power's Langdale and Riverview License Surrender Website and FERC's website (using the eLibrary feature):

https://www.georgiapower.com/company/energy-industry/generating-plants/langdale-riverview-projects.html

http://www.ferc.gov/docs-filing/elibrary.asp

1.3 Relationship of the Resource Studies to the Decommissioning Plan

Each resource study will culminate in the preparation of a study report (**TABLE 1-1**). Georgia Power will provide a 30-day public review and comment period on the study reports listed in Table 1-1. Those studies occurring in 2019 will provide information to be used to develop the Decommissioning Plan.

FERC will use the study results and information about the Projects, along with its environmental, engineering, and economic analyses, to make a public interest determination and to finalize its decision on Georgia Power's surrender applications. FERC's National Environmental Policy Act (NEPA) document will be issued for public review and comment and will include FERC's determination regarding reasonable and feasible alternatives and cumulative impacts as part of its analysis pursuant to NEPA.

Common terms used in the FSP include Project Boundary and Project Area. The term "Project Boundary" is that area defined in the project's license issued by FERC outlining the geographic area needed for project operations and maintenance. The "Project Area" refers to the land and water in the FERC Project boundary and immediate geographic area adjacent to the Project boundary.

TABLE 1-1 PROPOSED STUDY IMPLEMENTATION MASTER SCHEDULE FOR THE PROJECTS

Activity	Start Date	Completion Date or Deadline
Conduct Studies		
Hydraulic & Hydrologic (H&H) Modeling	May 2019	December 2019
Water Quality (WQ)	May 2019	December 2019
Shoal Bass Literature Review (SB)	May 2019	December 2019
Public Review and Comment on H&H, WQ, SB Study Reports	December 2019	January 2020
Mussel Survey**	October 2020	Post-Dam Removal
Cultural Resources**	May 2020	Post-Dam Removal
Public Review and Comment on Mussel Study Report	prior to Dam Removal	prior to Dam Removal
Public Review and Comment of Cultural Study Report***	Post dam removal	Within 6 months of dam removal
File Final Decommissioning Plan	NA	December 2019

**The proposed completion dates are dependent on FERC approval of the Decommissioning Plan and the actual timing of dam removal. All fieldwork that occurs post-dam removal is projected to be complete within six months (depending on the season and weather).

*** The Cultural Resources Study Report will be filed at FERC as privileged information; therefore, some or all of the report may not be distributed to general stakeholders.

2.0 HYDRAULIC AND HYDROLOGIC MODELING

2.1 Introduction

Georgia Power proposes to develop a steady-state Hydrologic Engineering Center River Analysis System (HEC-RAS) model of the Chattahoochee River from West Point Dam downstream to the headwaters of the Bartletts Ferry reservoir, Lake Harding. A principal element of the study will be evaluating the lateral extent of the Chattahoochee River affected under various dam breach alternatives to determine a preferred dam removal proposal for the Decommissioning Plan.

2.2 Goals and Objectives

A hydraulics model of the study area is necessary to understand how the river (elevations, widths, flow velocity, etc.) may change with removal of all or portions of the dams. The model will focus on base flow conditions but will also be able to evaluate other flow events. Removal of a part or all of the dams will not alter the flow regime in this stretch of the river because it is driven by the upstream USACE West Point Dam discharges. The Projects, when operated historically, were run of river projects.

2.4 Study Area

The anticipated study area on the Chattahoochee River will extend from West Point Dam downstream through Langdale and Riverview Projects to the headwaters of Lake Harding (Bartletts Ferry Hydroelectric Project reservoir) (**FIGURE 1-1**).

2.5 Methodology

The goal of this study is to evaluate various dam removal alternatives for the Langdale, Crow Hop, and Riverview Dams on the Middle Chattahoochee River and to identify an effect, if any, on existing water intakes and discharges.

The objective of this study is to evaluate the effects of several different dam removal schemes. These include:

- Existing Conditions (no removal of any dams)
- Removal of Crow Hop, Riverview, and Langdale Dams (in their entirety)
- Removal of Crow Hop and Riverview Dams; Langdale Dam to remain
- If the Riverview channel does not remain wetted as it currently exists in the first two scenarios, evaluate the removal of Crow Hop and Langdale Dams with Riverview to remain.

- Partial removal of Crow Hop Dam and Langdale Dam.

- All modeling schemes will be run with a 520 foot pool elevation for Lake Harding (mid-point of the operating range) to check the backwater effects through the reach.

For hydraulic modeling, the following existing information will be used for the study:

- Existing Langdale and Riverview dam as-built data, existing Lake Harding HEC-RAS Model.

- Peak flow hydrology developed for West Point Dam.

West Point Operations	**Total Flow (cfs)**
Base flow unit	680
Base plus one unit	9,280
Base plus two units	16,080
Maximum generation	19,000
“Action” stage	34,000
Flood stage	46,000

- Multiple field collected cross sections and two-dimensional point array survey data were collected by Lowe Engineering to develop HEC-RAS model terrain data.

- HEC-RAS Version 5.0.7 will be used to efficiently evaluate the differences between various dam removal schemes. The HEC-RAS model will consist of both 1-D reaches and 2-D areas, fully coupled for the entire simulation. The model will be a steady flow model but will use the unsteady flow engine in HEC-RAS to take advantage of the 2D modeling components (which only work in unsteady flow).

- When quantifying the resulting wetted areas, the level of detail needs to be consistent with the level of detail of the survey data. Therefore, additional cross section and 2D point array data were collected for inclusion into the HEC-RAS model.

- Several plans will be set up in the HEC-RAS model to evaluate different dam removal schemes in comparison to one another. Each breach or partial dam removal scenario will be evaluated with several different West Point dam operating flows. The base flow will be closely evaluated for wetted area in the river and side channels adjacent to the Projects as well as velocity in those areas.

- A plan will be created to evaluate partial and total breaches and evaluate the change in velocity for each breach scenario.

- Once HEC-RAS modeling is complete, maps will be prepared to demonstrate expected wetted area for various dam removal schemes. The maps will show inundated areas and present color shading that represents different water depths and velocity. Plots will also be prepared to show the different water surface profiles that are expected for each dam removal scheme.

- A visual rendering will be developed for Georgia Power's final proposal for dam removal.

Georgia Power is also collecting sediment samples above the Langdale Dam and will conduct a sieve analysis to determine sediment size and mobility potential to address composition and quantity of sediment. Georgia Power is also collecting limited core samples to confirm the bedrock elevation that will be input to the H&H model and for final design drawings.

2.6 Reporting

Initial modeling results will be compiled and presented at a public meeting in late summer 2019. Stakeholders will have 30 days following the meeting to comment on the meeting materials. A study report will be prepared and filed with FERC following completion of the study and concurrent with filing the Decommissioning Plan in December 2019. Stakeholders will have 30 days to review and comment on the H&H Study Report.

2.7 Schedule

In accordance with the master schedule provided in Section 1.3, the H&H Study will be completed and its results shared in a public meeting in late summer 2019. A H&H study report will be distributed with the Decommissioning Plan in December 2019. Stakeholders will have 30 days from the date the Decommissioning Plan is filed with FERC to review and comment on the H&H study report.

3.0 MUSSEL SURVEY

3.1 Introduction

Georgia Power is proposing to conduct a mussel survey on the Chattahoochee River in the immediate areas downstream of Langdale, Riverview and Crow Hop Dams where localized construction activity is proposed to effectuate dam removal. This study will be implemented prior to dam removal.

3.2 Goals and Objectives

The goal of this study is to characterize the existing mussel community in the immediate downstream vicinity of the dams using field surveys. The results of the study will allow Georgia Power to modify instream construction activities to prevent impacts to existing populations of freshwater mussels.

3.3 Study Background

3.3.1 Issues Identified

There is potential for impacts to freshwater mussel species. Impacts may include increased localized turbidities and physical injury to freshwater mussels during construction.

3.3.4 Existing Information

There are nine mussel species that are currently listed as having some level of conservation status in both Chambers County, Alabama, and Harris County, Georgia (**TABLE 3-1**). This includes seven mussel species that are listed as federally threatened or endangered or are currently candidates for such listing. A single individual of the Delicate spike, a Georgia state-listed endangered species, was collected during 2009 and 2010 surveys in the Riverview shoals at the upstream end of the Bartletts Ferry Project (Georgia Power 2012). The Delicate spike is listed as imperiled for Harris County, Georgia and is a candidate species for listing under the Endangered Species Act.

TABLE 3-1 FISH AND MUSSEL SPECIES WITH STATE OR FEDERAL CONSERVATION STATUS IN CHAMBERS COUNTY, AL AND HARRIS COUNTY, GA

Mussel Species	Scientific Name	Status
Purple bankclimber	*Elliptoideus sloatianus*	Threatened (Federal), Imperiled (Georgia)
Oval pigtoe	*Pleurobema pyriforme*	Endangered (Federal)
Finelined pocketbook	*Lampsilis altilis*	Threatened (Federal)
Ovate clubshell	*Pleurobema perovatum*	Endangered (Federal)
Gulf moccasinshell	*Medionidus penicillatus*	Endangered (Federal), Critically Imperiled (Georgia)
Southern elktoe	*Alasmidonta triangulata*	Under Review (Federal), Critically Imperiled (Georgia)
Delicate spike	*Elliptio arctata*	Under Review (Federal), Imperiled (Georgia)
Alabama spike	*Elliptio arca*	Imperiled (Alabama)
Sculptured pigtoe	*Quadrula cylindrica*	Critically Imperiled (Alabama) Vulnerable (Georgia)

3.4 Study Area

The proposed study area includes the Chattahoochee River in the immediate areas downstream of Langdale, Riverview and Crow Hop Dams, as determined in consultation with the U.S. Fish and Wildlife Service (USFWS).

3.5 Methodology

Georgia Power previously conducted freshwater mussel surveys in the study area during August 1992 (EA Engineering 1992). Georgia Power will procure the services of a qualified contractor to conduct a mussel survey prior to dam removal. The field survey will be conducted by a team of biologists experienced in mussel collection. Searches will be conducted during daylight hours and under suitable, safe river flow conditions.

Substrates most suitable for potential occurrence of freshwater mussels will be surveyed. The degree of change in suitable mussel habitats from 1992 to present is not known. Rather than replicating searches along certain transects used in 1992, exact habitat-based search areas will be selected in the field based on visual determination of suitable and preferred mussel habitats.

Search efforts of each individual searcher will be documented. The survey may include a variety of survey methods, tailored to site-specific conditions for depth, accessibility, and water clarity to search for live mussels (and relict shells) where suitable habitat is encountered. Search methods may include visual observations while wading, hand grubbing while on hands and knees, snorkeling, SCUBA, surface-supplied air in deeper water. Divers will follow all applicable safety regulations.

The survey will record observations of live mussels and shells of dead mussels. All occurrences of state and federally protected species of mussels will be documented using hand-held GPS (Global Positioning System) units. Photographs will be taken of representative live specimens of each protected species or species of concern collected. Live mussels will be returned unharmed to appropriate habitats in the area of collection. The surveyors will record field notes and general information about the survey area to include such information as the date and time of survey; individual survey capture, flow and velocity conditions; water clarity; depth and substrate composition; and bank and riparian zone condition.

Prior to the initiation of fieldwork, the mussel survey crew will submit a daily survey and dive plan to Georgia Power for overall safety diligence and awareness of upstream USACE West Point Dam operations for the day. The survey team will be equipped with a hand-held communication device and will be in constant contact with the field coordinator.

3.6 Reporting

Study results will be summarized and presented in a study report, which will be filed with FERC upon completion of the study. Stakeholders will have 30 days to review and comment on the Mussels Survey Study Report.

3.7 Schedule

In accordance with the master schedule provided in Section 1.3, the Mussel Survey will be completed prior to dam removal. Stakeholders will have 30 days from the date the report is filed with FERC to review and comment on the Mussels Survey Study Report.

3.8 References

EA Engineering, Science and Technology, Inc. 1992. Protected species survey of the Chattahoochee River near the Langdale (FERC Project No. 2341) and Riverview (FERC Project No. 2350) Hydroelectric Facilities, West Point, GA. EA Engineering, Science, and Technology, 1900 Lake Park Drive, Suite 350. Smyrna, Georgia 30080.

Georgia Power Company (Georgia Power). 2012. Application to the Federal Energy Regulatory Commission for a License for Bartletts Ferry Project No. 485.

4.0 SHOAL BASS LITERATURE REVIEW STUDY

4.1 Introduction

Shoal Bass (*Micropterus cataractae*) are recognized as a high priority, rare species by both Alabama and Georgia. The species is a popular target for Chattahoochee River anglers in the vicinity of the Projects.

4.2 Goals and Objectives

The goal of this study is to determine the potential effects of dam removal on Shoals Bass and their aquatic habitats in the study area.

4.3 Study Background

4.3.1 Issues Identified

Several stakeholders have commented that the removal of the Projects would be detrimental to the Shoal Bass population in this reach of the Chattahoochee River. Shoal Bass are recognized as a high priority, rare species by both Alabama Department of Conservation and Natural Resources (ADCNR) and the Georgia Department of Natural Resources (GDNR) in their State Wildlife Action Plans due to factors including limited range and habitat fragmentation by dams. As such, the protection or enhancement of Shoal Bass populations through actions that increase their range and habitat connectivity are of particular interest to resource managers.

4.3.2 Study Requests

Georgia Power proposes to consult with resource experts through the Southeast Aquatic Resources Partnership's (SARP) Native Black Bass Initiative (NBBI) to conduct a literature review study and prepare a "white paper" discussing the potential effects of dam removal on Shoal Bass.

4.3.4 Existing Information

Shoal Bass are considered fluvial specialists and are typically found in medium to large rivers with rocky substrate and moderate to fast water velocities and are generally intolerant of impoundments. Shoal Bass spawn in shoal areas during the spring (April - May) and travel long distances to reach these habitats. Shoal Bass prey typically consists of crayfish, fish, and insects (Sammons et al. 2015).

Sammons (2011) collected 40 Shoal Bass in the headwaters of Bartlett's Ferry Reservoir (located approximately 1.3 RM downstream of Langdale Dam, near the toe of Crow Hop Dam). The proximity of these fish to the Project, and the similar habitat complexes that exist throughout this river reach (i.e., rocky shoal habitat), suggest that Shoal Bass would likely be found further upstream into the Project Area.

4.4 **Study Area**

The study area includes the Chattahoochee River from West Point Dam downstream through the Langdale and Riverview Projects to the headwaters of Lake Harding (Bartletts Ferry Hydroelectric Project reservoir).

4.5 **Methodology**

Significant research has been performed since the description of the Shoal Bass by Williams and Burgess (1999). This research will contribute to identifying and understanding effects of dams such as the Langdale and Riverview dams on the Shoal Bass. Georgia Power will develop a white paper summarizing the expected, general impacts of barrier removal on Shoal Bass within their native range. This effort will involve members of the NBBI, who encompass many of the professionals currently working on Shoal Bass research and management across state and federal agencies and academic institutions. This group is working on a draft version of a rangewide Shoal Bass management plan to guide conservation and restoration activities. Examples of references to be used in the study will be the Georgia, Alabama, and Florida State Wildlife Action Plans, articles from publications such as the North American Journal of Fisheries Management and the Journal of the Southeastern Association of Fish and Wildlife Agencies, and books such as *Black bass diversity: multidisciplinary science for conservation* by the American Fisheries Society. Additionally, unpublished data collected by resource agencies may be used to infer relevant, existing conditions across the range. Finally, Georgia Power will provide the results of the H&H modeling to the NBBI for use in evaluating the effect of removing the Langdale, Crow Hop, and Riverview dams on Shoal Bass habitat.

4.6 **Reporting**

A study report will be prepared and filed with FERC upon completion of the study. Stakeholders will have 30 days to review and comment on the Shoal Bass Study Report.

4.7 **Schedule**

In accordance with the master schedule provided in Section 1.3, the Shoal Bass study will be completed and a study report distributed with the Decommissioning Plan in December 2019. Stakeholders will have 30 days from the date the Decommissioning Plan is filed with FERC to review and comment on the Shoal Bass Study Report.

4.8 **References**

Sammons, S.M. 2011. Habitat use, movement, and behavior of Shoal Bass, *Micropterus Cataractae*, in the Chattahoochee River near Bartletts Ferry Reservoir. Auburn University Department of Fisheries and Allied Aquaculture. February 28, 2011.

Sammons, Steven M., K.L. Woodside, and C.J. Paxton. 2015. Shoal Bass *Micropterus cataractae* Williams & Burgess, 1999. American Fisheries Society Symposium 82:75-81.

Williams, J. D., and G. H. Burgess. 1999. A new species of bass, Micropterus cataractae (Teleostei: Centrarchidae), from the Apalachicola River Basin in Alabama, Florida, and Georgia. Bulletin of the Florida Museum of Natural History 42(2): 81-114.

5.0 WATER QUALITY

5.1 Introduction

The Chattahoochee River is used extensively and has been actively managed since the late 1800s. Historic and current uses of the river include flood control, hydroelectric power, recreation, and wastewater assimilation. The river's water quality has been impacted by municipal and industrial discharges and agriculture. The Chattahoochee River Basin, including the river, its tributaries, headwater streams, and underlying groundwater, is utilized for numerous purposes. Its waters are withdrawn to supply water for cities and counties, industry, and agriculture.

5.2 Goals and Objectives

The goal of this study is to provide baseline water quality for the study area. The objective is to characterize study area water quality based on a summary of available relevant water quality data. In addition, Georgia Power proposes to consult with the USACE, as well as ADEM and EPD, respectively, regarding water quality information necessary for the USACE Clean Water Act (CWA) Section 404 permit(s) and the Sections 401 water quality certifications.

5.3 Study Background

5.3.1 Issues Identified

Georgia Power will describe baseline water quality in the study area to provide information for CWA Sections 401 and 404 permit applications for dam removal.

5.3.4 Existing Information

Designated water uses are assigned by the state of Georgia to all surface waters. These classifications are scientifically determined to be the best utilization of the surface water from an environmental and economic standpoint. Georgia's use classification for the Chattahoochee River in the Project Area is "Drinking Water" (GAEPD 2016). The State of Alabama use classifications for the Chattahoochee River in the Project Area are "Public Water Supply" (PWS) and "Fish and Wildlife" (F&W) (ADEM 2017).

Water quality conditions in the Chattahoochee River basin, particularly in upstream West Point Reservoir and Long Cane Creek, have a direct effect on the Project's water quality. Project water quality parameters affected by influent water quality primarily include dissolved oxygen. Previously, the Chattahoochee River downstream of West Point was listed as impaired due to low dissolved oxygen levels in releases from West Point Dam. This reach is now attaining the dissolved oxygen standards and has been removed from the CWA Section 303(d) list of impaired waters.

Discharges from West Point Dam comprise 98 percent of the inflows to the Riverview Project, with the remaining 2 percent contributed by local runoff from the intervening watershed. Inflows into the Riverview Project are comprised of 98 percent of the discharges from West Point Dam, with the remaining 2 percent due to local runoff. A study performed in 2009 and 2010 (Georgia Power) documented water quality in the Chattahoochee River approximately 1 RM downstream of the Riverview powerhouse. Monthly vertical profile samples at this location indicated dissolved oxygen levels exceed applicable criteria. In addition to common parameters, the 2009-2010 study also involved the collection of monthly discrete water chemistry samples and analysis of these samples for 24 different parameters.

Between 2000 and 2013, the U.S. Geological Survey (USGS) and Georgia Environmental Protection Division (GEPD) conducted periodic monitoring on the Chattahoochee River approximately 7 RM upstream of Langdale Dam (Station No. 02339500), which is co-located with a USGS gage and is approximately 2 RM below West Point Dam and just above where the City of West Point begins. During this period, average monthly water temperatures ranged from a low of 8.47 degrees Celsius (°C) in February to a high of 27.67 °C in August. Monthly average dissolved oxygen levels were generally above 5 milligrams/liter (mg/L), except for September (4.94 mg/L). The USGS and GEPD monitoring results also indicated relatively low nutrient levels in the water, with average total nitrogen concentrations of 0.38 mg/L and average total phosphorus concentrations of 0.26 mg/L. Analysis of samples for fecal coliform bacteria, including E. coli indicated that pathogens were well below acceptable limits (GEPD 2018, USGS 2018).

5.4 Study Area

The study area includes the Chattahoochee River from the Project Boundary for Langdale and Riverview Projects, which includes the Langdale pool downstream through Riverview, to the headwaters of Lake Harding (Bartletts Ferry Hydroelectric Project reservoir).

5.5 Methodology

The primary data source will be Georgia EPD via its recently released (May 2019) public data portal (https://gomaspublic.gaepd.org). EPD's ambient water quality monitoring program data will be included in the information summary and characterization of water quality. A desktop search will be conducted for other current, relevant study area water quality data and information. EPD's recent water quality samples collected upstream of the study area included parameters shown in **TABLE 5-1**.

TABLE 5-1 LIST OF MONTHLY WATER CHEMISTRY PARAMETERS AND ANALYTICAL METHOD

Parameter (units)	Analytical Method[a]
Alkalinity (mg/L)	EPA 310.1
Total Suspended Solids (mg/L)	EPA 160.2
Turbidity (NTU)	EPA 180.1
Hardness (mg/L $CaCO_3$)	SM 2340
Total Phosphorus (mg/L)	EPA 365.1
Nitrate + Nitrite (mg/L)	EPA 300.0
Total Kjeldahl Nitrogen	EPA 351.2
Ammonia (mg/L)	EPA 350.3
Biochemical Oxygen Demand (BOD) (mg/L)	EPA 405.1
Total Organic Carbon	EPA 415.3

[a] EPA (U.S. Environmental Protection Agency), Methods for Chemical Analysis of Water and Wastes; EPA SW-846, Test Methods for Evaluating Solid Waste – Physical/Chemical Properties; APHA-AWWA-WEF, Standard Methods (SM) for the Examination of Water and Wastewater.

mg/L = milligrams per liter; µg/L = micrograms per liter; $CaCO_3$ = calcium carbonate; NTU = Nephelometric turbidity unit

5.6 Reporting

Georgia Power will prepare a study report summarizing available water quality information and file with the Decommissioning Plan. Stakeholders will have 30 days to review and comment on the Water Quality Study Report.

Georgia Power will continue consulting with USACE on the Section 401 permitting process. The 404 permit process, once complete, will initiate the 401 permit process.

5.7 Schedule

In accordance with the master schedule provided in Section 1.3, the Water Quality Study will be completed and a study report filed with the Decommissioning Plan in December 2019. Stakeholders will have 30 days from the date the Decommissioning Plan is filed with FERC to review and comment on the Water Quality Study Report.

The 404 permit process will continue in 2020.

5.8 References

Alabama Department of Environmental Management (ADEM). 2017. ADEM Admin. Code r. 335-6-10 & 11. http://adem.state.al.us/alEnviroRegLaws/files/Division6Vol1.pdf. Accessed May 3, 2018.

Georgia Environmental Protection Division (GAEPD). 2016. Water Use Classifications and Water Quality Standards. Available: http://epd.georgia.gov/sites/epd.georgia.gov/files/related_files/site_page/391-3-6.03%20Triennial%2013%20Final%20Edits.pdf. Accessed May 3, 2018.

Georgia Environmental Protection Division (GAEPD). 2018. Watershed Protection Branch – Water Quality Database – Station RV_12_4067. http://www1.gadnr.org/dnr/wrdb/homePage.do. Accessed May 3, 2018.

United States Geological Survey (USGS). 2018. Water Quality Data Portal – Station ID USGS 02339500. https://www.waterqualitydata.us/portal/. Accessed May 3, 2018.

6.0 CULTURAL RESOURCES

6.1 Introduction

An archaeological resource inventory was conducted during the previous relicensing, resulting in the discovery and delineation of nine sites (Gardner et al. 1988). The seven historic sites include remains of a beached maintenance barge associated with the Langdale powerhouse, domestic and industrial dump sites, and staging/construction areas related to the dams. The two prehistoric resources are a Late Mississippian (Lamar) farmstead (9HS30) and a surface artifact scatter with undifferentiated Archaic and Lamar components (9HS31). Of the nine sites, only 9HS30 was recommended eligible for inclusion in the National Register of Historic Places (NRHP). A historic hydroengineering report was also prepared that documented the resources at the Langdale and Riverview stations (Hay 1989). Both plants were recommended eligible for the NRHP.

6.2 Goals and Objectives

The goal of this study is to continue consultation with the Georgia State Historic Preservation Officer (GASHPO), the Alabama State Historic Preservation Officer (ALSHPO), and affected federally-recognized Tribes (Consulting Parties) on ways to avoid, minimize, and/or mitigate adverse effects to historic properties.

Specific objectives of this study are to:

- Determine need for additional information/documentation on known and unknown resources.
- Work with Consulting Parties to develop a plan to avoid, minimize, and mitigate adverse effects to Langdale and Riverview plants and site 9HS30; and
- Work with Consulting Parties to determine need for any continued management of resources retained by Georgia Power.

6.3 Study Background

6.3.1 Issues Identified

Effects to recorded historic properties (power plants, site 9HS30) as well as impacts to any unrecorded historic properties (e.g., fish traps/weirs).

6.3.2 Study Requests

Georgia Power proposes to consult with the GASHPO, ALSHPO, and federally-recognized Tribes to determine the need for additional information on the Project facilities (dam, powerhouse, appurtenant facilities). The Muscogee (Creek) Nation has also requested that the riverbed be surveyed for any archaeological features that may be exposed as a result of lower water levels.

6.3.3 Resource Management Goals

The Georgia Department of Natural Resources (GDNR) Historic Preservation Division (HPD) is Georgia's State Historic Preservation Office. *Georgia's State Historic Preservation Plan 2017-2021: Integrating Innovation with Preservation* is the guiding document for the state historic preservation program administered by HPD. Likewise, the Alabama Historical Commission's *Statewide Comprehensive Historic Preservation Plan* is the AHC's guiding document for the protection, preservation, and interpretation of Alabama's historic places. Resource management goals consistent with these plans and applicable to decommissioning the Projects include: preventing the unintentional disturbance of historic properties by planning for the use of protective measures in activities that may cause a disturbance of the site, and preserving the integrity of any historical structures of the Projects' dams and powerhouses and the historical information regarding the development of the Projects.

6.3.4 Existing Information

Extensive cultural resource surveys have been conducted along the Chattahoochee River in the vicinity of the study area, from upstream West Point lake to downstream Columbus and Fort Benning. As referenced above, archaeological and historical/architectural studies were conducted for the Langdale and Riverview Projects during the previous relicensing. These investigations have generated a significant body of literature and developed a rich cultural context for evaluating prehistoric and historic resources in the study area. Additionally there is an existing Cultural Resource Management Plan.

6.4 Study Area

The study area for cultural resources will include the Langdale and Riverview Project lands, affected shoreline and riverbed, and surrounding passageways needed for deconstruction of the dams.

6.5 Methodology

Archaeological survey coverage of Langdale and Riverview project lands, referred to by Gardner et al. (1988) as Langdale Tracts 1&2 and Riverview Tracts 1-4, was thorough and systematic. Georgia Power, therefore, does not propose to conduct any additional survey in those areas. Our identification efforts will instead focus on any areas that may have been acquired since the previous survey, as well as shoreline and riverbed affected by the dam removals. For the shoreline/riverbed survey, we propose a two-stage effort. Prior to dam removal, the riverine reaches between Langdale and Crow Hop, as well as those between Crow Hop and Riverview, will be surveyed by boat and/or on foot during low flow to identify any rock weirs, fish traps, or similar features. Additionally, the entire reach of the Langdale and

Riverview Projects will be surveyed after the dams have been breached to identify and evaluate any cultural features exposed at lower water levels. Particular attention will be paid to those deeper areas (e.g., directly upstream of the dams) during this second phase of survey.

In addition to these efforts, we propose to conduct further evaluation of site 9HS31, the surface artifact scatter located on the bluff overlooking the east abutment of Crow Hop Dam. This site was recommended ineligible for listing in the NRHP by Gardner et al. (1988); however, for an unknown reason, it remained part of Georgia Power's annual site monitoring program over the term of the license. Evaluation efforts will focus on a final eligibility recommendation for the site and any further management considerations that may entail.

It is possible that equipment and material transport to and from the Project Area may impact a portion of site 9HS30, which has been determined eligible for listing in the NRHP. The potential for impact depends on which side of the river construction activities may originate from. If impacted, consultation, will inform any mitigation needs.

Documentation and evaluation of the Langdale and Riverview plants (Hay 1989) was also comprehensive. Georgia Power will work with the Consulting Parties to determine the level of Historic American Engineering Record (HAER) documentation that will be required to mitigate adverse effects to these historic properties.

6.6 Reporting

A study report will be prepared and filed with FERC upon completion of the study; however, due to the sensitive information contained in cultural resource reports, all or portions of the Cultural Resources Study Report may be filed with FERC as privileged information and not available to general stakeholders.

6.7 Schedule

In accordance with the master schedule provided in Section 1.3, the Cultural Resources Study will be completed six months following dam removal. Stakeholders will have 30 days from the date the report is filed with FERC to review and comment on the Cultural Resources Study Report.

6.8 References

Georgia Council of Professional Archaeologists. 2014. Georgia standards and guidelines for archaeological surveys. Revised April 2014. http://georgia-archaeology.org/GCPA/wp-content/uploads/2007/05/GA-Arch-Standards-and-Guidelines-revised-April-2014.pdf.

Federal Energy Regulatory Commission (FERC). 1993. Order Issuing Subsequent License. Georgia Power Company – Langdale Project No. 2350. May 1993.

Gardner, Jeffrey W., Ruth Ann Mitchell, and Paul Brockington. 1988. Documentation Langdale Hydroelectric Generating Project (FERC #2341), Riverview Hydroelectric Generating Project (FERC #2350), Chambers County, Alabama, and Harris County, Georgia. RI-I. Report on File – Georgia Power Company Land Department, Atlanta.

Gardner, Jeffrey W. and Paul Brockington. 1988. Documentation Langdale Hydroelectric Generating Project (FERC #2341), Riverview Hydroelectric Generating Project (FERC #2350), Chambers County, Alabama, and Harris County, Georgia. RI-II. Report on File Georgia Power Company Land Department, Atlanta.

Hay, Duncan E. 1989. Documentation, Langdale Hydroelectric Generating Project (FERC #2341), Riverview Hydroelectric Generating Project (FERC#2350), Harris County, Georgia. Report on file – Land Department, Georgia Power Company, Atlanta.

Klima, Don L. 1993. Programmatic Agreement among the Federal Energy Regulatory Commission, The Advisory Council on Historic Preservation, and the Georgia State Historic Preservation Officer and Alabama State Historic Preservation Officer with the Concurrence of the Georgia Power Company, for the Management of Historic Properties Affected by the Langdale Hydroelectric Facility

ATTACHMENT C – 2009 GEL ENGINEERING REPORT

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501(c) (3) organization

August 17, 2010

The Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

**RE: Eagle & Phenix Mills Project, FERC Project No. 2655,
Application for Surrender of License;
City Mills Project, FERC Project No. 8519,
Petition for Surrender of Exemption**

Dear Secretary Bose,

UPtown Columbus, Inc. (UCI), on behalf of the Eagle and Phenix Hydro Company, Inc., the licensee for the Eagle and Phenix Hydroelectric Project (FERC Project No. 2655), and itself as owner of the exempted City Mills Hydroelectric Project (FERC Project No. 8519), respectfully submits the attached application for surrender of license for Eagle & Phenix Mills FERC Project No. 2655 and petition to surrender the exemption for City Mills FERC Project No. 8519.

A draft combined application was submitted to FERC on February 9, 2010. Additionally, UCI distributed copies of the combined draft application to resource agencies and interested parties for their review. The attached final application incorporates comments received from the U.S. Fish and Wildlife Service, Georgia Power Company, and NOAA's National Marine Fisheries Service. These comments are included as Appendix H to the application, and a summary of the comments and responses is included as Appendix I.

UCI appreciates FERC's consideration and assistance in processing the application for surrender of license and petition for surrender of exemption.

Should you have any questions regarding the draft application and petition, please contact Donald H. Clarke at the Law Offices of GKRSE, (202) 408-5400, or Richard Bishop at UCI, (706) 596-0111.

Sincerely,

Richard Bishop, President
UPtown Columbus, Inc.

cc: Mathews Swift
Donald H. Clarke / GKRSE,
Doug Baughman / CH2M HILL

Application for Surrender of the Eagle and Phenix Mills Project License (FERC No.2655) and the City Mills Project Exemption (FERC No. 8519)

Prepared for:

Uptown Columbus, Inc.

August 2010

Prepared by:

CH2MHILL

1000 Abernathy Rd. NE, Ste. 1600
Atlanta, Georgia 30328

LAW OFFICES OF
GKRSE
1500 K Street, NW, Suite 330
Washington, DC 20005

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SEDIMENT TESTING REPORT
CHATTAHOOCHEE RIVER ECOSYSTEM RESTORATION SECTION 206 PROJECT
CITY MILLS DAM AND EAGLE PHEONIX DAM

COLUMBUS, GEORGIA

CH2M HILL
c/o Mr. Doug Baughman
North Park 400
1000 Abernathy Road
Suite 1600
Atlanta, Georgia

February 25, 2009

Sediment Testing Report

Chattahoochee River Ecosystem Restoration Section 206 Project
Columbus, Georgia

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Sediment Testing Report

Chattahoochee River Ecosystem Restoration Section 206 Project
Columbus, Georgia

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Signature Page

This report, entitled "Sediment Testing Report," has been prepared for CH2M Hill regarding the Chattahoochee River Ecosystem Restoration Section 206 Project, located on the Chattahoochee River in Columbus, Georgia. It has been prepared by Jack Walker in accordance with the Charleston District, Corps of Engineers' protocol and for the exclusive use of CH2M Hill. It has been prepared in accordance with accepted quality control practices and has been reviewed by the undersigned.

GEL ENGINEERING, LLC
A Member of the GEL Group, Inc.

Jack T. Walker
Senior Project Scientist

Larry Setzler
Project Manager

Thomas D.W. Hutto, P.G.
Principal

Date

Sediment Testing Report

Chattahoochee River Ecosystem Restoration Section 206 Project
Columbus, Georgia

1.0 Introduction

In anticipation of the removal of the City Mills Dam (32.4800° N, 84.994°W) and the Eagle Phoenix Dam (32.4607°N, 84.997°W), located on the Chattahoochee River in Columbus, Georgia (see Figure 1), CH2M Hill solicited proposals for sediment sampling and analyses services. As noted in CH2MHill's request for proposals, dated August 5, 2008, the goal of this project is to assist with the restoration process of the aquatic ecosystem of the Chattahoochee River. Information derived from the sediment sampling and analyses phase of the project will provide data that will ultimately be used to develop a 2-D hydraulic model, as well as prepare the final design documents necessary for the removal of the two dams noted above.

Removal of the two dams and the subsequent relocation of sediments accumulated behind the dams require an understanding of the physical and chemical nature of the sediments. Prior to disposal of the accumulated sediments, whether it happens that the sediments are allowed to simply flow and redeposit downstream with the removal of the dams or, the sediments are removed from the river for upland disposal, the sediments must be evaluated through bulk sediment chemistry. Initially it was determined that bioassay testing of the sediments would be required; however, it was later decided to forgo the biological testing.

In accordance with CH2MHill's "Attachment A – Statement of Work," 2 sediment samples were collected from behind each of the dams at 2 different areas at each of the 4 locations indicated on the enclosed Figure 2. 2 samples were collected at each of the 4 locations. The 2 samples were composited to end the sediment sampling task with 4 composited samples, labeled as SED-1, SED-2, SED-3, and SED-4. The 4 composited sediment samples were analyzed for bulk sediment chemistry to include select metals analysis, PCB's, pesticides, mercury, polynuclear aromatic hydrocarbons (PAH's), and semivolatile organic compounds (SVOCs) analysis. Details of the sample collection and analytical procedures are presented below.

2.0 Location of Sampling Areas

The sampling area consisted of the predetermined locations behind each of the 2 dams. The locations of all the sampling points were recorded in the field with a global positioning system (GPS). The state plane coordinates for each sediment sample location and the sample identification numbers are presented below in Table 2.0. Please note that for each of the four sediment samples, fractions a and b were combined to generate the composited sediment sample. A copy of the Summary of Measurements and Field Conditions is included in Appendix I.

Table 2.0

Coordinates of Sediment Sample Locations and Sample Identification

Sample Locations	Northing	Easting
SED-1.a	903161.65	2041699.65
SED-1.b	903106.16	2041670.30
SED-2.a	903316.96	2041103.46
SED-2.b	903481.92	2041124.14
SED-3.a	899274.15	2040761.72
SED-3.b	899399.37	2040734.48
SED-4.a	899514.89	2040186.48
SED-4.b	899480.67	2040172.61

3.0 Materials and Methods

The samples were collected and analyzed in accordance with CH2M Hill's August 5, 2008 RFP. The field sampling and laboratory methods used to collect and analyze the samples are discussed below.

3.1 Field Sampling and Sample Handling Procedures

The sediment samples were collected during the period of November 3 and November 4, 2008. The sediment samples were collected from the above noted locations using a hand held core sampling devise and/or a stainless steel clam dredge (Ponar grab/Ponar dredge). Samples were collected to the proposed dredge depth, when possible. New laboratory-quality PVC gloves were worn by field personnel during all sample collection activities and changed between each sampling location.

All of the sampling equipment was decontaminated prior to use in the field using the following procedure:

1) Rinse equipment using tap water.
2) Wash equipment with a non-phosphoric, laboratory grade detergent.
3) Rinse equipment with tap water.
4) Rinse equipment with deionized water.
5) Rinse equipment with 10% nitric acid.
6) Rinse equipment with deionized water.
7) Rinse equipment with acetone.
8) Rinse equipment with deionized water.
9) Allow for equipment to air dry in an area not adjacent to the decontamination area.
10) Wrap the sampling equipment with aluminum foil after decontamination and until used.

It was necessary to field decontaminate the stainless steel Ponar sampler between sampling stations SED-3.a, SED-3.b, SED-4.a, and SED-4.b. Additionally, the stainless-steel compositing bowl, and the stainless-steel spoon used to homogenize the sediment samples were field decontaminated between each sample location. Field decontamination followed the above noted decontamination procedure. The liquids used in the field decontamination procedures were collected and placed in an appropriate container for proper disposal.

At SED-3.a, SED-3.b, SED-4.a, and SED-4.b the core sampling devise would not penetrate the sediment due to large boulders and rocks located just below the sediment surface. Therefore, it was necessary to deploy the Ponar sampler. The Ponar sampler was attached to a polypropylene rope and lowered to the bottom. Following retrieval of the Ponar sampler, the sediment was placed into a stainless-steel bowl and thoroughly homogenized until the appropriate volume of sediments had been collected. As noted above, the Ponar sampler was cleaned between sampling location. The liquids used in the decontamination process were collected and placed in an appropriate container for proper disposal by GEL.

The samples were placed in certified-cleaned laboratory sample containers and labeled. The samples were documented on a Chain of Custody form which contained the following information:

a. Name of Site
b. Field Location Number
c. Date and Time of Sample
d. Initials and Printed Name of Collector
e. Type of Analysis

The samples were then placed on ice in a cooler. The samples remained in the custody of GEL personnel during transport back to our laboratory, GEL Laboratories, LLC, for analysis. All samples were analyzed by GEL Laboratories, LLC except those forwarded to TRAC Laboratories, Inc. for toxicology analyses. It was later determined that sediment toxicological analyses would not be completed as part of this task.

3.2 References for Laboratory Protocols

GEL analyzed 4 sediment samples. A summary of the analyses is presented below. The sediment samples were analyzed for the following parameters:

Metals	Pesticides
Mercury	Polychlorinated Biphenyls (PCBs)
Polynuclear Aromatic Hydrocarbons (PAHs)	
Semi Volatile Organic Compounds (SVOC's)	

In addition, a laboratory control sample (LCS), a LCS duplicate sample (LCSD), a matrix spike sample (MS), a MS duplicate sample (MSD), and a method blank (MB) were analyzed with the project samples. The samples were analyzed in accordance with the methods and lower reporting limits (LRLs) for GEL Laboratory, LLC's Standard Operating Procedures (SOP).

3.2.1 Exceptions to the Proposed Methods

All of the methods used for the analyses were in accordance with the methods presented in GEL's SOP.

3.2.2 Exceptions to the Proposed Lower Reporting Limits

The lower reporting limits (LRL) for the sediment analyses will vary based on the moisture content of the respective sample since the results are reported on a dry weight basis, consistent with industry standards. Interferences are particularly common in fine grained, clay-rich sediments, which often occur in areas that trap sediments. The following discussion provides more detailed information on Detection Limits (DLs), LRLs and types of interferences.

- Detection Limit (DL) – The DL is the lowest concentration of an analyte that can be detected with a 99% certainty that the analyte is present. At concentrations between the DL and the LRL (discussed below), the only certainty is in the presence or absence of the analyte; therefore, there can be some error associated with the reported concentration, particularly as the concentration approaches the DL. DL values appear under the DL column on the Certificates of Analysis. Analytes detected at concentrations between the DL and the LRL (**shown as RL on the Certificate of Analysis**) are designated with a "J" on the Certificates of Analysis to indicate that the reported concentration is estimated.
- Lower Reporting Limit (LRL) – The LRL is the lowest concentration of a particular compound that can be detected and quantified with a specific accuracy by available modern instrumentation. The LRL is typically derived from the lowest concentration to which the instrumentation has been calibrated and is typically greater than, but at a minimum, equal to the DL. In cases where samples exhibit no interferences or matrix difficulties, the LRL is the lowest achievable quantifiable limit. This value appears under the RL column on the Certificates of Analysis. Analytes detected at concentrations equal to or greater than the RL have no associated qualifier on the Certificates of Analysis.

Analytes not present at concentrations equal to or greater than the DL are designated with a "U" qualifier and a "ND" result on the Certificates of Analysis.

To determine a DL for a particular analyte, multiple analyses are performed on a standard of that analyte in deionized water, followed by a statistical evaluation of the results. However, "real world" samples are usually not of the same quality as deionized water and, therefore, it is often difficult or impossible to achieve the stated DL (and associated LRL) in a "real world" sample. The problems associated with "real world" samples substantiate the need for LRLs, as well as DLs. Like DLs, the LRLs reported are the lowest achievable by the methodology only if no interferences exist. To avoid interferences in "real world" samples, it is often necessary to dilute the sample. A dilution of a sample will increase the DL and LRL proportionally to the dilution required. The primary reasons for diluting samples are listed below.

1) High concentrations of heavy molecular weight organic compounds – These interferences usually are not detected within the chromatographic range of the analytes of interest. However, since the heavy organic compounds do not completely volatilize while inside analytical instruments, they contribute to active sites, column degradation, instrument malfunction, and the need for significant maintenance. Some sample "clean-up" methods are available for such interferences; however, many times the sample requires some dilution, even after clean-up.

2) Interferences within the chromatographic range which are not analytes of interest If the retention times of non-target analytes coincide with those of the analytes of interest, they can mask the signal of the specific analyte of interest.

3) High concentration of an analyte of interest (target analyte) – Target analytes must be quantified within the calibration range of the instrumentation to achieve accurate quantitative data. Furthermore, a high concentration of a target analyte can mask the signal of other analytes of interest. If the concentration exceeds the calibration range, the sample must be diluted to bring the analyte(s) within a quantifiable range.

Collectively, these three reasons for sample dilutions are known as matrix interferences. Substantial efforts are made to avoid dilutions of any sample, however, sometimes unavoidable.

Furthermore, it is also necessary to demonstrate how DLs and LRLs are affected by the varying moisture contents of individual sediment samples. Please note that all of the proposed detection limits are based on an "as received" or wet weight basis since it is difficult to predict the moisture contents of the individual project samples. To report DLs and LRLs on a dry weight basis, the moisture content of the sample must be taken into account. This is best summarized in the EPA's Contract Laboratory Program (CLP) standard contract entitled "Statement of Work for Organic Analysis, Multi-media, Multi-concentration, Revision OLMO3.1," dated August 1994. This EPA document is widely accepted as the definitive guidance for performing CLP-type analyses.

As stated on page C-1 of the EPA document, "Specific quantitation limits are highly matrix dependent. The quantitation limits listed herein are provided for guidance and may not always be achievable. For soil samples, the moisture content of the samples must be used to adjust the contract required quantitation limit values appropriately." Since the LRLs (also known as quantitation limits) stated in the EPA contract are based on a wet weight basis, the LRLs for analytes calculated on a dry weight basis will always be higher when adjusted for moisture content. This is also summarized on page C-8 of a previous version of the same EPA contract, version OLMO1.0, which states, "Quantitation limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculated on a dry weight basis as required by the contract, will be higher."

As noted above, DLs and LRLs will increase proportionately with moisture content. The moisture contents of the sediment samples collected as part of this project range from 29.4% to 71.2%. GEL made every effort to achieve the lowest possible DLs and LRLs for the parameters analyzed; however, since the percent moisture of each sample must be accounted for when reporting the results on a dry weight basis, the DLs and LRLs for the individual constituents are elevated compared to DLs and LRLs on a wet weight basis. An example calculation of the effects of moisture content on the analytical result of chromium detected in sample SED-1 is included in the Assumptions and Calculations section following the text.

The following discussion provides specific details on DLs and LRLs for the referenced sediment samples.

- Metals – No sample dilutions were required for the metals analyses except for the antimony analyses in sediment sample SED-2. Most of the DLs reported on the Certificates of Analysis are equal to or less that the LRLs proposed in the SAP.
- Moisture Content is reported to 0.1% which is less than the proposed LRL.
- Pesticides – As noted in the laboratory report included in Appendix III, due to sample matrix interferences, dilutions were necessary. All pesticide analyses required a 10x dilution. Therefore, the DLs and LRLs are slightly elevated.
- Semi-Volatiles - As noted in the laboratory report included in Appendix III, due to sample matrix interferences, dilutions were necessary. All Semi-volatile analyses required a 10x dilution. Therefore, the DLs and LRLs are slightly elevated
- PCB Aroclors – All of the PCB Aroclors required a 10x dilution. Therefore, the DLs and LRLs are slightly elevated.
- PAHs – No sample dilutions were required for the PAH analyses. Most of the DLs reported on the Certificates of Analysis are equal to or less than standard LRLs for PAH analyses.

In summary, adjustments were made for moisture content to report the data on a dry weight basis in accordance with industry standards, which caused the DLs and LRLs to be raised. For some analytes, a sample dilution was required despite use of sample clean up techniques; this also caused the DLs and LRLs to be raised. Despite these adjustments, the reported data are comparable to or less than typical LRLs.

4.0 Final Results

The Certificates of Analysis, Chain of Custody Documentation, and final reports for the "Acute Toxicity Tests of Four Sediment Samples," and "Acute, Definitive Toxicity

Tests Results of Elutriates of Four Sediment Samples" for all of the samples are presented in the Appendices at the end of the text as shown in Table 4.

Table 4
Corresponding Appendices for Certificates of Analysis, Chain of Custody Documentation, and Final Toxicity Reports

Analytical Data	Appendix
Certificates of Analysis – Bulk Chemistry	III
Final Report, Acute Toxicity Tests for Four Sediment Samples	IV
Final Report, Acute, Definitive Toxicity Tests Results of Elutriates of Four Sediment Samples	V

A summary table of the analytical exceedences detected in the sediment samples at or above the "NOAA Screening Quick Reference Tables" (Buchman, M.F., 2008, ref. 10*)* is presented in Table 1 following the text.

5.0 Discussions and Analysis of Data

The data summary Table 1 includes screening values that were requested by CH2M Hill for evaluation of the sediment data.

5.1 Comparison of Sediment Bulk Chemistry Data to Screening Values

The sediment bulk chemistry data are compared to the following screening values shown in Table 1, for the constituents detected:

1) TEL, Buchman, M.F., 2008. NOAA Screening Quick Reference Tables;
2) PEL, Buchman, M.F., 2008. NOAA Screening Quick Reference Tables; and
3) The EPA's Region IV Draft Ecological Screening Values for Sediment.

As stated in the EPA's document entitle "Supplemental Guidance to RAGS: Region IV Bulletins," the Draft Sediment Screening Values are "...derived from statistical interpretation of effects databases obtained from the literature as reported in publications from the State of Florida, the National Oceanic and Atmospheric Administration (NOAA). These values are generally based on observations of direct toxicity."

EPA's Draft Sediment Screening values (ESV) are based on toxicity studies on marine organisms. For some of the parameters, there are no risk-based screening values available.

5.2 Conclusions

As noted in Table 1, Summary of Analytical Exceedences – Sediment Bulk Chemistry Analyses, Benzo(a)Anthracene, Phenanthrene, Pyrene, Total PCB Aroclor's, and 4,4' DDE was detected in the sediment samples at or above its respective PEL values.

6.0 References

The references listed below were used in the field sampling program and the laboratory analyses.

1. *Standards Methods for the Examination of Water and Wastewater.* 19th Edition, 1985, American Public Health Association (or latest edition).

2. *Standard Method for Particle Size Analysis of Soils*, ASTM D422, 1972.

3. *Handbook for Analytical Quality Control in Water and Wastewater Laboratories*, USEPA 65W-79-019, March 1979m EPA Office of Research and Development, Cincinnati, Ohio.

4. *Evaluation of Dredged Material Proposed for Ocean Disposal (Green Book)*, EPA/COE, 1991.

5. Plumb, R.H., Jr. 1981. "Procedures for handling and chemical analyses of sediment and water samples," Technical Report EPA/CE-81-1, U.S. Environmental Protection Agency, Corps of Engineers Technical Committee on Criteria for Dredged and Fill Material. U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

6. *Standard Operating Procedures and Quality Assurance Manual.* Environmental Compliance Branch, Environmental Services Division, U.S. Environmental Protection Agency, Region IV, 1991, Athens, Georgia.

7. *Analytical Method for the Determination of PCB Congeners by Fused Silica Capillary Column Gas Chromatography with Electron Capture Detector (FSCC/GC/EC)*, NYSDEC Method 91-11, 1992.

8. *Statement of Work for Organic Analysis, Multi-media, Multi-concentration, Revision OLM03.1.* United States Environmental Protection Agency's Contract Laboratory Program, August 1994.

9. *Statement of Work for Organic Analysis, Multi-media, Multi-concentration, Revision OLMO1.0.*. United States Environmental Protection Agency's Contract Laboratory Program, March 1990.

10. Buchman, M.F., 2008. NOAA Screening Quick Reference Tables, NOAA OR&R Report 08-1, Seattle WA, Office of Response and Restoration Division, NOAA, 34 pages.

11. *Interim Report on Data and Methods for Assessment of 2,3,7,8-Tetrachlorodibenzon-p-dioxin Risks to Aquatic Life and Associated Wildlife.* United States Environmental Protection Agency, Office of Research and Development. Document No. EPA/600/R-93/055, March 1993.

12. Scott, Geoffrey I. et al., February, 1998, DRAFT "Chemical Contaminant Levels in Estuarine Sediment of the Ashepoo-Cumbahee-Edisto River (ACE) Basin National Estuarine Research Reserve and Sanctuary Site," U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service, Center for Coastal Environmental Health and Biomolecular Research, Charleston, South Carolina.

13. U.S. EPA. 2001. Methods for Collection, Storage and Manipulation of Sediments for Chemical and Toxicological Analyses: Technical Manual, EPA 823-B-1-2. U.S. Environmental Protection Agency, Office of Water, Washington, DC.

14. U.S. EPA.2001. Supplemental Guidance to RAGS – Region 4 Bulletins: Ecological Screening Values (Draft). U.S. Environmental Protection Agency, Region 4, Office of Health Assessment, Division of Waste Management, Atlanta, GA.

15. NOAA, 2006 (most recent update). Screening Quick Reference Table for Inorganics in Solids.

16. Geotechnical and Laboratory Appendix, Dredged Material Environmental Effects Evaluation: SIDA LTMS, Calibogue Sound, Hilton Head, SC. Prepared by Applied Technology and Management, Inc., dated April 25, 2000.

Additional references to laboratory protocols are included in the GEL Laboratories, LLC's Quality Assurance Plan.

7.0 Quality Assurance / Quality Control Plans

GEL's Quality Assurance / Quality Control Plan is titled "GEL Laboratories, LLC, Quality Assurance Plan," dated April 21, 2008. GEL Laboratories, LLC's, Quality Assurance Plan includes information concerning personnel qualifications, facilities layout, equipment, supplies, sample handling and tracking, test protocols and standard operating procedures for sediment analyses, documentation, record keeping, data validation, and archiving. Copies of this plan are available upon request.

ASSUMPTIONS AND CALCULATIONS

ASSUMPTIONS AND CALCULATIONS

Chattahoochee River Ecosystem Restoration Section 206 Project
Columbus, Georgia

FORMULA FOR CALCULATING WET WEIGHT CONCENTRATIONS FROM DRY WEIGHT CONCENTRATIONS

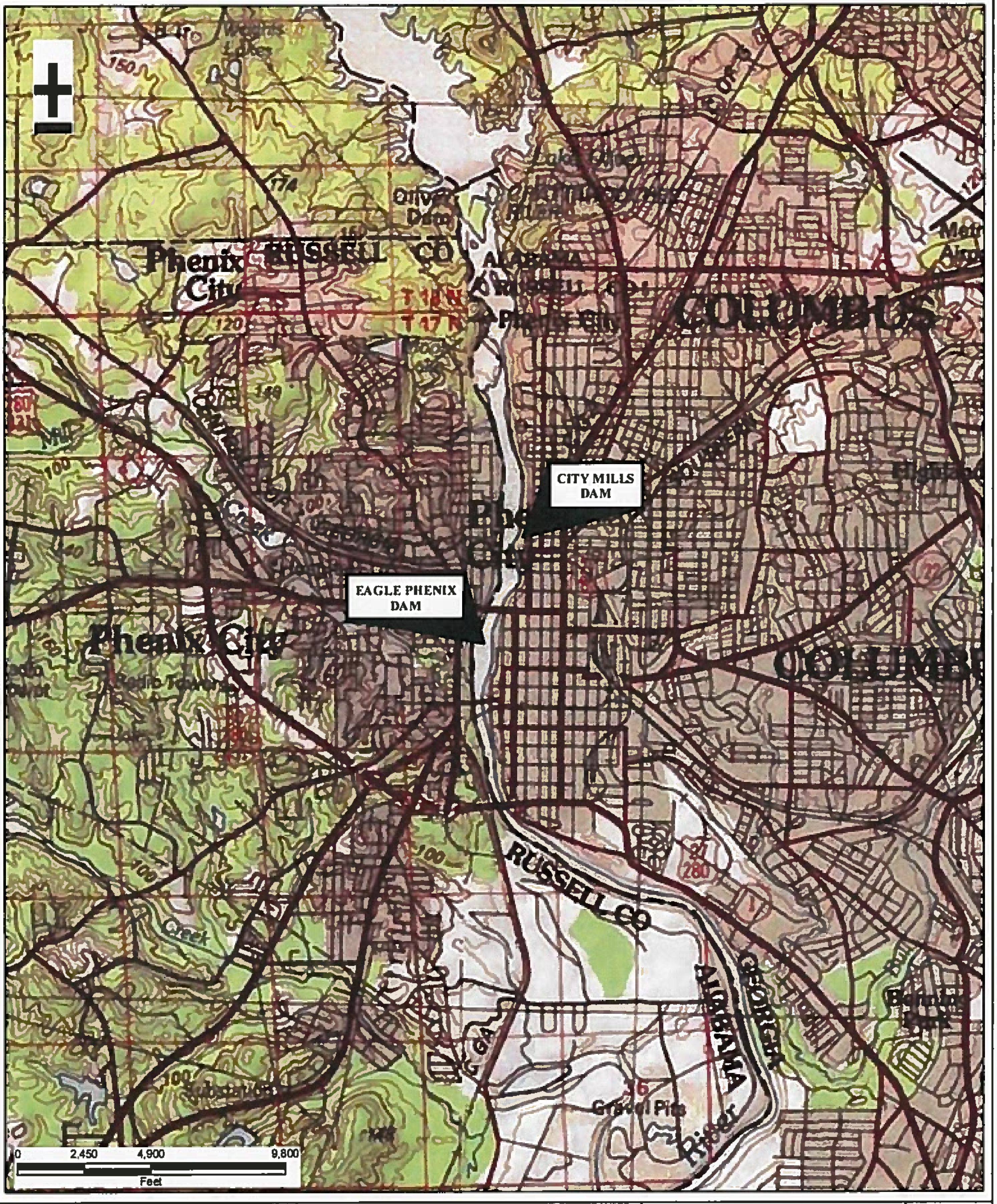
$$C_{wet} = C_{dry} * \% \text{ Solids}$$

C_{wet}	= wet-weight concentrations
C_{dry}	= dry-weight concentrations
% Solids	= percent solids which is equal to 1.0 less percent moisture, where percent moisture is expressed as a decimal

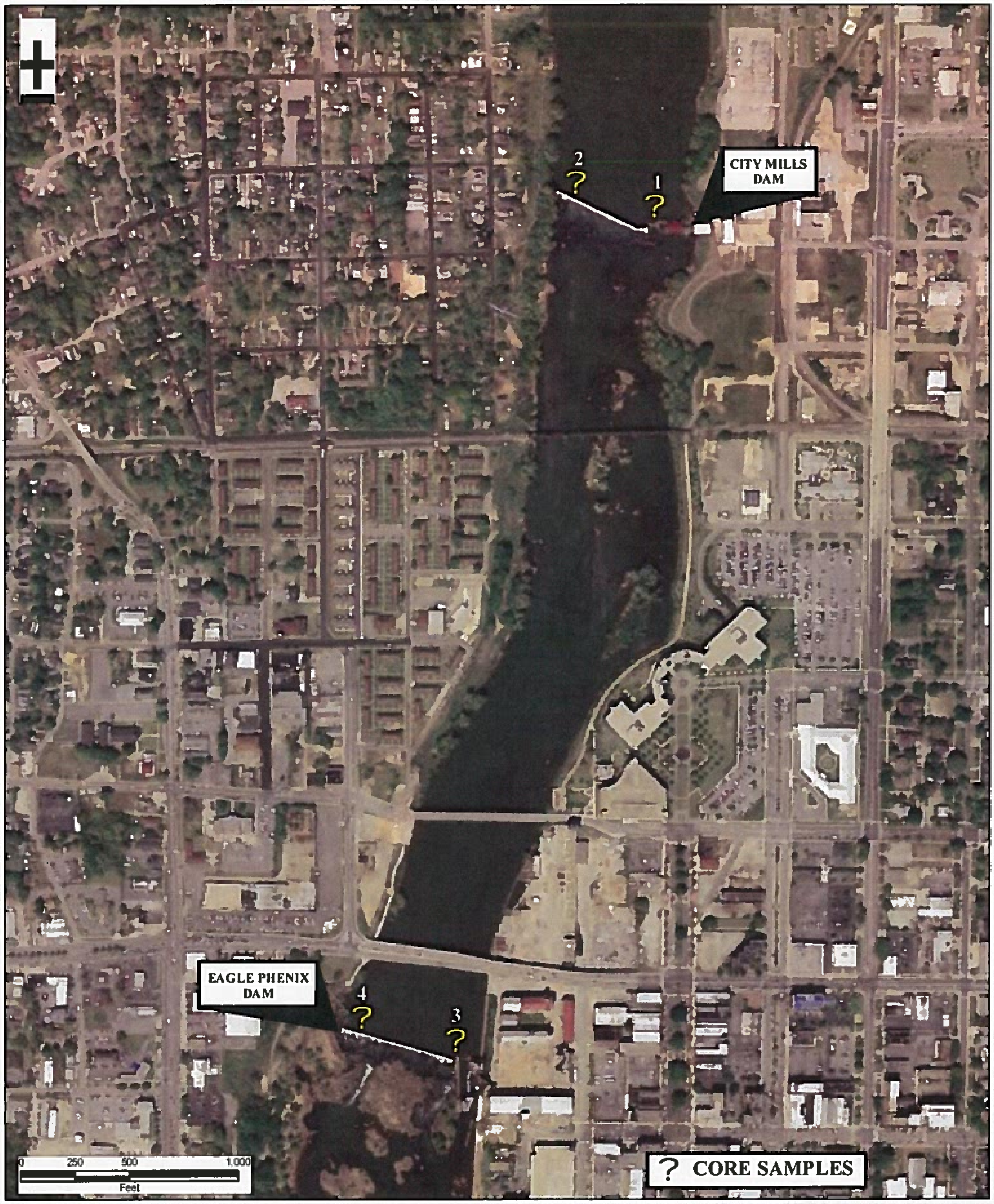
Example (chromium concentration in sample SED-1)

% moisture	= 52.5%
C_{dry}	= 20.8 mg/kg
% Solids	= 1.0 – 0.525 = 0.475
C_{wet}	= 20.8 * 0.475
C_{wet}	= 9.88 mg/kg

FIGURES



GEL Engineering, LLC a Member of THE GEL GROUP, INC. GEL P.O. BOX 30712 CHARLESTON, SC 29417 2040 SAVAGE ROAD 29407 (843) 769-7378 FAX (843) 769-7397 WWW.GEL.COM ENGINEERING ENVIRONMENTAL ANALYTICAL	PROJECT: CH2M00108 CHATTAHOOCHEE RIVER ECOSYSTEM RESTORATION SECTION 206 PROJECT COLUMBUS, GEORGIA DATE: February 12, 2009	SITE MAP CREATED BY: RCR	APPRV BY: JTW	FIGURE 1



GEL Engineering, LLC *a Member of THE GEL GROUP, INC.* GEL P.O. BOX 30712 CHARLESTON, SC 29417 2040 SAVAGE ROAD 29407 (843) 769-7378 FAX (843) 769-7397 WWW.GEL.COM ENGINEERING ENVIRONMENTAL ANALYTICAL	PROJECT: CH2M00108 CHATTAHOOCHEE RIVER ECOSYSTEM RESTORATION SECTION 206 PROJECT COLUMBUS, GEORGIA DATE: February 12, 2009	SAMPLING LOCATIONS CREATED BY: RCR | APPRV BY: JTW	FIGURE 2

TABLES

Table 1
Summary of Analytical Exceedences - Sediment Bulk Chemistry Analyses
Chattahoochee River Ecosystem Restoration Section 206 Project

Sample Number	Fraction	Parameter	Lab Result	Lab Qualifier	Units	TEL	TEL (units)	PEL	PEL (units)	ESV	ESV (units)
SED-3	METALS	Chromium	38.2		mg/kg	37.3	mg/kg	90	mg/kg	52.3	mg/kg
SED-1	METALS	Copper	27		mg/kg	35.7	mg/kg	197	mg/kg	18.7	mg/kg
SED-3	METALS	Copper	23.8		mg/kg	34	mg/kg	270	mg/kg	18.7	mg/kg
SED-1	METALS	Lead	43.1		mg/kg	35	mg/kg	91.3	mg/kg	30.2	mg/kg
SED-3	METALS	Lead	36.8		mg/kg	35	mg/kg	91.3	mg/kg	30.2	mg/kg
SED-3	METALS	Mercury	250		ug/kg	174	ug/kg	486	ug/kg	130	ug/kg
SED-1	METALS	Zinc	140		mg/kg	123	mg/kg	315	mg/kg	124	mg/kg
SED-3	PAH	Acenaphthylene	60.7		ug/kg	5.87	ug/kg	128	ug/kg	330	ug/kg
SED-3	PAH	Anthracene	96.6		ug/kg	46.9	ug/kg	245	ug/kg	330	ug/kg
SED-1	PAH	Benzo(a)anthracene	184		ug/kg	6.2	ug/kg	135	ug/kg	330	ug/kg
SED-2	PAH	Benzo(a)anthracene	51.9		ug/kg	31.7	ug/kg	385	ug/kg	330	ug/kg
SED-3	PAH	Benzo(a)anthracene	525		ug/kg	31.7	ug/kg	385	ug/kg	330	ug/kg
SED-1	PAH	Benzo(a)pyrene	172		ug/kg	31.9	ug/kg	782	ug/kg	330	ug/kg
SED-2	PAH	Benzo(a)pyrene	35.6		ug/kg	31.9	ug/kg	782	ug/kg	330	ug/kg
SED-3	PAH	Benzo(a)pyrene	483		ug/kg	31.9	ug/kg	782	ug/kg	330	ug/kg
SED-1	PAH	Chrysene	158		ug/kg	57.1	ug/kg	862	ug/kg	330	ug/kg
SED-3	PAH	Chrysene	479		ug/kg	57.1	ug/kg	862	ug/kg	330	ug/kg
SED-3	PAH	Dibenzo(a,h)anthracene	45		ug/kg	6.22	ug/kg	135	ug/kg	330	ug/kg
SED-1	PAH	Fluoranthene	383		ug/kg	111	ug/kg	2355	ug/kg	330	ug/kg
SED-3	PAH	Fluoranthene	1080		ug/kg	111	ug/kg	2355	ug/kg	330	ug/kg
SED-3	PAH	Fluorene	55.1	J	ug/kg	21.2	ug/kg	144	ug/kg	330	ug/kg
SED-1	PAH	Phenanthrene	163		ug/kg	41.9	ug/kg	515	ug/kg	330	ug/kg
SED-3	PAH	Phenanthrene	483		ug/kg	41.9	ug/kg	515	ug/kg	330	ug/kg
SED-1	PAH	Pyrene	279		ug/kg	53	ug/kg	875	ug/kg	330	ug/kg
SED-3	PAH	Pyrene	790		ug/kg	53	ug/kg	875	ug/kg	330	ug/kg
SED-1	SVOA	Acenaphthene	30.7	J	ug/kg	6.71	ug/kg	88.9	ug/kg	330	ug/kg
SED-3	SVOA	Acenaphthene	58.8	J	ug/kg	6.71	ug/kg	88.9	ug/kg	330	ug/kg
SED-1	SVOA	Anthracene	106		ug/kg	46.9	ug/kg	245	ug/kg	330	ug/kg
SED-3	SVOA	Anthracene	163		ug/kg	46.9	ug/kg	245	ug/kg	330	ug/kg
SED-1	SVOA	Benzo(a)anthracene	418		ug/kg	31.7	ug/kg	385	ug/kg	330	ug/kg
SED-2	SVOA	Benzo(a)anthracene	42.9		ug/kg	31.7	ug/kg	385	ug/kg	330	ug/kg
SED-3	SVOA	Benzo(a)anthracene	885		ug/kg	31.7	ug/kg	385	ug/kg	330	ug/kg
SED-4	SVOA	Benzo(a)anthracene	46.7		ug/kg	31.7	ug/kg	385	ug/kg	330	ug/kg
SED-1	SVOA	Benzo(a)pyrene	407		ug/kg	31.9	ug/kg	782	ug/kg	330	ug/kg
SED-2	SVOA	Benzo(a)pyrene	43.3	J	ug/kg	31.9	ug/kg	782	ug/kg	330	ug/kg
SED-3	SVOA	Benzo(a)pyrene	601		ug/kg	31.9	ug/kg	782	ug/kg	330	ug/kg
SED-4	SVOA	Benzo(a)pyrene	37.8		ug/kg	31.9	ug/kg	782	ug/kg	330	ug/kg
SED-1	SVOA	Chrysene	537		ug/kg	57.1	ug/kg	862	ug/kg	330	ug/kg
SED-3	SVOA	Chrysene	785		ug/kg	57.1	ug/kg	862	ug/kg	330	ug/kg
SED-1	SVOA	Dibenzo(a,h)anthracene	85.7	J	ug/kg	6.22	ug/kg	135	ug/kg	330	ug/kg
SED-3	SVOA	Dibenzo(a,h)anthracene	111	J	ug/kg	6.22	ug/kg	135	ug/kg	330	ug/kg
SED-1	SVOA	Fluoranthene	1080		ug/kg	111	ug/kg	2355	ug/kg	330	ug/kg
SED-3	SVOA	Fluoranthene	1800		ug/kg	111	ug/kg	2355	ug/kg	330	ug/kg
SED-4	SVOA	Fluoranthene	131		ug/kg	111	ug/kg	2355	ug/kg	330	ug/kg
SED-1	SVOA	Fluorene	33.7	J	ug/kg	21.2	ug/kg	144	ug/kg	330	ug/kg
SED-3	SVOA	Fluorene	60	J	ug/kg	21.2	ug/kg	144	ug/kg	330	ug/kg
SED-1	SVOA	Phenanthrene	514		ug/kg	41.9	ug/kg	515	ug/kg	330	ug/kg
SED-3	SVOA	Phenanthrene	938		ug/kg	41.9	ug/kg	515	ug/kg	330	ug/kg
SED-1	SVOA	Pyrene	958		ug/kg	53	ug/kg	875	ug/kg	330	ug/kg
SED-3	SVOA	Pyrene	1440		ug/kg	53	ug/kg	875	ug/kg	330	ug/kg
SED-1	PCB	PCB Aroclor-1254	105		ug/kg	60	ug/kg	340	ug/kg	NA	ug/kg
SED-2	PCB	PCB Aroclor-1254	233		ug/kg	60	ug/kg	340	ug/kg	NA	ug/kg

Table 1
Summary of Analytical Exceedences - Sediment Bulk Chemistry Analyses
Chattahoochee River Ecosystem Restoration Section 206 Project

Sample Number	Fraction	Parameter	Lab Result	Lab Qualifier	Units	TEL	TEL (units)	PEL	PEL (units)	ESV	ESV (units)
SED-3	PCB	PCB Aroclor-1254	95.9		ug/kg	60	ug/kg	340	ug/kg	NA	ug/kg
SED-1	PCB	Total PCB Aroclor's	142.3		ug/kg	34.1	ug/kg	277	ug/kg	NA	ug/kg
SED-2	PCB	Total PCB Aroclor's	327.5		ug/kg	34.1	ug/kg	277	ug/kg	NA	ug/kg
SED-3	PCB	Total PCB Aroclor's	141.3		ug/kg	34.1	ug/kg	277	ug/kg	NA	ug/kg
SED-1	PESTS	4,4' DDE	14.2	J	ug/kg	1.42	ug/kg	6.75	ug/kg	3.3	ug/kg
SED-2	PESTS	4,4' DDE	13.6	J	ug/kg	1.42	ug/kg	6.75	ug/kg	3.3	ug/kg

Notes:
mg/kg = milligrams per kilogram (ppm)
ug/kg = micrograms per kilogram (ppb)
J = Estimated value less than the Reporting Limit but greater than the Detection Limit.
TEL = Arch ET&C 2000, 39(1)20- TEL & PEL are also known as Canadian ISQG's and PELs
PEL = Arch ET&C 2000, 39(1)20- TEL & PEL are also known as Canadian ISQG's and PELs
ESV = United States Environmental Protection Agency (EPA) Region 4 Ecological Screening Values for Sediment.

[yellow] = Exceeds TEL
[blue] = Exceeds PEL
Bold = Exceeds ESV
Italics MacDonald et al, 2000. Arch ET&C 39(1):20-

Table 3
Summary of Analytical Results - Sediment Bulk Chemistry Analyses
Chattahoochee River Ecosystem Restoration Section 206 Project

Sample Number	Fraction	Parameter	Lab Result	Units	Lab Qualifier	MDL	Dilution Factor	Percent Moisture	Method
SED-1	METALS	Antimony	ND	MG/KG	U	3.26	5	52	SW846 3050B/6010B
SED-1	METALS	Arsenic	2.99	MG/KG	J	1.05	1	52	SW846 3050B/6010B
SED-1	METALS	Cadmium	ND	MG/KG	U	0.21	1	52	SW846 3050B/6010B
SED-1	METALS	Chromium	20.8	MG/KG		0.21	1	52	SW846 3050B/6010B
SED-1	METALS	Copper	27.0	MG/KG		0.631	1	52	SW846 3050B/6010B
SED-1	METALS	Lead	43.1	MG/KG		0.526	1	52	SW846 3050B/6010B
SED-1	METALS	Mercury	125	UG/KG		8.24	1	52	SW846 7471A
SED-1	METALS	Nickel	6.33	MG/KG		0.21	1	52	SW846 3050B/6010B
SED-1	METALS	Selenium	1.67	MG/KG	J	1.05	1	52	SW846 3050B/6010B
SED-1	METALS	Silver	ND	MG/KG	U	0.21	1	52	SW846 3050B/6010B
SED-1	METALS	Zinc	140	MG/KG		0.421	1	52	SW846 3050B/6010B
SED-1	PAH	Acenaphthene	ND	UG/KG	U	10.5	1	52	SW846 8310
SED-1	PAH	Acenaphthylene	ND	UG/KG	U	3.5	1	52	SW846 8310
SED-1	PAH	Anthracene	33.8	UG/KG	J	10.5	1	52	SW846 8310
SED-1	PAH	Benzo(a)anthracene	184	UG/KG		1.12	1	52	SW846 8310
SED-1	PAH	Benzo(a)pyrene	172	UG/KG		1.12	1	52	SW846 8310
SED-1	PAH	Benzo(b)fluoranthene	196	UG/KG		1.12	1	52	SW846 8310
SED-1	PAH	Benzo(ghi)perylene	129	UG/KG		1.12	1	52	SW846 8310
SED-1	PAH	Benzo(k)fluoranthene	125	UG/KG		0.7	1	52	SW846 8310
SED-1	PAH	Chrysene	158	UG/KG		1.2	1	52	SW846 8310
SED-1	PAH	Dibenzo(a,h)anthracene	ND	UG/KG	U	1.12	1	52	SW846 8310
SED-1	PAH	Fluoranthene	383	UG/KG		1.12	1	52	SW846 8310
SED-1	PAH	Fluorene	16.7	UG/KG	J	7	1	52	SW846 8310
SED-1	PAH	Indeno(1,2,3-cd)pyrene	ND	UG/KG	U	1.12	1	52	SW846 8310
SED-1	PAH	Naphthalene	ND	UG/KG	U	10.5	1	52	SW846 8310
SED-1	PAH	Phenanthrene	163	UG/KG		3.5	1	52	SW846 8310
SED-1	PAH	Pyrene	279	UG/KG		1.12	1	52	SW846 8310
SED-1	PCB	Aroclor-1016	ND	UG/KG	U	23.2	10	52	SW846 8082
SED-1	PCB	Aroclor-1221	ND	UG/KG	U	23.2	10	52	SW846 8082
SED-1	PCB	Aroclor-1232	ND	UG/KG	U	23.2	10	52	SW846 8082
SED-1	PCB	Aroclor-1242	ND	UG/KG	U	23.2	10	52	SW846 8082
SED-1	PCB	Aroclor-1248	ND	UG/KG	U	23.2	10	52	SW846 8082
SED-1	PCB	Aroclor-1254	105	UG/KG		23.2	10	52	SW846 8082
SED-1	PCB	Aroclor-1260	37.3	UG/KG	J	23.2	10	52	SW846 8082
SED-1	PEST	4,4'-DDD	ND	UG/KG	U	7	10	52	SW846 8081A
SED-1	PEST	4,4'-DDE	14.2	UG/KG	J	7	10	52	SW846 8081A
SED-1	PEST	4,4'-DDT	ND	UG/KG	U	7	10	52	SW846 8081A
SED-1	PEST	Aldrin	ND	UG/KG	U	3.5	10	52	SW846 8081A
SED-1	PEST	alpha-BHC	ND	UG/KG	U	3.5	10	52	SW846 8081A
SED-1	PEST	beta-BHC	ND	UG/KG	U	3.5	10	52	SW846 8081A
SED-1	PEST	Chlordane (tech.)	ND	UG/KG	U	35	10	52	SW846 8081A
SED-1	PEST	delta-BHC	ND	UG/KG	U	3.5	10	52	SW846 8081A
SED-1	PEST	Dieldrin	ND	UG/KG	U	7	10	52	SW846 8081A
SED-1	PEST	Endosulfan I	ND	UG/KG	U	3.5	10	52	SW846 8081A
SED-1	PEST	Endosulfan II	ND	UG/KG	U	7	10	52	SW846 8081A
SED-1	PEST	Endosulfan sulfate	ND	UG/KG	U	7	10	52	SW846 8081A

Table 3
Summary of Analytical Results - Sediment Bulk Chemistry Analyses
Chattahoochee River Ecosystem Restoration Section 206 Project

Sample Number	Fraction	Parameter	Lab Result	Units	Lab Qualifier	MDL	Dilution Factor	Percent Moisture	Method
SED-1	PEST	Endrin	ND	UG/KG	U	7	10	52	SW846 8081A
SED-1	PEST	Endrin aldehyde	ND	UG/KG	U	7	10	52	SW846 8081A
SED-1	PEST	Endrin ketone	ND	UG/KG	U	7	10	52	SW846 8081A
SED-1	PEST	gamma-BHC (Lindane)	ND	UG/KG	U	3.5	10	52	SW846 8081A
SED-1	PEST	Heptachlor	ND	UG/KG	U	3.5	10	52	SW846 8081A
SED-1	PEST	Heptachlor epoxide	ND	UG/KG	U	3.5	10	52	SW846 8081A
SED-1	PEST	Methoxychlor	ND	UG/KG	U	35	10	52	SW846 8081A
SED-1	PEST	Toxaphene	ND	UG/KG	U	117	10	52	SW846 8081A
SED-1	SVOA	1,1'-Biphenyl	ND	UG/KG	U	210	1	52	SW846 8270C
SED-1	SVOA	1,2,4-Trichlorobenzene	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	1,2-Dichlorobenzene	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	1,3-Dichlorobenzene	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	1,4-Dichlorobenzene	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	2,4,5-Trichlorophenol	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	2,4,6-Trichlorophenol	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	2,4-Dichlorophenol	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	2,4-Dimethylphenol	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	2,4-Dinitrophenol	ND	UG/KG	U	266	1	52	SW846 8270C
SED-1	SVOA	2,4-Dinitrotoluene	ND	UG/KG	U	70.1	1	52	SW846 8270C
SED-1	SVOA	2,6-Dinitrotoluene	ND	UG/KG	U	70.1	1	52	SW846 8270C
SED-1	SVOA	2-Chloronaphthalene	ND	UG/KG	U	24.5	1	52	SW846 8270C
SED-1	SVOA	2-Chlorophenol	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	2-Methyl-4,6-dinitrophenol	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	2-Methylnaphthalene	ND	UG/KG	U	14	1	52	SW846 8270C
SED-1	SVOA	2-Nitrophenol	ND	UG/KG	U	70.1	1	52	SW846 8270C
SED-1	SVOA	3,3'-Dichlorobenzidine	ND	UG/KG	U	210	1	52	SW846 8270C
SED-1	SVOA	4-Bromophenylphenylether	ND	UG/KG	U	70.1	1	52	SW846 8270C
SED-1	SVOA	4-Chloro-3-methylphenol	ND	UG/KG	U	70.1	1	52	SW846 8270C
SED-1	SVOA	4-Chloroaniline	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	4-Chlorophenylphenylether	ND	UG/KG	U	70.1	1	52	SW846 8270C
SED-1	SVOA	4-Nitrophenol	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	Acenaphthene	30.7	UG/KG	J	23.4	1	52	SW846 8270C
SED-1	SVOA	Acenaphthylene	ND	UG/KG	U	21	1	52	SW846 8270C
SED-1	SVOA	alpha-Terpineol	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	Anthracene	106	UG/KG		14	1	52	SW846 8270C
SED-1	SVOA	Atrazine	ND	UG/KG	U	210	1	52	SW846 8270C
SED-1	SVOA	Benzaldehyde	ND	UG/KG	U	210	1	52	SW846 8270C
SED-1	SVOA	Benzo(a)anthracene	418	UG/KG		21	1	52	SW846 8270C
SED-1	SVOA	Benzo(a)pyrene	407	UG/KG		21	1	52	SW846 8270C
SED-1	SVOA	Benzo(b)fluoranthene	679	UG/KG		21	1	52	SW846 8270C
SED-1	SVOA	Benzo(ghi)perylene	266	UG/KG		21	1	52	SW846 8270C
SED-1	SVOA	Benzo(k)fluoranthene	ND	UG/KG	U	21	1	52	SW846 8270C
SED-1	SVOA	bis(2-Chloroethoxy)methane	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	bis(2-Chloroethyl) ether	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	bis(2-Chloroisopropyl)ether	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	bis(2-Ethylhexyl)phthalate	784	UG/KG		140	1	52	SW846 8270C

Table 3
Summary of Analytical Results - Sediment Bulk Chemistry Analyses
Chattahoochee River Ecosystem Restoration Section 206 Project

Sample Number	Fraction	Parameter	Lab Result	Units	Lab Qualifier	MDL	Dilution Factor	Percent Moisture	Method
SED-1	SVOA	Butylbenzylphthalate	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	Carbazole	86.1	UG/KG		21	1	52	SW846 8270C
SED-1	SVOA	Chrysene	537	UG/KG		21	1	52	SW846 8270C
SED-1	SVOA	Dibenzo(a,h)anthracene	85.7	UG/KG		21	1	52	SW846 8270C
SED-1	SVOA	Dibenzofuran	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	Diethylphthalate	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	Dimethylphthalate	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	Di-n-butylphthalate	ND	UG/KG	U	70.1	1	52	SW846 8270C
SED-1	SVOA	Di-n-octylphthalate	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	Diphenylamine	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	Fluoranthene	1080	UG/KG		21	1	52	SW846 8270C
SED-1	SVOA	Fluorene	33.7	UG/KG	J	21	1	52	SW846 8270C
SED-1	SVOA	Hexachlorobenzene	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	Hexachlorobutadiene	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	Hexachlorocyclopentadiene	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	Hexachloroethane	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	Indeno(1,2,3-cd)pyrene	252	UG/KG		21	1	52	SW846 8270C
SED-1	SVOA	Isophorone	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	m,p-Cresols	ND	UG/KG	U	280	1	52	SW846 8270C
SED-1	SVOA	m-Nitroaniline	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	Naphthalene	ND	UG/KG	U	21	1	52	SW846 8270C
SED-1	SVOA	Nitrobenzene	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	N-Nitrosodipropylamine	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	o-Cresol	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	o-Nitroaniline	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	Pentachlorophenol	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	Phenanthrene	514	UG/KG		21	1	52	SW846 8270C
SED-1	SVOA	Phenol	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	p-Nitroaniline	ND	UG/KG	U	140	1	52	SW846 8270C
SED-1	SVOA	Pyrene	956	UG/KG		22	1	52	SW846 8270C
SED-2	METALS	Antimony	ND	MG/KG	U	3.03	5	49	SW846 3050B/6010B
SED-2	METALS	Arsenic	2.07	MG/KG	J	0.976	1	49	SW846 3050B/6010B
SED-2	METALS	Cadmium	0.208	MG/KG	J	0.195	1	49	SW846 3050B/6010B
SED-2	METALS	Chromium	12.6	MG/KG		0.195	1	49	SW846 3050B/6010B
SED-2	METALS	Copper	12.9	MG/KG		0.586	1	49	SW846 3050B/6010B
SED-2	METALS	Lead	19.4	MG/KG		0.488	1	49	SW846 3050B/6010B
SED-2	METALS	Mercury	59.8	UG/KG		7.29	1	49	SW846 7471A
SED-2	METALS	Nickel	4.42	MG/KG		0.195	1	49	SW846 3050B/6010B
SED-2	METALS	Selenium	2.69	MG/KG	J	0.976	1	49	SW846 3050B/6010B
SED-2	METALS	Silver	0.560	MG/KG	J	0.195	1	49	SW846 3050B/6010B
SED-2	METALS	Zinc	41.4	MG/KG		0.39	1	49	SW846 3050B/6010B
SED-2	PAH	Acenaphthene	ND	UG/KG	U	9.76	1	49	SW846 8310
SED-2	PAH	Acenaphthylene	ND	UG/KG	U	3.25	1	49	SW846 8310
SED-2	PAH	Anthracene	ND	UG/KG	U	9.76	1	49	SW846 8310
SED-2	PAH	Benzo(a)anthracene	51.9	UG/KG		1.04	1	49	SW846 8310
SED-2	PAH	Benzo(a)pyrene	35.6	UG/KG		1.04	1	49	SW846 8310

Table 3
Summary of Analytical Results - Sediment Bulk Chemistry Analyses
Chattahoochee River Ecosystem Restoration Section 206 Project

Sample Number	Fraction	Parameter	Lab Result	Units	Lab Qualifier	MDL	Dilution Factor	Percent Moisture	Method
SED-2	PAH	Benzo(b)fluoranthene	45.3	UG/KG		1.04	1	49	SW846 8310
SED-2	PAH	Benzo(ghi)perylene	31.7	UG/KG		1.04	1	49	SW846 8310
SED-2	PAH	Benzo(k)fluoranthene	25.8	UG/KG		0.651	1	49	SW846 8310
SED-2	PAH	Chrysene	37.8	UG/KG		1.11	1	49	SW846 8310
SED-2	PAH	Dibenzo(a,h)anthracene	ND	UG/KG	U	1.04	1	49	SW846 8310
SED-2	PAH	Fluoranthene	76.7	UG/KG		1.04	1	49	SW846 8310
SED-2	PAH	Fluorene	ND	UG/KG	U	6.51	1	49	SW846 8310
SED-2	PAH	Indeno(1,2,3-cd)pyrene	ND	UG/KG	U	1.04	1	49	SW846 8310
SED-2	PAH	Naphthalene	ND	UG/KG	U	9.76	1	49	SW846 8310
SED-2	PAH	Phenanthrene	39.6	UG/KG	P	3.25	1	49	SW846 8310
SED-2	PAH	Pyrene	52.4	UG/KG		1.04	1	49	SW846 8310
SED-2	PCB	Aroclor-1016	ND	UG/KG	U	21.6	10	49	SW846 8082
SED-2	PCB	Aroclor-1221	ND	UG/KG	U	21.6	10	49	SW846 8082
SED-2	PCB	Aroclor-1232	ND	UG/KG	U	21.6	10	49	SW846 8082
SED-2	PCB	Aroclor-1242	ND	UG/KG	U	21.6	10	49	SW846 8082
SED-2	PCB	Aroclor-1248	ND	UG/KG	U	21.6	10	49	SW846 8082
SED-2	PCB	Aroclor-1254	233	UG/KG		21.6	10	49	SW846 8082
SED-2	PCB	Aroclor-1260	94.5	UG/KG		21.6	10	49	SW846 8082
SED-2	PEST	4,4'-DDD	ND	UG/KG	U	6.51	10	49	SW846 8081A
SED-2	PEST	4,4'-DDE	13.6	UG/KG	J	6.51	10	49	SW846 8081A
SED-2	PEST	4,4'-DDT	ND	UG/KG	U	6.51	10	49	SW846 8081A
SED-2	PEST	Aldrin	ND	UG/KG	U	3.25	10	49	SW846 8081A
SED-2	PEST	alpha-BHC	ND	UG/KG	U	3.25	10	49	SW846 8081A
SED-2	PEST	beta-BHC	ND	UG/KG	U	3.25	10	49	SW846 8081A
SED-2	PEST	Chlordane (tech.)	ND	UG/KG	U	32.5	10	49	SW846 8081A
SED-2	PEST	delta-BHC	ND	UG/KG	U	3.25	10	49	SW846 8081A
SED-2	PEST	Dieldrin	ND	UG/KG	U	6.51	10	49	SW846 8081A
SED-2	PEST	Endosulfan I	ND	UG/KG	U	3.25	10	49	SW846 8081A
SED-2	PEST	Endosulfan II	ND	UG/KG	U	6.51	10	49	SW846 8081A
SED-2	PEST	Endosulfan sulfate	ND	UG/KG	U	6.51	10	49	SW846 8081A
SED-2	PEST	Endrin	ND	UG/KG	U	6.51	10	49	SW846 8081A
SED-2	PEST	Endrin aldehyde	ND	UG/KG	U	6.51	10	49	SW846 8081A
SED-2	PEST	Endrin ketone	ND	UG/KG	U	6.51	10	49	SW846 8081A
SED-2	PEST	gamma-BHC (Lindane)	ND	UG/KG	U	3.25	10	49	SW846 8081A
SED-2	PEST	Heptachlor	ND	UG/KG	U	3.25	10	49	SW846 8081A
SED-2	PEST	Heptachlor epoxide	ND	UG/KG	U	3.25	10	49	SW846 8081A
SED-2	PEST	Methoxychlor	ND	UG/KG	U	32.5	10	49	SW846 8081A
SED-2	PEST	Toxaphene	ND	UG/KG	U	108	10	49	SW846 8081A
SED-2	SVOA	1,1'-Biphenyl	ND	UG/KG	U	195	1	49	SW846 8270C
SED-2	SVOA	1,2,4-Trichlorobenzene	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	1,2-Dichlorobenzene	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	1,3-Dichlorobenzene	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	1,4-Dichlorobenzene	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	2,4,5-Trichlorophenol	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	2,4,6-Trichlorophenol	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	2,4-Dichlorophenol	ND	UG/KG	U	130	1	49	SW846 8270C

Table 3
Summary of Analytical Results - Sediment Bulk Chemistry Analyses
Chattahoochee River Ecosystem Restoration Section 206 Project

Sample Number	Fraction	Parameter	Lab Result	Units	Lab Qualifier	MDL	Dilution Factor	Percent Moisture	Method
SED-2	SVOA	2,4-Dimethylphenol	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	2,4-Dinitrophenol	ND	UG/KG	U	247	1	49	SW846 8270C
SED-2	SVOA	2,4-Dinitrotoluene	ND	UG/KG	U	64.9	1	49	SW846 8270C
SED-2	SVOA	2,6-Dinitrotoluene	ND	UG/KG	U	64.9	1	49	SW846 8270C
SED-2	SVOA	2-Chloronaphthalene	ND	UG/KG	U	22.7	1	49	SW846 8270C
SED-2	SVOA	2-Chlorophenol	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	2-Methyl-4,6-dinitrophenol	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	2-Methylnaphthalene	ND	UG/KG	U	13	1	49	SW846 8270C
SED-2	SVOA	2-Nitrophenol	ND	UG/KG	U	64.9	1	49	SW846 8270C
SED-2	SVOA	3,3'-Dichlorobenzidine	ND	UG/KG	U	195	1	49	SW846 8270C
SED-2	SVOA	4-Bromophenylphenylether	ND	UG/KG	U	64.9	1	49	SW846 8270C
SED-2	SVOA	4-Chloro-3-methylphenol	ND	UG/KG	U	64.9	1	49	SW846 8270C
SED-2	SVOA	4-Chloroaniline	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	4-Chlorophenylphenylether	ND	UG/KG	U	64.9	1	49	SW846 8270C
SED-2	SVOA	4-Nitrophenol	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	Acenaphthene	ND	UG/KG	U	21.7	1	49	SW846 8270C
SED-2	SVOA	Acenaphthylene	ND	UG/KG	U	19.5	1	49	SW846 8270C
SED-2	SVOA	alpha-Terpineol	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	Anthracene	ND	UG/KG	U	13	1	49	SW846 8270C
SED-2	SVOA	Atrazine	ND	UG/KG	U	195	1	49	SW846 8270C
SED-2	SVOA	Benzaldehyde	ND	UG/KG	U	195	1	49	SW846 8270C
SED-2	SVOA	Benzo(a)anthracene	42.9	UG/KG	J	19.5	1	49	SW846 8270C
SED-2	SVOA	Benzo(a)pyrene	43.3	UG/KG	J	19.5	1	49	SW846 8270C
SED-2	SVOA	Benzo(b)fluoranthene	83.1	UG/KG		19.5	1	49	SW846 8270C
SED-2	SVOA	Benzo(ghi)perylene	29.2	UG/KG	J	19.5	1	49	SW846 8270C
SED-2	SVOA	Benzo(k)fluoranthene	22.2	UG/KG	J	19.5	1	49	SW846 8270C
SED-2	SVOA	bis(2-Chloroethoxy)methane	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	bis(2-Chloroethyl) ether	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	bis(2-Chloroisopropyl)ether	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	bis(2-Ethylhexyl)phthalate	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	Butylbenzylphthalate	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	Carbazole	ND	UG/KG	U	19.5	1	49	SW846 8270C
SED-2	SVOA	Chrysene	52.3	UG/KG	J	19.5	1	49	SW846 8270C
SED-2	SVOA	Dibenzo(a,h)anthracene	ND	UG/KG	U	19.5	1	49	SW846 8270C
SED-2	SVOA	Dibenzofuran	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	Diethylphthalate	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	Dimethylphthalate	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	Di-n-butylphthalate	ND	UG/KG	U	64.9	1	49	SW846 8270C
SED-2	SVOA	Di-n-octylphthalate	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	Diphenylamine	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	Fluoranthene	90.8	UG/KG		19.5	1	49	SW846 8270C
SED-2	SVOA	Fluorene	ND	UG/KG	U	19.5	1	49	SW846 8270C
SED-2	SVOA	Hexachlorobenzene	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	Hexachlorobutadiene	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	Hexachlorocyclopentadiene	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	Hexachloroethane	ND	UG/KG	U	130	1	49	SW846 8270C

Table 3
Summary of Analytical Results - Sediment Bulk Chemistry Analyses
Chattahoochee River Ecosystem Restoration Section 206 Project

Sample Number	Fraction	Parameter	Lab Result	Units	Lab Qualifier	MDL	Dilution Factor	Percent Moisture	Method
SED-2	SVOA	Indeno(1,2,3-cd)pyrene	23.1	UG/KG	J	19.5	1	49	SW846 8270C
SED-2	SVOA	Isophorone	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	m,p-Cresols	ND	UG/KG	U	260	1	49	SW846 8270C
SED-2	SVOA	m-Nitroaniline	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	Naphthalene	ND	UG/KG	U	19.5	1	49	SW846 8270C
SED-2	SVOA	Nitrobenzene	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	N-Nitrosodipropylamine	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	o-Cresol	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	o-Nitroaniline	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	Pentachlorophenol	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	Phenanthrene	34.8	UG/KG	J	19.5	1	49	SW846 8270C
SED-2	SVOA	Phenol	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	p-Nitroaniline	ND	UG/KG	U	130	1	49	SW846 8270C
SED-2	SVOA	Pyrene	73.9	UG/KG		20.4	1	49	SW846 8270C
SED-3	METALS	Antimony	ND	MG/KG	U	1.06	1	71	SW846 3050B/6010B
SED-3	METALS	Arsenic	4.02	MG/KG	J	1.71	1	71	SW846 3050B/6010B
SED-3	METALS	Cadmium	0.365	MG/KG	J	0.342	1	71	SW846 3050B/6010B
SED-3	METALS	Chromium	38.2	MG/KG		0.342	1	71	SW846 3050B/6010B
SED-3	METALS	Copper	23.8	MG/KG		1.03	1	71	SW846 3050B/6010B
SED-3	METALS	Lead	36.8	MG/KG		0.856	1	71	SW846 3050B/6010B
SED-3	METALS	Mercury	250	UG/KG		14	1	71	SW846 7471A
SED-3	METALS	Nickel	9.08	MG/KG		0.342	1	71	SW846 3050B/6010B
SED-3	METALS	Selenium	3.90	MG/KG	J	1.71	1	71	SW846 3050B/6010B
SED-3	METALS	Silver	1.43	MG/KG	J	0.342	1	71	SW846 3050B/6010B
SED-3	METALS	Zinc	94.2	MG/KG		0.685	1	71	SW846 3050B/6010B
SED-3	PAH	Acenaphthene	ND	UG/KG	U	17.4	1	71	SW846 8310
SED-3	PAH	Acenaphthylene	60.7	UG/KG		5.79	1	71	SW846 8310
SED-3	PAH	Anthracene	96.6	UG/KG		17.4	1	71	SW846 8310
SED-3	PAH	Benzo(a)anthracene	525	UG/KG		1.85	1	71	SW846 8310
SED-3	PAH	Benzo(a)pyrene	483	UG/KG		1.85	1	71	SW846 8310
SED-3	PAH	Benzo(b)fluoranthene	598	UG/KG		1.85	1	71	SW846 8310
SED-3	PAH	Benzo(ghi)perylene	357	UG/KG		1.85	1	71	SW846 8310
SED-3	PAH	Benzo(k)fluoranthene	290	UG/KG		1.16	1	71	SW846 8310
SED-3	PAH	Chrysene	479	UG/KG		1.98	1	71	SW846 8310
SED-3	PAH	Dibenzo(a,h)anthracene	45.0	UG/KG		1.85	1	71	SW846 8310
SED-3	PAH	Fluoranthene	1080	UG/KG		1.85	1	71	SW846 8310
SED-3	PAH	Fluorene	55.1	UG/KG	J	11.6	1	71	SW846 8310
SED-3	PAH	Indeno(1,2,3-cd)pyrene	ND	UG/KG	U	1.85	1	71	SW846 8310
SED-3	PAH	Naphthalene	ND	UG/KG	U	17.4	1	71	SW846 8310
SED-3	PAH	Phenanthrene	483	UG/KG		5.79	1	71	SW846 8310
SED-3	PAH	Pyrene	790	UG/KG		1.85	1	71	SW846 8310
SED-3	PCB	Aroclor-1016	ND	UG/KG	U	38.5	10	71	SW846 8082
SED-3	PCB	Aroclor-1221	ND	UG/KG	U	38.5	10	71	SW846 8082
SED-3	PCB	Aroclor-1232	ND	UG/KG	U	38.5	10	71	SW846 8082
SED-3	PCB	Aroclor-1242	ND	UG/KG	U	38.5	10	71	SW846 8082
SED-3	PCB	Aroclor-1248	ND	UG/KG	U	38.5	10	71	SW846 8082

Table 3
Summary of Analytical Results - Sediment Bulk Chemistry Analyses
Chattahoochee River Ecosystem Restoration Section 206 Project

Sample Number	Fraction	Parameter	Lab Result	Units	Lab Qualifier	MDL	Dilution Factor	Percent Moisture	Method
SED-3	PCB	Aroclor-1254	95.9	UG/KG	J	38.5	10	71	SW846 8082
SED-3	PCB	Aroclor-1260	45.4	UG/KG	J	38.5	10	71	SW846 8082
SED-3	PEST	4,4'-DDD	ND	UG/KG	U	11.6	10	71	SW846 8081A
SED-3	PEST	4,4'-DDE	ND	UG/KG	U	11.6	10	71	SW846 8081A
SED-3	PEST	4,4'-DDT	ND	UG/KG	U	11.6	10	71	SW846 8081A
SED-3	PEST	Aldrin	ND	UG/KG	U	5.79	10	71	SW846 8081A
SED-3	PEST	alpha-BHC	ND	UG/KG	U	5.79	10	71	SW846 8081A
SED-3	PEST	beta-BHC	ND	UG/KG	U	5.79	10	71	SW846 8081A
SED-3	PEST	Chlordane (tech.)	ND	UG/KG	U	57.9	10	71	SW846 8081A
SED-3	PEST	delta-BHC	ND	UG/KG	U	5.79	10	71	SW846 8081A
SED-3	PEST	Dieldrin	ND	UG/KG	U	11.6	10	71	SW846 8081A
SED-3	PEST	Endosulfan I	ND	UG/KG	U	5.79	10	71	SW846 8081A
SED-3	PEST	Endosulfan II	ND	UG/KG	U	11.6	10	71	SW846 8081A
SED-3	PEST	Endosulfan sulfate	ND	UG/KG	U	11.6	10	71	SW846 8081A
SED-3	PEST	Endrin	ND	UG/KG	U	11.6	10	71	SW846 8081A
SED-3	PEST	Endrin aldehyde	ND	UG/KG	U	11.6	10	71	SW846 8081A
SED-3	PEST	Endrin ketone	ND	UG/KG	U	11.6	10	71	SW846 8081A
SED-3	PEST	gamma-BHC (Lindane)	ND	UG/KG	U	5.79	10	71	SW846 8081A
SED-3	PEST	Heptachlor	ND	UG/KG	U	5.79	10	71	SW846 8081A
SED-3	PEST	Heptachlor epoxide	ND	UG/KG	U	5.79	10	71	SW846 8081A
SED-3	PEST	Methoxychlor	ND	UG/KG	U	57.9	10	71	SW846 8081A
SED-3	PEST	Toxaphene	ND	UG/KG	U	193	10	71	SW846 8081A
SED-3	SVOA	1,1'-Biphenyl	ND	UG/KG	U	345	1	71	SW846 8270C
SED-3	SVOA	1,2,4-Trichlorobenzene	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	1,2-Dichlorobenzene	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	1,3-Dichlorobenzene	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	1,4-Dichlorobenzene	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	2,4,5-Trichlorophenol	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	2,4,6-Trichlorophenol	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	2,4-Dichlorophenol	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	2,4-Dimethylphenol	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	2,4-Dinitrophenol	ND	UG/KG	U	437	1	71	SW846 8270C
SED-3	SVOA	2,4-Dinitrotoluene	ND	UG/KG	U	115	1	71	SW846 8270C
SED-3	SVOA	2,6-Dinitrotoluene	ND	UG/KG	U	115	1	71	SW846 8270C
SED-3	SVOA	2-Chloronaphthalene	ND	UG/KG	U	40.3	1	71	SW846 8270C
SED-3	SVOA	2-Chlorophenol	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	2-Methyl-4,6-dinitrophenol	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	2-Methylnaphthalene	ND	UG/KG	U	23	1	71	SW846 8270C
SED-3	SVOA	2-Nitrophenol	ND	UG/KG	U	115	1	71	SW846 8270C
SED-3	SVOA	3,3'-Dichlorobenzidine	ND	UG/KG	U	345	1	71	SW846 8270C
SED-3	SVOA	4-Bromophenylphenylether	ND	UG/KG	U	115	1	71	SW846 8270C
SED-3	SVOA	4-Chloro-3-methylphenol	ND	UG/KG	U	115	1	71	SW846 8270C
SED-3	SVOA	4-Chloroaniline	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	4-Chlorophenylphenylether	ND	UG/KG	U	115	1	71	SW846 8270C
SED-3	SVOA	4-Nitrophenol	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	Acenaphthene	58.8	UG/KG	J	38.4	1	71	SW846 8270C

Table 3
Summary of Analytical Results - Sediment Bulk Chemistry Analyses
Chattahoochee River Ecosystem Restoration Section 206 Project

Sample Number	Fraction	Parameter	Lab Result	Units	Lab Qualifier	MDL	Dilution Factor	Percent Moisture	Method
SED-3	SVOA	Acenaphthylene	ND	UG/KG	U	34.5	1	71	SW846 8270C
SED-3	SVOA	alpha-Terpineol	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	Anthracene	163	UG/KG		23	1	71	SW846 8270C
SED-3	SVOA	Atrazine	ND	UG/KG	U	345	1	71	SW846 8270C
SED-3	SVOA	Benzaldehyde	ND	UG/KG	U	345	1	71	SW846 8270C
SED-3	SVOA	Benzo(a)anthracene	625	UG/KG		34.5	1	71	SW846 8270C
SED-3	SVOA	Benzo(a)pyrene	601	UG/KG		34.5	1	71	SW846 8270C
SED-3	SVOA	Benzo(b)fluoranthene	1170	UG/KG		34.5	1	71	SW846 8270C
SED-3	SVOA	Benzo(ghi)perylene	362	UG/KG		34.5	1	71	SW846 8270C
SED-3	SVOA	Benzo(k)fluoranthene	405	UG/KG		34.5	1	71	SW846 8270C
SED-3	SVOA	bis(2-Chloroethoxy)methane	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	bis(2-Chloroethyl) ether	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	bis(2-Chloroisopropyl)ether	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	bis(2-Ethylhexyl)phthalate	543	UG/KG	J	230	1	71	SW846 8270C
SED-3	SVOA	Butylbenzylphthalate	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	Carbazole	186	UG/KG		34.5	1	71	SW846 8270C
SED-3	SVOA	Chrysene	785	UG/KG		34.5	1	71	SW846 8270C
SED-3	SVOA	Dibenzo(a,h)anthracene	111	UG/KG	J	34.5	1	71	SW846 8270C
SED-3	SVOA	Dibenzofuran	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	Diethylphthalate	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	Dimethylphthalate	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	Di-n-butylphthalate	ND	UG/KG	U	115	1	71	SW846 8270C
SED-3	SVOA	Di-n-octylphthalate	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	Diphenylamine	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	Fluoranthene	1800	UG/KG		34.5	1	71	SW846 8270C
SED-3	SVOA	Fluorene	60.0	UG/KG	J	34.5	1	71	SW846 8270C
SED-3	SVOA	Hexachlorobenzene	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	Hexachlorobutadiene	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	Hexachlorocyclopentadiene	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	Hexachloroethane	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	Indeno(1,2,3-cd)pyrene	352	UG/KG		34.5	1	71	SW846 8270C
SED-3	SVOA	Isophorone	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	m,p-Cresols	ND	UG/KG	U	460	1	71	SW846 8270C
SED-3	SVOA	m-Nitroaniline	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	Naphthalene	ND	UG/KG	U	34.5	1	71	SW846 8270C
SED-3	SVOA	Nitrobenzene	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	N-Nitrosodipropylamine	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	o-Cresol	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	o-Nitroaniline	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	Pentachlorophenol	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	Phenanthrene	938	UG/KG		34.5	1	71	SW846 8270C
SED-3	SVOA	Phenol	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	p-Nitroaniline	ND	UG/KG	U	230	1	71	SW846 8270C
SED-3	SVOA	Pyrene	1440	UG/KG		36.1	1	71	SW846 8270C
SED-4	METALS	Antimony	ND	MG/KG	U	0.432	1	29	SW846 3050B/6010B
SED-4	METALS	Arsenic	ND	MG/KG	U	0.697	1	29	SW846 3050B/6010B

Table 3
Summary of Analytical Results - Sediment Bulk Chemistry Analyses
Chattahoochee River Ecosystem Restoration Section 206 Project

Sample Number	Fraction	Parameter	Lab Result	Units	Lab Qualifier	MDL	Dilution Factor	Percent Moisture	Method
SED-4	METALS	Cadmium	ND	MG/KG	U	0.139	1	29	SW846 3050B/6010B
SED-4	METALS	Chromium	5.57	MG/KG		0.139	1	29	SW846 3050B/6010B
SED-4	METALS	Copper	2.85	MG/KG		0.418	1	29	SW846 3050B/6010B
SED-4	METALS	Lead	2.57	MG/KG		0.349	1	29	SW846 3050B/6010B
SED-4	METALS	Mercury	7.38	UG/KG	J	5.75	1	29	SW846 7471A
SED-4	METALS	Nickel	1.29	MG/KG		0.139	1	29	SW846 3050B/6010B
SED-4	METALS	Selenium	1.92	MG/KG	J	0.697	1	29	SW846 3050B/6010B
SED-4	METALS	Silver	0.398	MG/KG	J	0.139	1	29	SW846 3050B/6010B
SED-4	METALS	Zinc	11.0	MG/KG		0.279	1	29	SW846 3050B/6010B
SED-4	PAH	Acenaphthene	ND	UG/KG	U	7.08	1	29	SW846 8310
SED-4	PAH	Acenaphthylene	ND	UG/KG	U	2.36	1	29	SW846 8310
SED-4	PAH	Anthracene	ND	UG/KG	U	7.08	1	29	SW846 8310
SED-4	PAH	Benzo(a)anthracene	12.3	UG/KG		0.755	1	29	SW846 8310
SED-4	PAH	Benzo(a)pyrene	14.5	UG/KG		0.755	1	29	SW846 8310
SED-4	PAH	Benzo(b)fluoranthene	20.9	UG/KG		0.755	1	29	SW846 8310
SED-4	PAH	Benzo(ghi)perylene	13.5	UG/KG		0.755	1	29	SW846 8310
SED-4	PAH	Benzo(k)fluoranthene	ND	UG/KG	U	0.472	1	29	SW846 8310
SED-4	PAH	Chrysene	13.4	UG/KG		0.807	1	29	SW846 8310
SED-4	PAH	Dibenzo(a,h)anthracene	ND	UG/KG	U	0.755	1	29	SW846 8310
SED-4	PAH	Fluoranthene	33.0	UG/KG		0.755	1	29	SW846 8310
SED-4	PAH	Fluorene	ND	UG/KG	U	4.72	1	29	SW846 8310
SED-4	PAH	Indeno(1,2,3-cd)pyrene	ND	UG/KG	U	0.755	1	29	SW846 8310
SED-4	PAH	Naphthalene	ND	UG/KG	U	7.08	1	29	SW846 8310
SED-4	PAH	Phenanthrene	16.2	UG/KG	J	2.36	1	29	SW846 8310
SED-4	PAH	Pyrene	30.5	UG/KG		0.755	1	29	SW846 8310
SED-4	PCB	Aroclor-1016	ND	UG/KG	U	15.7	10	29	SW846 8082
SED-4	PCB	Aroclor-1221	ND	UG/KG	U	15.7	10	29	SW846 8082
SED-4	PCB	Aroclor-1232	ND	UG/KG	U	15.7	10	29	SW846 8082
SED-4	PCB	Aroclor-1242	ND	UG/KG	U	15.7	10	29	SW846 8082
SED-4	PCB	Aroclor-1248	ND	UG/KG	U	15.7	10	29	SW846 8082
SED-4	PCB	Aroclor-1254	ND	UG/KG	U	15.7	10	29	SW846 8082
SED-4	PCB	Aroclor-1260	ND	UG/KG	U	15.7	10	29	SW846 8082
SED-4	PEST	4,4'-DDD	ND	UG/KG	U	4.72	10	29	SW846 8081A
SED-4	PEST	4,4'-DDE	ND	UG/KG	U	4.72	10	29	SW846 8081A
SED-4	PEST	4,4'-DDT	ND	UG/KG	U	4.72	10	29	SW846 8081A
SED-4	PEST	Aldrin	ND	UG/KG	U	2.36	10	29	SW846 8081A
SED-4	PEST	alpha-BHC	ND	UG/KG	U	2.36	10	29	SW846 8081A
SED-4	PEST	beta-BHC	ND	UG/KG	U	2.36	10	29	SW846 8081A
SED-4	PEST	Chlordane (tech.)	ND	UG/KG	U	23.6	10	29	SW846 8081A
SED-4	PEST	delta-BHC	ND	UG/KG	U	2.36	10	29	SW846 8081A
SED-4	PEST	Dieldrin	ND	UG/KG	U	4.72	10	29	SW846 8081A
SED-4	PEST	Endosulfan I	ND	UG/KG	U	2.36	10	29	SW846 8081A
SED-4	PEST	Endosulfan II	ND	UG/KG	U	4.72	10	29	SW846 8081A
SED-4	PEST	Endosulfan sulfate	ND	UG/KG	U	4.72	10	29	SW846 8081A
SED-4	PEST	Endrin	ND	UG/KG	U	4.72	10	29	SW846 8081A
SED-4	PEST	Endrin aldehyde	ND	UG/KG	U	4.72	10	29	SW846 8081A

Table 3
Summary of Analytical Results - Sediment Bulk Chemistry Analyses
Chattahoochee River Ecosystem Restoration Section 206 Project

Sample Number	Fraction	Parameter	Lab Result	Units	Lab Qualifier	MDL	Dilution Factor	Percent Moisture	Method
SED-4	PEST	Endrin ketone	ND	UG/KG	U	4.72	10	29	SW846 8081A
SED-4	PEST	gamma-BHC (Lindane)	ND	UG/KG	U	2.36	10	29	SW846 8081A
SED-4	PEST	Heptachlor	ND	UG/KG	U	2.36	10	29	SW846 8081A
SED-4	PEST	Heptachlor epoxide	ND	UG/KG	U	2.36	10	29	SW846 8081A
SED-4	PEST	Methoxychlor	ND	UG/KG	U	23.6	10	29	SW846 8081A
SED-4	PEST	Toxaphene	ND	UG/KG	U	78.6	10	29	SW846 8081A
SED-4	SVOA	1,1'-Biphenyl	ND	UG/KG	U	141	1	29	SW846 8270C
SED-4	SVOA	1,2,4-Trichlorobenzene	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	1,2-Dichlorobenzene	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	1,3-Dichlorobenzene	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	1,4-Dichlorobenzene	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	2,4,5-Trichlorophenol	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	2,4,6-Trichlorophenol	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	2,4-Dichlorophenol	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	2,4-Dimethylphenol	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	2,4-Dinitrophenol	ND	UG/KG	U	179	1	29	SW846 8270C
SED-4	SVOA	2,4-Dinitrotoluene	ND	UG/KG	U	47.1	1	29	SW846 8270C
SED-4	SVOA	2,6-Dinitrotoluene	ND	UG/KG	U	47.1	1	29	SW846 8270C
SED-4	SVOA	2-Chloronaphthalene	ND	UG/KG	U	16.5	1	29	SW846 8270C
SED-4	SVOA	2-Chlorophenol	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	2-Methyl-4,6-dinitrophenol	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	2-Methylnaphthalene	ND	UG/KG	U	9.41	1	29	SW846 8270C
SED-4	SVOA	2-Nitrophenol	ND	UG/KG	U	47.1	1	29	SW846 8270C
SED-4	SVOA	3,3'-Dichlorobenzidine	ND	UG/KG	U	141	1	29	SW846 8270C
SED-4	SVOA	4-Bromophenylphenylether	ND	UG/KG	U	47.1	1	29	SW846 8270C
SED-4	SVOA	4-Chloro-3-methylphenol	ND	UG/KG	U	47.1	1	29	SW846 8270C
SED-4	SVOA	4-Chloroaniline	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	4-Chlorophenylphenylether	ND	UG/KG	U	47.1	1	29	SW846 8270C
SED-4	SVOA	4-Nitrophenol	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	Acenaphthene	ND	UG/KG	U	15.7	1	29	SW846 8270C
SED-4	SVOA	Acenaphthylene	ND	UG/KG	U	14.1	1	29	SW846 8270C
SED-4	SVOA	alpha-Terpineol	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	Anthracene	24.3	UG/KG	J	9.41	1	29	SW846 8270C
SED-4	SVOA	Atrazine	ND	UG/KG	U	141	1	29	SW846 8270C
SED-4	SVOA	Benzaldehyde	ND	UG/KG	U	141	1	29	SW846 8270C
SED-4	SVOA	Benzo(a)anthracene	46.7	UG/KG	J	14.1	1	29	SW846 8270C
SED-4	SVOA	Benzo(a)pyrene	37.8	UG/KG	J	14.1	1	29	SW846 8270C
SED-4	SVOA	Benzo(b)fluoranthene	63.0	UG/KG		14.1	1	29	SW846 8270C
SED-4	SVOA	Benzo(ghi)perylene	17.0	UG/KG	J	14.1	1	29	SW846 8270C
SED-4	SVOA	Benzo(k)fluoranthene	26.5	UG/KG	J	14.1	1	29	SW846 8270C
SED-4	SVOA	bis(2-Chloroethoxy)methane	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	bis(2-Chloroethyl) ether	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	bis(2-Chloroisopropyl)ether	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	bis(2-Ethylhexyl)phthalate	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	Butylbenzylphthalate	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	Carbazole	ND	UG/KG	U	14.1	1	29	SW846 8270C

Table 3
Summary of Analytical Results - Sediment Bulk Chemistry Analyses
Chattahoochee River Ecosystem Restoration Section 206 Project

Sample Number	Fraction	Parameter	Lab Result	Units	Lab Qualifier	MDL	Dilution Factor	Percent Moisture	Method
SED-4	SVOA	Chrysene	45.2	UG/KG	J	14.1	1	29	SW846 8270C
SED-4	SVOA	Dibenzo(a,h)anthracene	ND	UG/KG	U	14.1	1	29	SW846 8270C
SED-4	SVOA	Dibenzofuran	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	Diethylphthalate	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	Dimethylphthalate	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	Di-n-butylphthalate	ND	UG/KG	U	47.1	1	29	SW846 8270C
SED-4	SVOA	Di-n-octylphthalate	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	Diphenylamine	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	Fluoranthene	131	UG/KG		14.1	1	29	SW846 8270C
SED-4	SVOA	Fluorene	ND	UG/KG	U	14.1	1	29	SW846 8270C
SED-4	SVOA	Hexachlorobenzene	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	Hexachlorobutadiene	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	Hexachlorocyclopentadiene	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	Hexachloroethane	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	Indeno(1,2,3-cd)pyrene	16.2	UG/KG	J	14.1	1	29	SW846 8270C
SED-4	SVOA	Isophorone	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	m,p-Cresols	ND	UG/KG	U	188	1	29	SW846 8270C
SED-4	SVOA	m-Nitroaniline	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	Naphthalene	ND	UG/KG	U	14.1	1	29	SW846 8270C
SED-4	SVOA	Nitrobenzene	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	N-Nitrosodipropylamine	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	o-Cresol	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	o-Nitroaniline	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	Pentachlorophenol	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	Phenanthrene	101	UG/KG		14.1	1	29	SW846 8270C
SED-4	SVOA	Phenol	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	p-Nitroaniline	ND	UG/KG	U	94.1	1	29	SW846 8270C
SED-4	SVOA	Pyrene	90.3	UG/KG		14.8	1	29	SW846 8270C

Notes:
mg/kg = milligrams per kilogram (ppm)
ug/kg = micrograms per kilogram (ppb)
J = Estimated value less than the Reporting Limit but greater than the Detection Limit
ND = Analyte not detected
U =
MDL = Minimum Detection Limit

APPENDIX I

Appendix I
Summary of Measurements and Field Conditions
Sediment Testing Report

Chattahoochee River Ecosystem Restoration Section 206 Project
Columbus, Georgia

Sample ID	Date	Time (DST)	Depth Recorder	Depth of Core (ft)	Recovery (ft)	Lithology	Weather Conditions
SED-1.a	11/3/08	1540	8.2	2.0	1.5	Silty sand,	Partly cloudy, 70° F
						dark brown	
SED-1.b	11/3/08	1610	6.8	1.5	1.0	Medium course	Partly cloudy, 70° F
						grain sand,	
						dark, brown	
SED-2.a	11/4/08	0830	6.5	1.0	0.5	Silty sand,	Cloudy, 60° F
						mica, organics,	
						dark brown	
SED-2.b	11/4/08	0900	5.5	2.0	1.0	Silty fine grain	Cloudy, 60° F
						sand, dark brown	
SED-3.a	11/4/08	1030	7.5	≤ 1.0	≤ 1.0	Silty sand,	Partly cloudy, 70° F
						some course,	
						dark brown	
SED-3.b	11/4/08	1050	11.5	≤ 1.0	≤ 1.0	Silty sand,	Partly cloudy, 70° F
						some course,	
						dark brown	
SED-4.a	11/4/08	1130	5.5	≤ 1.0	≤ 1.0	Course grain sand,	Partly cloudy, 70° F
						little silt,	
						dark brown	
SED-4.b	11/4/08	1215	5.2	≤ 1.0	≤ 1.0	Course grain sand,	Partly cloudy, 70° F
						little silt,	
						dark brown	